

Interviews: David Byrne, George Massenburg, Butch Vig · DVD Production · Sound for Lilith Fair

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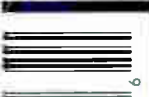
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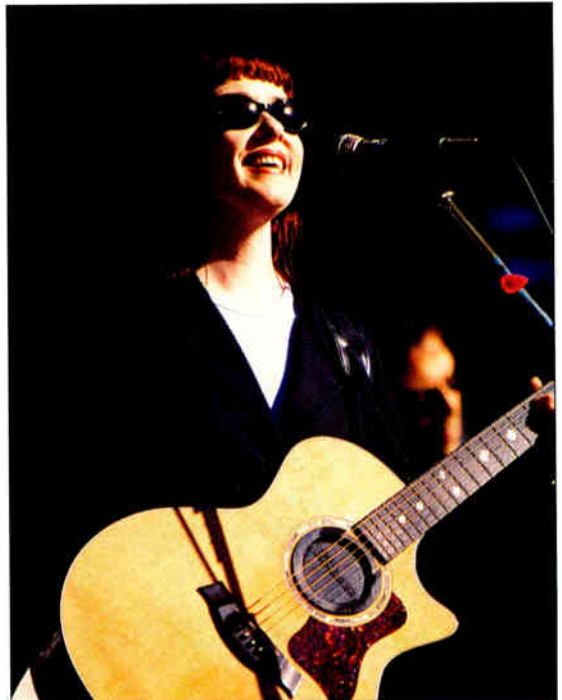
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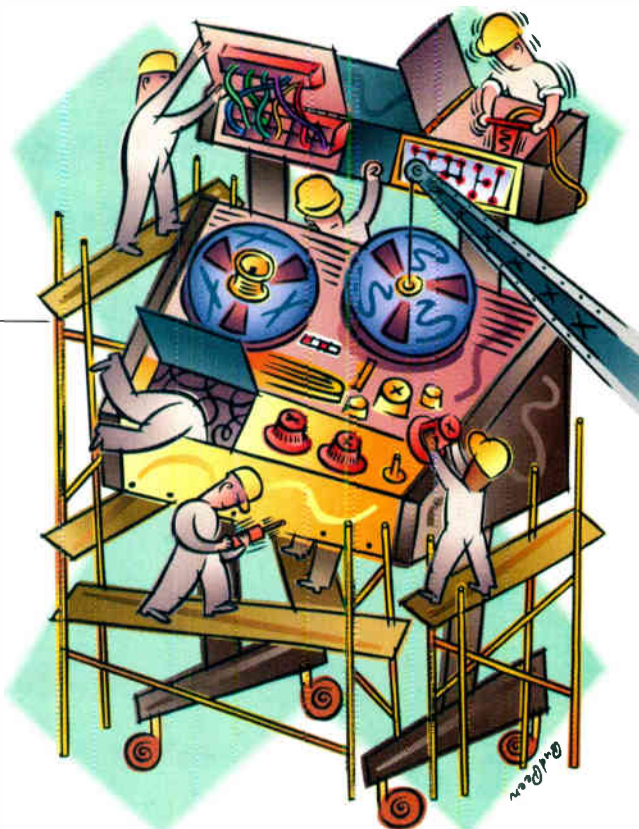
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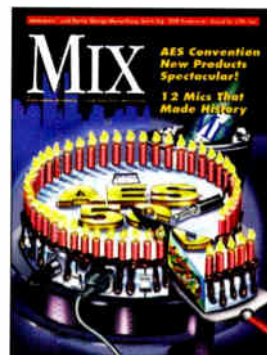


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Cover: In celebration of the AES 50th anniversary and *Mix* magazine's 20th, we commissioned Jenny Adams to illustrate a slice of the festivities for this month's cover.



There's lots of hype these days about PCI digital audio recording systems. Companies spend a ton of money on advertising, claiming future support by a myriad of different software companies. What are we supposed to do? We need instant solutions! Our projects are due now not "soon".

Emagic, known for its integrated professional MIDI, Digital audio and Scoring software has created a cross-platform, PCI busmaster digital audio recording card with 8 discrete outputs for less than \$800: Audiowerk8. Since the product's launch last Spring, thousands of users worldwide have attested to the incredible ease of installation and use and the warmest analog to digital conversion in the business. The Audiowerk8 works on both Windows and MacOS computers just like Logic Audio, the sequencing software it was designed to work with from the start.

Version 3.0 of this award winning music production tool now offers a rich complement of real-time DSP effects such as Equalizers, Filters, Reverbs, Chorus, Flangers and Delays with up to 8 inserts and sends per track, depending on your CPU.

The combination of Logic Audio 3.0 and Audiowerk8, allows the completion of professional production jobs on a very tight budget.

There's a whole slew of new features such as: punch in on the fly, cycle recording, contiguous synchronization of audio to MTC and much more. You can even use 2 Audiowerk8 cards and get a total of 24 physical audio tracks and 16 outputs.

Rather than calling a dozen companies to get a technical issue resolved, make a single call to a single source and get back to work. Compatibility and support problems become a thing of the past.

So what's the deal? Logic Audio & Audiowerk8, true integration, guaranteed compatibility, professional results. See your dealer or give us a call. The choice is simple. One company, one complete solution.

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by David Schwartz and Penny Riker Jacob

AES GOES GOLD!!!

The theme of the 103rd convention of the Audio Engineering Society is "AES Goes Gold—Celebrating 50 years as the Global Forum for Professional Audio." However, the 50-year part isn't exactly true—the AES was actually founded in 1948, although a steering group began planning in late '47. The first AES meeting, at New York's RCA Studios on March 11, 1948, drew about 150 engineers, anxious to discuss the newfangled LP format and share resources for finding lacquers and sapphire cutting styli, which were scarce commodities in those post-war times.

Months later, the AES expanded with other chapters, and the first convention—an "Audio Fair"—was held at the Hotel New Yorker in October 1949. Since the early days, the society's role in developing audio education, standards and practices has been exemplary. The first European convention was held in 1971, and now, 102 conventions since its founding, the society has more than 12,000 members in more than 40 countries.

And this AES is going to be special. Keynote speaker George Massenburg (interviewed in this issue) opens the show with a challenge for the future based upon recognition of the past. A Founders' Day reception will honor key individuals who shaped the course of audio during the past 50 years. Other highlights include an array of papers, workshops and special events, including 96kHz/24-bit Mastering, Education Forum and Fair, NARAS Grammy Recording Forum, SPARS Forum, Women in Audio, technical tours, Audio in Latin America, and a not-to-be-missed presentation on DVD-Audio. For those who want to go *way* back, a tour of the Edison Museum in New Jersey has been set up, complete with shuttle service. As always, the exhibit floor is where the real action is, with more than 350 exhibitors—a far cry from the 40 that showed for the 1949 Audio Fair!

This special AES issue of *Mix* is packed with articles for the audio professional. *Mix* executive editor Blair Jackson talks with musical chameleon David Byrne in "The Mix Interview." Technical editor Chris Michie asks noted tweakers about their favorite "Console and Recorder Modifications." Collector extraordinaire Jim Webb selects a dozen "Mics That Made History" from his collection. "Classic Tracks" spotlights Sam Cooke's "Bring It on Home to Me." *Mix*'s L.A. Editor Maureen Droney chats with cutting-edge producer/musician Butch Vig. Our New York focus checks out the NYC audio post-production scene and examines the business climate for studios in the Big Apple. Our expanded Live Sound section offers profiles of the Blues Fest (B.B. King, Robert Cray, et. al.) and Lilith Fair tours, and we've added a new feature, "All Access," where, this month, noted photojournalist Steve Jennings drops in on the Radiohead tour.

Of course, technology is a big part of any AES, and our 1997 New Products Guide is a 54-page section listing hundreds of new offerings. Our exclusive Technology Spotlights unveil the top-secret details of several major debuts: Otari's digital console, Neumann's new "project studio" microphone and Roland's VS-840 digital studio-in-a-box. And for those who can't attend AES, we'll provide complete coverage in the months to come.

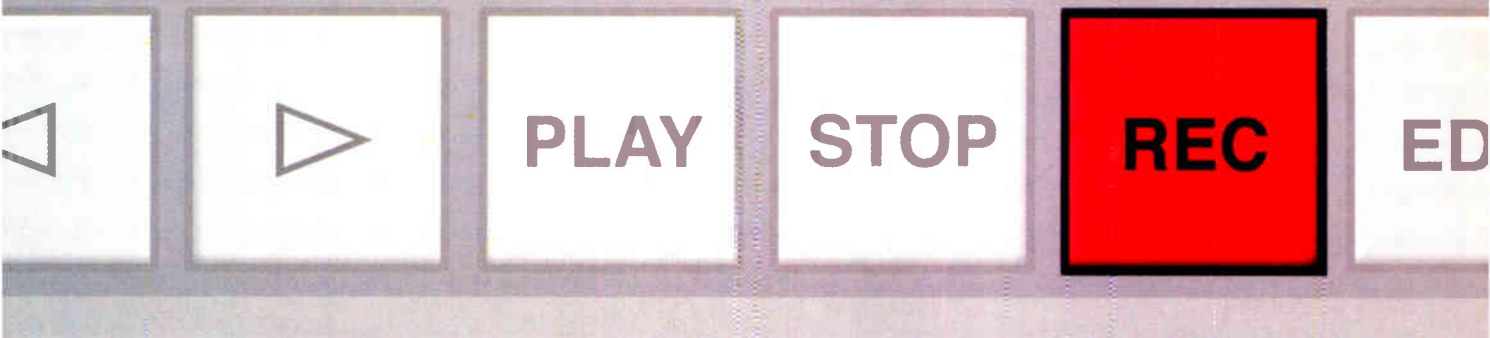
See you at the show!



George Petersen



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CURRENT

APRS APPOINTS NEW CHIEF EXECUTIVE

The Association of Professional Recording Services appointed Mark Broad as its new chief executive. Broad joins the APRS from Barnes Music, a production company focusing on music publishing, which he co-founded in 1986. Commenting on his appointment and goals, Broad says: "I want to develop and promote the benefits of the APRS for the UK industry, which makes a great and highly regarded contribution to the world of professional audio. There is always scope for fresh thinking, and this will be my main point of focus in the coming months—upgrading the association's services and gradually broadening the membership."

Broad succeeds Philip Vaughan, APRS chief executive for the past ten years, who retired in July.

IN MEMORY: CAROL CRAFT

We were saddened to hear of the death of Carol Craft, who passed away this summer while vacationing in her native England. During her audio career, Craft worked for George Massenburg Labs, Apogee Electronics, QSound and Spatializer Labs. She also generously volunteered her time assisting the House Ear Institute with its Hearing Is Priceless (HIP) campaign. Craft will always be remembered for her cheerful attitude and sense of humor. She will be missed.

LIQUID AUDIO, CAPITOL FORM INTERNET AGREEMENT

Liquid Audio (Redwood City, Calif.), developer of secure Internet music delivery systems is teaming up with Capitol Records (Hollywood) to promote and sell music over the Internet. Under the agreement, announced in early September, Capitol will offer music on the Internet in Liquid Audio format. Liz Heller, executive vice president of Capitol Records, says the agreement will provide a new, secure avenue for artist exposure. "It is incumbent upon the music industry to experiment with new technologies that protect our artists' copyrights in the digital era," says Heller. "We've got to try new

things, new ways of bringing our artists' music to the public." Liquid Audio CEO Gerry Kearby agrees that the industry is recognizing the viability of the Internet as a music promotion tool: "Our agreement with Capitol Records—both artists and record companies—are serious about capitalizing on Internet resources and supplying a much wider audience with an even greater variety of music."

"HOW TO LISTEN" TOUR FEATURES McFERRIN, MARSALIS

Ten-time Grammy winner Bobby McFerrin and Pulitzer Prize winner Wynton Marsalis are among the star jazz artist/teachers collaborating on the *harman: how to listen™* touring music appreciation program this fall. The program was started in 1996 by Dr. Sidney Harman and Wynton Marsalis out of a mutual concern for America's waning interest in music education. Geared toward students in grades 4 to 8, the tour is designed to explore new ways to listen to music through artist appearances at schools nationwide. In addition to sponsoring the classes, Harman will donate to each school visited an EON sound system, a CD player and a *harman: how to listen* lesson plan, plus eight CDs donated by Tower Records.

"As private citizens, we must get involved," says Harman. "How better to express Harman International's commitment to music and to its purest reproduction than to work with talented and committed artists as they reveal its wonders to young people and as young people reveal their wonders to the artists."

FIRST U.S. JAZZ MUSEUM OPENS IN KANSAS CITY

Tony Bennett, Al Jarreau, the Pat Metheny Trio and Kevin Mahogany were some of many performers at the September 5 gala preview of America's first jazz museum, in Kansas City, Mo. The Kansas City Jazz Museum will feature educational exhibits and personal effects of Louis Armstrong, Duke Ellington, Ella Fitzgerald and Charlie

Parker, all of whom were regulars at the city's jazz nightclubs during the 1930s. The Kansas City Jazz Museum, part of an extensive 50,000-square-foot complex in the renovated Gem Theater, marks the conclusion of an eight-year, \$26-million project to restore the area's historic 18th and Vine District, once a jazz mecca.

UPCOMING EVENTS

Guitar Center offers ongoing "Wired Wednesday" clinics throughout October. These free seminars, held at 34 Guitar Center locations nationwide, will each focus on different recording topics. Call your local Guitar Center or visit www.guitarcenter.com for schedules.

Synergetic Audio Concepts announced its schedule of workshops through next September, taking place at various locations across the country and focusing on a range of live sound issues and sound system design. To find out more, visit www.synaudcon.com or call 800/796-2831.

"Ignite the Web" is the theme of the Macromedia International User Conference, taking place October 8-10 at the Moscone Convention Center in San Francisco. The show, said to be the largest forum for authors, designers and publishers of digital media, features more than 3,000 multimedia developers and expects to draw more than 10,000 attendees. Visit ucon.macromedia.com for details.

This month, the 10th ITBS (International Audio, Video, Broadcasting, Motion Picture and Telecommunications) Show takes place in Milan, at the Milan Trade Fair. Convention dates are October 16-20; call 39/2/481-5541 for more information.

Asia Broadcast '97, the Asian sound, film and video exhibition and conference, is happening November 4-7 at the Hong Kong Convention & Exhibition Centre. For details, call 201/652-7070.

The 139th SMPTE technical conference returns to New York next month, to be held at the New York Marriott Marquis on November 21-24. This show's theme is "Film and Video Origination in the Era of DTV Broadcasting

—CONTINUED ON PAGE 12

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INDUSTRY NOTES

Solid State Logic (Begbroke, Oxford, UK) announced that **Rick Plushner** was named president of SSL North America. Based out of SSL's New York office, Plushner will oversee the continuing development of SSL's U.S. recording, film, broadcast and post production sales...Due to a business restructuring, **Bob Prideaux**, president of Kitchener, Ontario-based T.G.I. North America Inc., will be leaving the company. **Bill Calma** will assume the role of chief operating officer, **Rob Hofkamp** will assume the position of sales director and **Brian Denomme** will assume the role of financial director...**Dave Christenson** was appointed vice president of international sales at **Group One** (Farmingdale, NY). He will oversee sales and marketing for the network of distributors of **KRK Systems Inc.**...News from Foster City, CA-based **Otari Corporation of America**: **Kris Jackson** was promoted to product manager-recording consoles, and **Tim Murray** was brought onboard as sales support manager. The company is opening a factory-direct office in Nashville (Otari Southeast, phone 615/255-6080), which will be staffed by office manager **Melody Rhodes**, sales manager **Duncan Rowe** and product specialist **Jeff Glixman**. Otari has also appointed **Applied Audio Marketing** as Southeast factory representative...**Liquid Audio** (Redwood City, CA) named **Howard Brown** vice president of sales. Brown will be responsible for worldwide sales of Liquid Audio's suite of software products for mastering, publishing, previewing and selling music over the Internet...**Ian Thacker** was appointed Eastern regional sales manager at **Community Professional Loudspeakers** (Chester, PA)...**Nancy Flannery** joined **Highland, NY-based Walters-Storyk Design Group** as chief financial officer, and **Scott Yates** was named senior design associ-

ate...**Harris Corporation** (Quincy, IL) appointed **Bruce M. Allan** vice president/general manager of the company's broadcast division. Allan, a pioneer in the development of digital television, will lead the company's DTV business. **Patrick Baumann** was hired as international finance manager...**M. Travis Ludwig** was named product manager, systems contracting markets, at **BSS Audio**, a division of **Harman Pro North America** (Nashville)...**Yamaha Corporation of America** (Buena Park, CA) added technical personnel to the professional audio department. **John Patterson** was named R&D specialist, pro audio, based in New York; **Marc Lopez** was hired as applications specialist, pro audio, based in Buena Park...**JR Pro Sales Inc.**, the Valencia, CA-based North American distributor of **BASF** brand recording products, brought onboard **Mark Salamone** as Eastern sales manager for audio/video and broadcast products...**Korg USA Inc.** (Melville, NY) named **Paul Sommer** district sales manager for the Pacific Northwest region of the U.S...**Belfast-based Audio Processing Technology (APT)** appointed **Paula Flood** as sales engineer for the European and Middle East regions...**Audio-Technica U.S. Inc.** is expanding its Stow, OH-based facility. The new 20,000-sq.-ft. addition is scheduled for completion by year-end. **Audio-Technica** recently named **Ark Productions and Marketing** "Rep of the Year" for 1996...**Nashville-based Canorus Inc.** appointed **Jamie Ryan** to assume responsibilities for corporate communication on behalf of the company...**Gary Marcus** was hired to fill the position of director of sales and marketing at **Remo Inc.** (Valencia, CA)...**Burbank, CA-based Video Symphony** added animators **John Musumeci** and **Dan Fowler** to its staff of **Dimension 3D Animation Training Program** instructors. ■

—FROM PAGE 10, CURRENT

and Distribution." The event includes an informative full-day seminar and a two-and-a-half-day technical program featuring eight papers sessions; visit www.smpete.org or call 914/761-1100 for registration and seminar details.

NAMM's International Music Market '98 is moving to the Los Angeles Convention Center; the show takes place from January 29-February 1. For more information, visit www.namm.org or call 760/438-8001.

The **1998 POST/LA Expo** will be held February 27-March 1, at the Santa Monica Civic Auditorium in Santa Monica. **POST/LA Expo** is a technology-driven post-production trade event; to find out more, call 213/654-6530 or 800/407-4697.

NEW WEB SITES

Visitors to the **Bose** site, at www.bose.com, can find information on the company's history, technology and products.

Creative Labs Inc. announced **Creative Open MIDI Contest**, an online music contest where visitors can submit original compositions to compete for prizes, including E-mu and SoundBlaster products. The deadline is October 20; visit www.creativeinspire.com.

Visit **Fenderworld** at www.fender.com; the site offers Web chats with artists and industry experts, plus tech tips and product information.

The **Intelix** home page offers complete descriptions of the entire product line, plus company history. At www.intelix.com.

Mouser Electronics, an electric component distributor, introduced a new Web page, at www.mouser.com. The site features a user-friendly interface, product pricing and availability and an extensive search engine.

TEAC announces a Web site for **Tascam** at www.tascam.com.

QSC recently upgraded its Web site to provide more convenient access to product information and news. Visit www.qsc.com.

CORRECTION

In the August feature "Room Acoustics" by David Schwind, we incorrectly stated that the book by Charles Salter Associates was to be published by McGraw-Hill. A publisher will be announced. ■

CHECK OUT THIS MONTH'S
MIX ONLINE!
<http://www.mixmag.com>

Loved by The King, The Chairman, The Material Girl, Some Hot Tuna & Everyone aboard The Airplane.

Don't tell Al Schmitt that names aren't important in recording. He has recorded, mixed, and produced some of the greatest names in history—everyone from Elvis to Frank Sinatra, Madonna to Steely Dan, Barbara Streisand to Toto, and Natalie Cole to the Jefferson Airplane. His Neumann mics (which he has been using and collecting since the mid-1950's) have even helped him win six Grammy Awards for Best Engineer. "I believe they are the best microphones in the industry," he says.

And when you also believe, as Al does, that great sound comes from good microphone technique (and not from constant EQ adjustments) you want to use the very best mics you can get. The natural choice for Al is Neumann. And while he has great affection for all of his Neumanns, he has grown particularly fond of his new M 149 Tube. "Like the original M 49, the M 149 Tube never lets me down," he says. "It's an extraordinary microphone—clean and crisp."

Being the award-winning professional and sound perfectionist that he is, Al has chosen to record the voices and instruments of so many of our favorite artists—Tony Bennett, Jackson Browne, Willie Nelson, Quincy Jones, Diana Krall, Dr. John, Michael Bolton, and many, many others—through his favorite mics.

After all, nothing else sounds like a Neumann.



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CIRCLE #007 ON PRODUCT INFO CARD

**Congratulations,
Al, on winning
your 7th Grammy!**
Best Engineered Album, Non-Classical for O'S Juke Joint



**1997
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THE COMPRESSOR LIMITER EXPANDER/GATE

The name that defines great compression!

A/B the sound with and without sidechain processing. No patching required.

OverEasy®-- the choice of top professionals for soft-knee compression.

12-segment gain reduction meter allows precision monitoring of compression.

Tells you when the zero-attack PeakStopPlus™ limiter is doing its thing.

Link both channels the best way with True RMS Power Summing—a very musical way to achieve stereo compression.



Flexible expander/gate works over a 70 dB range.

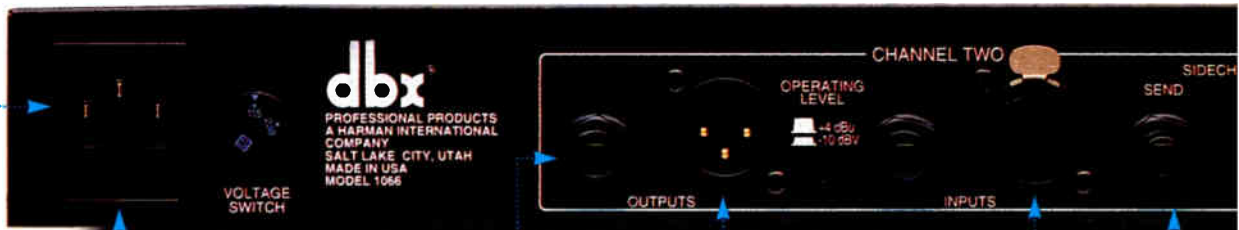
Monitor sidechain processing when setting up the unit.

Prevents low-frequency energy from punching holes in the sound.

Get that classic dbx sound by selecting program dependent attack and release times. or (see #18)

Monitor either input or output signals.

The illuminated switches are not only cool, but are easily seen in light or dark.



Internal power supply with easily replaceable power cord.

Easily accessible fuse — you'll probably never need to find out how easy.

Connect the unit hassle free using either unbalanced or balanced 1/4" TRS or balanced XLR connectors.

Ensure signal path integrity with gold plated locking Neutrik® XLR connectors.

Add processing to detector path for frequency-conscious compression/gating/special effects.

THAT WILL TURN THE WORLD ON ITS EAR.

AGAIN.

You've seen and heard dbx signal processors for as long as you've been involved with audio. After all, our boxes are in daily use all over the world, with major touring companies, world class recording facilities, radio and television broadcast facilities and anywhere else audio professionals ply their trade.

Now, after over twenty years of pleasing the most finely tuned ears in the business, dbx has done it again with the new 1066. The dbx 1066 will, of course, be the standard against which all compressor/limiter/gates are judged. State of the technology VCA's, meticulous component selection, and scrupulous testing procedures are just a few reasons the new dbx 1066 is the latest in a long line of pedigree signal processors.

So head on down to your local dbx dealer and audition this box. We're sure you'll see why the dbx 1066 is destined to turn the world on its ear.

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PROFESSIONAL PRODUCTS
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Over/Under LED's let you know at a glance if you're expanding/gating.

3-segment OverEasy® indicator lets you know when that classic dbx compression starts happenin'.

Fully adjustable attack and release controls offer maximum flexibility. (see #7)

Peak-reading meter allows easy setting of optimum input and output levels.



Vary the Ratio to select anywhere from gentle downward expansion to gating.

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Adjusts from mild compression to ∞:1 limiting.

Add make-up gain or match levels over a 40 dB range.

Newly developed PeakStopPlus™ circuit intelligently tames signal peaks.

Add optional custom dbx output transformers manufactured by Jensen®.



Servo-balanced outputs drive up to +22dBu

Convert semi-pro -10dBV signals to the dbx 1066's professional +4dBu internal level.

Precision balanced inputs reject hum and noise in tough audio environments.

Separate sidechain send and return jacks —no special "insert Y-cables" required.

Heavy-duty steel chassis will take years of road use and abuse.

CIRCLE #008 ON PRODUCT INFO CARD

World Radio History

THREE GUYS, THREE WAYS

A TRILOGY OF TALENT

AS is again upon us, and as is our cruel, self-inflicted tradition, its preparation ritual has drained the very life out of hundreds of engineers as they attempt to finish what marketing departments promised would be shown. It is safe to guess that they have spent their recent weeks surviving primarily on toxic junk food and drinks containing more caffeine than liquid. Here at the show, these victims of the Big Technology Race can be found hiding behind the demo booth walls, sitting stunned in those horrible \$3 plastic chairs at the "food" concessions, or dead on the loading docks. The few survivors will return home after the show to discover that their families have left them, citing lack of interaction and

even rudimentary communication as the reason.

The projects will, of course, be shown unfinished. During the last pitiful days before the show the demonstrators will incessantly interrupt the engineers to get briefed on what works and what does not, so that they may start on *their* diet of toxic junk food and caffeine, as they choreograph their traditional Dances o' Deception for the demos on the floor.

The manufacturers know that the buyers know that the demo is always between 25% and 80% vapor. The buyers know that the manufacturers know they know that the demo is vapor. This delicate balance of pressure and poli-

tics, vapor and results, promises and panic produces, in the end, the products that were promised—or disgrace and the possible death of the perpetrating corporations. What a wonderful system. *I love it!*

I often write about technology and its politics when it comes to these shows. But this time I thought that I would take a giant step back and remember *why* we do these shows, why we buy and what we do with what we buy.

We, in the end, theoretically make music. So this month I am going to tell you a little about three guys who do just that, three guys who impress me with how they make music. Just so we don't all get too myopic at the show.

I am not a beginner. I do not impress easily. In a drawer sits a

BY STEPHEN ST. CROIX



ILLUSTRATION CHARLIE POWELL

photo of myself scuba diving in 5,000 feet of black ocean at the edge of a continental shelf off the coast of Haiti—taken from the space shuttle and sent to me by NASA. It took quite a bit of technology and politics to get that photo, and I am basically an orange dot in it. I enjoy it, it brings back nice memories, and I am amused—but not actually impressed. But these three guys, each of whom impresses me, seem worth some ink here, as a reminder of what this is all *really* about.

GUY ONE

Oscar Peterson. I knew Oscar for some time before I ever had the opportunity to hear him perform live. Then, the evening I finally did hear him, I realized that I had made some embarrassingly errant assumptions over those many years. Basically, I thought he was like me. (Don't we all initially assume this, to some extent, of someone in our own line of work?) I assumed that he was good, better than me of course, but that he also used every techno-trick in the world to augment and perhaps repair small glitches in his recordings.

After the concert, I was forced to face the reality that there are some people out there who *aren't* like me. They have so much natural talent, so much natural control and sensitivity, and each has compressed lifetimes of dedicated polishing so that they have emerged as a unique life form—one that can literally control the emotions, the attitude and even the breathing of another with their music. Not their SPL, not their light show, not their visual persona, just their music. Oscar Peterson is truly such a musician.

Some time later, Oscar and I were jamming at my house...Maybe I should go into a bit more detail here. Oscar was playing one of my keyboards, while I spent the first half of the first song trying to decide if I would embarrass myself less with a keyboard, a guitar, a bass or drums. I finally chose, as the window to my soul, a keyboard. I dropped in, started playing, and instantly Oscar casually told me what kinds of music I like, who I listen to, where I grew up, about when I started and ten other personal musical facts. Like I said, I had apparently chosen the window to my soul. After some time (it felt like ten months but was probably about ten minutes), I decided, for the first time in my life, that I might just be a tiny bit over my head. Maybe 5,000 feet or so. I think I made an excuse like the

cats hadn't been fed yet, and I fed them.

When I returned, he was just sitting there playing. It was then that I realized that he was making the keyboard do things that even it didn't know it could do.

On another occasion, at Oscar's home with his own piano, I witnessed what actually appeared to be an *interaction*, a two-way dialog between Oscar and his piano. He made it look like they were working *together* to produce the most organic, the most living music I have ever heard.

On my way home from that Canadian venture, I had two profound

thoughts: first, that I had been lucky enough to experience first-hand a skill that transcends what I thought was reality, and second, that it might be best if I never played another note myself. I later got over the second idea, but never the first. What a guy.

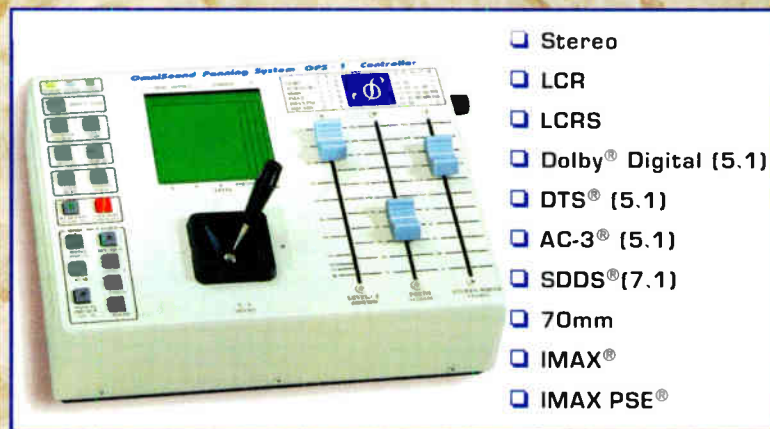
GUY TWO

And now for something completely different, but not really. Edward Van Halen. Yup, ol' speed-hammer himself. Here is a guy I thought was *really* similar to myself. The first or second time I went to his house I took a black Lam-

—CONTINUED ON PAGE 312

OmniSound

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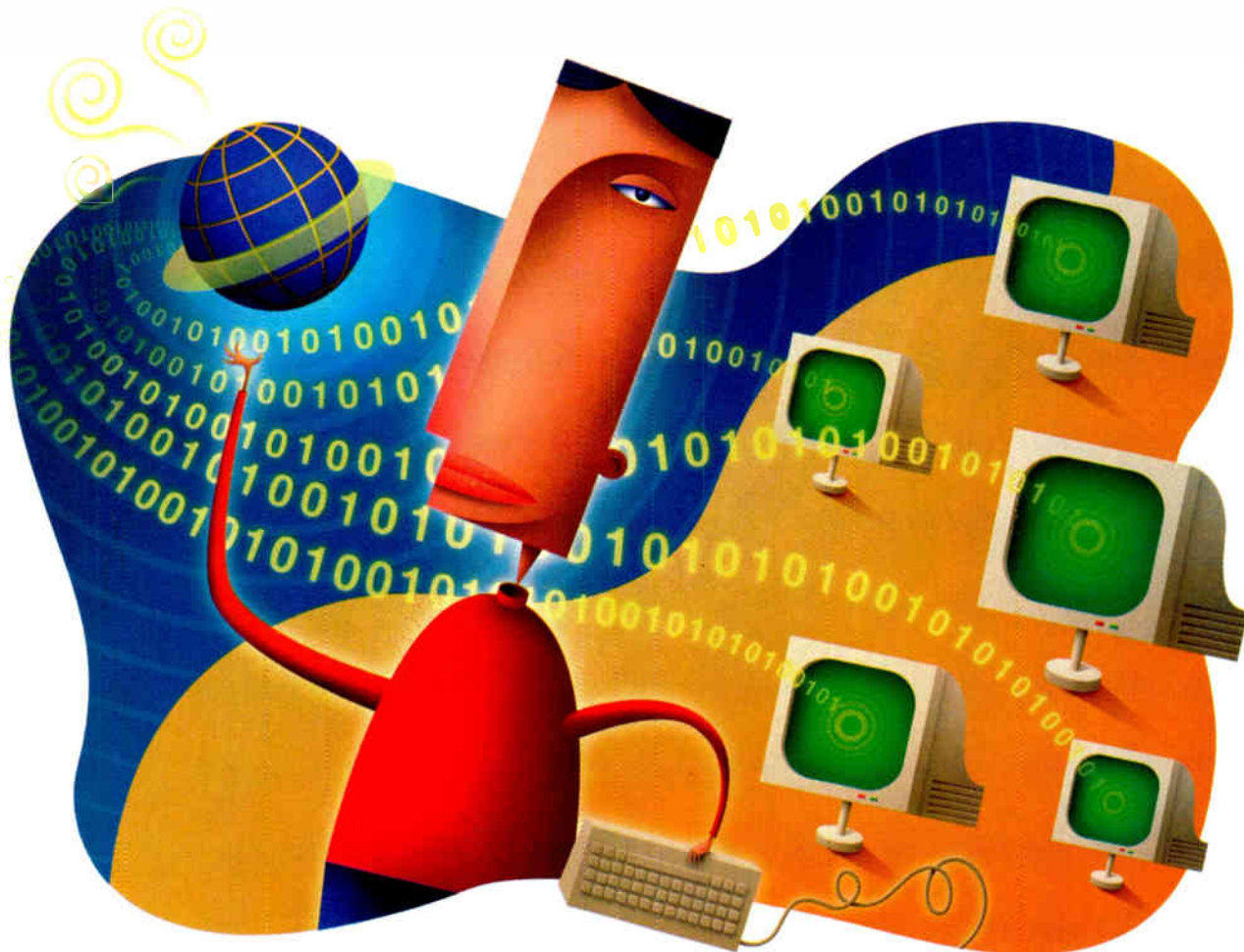


ILLUSTRATION: CHRIS LENSCH

Watching the world go nuts over the Internet is like witnessing a really messy car wreck: It's repulsive, but you can't tear your eyes away. Most of the breathless prose that's written about the Net makes my "bogometer"—that internal device that tests the degree of bogosity—fly off the scale. Venture capitalists are pumping billions into companies that won't show profits for at least five years and that don't even know what product they'll be making that far down the line. Every IPO seems like the launching of the Titanic: Unimaginable sums, which would buy you, me, our studios, this magazine and half the companies that advertise in it 100 times over, are bound for the bottom of the ocean.

But the Net and its nephew, the World Wide Waste of time, are here to stay. And if you can get around all the hype and blather, it's true that the Internet is creating some valuable new ways to get people to communicate with each other. To those of us in the writing biz, or who just like the idea of people talking to each other in general, this is good. But as Sgt. Phil always said to the men and women of Hill St., let's be careful out there.

First of all, of course, there's e-mail. I love e-mail. I sincerely don't know how any of us got along without e-mail. Not as intrusive as a phone call, much faster than a letter, not as much of a bother to

send or receive (and none of the environmental costs) as a fax, e-mail can be casual, as in a "how are you?" note to an old friend you haven't seen in years, or as formal as contract negotiations. There's no such thing as e-mail phone tag. For many, it's brought back the art of letter-writing, which was put on ice for decades by the telephone.

I knew e-mail was going to change everything some years ago, when I found myself doing a session in England while the synthesizer patches I needed were back on my computer in the U.S. I called a colleague at home who went into my office and uploaded the patches to my mailbox on PAN, a dedicated online service for the music industry. The studio also had a

BY PAUL D. LEHRMAN

Take the Classic Cure.

Get over those digital chills!

Freedman Electronics of Australia has created the RØDE Classic Valve (Tube) Studio Microphone.

For richness, warmth, and a remedy for the sonic blahs, seek out the RØDE Classic!

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The RØDE CLASSIC Features:

- A rare and costly **6072 tube**, first choice of the finest microphone craftsmen.
- **Full 1" Gold-Sputtered Dual Diaphragm Capsule**, in combination with 6072-based circuitry, ensuring a warmth of tone for pristine vocal recordings.
- **Nine polar response patterns and two Frequency selections for high-pass filter**, selected at the supplied external power supply. (30 feet away from the performer)
- **-10dB and -20dB pads**, selected at the power supply, allowing optimum performance at different sound pressure levels.
- **Gold Plated Tuchel connectors** to insure accurate noise-free signal transitions.
- Australian-made **10m (30') high-grade multi-core cable**, helping to eliminate RF and other unwanted signal contaminants.
- High quality **Jensen transformer**, for added cleanliness and accurate bass response.
- **Internal shock mounting system** for Capsule and Tube, helping eliminate low frequency rumbles and vibrations.
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- **Hand-crafted** solid brass body, textured with fine glass bead blasting. A nickel finish provides lifelong durability.
- A tremendous value at **\$1999!**

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CIRCLE #011 ON PRODUCT INFO CARD

CRI604

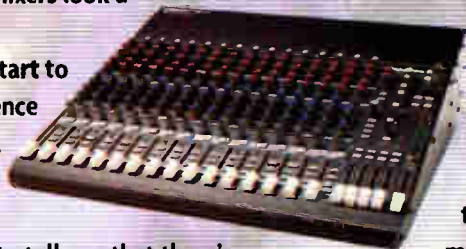
More professionals channel their creativity through

When you page through this magazine, you're going to see a multitude of ads for compact mixers. Some of the mixers look a lot like our CRI604-VLZ™. Heck, even some of the ads for other 16-channel mixers look a lot like Mackie ads¹.



■ Pretty soon, you may start to wonder how much difference there really is between all the various mixer makes and models.

■ Naturally, we're going to tell you that there's a VAST difference between the CRI604-VLZ™ and other 16-channel mixers².



■ But luckily, you don't have to take our word for it. One of the best, unbiased benchmarks of mixer performance is who uses it. And that's where the CRI604-VLZ™ blows the competition in the weeds. We're the overwhelming choice of professionals who can afford any mixer they want. And who have taken the time to listen to every mixer on the market.

■ Send for our thick, color tabloid brochure¹ and we'll include a comprehensive list of distinguished CRI604-VLZ™ users. It includes familiar names like the Tonight Show, The Late Show and Saturday Night Live bands, The Presidents of the United States of America, Ronnie Montrose, Microsoft®,

¹ Dense, fine print type. Lots of lines and arrows pointing to features. Textured backgrounds.

² There ARE vast differences too numerous to mention without resorting to dense, fine print...with textured backgrounds.

A short Grant Reeves bio:
Music for Sony, U.S. Navy, Anheuser-Busch, Apple, Fujitsu, Hewlett-Packard, Hitachi Data Systems, NASA, Siemens, UNISYS, United Way, Airborne Express, ISI, Logitech, McKesson Health Systems, Pyramid, Las Vegas Chamber of Commerce, Austin Chamber of Commerce, Applied Materials, Weyerhaeuser, KIRO-TV, KICU-TV, KMPC, Peat Marwick, among others. Six Gold Tejllys, Joelys and other industry awards. For more information, log onto www.GrantReeves.com.

³ Mention in this ad is intended only to denote usage or ownership as reported to Mackie Designs. Mention is in no way intended to represent a specific or implied endorsement by the individuals, groups, programs or production companies listed.

© 1997 All Rights Reserved Mackie Designs Inc. All prices and specifications are subject to change without notice. Design patents pending. All other names and stuff are probably registered to their respective companies.

CR1604-VLZs™ than through any other 16-channel mixer.

sound design wizard Frank Serafine, Jet Propulsion Labs and all four national TV networks³.

■ The list also includes a lot of folks you may not have heard of... a huge group of pros who make their living creating music for ads, documentaries, corporate videos and multimedia. Real live, bonafied electronic musicians like Grant Reeves, shown below with his CR1604-VLZ™; sequencer and air guitar.

■ Bottom line, part one: Everything you track and mix down goes through your mixer. It needs the low noise floor, maximum mix headroom,

pristine microphone preamps, and musical, natural EQ for which Mackie is renowned.

■ Bottom line, part two: You spend more session time in front of your mixer than you do with any other single component in your studio. You want a console that's intuitive, flexible and easy to use... for thousands upon thousands of hours. Ask somebody who owns a Mackie CR1604-VLZ™ and one of the first things they'll probably mention are the "little things," the myriad small details that

make the mixer a joy

to work with.

■ Then visit your nearest Mackie Dealer and start channeling your creative impulses through a real CR1604-VLZ™.

Noway were we going to get this ad past Greg Mackie without at least SOME informative fine print. First, the CR1604-VLZ basics:

- 16 x 4 x 2 configuration with 16 mic and 16 line inputs
- 16 inserts & 8 direct outs
- 6 aux sends per channel
- 2 master aux sends & 4 aux returns
- 4-band EQ with wide sweepable midrange
- ARL/PFL solo
- Large emitter geometry discret mic preamps. There's more! Here's a list of CR1604-VLZ features and components NOT found on other comparably-priced 16-channel mixers.
- Unique multi-way rotating input/output pod
- In-place stereo solo
- Constant- loudness pan pots
- UnityPlus gain structure for easy level setting, low noise and high headroom
- Negative gain mix amp architecture to handle 16 simultaneous HOT inputs without distortion
- Wideband sweepable midrange EQ
- Sharp, 18dB/octave low cut filters on every channel
- RUDE solo light
- Control Room/Phone source matrix
- Effects To Monitors on Aux Returns 1 & 2
- True logarithmic-taper 60mm faders
- Balanced inputs & outputs (except headphone, tape in/outs, and direct outs)
- Comprehensive, easy-to-read manual.



One of the six industry awards won by the CR1604-VLZ.



Below: a few of the 400+ folks and one incontinent Chihuahua (not shown) who work at Mackie Designs in Woodinville, WA 20 miles northeast of Seattle.

MACKIE

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World Radio History

CABLE-TV BY PRODUCT INFO CARD

PAN account, and I could download them right into the machine I was using for sequencing. I had the patches an hour (and about five bucks for the phone call) later—as opposed to the two days and 30 bucks it would have cost me to ship them overnight.

Thanks to e-mail, I haven't submitted an article on paper in about ten years. I've written entire books using nothing but e-mail between myself, my editor, my co-author and the graphic designer. I can even submit scores for approval by film directors via e-mail:

make a time-stamped, 22k, 8-bit mono AIFF file of every cue and send it to the director, who plugs it into his Avid and tells me whether it rings his chimes or not. Beats the hell out of putting the phone up to the speaker.

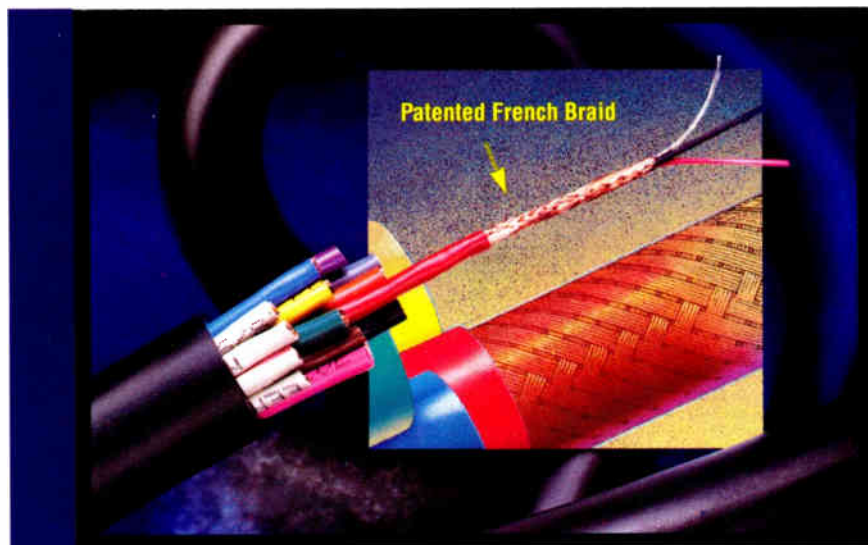
Of course, when you get involved with e-mail, you run the risk of sacrificing some of your privacy. Last year I finally (after ten years) canceled my CompuServe account when the ratio of junk mail (most of which was for blatantly illegal pyramid schemes and for which I was still paying connect time for the privilege of reading) to real mail reached 100 to one. And as I write this,

AOL is announcing a plan to sell all 8 million or so of its members' phone numbers to its "marketing partners." Whoops—now they've taken it back. They'll keep them all in-house. Whew! I know it's going to be a big comfort to you to know that the jerk who interrupts your dinner to huck magazine subscriptions is calling from AOL's own office and not some boiler room!

Besides the point-to-point communications of e-mail, another of the great promises of the Web is the one-to-many mode, loosely called electronic publishing. This takes three forms: the mailing list, the electronic magazine, or "e-zine," and the Usenet newsgroup. Mailing lists are text only and are useful mostly for things that people will read once and throw away, like press releases. An e-zine can be created by anyone with an Internet account. Theoretically, it doesn't cost anything more than the cost of the account: Most Internet Service Providers will give subscribers a home page and 5 or 10 MB of storage, which is a lot of words. Someone with something to say can get a freeware program like BBEdit Lite, or even just a word processor and a list of HTML (that's the formatting language you need) commands, and a Web site is born. No mailing costs, no buying dead trees.

Of course, most e-zines are garbage. Just because a medium is open to everyone doesn't mean that everything that anyone does with it is good—check out some of the piles of free MIDI files available on the Web if you don't believe me. A few years ago, author Michael Crichton predicted that information would become so plentiful that we would no longer pay for it—instead we'd pay to be shielded from the trash we *don't* need. Most no-budget e-zines are worth, unfortunately, exactly the investment that has gone into them. They are unreadable because their creators have nothing to say besides "look at me," and don't even say that very well. They're fun the first couple of times, but get old very fast.

So although it's a nice idea, cost-free electronic publishing is for the most part a myth. An e-zine that *has* something to say, and can hold readers' interest for more than a few minutes, needs somebody with at least some talent and ability behind it, and people who fit that description, unless they are born wealthy or have an unending source of free time and energy, need to get paid. How does an e-zine generate money? Paid subscriptions are an idea whose time came and went and are



Your snakes will bend, twist, coil and slither more freely than ever before with new AudioFLEX cables from Belden. They'll make all the right moves, with unsurpassed flexibility, to improve cable handling in your session or studio. These new multiple-pair snake cables feature a patented French Braid Shield design, delivering new highs in flexibility and new lows in triboelectric noise. And that, of course, means crisper, cleaner sound along with easier handling. 24 AWG AudioFLEX cables are available in 2, 4, 6, 8, 12, 16, 24, or 32 pairs, each individually shielded and jacketed.

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Clean Sound & All The Right Moves.

Jackets are color-coded for easy pair identification. For more information on Belden AudioFLEX Snake Cables, call:

1-800-BELDEN-4.



Belden

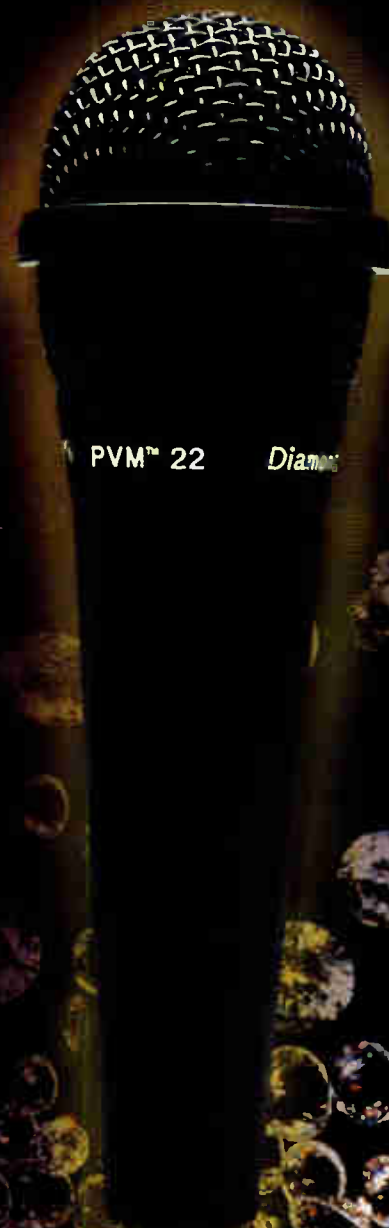
Belden Wire & Cable Company
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Dare to Compare

The Peavey PVM™ 22 Diamond Mic
Against Your Favorite Microphone.

Every microphone manufacturer says their mic is better. We invite you to test drive the **PVM™ 22 Diamond Mic!** Don't follow the masses by using an outdated industry-standard mic with thirty-year-old technology. Check out the new standard in hand-held microphones.



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World Radio History

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INSIDER AUDIO

anathema to people who are used to surfing the world for free, even if they really are getting just what they pay for. So most e-zine editors/publishers who need to be paid for their time try to sell advertising.

Whether it's on paper, on the air or online, advertising influences any publication's editorial content. Face it: In our society, the goal of any profit-making institution is to make a profit. In our corner of the world, the ultimate goal of a publication is to sell gear. While some magazines (like this one) do a better job than others of putting a "firewall" between editorial and ad sales, once a publication starts taking money to promulgate an advertiser's message, it can never be free from the imperative, however subtle, to protect that message.

I've had advertisers try to muscle editors into pulling me off an assignment, because they thought I would treat their product unfairly (it didn't work). Recently, a freelance writer friend sold a piece about the Internet to an "alternative" newspaper, well-known for its political and cultural independence, but when it was published he discov-

ered that all his negative comments about AOL had been chopped out—it turned out the paper was in the process of negotiating a co-operative advertising and publishing deal with the online service.

Then there's newsgroups. Newsgroups evolved when the forums used by the academic community who pio-

**I've written entire books
using nothing but e-mail
between myself,
my editor and
the graphic designer.**

neered the Internet melded with the Special Interest Groups, or SIGs, found on the pre-Net proprietary services. Although the population was relatively small, early forums provided a sense of community, of people sharing a particular professional or personal interest coming together to communicate as equals. For those in an industry like

ours, where creativity and high-tech mingle, online interest groups and technical support are a natural, and these were very successful. CompuServe, at one point, had something like 60 companies providing online interactive customer support in its MIDI forums. There and on PAN (which is still around at www.pan.com), representatives of companies partied alongside their customers, with everyone asking questions of each other and getting answers from all directions. PAN's archives—the service for a long time kept online all of its posted messages, going back to day one—remain one of the best primary sources of material on the early days of MIDI, commercial music software and project studios. CompuServe, regrettably, has always used a scrolling format in which only a certain number of messages were kept, and so older messages were lost forever.

Unfortunately, what has grown up on the Internet to replace proprietary forums isn't doing this at all. Instead of participating in open forums, companies now expend their energy on their own Web sites, which (sometimes) have plenty of information, software up-

—CONTINUED ON PAGE 313

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GEORGE MASSENBURG

PRO AUDIO INNOVATOR

George Massenburg is a hard guy to pigeonhole. He is as passionate about the failings of current technology as he is about music. And with a career that has spanned more than 30 years, he's been involved in virtually every aspect of production for records, film and television. He has also designed and operated studios, including L.A.'s landmark The Complex, and, as the founder of GML Inc., has developed innovative electronic systems. This year, Massenburg has been invited to deliver the coveted keynote address at the AES convention in New York; his theme is reported to be "Returning to Reality."

As producer/engineer, Massenburg has worked with a wide cross-section of artists, including Aaron Neville, Little Feat, James Taylor, Herbie Hancock, Billy Joel, Randy Newman, Lyle Lovett, Earth, Wind & Fire, Michael Ruff and Linda Ronstadt. In 1990, he won a Best Engineered Non-Classical Grammy for Linda Ronstadt's *Cry Like a Rainstorm, Howl Like the Wind*, and in 1997 he won as Producer for Best Musical Children's Record for Ronstadt's *Dedicated to the One I Love*. He won TEC Awards for Best Recording Engineer and Best Producer in 1989 and again for Best Recording Engineer in 1992. In 1990, he became an inductee into the TEC Awards Hall of Fame.

Born in Baltimore and raised there and in Macon, Ga., Massenburg became keenly interested in music, electronics and sound recording at an early age. At 15, he was working part-time in both a recording studio and electronics laboratory. He later abandoned his major in electrical engineering during his sophomore year at Johns Hopkins University and never returned. Massenburg was chief engineer of Europa Sonar Studios in Paris in 1973/74, and during those years he also took on freelance



PHOTO: ED FREEMAN

recording and equipment-design projects. In 1982, he chartered GML Inc. to produce equipment required for specific recording applications. Notable GML developments include the parametric equalizer (described in his landmark 1992 AES paper) and third-generation recording console automation/control systems.

Currently Adjunct Professor of Recording Arts and Sciences at McGill University, Montreal, Massenburg also lectures regularly at UCLA and USC in Los Angeles, and Middle Tennessee State University in Murfreesboro, Tenn. These days, he divides his time between Los Angeles, Marin County, Calif., and Nashville.

What first attracted you to the recording business?

It goes back to my growing up in Baltimore, down the street from [leading designer] Dean Jensen. He had just moved to Baltimore with his father, who'd moved the whole family from Princeton. Dean was a couple of years older than me, but we hung out as [teenagers]. With his friend Lee Furr, who is now at the University of Arizona, Dean

had built a hi-fi system for the school. Dean discovered an Ampex 601 stereo [portable tape machine] and bought a used U67, which I still have.

At the same time, Dean introduced me to a very small recording studio in Baltimore that was doing a lot of media work and commercials. I started dabbling in recording and loved it—it just hit me the right way. Suddenly you have power over something that has a visceral effect: you can push a button and capture music.

The church that we went to had a terrific Möller pipe organ, which was the first real musical instrument that I had to experiment on. Also, the little studio I worked with had a deal to do the Tuesday night broadcast on a local FM station, WBAL. We would go down, set up mics and then either record [the session] or drive [music] lines to the station. Early on, I had the experience of setting up for a symphony orchestra and working with friends who also loved that orchestral experience. My earliest experience was with moving mics, experimenting a lot and having fun.

The earliest electronics I remember building were a copy of an MX10 mixer using different transformers—not using the Beyer

BY MEL LAMBERT



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transformers—and I remember building a line driver from parts we got from the military surplus yards. When I was 15, I worked for [Mix columnist] Stephen St. Croix's father, Dr. Curtis Marshall, building a Computer of Average Transients, which used a storage tube called a Radichon—which, ironically, had been developed by Dean Jensen's father, Dr. Arthur S. Jensen, at Westinghouse. We did most of the design with tubes. [That's how] I learned to design electronic circuits—early vacuum-tube and solid-state computer circuits; I was just 15 at the time.

I took the money I earned that summer and bought a used Ampex PR-10 [tape deck], which was a miserable machine. But keeping that machine running and working taught me a lot about electronics and recording. I went out and recorded high school bands and choirs and things like that. I'd played trombone since I was six, and played in marching bands. In an effort to be more popular, I switched to bass in college, played with a couple of bands and ended up in a bluegrass band.

How did you get your first recording session?

I first started as a formal recording engineer—getting paid for it—in '63/'64 when I was 17. From my earliest days, recording was doing whatever it takes to get through the session. But to get my first break, I lied the way we all did—they'd ask if I had done something before, and I'd say "Sure."

What was your first impression of artists working in the studio with a producer?

The question is rather: "What is the process with modest musicians?" because we grew up in a market that was limited in terms of musical ability. These were bar bands that sounded great when they were drinking in live halls. But get them into a studio, confront them with what they actually did, and it was...shocking.

Nothing dominated my early years more than product coming out of Motown, Atlantic and, especially, Sax Records—I loved the work out of Memphis. We tried to emulate that sound. It was a lot harder than we thought it should be. Since the sound coming out of our speakers didn't match the sound on these records, the [band and producer] would say that there was probably something wrong with the equipment. I worked my ass off trying to make things sound better.



PHOTO: DAVID GOGGIN

George Massenburg and Peter Asher at Conway Recording Studios, Los Angeles, working on the new Billy Joel single "To Make You Feel My Love"

Occasionally, we would take sessions up to Sigma Sound [in Philadelphia] to find out how real records were made. Even though, by today's standards, the equipment was pretty modest (except for the live reverb chamber)—Electrodyne consoles and Studer 8-tracks—the musicians were *fantastic*. They had the natural sense of meter and could tell a story musically without concentrating on playing right. I began to suspect that I had technically maybe moved past what was really required.

How did you translate bearing what you liked into electronic designs?

If somebody was playing particularly well and the hi-hat stood too far out, I might try to build a better mic preamplifier. Going to more and more tracks was helpful, but I'd have to build my own machine. I made a lot of mistakes and wasted a lot of time.

What was the main difference with working with, let's say, a garage band and somebody who is able to use the studio as a creative environment?

That question makes me think of so many things that characterize great artists. What I look for in an artist is the ability to tell a story musically, and not just go through the motions. I associate the ability for the artist to [perform] with my ability to stay out of the way both technically and socially. Keeping a recording situation transparent in the sense of retaining the magic of the musical moment is vital. It's so obvious, but at times we still blow it. There are other little things that I think artists rate highly, like making sure the headphones work, or fixing the mic cable before putting it back in stock!

As an engineer/producer, do you prefer the artist to be well-rehearsed and familiar with the material?

There isn't any formula—as soon as we have a formula, we lose the flexibility to

respond to the moment.

The most important thing is to have enough energy to do whatever's necessary—you're 12 hours into a session, something needs to be done, and you've still got the passion; to be that flexible and not to have so much of an internal agenda is what works for me.

There's a new band coming into the studio. What do you like to find out about them beforehand?

I'm talking to a band in Toronto. I'm going to go up and listen to them and find out what they're trying to say musically. They're a competent and multitalented group, and play different instruments and acoustic styles. I sure want to know what they listen to. I really want to make sure that I'm not just working with folk who are trying to turn in the record to get the advance. Somebody who really wants to make music is what I'm looking for.

Do you get approached by a lot of artists to produce them?

I get approached a lot both as an engineer and a producer, and also as somebody to just listen to their work. My criteria is: Who is asking me? Tony Brown asked me to listen to Lyle Lovett. I like Tony; I like him as an instrumentalist and producer, and all the way up to a head of a record company, so I listened. People in the business that I have a deep respect for have a lot to do with how I listen to suggestions.

What I go with internally is the degree to which I can bring "transparency" to a project, which presumes that there is something to be transparent to. A good example is Lyle Lovett. Tony Brown brought me Lyle and said that we should work together [on] the tribute to the Grateful Dead, which resulted in a really good track. I'm really impressed with Lyle's ability to tell a story—he really "sees" these stories; we

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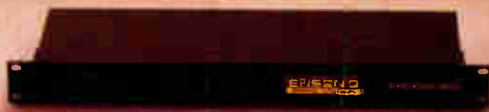
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did a great record together.

How would you "sculpture" the session—flesh out that basic concept?

The emotional compass is the degree to which something touches me. That's what we're in the business to do. You learn the tricks, and I've got a mighty big bag of them—I've got every other journeyman's tricks, and I have my own, and I learn more every week. Every time I lose a mix to a flavor-of-the-month mixer, I find out what he's doing, and I know why the artist has picked his work over mine. I won't necessarily use [that technique], but it becomes another color for my palette.

Are you interested in remixing a project that you didn't track? Will you willingly give a mix to someone else?

I've remixed, and I've seen the benefits of being remixed. I have remixed other people's recordings, and I've benefited them. But it's a little uncomfortable. You live with a record for however long, and you have your evolving dream of what it could be. You're reaching for that dream, and then suddenly you have it snatched away [when] somebody else mixes it, and they take it

somewhere else. It's a shock. But the object of the business is to touch people deeply, and for a long time. I don't think remixing always takes into account that transparency—more often, it goes for the quickest response, and most often the response of a record company's A&R staff.

As you review some tracks you've been asked to remix, do you want to know about the session?

I don't want to know anything. When you put on the record, it has to speak for itself. When you put up a multitrack tape [to be remixed], you form an idea of what's really there without the prejudices or imagined realities of the original producer or artist. Now, you can really mess things up if you don't have the imagination to know where they were going and how some parts fit together.

What do you look for in a recording environment for tracking and mixing? A large control room with monitors you're familiar with? Or do you bring your own?

I always bring my own monitors. I use Genelecs, and also Tannoys with Doug Sax's tube amps. And I augment that by listening on headphones—"Flim" Johnson got me started listening to head-

phones because you hear things you won't hear on monitors—little pops, etc. Maybe you'll take them out and maybe you'll leave them in, but you should know they're there. Otherwise, I listen for a natural acoustic ambience in the control room as well as the studio. And the surroundings have to be nice, like Conway in Los Angeles.

What do you take as a favorite recording, so you know what the room's doing? Nothing—I walk in and start from scratch. Every time I walk into a studio, I walk into it for the first time. My job is to learn this record from scratch. If I can, I want to make a new record.

What would you look for in a studio? Same things that I'm looking for—the ability to allow the performance without getting in its way. Good maintenance. A good board. I generally gravitate towards 8068s and 8078s—older Rupert Neve consoles that I know would work. And if I had to, I'd move my whole studio over; I have 48-tracks, and consoles, processors, mic stands and cables. Just tack up some Sonex and go!

I think that the [Sony PCM-3348] is a fast and useful machine—but our industry has moved past it now. In the next five years we'll probably be tracking to

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Here's the latest. He sits up there in the hills saying "Digital is a good idea, but it's not quite there yet. Sounds all compressed to me." People think he's gone real crazy now. After all, they are all going digital. *But he's right!* And he *knows* 'cos his analogue stuff has better specs..

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Do you miss having your own studio?

Yes, I do. But The Complex [Los Angeles] was too big—too much to keep up. We had two control rooms and two more soundstages, with our own [custom-designed] consoles and monitors. And we had ATR-102s and ATR-124s, which were great machines. These days, I'm back to recording analog, after 15 years of resisting by trying to squeeze good performance out of digital. And analog gives you something *more* to listen to—I can hear the sound of a hi-hat again! When digital came along, we realized that we had to change the way we worked, and our expectations of what we heard. But I'm heading back to analog.

Were you consulted about the reasons why early digital machines didn't

sound the way they should?

People ask other people's impression of equipment for the same reason that people ask for the impressions of the record that they've just done. It's not for criticism but for affirmation. So, when a company asks me how something works the last thing they want to hear is my criticism! And they respond accordingly. Most manufacturers find that I'm pretty grouchy and opinionated and critical...and often I'm not asked again. People don't want to know what I think—people want me to like it.

You've used the Sony 48-track for a long period of time, despite its limitations.

We knew its limitations going in. Allen Sides [owner of Ocean Way Studios in L.A. and Nashville] and I listened to it at Atsugi [Sony's R&D Headquarters, close to Tokyo]. While doing listening evaluations one day, we told them that it did certain things to the high end and asked them to fix it. The next morning, it came back and somebody had designed [a circuit] to correct maybe a quarter of a dB at 19 kHz, at the expense of increased group delay. Well, we couldn't have that, so our fix didn't go in. It was a compromise; you do the best you can and then take your best

shot. I like to think that I make the best compromise at the last possible moment. Isn't that the art of engineering?

But if you don't have access to a piece of equipment, your firm, GML Inc., has the resources to go build it. Witness the outboard EQ and dynamics processors, not to mention the custom consoles and moving-fader automation. How did that development come about?

It kind of started again with not having enough money to go out and buy something that was already built. The [Model 8200 2-channel parametric] equalizer started when we were looking at how to build a different kind of EQ. I was looking at an old Western Electric filter handbook, and I saw this T filter; the circuit that evolved looks very bizarre, and as such, if anyone copied it they could only get it from one place.

The basic idea was not that complicated. What was unanticipated was the difficulty selling it—demonstrating it to people. The first person who bought it was Gerhart Lehner, chief engineer at Barclay Studios in Paris. But very few people had his imagination to see what it was about.

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to use the expression "parametric" for a device that provides simultaneous cut/boost, bandwidth and center frequency control.

I am. The T filter was used in one other device that I know of at the time, but with switches; we used pots. The topology had been around, but the idea of actually making everything variable—including the "Q"—wasn't realized. What I wanted to do was reach into sounds and do the things you couldn't do at that time. To get the "boink" out of the snare drum. To reach for the frequency of the Helmholtz resonator of an acoustic guitar, which, when picked up with a cardioid mic, can be "boomy," and just take that much out.

You also produce a highly regarded mic preamplifier, the Model 8300. What's special here?

Everybody and their brother makes a mic pre, but mine is my personal choice for transparency. I haven't heard one that is more open and transparent. There are others out there that have a different kind of "sheen" and color, but mine is cleaner. I think, and a little bit more forgiving on vocals.

What's your favorite vocal mic?

An old [Neumann] U67—which was Deane Jensen's originally—recently refitted with a Stephen Paul 0.3 micron capsule, and either my mic preamplifier or maybe a Doug Sax, which also has its virtues.

You also produce a fancy compressor/limiter, the Model 8900 Dynamic Range Controller. What was the thinking here?

Here's the way I design things: You're sitting there with the artist, and they say, "I can't hear myself," or "Why are you making me sound so [crappy?!]" Everything I've ever built has been to try to bring out the artist's performance so that he or she can hear themselves. While testing dynamics devices leading up to my Model 8900, I was working with Lowell George [late lead singer with Little Feat]. He finally said, "I can hear myself." We liked the effect of the box; it gave Lowell something that let him find his pitch better, and hear his phrasing better, than anything else we had. He had more fun, so that makes for a better performance. Severe gain control is there—as much as you could ever need—but without so many artifacts.

And the Model 9300 A-to-D converter?

It just sounds better than anything else I came across, but I'm not really trying to sell it; the market's saturated with boxes

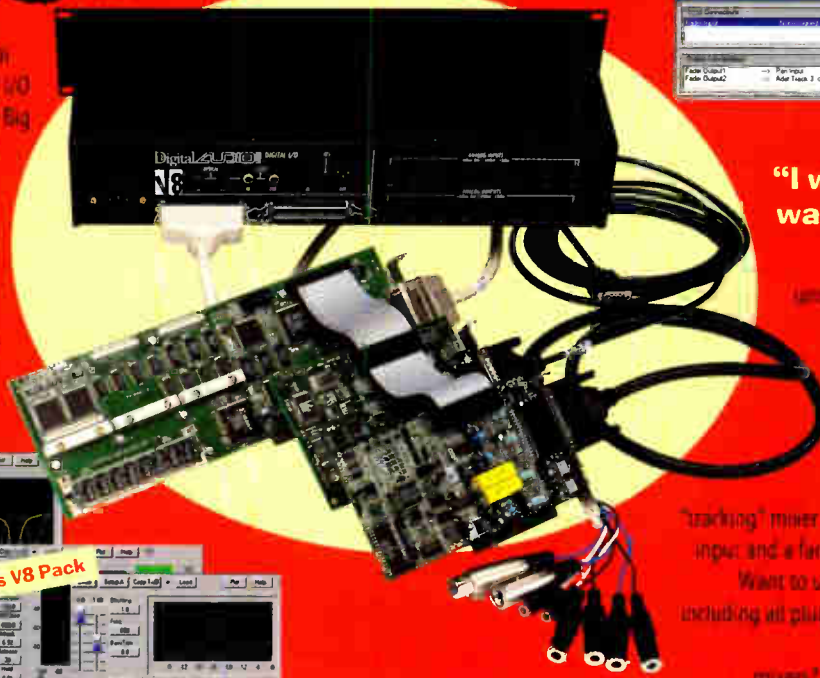


Burn Rubber!

The V8 from Digital Audio Labs. It's 16 real tracks of hard disk recording and editing for the PC. It's up to 32 channels of digital mixing. It's a rack full of realtime EQ's, dynamics processors, and effects units. It's a real hot rod!

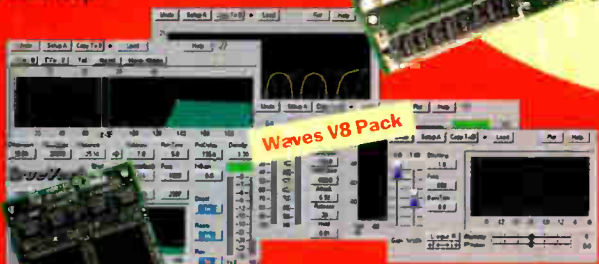
Audio Quality is Job 1

When it comes to sound quality, Digital Audio Labs cuts no corners and the V8 I/O peripherals are no exception. Take the Big Block for example. This 8 channel rack mount A/D/D/A sports S/N ratios in excess of 90dB and crosstalk better than 100dB! Add to that the ability to completely configure the Big Block from software, right down to the individual analog gain trims. We even isolated the ground, making the system virtually impervious to ground loops.



"I wish my mixer was this flexible"

With the V8's completely unrestricted, totally automated mixing and routing architecture, your only limitation is your imagination. If you can think of a mixer, you can build it. Want a specialized "tracking" mixer with a compressor on every input and a fancy cue matrix? No problem. Want to use that vocal input channel, including all plug-in effects settings and aux sends, on several different mixers? It's done. Create specialized modules for each job or project and modify and build new channels and buses as needed.



300 MIPS, No Waiting

Add up to three DSP Superchargers and RAM Induction modules to the V8 and get channels upon channels of realtime, simultaneous EQ's, dynamics processors, and reverbs with Gearhead Approved plug-in packages like the Waves V8 PackSM, use them on disk tracks or stream live inputs and ADA channels through them. Transforming your V8 into a monster effects rack!



The Slickest ADATSM Interface on the Planet

Why settle for just the 8 channels of audio when the V8 gives you the whole ADAT interface? The V8 MDM Custom Interface is the only PC system that includes 8 channels of ADAT eight pipe port full synchronous ADAT transport control. With the MDM Custom, your ADATs completely disappear into your V8 system. Remote control a single ADAT or banks of them. Fly ADAT tracks on and off the hard disk in rock solid sync. Simultaneously play back ADAT and hard disk tracks through a single mixer with full automation and realtime effects. (Hang in there, DA88 owners- we have a special surprise for you...)



The Audio Gearhead Partners: The V8's Secret Weapon

Since the V8 runs entirely on third party software, you already know how to drive it! Why shackle yourself to a proprietary software interface when you can choose your own from among a growing list of Audio Gearhead Partners? And don't worry about compatibility between programs and plug-ins; if you see the Audio Gearhead Approved symbol, they're simpatico. But what if your favorite software's not yet Audio Gearhead Approved? No Sweat. The V8's .WAV emulation makes standard windows programs think they're talking to up to four CardPlus's. Now that's hip, Daddy!



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INSIGHTS

and claims. I made sure that the input didn't go through shitty ICs at the front end! The jitter circuit is one of [Apogee Electronics' founder] Bruce Jackson's, so that works well. Finally, people were paying attention to jitter performance. It was another one of those things that people ignored for years.

Staying with things digital, you are pretty critical of the initial choice of sampling rate and bit resolution for the CD, and where the hardware industry moved in reaction to those decisions. Was 44.1 kHz such a great choice? The

rumor is that Sony opted for it simply because it was the highest rate at which the R&D department could run its initial A-to-D converters at the time the CD was being developed.

The numbers should be based on our hearing, not mathematics. Most of the physiological frequency response data are from [numbers] that were taken years ago; we don't have any modern sense of where a population's hearing extends. The numbers [derived from Fletcher-Munson curves] we have for hearing performance and cut-off are for a narrow segment of the population, but not necessarily kids, [who] hear far

better than we do. And way beyond the brick wall, 20kHz cut-off response of a 44.1 [kHz] CD.

Based on my experience, digital recordings do not sound the same as analog. Part of it has to do with the extraordinary high excess response of the analog chain; we have (or had) analog consoles that are flat out to 200 kHz. James Boyk [L.A.-based piano artist, writer and teacher at Cal Tech] has frequency response plots of a harmonic series of trumpets with Harmon mutes that show really extended frequency response. We know that violins have excess high-frequency response; we know we can't record a violin to the point where it can fool us—we can almost always tell the real from the recorded violin. Whether it's frequency response or phase coherency or minimizing the time-granularity, we don't know.

And I've been looking at it a little differently. Hearing data is processed so differently from visual data—a large portion of the cortex is allocated to image processing/visual data, and a rather smaller part is for processing perceived sounds. It's possible from what I've read that we may process what we hear a little differently than what we see. The subconscious or unconscious may come into play. We may process sounds other than with a direct, immediate response to, say, "Yes, I hear an 18kHz sine wave."

We have timing cues that allow us to identify and separate images in space that let us determine where a sound is located in a room, for example. And these cues have very fine gradations—perhaps far finer than the approximately 20 microseconds available in current digital conversion techniques. Maybe we need finer resolutions—maybe down to 5 microseconds, maybe further. I can't really find any hard research numbers on this.

Empirically, have you found that recordings made at 88.2kHz or 96kHz sample rates sound better?

Yeah, I think so. I hear more high end. But "empirical" means more than just a listening test. What I need to do is make recordings and have them be a part of my life for a time. It's the texture—lace-filigree delicacy of a performance, ambiguities in playback—that, over time, will fill in a sound picture. But, so far, with digital at [CD sampling rates], I cannot achieve that integration of music into my life the way I used to with my favorite records.

Audio has sunk to a great low with

—CONTINUED ON PAGE 314

96kHz Performance 44.1 Price

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2 CH - A to D module

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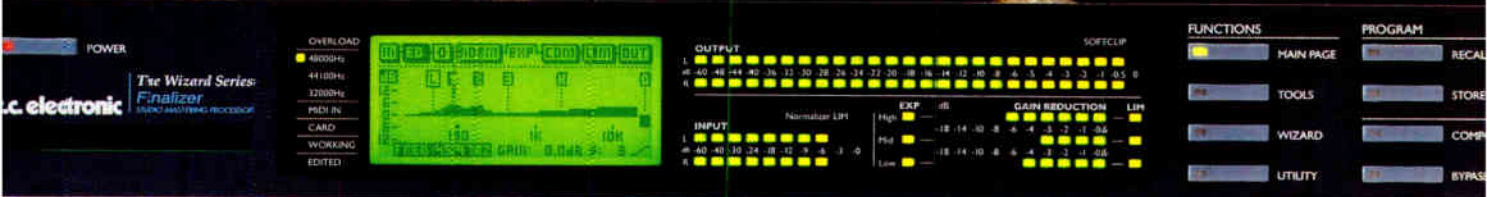


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*Bob Ludwig, Gateway Mastering Studios
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World Radio History

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UV22: There's nothing like Apogee's exclusive UV22 encoding process—taking your 24-bit digital signal and translating it flawlessly into the 20- or 16-bit domains. UV22 is standard in the vast majority of US mastering houses, and a great many hit records have been made with the process.

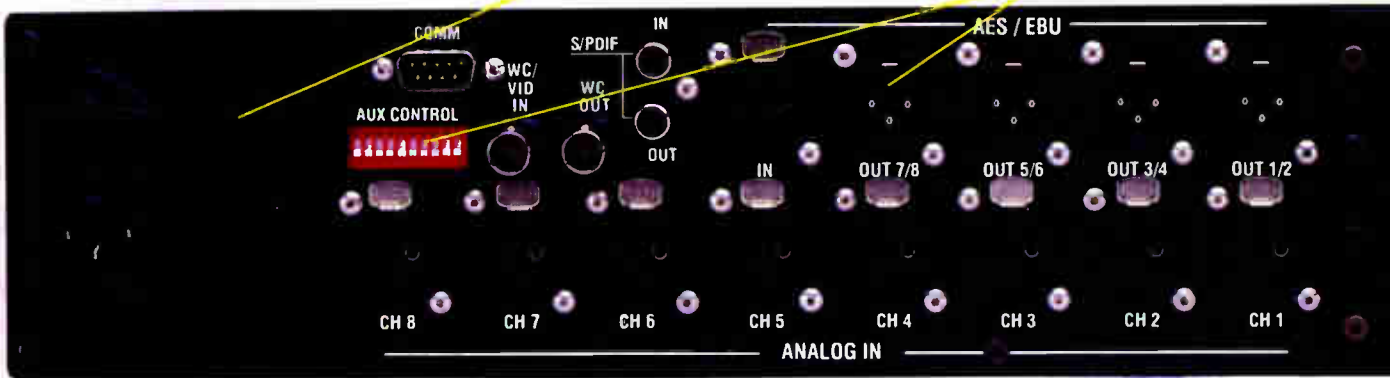
Soft Limit: Apogee's proprietary Soft Limit circuitry, available on every channel of the AD-8000, enables you to get more level on tape without risking digital "overs". Per-channel indication shows when a signal is activating the Soft Limit circuit.



Sync Options: 44.1 and 48 kHz crystal-locked sample frequencies, plus "pull-up" and "pull-down" settings for video/film transfers. The AD-8000 "smart syncs" to any input signal, via Apogee's proprietary Low Jitter Clock, in the range 32 to 54 kHz—including video with the optional video sync card.

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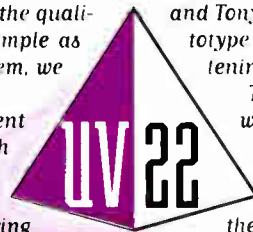
THERE'S NOTHING MORE IMPORTANT in the digital recording chain than the converter that takes your original analog input signal and converts it into digital information. The higher the quality of the A/D converter, the better the sound. It's as simple as that. So when we decided to create a new conversion system, we knew we had to listen — and listen hard.

Apogee's engineering team, under the direction of Brent Elder, worked with Apogee's Advisory Board, which includes some of the top names in the industry. Each contributed ideas and suggestions from their own area of expertise: mixer/producer Bob Clearmountain; mastering

maestro Bob Ludwig; top film composer David Newman; producer Don Was; songwriter/producer Steve Kipner; guitarist Steve Stevens; and Tony Berg, producer/A&R at Geffen Records. And as each prototype left the lab, Board members submitted it to extensive listening tests, refining and optimizing the design.

The result was the **AD-8000** — a conversion system truly without parallel.

The **AD-8000** takes digital conversion to a whole new level. It's a true 24-bit converter, with 114 dB dynamic range and all the features you need. Whether you own the biggest studio in town, a leading post-production facility,



The AD-8000 8-channel 24

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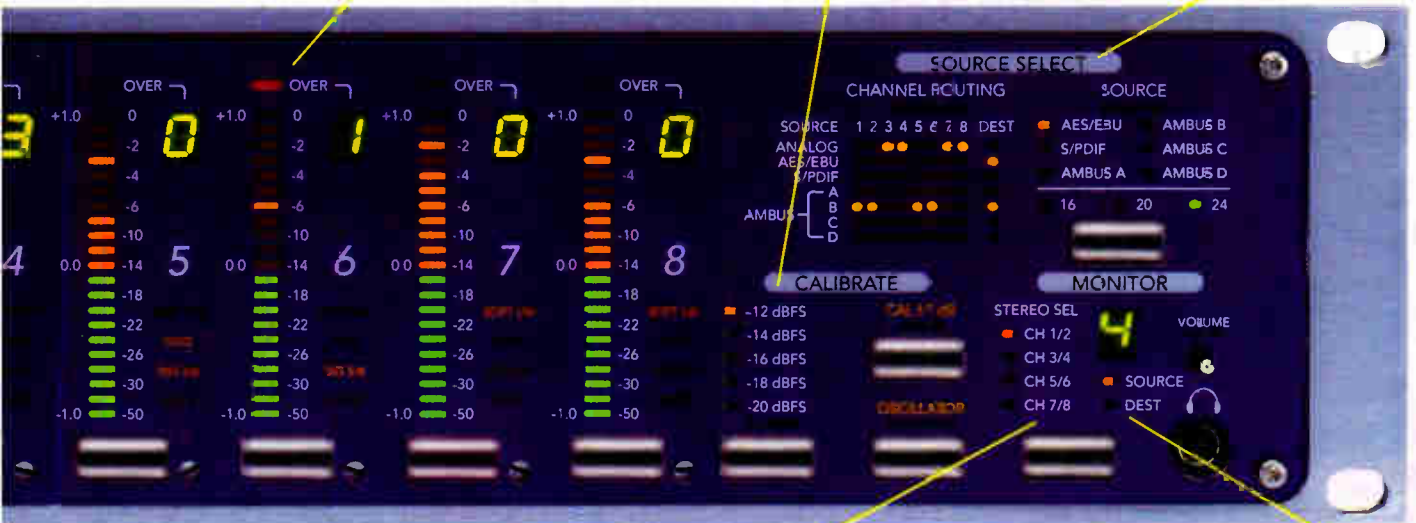
World Radio History

THE DIGITAL RECORDING CHAIN.

Advanced Metering System: The AD-8000 incorporates no less than six highly accurate bargraph metering modes offering simultaneous average and peak ballistics, with 2-second and infinite peak hold. The number of digital "Overs" is indicated, and can be set to clear automatically.

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Digital Routing: With the AD-8000's unique digital routing matrix, choose sources and destinations for all your signals at the push of a silver button. AMBus slots with cards installed are identified for instant access. Combinations of analog and digital inputs may be selected simultaneously.



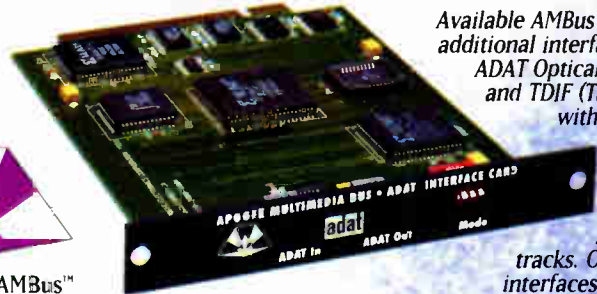
Format Conversion: All interfaces are available at all times, enabling you to use the AD-8000 as a powerful multi-channel digital format converter—a feature worth thousands on its own. Convert from any interface to *all others* simultaneously, whether they are inbuilt or on AMBus cards.

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Overdub (Destination) Mode: Any device connected to an AMBus card can be monitored while it is the output destination of the AD-8000, to permit overdubbing and confidence monitoring. The output of the selected card is also available at all other interfaces and any installed D/A card.



Look for the AMBus™ logo on Apogee-compatible products and interface cards



Available AMBus cards provide additional interfaces including ADAT Optical (shown here) and TDIF (Tascam DA-88), with "bit-splitting" technology for recording 20/24-bit signals on multiple 16-bit tracks. Other available interfaces include cards providing complete Pro Tools compatibility with no other external hardware. Additional interfaces to follow.

or have a project setup in your garage, the AD-8000 was created with you in mind.

Every facet of the AD-8000 was designed by industry professionals — from Apogee's proprietary UV22® and Soft Limit® to the multi-mode bargraph metering; from the innovative front panel to the four slot AMBus card bay supporting virtually any interface.

Hear the Apogee advantage for yourself. Just visit your Apogee dealer and try out the AD-8000. You'll notice the difference immediately. Whatever your recording environment, the converter is the heart of your digital system. Now, with the Apogee AD-8000, an outboard converter is no longer an option. It's a necessity.



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*Some of the option cards described may not be available immediately. Ask your dealer for prices and availability.

CIRCLE #027 ON PRODUCT INFO CARD

TWELVE MICROPHONES THAT MADE HISTORY

MICROPHONE development as we know it today was distilled from telephone technology, whose roots go back to the mid-1800s. The word “microphone” was first coined by Wheatstone around 1827 and was used to describe a purely acoustic device, like a stethoscope, which he had developed to amplify weak sounds. The word is Greek in origin, with “micro” meaning small and “phon” meaning sound.

BY JIM WEBB



RCA 77-D



Western Electric 369
Double Button
Carbon in
1A cage



Neumann
CMV3



Neumann M49



RCA 44-BX



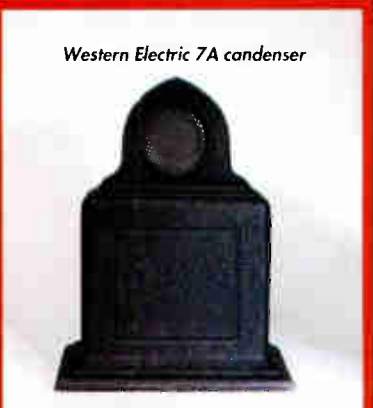
Western
Electric
618A



Shure 555B



Altec 639B



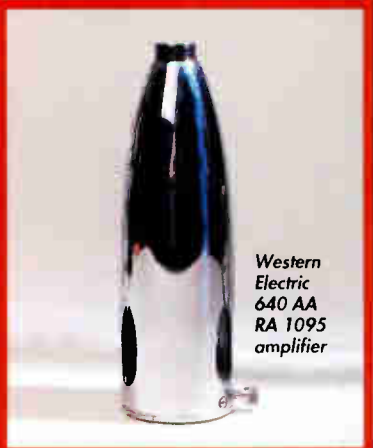
Western Electric 7A condenser



AKG C-12



Neumann
U47



Western
Electric
640 AA
RA 1095
amplifier

TWELVE MICROPHONES THAT MADE HISTORY

The following list reflects my choice of 12 landmark microphones, some in a series, that had a significant influence on the audio profession and related arts though their unique designs. The mics shown in this article are part of a collection of some 500 microphones, accumulated over a 25-year period through trade and purchase. It is the second-largest collection in the country, and all of them have been restored as much as possible to their original factory working condition and appearance.

WESTERN ELECTRIC DOUBLE-BUTTON CARBON

In the early 1920s, the demands of broadcasting led Western to develop a more stable and better-sounding carbon transmitter. The push-pull designs of the 369 and 373 models in their ring mounts and eye-catching protective cages were a big step in this direction. A double-button

development of the vacuum tube amplifier solved the impedance and output problems, and in 1917, E.C. Wentz of Bell Labs developed the first modern condenser microphone. Early models of the mics were not reliable, and they were held aside mostly for acoustic research. By the mid-'20s, improved condenser models began appearing, and by the late '20s, Western Electric had produced six different models of condenser mics: the 7A and 9A "mantle clocks," the 8A and 10A floor stand models, and the hanging cylinder models of the 47A and 53A, all incorporating Wentz's famous 394 condenser transmitter head with its aluminum alloy diaphragm. American-made condenser mics pretty much faded from the market by the mid-'30s.

WESTERN ELECTRIC MOVING COIL

In early 1931, Western Electric marketed its 618 electrodynamic transmitter—the first dynamic microphone. The moving-coil idea had been around since the late 1800s, but the vacuum tube amplifier and the cobalt permanent magnet material combined to make it a reality. In an audio world populated with noisy carbons and largely troublesome condensers, both of which required power supplies to operate, the 618's claim of a

magnet material in the mid-'30s, and the 44B/BX went on to become one of the classic influences in microphone technology, staying in production until the mid-'50s. This quality ribbon microphone is still in demand today and has one of the most recognizable shapes in the world.

RCA 77 UNIDIRECTIONAL RIBBONS

In the early 1930s, Dr. Olson, realizing the need for a directional mic, developed the 77A unidirectional. Its round shape would migrate through seven different models. The A, B and C models utilized double ribbons, combining a pressure unit with a velocity unit to achieve the unidirectional pattern. Improvements in magnet material allowed a significant reduction in size starting with the B model. The C and D models were capable of multiple patterns. The 77D and DX single-ribbon models produced after World War II were arguably RCA's most successful microphone, staying in production until 1973, when all RCA microphone production finally ceased. Graphic artists routinely depict its widely recognized shape to indicate public speech. This mic can still be seen today on the Larry King and David Letterman shows.

WESTERN ELECTRIC 639 A/B

In the late 1930s, Western Electric, drawing on ribbon technology for the first and only time, produced the first switchable multipattern microphone, combining its well-respected 630A omnidirectional dynamic unit with a uniquely crimped bidirectional ribbon assembly. Its output impedance, as with all previous Western mics (except condensers), was 50 ohms. It offered a selection of R (ribbon/bidirectional) D (dynamic/omnidirectional) and C (cardioid or combined pattern). The 639B added another three variations of the combined pattern for a total of six patterns. In the early '40s, Electrical Research Products Inc. (ERPI), a division of Western, redesigned the acoustic cage of the 639 for motion picture use, designating it as the RA-1142 transmitter.

SHURE UNIDYNE MODEL 55

The Shure Unidyne's history dates back to 1937, when Ben Bauer began searching for a way to make a much simpler and more reliable directional mic using a single element.

Bauer found that by using time delay networks on sounds arriving at openings at the back of the mic

In early 1931, Western Electric marketed its 618 electrodynamic transmitter—the first dynamic microphone.

mic even found its way into President Harding's Inaugural Address in 1921.

By the mid-'20s, the 387 model, with its gold-sputtered diaphragm of 0.0017-inch-thick duralumin, would embody the best of the push-pull designs. It was followed by the slightly improved model 600 in the early '30s, and the double-button became recognized worldwide as a standard in broadcasting. The development of E.C. Wentz's condenser (see below) and later the moving coil and ribbon microphones would replace the noisy carbon, reducing it to communication status in later years.

WESTERN ELECTRIC CONDENSER

The idea of a condenser transmitter had been around since the early days of telephone technology, but its high impedance and low output had made it impractical for early use. The 1915 de-

velopment of the vacuum tube amplifier solved the impedance and output problems, and in 1917, E.C. Wentz of Bell Labs developed the first modern condenser microphone. Early models of the mics were not reliable, and they were held aside mostly for acoustic research. By the mid-'20s, improved condenser models began appearing, and by the late '20s, Western Electric had produced six different models of condenser mics: the 7A and 9A "mantle clocks," the 8A and 10A floor stand models, and the hanging cylinder models of the 47A and 53A, all incorporating Wentz's famous 394 condenser transmitter head with its aluminum alloy diaphragm. American-made condenser mics pretty much faded from the market by the mid-'30s.

RCA 44 STYLE RIBBON MICROPHONE

In the late 1920s, Dr. Olson of RCA began development of the ribbon microphone, first with field coils and then with permanent magnets. In 1931, some nine months after the introduction of Western's 618 dynamic, RCA marketed its first permanent magnet bidirectional ribbon microphone, the 44A. The smooth sound of the ribbon and its eye-pleasing styling made it a staple of broadcasting well into the 1940s. The design was updated with improved

An Inside Tip from a Professional.

"After comparing the CAD E 100 to the mics I have been using on kick drum... it outperforms them all!"

*Randy Siegmeister,
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World Radio History



Photo: Peter D'Amico

TWELVE MICROPHONES THAT MADE HISTORY

("uniphase," as Shure called the system), he was able to achieve controlled cancellation and produce a cardioid pattern. In 1939, Shure introduced the Model 55A (30-50 ohms), Model 55B (200-250 ohms) and the high-impedance Model 55C. In the '40s, Shure added the shock-mounted broadcast models 555 and 556. The small Unidyne was introduced in 1951. It's hard to imagine another microphone based on its original concept and styling that has remained in production as long as some version of the Unidyne. I believe its styling is one of the three most recognizable microphone shapes ever created, the other two being the RCA 44 and 77.

WESTERN ELECTRIC 640A/AA CONDENSER

The 640A/AA condenser mic came

about from Western Electric's need for a reliable calibration mic and the conclusion that the 394 condenser was too big and bulky to do the job. In 1932, a miniature condenser microphone system with a 1-inch diaphragm called the D96436 was successfully tested and re-designated the 640A. In 1942, Bell Labs' testing of the 640A revealed it to be susceptible to changes in ambient temperature, pressure and relative humidity. They changed the capsule diaphragm material from aluminum alloy to highly corrosion-resisting steel and changed other internal components to lessen this effect. They re-designated this capsule as the 640AA. The 640AA was the mainstay calibration mic of anyone involved in serious audio work, including such entities as RCA, Altec and, of course, the National Bureau of Standards. Western Electric eventually decided that with the small demand for calibration mics, it would be better to buy them as needed rather than making them. They turned over the manufacturing of calibration mics to Brüel & Kjaer, which constructed the 4160 to meet Western Electric needs. Once the 4160 was in production, 640AA capsules ceased to be made.

NEUMANN CMV3/3A

Georg Neumann and Co. was formed in 1928. Neumann produced his first condenser mic, the CMV3, which had a 9EO84K triode amplifier and a pressure-omni capsule (the M1/M2) made from hand-cast, gold-plated PVC. Very early diaphragms were actually made from a resin dissolved in alcohol cast on water. Eventually, PVC was dissolved in amyl acetate and cast onto gold-dusted plates. In 1932, Neumann produced a variation of the CMV3 (the CMV3A) that enabled the user to attach different condenser heads. Using an idea patented by Braunmuhl and Weber in Germany in 1927, Neumann developed the double-membrane capsule with a shared backplate. In this backplate were 153 precisely hand-drilled and critically placed holes, some of which went through the back side. A cancellation of sound reaching the rear of the capsule was produced, resulting in a cardioid pattern. This capsule was designated the M7. The so-called "bottle" condenser, with its M7 capsule, became the first directional microphone. The M8 unidirectional and M9 bidirectional capsules were soon added. The M7 capsule design has been in continuous production from its incep-

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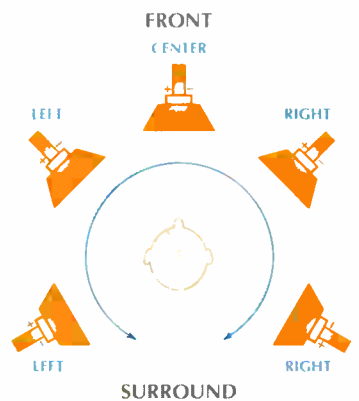
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TWELVE MICROPHONES THAT MADE HISTORY

tion to the present. Its influence on modern condenser technology is unparalleled. An updated version of the CMV3A bottle made by B.L.U.E. microphones is in production today.

NEUMANN U47/67

After World War II, Neumann regrouped his company and developed the U47. It was first marketed in June 1948. Distribution was by Telefunken, which promptly put its name on the amplifier housing. The U47 was the first switchable-pattern condenser microphone switching between cardioid and omnidirectional patterns. It incorporated the highly successful 12-micron-thick M7 capsule and VF-14 tube amplifier, which was a metal-clad pre-World War II pentode configured to work as a triode. The hand-selected VF-14s had a 55-volt filament that operated at 36 volts for longer

tube life and quieter operation. In the early 1950s, Mercury Records touted the U47 as its "Living Presence" microphone, putting pictures of it on record jacket covers. In 1956, thanks to the development of smaller capacitors, Neumann was able to reduce the length of the mic by almost three inches. The capsule finish was also changed from chrome to matte, matching the rest of the microphone. The U48, a cardioid/bidirectional version, was marketed in 1956. Two years later, Neumann took over distribution of its own products from Telefunken, restoring the Neumann logo. Gotham Audio became its North American distributor.

In 1960, Neumann decided to update the U47 with the U67, which was originally called the U60 but later re-designated to indicate its ties to the U47. The U67 capsule design was switched from PVC to Mylar film, and a tensioning ring with screws (rather than glue) secured the membrane. Longstanding problems of proximity effect and overload during close work were resolved with a clever internal 40Hz cut-off filter and an amplifier pad switch allowing the choice of close-up or distant use. A three-pattern switch was added for extra versatility.

An effort to minimize capsule resonance was made with a new tapered capsule windscreen, and the modern EF 86 tube allowed for a more streamlined, tapered body design. This particular shape remains not only in Neumann's line of microphones, but other lines of competing microphones today.

NEUMANN M49/50

In 1949, Dr. Herbert Grosskopf of the IRT (Institute Fur Rundfunktechnik, a German-based technical standards and design organization established after WW II by German broadcasters) designed and patented the first electronically remote-controlled variable pattern condenser microphone, the M49. This design was given to Neumann for manufacture, and Neumann incorporated its well-established M7 capsule into the mic. The IRT also wanted to establish a standard tube amplifier for all German broadcast mics and a special low-noise, hand-built tube; the Hiller MSC2 was developed for this purpose. Telefunken manufactured the final version of this tube as the AC701K, and eventually, all condenser tube microphones in the German broadcast system used this tube. The "M" designation before the model

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TWELVE MICROPHONES THAT MADE HISTORY

number indicated the standard AC701K amplifier, while the "U" designation indicated other tube amplification. The unique taper of the windscreen grille shows a major effort to address the influence of grille resonance.

The M50, a look-alike twin of the M49, shares the design shape and the AC701K tube, but it is strictly a pressure microphone designed for distant orchestral miking work. Its small pressure capsule evolved through three separate diaphragms, first with PVC, then aluminum (the same as the KM53), and finally with gold-sputtered Mylar. The diaphragm was flush-mounted in a plastic sphere designed to allow the capsule to respond with some directional characteristics in the frequencies above 1 kHz while still maintaining an omnidirectional characteristic at the lower frequencies. An additional +5 dB of high-frequency boost was added in the AC701K tube amplifier

circuit, resulting in a favorable overall frequency response when the mic was used at a distance from its source.

AKG C-12/ELAM 250/251

AKG, which stands for Akustische und Kino-Geräte (Acoustic and Film Equipment) was formed in 1947 in Vienna, Austria. AKG developed the C-12 condenser microphone in 1953 based on a dual-backplate/dual-membrane idea patented by Kalusche and Spardock in 1951. The modified version of this idea became the basis for the CK-12 capsule. AKG was the first to manufacture a split electrode microphone. The original capsule membrane was 10-micron-thick PVC, which was later changed to 9-micron-thick Mylar. The amplifier design was based on the 6072 tube, and the C-24 stereo edition of the mic with two CK-12 capsules utilized this dual triode to its full extent. The C-12, like the M49, had a remotely controlled pattern selection from omni to bidirectional via the selector switch located in a box between the microphone and the power supply. The C-12 remained in production until 1963. In 1964, the C-12A appeared with a 7586 Nuvistor tube amplifier and a physical shape foreshadowing the de-

sign of the 414 Series.

In 1959, after the U47 had been withdrawn from Telefunken distribution, Telefunken commissioned AKG to develop a large-diaphragm condenser microphone. This became the ELAM 250. This design incorporated the CK-12 capsule in a wider body with a thicker wire mesh grille. A two-pattern selector switch (cardioid to omnidirectional) was placed on the microphone. The ELAM 251 added a third bidirectional pattern to the switching arrangement. The "E" designation after the 251 indicates export, incorporating a 6072 tube amplifier. Non-E designations indicate the standard German AC701K tube amplifier. The immense popularity of the C-12 and ELAM 250/251 microphones has made them the most expensive and highly desirable vintage tube mics on the market today. ■

Sound mixer Jim Webb won an Academy Award for his work on All the President's Men. His microphone collection includes a variety of line standards from Western Electric and RCA, along with rare RCA Princeton Lab prototypes. Visit the Jim Webb Microphone Page at davin.ci.csum.edu/~kwebb.

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UPGRADING AND RESTORING

AND Tape Recorders Consoles

Though much of *Mix's* editorial content is concerned with the latest technological developments, few readers actually spend their working lives surrounded by new products. Many components in an average studio are between five and 15 years old, and even a "state-of-the-art" facility may well contain microphones and outboard gear older than the chief engineer.

There are good reasons for this apparent conservatism in such a fast-changing, technology-based working environment. It rarely makes economic sense to replace all of the major pieces of equipment at one time, so large purchases tend to be staggered over several years. Regular clients may actually resist proposed changes, especially in the monitoring chain. And occasionally a manufacturer hits on a classic design that cannot be bettered. All of these factors argue in favor of maintenance and selective upgrading, rather than wholesale replacement.

To find out more about the pleasures and pitfalls of upgrades and restoration, *Mix* spoke with Coast Recorders owner and vintage equipment dealer Dan Alexander, John Klett at Singularity Enterprises, Walter Sear at Sear Sound and Jim Williams at Audio Upgrades.

Four Experts

Navigate

The Minefield

Of Vintage Gear

Modification

BY CHRIS MICHIE

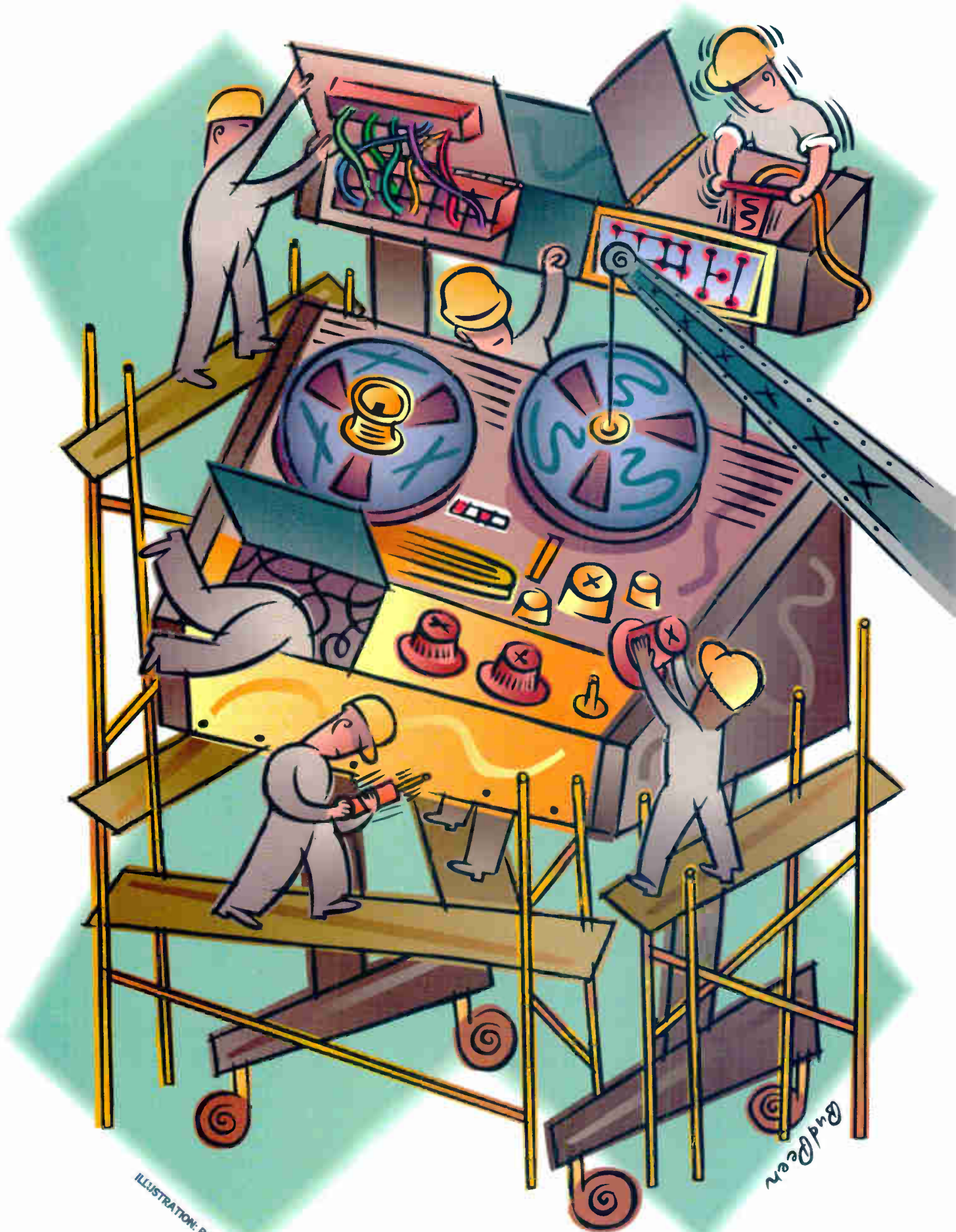


ILLUSTRATION: BUD FEEN

IT TAKES TWO

John Klett has been doing independent technical work in the New York area since the late '70s, incorporated as Singularity Enterprise in 1987 and recently set up Tech Mecca Inc., a large service shop in midtown Manhattan. "We have customers with really classic or vintage pieces of equipment who want them cleaned up and restored," he says. "They may want a couple of mods to overcome the limitations of early consoles, like more tape monitor inputs in the monitor section or some additional metering. We also have customers who have a Neve 8068 or something like that and they want to be able to double up on the number of inputs."

Though Klett has in the past merged Harrison MR4s and other small consoles and has "manufactured" large API consoles from parts of smaller ones, he readily agrees that a current hot topic is the creation of large-format Neve consoles by combining two smaller ones. "One of the things with early Neve consoles to be aware of is that the bus structure, the way signals are combined together, is different from what you'd find in later Neves, SSLs or other modern consoles," he warns. "The 80 Series—your 8068s, 8078s and so on—and the 53 Series broadcast consoles used a busing structure called 'passive summing' or 'voltage summing.' Voltage summing combines signals through a passive network. When you do passive summing, there's a necessary attenuation of the signal and, depending on how many inputs you are summing, you can end up going down to somewhere around microphone levels. So you can feed the bus resistor at +4 dBu (0 VU), and the actual level on the bus will be something like -60 dBu. Then you have an amplifier that amplifies that small signal back up to line level. Now because it's passive summing, a lot of people, including myself, at times will argue that it's a better way to add signals together because you're not relying on any active component—and the feedback around that component—to do the work of summing."

The modern alternative to voltage summing is current summing, Klett explains. "Almost all modern consoles are built with current summing buses. The reason for this is it is much easier and cheaper to combine a whole lot of inputs onto a current summing bus than a voltage summing bus—and after a point the voltage summing bus runs out of gas. The more inputs you add to a passive voltage summing bus, the greater

the attenuation—or mixing loss—that you're going to have to compensate for with makeup gain. All that gain brings up noise—it's a problem. So when you want to merge two 8068 consoles—or two Trident A Range consoles—to make a single large-format version you can't just jam them together. There's a lot of care that has to be taken with how you handle the buses. There are some tricky aspects to doing those kinds of consoles. Merging current summing bus consoles is easier but not

problem-free—and for other reasons.

"One of the ways around merging the older consoles with voltage buses is to leave the buses alone and take the boosted outputs through an additional summing network with just two or three inputs—very little mixing loss and very little make up gain—and it allows you to split the console to effectively get more than 16 buses when you need them. There's all kinds of ways of doing it, and every one has got its pluses and minuses. I think that Neve abandoned passive

CLASS STRUGGLE

Dan Alexander would like to cast some light on a common misconception about Neve consoles. "There's this rap in the industry about broadcast modules and consoles," he says, referring to the supposed differences between Neve modules from recording and broadcast desks and the relative distribution of Class A and Class AB modules among the two product lines.

"Now, supposedly, a 1073 or a 1066, which is an all Class A module, is far superior to a Class AB-type module, some of which are found in broadcast consoles," says Alexander. "But the fact is, the most popular consoles out there are 8058s, 8068s and 8078s—every one of which has the dreaded Class AB output stage in all of its modules and busing amps. Actually, the microphone input module in an 8058 or an 8068 is Class A. It's just everything else in the console that has the AB output stage. In an 8078, it's all got the Class AB output stage, and the 1081 module, which is the most famous module of all, has got a Class AB output stage.

"As far as broadcast vs. regular consoles, the broadcast consoles have thinner modules. The metal boxes were thinner. Aside from that, all the amplifiers, transformers and all the rest of the components in the thing are all the same. You can't put a 33114 in a 8078, but if you open them up, you'll see all the same stuff. And the most popular Neve limiter, the 33609, is exactly the same as the 32264. As an audio dealer, I can tell you that the 33609 is the most in-de-

mand Neve limiter. The 32264, which is the module with the meter at the top, is the same internally as the 33609, and both of them have the dreaded Class AB output stage. Let me also say that the most famous

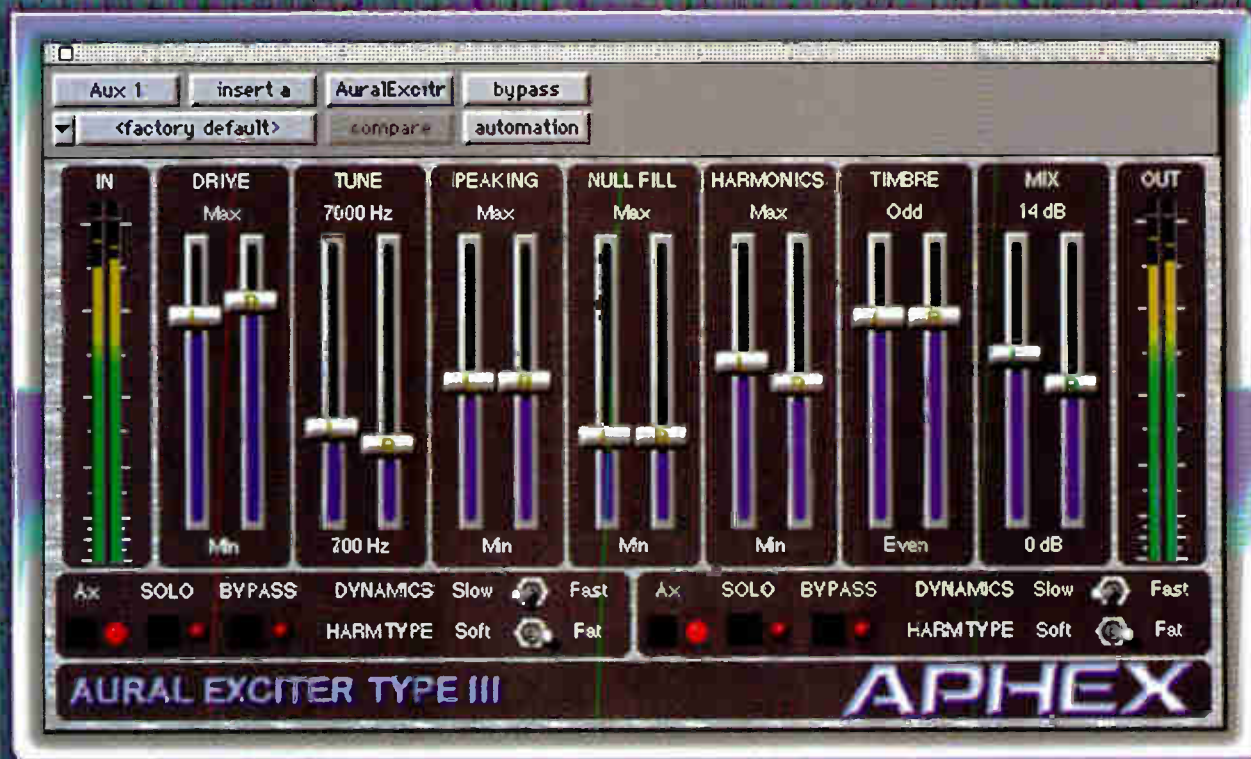


Coast Recorders' custom Neve 5305 console was created from two identical (and consecutively numbered) 5305 consoles originally built for Yorkshire Television. The 72-input all-discrete console features GML automation. Modifications by Dan Alexander Audio.

Neve consoles—the three AIR consoles: the one at A&M, the one in Bryan Adams' studio and the one in Lyndhurst Hall—not only all have Class AB output stages, but they're all IC consoles throughout, because Neve made these interchangeable daughterboards. First they made the 1073, the 1066—all that stuff, with 183 and 283 cards. Then they came out with the 1081 and the 3104, and that stuff is made of all 300 Series amplifier cards, the output stages of which are all Class AB. And because they made the pins too short and the amps tended to fall out, they came up with a 400 Series amp, which is basically the same thing; it's just got bigger pins. That was also a discrete amplifier.

—CONTINUED ON PAGE 57

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voltage summing because there was pressure on them to come up with 60- and 80-input consoles. I really don't think they could take it much further without compromising their quality standards."

YOU'VE LOST THAT LOVIN' FEELIN'

Klett also modifies lower-cost consoles. "We also wind up with customers who have a less expensive console that they really like—it's compact and already wired in—and they want to clean up the sound. The other category is people with consoles that are 5, 8, 10 years old that they're fairly satisfied with, but they remember them sounding better than they do now."

Klett begins each project by establishing clear goals. "My general approach is that I try first to figure out

what the customer really is asking for," he says. "That's the biggest trick. Sometimes you'll have an engineer who is very clear and can describe routing details very clearly...then you have other people who just are describing things in very soft and more artistic terms, and it takes a little while to tease out of them what it is they're looking for. A lot of times, they're trying to get a sound out of it that they remember they used to be able to get and can't get anymore."

"And at that point, I look to see how the console is performing compared to its original published specs. With a lot of consoles, the performance specifica-

tions have slipped, and really it's almost gotten to be a cliché, but dried out electrolytic capacitors are often the biggest problem."

THEM CHANGES

"A number of rather prominent console manufacturers, who make very high-end consoles, were really seriously bitten by this problem," recalls Klett. "They wound up replacing capacitors in an enormous number of modules. Then several years went by, and those caps started failing, and they had a different problem, because the newer capacitors they were using, when they failed, they

—FROM PAGE 54, CLASS STRUGGLE

"Then Neve came out with the 600 Series amps, which was an IC amplifier that could plug into the same place as the 400 Series amps. So you found consoles sometimes that were half and half. The 8078s at Clinton in New York and the 8078s that Neil Young has are all ICs. Here's a fantastic illustration: I sold a guy a pair of modules and he uses them all the time. A year-and-a-half later he calls me back and says: 'Hey, a technician opened up the modules you sold me and one of them is all ICs.' So this guy was using a pair of modules—one of which was all discrete and one was all ICs, for a year-and-a-half, and he never noticed! Why? The difference in sound quality is very subtle.

"The discrete amplifiers do sound better, but it's only a matter of degree," summarizes Alexander. "And with all of this modification stuff, I have to say that the vast majority of this stuff that all of us go through, to take this equipment to the nth degree, it's only to please ourselves. In the end, the bottom line is that if a song is great and the singer is great, it's going to be great, and if it's not, then it doesn't matter about the last 2 percent of audio fidelity. It's all about recording music."

—Chris Michie

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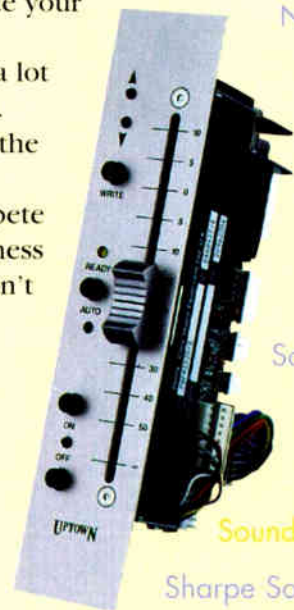
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would spray their guts out onto the circuit board. The electrolytic inside of some of these newer electrolytic caps is fairly corrosive and it would actually eat the metal off of the circuit board. And if you didn't catch it right away, you would ruin the circuit board, and that's even worse. Now, it seems like everyone's got this in hand, but it's a horrible way to learn."

Among the more popular mods that Klett's shop carries out is an IC upgrade for lower-cost consoles. "There were some ICs that came out that were the sort of does-does-does-it-all IC," says Klett. "They were very popular and were used as both the mic input and the line input—one IC for everything. The specifications on these ICs were pretty good, but when you really listened to them over a period of time you realized that they didn't hold a candle to some of the better-designed mic pre-amps on some of the bigger consoles. We've come up with a little circuit board that will plug into the same socket as one of these ICs, and it provides you with lower noise and less distortion, just a better-sounding replacement for the same thing."

DIRTY WORK

There are, however, practical limitations to modifying low-cost consoles. "Some consoles are just incredibly difficult to work on," says Klett. "The way that the boards are laid out, you basically have to remove eight channels at a time, and that means removing every knob and every control collet—you know, the little nut that holds the pot on—and then popping this huge circuit board out and then working your way down in between all these components to get to the one thing that's failed. It's a drag enough fixing them. Mod'ing those is just silly—I don't think anyone has seriously discussed it for more than about a minute-and-a-half. On the other hand, just about any console that has a removable input module, you can do something with."

Jim Williams of Audio Upgrades, based in Van Nuys, Calif., is also familiar with the component upgrade path to improved console performance. "We're pretty famous for the mid-level stuff, like the Tridents and the Ameks and the Soundcrafts and that kind of thing," he says. "We replace the caps on the EQ section with polypropylene film caps, and we either have these imported from Germany or we have them made locally for the higher-grade stuff. We use a type of cap called MIT, which is Musical

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Interface Technologies. It's a 10-section paralleled, polypropylene, audiophile-grade cap. It's used in all the finest home stereos. Very expensive stuff. But most people when they hear them, they go, 'I must have those!' so the sound justifies the usage."

"Electrolytic capacitors are sort of like batteries in the way they lose their ability to function over time," adds Klett. "They're one of the fastest-fatiguing components that you run into, other than some of the electro-mechanical stuff like switches and so on."

Another console input strip modification that Williams often recommends is changes to the mic preamp circuitry. "We recently finished a Tascam M600 for a guy named Billy Sherwood who's done the last two Yes albums with that console," says Williams. "He's mixed on that console after going to places with SSL rooms and being very disappointed in the sound. He got a bigger, punchier, clearer sound on the modified M600."

Williams claims that the performance of Audio Upgrades-modified mic preamps equals or exceeds most high-end outboard units. "On consoles where the preamp circuit is using a chip preamp that's not very good and out-of-date, we'll just rip that chip out and put our own circuit board in, because we make a very high-grade preamp on a card that can be retrofitted in most of these consoles quite easily. But we only do that

when the design is so far away that we just can't make it come to life. Most of the time we can make those preamps work pretty dang good."

IS IT ROLLING, BOB?

Klett also has considerable experience in cleaning up, restoring and modifying tape machines. "We're getting a lot of them in to fix," he says. "We've got 3M M79s in here, we've done three this year, we've done four JH24s, we've done four or five MTR90s, and that's all in the shop, not field service. I also do a lot of ATR-100s. Some things are just classics—they are just so well done to begin with that there is no great need or desire on our part to modify it. The weak point of the ATR-100, as far as audio goes, is really the I/O module, so one really straight-ahead and dopey mod I do is make a cable that just allows you to plug right out of the bottom of the machine and bypass the I/O module. I also do a cleanup of the I/O module, although Mike Spitz at the ATR company makes a transformerless I/O module, a really nice plug-in replacement. Also, Manley Labs makes a playback head and vacuum tube playback electronics that work quite well on the ATR-100, and Mike Spitz makes one as well that fits in the slots that would be occupied by the audio cards for tracks three and four. On Mike's you can switch back and forth between the play-

RESOURCES

John Klett kindly supplied the following list of resources.

Tape Machine Parts and Service

Athan Corporation
South San Francisco, CA
415/589-5206

ATR Service Company
San Mateo, CA
650/574-1165

Blevins Audio Exchange
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back of the original solid-state parts and the new tube card. That's very nice—you can A/B."

Another ATR-100 modification that Klett recommends is tape head replacement. "Flux Magnetics makes a really wonderful tape head, an extended-response playback head whose head bump is an octave lower than anybody else's. It's very smooth, so at 30 ips you have the low-end response that you would normally expect at 15. It's got a very efficient and extended high-frequency response as well."

Klett notes that the popularity of modular digital multitracks (MDMs) is to some extent responsible for the continuing demand for multitrack analog tape decks. "It's interesting. A lot of people build their tracks on ADATs and then dump those to 24-track analog to mix. There's a couple of studios I know that do a substantial amount of business just doing the dumps from ADAT to 24-track and also to digital, like 3348s and so forth. The ADAT is a good thing to build on and is a good thing to transport around town, but when you're putting a lot of wear and tear on the tape it seems as though 2-inch multitrack and ½-inch digital formats are lot more robust. 3348s don't eat your tapes."

HEAD GAMES

Though a large part of Audio Upgrades' business consists of upgrading MDMs, Jim Williams also restores and modifies analog tape machines. "We do mostly Studers, Otaris, MCIs," says Williams. "My personal favorite is the old JH24 MCI. On that particular machine we rebuild the head amps, put in new transistors, all the chips are changed, all the equalization capacitors. It's a pretty vast job. We use our Audio Precision to align analog machines, because we can really nail the THD vs. amplitude with the bias, and we can typically get 0.15% distortion in the midrange at +9 on 996 [tape], which is very good. It's quite a bit better than the factory spec. at 0.55% with 456 [tape].

"Also in the high end, we can get flat to 30,000 [Hz] frequency response, and it'll actually go almost to 40k before you get a pretty good roll-off. Unfortunately, the low end is limited by the tape speed, so we can't do much about the head bump. But at least the analog circuitry is feeding onto tape an extended low-end 2-cycle response. So hopefully something of that sticks and comes back."

Electronic upgrades at the IC level seem almost straightforward compared to some of the challenges associated

with the electro-mechanical components of aging tape recorders. According to John Klett, replacement heads for Telefunken Magnetophons are virtually unobtainable. "They're very thin," he explains. "If you come across a used 2-inch 16-track Magnetophon, that's great, but if the heads are shot, you're completely screwed. I haven't been able to figure out a replacement head for that."

A more typical problem for Klett is finding replacement relays. "The MCI JH16 Series machines have discrete elec-

I try first
to figure out
what the customer
really is asking for;
that's the biggest trick.

—John Klett

tronics and there's a relay that they use that was manufactured by a company called Varley," he recalls. "Trying to find replacements for those is a real drag. We bought, I think, the last 40 of them that Sony had. When we had to buy these relays they were 60 dollars apiece, which for a 24-track is a 'Yikes!' number. But people want these machines to keep running, and they sound really good."

IT'S GETTING BETTER

Walter Sear has been active in the recording studio business for 32 years. "We come from an era when it was understood that you would build your own equipment," he says. "You couldn't go to the store and buy it." Partly because of this background, Sear and his staff have extensive experience in rebuilding Studer and Ampex tape machines. "We are just finishing off a Studer C37 that came out of EMI/Abbey Road in London," says Sear. "Supposedly, it was the machine on which the Beatles recorded *Sergeant Pepper*, but that's the story I got. I won't vouch for it."

Sear rebuilt the 4-track 1-inch C37 as a 2-track 1-inch. "Of course you have all the problems of converting it from a 7.5/15 ips machine to a 15/30 ips machine," he says, "and a machine that was used to running on 220 volts and 50 cycles had to be upgraded or downgraded to 120 volts/60 cycle. The machine had

been stored for many years and was totally encrusted with rust and dirt, so it took over a year, because we had to take it apart, replace most of the bearings or clean them and relubricate them. And you get no backup from the factory, because nobody remembers the machine anymore."

Sear notes that a restoration project can sometimes become a financial black hole. "We're not really a repair facility," he says of Sear Sound. "We'll take an outside project if it looks like fun. But it usually ends up as a disaster for us. We just rebuilt an old German CMV3, a Neumann, which was a very good microphone, but someone else had gotten in there before us and made their modifications, and we didn't know that, and there were no schematics, and that took us two weeks, and of course we couldn't charge for the time, so we ate it and chalked it up to experience. But when it went out of here, it was remarkably good-sounding."

WORKING IN THE COAL MINE

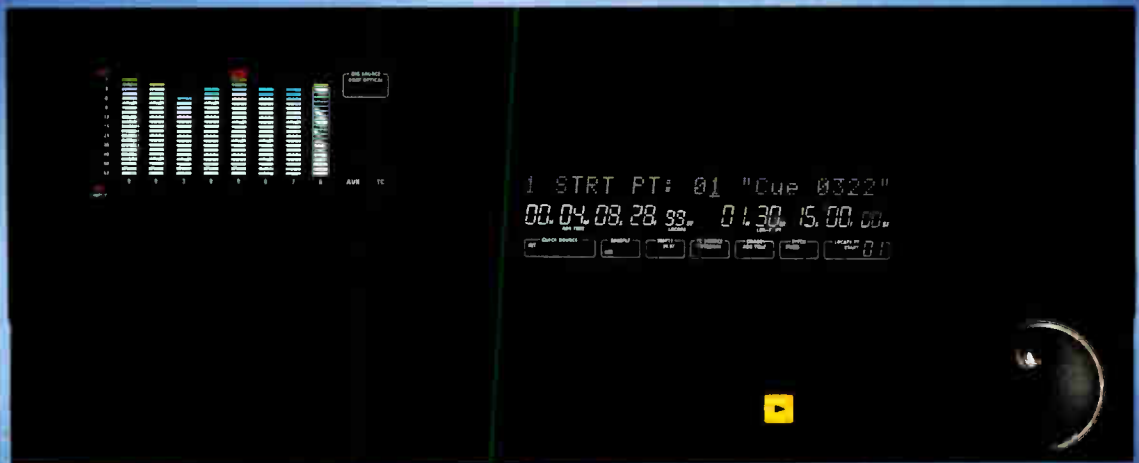
According to Dan Alexander, a significant portion of restoration work consists of undoing the work of others. "For years, I used to go to these big auctions, specifically to buy the shop," he says. "I bought the parts, the bins, the broken stuff, all the spares, the literature, and all that stuff, and hopefully the tools and test gear, but a lot of times, that stuff has kind of disappeared. What became apparent is that even places that have the reputation for being exceptional technically, in reality one finds the most unbelievable level of incompetence. We have found the most amazing things that passed for tech work. There's no description.

"Let me also say this of the industry in general. For some reason, a lot of these people still don't know that they should keep their equipment clean. It's mind-boggling! We bought an MTR90 from a guy one time and it looked like somebody had sprayed the inside with a spray can of corn oil and then taken a vacuum and turned it around and blown all the dust from the vacuum into the tape recorder! And that's extreme, but I'm sure that other people will tell you that some of this equipment that comes from places where people smoke and where people obviously don't own a vacuum cleaner, they're just disasters inside. It's not surprising that the stuff doesn't work right. It's surprising that it works at all." ■

Chris Michie is Mix's technical editor.

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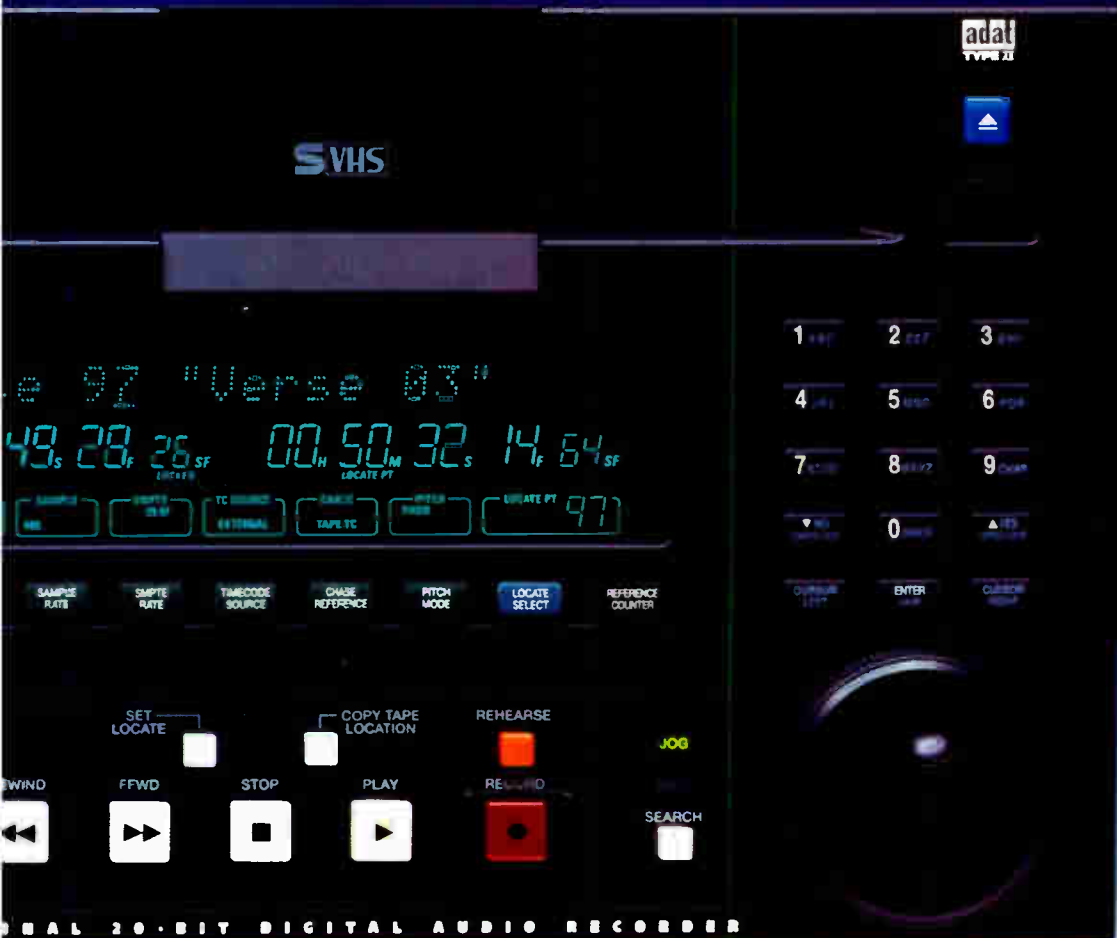
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ALESIS

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World Radio History

BY DAN DALEY

All

Quiet

on

the

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NEW YORK

STUDIOS

New York is still jousting with London for prominence as the center of contemporary Western culture; the latter's music scene is arguably more successful at the moment, but New York is no less intense. New York has more clubs than ever before, and the diversity is greater. As in London, the mood is reminiscent of the great music eras of the 1960s. But does this air of aesthetic robustness promise booming business for studio owners? That depends on your point of view.

BLAME THE LABELS

For starters, virtually no one trusts the record companies anymore, and that has significantly eroded overall confidence in the music-recording industry. The Great Independent Record Revival of the past three years has petered out, with first-quarter 1997 returns of over 40% sinking many small labels and bleeding money from the larger labels and independent distributors that funded them. Flat record sales in the U.S. in 1996 have left that in-



Platinum Island



Sound On Sound



Right Track

PHOTO: MICHAEL PARIENO

dustry in a pessimistic slump as other forms of entertainment, like movies and ROM discs, spar with prerecorded music for the increasingly finite consumer dollar.

"The record industry stinks," says David Harrington, studio manager at Greene Street Recording in SoHo. "The record business went after the lo-fi sound a few years ago, and now they suddenly realize that radio hates it and it doesn't sell records. They weren't developing acts; they were funding independent labels hoping that the guys on the street knew what they were doing, because they sure as hell didn't."

The two-room Greene Street learned years ago that they had to establish a niche in order to survive, and during the past year the studio has shifted its focus as the culture evolved, moving from lo-fi rap to lo-fi alternative rock and now to pop, which Harrington says at least forces more artists to consider using conventional studios in order to put a more professional gloss on their productions. "After the rap thing bottomed out, because the records were going into people's private studios and the budgets were getting lower, we had a lot of alternative rock tracking and mixing," Harrington recalls. "Now, the lo-fi thing is over and bands like Luscious Jackson are going from a punk sound to a pop sound. And they need a studio to do that in, so that part is good. The tough part is that the lo-fi thing depressed rates, and they haven't been able to come back yet."



At Greene Street, Russell Simmins (L) took a break from mixing Luscious Jackson in Studio B to say hi to Steve Lillywhite and John Siket (R), in Studio A, mixing Phish on the API Legacy.

Greene Street owner Steve Loeb agrees. "We were at one point toying with the idea of renting a space across town, putting in a bunch of semi-pro equipment and renting it out for \$900 a day," he says. "People were starting to want to make their records in one day. Now they need better-sounding records, but the budgets are still at the lo-fi level, and the acts are still disposable. As soon as rap became a cartoon, I knew it was over, because the white kids stopped buying it and the artists were never really developed. The switch from tape and vinyl to CD has been supporting the record industry all

these years, and now that's over. The whole studio industry is in a transition period as a result, and we've been wracking our brains trying to figure out how to make the transition from this mode into something else, like interactive media or film. We'll still be a recording studio, but in five years' time, the business will be completely different. The way it is now is over."

CLOSED DOORS

Loeb speaks for a lot of mid-sized-studio owners. After 13 years in business, Giant Studios owner Doug Pell closed shop in June after selling the main studio's SSL board and then auctioning off the rest of his gear in a private sale after a potential deal to sell the studio as a whole went sour. "The era of the small recording studio, the boutique studio, is over in New York," he says, flatly. "Studios here either have to become larger or have to become producer-owned project studios. I hate to say it but, I really don't have any belief in the future of the studio business the way it's been. The technology keeps changing and keeps getting more expensive on the upper end and cheaper on the lower end. Recording is never going to stop in New

York—it's still one of the world's entertainment capitals. But the nature of the studio business is going to be radically different. I think you're going to see [recording studio] palaces with hotels attached to them."

Pell's words ring true at Axis Recording, where owner and dance record producer Francois Kevorkian has turned the studio's A room into a personal studio to support his new custom record label. Kevorkian sold the SSL that was in A and replaced it with a smaller console. According to studio manager Chris Raymond, Axis' B room was recently refurbished and retains its Amek Angela console as a for-hire studio. She attributes the removal of Studio A to Kevorkian's need for access for his productions. "He's an artist at heart, rather than a studio owner," she explains. However, she acknowledges that it remains to be seen how well a single-room facility can do in New York's changing economic environment.

PAYING FOR UPGRADES

One thing that has become clear in the past year is that the increase in business that many New York City studios reported in 1996 has not continued

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through the current year. Increases in bookings and revenues last year, spurred by the strong but apparently temporary independent record market, prompted numerous studios to invest in needed upgrades—anything from cosmetic renovations to new large consoles. However, the trail-off in business that many are reporting since the spring is causing some studios to feel squeezed. Alan Selby, owner of Electric Lady Studios, added an SSL 9000 (a purple one, befitting the studio's founder, Jimi Hendrix) after experiencing what he calls a spectacular April through September in 1996. "I couldn't figure it out; I thought things were trending to the better," he recalls. "It was at that point that I committed to the 9000. Then I looked back later and realized that those were the months that Power Station was out of business. Many of those clients were coming to other New York studios. When they reopened in the fall [as Avatar Studios], I noticed that business had tailed off." Selby says that though the closing of one multiroom studio would not completely account for a significant change in revenues, it does indicate how delicately balanced the market has become. "Last year, I had almost the best numbers I ever had," he remembers. "This year it's definitely off."

Other indicators Selby has noticed are the consolidation of record companies—in particular the folding of some independent labels and the dissolution of EMI Records, and the scattering of some artists to related labels like Virgin while others were dropped. "I read about that in the paper," he says. "If I hadn't seen it there, I might not have noticed it in terms of bookings. But I know it has an effect. What I do know is that I have four kids, two of whom are musicians, and they're always asking me for software packages instead of CDs, so I know that's having an effect,

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too." As for rates, Selby says that he was able to raise them somewhat after the installation of the new console, but it has been an uphill battle. "Everyone wants the new equipment, but someone has to pay for it," he says.

Chung King Studios opened its new SoHo location last year, and owner John King says he's booked solidly through this year. But, he acknowledges, "We spent a lot of money to make a little more money. It's the niche I want to be in, but I don't recommend it for many people. Trying to operate at the top end of this business is a balancing act."

Chung King opened three new

rooms, including one with a Neve Capricorn, which King says is bringing in some new clients, but it also takes time to expose existing clients to the new operating system. Fourth and fifth rooms are slated to come online later this year (one will have a residential apartment available with a skyline view of Manhattan). "One of those rooms is an A/V room, which I think is where a lot of the business will be going in New York in coming years," he observes. But coming from a music-recording background and client base, King cannot help but rail against what has become the common bogeyman of the

recording industry here—the record companies. "They have really dropped the ball," he says. "They signed the wrong acts, didn't do the kind of artist development they needed to and they're not selling records. And the studios are suffering as a result, to a degree. As long as you're in it for the long run and you're a pro and you don't get crazy with leases, you can stay on top of it. There's still lots of work out there. But there's also a lot more private studios here now, and we're hitting the ceiling as far as the technology prices are concerned. There's the balance you have to keep."

Dave Amlen's two-room Sound On Sound also upgraded in the past year, adding an SSL to its new upstairs room to complement the original Neve room downstairs. "There's no real pattern to how bookings are going," he says. "Everyone is trying to figure it out. There's a lot of factors that are responsible—record companies, poor record sales, private studios—but no one really knows to what extent each one plays a part. One thing myself and a number of other Midtown studio owners are theorizing is that the record companies have dug themselves into a hole and they're having a hard time justifying budgets. Many of them blew their budgets for the year in the first six months of 1997. On the other hand, it's possible that the seasonal patterns that we all thought were predictable for so long weren't so predictable after all."

Amlen says there's not much headroom left for upward movement of rates, and he's spending more and more time explaining the economics of the business to clients—particularly new hands at record labels—about how studios' needs for upscale technology and amenities have to be counterbalanced by rates that can justify those upgrades. "One other thing I have heard, though," he adds, "is that the record companies, having squeezed the studios all they can, are now trying to put the squeeze on producers and engineers to take less per project."

Tony Maserati, engineer and mixer for Mary J. Blige, the late Notorious B.I.G., Puff Daddy and others, says that's been the case for some time in New York. "Labels, producers and artists have always been coming to me and other engineers asking us to 'do them a solid' sometimes, no matter how big or small the budget," he says. "Labels have always tried to haggle, and you agree or resist based on your track record and how many records you have on the

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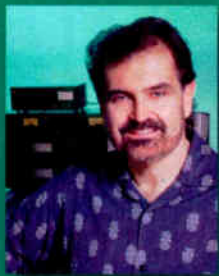
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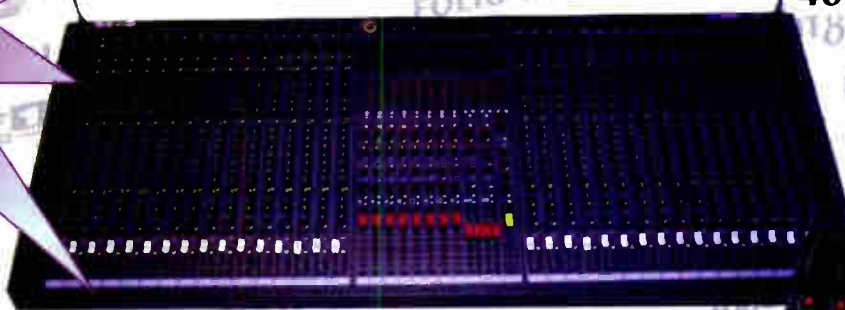
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chart at the moment. That's what pretty much determines your rate. But if it's a good client who's going to keep me busy for the rest of the year, I do it." What has changed lately, though, Maserati adds, is that he now finds himself called to mix or track the singles rather than the whole record. "Instead, they ask me to recommend someone who I think is good but who charges less for the rest of the record."



Chung King

INTERFACE

Barry Bongiovi, general manager at Right Track Recording, went through a significant upgrade period in which Neve VX and Capricorn consoles were added, and the SSL 9000 was brought back online, partly in response to last year's increased activity. However, Bongiovi says that 1997 has been quieter, and he's had to make his marketing efforts more proactive. "We were so busy last year that it caused us to think more positively about investing in new technology," he says, "and the beginning of this year was good, as well. I'm not really complaining about this year, but things have tailed off a bit all over town. But we're taking some of the time to train and educate engineers on the Capricorn and the 9000. There are a number of ways you can make good use of time, and it's not always just renting it out."

Bongiovi says he's cautiously optimistic about the near future, and though he says he's noticed the economic straits that mid-sized studios have fallen into and feels bad about that, the pragmatist in him realizes that it will likely increase the interface between project studios and larger facilities like Right Track. "The home studio market is going to prevail, no doubt about that," he observes. "There's so much product coming out of them these days. The only way for a [conventional] studio to make it is to draw the type of clients who can pay for the type of equipment that upper-end clients want. And not many people can handle the economics of that anymore."

But Lou Gonzales, owner of Quad Recording, says that his business has not seen a drop off this year. He attributes his success to the facility's long-time service-oriented approach. In addition, like many other studio owners around the country, he has tended

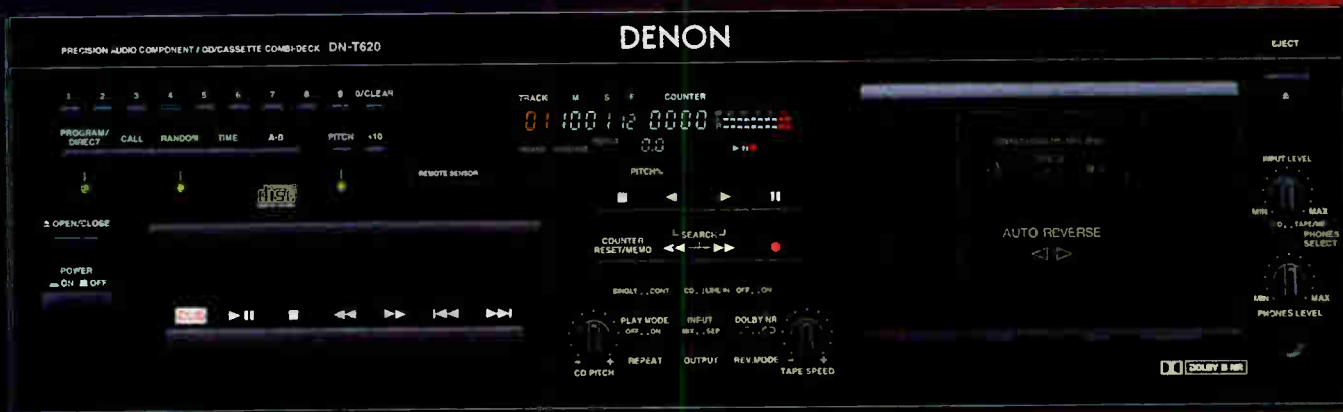
in recent years to pay outright for much of his newer equipment rather than leasing, which he does for only the most major acquisitions, such as the two SSL 9000J consoles he's installed in the past two years. That, he offers, gives him "two-fifths of the 9000 business in New York." He says adopting new technology early allows him to get the jump on in-demand gear. Gonzales also says that the upgrades have drawn in more upscale rock acts, which he says tend to book longer time blocks than the independent alternative rock artists New York has seen so much of in recent years.

MID-SIZED VIEW

But it's the mid-sized facilities—the backbone of much of New York's music-recording business—that are feeling the brunt of the changes in the business here at the moment. Jeff Rechter, manager at Staten Island's Mystic Sound, says, "It's gotten to the point where people are cutting each other's throats so badly on rates at this level that people are getting out of the business." As a result, he's implementing new service levels for clients. "It's also at the point where everyone has virtually the same equipment, so you have to do things that differentiate you from other studios and that keep people coming back again. What we've done is create a vibe to the joint, and it's the vibe that sells it. Because things have definitely slowed down since last year. You need to have something special. A studio needs to have personality."

At the four-room Unique Recording, manager Tony Drootin says his facility's response to a business slowdown has been to maintain a flexible rate structure which, he stresses, is not a euphemism for rate slashing. Rather, he says, it's allowed by the studio's decision not to

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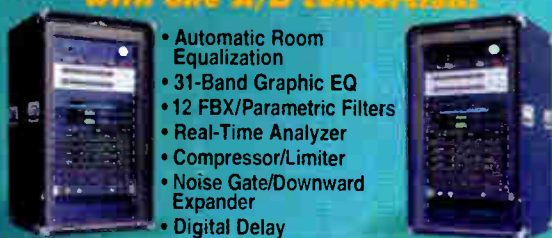
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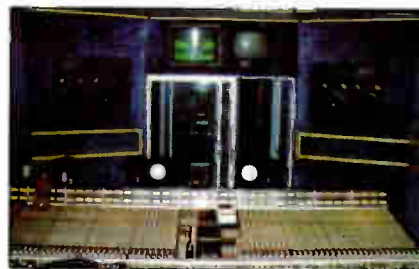
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jump heavily into new technologies such as large, expensive consoles. "A&R people can't spend as much as they used to, and without the budgets you can't buy consoles whose lease payments are \$12,000 a month or more," he says. Drootin says that mismanagement of the labels is primarily responsible for the "doldrums" of the New York studio business. On the other hand, Drootin believes that this is "a cleansing time" in the studio industry here, forcing studios to renovate more than their technology platforms: Unique recently upgraded its elevators, lobby and reception areas as well as renovating Studio C with a dual 8068 vintage Neve with Flying Faders. "You need to do more with less, and appearances count with producers and artists," he says.

"Studios have become subject to the whims of fashion and fancy," observes Richie Kessler, owner of Platinum Island Studios. Kessler is in the process of extricating himself from a joint indie label venture with former CBS Records head Walter Yetnikoff. That venture was a larger-scale version of what many studios did in the mid-1990s to compensate for lower revenues: turn part or all of their facilities over to in-house production to participate in content revenues. The demise of the indie bandwagon this year has ended some of those dreams. But Kessler says it allowed him to refocus on cutting overhead by consolidating staff and becoming essentially lease-free. "The major labels struck back with a vengeance, cutting off radio to a lot of independents, so in a way it was very timely," he says. "But what's happened is two things. First, a lot of producers have been forced by whatever circumstances to work on the low-priced gear, and some of them can do very well on it. That's affected studios. Second, all this *mishigas* with the independent labels proves how much more sensitive recording studios have become to the entertainment industry as a whole." ■

Dan Daley is Mix's East Coast editor.

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World Radio History

ROBBIE KONDOR

A NEW ROOST

The story of Robbie Kondor's personal studio is a quintessentially New York tale, and it underscores how the commercial music business has changed. Jingle recording, once one of the mainstays of the New York studio community, scattered over the past decade. It has now burrowed into a maze of commercial music houses that contain their own recording and composing facilities, and into composers' personal studios.

Kondor, who bought his first synthesizer in 1980, broke into the still-vibrant music scene that was centered around Bleecker Street clubs like Kenny's Castaways and The Other End in the early 1980s, a milieu that had spawned artists like Caroline Mas, Steve Forbert and Phoebe Snow a few years earlier. Kondor quickly became an in-demand keyboardist; he did sessions for the likes of Eric Clapton, Anita Baker and James Galway, and toured with Mariah Carey, Linda Ronstadt and Aaron Neville. It was almost inevitable that he would get caught up in Manhattan's happening jingle scene, one that was staffed by an elite corps of musicians such as Will Lee, Steve Gadd, Marcus Miller, John Tropez and Alan Schwartzburg. "I was the new guy who came in at the end of the old crew of jingle recording," Kondor recalls.

It was a short step from playing on jingles to writing them, and after freelancing for a while, Kondor joined JSM Music as a staff composer, where he wrote themes for Shell, AT&T, American Express and others. Prompted by opportunities to compose outside of the music house environment, he opened his own studio, Robbie Kondor Music, this past summer.

"Being at JSM gave me the opportunity to be creative," says Kondor, "but I can be more so in other ways with my own place and business. There's a creative aspect to handling clients, and as a staffer you're not always in the loop when it comes to creative decisions. The interface with the client takes place elsewhere and a staff writer is then given some basic directions. As an independent composer with my

and a small overdub booth were fitted into a 1,500-square-foot space in the Chelsea neighborhood by local studio designer/builder Chris Harman. Kondor and his business manager and executive producer Bob Montero had heard about Harman from other musicians-turned-studio-owners whose ideas and budget projections fit Kondor's own.

"It's intended to be client-friendly," says Kondor, noting the view of the Hudson from the terrace. The studio's small size is strategic, though. "It helps keep a lower overhead in terms of space, and I know that I'll be using larger commercial recording studios for live recordings a fair amount of the time," he explains. "We can do demos and overdubs here, and even finals for spots that don't need live ensembles. But right from the beginning I had no intention of building a studio that I was going to use for everything. I don't want to cross that threshold where suddenly I find myself in the studio business instead of the commercial business. There are great studios in New York, and I intend to use them. Besides, it's become so rare these days for a spot

to need a group of musicians playing live that when it happens it becomes a cause for celebration, and we always go out and have lunch afterwards. We used to do those sessions three times a day; now it's every now and then. I do lament the passing of how jingles used to be done. The technology changed everything, and it diminished the amount of human interface there was. But it also has given a lot of people a lot of opportunities they wouldn't have otherwise had, including me." ■



own recording facility, I can deal with the clients on the creative level."

Kondor's studio is a simple affair, with an equipment investment of less than \$80,000 centered around a 32-input Mackie 8-Bus console, Pro Tools hard disk recording and editing, some outboard gear and Kondor's own arsenal of synths and samplers that he has assembled over the years. A snug but naturally lit control room

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DAVID BYRNE

NO FEAR OF MUSIC

David Byrne will never escape the legacy he created as the principal songwriter, lead singer and guitarist for Talking Heads, whose output between 1977 and 1988 surely constitutes one of the most original and compelling bodies of work in late 20th-century popular music. And, to his credit, Byrne hasn't run from his past, but instead has continually updated it to suit his current artistic needs. Anyone who has seen Byrne's last few solo tours has witnessed some bold and original reinterpretations of classic and obscure Talking Heads songs. Byrne is happy to oblige Heads fans... up to a point.

Always a restless and forward-thinking soul, Byrne is more interested in what he's working on at the moment, or what's waiting for him up the road, than in reveling in his past glories and regurgitating his hits for a nostalgic public. This isn't new for him: After all, Talking Heads were anything but complacent. On the contrary, they were determinedly eclectic, always looking for new elements to add to their music and update their sound, whether it was hard funk, Cajun, African or Latin influences. Being a quartet was no limitation, because they hired as many outside players as they needed to make each song what they wanted. Byrne's vocals were the thread that ran through it all and held it together; otherwise, you might be lost in Zimbabwe on one track, Louisiana the next.

Since Talking Heads' demise nearly a decade ago, Byrne has put out a handful of solo albums, none of which has ascended to the same commercial heights as Talking

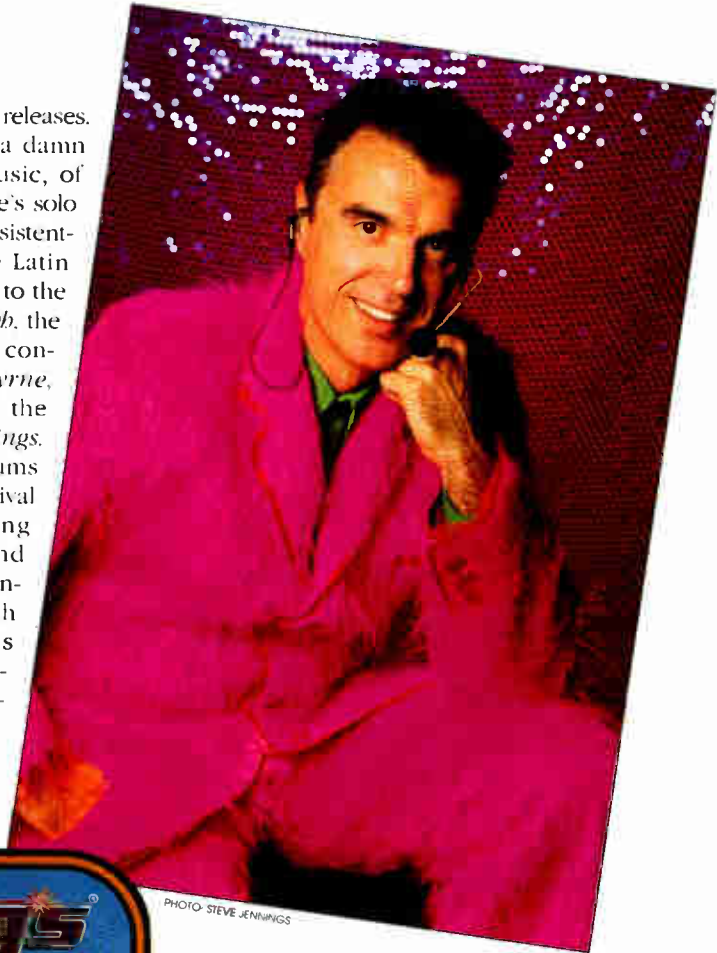
Heads' most popular releases. Which doesn't say a damn thing about the music, of course. In fact, Byrne's solo output has been consistently strong, from the Latin punch of *Rei Momo*, to the playful rock of *Ub-Ob*, the stripped-down and confessional *David Byrne*, and his latest opus, the highly eclectic *Feelings*. Each of those albums contains songs that rival Byrne's best Talking Heads material, and Byrne's singing continues to improve with each album, as his voice becomes a richer and more expressive instrument.

Feelings is everything I want from a



David Byrne project. It's musically challenging and unpredictable, laced with humor and his famous ironic detachment, but also quite moving and emotional in places. Once again, it serves up a polyglot of different styles, yet it all hangs together by the sheer force of

BY BLAIR JACKSON



Byrne's personality.

There are loops, scratches and sequences that place it firmly in the '90s, but it also contains retro '70s keyboard sounds here and there, and some of the strangest instrumental combinations imaginable: sitar, fiddle and dobro? Yes! Byrne traveled far and wide to find the players and sounds he wanted—to London to work with the group Morcheeba; to Los Angeles to make music with Devo; to Miami for the Latin groove one song cried out for; to Seattle to record with the very European-sounding Black Cat Orchestra. The album was made primarily in project studios in those cities and in Byrne's own Manhattan apartment studio, but he also used two big commercial rooms—Sony Studios and South Beach Studios. Engineers included Pete Norris, Caesar Sogbe, Hahn Rowe, Mark Saunders, C-n-A, Bob Casale,



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Stewart Hallerman and Marc Ramaer.

Byrne and I spoke shortly before the album's release at the beginning of the summer. Our conversation ranged from his new album, to recording with Brian Eno, to his adventurous custom label, Luaka Bop, which has put out so many interesting CDs of South and Central American music.

In the notes for your record you talked about making "simple demos." What's your demo process generally?

Up until this record I used to do them on one of those 4-track cassette recorders. I'd usually have a drum machine play like a two-bar groove, and then I'd play guitar and sing with it. The ones that worked the best were the ones where I'd do all three of those at the same time, rather than layering it, so it was more like a performance. On the fourth track I might add some kind of weird effect or a vocal harmony to signify where the chorus is supposed to go. And that would usually be it because I'd feel like I wanted to leave some room for development and discoveries and adventure in the studio when it came time to record it for real.

So I kept to that for a long time, but then I moved up to a DA-88 and I got a board with slightly more channels—a Soundcraft that was about ten years old—but that doesn't mean I do much more on the demos.

When you write a song like "Miss America," which is one of my favorite songs on the new album, did you always have a Latin flavor in mind?

Yeah. It always had that riff at the beginning, which had a sort of Latin vibe, but it also suggested these other sounds and textures which were different. So when I did the demo, I sampled a little piece off a Portishead record and used that for the rhythm of it. It didn't end up fitting that well, so I didn't use it on the record, but for the demo it was sufficient.

So then how would a piece like that have evolved in the studio? What happened between making the demo and deciding on going to Miami for that song and hiring the musicians you did?

It was a fairly complicated route for that song. I worked with it in my apartment studio, which is pretty much what I described—a sampler, a DA-88, a DAT machine, one reverb unit, guitars and amps and that's about it—and I started working with Hahn Rowe, who is a musician and mixer-type guy.

He used to be in a band called Hugo Largo, but he's more in the New York club scene at the moment. I've seen him mix some sounds and grooves which are pretty great. He has a lot more facility in that area than I do. So I worked with him on adding more sounds and sequences and grooves to that tune, and we advanced it a ways. But then, after a while I thought, "This can go to another level that he and I weren't getting," so I sent what we had done—the demo with more loops and samples and things playing with it—to Joe Galdo in Miami, who I'd met years ago and I'd loved some of the stuff he'd done in the past. The thing he did that really impressed me was the first Island release by this

African artist, Angélique Kidjo. I could tell just from listening to that record that what he'd done is taken pretty much everything she'd recorded and either resampled it or replayed it using samples and made like a high-tech computer sample version of an African record, but still stuck to her tunes and grooves. I thought it was amazing. It really kicked butt, yet it still had the grooves she probably started with. And I'd met Joe before and I knew he had a Cuban background and he used to work with Emilio Estefan when they had the Miami Sound Machine.

So you both have that confluence of Latin and African influences.

Yeah. I thought he'd dig the song and know what to do with it, and he did, so it was a matter of him bringing in some more musicians and singers and him putting his own samples and sounds on, too.

What did these traditional Latin players think about the words to "Miss America," which are not exactly, er, traditional?

To be honest, I'm not sure everybody was paying attention to the words. I think most of the time when musicians are coming in and playing on a track like that, they're mainly listening to whether their playing is in the pocket and whether their part is sounding good. Which is how it should be. Oc-

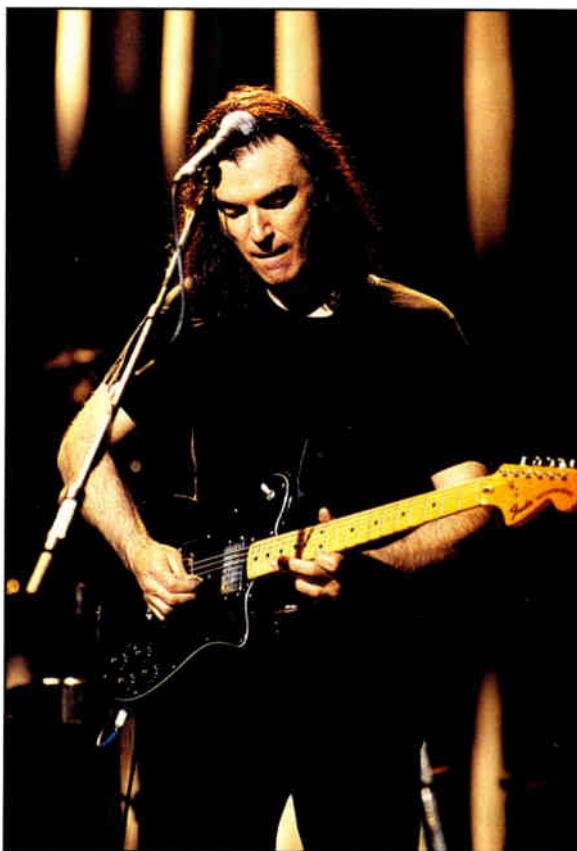


PHOTO STEVE JENNINGS

asionally a musician will say, "Hey, those are some pretty cool words there." But I don't remember that happening on that tune. [Laughs] Except Paula Cole. She sang on the song, too, and being a songwriter she commented on the writing. Same with Joe Galdo.

"Soft Seduction" is another interesting track. It's so spare and atmospheric. Hearing that ARP Omni in the background, I thought of the music from A Clockwork Orange: sort of a warm, retro sound. I imagine that's not too much different from the demo you made.

Yeah, it was one of the simpler arrangements. That tune was recorded entirely in the apartment. I think at one point after one of the bridges in there you can even hear a police siren or ambulance going by. Luckily, it was on a guitar or vocal track or something and it kind of fit in. It's way in the background, so I thought I'd leave it; it's kind of cool.

Can you tell me more about the Morcheeba Productions people in England?

They're a British band, made up of two brothers, Paul and Ross Godfrey, and this singer, Skye Edwards, who has a really beautiful voice. I guess people say they're trip hop, though they'd probably wince if they heard me say that. Their influences are a fair amount

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of trip hop, hip hop and West Coast music from the '70s, and blues.

So on songs like "Gates of Paradise" or "Fuzzy Freaky"—would you have to tailor them to their instrumentation or their particular skills?

No, no. I'd send the demos to them. I knew on a lot of these songs that I wanted to record them with loops and samples and then mix real instruments with them, and still keep it within a song structure rather than it being like a ten-minute dance track. To their credit—and everybody's, really—they

would listen to the song and they wouldn't try to make it sound like a Morcheeba record. They'd use what they were into. I remember on "Gates of Paradise" I kind of said to them, "You know, I really do see this as being sort of jungle-ambient verses and kind of country-punk choruses. It'll be a seamless merge!" [Laughs] And it kind of does work.

What's that weird, high-pitched guitar on the coda of that song?

That's one of the Godfrey brothers going through an old '70s pedal, turned up and distorted I imagine. [Laughs]

Is there some unifying thread to the

album, something that suggested that these 14 songs should go together?

Hmm. I'm not really sure. There were other songs, too, so why these songs...? *The reason I ask is that on your previous album—David Byrne—you talked about how your approach with that batch of songs was to write more personally and to reveal more of yourself. So is there some overriding theme or approach on the new album?*

It's not so easy for me to pinpoint. It's a continuation of the songs being somewhat more heartfelt than some of my past stuff, but there's obviously a variety of sounds, and the production is all over the map, whereas the last record was, to my way of thinking, really stripped down, bare bones—a basic four-piece band and not much else.

Now that you have some distance from that record, how do you feel about it?

I think some of the songs are really good. I can never listen to anything I do for very long without kind of wincing at the occasional lyric I think could've been better, or a mix where I think, "Gee, it sounds sort of thin there"; that kind of stuff. I tend to be hyper-critical. *I loved the song "Angels" from that record.*

Thanks. But that's the kind of thing where in my head I always wanted it to sound like that group My Bloody Valentine, where it's just this drone of guitars, but with a dance beat going on. The band Garbage has sort of pulled that kind of sound together. But I felt like I never quite achieved what I wanted to on that, even though I liked the song a lot.

I think that's a pretty common complaint—the gap between intention and execution. Are you getting better at realizing what you visualize?

I think so. I got better on this record partly due to the whole home studio and more casual approach to recording that I was able to use.

Is it because the clock's not running?

Who knows? If it's that or that it's just not in a professional studio. Or that because it's just me and a couple of musicians doing it most of the time. It doesn't feel like you're at the office.

Did you tend to mix these in groups, in the sense that the tracks you did with Morcheeba were all mixed together?

I sort of mixed them all at once when everything was done. I thought that might unify them a bit more. I was obviously worried they weren't going to cohere together as one record.

"They Are in Love" has sort of a French nightclub feeling. I can picture the can-

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dles burning...

Yeah, yeah! I wrote this song and I thought that would be the perfect way for it to sound. I was thinking kind of a Tom Waits goes to a French nightclub kind of thing. And I'd seen this band, Black Cat Orchestra, in a bar/lounge in Seattle when I was passing through there once, and I thought, "They kind of already sound like that, so if they're up for it, all we gotta do is learn the song and record it." And that's what we did. We played it over and over and worked on the arrangement.

How often do songs of yours go through radical transformations in terms of style? Are there times when you think, "Oh, I'll do a Black Cat Orchestra," and then later you decide to try a completely different approach, whether it's giving it a Latin flavor or making it stripped down rock 'n' roll?

It varies. Some stay on track and remain the way I originally envision them throughout the process of recording. Nothing can derail them. They're headed a certain way and it doesn't change. There are other songs where I've changed them quite a bit along the way and done alternate versions. On this record, I did a version of "Fuzzy Freaky" that had a lot more of a jungle sound to it, but I was kind of married in my mind to more of a funk feeling.

Like that '70s clavinet on there...

Yeah. So marrying that with the jungle stuff to me was not happening, but I did a whole alternate mix of that and took out all the funk stuff and it worked out pretty well, actually. The whole world of alternate mixing is pretty interesting. Then I sent the song to a producer from Seattle named Mark Wolk, who'd done a record I really like called "Ruby" with a singer named Leslie Rankin. So he did a remix, and it transformed the song into something that was at least equal to the album version. It'll come out one of these days, I imagine.

How often is your writing affected by the kind of bands you've gone out with on tour? Did going out with the Rei

Momo band, for instance, color your writing after that? Or going out with the smaller band on your last tour?

Over the long term, I guess it does. Like on *Rei Momo*, I was working with Oscar Salas, the drummer, and some of the other people in that group, and as I was writing songs after that I'd think, "Oscar can do something incredible on this." So I really did have certain people in mind. But 90 percent of the time, the actual moment of inspiration is kind of more solitary.

Have you ever had a dry spell?

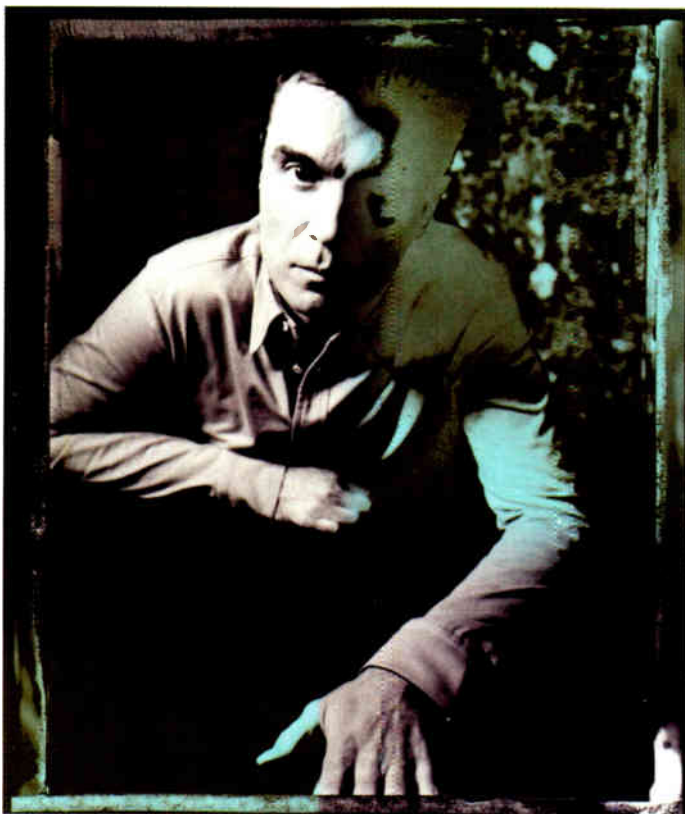


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Thinking back I can see times when I've sort of just squeezed stuff out and it wasn't as strong as it could've been. [Laughs] And maybe some of it could've been edited down, and maybe there are a few things I shouldn't have put out. But it never goes dry, so I feel, just keep the writing hand moving because if it stops it's really hard to get it started again. Better to record a lot of crap and maybe not release it than to stop altogether. Plus you never know—you might be in a period when you're not feeling that inspired but something you write will open the door to some other kind of a song that is stronger.

I'm sure from the feedback you've gotten through the years you have some sense of what the audience likes, and I wonder to what degree your own opinion of the songs you've written coin-

cides with what the audience likes the best.

Sometimes they go together; not always. There was a period when I didn't want to play "Psycho Killer."

Because it no longer resonated with you?

That one didn't resonate a year after I wrote it! It was written as a gag, or like a song exercise: Can I write a song from this killer's point of view, but really from inside, and not with a lot of over-dramatic blood and guts? And...I could. So what? [Laughs] But it was really popular and it became this album cross but, well, worse things can happen...

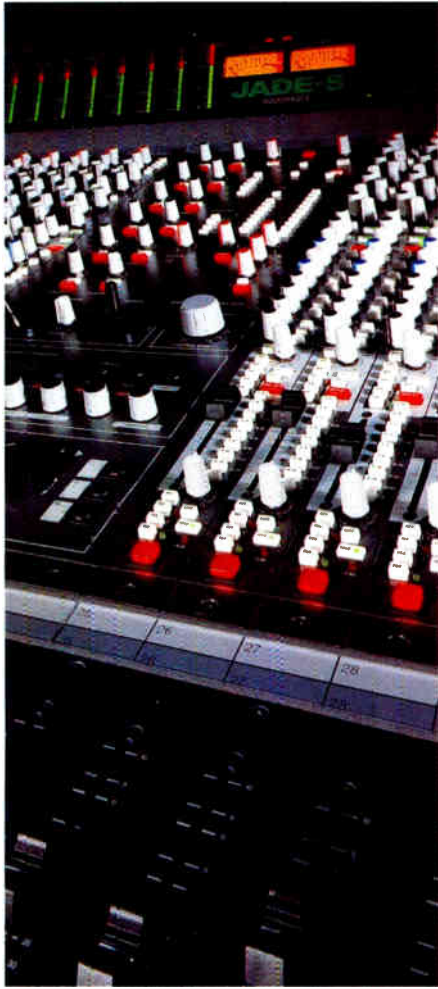
Pretty much at the dawn of your career you began a long working relationship with Brian Eno. What did that do for your studio chops, to go in with "the master"?

Well, for instance, on our second record [*More Songs About Buildings and Food*, 1978], he wasn't doing much except letting us be us. We were a good live band and I think, to his credit at that point, he was hearing that and so his interventions and the stuff he added or suggested as overdubs were pretty minimal. So basically the way he approached that record was just to stick up some microphones, some room mics, and the band would just play. Any other producer in that era probably would have said, "Oh,

no, we've gotta strip this down and do the drum tracks and the guitar tracks..." But he could hear—"This band can play!" [Laughs]

Was it odd working in the Bahamas at *Compass Point* on that record? Going from CBGB's to *Compass Point* was a stretch.

Yeah, it was a stretch. I didn't care about it one way or the other. I'm not the kind of guy who likes to lie on the beach. I did go snorkeling and stuff, but that's not really my thing. So I didn't care about that. But it was nice to get away from home for a while and get away from the distractions and worries and your friends and your phone calls and your landlord or whatever. But you don't really have to go to the Bahamas to do that. Even if you just go across the river to New Jersey, that helps your concentration when you're recording.



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The next record [Fear of Music] you cut at Chris and Tina's loft...

Well, that's where we rehearsed and Brian heard us there and, again, we were playing pretty tight then. We were touring a lot, playing all the time, and we felt comfortable in there. Often bands kind of tighten up when they get in a regular studio, and the groove that they play off of with one another can fall apart when they're all worrying that they can't hear such and such in the headphones and can't see each other and all that kind of stuff. And everything they've done and everything they are suddenly doesn't exist. So Brian said, "Hey, let's bring in a mobile truck,

**For me, it's less
about details
of the performance
than the
emotional truth
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I want to get that.**

run cables in the window, put up as few baffles as we can, and just record you guys, and these'll be the basic tracks. Then we'll go in the studio and finish it off." That ended up being the case on maybe 80 percent of the songs there. Then on a few of the songs he and I started cuttin' and pastin' and taking stuff out and putting other stuff in, removing tracks and mutating tracks and doing this and that and really creating new things in the studio. And those songs sort of pointed the direction where we were going with the next record.

How does My Life in the Bush of Ghosts sound to you now? That ended up being quite an influential record.

I think it's a great record. I really wanted it to be remixed by a variety of different mixers. I thought that would be the greatest thing—to give it to other people and not interfere. But it's hung up in legal shit. But a lot of rappers and mixers were influenced by it. I even heard that one of the Rai guys—the Algerian singers from Paris—said it was one of their favorite records. [Laughs] I thought, "There you go. People accuse

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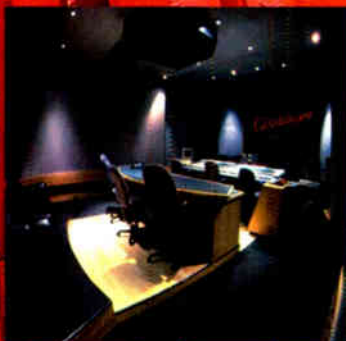
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THE MIX INTERVIEW

me of stealing from Third World sources and here's these guys listening to me doing that! Wow, it's really going 'round in circles."

You worked in Paris at Studio Davout on Naked years later. What was that like?

It was great. It's this big abandoned movie theater, so it's just this huge room. There used to be more places like that in New York and L.A. It's pretty raw; it's not slicked up. At that time I think they had a Sony digital recorder.

I remember on "Gates of Paradise"

I said, "You know, I really do

see this as being sort of jungle-ambient verses

and kind of country-punk choruses.

It'll be a seamless merge!"

so I think we felt we weren't going to have problems with alignment with the tapes not matching when we took it home, and we knew we wanted to work with all these musicians, so it was the kind of thing where everyone could set up in the same room, see one another, walk around and talk about what everybody was playing, but be far enough apart that we didn't have to have isolation booths for anything. So that was great.

Paris is such a great musical melting pot, too. You have all that Senegalese and North African music, and the whole Euro-disco thing, for what that's worth. There's music pouring out of everywhere. I guess people say the same thing about New York, but it doesn't seem the same...

No, New York is a different kind of mix. I guess New York has more Latin things going on, and at the same time, in Paris—I'm not sure how it is right now—you'd listen to Radio Nova, this station they have there, and you'd hear a rap track and an African track and a rock thing, then you'd hear something off a movie soundtrack. It really seemed like the soundtrack of the city. You don't hear that so much here. Everything is more segregated. I can go from place to place and hear all kinds of music here in New York, but you're aware that these scenes keep to themselves for the most part. But occasionally some of that breaks down.

What are your favorite major studios? I know you did a lot of work at Sigma's New York studio...

We got to be comfortable there. They went through a decline, and then they were sold. I don't know if they're up and running again or not. At the beginning, we kind of liked working at Sigma because it was known for dance music; it was known for all these Philadelphia R&B songs and things we'd heard in clubs. We thought that was really cool—even though most of it wasn't made in the New York studio. [Laughs] But it still had that name and we fig-

ured, "They must know how to make records that really groove!"

I guess it was like using Motown Studios in L.A.!

[Laughs] Exactly! We figured some of it would rub off.

In what sense did the group produce itself in the later years? What did that mean exactly?

I guess it just meant that there were a lot of collective decisions made. The arrangements were usually worked out in rehearsal together, and then later there were collective decisions about what kind of overdubs we wanted and what kind of changes would be made to the songs later on—vocal harmonies, those sorts of things. We really did do most of that as a group. On some of *Little Creatures*, which was probably our most pop record, most of what we were doing was pretty straight-ahead, other than throwing in some unusual instrumentation here and there, so it wasn't hard to come up with a consensus on how things should go. I think if you were trying to do something more revolutionary and produce yourself, unless there's one strong voice, you're probably going to have a hard time communicating ideas and reaching decisions.

But it's not a question of ten hands—four bandmembers and an engineer—with their hands on the console shaping a mix?

No, it kind of means a lot of times that

—CONTINUED ON PAGE 314



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Jay David Saks, left, producer, and James A. Nichols, recording engineer, at NYC's Hit Factory for a recording session of the RCA Victor release *Steel Pier*.

Anyone who thinks Broadway cast recordings are for the birds should pick up Jay David Saks' CD of Frank Loesser's *Gypsy and Dolls*. This is not your father's Broadway cast album. Loesser's completely irresistible words and music come to vivid life on this energetic recording. Saks goes for pizzazz and vitality over technical perfection. On *Gypsy and Dolls*, he nails it. The singers sound like they are having a great time, and so the listener has an even better time.

Pick up any number of high-profile Broadway cast recordings made over the past decade, and chances are good the producer's credit will read "Produced by Jay David Saks." A six-time Grammy winner, Saks is busier than ever, having recorded five Broadway shows in the first six months of

1997 (*Chicago*, *Once Upon a Mattress*, *Titanic*, *Steel Pier* and *Candide*). Saks, who in old-school style is actually a record company staff producer (he is vice president and executive producer at BMG Classics/RCA Victor; his executive duties include supervising four classical producers), also has extensive classical producing credits. And he works weekends: Saks recently began his 18th season as audio producer for the weekly *Metropolitan Opera Presents* radio broadcasts. And if that is not enough, Saks produced the soundtrack of Prokofiev's score for a recent revival of Sergei Eisenstein's classic film *Alexander Nevsky* and is producing the soundtrack for Disney's upcoming film *Fantasia '99*.

BY ERIC RUDOLPH

Mix caught up with Saks in his corner office in the brand-new BMG building high above Times Square (and directly above the giant Virgin Megastore) to discuss his Broadway soundtrack work.

What is your biggest challenge in making a Broadway cast album?

My biggest challenge is to make a recording that gives the listener the feeling, the spirit and excitement of being on Broadway. If you've seen the show, you should come away with a re-creation of what you remember, and if you haven't, my job is to give you a good idea of what the show is all about.

For me to do an album with just a bunch of songs from the show, that to me is not a cast album; it's just a bunch of songs. I like to have more elements. Before CDs, you were limited to a certain playing time. Now, with a single CD, you can have nearly twice as much material as on an LP. That enables you to record much more of the show.

I try to capture as much of the excitement and theatricality as possible. I like to include some of the dance music and some scene material to give a lot of the feeling of the show. I'm not 100 percent completely concerned with absolute perfection of performance as I am with spontaneity and spirit.

My primary goal in running a cast session is to let the actors be as happy and relaxed as possible. There is no reason for pressure; if something gets screwed up, you just do another take. I try to make sure they understand that if something goes wrong, it is not the end of the world.

To me, the most important thing is a tension-free session. Any time I've witnessed cast albums made with tension, some kind of problem follows from it. Sometimes tension is caused by mechanical problems, or a singer just isn't "on" that day. You have to decide if you need to bring them in another day

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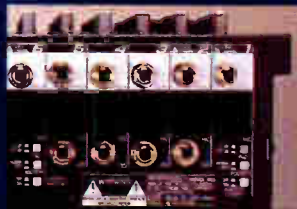
B Solution: 3-band *mid sweep* EQ on first 2 channels. "Who says all channels have to be the same?"

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to track them. Sometimes you get a performer who is uptight in the studio, or someone who is a bit of a prima donna, and you have to handle that a certain way. But generally these sessions are free of tension.

What are some of your secrets for keeping the tension level low?

I don't like to have a lot of people giving directions all at the same time from the control room. Sometimes you can have the authors, director, choreographer and conductor all in the control room at once, and they all have opin-

ions. It is their show, and I would be the last person in the world to deny them their input. However, I like to make sure that, in most cases, the direction comes funneled through me, or at the very least is channeled to the actors in a way that is organized. It is not a good idea to have ten people coming out and giving the actors suggestions. You end up with actors who are more confused than they were before.

How do you control things when there are all these people sitting behind you in the control room—people with a real stake in the show?

Occasionally you have to turn around

to tell people to be quiet. I'm very careful about what gets said when the intercom button is pushed. Sometimes I have to admonish people; if too many voices are heard, it can sound like chaos to the actors out in the studio. I don't care if the control room is packed with friends, onlookers, people from the record company, whoever. But when there is communication to the actors, I like to keep it very focused so the people in the studio will not get the impression that there's a lot of activity in the control room.

We avoid a lot of these types of problems with a great deal of preplanning. All the creative people meet prior to the actual sessions and plan the recording. The composer, authors, director, orchestrator, conductor—we all get together and discuss what is going to be on the record, from beginning to end. The cast isn't at these meetings, except if there is a star who dominates the show. I come to the meetings prepared by having seen the show several times and by having studied the music.

At these meetings, we'll decide to make small adjustments in the actor's performances for the record, which is a much different medium from a live show. Maybe a song needs to go faster because it is a patter song with a lot of words. In the theater, to allow people to understand the words, the singer doing a patter song may have to go more slowly. But in a recording session, the microphone is two feet away from the singer. They can go at a faster clip and maybe add more spirit to the recording.


We discuss orchestral changes and whether or not there will be dialog. We arrive at the studio all planned out, and at that point there shouldn't be any disagreement as to what the album should be.

You cut everything live, right?

Yes, the orchestra and singers all track together at the same time. I absolutely loathe cast albums where they lay down tracks and overdub the singers later. It has nothing to do with musical theater and everything to do with making gleaming, polished-chrome-perfection-type recordings. I can tell those records when I hear them; nothing's out of place and they're just boring and it doesn't sound like musical theater.

I'm not into making certain that the drum sound is the most perfect drum sound ever obtained on record. These are cast albums, not Whitney Houston records! It's all about spirit and vitality. If I lay down tracks with an orchestra and


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then discover the song would have worked better had we gone a little faster or laid down a little *ritard* at that moment or left a little more pause for a nuance, I can't do it; the tracks are done. You can't order a skeleton and then decide you're going to flesh it out and make it beautiful. It just doesn't work that way.

Sometimes, however, cutting tracks in advance can't be avoided. You'll have a singer who has too much to do in a day, or they just can't keep pumping out take after take of song after song after song in one day. So you track the orchestra and then you just have to bring the singer back to finish up, not all of the musicians.

James Nichols, one of your engineers, said that one of the most amazing things about doing a cast session with you is the way you handle and soothe the actors, who occasionally get a little uptight.

That happens; the actors put enough pressure on themselves. People who go onstage eight times a week sometimes get nervous when making a cast album. They won't get nervous at all in the theater, but the thought of going into a studio and committing a performance forever onto a CD, that sometimes makes them uptight. If they're people who've done it a lot, it is not a problem, but you get a lot of young people in the theater who don't have that recording experience and they get kind of nervous about it, even if it is a small part.

Again, I always emphasize that if something goes wrong we just do it again. I also explain that if they do a great take and three things get screwed up we'll go back and punch it in; we don't need one take that is perfect. We can edit, and we do a great deal of it. If we do three takes and the beginning is good on one take and two notes are good on another take, I'm happy to do as many edits as possible. Sometimes we do hundreds of edits in a cast album. That doesn't rob any spontaneity from the recording; it is just capturing the best moments as we go along. All these takes are spontaneous on their own.

I assume you do a lot more now with editing because your workflow is 100 percent digital.

We definitely do more editing now because of digital. It is a great relief to not have to pick up a razor blade and cut a piece of tape and hope that the edit goes together, and if it doesn't, you have to cut somewhere else, and before you

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This device is well suited for use with popular digital mixers such as Yamaha's O2R, or Pro Tools Soundlink, or as a translation device from MDM to Digidesign ProTools systems. The DMTi allows many different digital input formats to be user routed to a variety of digital output formats and sample rate converted. The Alesis and Tascam option cards are needed for conversion to and from these popular MDM formats. The DMTi can be seen and demonstrated at your local Kurzweil dealer.

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know it you've got lots of cuts all over the place. To be able to do electronic editing is great. It allows a lot of flexibility. Of course you can overdo it—not that you're going to hurt the product; you'll just spend twice as much money and time for no particular reason.

When I came into this business I assisted Tom Shepherd, a great producer who is mostly doing cast albums now. As his assistant I ended up doing the editing. The editing was very straightforward; you'd maybe make one or two or three cuts per song; it was a lot more block editing. We do a lot more detail editing now, but not for the sake of editing. We always have good reasons for our edits. You feel you can't leave that phrase behind, or that little sax solo was just great; why should we leave it on the cutting room floor because the rest of the take was not as good?

Tell me about the nuts and bolts of these marathon cast album sessions.

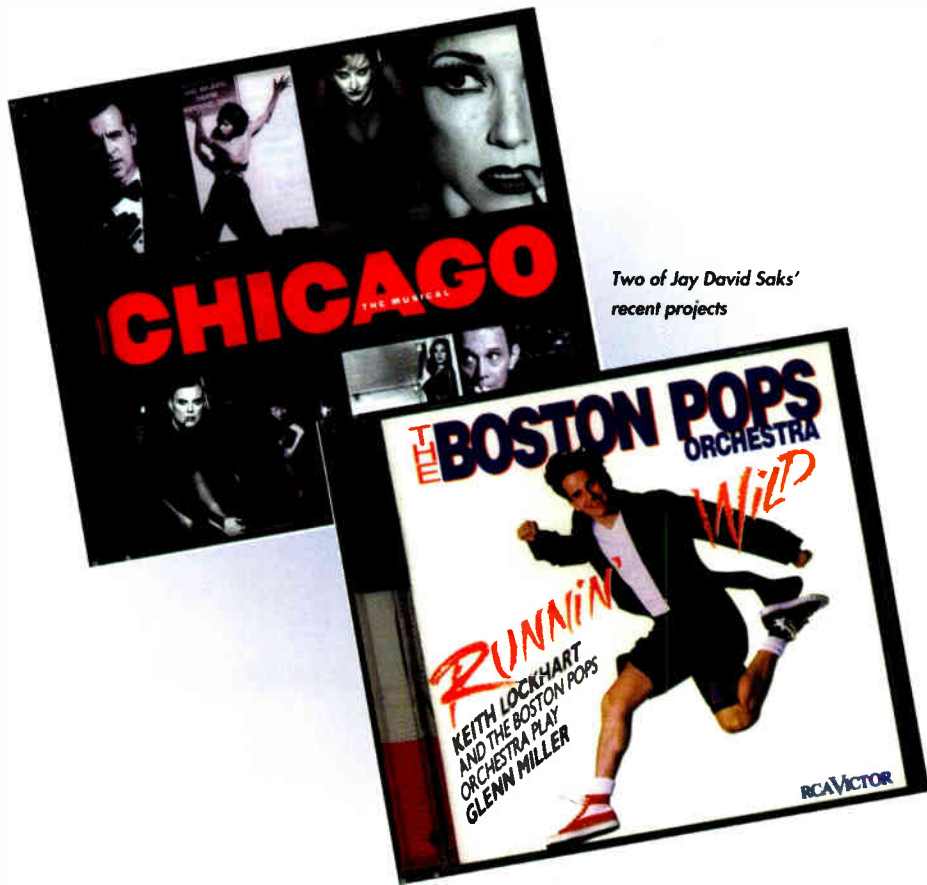
It's a big long day that is planned like a military operation. Cast album sessions are these day-long marathons because of the union work rules that apply for the cast. Every single member of the cast gets paid a week's salary—the same amount they get paid in the theater for an entire week—each time they are called into a studio for a session, even if you need them only for ten minutes.

That one week's payment allows you to keep them for nine hours continuously, with an hour break somewhere along the way. If you need someone beyond the nine hours, that triggers another week's payment. That has recently been modified somewhat, so it's not quite so punitive.

It used to be very strict; if you called someone to the studio and you needed them for ten hours on that first day and then called them back for another session later, you had to pay them three full weeks' worth of salary! So the cast call, the scheduling of who comes to the studio when, is very important—a very tightly structured procedure—for reasons of basic economy.

But while these rules have loosened up a little lately, they haven't changed all that much. And when you multiply this sort of thing by all of the cast members, suddenly you're spending a lot of money!

Doing the sessions as these big marathons is not the most ideal way to go. Cast albums in London are different; there you just pay on the basis of time used. So you can spread it out over a



Two of Jay David Saks' recent projects

week or two and get it done in a very civilized manner.

But doing the sessions this way does have benefits. An energy develops that is usually really good. Of course, the musicians have to play from early morning to late at night and hold up; I don't now how they do it. It is also fatiguing on me and the engineer, James Nichols, and on his assistants. Still, there is some kind of energy and a spark; you get something going, people get into it and the cast just loves the whole experience, as long as they are not feeling pressured. The chorus members hang out; it is a special day, and they're happy because they are making an extra week's worth of money.

We're talking about 14- to 15-hour sessions, right?

Yes, and sometimes longer. Typically you have four three-hour sessions for an album during the one long day. According to musicians' union rules, you can extract approximately 15 finished minutes of music per three-hour session, so from those four sessions you can get 60 minutes of finished music, give or take.

We gather on the day the theater is dark, which is usually a Sunday or a Monday. A typical day would start at 9 a.m. and go till noon. Then we take an hour's break. We start again at 1 p.m. and go till 4 p.m., then another hour break. We resume at 5 p.m. and go till 8

p.m., then break for a half-hour, and then go from 8:30 p.m. to 11:30 p.m. when, hopefully, we are done.

Sometimes you need to go well beyond 11:30. When we did the revival of *Chicago* recently, we started at 9 a.m. and didn't finish until 1:30 the next morning. There have been cast sessions that have gone way beyond that; fortunately, they have not been mine. That's not due to any special skill on my part—its just my good luck or someone else's bad luck.

But it gets really expensive when you go past midnight because you're not only paying overtime, you're paying time-and-a-half overtime to the musicians, not to mention paying another week's salary to any cast member who has been there more than nine hours that day. It just becomes outrageously expensive.

According to James Nichols, you close-mike. I think people probably assume that cast albums employ more of a room-miking technique.

My feeling is that the room is never good enough. It's not like a classical recording done in, say, Boston's Symphony Hall where the room can really bring a wonderful sound and a glow to the recording. Symphony Hall is known for its acoustics, and combined with the sound of a world-class orchestra, like the Boston Symphony, you can get great sound using just the room with

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just two mics. If you took that same orchestra into a studio that is much tighter and drier, you wouldn't have that ambient glow and tail and reverb.

A good studio for doing cast albums doesn't have a lot of decay, is very dry and has a short ring-off. That minimizes the amount of leakage. So that kind of room doesn't have much to contribute. I've experimented with room mics, and I invariably don't use them; there is nothing there of value to me. It is not going to make it bigger; it is just going to make it looser. I get more than enough room sound with natural leakage, even with close-miking.

All the ambience that one hears with a cast album of ours comes from artificial reverbs; if we take those reverbs away, it would sound absolutely bone-dry. We carefully construct different reverbs, all running simultaneously. I do my post for every project I do at Sync Sound with Ken Hahn. We use TC Electronic and different Lexicons for reverb, mostly TC. You can have a number of different reverbs going at once from each TC unit, and it is digital in-and-out and stereo and just wonderful.

We use one reverb setting for the orchestra, another for vocals, then we use another for a slightly longer tail at the end of the song so it will ring off longer; if we left that long reverb in all the way, it would muck up everything.

Another gadget I use is the TC Finalizer, a terrific limiter/compressor that gives the sense of more level being added but no sense of limiting or compression. I've used it for the past three or four cast albums I've done, and it is incredible. Ken Hahn brought it to my attention.

I've got the best of both worlds with James Nichols at the sessions and Ken Hahn and Sync Sound for my post. James is great; he is so unflappable, so unperturbed by chaos, and he is so good at what he does. He knows exactly what mics to use for each section; I don't get into that anymore. When I started out, I was a real fiend about mics. Now I work with James, who is someone I trust and whose taste I respond to and whom I like, and so I let him do his thing. He is great—brilliant, calm, relaxed and knowledgeable.

And for my post I go to Sync Sound and use their AMS Neve Logic 2 console. Sync Sound is my home away from home. I may be their only record client; they do almost exclusively audio post for film and video. I do hands-on

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World Radio History

mixing myself there, pushing my own faders and turning my own pots, and I'm comfortable doing that, because I do live opera every week at the Metropolitan Opera during a great part of the year. I wouldn't dream of moving faders myself at a cast album session; I'm far too busy, I never touch a single knob except for the talkback button.

You're known as a total convert to digital.

Absolutely. I know there are some people out there who do not believe in digital, who still prefer to record with Dolby SR and they like the sound of an SSL or a Neve, but I am absolutely, completely a devotee of digital technology.

I've never recorded an analog cast album, and I've been doing them for ten to 12 years. We've always used Sony 3324s or 3348s. As far as classical recordings go, I don't think I've made an analog classical record since '80 or '81. Now most of our classical recordings are done directly to 2-track using 20-bit technology; we also edit in the 20-bit domain.

For cast albums, I need the tracks more than I need the bits, so we record with 16-bit, using two Sony 3348s for safety, in case the machine dies. And every now and then you find a problem with the tape and so you just pull up the safety.

When did you get won over to digital?

The first project I worked on using the Logic 2, with Julie Andrews, which was for a Sondheim review. It was a limited

run in the Spring of 1993. That was when they'd just gotten the Logic 2 at Sync.

We do all the mixing on the Logic 2. It is a fully dynamic automated console; it's just an incredible device. It is digital in-and-out, so once we record, everything stays in a digital domain from beginning to end. It is incredibly clean and quiet.

The most minute adjustments are all remembered. I can work on tiny details and build my mix little by little. If I want to make an EQ change on-the-fly, or if I have a mic with a popped "P" and I want to roll in a highpass filter and quickly roll it out again, it remembers and does that every time. If you move a panpot to create the image of someone moving, it remembers that move. You can mix for a few days and come back and it takes maybe five minutes for the entire mix to be set up. With the Logic 2 every single setting is automated; every EQ for each track, every bit of limiting.

Could you cite an example of why the Logic 2 is so particularly valuable to you in doing a cast album?

I do a rough mix of each cast album and then bring in the show's creative team and play it for them and get all their comments. I've assured them from the start that, after the sessions, everything they want will be done in the final mix. Ten years ago, to make all those corrections was just too complicated and would take several days. Now I can open up and adjust every single song and accomplish all the adjustments in

less than a day. If there is a song with two measures of trombone they wish were louder, I just pull up the song, zip to that spot on the tape and goose the trombone for those two measures and it gets added to the existing mix. I used to dread making so many fixes and changes like that, but not anymore.

Who decides which shows you record?

I don't have anything to do with acquisition of these projects; I'm not an A&R person. For the cast albums, that person is my very close colleague Bill Rosenfield, who is vice president of Broadway and soundtracks A&R. Bill is a walking encyclopedia of musical theater. He makes the deals and determines which projects we record. We work very closely; he's listed as "A&R direction" on the back of all my cast recordings. He's basically my executive producer.

I want to make records; I don't want to stay up all night wondering if we should have made the records! I never aspired to do A&R work. Bill Rosenfield is great at that.

Do you miss the old RCA Studios, with the almost gymnasium-sized midtown Manhattan room where you did most of your cast album sessions (and which were closed a few years ago and converted into IRS offices)?

I was one of the few people around here who wasn't sentimental about losing those rooms at all. During the last few years of their existence, they were so badly mismanaged and outdated it was ridiculous. It wasn't until near the end that they got a quality console, a Neve VR. Before it was either home-built RCA studio stuff or an MCI that crapped out constantly. The big room had a nice sound and feel to it, but it also totally lacked isolation facilities.

When they opened in 1965 or 1966 they were terrific studios, but time passed them by, and in my opinion they were never maintained or upgraded properly.

There was a comfort factor because the big room had a large stage that was raised and could hold a lot of singers. The control room was very large but it was not acoustically treated and was not a modern control room. When I heard they were closing those studios it meant nothing to me. By then, Hit Factory was almost ready with their big room, which looked wonderful to me. I'm very comfortable working there, and it has everything that I want. ■

Eric Rudolph is a Manhattan-based freelance writer.



PHOTO: NICK SANGANO/COURTESY OF RCA VICTOR

Clockwise: Bill Rosenfield, RCA Victor VP of Broadway A&R; cast members Brent Barrett, Stacey Logan, Jason Daneiley and Harolyn Blackwell, with producer Jay David Saks at a session for the new Broadway cast recording of Candide at Hit Factory studios.

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POST + PRESSING

PREPARING FOR DVD PRODUCTION

The name Digital Versatile Disc may be less than inspiring as a snappy marketing handle, but it does ring true as a description of the new DVD format. For the first time, a single consumer configuration has been designed from the ground up as a carrier for a wide variety of applications and media, including

CD-ROM-type data and interactive games, home video and (eventually) high-resolution audio. This versatility offers the advantage of standardization in both the design and manufacture of drives, and the replication of discs, which should make it much easier to achieve the economies of scale needed to keep prices low and, thus, build a mass market. But versatility brings with it new and potentially daunting levels of complexity—particularly in the area of home video.

BY PHILIP DE LANCIE



World Pacific History



While creating a master for a VHS release essentially involves making a transfer, a DVD title needs to be "authored," a process rooted in the wholly different field of multimedia design. (For a basic primer on DVD, see Gary Hall's article "Understanding DVD: What Audio Engineers Need to Know" in the September '97 *Mix*.) And because the DVD Video specification is intended to ensure uniform playback across set-top players from all different manufacturers, the authoring process is much more strictly defined than that of CD-ROMs. Add to that the facts that the video needs compression (MPEG-2) and the audio may well need to be mixed for Dolby Digital surround (5.1-channel AC3), and it's clear that DVD title preparation requires a big investment, not only in new equipment but in new sets of skills.

New markets bring new opportunities, of course, so there is no shortage of investors and operators eager to get in on DVD. But with the format so early in its launch, substantial investment still means substantial risk. DVD service providers have little control over how the consumer market develops, but they can influence how well they will prosper if the market takes off, and how much they will be exposed if it does not. With that in mind, vendors have partnering on their minds and—like lonesome singles in the personal ads—seek significant others whose strengths complement their own.

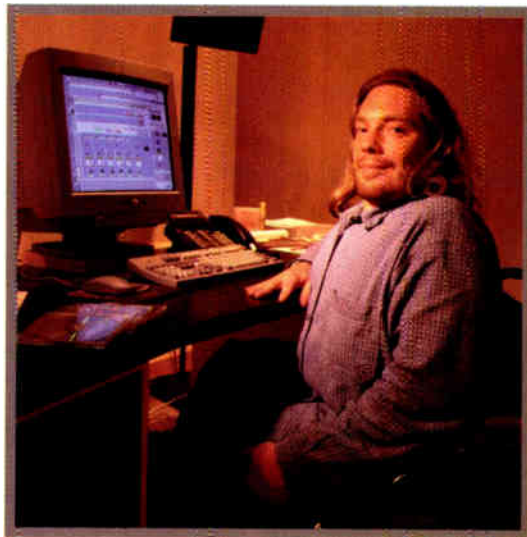
"If you look at the DVD replication plants, most of them have aligned themselves with compression and authoring facilities," says Jeff Klein, co-president of video post-production house Complete Post in Hollywood, Calif. Klein's company recently entered into what he calls a "strategic alliance" with Technicolor, which has expanded its optical disc replication operations into DVD. "Even though the arrangement is not exclusive, we will be working together to create a service that is seamless from compression and authoring to actual duplication," says Klein.

For Complete Post and Technicolor,

a close relationship is natural because, though the two are separate companies, both are owned by the same parent, Carlton Communications. But the trend toward pairing up is by no means limited to corporate cousins. Last fall, replicator Kao Infosystems partnered with the mastering and multimedia house Pacific Coast Sound Works to open up a DVD preparation facility in West Hollywood, Calif. Additional associations have been formed by, among others, Nimbus Manufacturing with IBM Interactive and by Cinram with Pacific Ocean Post (POP).

"The biggest impact of DVD is in the complexity of the format and the technolo-

Right: Steve Thompson, director of production at the Cinram POP DVD Center



Below: Jeff Klein is co-president of Complete Post Inc., which has formed a strategic alliance with Technicolor.



gy involved in successfully making a disc," says Steve Thompson, director of production at the Cinram POP DVD Center in Santa Monica, Calif., which opened in May. "It's a lot more difficult than making a VHS tape. So there is an advantage, especially with new technology, in pooling resources, not only financially but also the joint knowledge pool. It is nice for us to be able to go through research and development with a partner that really understands the physical format."

The Cinram POP facility is a joint venture owned by the two companies. According to Dave Larson, executive VP

of marketing and new ventures at POP, trends in the audio market served by the company's POP Sound division played a big role in sparking the company's move toward DVD. "We have been doing a lot of business in multi-channel mixes and AC3 encoding for several different clients for feature films and music videos. Out of that we devel-

oped a strong intent to get into DVD authoring, because we thought it would be a natural extension."

Cinram, meanwhile, "felt that with the complexity of DVD they needed to have the ability to offer to their clients a front-end authoring capability to complement their mastering and manufacturing capability—a creative front end that could represent them in the DVD marketplace," Larson says. "So they did a detailed evaluation of various companies in Los Angeles that they could partner with. We began a dialog, and last fall we sat down seriously and learned the attributes that each offered and that each was missing. We found that it was really a perfect match, and we were able to complete the deal by the first of January."

Larson points to two main motivators that made the deal attractive from POP's perspective: "One is that we felt that we had great creative capability on the audio and video sides, but we had no access to mastering and manufacturing. Secondly, Cinram has a very strong sales force for selling replication services throughout the world to both theatrical/studio clients and potentially to non-theatrical customers. So we felt that the combination of their skills on the manufacturing side and their relationships on the sales side—as well as the fact that they are a public company that is well capitalized—were really impor-

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System 9098

Dual Compressor/Limiter

by Rupert Neve the Designer



The addition of a new Compressor/Limiter to my SYSTEM 9098 product family is justified by the continuing popularity of the famous old 2254 devices I designed in the late 1960s. More than 25 years later, their performance undeniably still brings benefits to engineers and producers seeking inconspicuous control over the dynamic range of microphone signals. Just as importantly, they are used today in digital recording to manage critical levels, to preclude the effects of hard, unforgiving clipping and to impart warmth.

In those days, the Compressor/Limiter had to be almost all things to all men. Controls had to be accurately calibrated for the broadcaster and have the right subjective 'feel' for the music engineer. Attack and decay times, the rate of change of slope, the order of harmonics generated by the non-linear transfer characteristic etc. were arrived at empirically after a lot of listening with golden-eared people. The result was a Compressor/Limiter, the 2254 and its later derivatives, which sounded right and over the years achieved an amazing reputation.

The same principles have been applied to the new SYSTEM 9098 Compressor-Limiter. Considerable advances have been made in technology and I am now able to provide a much more flexible device which retains all of the character and musicality of the original design while incorporating some exciting new features.

Ratio, Threshold, Attack and Release are familiar controls with recognisable ancestry but an important new feature called Ambience has been introduced.

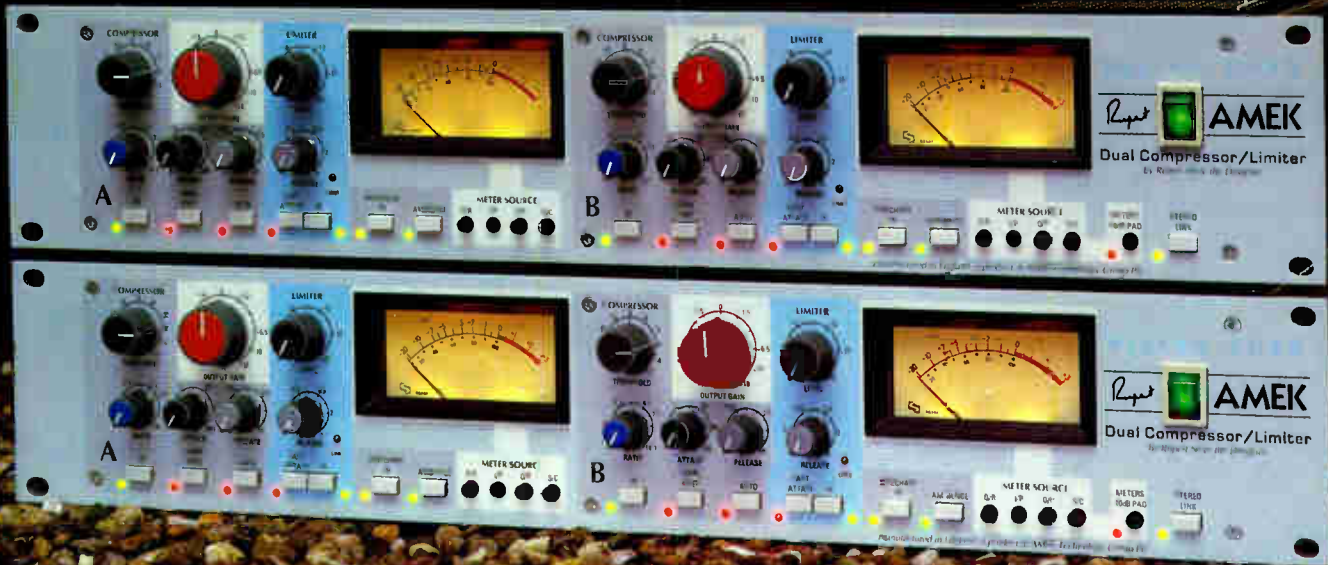
Operating the Ambience switch does not affect signals above the threshold but reduces or mutes signals below the threshold level. The effect is rather like a Gate but is much more subtle. Not only steady background noise but fluctuating ambience and apparent reverberation time can be reduced at will with the Gain control. For example unwanted environmental sound can be re-balanced, or even eliminated, from speech recorded out of doors. The Ambience control will also regulate reverberation - for example, a large reverberant studio can be made to sound like a small speech booth.

The 9098 Compressor-Limiter has a totally analogue signal path which employs transformers at both the input and the output. For the highest possible performance, input and output interfaces must be insensitive to anything other than the signal we want to receive - or there is little point in striving for excellence in the unit itself.

The heart of a Limiter or Compressor is the gain controlling device. The original 2254 used a diode bridge in a classic balanced ring modulator configuration. A very similar technique is used in the 9098 Compressor/Limiter except that semiconductor devices and amplifiers have greatly improved in the last 30 years. For example the original 2254 design had a noise floor of about -55 dBu. Noise performance of the 9098 unit is 35 to 40 dB better.

I believe that the new SYSTEM 9098 Compressor-Limiter continues the rich heritage of earlier designs and its flexibility and extremely high standard of performance will find many satisfied owners in all areas of audio production, whether recording, post-production, mastering or live performance.

Rupert



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tant attributes to put together with our understanding of the DVD process from a creative and technical side. It has really worked well because we bring things to the table that are totally different yet totally complementary, so together we can provide a turnkey service."

Klein refers to this concept of turnkey service as the "one-stop shop," and he believes it offers a key advantage to potential clients of partnered DVD providers. "At Complete Post, we can guarantee the cooperation of ourselves and Technicolor. Together we will warrant the total package, whereas Technicolor cannot warrant the services of other outside companies. If someone comes to us for compression and authoring, and also uses Technicolor for replication, they would be guaranteed

that the product will be right whether there was a problem on our end or on Technicolor's end. That's important because in the DVD world right now there is still so much room for error. Every step along the way, you can have a problem, which may be caused by the process being done at the time or by a prior process. So there can be a lot of finger pointing, which our arrangement will eliminate."

Of course, a replicator could guarantee the process all by itself by offering in-house master preparation services. But aside from the investment that would require, Klein sees a couple of other reasons why plants have shied away from this option. "I think it has to do with the same reasons that most facilities that do videocassette duplication don't do telecine," he says. "It is a different market. A duplicator is more of a factory situation, where they have to put out thousands or millions of copies of something. Compression is a one-on business; you need to do it once and you need to do it right. So it is a different mentality." At the same time, he points out that hooking up with a partner "allows replicators to not compete directly with the other providers out

there who are doing compression that may also be sending them discs to duplicate."

Both Complete Post and POP have made substantial investments in their facilities in preparation for the DVD market. Complete Post uses a Minerva system for video compression and Daikin's Scenarist 2 DVD for authoring. As for audio, Klein says the company "actually built a new audio facility from the ground up to handle surround sound, because we knew that DVD and advanced television were coming up, and the only thing we knew for sure is that AC3 was going to be the standard for both."

Klein sees surround sound as a crucial piece of the DVD puzzle. "The audio for motion pictures is so much better on a DVD than a video cassette. And with home theaters now in the homes of a large percent of the country—I think the number is something like 17 percent—I think that audio is going to be DVD's driving force."

The new audio room, Klein says, "is all based on the SSL Axiom technology, so it is all digital. Right now we have the only stand-alone AC3 encoder you can get, which is the Dolby unit, though

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in the next few months there will be many more units available. We are evaluating several of those, and I am not sure which others we may decide to use. That's one of the interesting things

about DVD, that no matter what we put in today, we know that six months or a year from now we are probably going to have to change it, because somebody will come out with something else. So we have to get returns on a shorter basis."

POP, meanwhile, also uses a combination of Minerva video compression, Dolby audio encoding and Daikin authoring tools. "We have divided the DVD production process into different areas: audio, including all the related editing and conforming services; video production and compression; and authoring, including menu creation and

creating the finished disc image," says Thompson. "We have POP Sound, which is where the audio work is done, POP Television, where we do the encoding, and the new Cinram POP DVD Center, which is the joint venture where we do the authoring.

"The first step in title preparation is to sit with the client to map out or storyboard their project," Thompson explains. The storyboard makes it possible to determine all the "assets" that will be used, including the number and type of audio channels, the number of menus, the subtitle languages, etc. "Then we do our 'bit budgeting' to figure out how much space will be taken up on the disc by the assets. When we know that, we can send instructions to the video compressionist, the audio department and the people who create the menus, so we can get all those processes rolling in parallel.

"For video, we wanted to put the compression where the existing video expertise and support and infrastructure were. So we can offer editing, color correction and telecine right along with the compression package. We have had a number of different video encoders through the facility, but right now we are using a Minerva C-250 MPEG 2 variable-bit-rate video compressor. We have people who are trained in looking at picture doing the compression, and we treat that process with the same attention that we treat any other video process.

"Likewise in audio, the engineer who mixed your program, or at least does the conforming and editing, is the same person who does the encoding, sets the AC3 parameters and delivers the finished bitstream. We have been doing audio for quite some time and have established a system of doing AC3 encoding based around Dolby's reference AC3 multichannel encoder, called the Model DP 561. We use some of the software tools that they provide with that product, as well as some tools that we have developed.

"Once the assets are generated and compressed to our central storage, the authoring person can import the menus and subtitles, build the navigation and put together the program. Right now we are using Daikin's Scenarist 2 DVD software for that. There are a lot of other things in development right now that may lead us down different paths, but that is our current platform."

After authoring is complete, Thompson says, "Scenarist has a built-in multiplexer that creates the disc image. Then,

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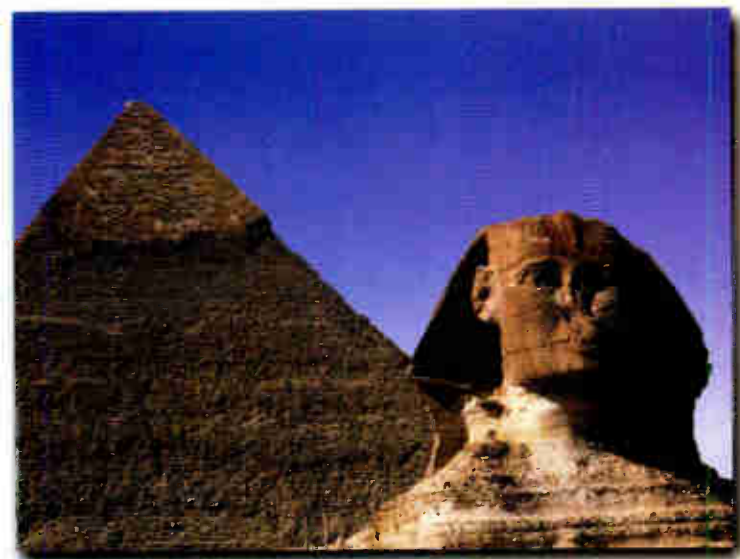
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using a variety of tools, including having the ability to manufacture a disc, we can go through a series of QC passes to make sure that all the elements turned out the way we expected. The only real way to know that your disc plays correctly is to make one, so we send our DLT master tapes to Cinram in Anaheim, and they turn out sample discs in a day or two. It's important to check those discs on several players, because there are subtle differences between button actions on different players."

A key element in making POP's distributed production process work is the company's network, because the three divisions involved in DVD preparation are actually located in separate buildings. "The three buildings are within a one-block radius here in Santa

Monica," Thompson says, "and are tied by an integral fiber-optic network, so we can actually deposit data created in POP Sound or POP Television anywhere we like in the DVD Center facility and have instant access to that data. For example, we are able to encode data directly from the video encoder to large RAID arrays, and then access that same volume directly from the SGI authoring station without ever having to copy the data."

With new facilities, networks and production gear, the costs to both POP and Complete Post of setting up shop for DVD have been far from trivial. The only way to recoup those costs, of course, is from the movie studios and other clients who want to release their films on DVD. But Klein does not appear overly worried that the expense of DVD title preparation will discourage DVD releases. "Right now the studios' costs are higher than with VHS because they can't amortize them over a million units. But as they start doing pressings in the millions instead of the thousands, then the additional costs become very minimal. So at some point in time, the studios are going to have to embrace the medium and develop the market. If

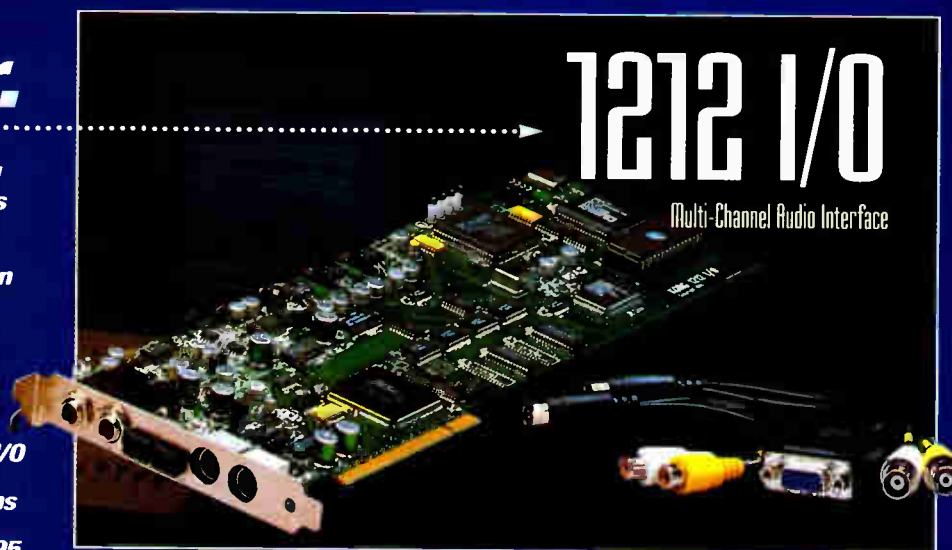
there are easily available titles—and a perceived advantage to the format—people will buy DVD players instead of VCRs. There are still a lot of questions out there as to whether people are going to accept the new format, but the only way they absolutely won't accept it is if there's no material out there to rent and to buy."

With the consumer jury still out, the long-term wisdom of jumping into DVD preparation is still an open question. But both POP and Complete Post seem certain that hooking up with a replication partner is—at least for the time being—the most sensible approach to the new format. "As the business matures, these arrangements may or may not be as advantageous as they are now," Klein says. "But the DVD market is in its infant stage, and it is important that people work together, because there is going to be a very large learning curve for everybody right now. Even if somebody thinks they know everything about DVD, it will be different six months from now." ■

Mix's media & mastering editor, Philip De Lancie, is a mastering engineer at Fantasy Studios, Berkeley, Calif.

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PAUL CARRACK

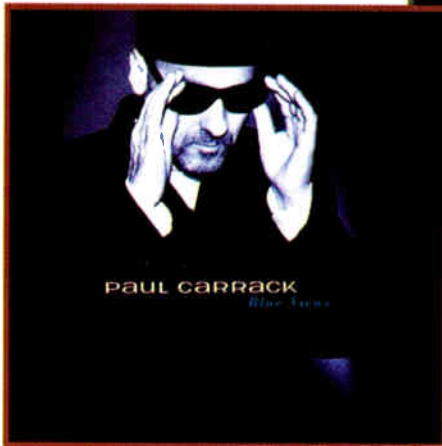
RECORDING "BLUE VIEWS" AND BEYOND

You may have seen Paul Carrack perform live, but it probably seemed sort of out of context. This golden-throated singer/songwriter has been on the road with a lot of different artists, usually as a keyboard player/backing vocalist. And, invariably, there's some break in the action when Carrack takes the spotlight for a few minutes to do a couple of his own songs. Some time in the middle of a Squeeze concert or a Mike & The Mechanics show, you'd get to hear Carrack sing his first hit, Ace's "How Long (Has This Been Goin' On)" or "Tempted," the song he wrote and ended up singing for Squeeze because the producer, Elvis Costello, liked Carrack's version better than Glenn Tilbrook's.

It seems Carrack has always been the odd man in. Other suc-



PHOTO: PAUL COX



cesses have included Mike & The Mechanics' "The Living Years" and co-writing The Eagles' hit "Love Will Keep Us Alive." But until recently, he hasn't had much of a chance to focus on his own songs and make his own recordings. Now, Carrack feels he's come full-circle with the release of a solo album, *Blue Views* (Ark21 Records). This record features intimate, back-to-basics versions of Carrack's works. He offers some new songs and revisits some of the ones that have been other people's hits; he

also sings a powerful new arrangement of "How Long." This record makes you feel that, as the album's producer, Peter Van Hooke, says, "He should have been making his own records for the past ten years. Paul's great strength is that he's a fantastic singer and musician; he's one of the few people who can really perform music."

Though it was not released in the U.S. until this summer, *Blue Views* was recorded two years ago, in the historic Abbey Road Studio 2, to a digital 32-track Mitsubishi machine, and mixed on Studio 2's Neve VRP console. It was recorded

live in the studio by engineer Simon Smart. "The idea behind *Blue Views* was that it would be a real record, not a contrived thing," says Van Hooke, who met Carrack when they were both playing with Mike & The Mechanics. "What you hear is what happened."

When *Mix* got in touch with Carrack to ask about *Blue Views*, he had just completed another solo album, at home, which will be out in the UK this fall.

I know you recorded Blue Views a while ago. What have you been working on since?

I finished an album about two weeks ago.

BY BARBARA SCHULTZ

—CONTINUED ON PAGE 118

RIDGE FARM STUDIOS

Something Old, Something New

The entrance to Ridge Farm Studios is a low-slung, timber-framed portal to what once was a stable that was in use before the U.S. was even a country. Set on 13 pastoral acres an occasionally harrowing hour's ride west of London, the studio is down a short gravel path from an even older—as in 350-some-odd years—manor house. Halfway through the doorway, you realize that you're not just crossing a threshold—you're crossing centuries, too. So, the contrast upon entering the studio and watching SSL's technicians doing the final bits of wiring on a new 9000J is striking.

The studio's owner, Frank Andrews, does not rush right out to meet visitors. After spending some time with him, it becomes apparent that Andrews probably does not rush for anything unless it's something he's building. His own residence is on the property, and the bookshelves in his country kitchen are lined with tomes such as *Care for Old Houses*, *Japanese Joinery* and *Food From Your Garden*. Andrews' charm and friendliness are immediately apparent, and he will jump at the chance to show you the studio's sizable herb garden. Out in the nearby garage, Andrews has other restoration projects under way, including a 1967 Volvo and a vintage Rover sedan.



barn into a rehearsal hall, using his connections from those world-class tours to attract artists to the rural location. Within a short time, it had recording capability, first with an interface for remote trucks and then with an MCI 24-track deck and MCI 400 console (a loan from Yes singer Jon Anderson via a partnership with Anderson's personal sound engineer Mike Dunne). As the facility's fame grew, so did the facility, with Andrews more often than not swinging the hammer himself, constructing outbuildings like the glass-walled pool house with requisite Jacuzzi (and the nonrequisite but very effective gardener Clive, who maintains the English garden tradition at Ridge Farm quite spectacularly).

Within a few years of the studio's opening, Bad Company had recorded its album *Desolation Angels* and Roxy Music tracked *Manifesto* there. Based on those initial successes, Andrews secured financing, bought



The control room at Ridge Farm Studios has a new SSL 9000J console, installed this summer.

Andrews takes intense pride in the recording facility he has built. Starting out as a lighting director for, among others, Little Feat and lighting technician for Yes, in 1981 Andrews bought the Ridge Farm property from his family, who had been using it as a primary residence. He fashioned the

his own equipment and expanded. Acoustical consulting was by Keith Slaughter, who made an effort to enhance rather than change the original design of the structure. The center of the facility became the main recording room, accented by the soar-

BY DAN DALEY

—CONTINUED ON PAGE 322

—FROM PAGE 116, PAUL CARRACK

Where were you working?

I was working at home. I've had the studio four or five years. I originally built it with the idea in mind to make my own records at home. I equipped it with a 24-track analog 2-inch machine. It's called a Saturn, which was made by

Soundcraft. That was my original plot, and though I did all my demos and writing there, on the *Blue Views* album, I lost my nerve at the last minute and decided to go into a professional studio. *That's a pretty big swing in the other direction, from home recording to Abbey Road.*

Yeah, I know. But on this new album, I kept my nerve and decided to do it at

home, so I augmented the system with 16 tracks of Pro Tools.

Do you operate the equipment yourself, or does an engineer help you?

I don't have anybody on a daily basis. I know how to go in there and make stuff work. I certainly know how to get stuff onto tape. But we got the Pro Tools stuff right before we started recording this new album, so I didn't

"BRASSED OFF"

A SCORE TO BEAT THE BAND

by Barbara Schultz

Brassed Off (Miramax Films) is one of those small movies with big content. It's the fictional story of a group of Yorkshire miners whose mine is about to be closed. The movie juxtaposes their fears and loss of self-worth with the charge they get out of playing in the Grimely Colliery

competitions they hope to win on their way to the National Brass Band Finals. These are some of the most enjoyable scenes, featuring the impressive sounds of orchestral works arranged for brass band: Rossini's *William Tell Overture* and Elgar's *Pomp and Circumstance* are highlights.

Brassed Off draws emotionally on the power of friendship and the power of music. It makes no qualms about going over the top,

either. There is one scene in which, as Danny lies in a hospital bed struggling to breathe, the musicians reunite one "last" time to play a lullabye of "Danny Boy" under his hospital window. The players wear their miners' hard hats with lights on to illuminate their sheet music. One of the characters, Andy

(Ewan McGregor), has gambled away his trumpet in an earlier scene, so he stands reverently with the group, softly whistling his part.

All of the brass band music in *Brassed Off* was performed with great skill and emotion by the Grimethorpe Colliery Brass Band, a prize-winning nonprofit group that has carried on the legacy of a miners band, just like the one in the movie. The band recorded the music for the film and the soundtrack CD in Abbey Road Studio 2, with the help of veteran classical engineer Mike

Shedy. "They came in very well-rehearsed, and most of the pieces they played were either well-known pieces or competition pieces," Shedy explains. "They *know* them."

"The scenario was that we were doing the film soundtrack, but there was a likelihood that a record would be required," Shedy continues. "So, having discussed it with the band and the conductor, it was obvious that we had to close-mike everything on the one hand, but to lay [the bandmembers] out in a way that they were used

—CONTINUED ON PAGE 120



PHOTO SOPHIE BAKER

Brass Band, which is conducted by the aging and infirm Danny (Pete Postlethwaite). Danny's son, Phil, typifies the miners' predicament: he's been struggling to repay debts to loan-sharks since the last time the miners struck, but it's a losing battle: His belongings are repossessed, his wife leaves with their children, and Danny falls ill with black lung. Throughout the film, Phil carries around a physical metaphor: His trombone keeps coming apart. At numerous times, Phil and other members of the band decide to quit playing, but each time, their loyalty to Danny and to each other draws them back.

The film takes you inside the band's practice sessions and to the

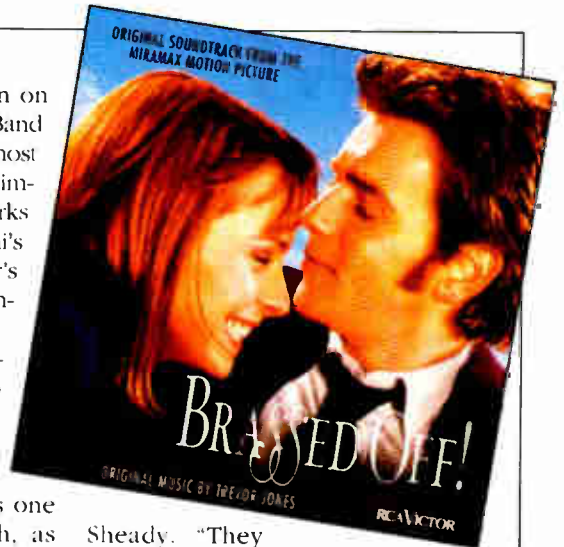


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L to R: Ewan McGregor, Tara Fitzgerald and Pete Postlethwaite in Mark Herman's *Brassed Off*

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get into that, because that would have slowed the process down. The two guys who helped me produce the record, Gary Wallis and Toby Chapman, are more proficient in that area, so I just let them get on with it because we were on a pretty tight time restraint.

Our concept was to mostly record analog but to use the Pro Tools for editing. But we had, actually, one or two problems synching everything up. Gary, the drum programmer, also uses the Akai MPC drum machine, and we

found we were having a few problems getting everything to run nicely in sync. So, rather than get bogged down with it, we finished up recording almost entirely into Pro Tools. Then at the end of the process, we dumped everything down to analog tape to warm things up a bit before we went into mix.

Have you finished mixing yet?

Yeah, the whole thing's done and dusted. We mixed in a new room in London, in Hammersmith, it's called the Pearce Rooms.

They're the ones who are booked up to the theater.

That's right—the Hammersmith Apollo.

—FROM PAGE 118, "BRASSED OFF"

to playing, because brass bands fit in a certain way; they're used to hearing so-and-so on the left and seeing so-and-so opposite. So we worked on that premise to start with, but using more microphones than one would if one were just doing a brass band record. This was to allow [the film mixers] to bring out the soloists more than a band performance would [normally] require."

Shedy employed a stereo pair of Schoeps MK21 mics overhead, plus about 20 spot microphones; these were mainly Neumann mics: U87s, Fet 47s and KM84s. The band was recorded dry to a Sony 24-track digital machine. "We did a DAT listening copy," Shedy explains, "and for use on the soundstages, we did an 8-track mix highlighting each segment and the solos so that they could vary their balance as they needed for the gentlemen who were miming—obviously, the stars had never touched these instruments before in their lives, though they did a good job of miming. I was very impressed.

"The listening copy was more the sound one would have on a disc, but prior to getting serious about the 2-track sound, I made sure that each section was properly balanced and one had control over every facet and every solo that they were likely to zoom to."

Shedy used Studio 2's Neve VRP console, listening through B&W 801 monitors. "It was just a straight stereo setup," he says. "We reckoned that with the amount of separation we had within the mic setup, one could have made it into anything at a later date."

The score and the CD release were mixed by Simon Rhodes, who also recorded and mixed the Trevor Jones-penned incidental music for the film. The brass band tracks were mixed in Abbey Road's Penthouse studio, which features a Neve Capricorn board. "It's one of the first Capricorns they ever made," Rhodes says. "It's a very flexible beast. You can be immensely creative on it. You can automate everything, and

—CONTINUED ON PAGE 322

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Tell me more about your studio. Do you have a separate control room and recording room?

Yeah, I do. It's a self-contained building. I live just outside London, so I'm fortunate that I do have a bit of space. I built it as a double garage—the same sort of size as that, with a bit extra on the back. So, the control room is in the double garage bit, and the extra bit on the back is my live room, which is big enough to house a drum kit, and I've got a Hammond organ in there, and I do vocals in there.

You say you had someone programming drums for you. Did you play all the other instruments yourself on the record?

No. I've had a band for the last year, since we've been promoting *Blue Views*. We put a band together, which consisted of Gary Wallis on drums, Toby Chapman as an additional keyboard player, Tim Renwick on guitar and Dave Bruns on bass, and they are the people that made this new record. We didn't have an outside producer; basically, Gary and Toby are the producers.

What was the tracking process? It

doesn't sound like you have enough room to record live.

Well, actually, we could, because we have the drums in the live room anyway, and the control room is pretty big, and also above it and the whole length of this building is another big space. But, in fact, what we have done on this—and it's kind of the opposite of what we did on the *Blue Views* album—is there's more layering involved, more individual playing. *Blue Views* is pretty much live; it's a very minimal production. This one is a different kettle of fish.

Why did you want it to be different, and how is it different?

I guess I better start by talking a little bit about the *Blue Views* album, which is pretty much totally organic. We assembled an ensemble of players and went into Abbey Road for two lots of three days and laid down tracks and then did a little bit of sweetening of it at my home studio, but very little. Peter Van Hooke, who is a good friend of mine and an ex-colleague from Mike & The Mechanics, produced the record, and his style is very minimal anyway.

I think he felt, and I agreed with him, that it was important to put up a flag, really, and say, "This is where I started; this is where I'm going to start again." The approach of the new record is a little bit more contemporary.

Do you mean more contemporary in terms of the sound or in terms of your approach to recording?

Well, both. The song writing is not a whole lot different, because that is pretty tried and tested. My kind of songs are all dead-simple. You get a couple of verses, a chorus and a middle bit. But I think we wanted to make this sound a little more contemporary. Gary and Toby are from a slightly younger school anyway, and they're not afraid to incorporate a bit more technology. We used drum programming and drum loops and stuff, and it's a more polished production for sure; sonically, it's a big difference.

How did you approach each track? Drum programming first and then layer on top of that?

Yeah. I did some pretty good sketches, demos. I did most of the work as far as structure of songs and the arrangements before we started to record. Then, we'd sit down and make skeletons of the songs, with basic drum tracks and basic keyboard parts. Then, gradually, we worked as you do making that kind of a record—you chip away, and you add a little bit here

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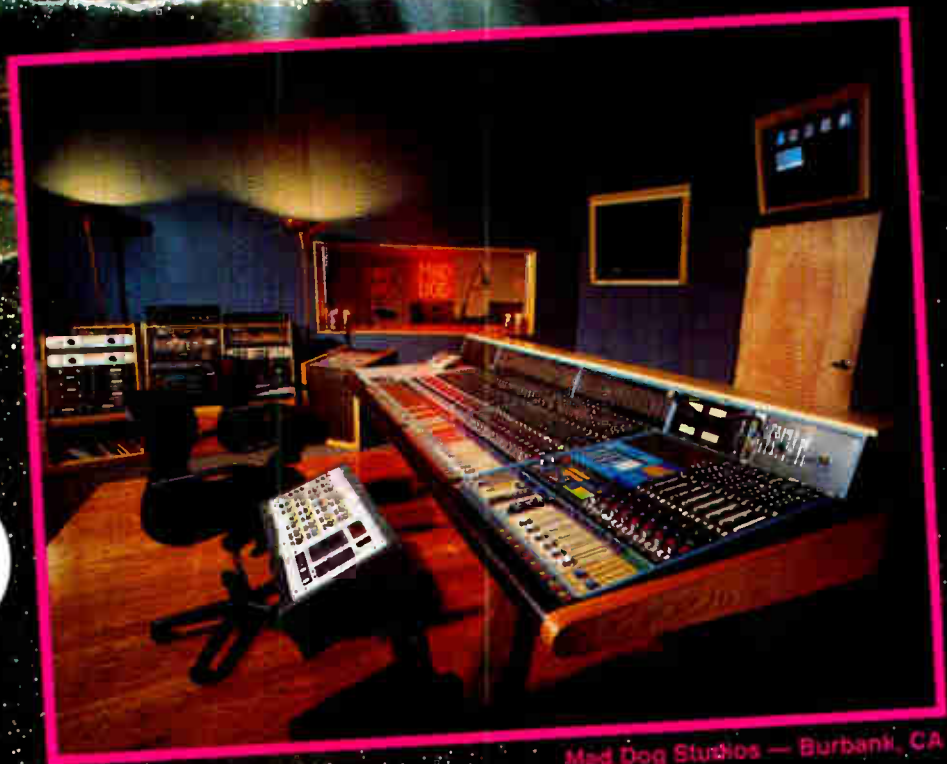


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But one thing I made pretty sure of was I didn't leave it until the last thing to put the vocals on. I made a point of getting lead vocals on there fairly early on in the process. Once we had a reasonable vibe on the track, I'd get the vocal on there and then do dubs to that vocal, as opposed to getting a lovely finished track and then trying to get the vocal to muscle his way in there.

Do you have a certain kind of mic you like best for your voice?

I have a few mics, but on this album, I used a Neumann TLM170. And then... Oh great, I can give a plug to my friend here. My friend Tiny Evans [put together the] mic preamp. It's an old Cadac mic EQ/preamp. He had a wonderful old Helios desk, I think it was, and to cut a long story short, the desk came to a very sad end when his premises were...sabotaged. He was left with 24 lovely Cadac mic preamps, which he has put in pairs in these beautiful cases: wood, lovely, Rolls Royce, walnut-veneered cases. And he calls this thing the Red Kite.

So we used this Red Kite preamp, and then the chain was a Summit valve EQ and a Summit—what they call a "leveling amplifier," which is sort of gentle compression. For a lot of the album, we didn't have a recording en-

Once we had a reasonable vibe on the track, I'd get the vocal on and do dubs to that vocal, as opposed to getting a lovely finished track and then trying to get the vocal to muscle his way in.

gineer as such. We were just careful not to do too much to anything. We didn't use too much EQ or too much compression. When we did need to have

help—for instance, when we did some live drums and for all our guitars—we had Andy Jackson, who is a real good engineer friend of ours who worked on numerous Pink Floyd projects.

What kind of monitors do you have in your studio?

I have some Meyer HD-1s, near-field speakers, and of course the old NS-10s, but my friend Tiny Evans—the Cadac guy, the Red Kite guy—lent me a pair of his UREIs, which were, I think, old Britannia Row ones.

Let's talk about Blue Views some. Obviously, "How Long" was written a long time ago, but over what period of time were some of the other songs written? Are any of the others as old as that?

There are very few songs around that are as old as that. [Laughs] That's like 20-odd years old, which gives you an idea how old I am.

I was twelve when that song came out. I was 13. [Laughs] Well, "How Long" is obviously the oldest, and there are one or two other ones that are three years old. Probably half of them were done about six months before I recorded. I went on a little songwriting trip to L.A. and Nashville and met up with various people.



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INTERNATIONAL UPDATE

Had you recorded in Abbey Road before?

I don't think I had.

What room were you in there?

We used the big old Beate room, the Studio 2. It was fantastic. And the funny thing was it was right when the Beatles were doing their final mixing of the *Anthology* compilations.

Oh, so they were there.

They were there! I walked down into the canteen one day, and there they were, all sitting at the table.

Had you met them before?

No, I hadn't. I walked in, and there they all were sitting and having a cup of tea, and I just kind of froze, actually. I've met plenty of famous people, but it was just too much. I couldn't take it in.

Did you talk to them?

No, I didn't. Paul looked over and sort of nodded at me, and I sort of looked at the ground. I was just too shy. And the funny thing was, the same thing had happened the day before to Peter Van Hooke, who was producing my record, and he was also totally fazed. So this time [when he walked in with me], he doubly wanted to make sure that he wasn't fazed. He went straight over to their table and introduced himself, and I was like, "Pete, Pete, Pete, leave 'em. leave 'em. The Beatles—leave them alone. They're talking, they're busy." But Pete went straight over there, and I just walked straight back out again.

What's it like working with Peter Van Hooke as a producer? What do you feel he brought to the project?

Peter is a good friend, and he really does believe in me as an artist. He has a strong belief in what he thinks I'm about and how he thinks music generally should be. He's very fond of real music and real performances. And he was very supportive the whole way through—not only the recording, but long after. He saw through every cut, every meeting, every discussion, every release; he always had an opinion and was always there at the end of the phone if I wanted to talk to him about it.

What else do you want people to know about Blue Views?

I think *Blue Views* is almost full circle for me from where I started out in the days with Ace. After all these different bands, I kept going off the track a bit, and this is a bit like coming back to where I should be.

Barbara Schultz is an associate editor of Mix.

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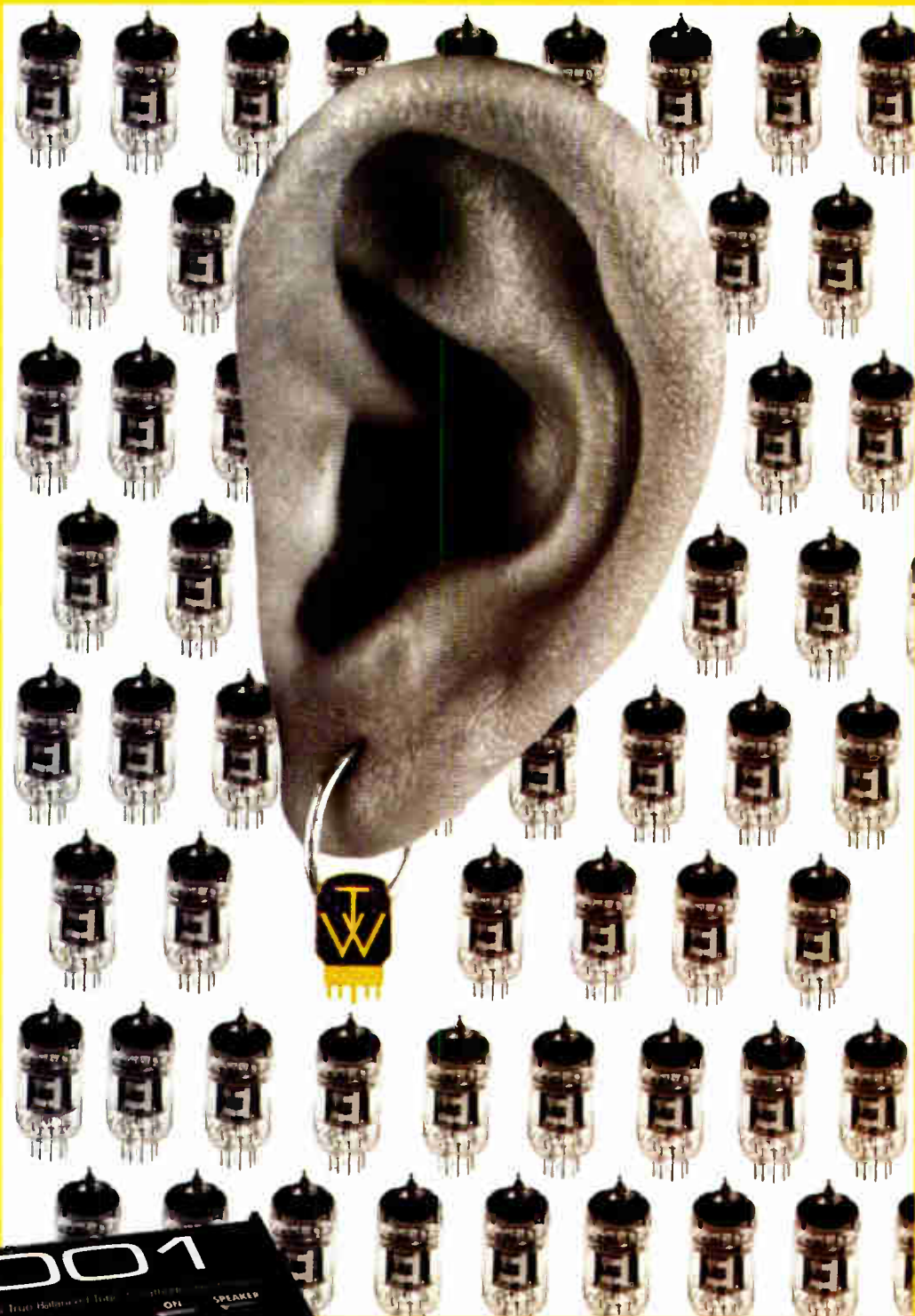
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**Full Sail's
Road Show
Reflects a
Changing
Industry**

T RUCKIN'



Above: The Road Show's first two of five vehicles arrive at Full Sail. The caravan travels from coast to coast presenting the school's audio, digital media, film and video curricula at trade shows, festivals, schools and other entertainment industry events.



The interior—in progress—of this Road Show truck is designed to support eight workstations. This vehicle is used for virtual reality, live sound reinforcement, recording studio, automated lighting, nonlinear post-production, live video switching, a kiosk learning center and the student film gallery.

What's long, cobalt blue and requires 18 rubber products to be operated safely? In this case, it's the centerpiece of the five-vehicle road show that Full Sail Real World Education will be launching this fall, starting at the New York AES and Showbiz Expo shows. The 77-foot-long rig is a 13-speed, 500 hp Kenworth T-2000 diesel with GPS and a cruise speed of 78 mph, and a 53-foot trailer custom-built by race car transporter builder Featherlite of Iowa. The trailer contains representations of Full Sail's entire broadened curricula, from music recording (an AMS Neve Libra digital console, Studer D827 48-track and another 48 tracks of Tascam DA-88s) to video and film (a 42-inch plasma screen fed by a complete mobile machine room controlled by a

Grass Valley switcher) to digital media (a complete virtual reality module and two Web-connected interactive kiosks) to live sound reinforcement (a fully loaded Midas MIA FOH console and a Status Q controller for an array of High End systems computer-operated lights). Dressed in the cobalt blue and white colors of Full Sail, this mobile version of the 18-year-old school's range of study is emblematic of how the professional media have become interlaced and how people train for careers in them. More important, perhaps, the convoy that will depart Or-

■ **BY DAN DALEY**

lando, Fla., this month and head north on a year's-long odyssey tells us much about how the professional audio industry, like the media it serves, is becoming a mass market.

TRUCK TIME

Let's first look at heavy equipment. The assembly is made up of five vehicles: Coach One is the VIP bus and is opulently fitted with amenities, from cappuccino machine to a back room that could pass for a four-star hotel meeting room. It also has a pull-out picnic bin complete with electric grill and cooler, which driver Denise Bolton, wife of Vehicle 3 driver Amos Bolton, says with a laugh has already been commissioned by the crew. Vehicle 2 is the crew bus, which is fitted out a little closer to the road realities of contemporary touring. Vehicle 5 (at top of illustration below) is another custom-built trailer, this one designed to hydraulically open into a 32x32x20-foot theater that will be located inside the large square made up of the other four vehicles when they can park in that configuration. The largest trailer allowed on Interstates by federal regulation, the theater has its own 60 kW generator, cinema-style video screen and air conditioning, along with moving lights and 16-zone LCS sound system—that will host demonstrations and talks to prospective students. Vehicle 3 is the heart of the matter, with its hands-on audio, video, live sound and digital media demonstrations. Vehicle 4 is a cargo semi.

The way
the line has
blurred between
NAMM and AES
in terms of
technologies,
that's the same
way the line
has changed
between careers
in entertainment
technology.
—Jon Phelps

Dana Roun, head of Full Sail's academic live sound department (who has spent practically a lifetime out on the road with the likes of Boston, Bon Jovi and Sammy Hagar), is the tour manager for Full Sail On Tour, as the road show is called, and the designer, along with staff interior designer Stella Posada, of the trucks. A tour of the interior of Vehicle 3 reveals an attention to detail and years of experience anticipating problems on tours. Punching the interior lighting controls, Roun notes, "Everything is 12 volts, no dimmers. The controls are four-step increments that introduce no buzz at all into the electrical system. Every rack, from the outboard to the machine racks, has separate ground AC and its own low-speed fans."

The most eye-catching part of the truck is the hydraulically sliding side compartment that extends the section containing the audio consoles and racks several feet out from the side of the truck. When recessed, the edges of the Midas and Neve consoles are virtually touching the other interior wall of the truck; fully extended, the audio area is twice again as wide as the entire width of the trailer.

Power is tapped either from local sources or from a 45 kW generator that is split between the rear panel and the front of the trailer, which also contains a five-ton air conditioning system. The trailer is peppered with access doors for the miles of Mogami and fiber-optic cabling that run through it. A gas fire control system (non-Halon) is

An illustration of the Full Sail Road Show caravan. Vehicle 5 (center) hydraulically opens into a 30-seat theater that can be used to demonstrate multimedia and sound reinforcement applications. Features include computerized robotic lighting, surround sound, virtual sets, video projection and show control.

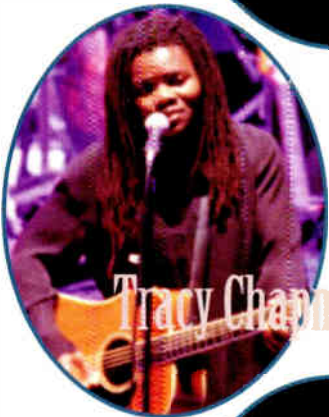




Paula Cole



Jewel



Tracy Chapman



Suzanne Vega



Sarah McLachlan

THE Lilith Fair

Meeting the challenges of the summer's biggest multi-act festival

Sarah McLachlan says her motivation for putting together the Lilith Fair was mostly so she could have a chance to see the performers she enjoyed, in addition to providing a forum for up-and-coming female artists. "Lilith Fair is a partnership of four people: Myself, my two managers and my agent," she says about the touring all-female festival she conceived early this year. "We basically got a wish list together, took all of the artists we liked, whom we listened to and we respected, and started calling them up. We really wanted the bill to be diverse, but we didn't have any set plan. We gave each artist the freedom to come on [tour] whenever they wanted, for however long they wanted, so really all of the artists dictated how the bill would end up."

by Sarah Jones

PHOTOS: STEVE JENNINGS

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By June, the 29-year-old Canadian singer had assembled a group of more than 60 artists who would appear at various times throughout the summer, from such long-established stars as Emmylou Harris, Indigo Girls and Shawn Colvin to newer acts including Sheryl Crow, Joan Osborne, Fiona Apple, Meredith Brooks and The Cardigans.

Mix caught the third night of the Lilith Fair (named, McLachlan says, for the woman who, in Jewish folklore, was the first wife of Adam, but was expelled from the Garden of Eden for insisting on equality) on July 8, a sold-

out show at the 25,000-seat Shoreline Amphitheater in Mountain View, Calif. The evening's headliners were Suzanne Vega, Jewel, Tracy Chapman, Paula Cole and Sarah McLachlan; other artists on the bill included jazz vocalist Cassandra Wilson, Leah Andreone and Mudgirl.

Sound for the tour is provided by Jason Sound Industries (profiled in Jan. '97 *Mix*), based in Vancouver. Over the course of the eight-hour show, more than a dozen men and women mix at three stages: The acoustic-oriented Village Stage is set up near the venue entrance and is

designed to showcase new independent artists; the P.A. is a compact system based on JBL EON portable powered loudspeakers. For the intimate Lawn Stage and the Main Stage, the P.A. systems are JSI's proprietary low-distortion horn-loaded loudspeakers: J33 mid/high-range loudspeakers, supplemented by J31 direct radiator woofers and J61 horn-loaded subwoofers.

JSI's system chief/front-of-house technician is Chris Russo, who at the ripe age of 19 has already been in the sound reinforcement business for six years; he started out when he was 13, working on the East Coast with Phish. "The P.A. looks really tiny, but the array we have now on the outsides is two-wide, five-deep," says Russo of the speakers hidden on each side of the stage. "The top two cabinets [on each side] consist of four J34 long-throw horns with 2-inch drivers; four pairs of boxes hanging under that are J33s, which are double-12 2-inch cabinets. They're a really efficient box for the physical size of the P.A. we have here; the amount of output we get out of it is amazing." Hung on the inside are four double 18-inch boxes, and on the ground are four double 18-inch subs. The entire system is QSC-powered (60 PowerLight 1.8s and 12 PowerLight 4.0s provide 75,000 watts of power to the stages) and incorporates BSS drives and Vari-Curves. Consoles provided by JSI include Soundcraft's new Series Five boards at the Main FOH position, a Midas XL3 and Soundcraft SM12 and SM24 at the Main Stage monitor position, and a Soundcraft 6000 at the Lawn Stage FOH position.

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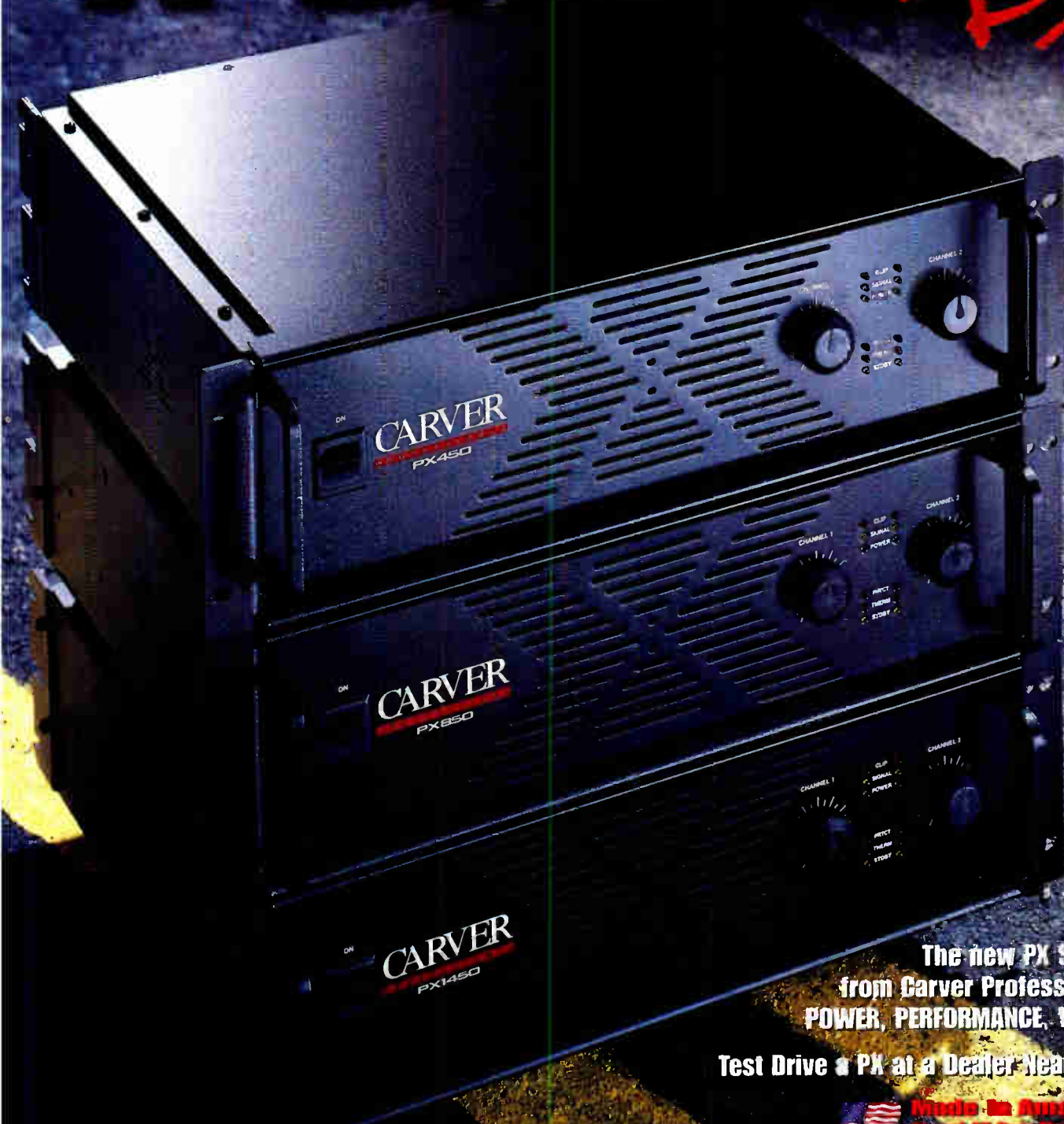
MONITORLAND

The Main Stage monitor speaker system is provided by JSI and includes 12 wedge mixes, two three-way side fills and one three-way drum fill. Owen Orzack, monitor engineer for Tracy Chapman, brought in some extra gear, including two consoles, from Cleveland-based Eighth Day Sound. "We've got a [Yamaha] PM4000 and PM4000M," says Orzack of the boards he's using instead of the 24 inputs allocated by JSI. "Since Tracy needed more inputs, we figured it's best that we carry gear ourselves. Everything's self-contained: We carry all our own mics and stands, multipins, everything else. So all we have to do is give JSI a few

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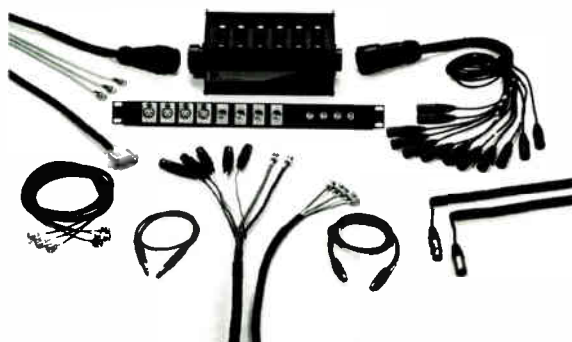
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outputs to feed their side fills and wedges, and away we go."

Like most of the other engineers at Lilith, Orzack says production is pretty basic. "I do eight mixes," he says. "Tracy's mix has no EQ; she likes it really natural-sounding. But it's not very loud, so it's pretty easy. She's got 37 inputs and a couple of effects returns, like [Yamaha] SPX on violin. Then there's a stereo mic for the drummer; that's just for his in-ears. He's got hard-wired in-ears, with Sony headphone molds, running out of a little headphone amp. I've got a bass shaker built into the drum throne, and a couple of side fills."

Tracy Chapman sings into a Shure SM58; her other band vocals are miked with Beta 58s. On the drum kit, the kick is an M88, snare is SM57, with AKG 460 on hi-hat; rack and floor are both SM98s, plus a pair of AKG 460s for overheads, and a 414 and 421 on djembe. All DIs are from Countryman. Chapman's electric is miked with a 421, and she uses Demeter tube DIs. Other guitars onstage are miked with SM57s.

VIEWS FROM FOH

Rob Howick, Jewel's FOH engineer and tour manager, talks about working with four other engineers at the front-of-house position. Was production consistency a priority during planning? "Yes and no," says Howick. "That was one of my biggest questions in the beginning, when this tour was being put together, was if we were going to do a festival-style audio situation, where everybody would have two big sound boards and everybody use the same channels all day, and it ended up not being that way. Basically we're all on our own, in a sense—we do a line check each day, no sound check; so we just come in, make sure our gear works, and wait for the show to start and hope for the best. [The show is] straightforward; it's just not done the way most festivals are done, audiowise. Which makes more work each day for the people from Jason Sound, changing bands in and out. Their days are from six in the morning till two in the morning."

For Jewel, Howick brought along extra gear supplied by Eighth Day Sound to complement JSI's effects racks, which include Lexicon and Yamaha multi-effects units, plus Roland SDE 330s. Howick uses a pair

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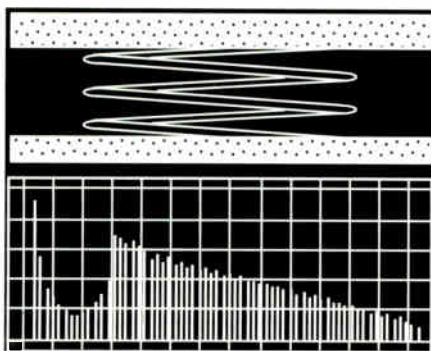
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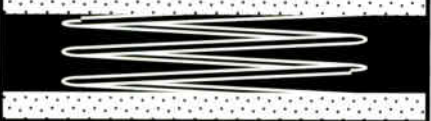
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of Summit DCL 200 compressors on vocals and on cello and acoustic guitars, but other than a little AMS and Lexicon PCM 70 reverbs, he's staying away from adding much effects. "It's a very straightforward show. It's supposed to be in the folk tradition, so it's certainly not a processed-sounding show by any means," he explains, noting that Jewel is probably the least-processed act of the night. "It's just supposed to be wide-open and let everybody feel what's coming off the stage from the musicians. And likewise for the musicians, to be able to feel the crowd," Howick says of the festival. He usually tries to run SPLs at around 105 dB, levels consistent with the rest of the show.

Sharing one of the Soundcraft Series Five boards at the front of house with Howick is Phil Sullivan, who has been Paula Cole's FOH engineer as well as tour manager for the past three years. "I'm probably in the minority of FOH guys who is not a gear head," says Sullivan. "I've always been happy with Soundcraft and Yamaha boards, and that's generally what I find on tours like this. We have the new Soundcrafts here, which are sounding great."

Sullivan says that he is enjoying working on the Lilith Fair, and so far, things have been running smoothly. The only drawback, he says, is that logistics allow only for line checks. "But every day, things



PHOTO: STEVE JENKINS

Clockwise, from top left: Jewel, Sarah McLachlan, Paula Cole, Suzanne Vega, Tracy Chapman

Howick says that even though traffic is a bit heavy at the FOH position, nobody's stepping on toes. "The last thing anybody wants to do is cause any problems for anybody else or get in the way, so we're all very cordial to each other. Everybody's helping everybody else out as much as they can, if the other people need help; and if not, then you just stand back and let them do their gig. And everybody's been around long enough that they know what they're doing."

are getting a little bit easier. We're all having a great time; everyone's been very supportive. At shows like this, you meet a lot of other engineers, and you're always learning new things."

Sullivan relies on a proven miking method to provide a consistently good sound from line checks. "On piano, for situations where I'm outdoors and I'm not getting a sound check, I use the Barcus Berry Planar Wave pick-up, which works very well for me. If I had all day to

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PHOTO STEVE JENNINGS

A few of Lilith's finest pose at a new Soundcraft Series Five (L-R): Tony Szabo, JSI account manager; Chris Russo, FOH tech; Gary Stokes, FOH for Sarah McLachlan; Rob Howick, Jewel FOH; Harry Andronis, Tracy Chapman FOH; and Phil Sullivan, FOH for Paula Cole.

maybe wrestle a couple of 414s—or a Neumann—under there, maybe I could get that ultra-clear studio sound, if I'm lucky." Paula Cole is using a Beta 87 UHF wireless. "She's an energetic performer, she moves all over the place, so the wireless is essential," says Sullivan. Drummer Jay Belrose's drums are miked with a Shure SM52 on the kick, and

SM98s on the top and bottom of his custom djembe. "Jay's djembe—this is an idea of Jay's—is a regular LP djembe, right out of the store; we went to Home Depot and bought some hardware brackets, and we actually have a snare across the top. And we put a couple of springs and wing nuts on it, so Jay can still play it as a djembe. It's a very unique

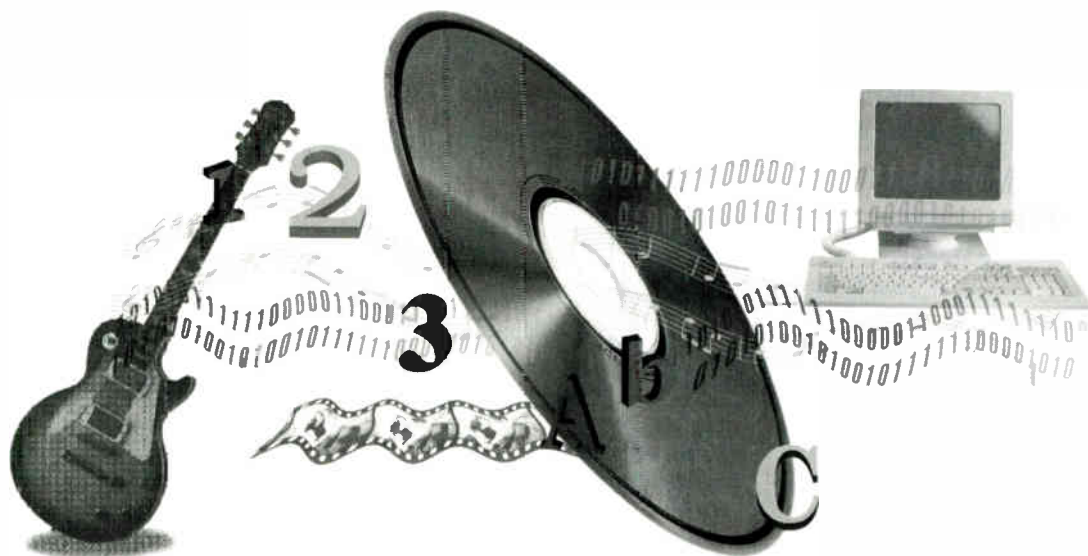
sound, and it works great." Overheads/cymbals mics are 414s, and a Shure SM57 is on the guitar amp; the bass is DI.

Like most of the acts, production is virtually transparent. "On Paula's vocals, [I add] you know, the obligatory little 'verb, delay here and there," says Sullivan. Cole's vocals are sent through a Summit TLA100. Cole insists on a real grand piano at each show, and that's left pretty much as-is. "Acoustic guitar, sure, a little 'verb to fill it out a little, but as a rule, this isn't an overly effected show. I have no gates on Jay's drums, because very often Jay will go from just a pounding madman to the gentlest brushwork here and there. The same with Paula: She can go from the quietest to the roar of the tiger; it's unbelievable."

Sullivan concludes that overall, Lilith is "very straightforward, not a flashy show. Everyone is a great musician; everything is right to the point. It's just a matter of getting that out front, and it seems to work well every night."

Sarah Jones is Mix's assistant editor.

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When San Francisco's opera patrons returned to the city's War Memorial Opera House in early September for the start of the 1997/98 season, many of them must have experienced a momentary shock. Closed since 1995 for a seismic engineering retrofit, the Opera House has not only been structurally strengthened but also thoroughly cleaned and renovated. Home to the San Francisco Ballet and S.F. Opera companies since 1932, the Opera House has undergone a facelift that many would envy and, at a total cost of \$84.5 million (about \$26,600 per seat), few could afford.

Visible evidence of the restoration is everywhere. The walls of the lobby and staircases are no longer veined by worrisome cracks that appeared after the 1989 Loma Prieta earthquake. Thousands of square feet of architectural details on the proscenium and ceiling have been painstakingly regilded, a new house curtain has been installed, and the 3,176 seats have been re-upholstered. The unsightly net that once hung from the auditorium ceiling to catch falling plaster has been removed, and the massive chandelier is now fully visible. (In fact, the renovation of the 625-lamp chandelier, in combination with a thorough cleaning of the pale blue auditorium ceiling, has produced a nine-fold increase in overall lighting levels.)

But what really makes the Opera House shine (at least in these pages) is its newly installed technical systems infrastructure. Working from plans developed by Auerbach+Associates Inc., a San Francisco-based theater and media facilities design company, contractors have installed a completely new lighting system, new rigging (including computer-controlled motorized winches) and an extensive cabling infrastructure that provides the backbone for cur-

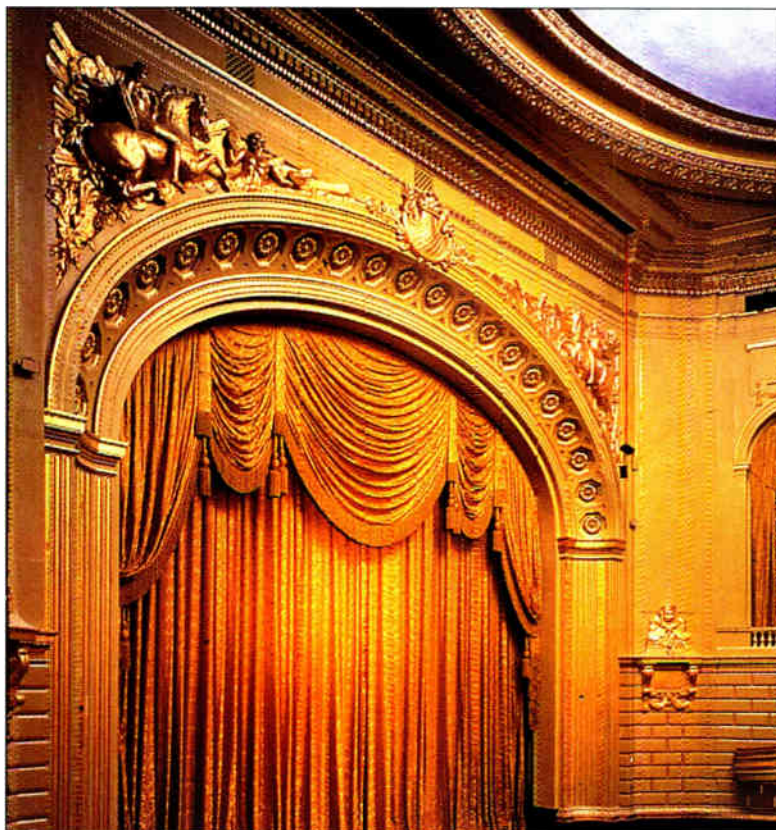


PHOTO: ROBERT CANFIELD

The proscenium has been completely regilded and features an all new stage curtain. Holes cut into the proscenium arch are for new speaker mounting brackets to hold Meyer CQ-1 and CQ-2 speakers (not shown).

rent and future sound, video and communications systems. In all, the new A/V systems make use of 450,000 feet, or approximately 90 miles, of mic, line, speaker and video cable. Auerbach's design was a direct collaboration with Roger Gans (the S.F. Opera's sound designer), Max Christensen (the Opera's master sound technician) and Kevin Kirby (the S.F. Ballet's master sound technician).

SOUND CONTROL CENTER

At the heart of the Opera House sound and communications system is an all-new sound control center. Located backstage and completely

invisible to patrons and performers, the sound control center includes an acoustically isolated control room, an amp room, storage space and a production office for the opera company. The San Francisco Ballet, which has its own offices and studios in a nearby building, also has a small production office.

Measuring approximately 10 feet high, 14 feet wide and 19 feet in length, the control room was designed by Larry Tedford of Paoletti Associates, a San Francisco-based acoustical consulting firm. Tedford was not able to work from a clean slate—HVAC ductwork and an overhanging structure limited headroom, for example—and acoustic isolation, noise control and budget

BY CHRIS MICHIE



ers is especially dependent on the acoustic character of the room, so Tedford's design sought to minimize first and second reflections at the monitoring position. Coincidentally, the control room design geometry is remarkably similar to that of the auditorium itself.

Positioned across the front wall of the control room, directly in front of the main console operator,

current main mixing console is a Euphonix 2000B, supplemented by a Roland PC200 MkII sampling console, which is primarily used for playback of effects and is positioned behind the Euphonix at its own ELCO-equipped docking station.

In fact, the Euphonix console was purchased long before the sound control center was complete and was used by Roger Gans during the 1996 Opera season at the nearby Bill Graham Civic Auditorium, which the Opera converted into a temporary home during the Opera House renovation. The console, along with most of the company's mics, processing equipment, loudspeakers and recording setup, was not returned to the Opera House until early July 1997, after wiring for the sound control center was complete. For that reason alone, a modular connection system was a necessity.



The San Francisco War Memorial Opera House, one of several buildings in the city's Beaux Arts Civic Center complex that have been seismically renovated.



PHOTOS: ROBERT CANFIELD

The Euphonix 2000B console and rolling equipment racks in the sound control center are linked to the Ghielmetti patchbay via Elco connectors. Meyer CP-10 equalizers and various delays occupy the permanent racks recessed into the control room wall.

limitations took precedence over the acoustic environment. Nevertheless, Tedford was able to maintain dimensional ratios of between 1:1.4 and 1:1.9 and achieved a neutral acoustic in the limited space "without having the room sound like a closet," as he puts it. Sound operators monitor the sound in the auditorium with a Schoeps KFM-6 binaural "globe" microphone, which is positioned on the front of the Grand Circle. Successful binaural monitoring through loudspeakers

are a pair of Meyer Sound HD-1 powered monitors. Multiple video monitors enable the mixer to follow almost all of the action on stage and in the pit from a variety of camera angles. Several stations around the room are equipped with a multipin docking system based on ELCO connectors: this allows mixers and processing racks to be easily removed and reinstalled, and also allows for future changes in the control equipment. The opera and ballet companies'

RECONFIGURATIONS A SNAP

Flanking the two console positions and flush with the control room side walls are eight 84-inch racks, accessible from the rear via north and south cross connect rooms adjacent to the control room. The racks contain outboard processors, intercom routing matrix panels, digital recorders and a Ghielmetti patchbay, which has been customized to match the Euphonix console's 48-point TTY patchbay configuration. The Ghielmetti patch point connector features three gold pins of the same length that simultaneously break the rear plane contacts, and a fourth pin for registration. Because of its smooth insertion and circuit-breaking characteristic, the Ghielmetti connector permits "hot patching" during a performance, unlike traditional ¼-inch connectors. According to Auerbach+Associates A/V systems designer Darrell Haber, the Ghielmetti patchbays are quite common in Europe and were specifically requested by S.F. Ballet master sound technician Kevin Kirby, who had come across them in Paris while on tour.

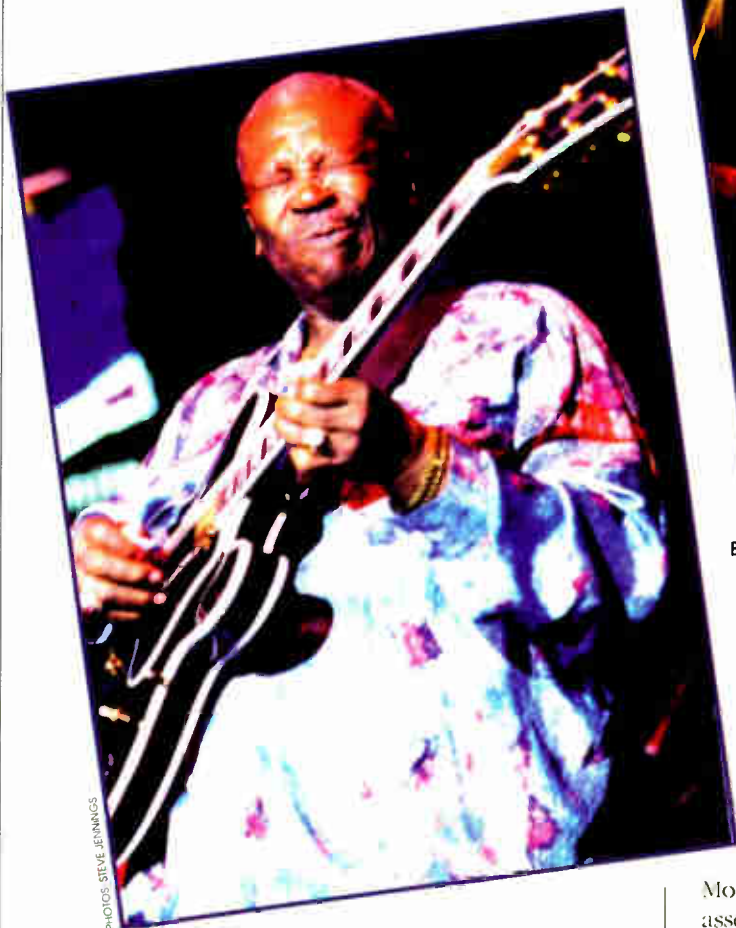
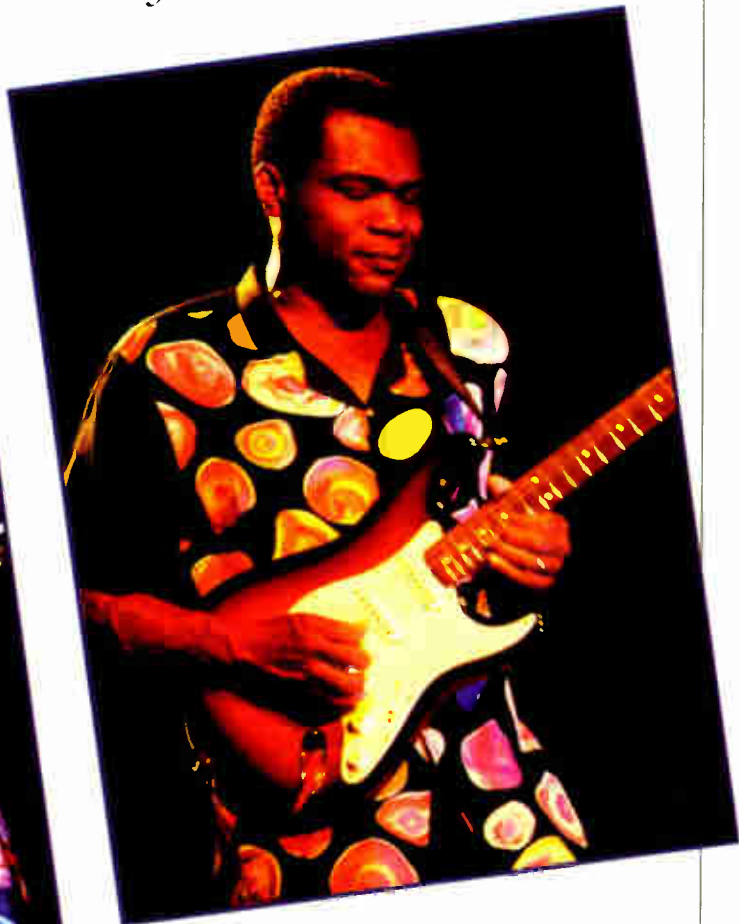
Mic and line cables are soldered to the rear pins of the Ghielmetti patchbay but, in order to provide flexibility and ease troubleshooting, they also pass through ADC ICON

—CONTINUED ON PAGE 147

1997 BLUES MUSIC FEST

B.B. King, Robert Cray and More

Every summer, major markets in the U.S. are visited by an institution that is uniquely American—the blues festival, which brings together a few of the biggest names in a musical niche that is usually enjoyed in a natural club setting and takes them out to the sheds. The lineup for the first leg of the 1997 Blues Music Fest tour was B.B. King, Robert Cray, Tower of Power and Johnny Lang, who spent a month covering East Coast dates. After breaking in July to go their separate ways, King and Cray were joined in August by Jimmy Vaughn and a band called Blues Time, which is headed up by J. Geils and Magic Dick, for a string of West Coast dates, which is where we caught up with the tour.



PHOTOS: STEVE JERNINGS

B.B. King (left) and Robert Cray

Sound and lights for the tour were provided by ProFormance Lighting and Sound, based in Emeryville, Calif., just a few blocks from the main offices of *Mix*. For years they've provided production services in the San Francisco Bay Area for a list of corporate clients that would be the envy of any vendor and reads like a who's who of the

Fortune 500. With corporate industrial presentations growing to embrace entertainment values found in touring shows, ProFormance decided to invest in a system that could meet the demands of any event, and wound up with a rig that is equally at home in a shed as in a convention facility or a ballroom. Wesley Sharpe is ProFormance owner Mickey Morgan's right-hand audio man and helped package and assemble an impressive rig for this tour.

Sure, a lot of us have mixed B.B. King, but does it get any better than this? Buying a brand-new sound system and then mixing the headliner on the first tour? Morgan mixed front-of-house for King on a Yamaha PM1000 with 44 mono inputs and 8 stereo strips that he shared with 10-year Cray FOH veteran Gary Newell. Each band's input list had separate chan-

band's input list had separate chan-

BY MARK FRINK

—CONTINUED ON PAGE 146

ALL ACCESS

RADIOHEAD

PHOTOS BY STEVE JENNINGS

ENGLISH BAND RADIOHEAD are presently on the road supporting their excellent new record, *OK Computer*, which features a moody melange of highly dynamic, guitar-heavy tones. For a recent five-week run in U.S. soft-seaters, clubs and festivals, the five-piece band (playing three guitars, bass, drums and a little keyboard) carried gear rented from Firehouse Productions in New York, including a complete monitoring system, mics and an FOH console. *Mix* caught the show at San Francisco's Warfield Theatre and asked the engineers a few questions about the challenges of mixing for these inventive, compelling musicians.



Front-of-house engineer Jim Warren, at the Midas XL3, has worked with the band for five years. "They're very keen on being cooperative, so it's very rewarding," he says. "If the band asks me to do something, I try to be like my favorite 'P.A. babysitters,' and just say yes. I see it as an artistic and sometimes technical challenge to make it work. They perform really well live, so most of the time you just let them play and try not to make too much noise so people can actually hear what they're doing."



Warren uses an array of effects and processing on Thom Yorke's vocals. One unusual item is an FX 550, an old guitar processor that Warren says is useful for a strobing effect.



Monitor engineer Tree positions his desk sideways to the band (facing downstage) to better hear what they're hearing. Tree chose the Yamaha PM4000 console because of the multiplicity of sources on the stage—the board has input metering on all the channels, allowing him to tell "where the noise is coming from." Speaking of noise, Tree says that both he and the band wear AR-15 custom-molded earplugs onstage, which reduce levels by 15 dB with an even attenuation. "[Radiohead] are professional musicians with an outlook that they're going to be professional musicians until they retire," he says, "and they want to be able to hear properly." Besides, he adds, "It's like a secret weapon—it makes the music quieter, so they have to make up for that by trying hard and giving an exciting performance."



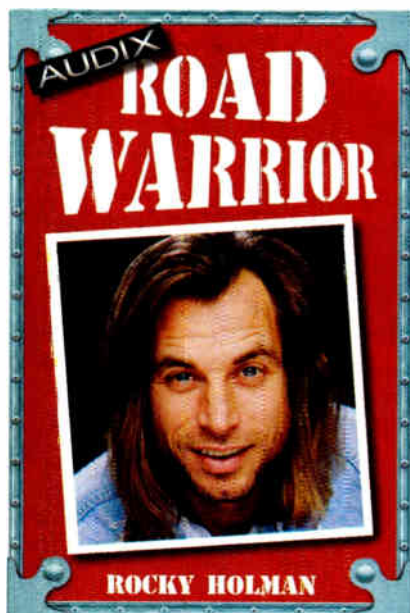
Phil Selway's kit. "The drums are quite tricky," Warren says, "because there's everything from lightly brushed to having to get through a sea of guitars. I'm trying to use ambient miking for the softer stuff; for that, I have my 'kit mic,' which just sits in the middle of the drums. I use an EV 408 when I can; it's very small, good for wedging between the drums and cymbals. There's a lot of bedroom-sounding drums on the album. I have my kit mic y-split to two channels, and one of them is compressed to death so I can get some of those sounds that are on the record."



Guitarist Jonny Greenwood's Fender Deluxe 85 and Vox AC30 amps. The three guitarists use different amps (one at a time), to generate a variety of tones onstage. Between amps and pedal effects, Warren says, "The guitars pretty much look after themselves. Double miking the guitars is something that people don't use much, but if you've got a band with lots of different guitar sounds it can be a really good way to do it."



Guitarist Ed O'Brien's effects.



GIG: Monitors for Bon Jovi, John Mellencamp



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CIRCLE #105 ON PRODUCT INFO CARD

—FROM PAGE 144, BLUES MUSIC FEST

nels except for the Leslie, which was shared by Cray's and King's keyboard players. Support acts Blues Time and Jimmy Vaughn similarly split a brand-new 48-channel Soundcraft Series 5, which replaced the Europa used on the first leg by Johnny Lang and TOP. "The Series 5 represents an incredible value and has all the features anyone could ask for," says Morgan. "It's interesting to compare the two side by side; it gives us a good choice to offer our clients." Both consoles shared the effects rack, which was loaded with a TC Electronic M5000, a Lexicon PCM 70, an Eventide H-3000/SX Ultra Harmonizer, a Yamaha SPX990 and a Pro-R3, plus a Roland SDE-3000 delay. "The philosophy when we assembled the rig was for engineers to walk in and be instantly comfortable with the selection of equipment provided," Morgan explains.

Each console has its own 20-channel insert rack, including six Aphex 661 Tubessence compressors used on the vocals and horns. "The new Aphex is really smooth, warm and transparent," Morgan says. There were also dbx 1046 quad compressors, used on bass and keyboard channels, as well as Drawmer DS-201 dual gates and DS-404 quad gates for drum inputs. The FOH drive rack has a Klark Teknik DN-360 stereo graphic, an Aphex 722 Dominator and the Brooke-Siren FDS-380 OmniDrive. The OmniDrive has specific settings for the various array combinations of the JBL HLA speaker system, with parametric EQ on each band used for minimal contouring of each transducer section in the four-way system.

This is the first North American outing for JBL's new large-format speaker

system. The main speakers are 32 JBL HLA 4895 full-range speakers and 16 HLA 4897 dual-18 subwoofers. Discarding the wooden construction of traditional speaker enclosures, the HLA full-range and sub speakers employ a trapezoidal tubular aluminum SpaceFrame that increases structural integrity while reducing weight, at 210 and 240 pounds respectively. After the first row is hung from the ATM truss bars, the array is quickly assembled by positioning the next row below it and sliding connecting bars into slots at the enclosures' corners that held the wheel bars. The horn-loaded three-way 4895 uses a low-, mid- and high-frequency driver crossed over at 120, 297 and 1140 Hz and sharing a single Multiband Waveguide that uses an Optimized Aperture design to provide wideband controlled coverage with low distortion. This waveguide can be tilted within the SpaceFrame, allowing arrays to be constructed that emulate a spherical point-source to correctly address a venue's vertical coverage needs as well as the horizontal. The speakers assemble to form an impressive array that both looks and sounds clean.

The ProFormance HLA rig is powered with Crest 9001 amplifiers except for the high-frequency section, which uses the 6001. Each three-way HLA 4895 speaker employs high-output 16-ohm 10- and 14-inch DCD transducers, as well as a 16-ohm 2451 high-frequency driver, allowing it to be efficiently powered by contemporary high-power pro touring amps, placing four transducers on a channel without resorting to 2-ohm loading.

Down on the stage, Oregon's own Steve Selid mixed monitors for the Cray band, as he has for the past six years, while ProFormance's Billy Flores cov-



B.B. King's front-of-house engineer Mickey Morgan

PHOTO: STEVE JENNINGS

ered the monitor chores for King, sharing a 52-input Yamaha PM4000M monitor console. The other two bands shared a 40-channel Soundcraft SM-16, giving each band its own dedicated monitor channels. "We really worked hard to accommodate everyone," Flores points out. The SM-16's outputs were run into the sub ins on the Yamaha, which had 16 channels of BSS FCS-960 graphics inserted in its mixes, and there were 8 channels of Drawmer gates for channel inserts at either desk.

ProFormance's floor monitors are 16 EAW SM-400 double-12 wedges, powered with Crown MacroTech 2400 and 600 amps, using the BSS FDS-355 cross-overs for bi-amping four mixes at a time. Sidefills are the Apogee M8000, a three-way bi-amped box with dual-15s, a 10 and a 1-inch tweeter, powered with Crown MA-2400 and 3600VZ amps.

With so many microphones needed, it is no surprise that this tour is a Shure endorser. The familiar assortment of Shure products includes SM57 and 58s used on everything from vocals and snare drums, to guitar amps and brass; SM81 condensers used for all hi-hats and overheads; a dozen SM98s on toms; plus a full assortment of the Beta Series of Shure microphones. The Beta 56 is used for miking the bottoms of most snare drums onstage and for the highs on the Leslie cabinet shared by King and Cray. The new Beta 52 was used as the bass mic, for the low rotor on the Leslie, and for two kick inputs out of the five drum kits onstage. Interesting alternate choices were the few Shure exceptions, which were the use of a Sennheiser 421 on the Cray band's kick drum and an AKG D-112 on TOP's kick. Cray's vocal mic was the only other defection from the Shure line, as he has chosen a Beyer M88 to sing into for some time. Out of more than 100 inputs onstage, 16 were active and passive direct boxes, mostly manufactured by Rapco, except for JDI units used on Cray's bass, keyboard and kick drum samples.

While the annual blues tour has become an American institution on the summer shed circuit and there were few surprises on any of the set lists, the 1997 outing represents the arrival of a new contender for the attention of potential purchasers of sound reinforcement speakers. This proof-of-performance event shows that JBL has finally brought to bear its vast experience and knowledge to provide a viable off-the-shelf touring sound system. ■

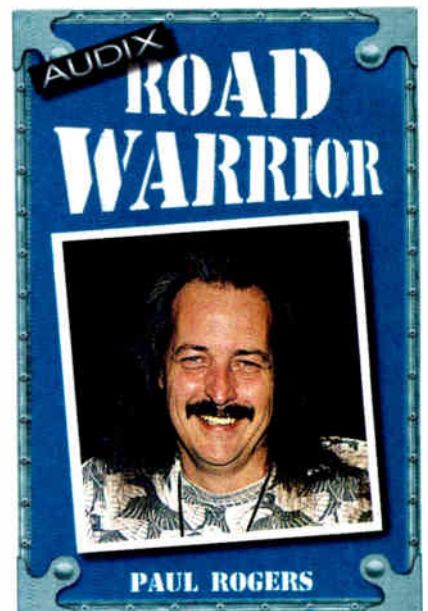
—FROM PAGE 143, S.F. OPERA HOUSE

terminator blocks in the north cross connection room, which is adjacent to the control room on the rear side of the racks. Any future changes in the patchbay configuration may thus be effected at the punch-connect termination blocks, eliminating the need to resolder at the patchbay.

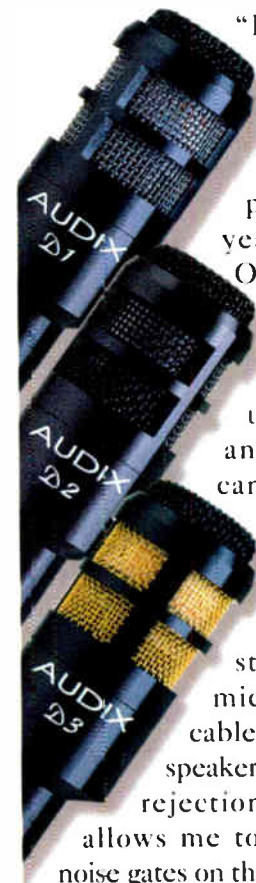
Signal processing for the loudspeaker systems is comprehensive. Three two-channel Meyer Sound CP-10 Complementary Phase parametric EQs are dedicated to the six main speaker systems (four Meyer Sound CQ-1s and two CQ-2s), and two more CP-10s are used for the main balcony delay system, which consists of two UPA-2Cs mounted near the auditorium ceiling to cover the upper balcony seats. An additional six CP-10s are available for various "Repertory" systems, which may include offstage effects playback and sidefill systems, or monitoring for offstage musical groups and choruses known as "banda." A Meyer Sound RMS remote signal monitoring system allows control room operators to monitor amplifier voltage, power and heat sink temperature, input signal level, limiting activity, driver status and AC line conditions. Delays, which are distributed among the main balcony system and the various production systems, are ATL and TC Electronic models. Also housed in the racks are the opera and ballet companies' archival recording systems; rehearsals are typically recorded onto video tape as a visual and aural reference for production choices and effects.



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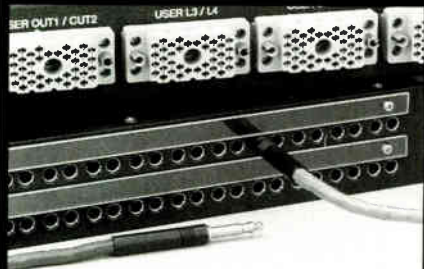
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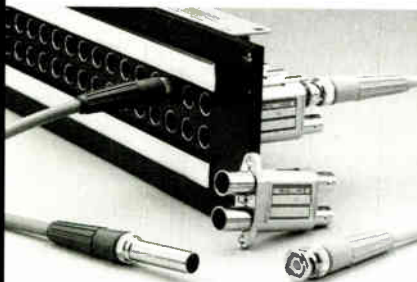
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12-BUS INTERCOM

The control room racks also contain a new ClearCom MS812 12-bus intercom system. Four custom 12x72 sliding pin matrix panels allow operators to easily assign intercom stations to appropriate buses, and an off position allows a faulty or unused bus to be taken out of service, though the DC component is still active. (An intercom patchbay, which was cut from the plans during one of the many cost-cutting exercises, will likely be installed at a later date, allowing for the complete disabling of circuits for trouble-shooting.) An elegant fusing system protects each of the 288 individual intercom circuits and indicates status via front panel LEDs. Like the mic and line cables, all intercom signal lines run through ICON terminator blocks.

The amount of cable running in and out of the sound control center is awe-inspiring. There are 243 mic, 552 AES/

EBU "ready" line, 110 speaker, 254 intercom and 240 video cables, all color-coded, cut to length and dressed with identifying (and readable!) sleeves at the termination points—quite a showcase for the systems integrator, Ceitronics, which preassembled most of the looms off-site. From the termination blocks, the cables ascend to a non-conductive grid suspended from the ceiling and descend through conduit to stage level and below. All conduits are oversized to allow room for future cable pulls. All speaker cables are four-wire, interlaced and contained in a lattice poly sheath.

AMP ROOM INTELLIGENCE

A separate amp room contains another 14 19-inch racks, ICON terminator blocks, and a set of LynTec power panels that control the AC power supply for the entire A/V system. The LynTec panels feature a comprehensive relay switching and power up sequencing system that allows for a range of cus-

OPERA REQUIREMENTS SPUR NEW LOUDSPEAKER DESIGN

Though opera companies have resisted the widespread use of sound reinforcement technology, audience expectations are subtly changing. Not every seat in an opera house is perfect, and audiences have increasingly come to expect a degree of articulation and presence that is physically impossible without reinforcement. Though the electronic reinforcement of principals is generally frowned on, it is not uncommon to mic offstage choirs and soloists; the use of prerecorded sound effects obviously necessitates a sound system. And for the San Francisco Ballet, which often performs to prerecorded music, a first-rate sound system is imperative.

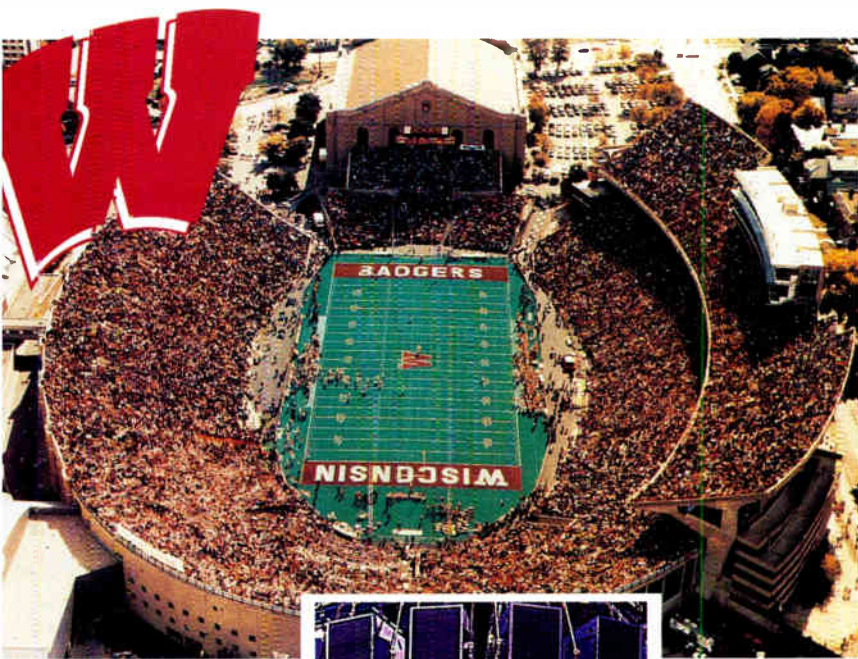
Before the Opera House auditorium was stripped for renovation, Auerbach+Associates, together with sound designer Roger Gans, conducted tests to determine the best placement and coverage pattern for a permanently installed reinforcement system. The tests were conducted with Meyer Sound MSL4s, of which the opera company has several, but a smaller system was needed. Working to A+A's and Gans' specifications, and making extensive use of its new anechoic chamber and computer-based test equipment,

Meyer developed prototypes of two new self-powered speaker systems and successfully demonstrated them during the 1996-7 season, when the opera moved into the Bill Graham Civic Auditorium. The final installation at the War Memorial Opera House included two Meyer CQ-1s and a single CQ-2 per side, mounted on brackets set into either side of the proscenium arch, about eight feet above the stage.

—Chris Michie



Meyer Sound CQ-2 self-powered loudspeaker



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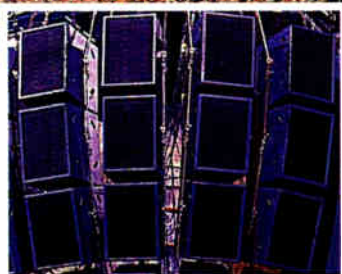
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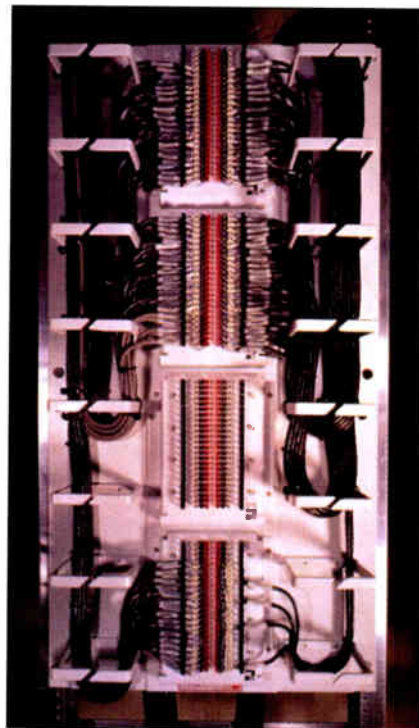
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LIVE SOUND

tom programming. Normally, the first eight breaker switches in each panel come on in sequence at a prescribed interval, user-definable from a millisecond to three seconds, and the remaining set of breakers come on as a group or as programmed. The system also includes an "intelligent" selective turn-off feature for brown-out conditions. A simple switch panel allows individual activation of AC circuits feeding outlets included on various mic/line/ video input panels. This allows the sound system operators to maintain tight control of the technical systems AC circuits and eliminates the possibility of surprise appearances by noise-inducing loads (such as coffee-makers and power tools).

A loudspeaker patch panel for the 110 installed loudspeaker circuits features Neutrik Speakon connectors on jumper cables. Power amps for the sound reinforcement system are a mixture of AB, QSC and Meyer Sound models, reflecting the evolution of the opera company's house and production sound systems. (The most recently purchased Meyer components, including the main CQ-1 and CQ-2 arrays, are self-powered models.) Crown Micro-Tech 1200 amps, controlled via a Crown IQ system, drive both the upper balcony delay system and an under-balcony delay system consisting of Meyer Sound UPM-1s suspended from



Program and paging system cross-connect block

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COMMUNICATION SYSTEMS

a track in the underside of the balcony. (Because the ballet company often uses prerecorded music, and the opera company tends to eschew sound reinforcement whenever practicable, the two companies have different sound design requirements. The IQ system allows for fast switching among previously established delay and amplitude settings for the two companies, which often use the Opera House at different times on the same day. Simply loading a computer disk changes the delay system configurations.)

The elaborate wireless system provides communication facilities for various production departments and is also used for performances, though, as the opera company is anxious to stress, microphones, wireless or otherwise, are generally only used for production effects and never to amplify the principals. The wireless system is a UHF duplex expanded system from HME and is compatible with the ClearCom system, allowing up to four intercom buses to be dedicated to wireless receivers. All of the antennae for all systems are consolidated on an "antenna farm," a PVC



PHOTO: DAVID REDFERN

NEW SOUNDS AT RONNIE SCOTT'S IN LONDON

Long rated one of London's premier jazz clubs, Ronnie Scott's has not always enjoyed a comparable reputation for its sound system. Patrons and artists alike should be pleased to learn that owner Pete King recently bit the bullet and, acting on the recommendation of the club's longtime recording specialist Peter Bould, contracted with hire company ENTEC for an all-new system.

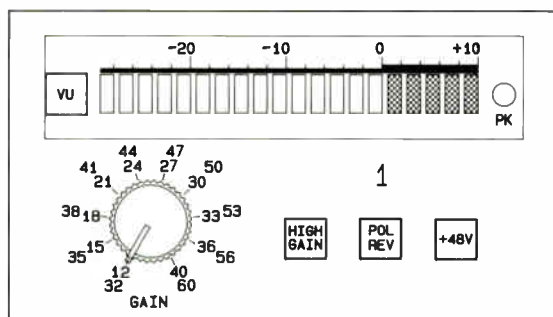
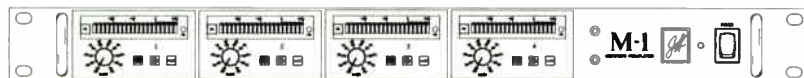
According to ENTEC's Dick Hayes, "The tricky thing in defining the system for a venue like Ronnie Scott's is getting the coverage throughout the audience, maintaining an image back to the performers [through the P.A. and monitors] and keeping it simple." As Hayes points out, the club's thrust stage, low ceiling and non-symmetrical seating area certainly contribute to the intimate atmosphere of the 300-seat club, but do not ease the system designer's task. In fact, one consistent complaint about the club's previous sound system (which included a pair of Westlake studio monitors as FOH P.A.) was that coverage at the sides was poor.

Based on an initial site visit by Hayes and Barry Mizen and Mick Williams of Mick Williams Associates, an all-new system from d&b audiotechnik (Backnang, Germany) was proposed. Working with d&b's Simon Johnston and John Taylor, in late April Mizen's team assembled and installed a demo system, consisting of a pair of 902-LS full-frequency cabinets supplemented by two bassMAX subwoofers as the main stereo P.A., with a single E3-LS as a center fill. A proposed delay system based around distrib-

—CONTINUED ON PAGE 156

M-1

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Options: VU-1 meter (shown); PK-1 meter; Jensen JT-11-BM output transformer;



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pipe mounted on the back wall of the Opera House outside the sound control center. To avoid interference—some past events were disrupted by a local taxi company's on-air chatter—the opera company's audio crew has mapped out the entire relevant radio spectrum and has leased usable frequencies from the FCC.

Of all the systems for which Auerbach+Associates became responsible, the Opera House program and paging system was perhaps the most in need of restoration and renovation. Frustrated by the old system's lack of local volume control for program material, backstage production personnel had poked pencils through speaker cones, drastically reducing the system's effectiveness for paging. Eager to avoid a similar fate for the new system, A+A, in collaboration with Christensen and Kirby, designed it to include four audio signal lines run to each of 21 terminal cabinets, allowing for a degree of flexibility in local speaker and program selection, and provided a local volume control for program; a DC circuit automatically bypasses the volume pad for paging. Each speaker in

the backstage, all of the dressing rooms, the production offices and the front of house individual runs to the termination cabinets for flexible assignment to the four-zone paging system. The new system allows the ballet and opera companies to set up multiple different program and paging distribution plans and, equally important, modify them at the local terminator boxes. Program and paging system amplifiers are all-new Crown ComTech 400s, selected for their 70 volt capability and because they accept a Crown IQ System-compatible PIP card (as with the sound systems, the program and paging requirements of the ballet and opera companies are quite different). Inputs and outputs are routed through ICON blocks.

NO TWO INPUT PANELS ALIKE

At the basement level, immediately below the stage, audio lines pass through a multipin cross connect box, which allows for five different 32-mic/16-line stage boxes to be connected directly to the sound control room. The stage boxes also include video and intercom connections. Necessary budget-trimming meant that A+A left some of the stage boxes unconnected, but the

opera and ballet companies have undertaken to pull the cables and complete the installation at some future date.

A total of 110 A/V input panels are distributed throughout the stage area and also at selected points in the house, including the long-disused organ bays, where effects playback speakers are often positioned. All of the input panels, which are constructed from Modular Panel System components supplied by Signal Transport (Richmond, Calif.), include a mixture of XLR, BNC, Whirlwind 62- and 122-pin, Speakon and fiber-optic connectors; according to Ceitronics project manager Jim Thielemann, each location required a different connector complement. Because of the immense complexity of the conduit runs in the basement level—plumbing, electrical, lighting and other systems all compete for the narrow space above head height and below the stage—some A/V connector boxes are less than ideally positioned, but all are accessible. For wall-mounted A/V connector boxes, A+A specified additional reinforcement, and the standard panels boast steel end plates to prevent damage from road cases, etc.

There are also several A/V connec-

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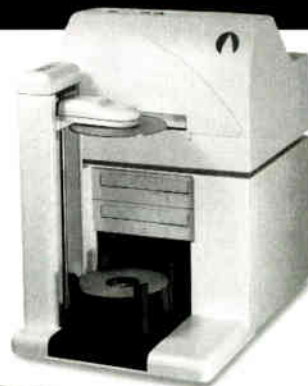
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LIVE SOUND

tor positions in the house. A connector box in the floor midway up the center aisle of the stalls provides for the temporary installation of a stage manager's audio and communications control system during rehearsals. A FOH mix position in the SRO space at the back of the stalls also has its own floor panel and audio box, and there is also a position

in the balcony that enables an audio operator, suitably dressed, to sit among the audience and fine-tune levels by means of a lap-top MIDI controller. A fiber-optic cable runs from the balcony back to the sound control center to provide for possible future developments in the opera and ballet companies' audio control system. ■

Chris Michie is Mix's technical editor.

—FROM PAGE 152, RONNIE SCOTT'S

uted E3-LS cabinets proved unnecessary, but since the two 902-LS speakers flown down stage left and right cannot adequately cover sections of the audience seated to the sides of the stage, two more E3-LS speakers were positioned on each side. Apart from the bassMAX subs positioned on the floor at the rear corners of the stage, all speakers were hung from the ceiling. Onstage, ENTEC added six d&b MAX monitor cabinets, all driven in passive mode using the club's existing C-Audio amplifiers.

Related to d&b's 402 P.A. speakers, which ENTEC has out on tour with Blur, each 902 contains a 12-inch woofer and a 2-inch HF driver. The 902, which features a 90x50-degree asymmetric horn, is capable of 128dB SPL maximum. The bassMAX subwoofer contains a single 15-inch direct radiator and extends the system response down to 40Hz. d&b's system design includes integrated amps with internal controller modules, and the Ronnie Scott's speaker system is driven by just two P1200A amp/con-

trollers; both 902s and bassMAX subs are driven in stereo by one two-channel P1200A controller, and all five E3s are powered (in mono) by the other P1200A. House sound engineer Janet Moorhouse and colleague Gerard Albo mix both FOH and monitors from a pair of Allen & Heath GL 3000 consoles (32 inputs for FOH, 24 for monitors) crammed into a tiny cubicle near the club's entrance.

According to d&b's Taylor, the April showcase successfully demonstrated that coverage in the outlying areas of the club was much improved, and the perceived upgrade in sound quality was such that Pete King ordered a permanent installation within a few days. House engineer Albo, who was already familiar with the 902 cabinets, having used them before at "The Place" Theatre and at the Queen Elizabeth Hall, agrees that the new P.A. is a considerable improvement over the system it replaced. "I run the system flat at the moment and it sounds great," he says. "The quality of the sound produced by this system is fantastic." —Chris Michie



Ronnie Scott's, one of London's premier jazz clubs.

PHOTO: DAVID REDKERN

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THE OTARI DIGITAL CONSOLE



A CAD rendition of the Otari Digital Console prototype

Although renowned as an analog electronics company, Otari is no stranger to the digital domain. In fact, Otari has typically been at the forefront of digital technology, whether with microprocessor control of the MTR-90 and MTR-100 series analog multitracks; its DTR-100 digital 32-track; professional DAT decks; RADAR 24-track disk recorder; and even its TMD line of thermal-magnetic video duplicators. The acquisition of Sound Workshop in the 1980s eventually led to the development of Otari-designed, digitally controlled analog boards, such as the Premiere film mixer, the Concept One and now the Status and Elite consoles. The digital developments continue with Otari's PD line of MO disk-based recording editing systems, Lightwinder fiber-optic transceivers and a new, large-format digital audio mixing console.

Based on a new 40-bit DSP technology and an ultra-fast communications network, the code-named-for-now Otari Digital Console (ODC) is a major step in console technology. The system is scalable to handle all digital audio formats up to 24-bit/96kHz. Music consoles are available with up to 128 dual-channel audio control paths, while film post versions can be configured for 3-position operation, with a choice of dedicated or mapped control surfaces. Pricing can vary widely depending on configurations, but is said to be comparable with higher-end analog designs.

THE SYSTEM

The ODC system consists of a Control Surface providing the user interface, faders, switches and display, connected over short or long distances via standard 100 Mbit Ethernet to a Processing Rack containing the Digital Engine, I/O Processors and power supplies.

The Digital Engine consists of DSP cards, master computer, system sync card (SMPTE/Sony 9-pin/MMC) and disk drives for mix data storage. I/O Processors include digital I/O (AES EBU, MADI, etc.) and mic/line amps with 24-bit DACs/ADCs that are remotely controlled from the console.

All subsystems are modular, allowing for simple field upgrades/expansions. Users could start out small and expand the system in the future without having to think ahead and buy a "short-loaded" large console frame. And the days of huge, unwieldy console crates could be numbered, as ODC is shipped in smaller boxes: a large system can be brought in a piece at a time and easily assembled onsite. This should be good news to studios with narrow halls and doors or the "You want it *where?*" 14th-floor facilities found in large cities.

Different configurations can be created by varying the number of components: The number of DSP Cards controls the maximum number of inputs, outputs, paths, control surfaces, buses and effects. Similarly, analog or digital I/O boxes, input sections and any number of options—including joystick panners, group master faders or film monitoring (Pec/direct switching, surround sound formats, etc.)—can be specified.

Each Input Section has 16 physical paths, each including a path controller with 100mm moving fader, LED "scribble" strip, access to dynamics, 4-band EQ, solo/mute buttons, routing, effects sends and 40-segment metering. Additional paths can be accessed via layers, allowing up to 128 fully independent dedicated input paths to be accessed per input section. Layers allow for the creation of console configurations with inputs that are mostly dedicated (one input per path) or virtual, with one Input Section

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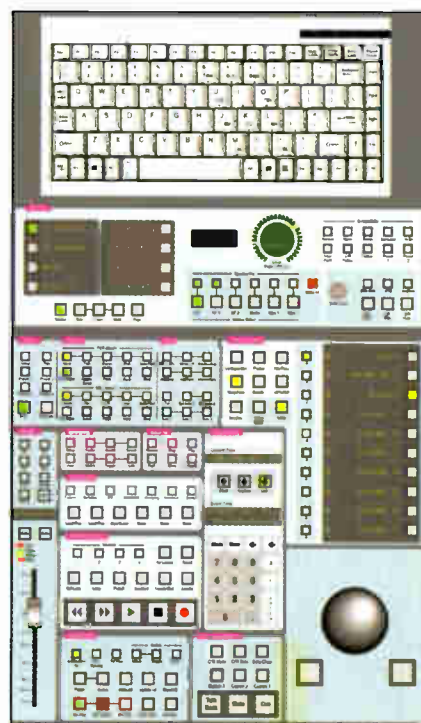
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The Master Section has comprehensive controls for control room monitoring, automation recall, transport control and talkback. Data input is via 10-key, full-size QWERTY keyboard, trackball or soft keys. Options include film monitoring, joystick panners and group master faders.

accessing eight layers of inputs. If a more dedicated control surface is preferred rather than layering, the user can easily add more physical control surface sections.

A virtual path is a signal path created in the digital engine for processing a single channel of audio. Virtual paths can be arranged in layers that can be used as audio path controls, "clones" of other audio paths, stereo master faders, bus masters, group masters, MIDI controllers and so on.

The input devices for all control GUIs (Graphical User Interfaces) are the 24 "mapped" rotary encoders and switches. A mouse is never used on the Input Section displays, making console operations more like working on a traditional mixer.

Master parameters can be viewed on each Input Section's color LCD. Control displays can show all parameters of a single path EQ, including filters, or a subset of the parameters (user-definable) for 8 or 16 paths simultaneously.

The console interface allows you to decide how you want to work—even in the middle of a project. Many master functions are available locally at the Input Sections, to reduce the constant migration to the console's Master Sec-

RAM THIS

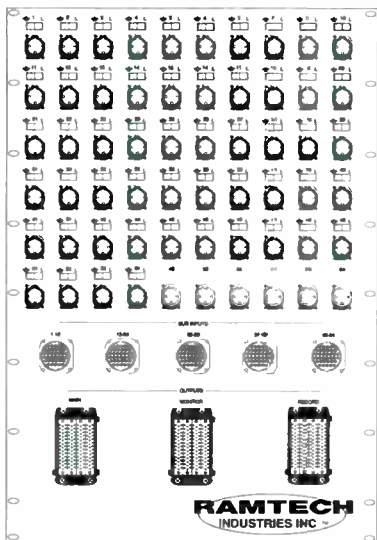


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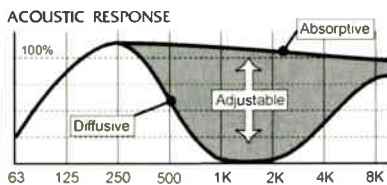
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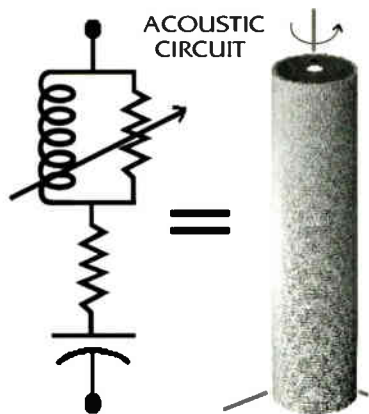
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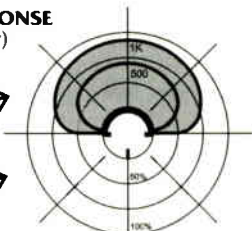
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tion. All virtual paths can be accessed from any Input Section. Each Input Section has its own 12-inch color S-VGA active-matrix LCD screen and set of "Mapped Controls" for setting path parameters on that section. Mapped rotary encoders have push knobs for executing automation modes and touch sensors, which enable touched controls on the LCD screen. Mapped switches have bi-color, multilevel illumination for displaying switch availability, modes and states.

Console configurations can be quickly stored and recalled. Virtually all control settings can be stored and recalled within a frame and can also be dynamically automated. Session management is handled by a special version of Otari's Eagle Automation.

METERING

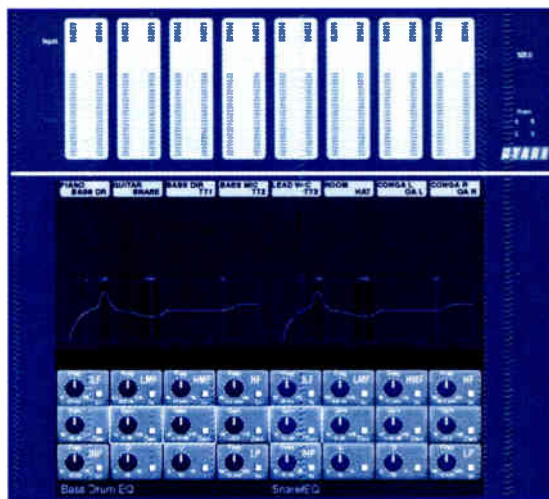
Sixteen 40-segment, bi-color LED meters are provided on every Input Section. These are user-configurable for brightness, color and level breakpoints, where the segment colors change at user-defined levels. Otari's Multi Chroma technology allows two parameters—i.e., signal level and gain reduction—to be viewed simultaneously on the same meter. This is accomplished via a contrasting single LED displaying gain reduction action. Each meter's source and path is indicated using illuminated panel legends and the top line of the section's LCD screen.

DSP

The console provides an assortment of signal processing elements that can be sequenced in the audio path in any order. These include six filters (typically a 4-band EQ and highpass/lowpass filters), three dynamics processors (gate, compressor/expander, limiter) and one insert send/return or direct out. Among the onboard time domain effects are an assortment of reverb, flanging, delay and chorusing.

YES, MASTER...

The Master Section has two physical "sections" allowing custom configuration of panels and options. There are two types of Master Sections, Music and Film, the main difference being the monitor system, which provides application-specific controls for monitoring multiple



The top of each Input Section has 16 40-segment LED meters and a 12-inch LCD color screen showing EQ, dynamics or DSP displays, along with parameter controls.

outputs—i.e., control room, studio, near-field speakers and surround formats. Multi-Format Monitor can be configured to monitor sources up to 8 channels wide, and it supports all popular formats such as LCRS, 5.1 surround, SDDS, etc.

In normal operation, any Input Section can "dial up" any other Input Section on the console, allowing any Input path to be displayed and controlled on the Input Section adjacent to the Master Section—the "sweet spot" of the console. This simplifies operation by leaving path selection and sweetening to the Input Sections and master control to the Master Section, which eliminates the need for "assignable" faders in the Master Section. However, the Master Section contains a single assignable path strip that can be assigned to any Input Section path to provide local control of a remote path, master fader control, or individual path "tweaking" at the end of a session.

Bus and path resources may be allocated. For example, in a typical maximum configuration, the 88 buses might be broken down as follows: 48 for track assign, eight for multiformat pan outputs, four 2x2 (stereo) buses, 20 aux sends and eight buses for monitoring.

AND THE REST...

The ODC debuts at AES in New York and is slated to begin delivery in the first quarter of 1998. Combining flexibility, powerful automation, 40-bit internal processing and the capability to handle 96kHz/24-bit signals in a product with a familiar look and an intuitive interface, Otari has a mixer that should get the competition to sit up and take notice.

Otari Corporation, 378 Vintage Park Drive, Foster City, CA 94404; 415/341-5900; Web site: www.otari.com. ■

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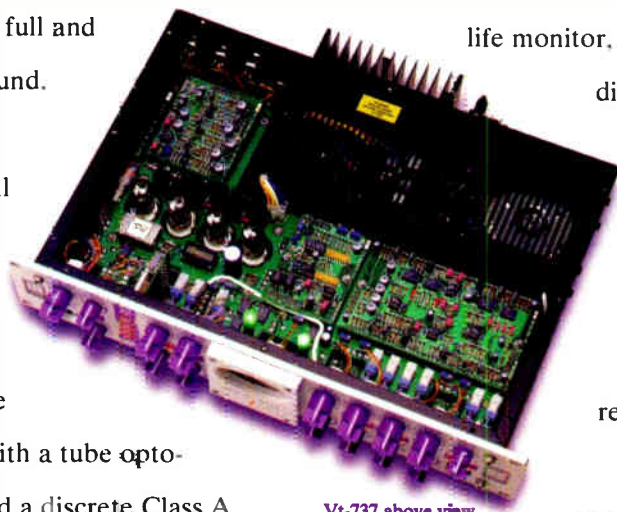


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Vt-737 above view

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NEOTEK ÉLAN II

MULTIMEDIA CONSOLE



The new Neotek Élan II console offers performance and features comparable to the company's top-of-the-line Élite, but in a scaled-down design, enabling studio owners to offer the next level of service above and beyond the eight-bus/MDM/home/project studio. The Neotek Élan's sound, feel and performance are professional in every way, yet the console is priced to fit within the budget of a growing studio business—MSRPs start way under \$30K for a 32-channel complete system. In the two studios I visited, both the Élan consoles worked flawlessly. Their operation was quiet and sound was punchy, largely due to the use of discrete circuitry in critical signal paths and good, solid engineering practices in the overall design. My personal experience with both the Élite and Élan consoles dates back a few years and countless sessions on the original, Chicago-built consoles with wood frames and great sound.

The new boards represent much-improved component quality and manufacturing refinements and a re-commitment to high engineering standards in the production of this cost-effective and impressive mixing system.

To begin, the new Élan occupies a substantial, all-alloy frame with integral legs available in black or white color schemes. The input modules are housed in alloy extrusions and are elevated and slightly angled relative to the fader modules. A beveled frame member between the two sections offers a surface for writing track/mic layouts. The Élan frame selection is 16, 24, 32, 48, 56 or 64 channel inputs, and it shares the Élite's interconnect system design. An extra blank panel is included in all frame sizes, and consoles may be ordered with more. Since Neotek is a custom console manufacturer, custom mod-

ules can be added later, making the Élan more future-proof than non-modular consoles.

The Élan is an in-line monitoring, "American" style console with 24 balanced multitrack buses, balanced inputs and balanced stereo bus outputs. A TT Bantam all-metal patchbay includes one complete row for outboard gear. There are 40-LED segment bar graph meters for each of the 24 buses and both standard VU meters and bar graph for the stereo mix output. There is a global peak/VU changeover switch for all the meters as well as individual touch-sensitive switches located on each meter.

The Élan uses the same microphone preamp section as the Élite, a discrete transistor DC servo amplifier circuit—no problematic electrolytic capacitors, and you are not going to get the same sound as everybody else these days recording with an IC chip mic stage. Gain range is from +20 dB to +60 dB, and there are -20dB pad, phase flip and 48-volt phantom switches. Neotek says that the noise floor of the mic pre is within ¼ dB of the theoretical minimum. A small LED clip indicator signifies +16dB clip level. A switchable highpass filter offers a fixed 80Hz corner frequency and a 12dB/octave slope. A switchable -6dB line-level pad is provided to compensate for super-hot digital tape levels that may overload successive stages, especially when under massive EQ boost. There is no line-level trim pot.

The in-line design allows both the channel fader inputs and the monitor inputs to be used as mix inputs, thereby doubling the number of inputs. Normally, the board is operated so that the main faders control the microphone inputs, post-EQ, and the monitor pots affect the multitrack tape playback levels. Using the Rev button flips or reverses the fader with monitor. So if you work with a producer who likes to fiddle while you track, you

BY BARRY RUDOLPH

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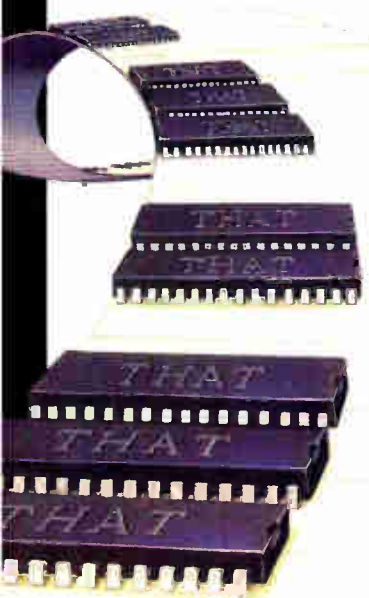
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can set the board up so that the monitor knobs send mic inputs direct to tape; the producer may then mix monitors on the faders without affecting Record levels. The monitor path can also "follow" the fader source; during mixdowns, 24 extra effect send paths are available from the 24 recording buses. This is in addition to the regular four mono sends and the single, stereo Send A-B control.

All four of the mono sends are either pre- or post-fader, but are only selectable in pairs—sends 1 and 2 may be either pre- or post-; similarly, sends 3 and 4. Send A-B has a level, panpot and pre/post switch, making it usable as a cue mix or stereo effects send. All the send controls follow the monitor pot, in either pre- or post- modes, when the Fader switch is de-selected. There isn't a Mix to Headphones switch on this console, though the stereo bus output could be patched to the cue amp input in the patchbay. In this configuration, the cue volume would be dependent on the stereo mix level, and in most cases you would have to lower the stereo master fader or lower the input gain at the headphone amp. It would be worthwhile to add a Mix to Headphones path with level control.

Below the effect send section on the input module is the 4-band, semi-parametric equalizer. Again, in the Élan Neotek has used the same proven equalizer as in the Élite; the only differences are that the high and low frequency bands are shelving only, whereas they are switchable to bell-shaped in the Élite. Also, the Élite's two mid-band sections have a choice between two Q shapes. The two mid-band EQs in the Élan use separate stages to avoid interaction, and the fixed Q is a little wider than one octave. All boost/cut controls have solid detents, and an option allows the mid-band EQ to be split off to the monitor path. I found the equalizer very musical both when aggressively torquing a dull snare drum track and when applying a subtle, touch-up EQ to stereo program. There was no extra noise, muddiness or stridency in either case.

Below the equalizer on the input strip are the monitor level with panpot, and the fader panpot. Panning can be effected across any two odd/even recording buses with the monitor panpot or the fader panpot, depending on the status of the Rev switch. The panpots have easily detected center detents. The main faders are 100mm Penny & Giles conductive plastic, and, since they are in a separate

module, Neotek can install any fader or automation system as an option. There are three mute groups with the option for more. The mute circuit uses a ramped discrete FET design and is more reliable and better-sounding than a CMOS chip. You can design mute groups and in-place solo schemes on designated mute groups. MIDI direct mute automation is another option.

The Master section of the console requires only minimum explanation for the novice. The oscillator offers fixed frequencies of 100 Hz, 1 kHz and 10 kHz, and there are Level Adjust, Tones and Slate routing controls. I think the Slate button would be better located adjacent to the talkback button down at the bottom of the panel, and the main talkback button should be bigger with a light—it looks no different than the pre/post switches. As one of the most overused

The equalizer was very musical both when aggressively torquing a dull snare drum track and when applying a subtle, touch-up EQ to stereo program.

buttons in the studio, it ought to be easy to find. Below the Talkback Level control, the Meters section allows the user to route the stereo VU meters to read: monitors; aux 1&2; aux 3&4; aux A-B; or Mult L, R (an external, patchable stereo source). The Studio Speakers controls offer level and on/off, and one can also select either the control room's audio or Send A-B as a source. I would like to see a flashing LED when studio speakers are on! The Control Room Level is a precise and solid-feeling detented pot that adjusts volume (what else!) from four different sources: Mix L/R, Tape 1, Tape 2 and Extra. The extra feed is a patchable stereo point on the patchbay, but it can also come from another Neotek option called the 12-way Line Selector panel. I recommend this one-space panel to ease playback from cassette decks, DATS, turntables, analog decks, CD players, VCR's, TV, Jacuzzi, etc.

Effects send masters are on the left side of the Master Section and include six auxiliary send controls along with solo buttons. There are also two Direct Stereo inputs, with both solo and on/off buttons. These are used for stereo effect returns and are single knobs without a

left/right balance control. These two stereo inputs do not feed the aux sends. If you want effects to appear in a headphone mix, you will have to use fader inputs for all effect returns and then send them to the cue mix.

There are two different solos on the Élan: PFL (Pre-Fade Listen) and In-Place. In-Place or mix solo is available only on faders. PFL works on faders, aux sends and monitors. There is an interesting Solo Lockout button that releases solo. If you have a drum mix going in a solo group, you can quickly "release" the solo group with this one button rather than hunting down all the individual solo buttons.

Neotek has added the Multimedia Module to its list of available options for the Élan. The Multimedia module provides a complete multichannel monitoring system for any Neotek console. Essentially, the module provides a low-cost system for multichannel monitoring in mono, stereo, LCRS, 5.1, and 6-channel surround. This is done by routing the multitrack and the stereo buses used to record 5.1, LCRS or 6-channel to the appropriate speakers. Furthermore, the Multimedia module allows monitoring of the audio quality before and after insertion of a DS-4 or SEU-4/SIDU-4 or data reduction processes. Since the module provides an encode/decode insertion point for whatever data reduction or encode system you desire, you can monitor quality before encode, after encode but before decode (if someone was to play it without decoding) and of course, after decode. The module also allows you to "collapse" any surround mix down to stereo, or even mono, to check for compatibility. The speaker selection logic automatically determines how you want to monitor by your speaker choice. So if you select the stereo near-fields you will hear your surround mix folded to stereo. Switch again to the mono television speaker and you'll hear how it will sound on a small, cheap TV. Other features important for this work are individual speaker mutes for tracking and dealing with encode-decode artifacts heard on a specific speaker; switchable lowpass filter to the subwoofer channel; and quad panner output bus assign for an optional joystick or other surround effect generators.

I would like to thank Bob Heiber and Barry Goldberg at Chace Productions in Burbank for letting me come in and interrupt their surround mix session.

Neotek, distributed by Martinsound, 1151 W. Valley Blvd., Alhambra, CA 91803; 818/281-3555; fax 818/284-3092. ■

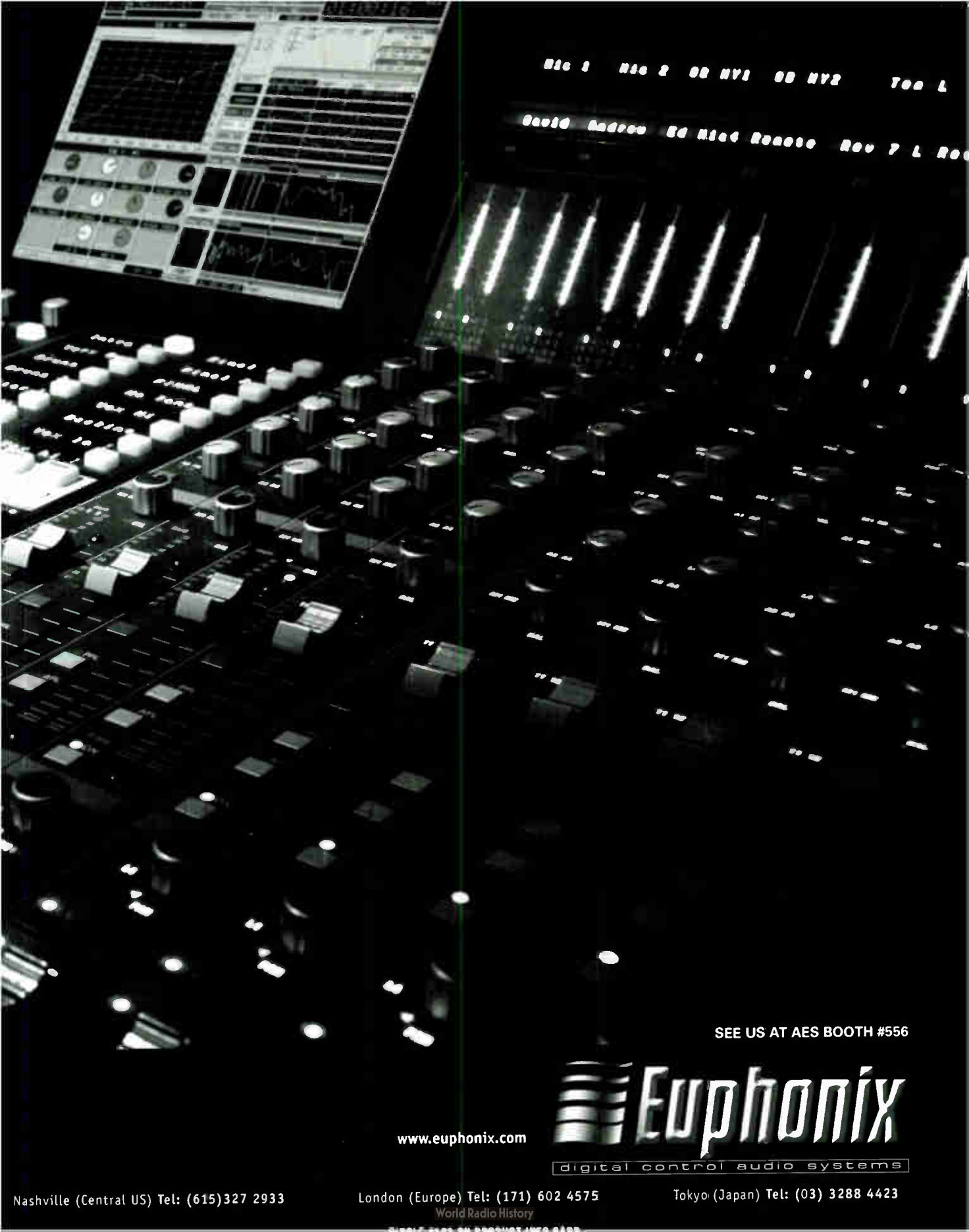


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MANLEY LABORATORIES MIC/EQ 500 COMBO

MICROPHONE PREAMP/EQUALIZER

Manley Laboratories of Chino, Calif., has produced the MIC/EQ 500 Combo with the sole purpose of providing the purest possible microphone signal path for direct recording. Designed by David Manley, the MIC/EQ 500 Combo is a fine example of a classic tube circuit fully realized in a modern package using the best available components and manufacturing techniques. Intended applications include use with primary orchestral mics and spot recording of vocals and acoustic and electric guitars.

The mic preamp section uses a fully differential Class A input stage similar to the amplifier circuit in the Manley Variable Mu Limiter/Compressor, considered by some to be the finest audio line amplifier currently being built. The MIC/EQ 500 Combo's equalizer section is modeled after a vintage design by Arthur Davis, who has worked for Altec Lansing (Cinema Products), Universal Audio and Langevin. Davis' passive equalizer circuit is highly praised by mastering engineers and collectors of audiophile gear.

The fully differential input stage is a design departure from Manley's other mic preamplifiers, the Manley 40dB dual mono and single channel microphone preamps. The MIC/EQ 500 Combo is quieter, cleaner and smoother than the 40dB preamp, which uses a "single-ended" tube circuit and operates the two triode sections in cascade. Also, in the 40dB, the signal out of the mic input transformer is referenced to ground at the grid of the first tube stage. Instead, the MIC/EQ 500 Combo uses two triodes in a fully differential circuit to feed a second pair of push-pull triodes before the output transformer. The signal enters the first tube stage fully balanced and leaves the last stage fully balanced out of the transformer. It is interesting that a small amount of



negative feedback is accrued by connecting the cathodes of the output stage tubes to a separate winding on the final output transformer. As a rule, Manley designs use less than 12 dB of negative feedback to "maximize transient response accuracy." Fully differential topology also has the propensity to cancel out even order harmonic distortion products. A similar differential circuit is used in the popular Telefunken V77 mic preamp. (David Manley has a long association with EMI Research, Engineering, Design and Development or REDD. The V77 units were used by EMI Studios at Abbey Road.)

Maximum gain of the mic preamp section is 55 dB, enough for 98% of all studio recordings but maybe a little lean for some Foley sounds or extremely quiet ambient or nature recordings. (Of course, necessary gain greatly depends on the gain of the microphone and the analog input level of the recording system.) Frequency response is 10 to 22k Hz (+0/-1 dB), and signal-to-noise ratio from mic to line out is 95 dB. This is one of the quietest preamps I have ever come across—you will start to hear the noise floor of your microphone, room noise, A/C noise and console electronics. I had no problems with microphonics or other typical vacuum tube maladies, no doubt a result of the fact that each unit is hand-assembled with carefully matched and tested tubes.

The passive equalizer that follows the preamp section is activat-

ed by a front panel routing switch that either divides or unites the preamp and equalizer sections. The mic preamp may be operated as a stand-alone unit without the equalizer by using the preamp's output XLR connector. Similarly, the equalizer may be used separately via the line input and output jacks. When preamp and EQ are used together, the line amplifier (another fully differential circuit) has about 10 dB of user-adjustable variable gain that makes up the insertion loss of the passive equalizer circuit. There is an insertion point for connection of external processors, such as a compressor or de-esser, before the equalizer.

The equalizer is a two-band, high/low type with peak and shelving switches. Frequencies are: LF Band (40 Hz and 100 Hz) and HF Band (3 kHz, 5 kHz, 7 kHz, 10 kHz and 15 kHz). The Boost/Cut controls are switches rather than pots and are in 2dB steps from -10 dB to +10 dB. The custom-built Greyhill switches feature gold contacts and ensure clean, reliable and resettable operation. There are only three components in the equalizer signal path: one resistor, one inductor and one capacitor.

To match the rest of the entire Manley product line, the MIC/EQ 500 Combo is housed in an aluminum-framed cabinet with a thick, engraved front panel. The overall solid feel and sturdy construction of the two-rackspace unit is not betrayed by the internal construction. Inside, a large, thick, printed circuit board holds all components with the attendant wiring neatly

BY BARRY RUDOLPH

wrapped and bundled together. There is an overall handmade craftsmanship throughout with clean applications of shielding for all sources of stray magnetic fields. Top-grade components are used throughout with gold-plated terminals, switches and XLR connectors. I object to the quality of the small output VU meter and wonder why the same meter used in the Variable Mu limiter wasn't used. (Actually, an output meter is redundant since you should be measuring VU/peak levels at your master recorder's meters.)

In operation, the MIC/EQ 500 Combo is an impressive unit. I recorded solo violin using a Milab microphone with and without the equalizer path. There is no difference in sound with the equalizer in or out (with the EQ flat, of course) other than the 10dB gain change. I would characterize the sound as "very close," in the sense that I was hearing the violin exactly as the microphone was hearing it—I could "hear" the lack of electronics between the sound source and my ears. I found little need to use the equalizer, apart from compensating for microphone shortcomings.

One small point: I wish there was an easy way to simply add the make-up gain if you elect to insert the equalizer after you have already arrived at a proper recording level without it. Perhaps if the front panel engraving had accurate hash marks indicating gain in dB, you could add the gain without having to guess. I would also like to see a Mute button. I love direct recording, except for the fact that if you want to erase an inadvertent noise and have no mute, you will have to physically unpatch the output of the preamp. Hutch over at Manley assures me that if the output control and/or the mic gain control is turned all the way down, you would effectively mute the output (-100 dB). However, without hash marks it would be difficult to return to the same exact level setting.

Recording vocals revealed striking differences between microphones, as well as mic placement. Singers could hear themselves better and didn't complain of a "veil" over their voices. I used less EQ and a little less compression. I think getting a great sound was never easier. Retail is \$2,900.

Manley Laboratories Inc., 13880 Magnolia Avenue, Chino, CA 91710; 909/627-4256; fax 909/628-2482. Web site: www.manleylabs.com. ■

Barry Rudolph is an L.A.-based recording engineer. Visit his Web site at <http://home.att.net/~brudolph>.

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PENNY & GILES PP10

MULTICHANNEL AUDIO MULTIPROCESSOR

Just over a year ago, P&G surprised the pro audio community with the introduction of its PP10 Audio MultiProcessor, a multichannel, 24-bit (32-bit FP internal) digital audio processor offering simultaneous manipulation of up to 16 audio channels. Actually, we shouldn't have been too surprised—although most of us in the audio industry think of Penny & Giles as a “fader company,” P&G Audio is part of a large multinational organization of P&G divisions (founded in 1955) involved in diverse hi-tech industries such as avionics, rocket development, sonar systems, satellite communications, etc. Perhaps you used a P&G Pegasus 22-gigabyte data storage unit for your last archival session...

mainframe approach also allows a single front panel interface to control multiple units. Housed in a two-rackspace chassis, a “base” PP10 unit retails at \$7,590 and includes a selection of dynamics, routing and EQ software algorithms, and stereo digital I/O (AES and S/PDIF) connections. Each PP10 has a single set of digital I/Os in both S/PDIF coaxial and AES/EBU formats, as well as a BNC word clock input.

The beauty of the PP10 Audio MultiProcessor system is the extensive nature of its expandability. To enable the processing of 16 simultaneous sources, seven back panel slots are provided for additional stereo input or output panels (analog or digital), which can be pur-

PP20R duplicates all the PP10's front panel controls, including the large LCD screen. Parameters can also be controlled by P&G's DC16 Digital Controller, which adds 16 endless-belt fader controllers and soft keys that can be set to manipulate individual parameters. MIDI control is also offered via MIDI In/Out/Thru ports on the PP10 back panel.

POWER AND GRACE

At the heart of the system is the formidable Texas Instruments TMS320C31 33MHz DSP chip, which provides 24-bit audio resolution and a 32-bit floating-point architecture. The TI chip can support numerous simultaneous signal processing tasks, and the Pythagoras software architecture allows the system to be configured from a library of algorithms and processing functions, which may be loaded via a floppy drive on the PP10 front panel.

The PP10's front panel combines simplicity with a Eurostyle design that is elegant and sleek. Unfortunately, the icons on the nine control keys controls are somewhat vague, so new users may get lost at first. With this in mind, the unit's extensive and well-written manual includes a quick start-up section for those in a hurry. After a short acclimation period—about 15 minutes—users will be completely familiar with the unit and be able to master its operation. One nice touch the PP10 provides is an onboard tutorial that can be enabled by pressing the Activate/Bypass button (it's the one marked with that curious square-with-slash icon) while powering up. Between the complete manual, quick start section and tutorial, new users should be up and running ASAP.

The manual is filled with dozens of real-life application ideas and production notes for the creative PP10 user. However, I felt the manual should provide more informa-



ENTER THE PP10

The PP10 is an outboard signal manipulation device that is the equivalent of an entire rack of outboard gear, and is capable of processing up to 16 digital audio channels—simultaneously. All processing is software based, and users can pick and choose from a variety of P&G's Pythagoras Audio software, which includes suites of processors such as Dynamics, EQ, Studio and Mastering. All Pythagoras software can be linked by soft-wired patching and routing and allows for the cloning of multiple processors. The PP10's hardware-based expandable

chased with the unit or added later as needed. The optional analog interfaces include 18- or 20-bit A-to-D stereo input modules (\$1,500 and \$1,900, respectively) and a \$1,300 18-bit D-to-A stereo output module. The standard—or optional—digital I/O module (\$1,390) handles signals up to 24 bits in length.

The Audio MultiProcessor is available in two basic styles—the PP10 shown above and the PP20, which is identical to the PP10, but *sans* front panel controls. Two remote controllers are offered: The

BY GEORGE PETERSEN

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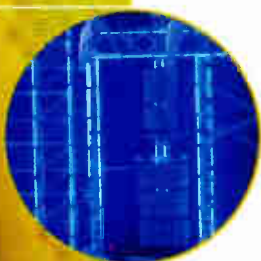
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World Radio History

FIELD TEST

tion on accessing PP10 parameters via external devices other than Penny & Giles' DCI6 controller—MIDI affords much more control of the PP10, particularly when using an external MIDI sequencer to send dynamic automation via System Exclusive (SysEx) commands. Perhaps P&G could include such an appendix in the next edition of the PP10 manual, or make this data available on the Internet. And, bearing in mind that no one likes to consult a manual in the middle of a heated session, perhaps Penny & Giles could consider providing some sort of laminated quick start card for new users or visiting engineers.

All front panel controls are duplicated on the optional PP20R compact remote controller which, like the PP10, has a wonderful feel and tactile response. The level control's audio curve is intended to approximate the fader taper response of Penny & Giles' mechanical faders. And rather than merely offering simple parameter or level adjustments, the data wheel and level control have a variable response; the incremental control steps increase in size when the dials are turned more rapidly.

PP10 control operations are rapid and precise. Just select the menu item you want to change and then enter a new value with the data wheel. From the LCD window it's easy to set up and select processors, determine the required routing and chain any necessary processors in any order you need. The LCD screen is divided so that the left-most third shows control menus, while the right shows the selected processor, channel I/O routing, stereo peak-hold meters with numerical displays of the highest peak reached and a gas gauge-style DSP Meter.

The DSP Meter gives the user an approximation of the amount of DSP power that's available for use and remaining in the system. If a DSP overload (not enough DSP power) condition exists, the PP10 automatically reduces the sampling rate of the program material by 50%. According to the PP10 manual there will be occasions when such a drastic reduction in sampling rate will go unnoticed, but with the work I do (mainly music CD sessions and broadcast production) I think I'd rather just keep an eye on the DSP Meter and avoid the half-sampling rate condition. At least the PP10's approach is preferable to a system crash/restart,

which is the typical reaction when most computer-based DSP programs hit the ceiling.

Any input can be routed to any output(s), with or without signal processing. Although using a box with the PP10's power as a lowly signal router/electronic patchbay seems somewhat akin to using a cannon as a fly swatter, the ability to route signals with absolute precision and repeatability becomes quite powerful, especially when combined with the storage of all routings, DSP parameters and presets either in internal user memories or offloaded onto floppy disk.

SOFTWARE AND SUCH

The PP10 includes a selection from the Pythagoras Audio software collection as part of its standard "Base" configuration: parametric EQ, low and high shelving, notch filter, ducker, soft clipper, noise gate, mono-to-mono crossfade, stereo crossfade, mix mono inputs, mix stereo inputs, dual mono-to-stereo router, and 512 samples (approximately 10-12 milliseconds, depending on sample rate selected) of delay. The point of the Pythagoras software line is to allow users to get started, perhaps with a base unit, and add specialized packages later.

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FIELD TEST

ages for the PP10/PP20 include The Mastering Suite, with a range of 25 processors, such as narrow band compressors/expanders, five parametric EQs, warmth EQ, notch filter, low-cut filter, soft-knee/kneeless compressors and expanders, soft clipper, micro delay, dither, link, clone and noise shaping. Pythagoras Dynamics offers four different compressors (soft-knee-, hard-knee-, kneeless- and hyper-compressor); three expanders, brick wall filter and expander/gate. The Pythagoras EQ software has five different paramet-

rics, a warmth EQ, notch filters and low-cut filter. The \$2,200 Pythagoras Studio Suite supports 8-channel operation and provides access to more than 30 processor types, with a balanced selection of compressors, expanders, parametric EQs, notch filters, low-cut filter, brick wall limiter and expander gate—essentially all the power of the Dynamics and EQ packages in one bundle.

Over a period of months (I really liked this box) I had the opportunity to try just about everything in nearly every kind of studio application. Compressor quality was number one on my list, as pumping, breathing and overshoot are

all tell-tale signs of poor dynamics processing. The Pythagoras soft-knee compressor is about as good as it gets and is perhaps the best compressor I've ever heard—analogue or digital. In use, on either individual instruments—cello, voice, piano, bass and drums—and full mixes, it was audibly transparent, leading me to use more compression than I normally would have dared. The audio never seemed squashed except at the most extreme settings.

I soon saw that the main drawback to the PP10 was that I wanted more I/O modules than the two stereo pairs of digital and one stereo pair of analog that I had in the test unit—especially on live drum tracking sessions. And while a fully loaded PP10 runs about \$15K when completely decked out, if you can look at the product as up to eight independent stereo processors, then the price seems a lot more manageable.

Other Pythagoras compressors/limiters were also of equally high quality. However, I should warn users to be careful about the Hyper-compressor, which uses a downward compression curve to bring louder signals below the set threshold, while transients and peaks become softer than sounds at the threshold. This processor is sort of the audio equivalent of a fun house mirror—sound designers will probably love it, but it's just not the thing for smooth pop vocals.

If you're looking for equalization, Pythagoras Studio has just about everything you need, with a choice of 3-band parametrics, such as mid-mid-mid, low-mid-mid, mid-mid-hi, etc. Fans of overlapping bands will go wild here, although the names are slightly misleading. For example, the mid-mid-mid EQ has three bands with a 20 to 15k Hz range and a nice deep -40 to +15dB gain variance. In fact, if nobody was looking, it would make a great notch filter. And speaking of notch filters, the PP10 excels here, with a choice of either a single notch (with a hair-thin 0.01 to 0.7-octave bandwidth) or as a harmonic notch, which automatically cuts the fundamental, as well as two of its harmonics. Also offered is a "warmth" EQ, which applies a low-gain/wide-bandwidth upper bass range boost.

As I used the PP10 more and more, I began to appreciate the little pluses it offers, such as a little $\frac{1}{2}$ -octave frequency analyzer display that accompanies some of the EQ screens—by the way, it also has a freeze function for holding the display at any particular point in time. Also available is a display for loudness metering (for approximating



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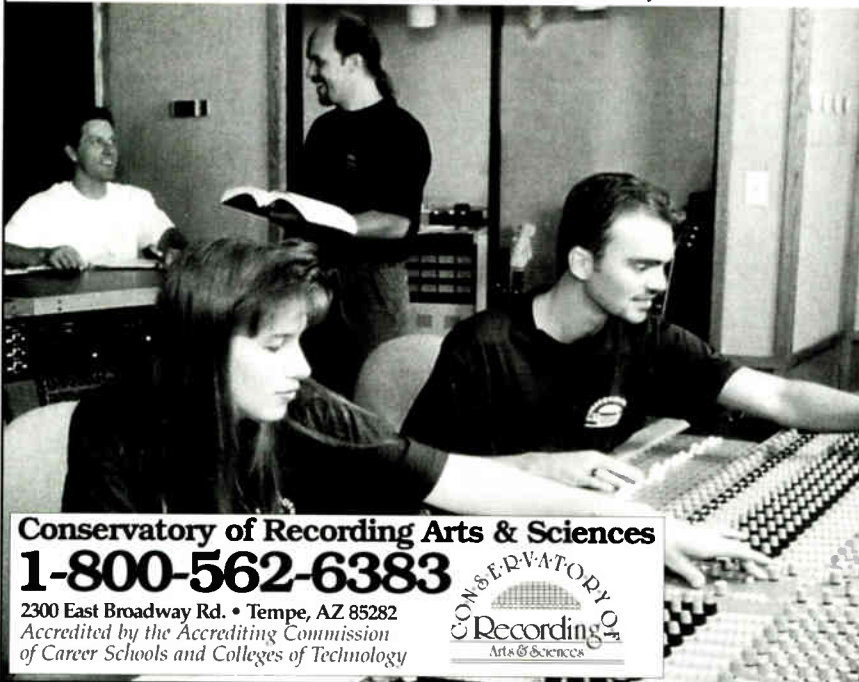
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Fletcher/Munson-style responses) and a stereo image meter that indicates L/R correlation.

IT'S THE SOUND

Offering 32-bit internal processing with up to 24-bit I/O via the digital ports, and 20- (or 18-) bit 64x oversampled A/D converters and 20-bit delta sigma (64x oversampled) DACs, the PP10 is serious about audio and it sounds great. I used the PP10 for pre- and post-processing 20-bit mixes on their way into and out of a workstation while mastering archival material, and the results were absolutely free of any audible artifacts.

Another factor leading to the PP10's clear sound quality stems from its most basic approach to signal processing. Typical digital multi-effects devices process chained effects by a procedure where one set of samples is processed, followed by another, etc., which can result in noticeable delays in critical applications. However, the Pythagoras software processes on a sample-by-sample basis, allowing for the possibility of all audio processing occurring within a single audio sample (or occasionally a couple of samples). This results in clearer, tighter sound, with reduced image smear when dealing with stereo sources or bringing processed sounds back into a mix.

THE FUTURE...

One of the PP10's strongest assets is that it offers expandability from both a software and hardware standpoint. Three years from now, when everybody needs 24-bit I/Os, Penny & Giles should be offering new I/O modules that bring the unit up to the new standard. This approach also allows users to buy small and expand the system later, whether by adding a couple more processing channels or a new software package. As it is right now, the PP10 is ideal for processing surround tracks in LCRS, LCRSS, 5.1 or other multichannel applications. The next Pythagoras software release is reported to be a surround package with link, clone and encode/decode algorithms. And although somewhat pricey, the PP10 system is one great-sounding, versatile box offering the power of eight digital processors in a single chassis. Not bad for a company that makes faders!

Penny & Giles Inc., 2716 Ocean Park Blvd., Ste. 1005, Santa Monica, CA 90405; 310/393-0014; fax 310/450-9860; e-mail: 100442.2227@compuserve.com. ■

LOAD



Since nothing can ruin your day quite like accidentally erasing two weeks' worth of irreproducible creativity, the MPC's disk management screens include graphic icons that let you see at a glance that what you're about to do is what you intend.

Lets you slice and dice your sounds and loops to your heart's content.

ZONE EDIT



With its combination of informative icons and clean display design, the MPC2000's new graphical interface

allows you to concentrate on your music, not on trying to remember what button to press next.

MIXER



Easily see and adjust the currently selected Pad Bank's level and pan settings. You can even record moves into the MPC's sequencer for fully automated mixes.

Whether you're producing rap or hip hop, sequencing a rack of MIDI modules, or performing live, the new Akai MPC2000 gives you everything you've come to expect from an MPC. Start with a superb-sounding 16-bit, 32 voice stereo sampler. Then add a 64-track, 100,000 note sequencer with linear or drum-machine style programming, extensive editing, a standard SCSI interface and powerful expansion options. At the suggested retail price of \$1499, there's simply no other choice.

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KEYPAD

The keypad lets you directly enter sample points for editing and looping. In combination with the shift key, it's used to select the MPC's functional modules.

TAP TEMPO

If you're feeling the beat, just tap this button in rhythm and the MPC2000 will calculate and set your desired tempo. During sequence recording, holding down this button and playing any pad will cause that pad's sound to be retriggered at the currently set Timing rate.

UNDO SEQ

OK, we know you'll never need this, but for the more sequence-challenged among us, the Undo function lets us keep trying any sequence recording or editing until we get it right.

NOTE VARIATION

For subtle expressiveness or wild special effects, this slider gives you real-time control of any sound's tuning, attack, decay, or filter frequency. It may be used while you are sequencing a sound, or in a separate pass after the sound has been sequenced.

FLOPPY DISK DRIVE

For storing and recalling sounds and sequences. Also allows easy software upgrades, including the ability to use your PC or Mac to download new operating system software from Akai's World Wide Web site.

SOFT KEYS

Six context-sensitive softkeys take you right where you want to go, without having to wade through an endless succession of hierarchal menus.

OPEN WINDOW BUTTON

With the cursor on a main parameter, pressing the Open Window button gives you immediate access to any associated secondary parameters.

DATA/DIGIT WHEELS

Use the inner wheel to enter data. The outer wheel sets the variable scrolling resolution when moving through long samples.

CURSOR CONTROL

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PAD CONTROLS

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CIRCLE #136 ON PRODUCT INFO CARD

World Radio History

NEUMANN TLM 103

STUDIO CONDENSER MICROPHONE

Technology is sometimes unveiled in the most mysterious places. I first saw the Neumann TLM 103 on a clear summer afternoon at Beaulieu Vineyards in California's Napa Valley, while enjoying some vintage Cabernets in BV's reserve tasting room. And, no, it didn't happen entirely by chance—you see, when you go wine tasting with some friends from Neumann (another company known for fine vintages), special things are bound to happen.

After a quick toast to our mutual successes, Wolfgang Fraissinet from Neumann Berlin pulled a gleaming wood box out of his briefcase. I wasn't exactly sure what to expect, but inside was the TLM 103 shown here. I carefully lifted it out of the case and held it to the light, just as one would check out the deep hue of a good Merlot. And through the layers of its front grille, I could make out the distinct silhouette of the K103 large-diaphragm capsule, derived from that used in Neumann's classic U67 and U87 studio condensers. But the TLM 103 was clearly different, weighing in at about a pound and being a scant 5.25 inches in height. And best of all—it was priced at \$995!

Essentially, the TLM 103 (slated to ship in January) is a 48VDC phantom-powered studio condenser mic designed for users who require a high-quality, yet affordable, microphone—perfect for the project studio owner. With this in mind, some frills were eliminated from the TLM 103, such as multipattern operation, bass roll-off switches and internal attenuation pads. The polar pattern is a traditional cardioid, which is the best choice in 90% of all studio applications anyway.

As another way of addressing the project studio owner, the TLM 103's frequency response and polar patterns were optimized for voice and instrument reproduction, with a flat frequency response to about 5 kHz, followed by a wide, +4dB presence boost in the higher frequencies. Overall, the frequency response is similar to that of the U87.

As the mic's bottom-end frequency response extends down to 20 Hz, the TLM 103 can be susceptible to unwanted subsonic frequencies. So to reduce vibration from outside sources that could be transmitted through the mic stand, all of the TLM 103's internal components,



including the capsule, are elastically mounted. And if your studio is located below a subway station or next to an artillery range, an EA 103 elastic suspension (shock-mount) is optional.

But the real difference between the TLM 103 and other Neumann mics lies beneath the surface. Neumann's TLM designation is actually an acronym for "transformerless microphone," a design where the usual output transformer is replaced with an electronic circuit. As with traditional transformers, this ensures good common-mode rejection and reduces the RF interference that can degrade the balanced audio signal. Additionally, transformerless designs can offer better low-level linearity, more accurate low frequencies and freedom from core saturation.

More significant is the fact that the TLM 103's self-noise is stated to be an impressively low 7dB DIN/IEC 651 (A-weighted) or 17.5dB CCIR, which—from the standpoint of noise performance alone—puts the TLM 103 on a par with the best measurement mics available. With the ability to handle sound pressure levels of up to 138 dB (at 0.5% THD), this provides a maximum dynamic range of 131 dB.

The TLM 103's \$995 price includes wooden box and swivel mount. Numerous options are available, such as battery- and AC-powered phantom power supplies, an overhead hanging mount, windscreen, pop filter and shock-mount.

There is no question that a quality mic with extremely low noise performance will appeal to a wide range of users, especially in Foley, radio drama, sound effects/sample recording and as a spot mic in orchestral applications. Additionally, the combination of a large-diaphragm design with a rising high-end response should be useful in all sorts of voice situations, whether it's vocal recording in project studios or announce narration for broadcast. So far, the TLM 103 looks good, feels good and has impressive specs. But how does it sound? We'll have to wait until AES to find out.

Neumann USA, 1 Enterprise Drive, P.O. Box 987, Old Lyme, CT 06371; 860/434-5220; Fax: 860/434-3148; Web site: www.neumannusa.com. ■

BY GEORGE PETERSEN

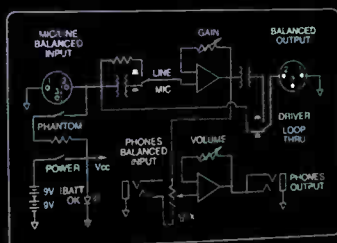
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AKG C 480 B

MICROPHONE PREAMP

The C 480 B, AKG's latest mic preamplifier, is designed to be used with the long-established line of AKG ULS (Ultra-Linear Series) modular, small-diaphragm condenser microphone capsules. To prevent any confusion, the C 480 B is not an outboard mic preamp used for bringing mic level signals up to line level. Rather, it is quite literally the rear half of a microphone (i.e., the output stage and associated circuitry, contained inside a rolled brass body). You must screw on a ULS capsule to have a complete, working microphone. A variety of ULS capsules, each providing a different polar pattern, are available for use with the C 480 B.

The ULS capsules were originally introduced in 1984 for use with the outstanding AKG C 460 B (\$515 list), a transformer-balanced mic preamp that runs on 9-52 volts phantom power (the C 460 B was introduced in 1982). Until the C 480 B came on the scene, the C 460 B (with ULS capsule) was AKG's flagship small-diaphragm condenser mic. Thankfully, the C 460 B is still in production, and AKG has no plans to discontinue it.

Both the C 480 B and the C 460 B can use the original CK61 cardioid, CK62 omni and CK63 hypercar-

dioid ULS capsules (\$216 each). The CK68 shotgun capsule works only with the C 460 B and has been discontinued to make way for the new CK69 (\$785) shotgun capsule. Although the CK69 will work with both mic preamps, its sensitivity will be considerably higher when used with the C 480 B. I tested a pair of 480s with CK61 cardioid capsules for this review (all of the following specifications pertain to this configuration).

As the new AKG C 480 B is essentially a transformerless, 48-volt version of the C 460 B, a brief review of the latter will be useful. And since most of the screw-on ULS capsules can be used with either mic preamp and the preamps can be bought separately without capsules, owners of the C 460 B who are considering an upgrade to the C 480 B will want to know how the sound of the two modular systems compare. We'll get to that in a moment, but first our tour down memory lane.

A MICRO-TOUR OF THE C 460 B

I have to say I'm a huge fan of the C 460 B; I own four of them with CK61-ULS cardioid capsules. At a list price of only \$699, the C 460 B comb-ULS/61, as it's called, offers one of the best values for a small-diaphragm condenser on the market today. It's very linear, offers a number of useful features (modular capsules, switchable 10dB pre-attenuation and two-position bass roll-off switch) and sounds great on a variety of instruments. Over the years, the C 460 B comb-ULS/61 has been my very first choice for miking overhead cymbals on a drum kit, and it also sounds wonderful on acoustic guitar and background vocal groups (two room mics in X-Y configuration for the latter application). The CK61 capsules offer excellent off-axis frequency response, of particular

worth when tracking large ensembles or miking large instruments.

At first glance, the C 480 B's housing looks exactly the same as that of the C 460 B. But, although the two preamps are the same dimensions (5.9 inches long by 0.8 inch wide) and sport the same black matte finish on their rolled brass bodies, closer examination reveals a few nice extras on the 480. The 460 offered only one four-way switch for choosing between linear response, 70Hz roll-off, 150Hz roll-off, or 10dB pre-attenuation. That is, you could not pre-attenuate the output stage and roll off the bass frequency response simultaneously. (By the way, both the 480 and 460 pre-attenuate the output electronics rather than placing a pad after the preamp; this design tends to nip overload distortion in the bud, though it also reduces the signal-to-noise ratio when the pre-attenuator is switched in.)

The 480 offers two separate multiposition switches for controlling the mic's output level and frequency response. The first switch lets you pre-attenuate the preamp 10 dB, boost its gain 6 dB or leave it at 0 dB. If your console and outboard preamps don't deliver enough clean gain for miking very quiet instruments, the 6dB boost can come in very handy. The 480 delivers an impressive output level compared to other preamps in its class. Its sensitivity at 1 kHz (with the CK61 capsule) is rated at 20 mV/Pa in the 0dB position, 40 mV/Pa with the 6dB boost switched in. (In comparison, the 460's sensitivity is a modest 10 mV/Pa.)

The 480's second three-way switch lets you choose a linear frequency response or roll off the bass at 70 or 150 Hz, respectively (with a 12dB/octave slope). Having separate control of preamp output level and frequency response makes the 480 a more flexible performer than its sibling, the 460.

The 480 ships in the familiar

BY MICHAEL COOPER



black, hard plastic, foam-lined case that AKG switched to a few years back (replacing its former cardboard storage boxes). An SA 40 swiveling mic stand adapter comes with the mic preamp, but the W32 foam windscreen (standard issue with the C 460 B comb-ULS/61) is absent. The CK61 capsules are a bit more susceptible to air turbulence than most other small-diaphragm capsules, so you'll want to buy a W32 for every C 480 B/CK61 combo you own. This is especially needed when close-miking heavy-breathing acoustic guitarists. The W32 can be purchased separately for \$9.40.

If I have one complaint about the new foam inserts for the storage case, it's that you can't store the 480 with a capsule attached—you must unscrew the capsule and store it separately in its own box. I don't like to screw/unscrew capsules any more than I have to—I always worry about cross-threading. With this new arrangement, you must disassemble the mic for storage. On a brighter note, the 480 provides the same self-cleaning, gold-plated capsule contact as the 460.

THE INSIDE STORY

The 480 is exceedingly quiet and can take considerable punishment. Its A-weighted equivalent noise level is a very impressive 11 dB, and its maximum SPL for 0.5% THD is 140 dB SPL (with the recommended load impedance of 2,000 ohms and no attenuation). That translates to an excellent A-weighted dynamic range of 129 dB (a 9dB improvement over the C 460 B). But whereas the 460 can operate on from 9 to 52 volts phantom power, the 480 requires 48 volts (± 4 volts).

The frequency response of the 480's preamplifier is 10 to 30k Hz ± 3 dB. Since the 480 is sold separately and not as part of a package with a specific ULS capsule, no frequency response plot is included. Since it incorporates a transformerless design, I expected the 480's frequency range to be more extended than that offered by the 460. An A/B comparison was in order.

Using the same exact CK61 capsule, I recorded an acoustic guitar with first the C 480 B and then the C 460 B. The guitar was miked at about eight inches from the 12th fret and recorded with a Millennia Media HV-3 mic preamp (an extremely linear, transformerless, solid-state pre) and via a Yamaha 02R's 20-bit A/D converter (accessed via the channel inserts so as to bypass the onboard mic pre) to R-DAT, dithered to 16 bits.



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FIELD TEST

The C 480 B offers a deeper and bigger bottom and more detailed highs in comparison to the C 460 B. While the transient response of the 460 is excellent, the 480's is slightly better and rivals that of the best mics on the market today. This bidirectional extension of the frequency response gives the 480 an overall better balanced tonality; the 460 sounds a little bright in comparison. This can work to the 460's advantage in some situations. For example, the 460 sounds a little more open and less boomy on close-miked acoustic guitar. However, switching in the 480's 70Hz roll-off yields a comparable bottom end, and the 480 still gives you a slightly sparklier "twing" on the pick strike. I recorded several acoustic guitars, including a 12-string, on different occasions with the 480 and was always very happy with the results.

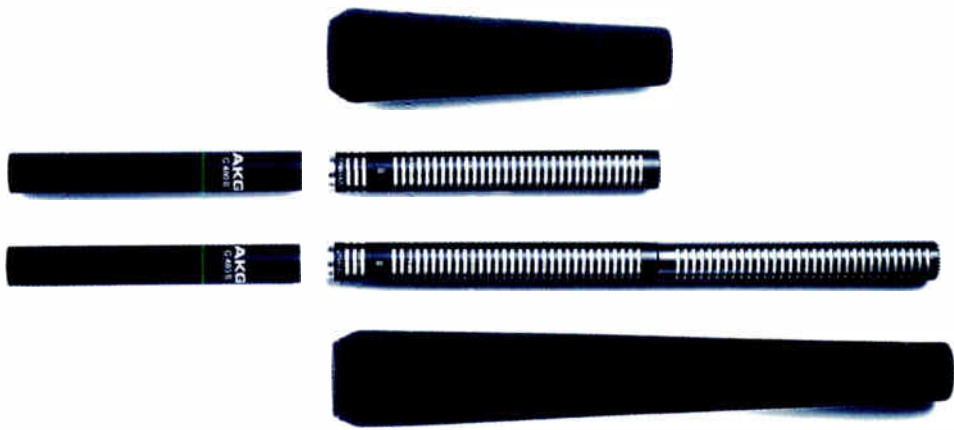
IN SESSION

The next test was miking overhead cymbals on a drum kit, using a spaced pair of 480s. The tone was clear and even, and the stereo image wide and tight. The 480 reproduced transients extremely well but without any harshness, producing a beautiful, silvery high end "ping."

On rack toms, the 480s sounded, in a word, accurate. What I heard in the studio was faithfully represented in the control room, with outstanding transient reproduction and a balanced tone from lows to highs. The mics handled the high SPLs without breaking up, even though they were unattenuated. (The 10dB pre-attenuators on the 480s were not quite adequate for this application, so the mixer's 20dB pads were used instead.)

Next up was a Strat, played through a Fender Super Reverb amp on an R&B session. The 480 produced a controlled yet ample bottom and the overall sound was very well-defined, if a little glassy in the upper mids/highs. This glassiness has been my experience with most small-diaphragm mics on electric guitar cabinets. Adding a second, large-diaphragm mic (a RØDE Classic) and blending the two mic outputs made for a great tone that was unattainable with either mic alone. The 480 lent detail and a tight bottom end; the RØDE Classic contributed warmth and creamy body, smoothing out any brittleness from the 480. The best of both worlds.

Finally, I tried recording male lead



AKG's C 480 B mic preamp module shown here with CK69-ULS dual shotgun capsules

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vocals with the 480. I rarely employ small-diaphragm condensers for this purpose, but I have sometimes been pleasantly surprised. For this particular singer, the 480 was articulate and clear but too bright and hard. Although the opportunity did not arise to record rock background vocals, I would guess that an X-Y pair of the 480s would excel at this application, as the 460s do.

Mix technical editor Chris Michie used the 480 with the CK69-ULS condenser shotgun capsule to record bird song during a field recording workshop in California's Sierra Nevada mountains. The workshop was arranged by the Nature Sounds Society, which also supplied recording equipment: a full-track Nagra (7.5 ips) featuring on-board 48V phantom power supply. Michie was impressed with the directionality and detail of the CK69-ULS. However, the mic/capsule combination is highly sensitive to handling and wind noise and the supplied wind-screen was only marginally effective in light breezes. CK69-ULS condenser shotgun capsule users should experiment with shock-mount pistol grips and alternative windscreens, especially in outdoor applications. For details on the NSS and its recording workshop schedule call Paul Matzner at 510/236-7482.]

CONCLUSIONS

The C 480 B represents a significant improvement over the C 460 B in terms of frequency and transient responses, dynamic range and flexibility in use. Fitted with a CK61-ULS capsule, the 480 belongs to a rarefied class of small-diaphragm condensers inhabited only by a few other models such as the Neumann KM140 and B & K 4011. At \$1,001 list (\$785 for the C 480 B preamp, \$216 for the CK61 capsule), it is priced very competitively with mics in its class. The 480 has everything going for it: It's very linear, fast, clean, quiet, sensitive, dynamic, flexible in use and modular. If you're in the market for a world-class small-diaphragm condenser mic, be sure to check this one out.

AKG Acoustics (Harman Pro North America), Airpark Business Center, Suite 12, 1449 Donelson Pike, Nashville, TN 37217; 615/399-2199; fax 615/360-0265; Web site: www.akg-acoustics.com. ■

Michael Cooper is a producer, engineer and owner of Michael Cooper Recording in Eugene, Ore.

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ROLAND VS-840 DIGITAL STUDIO WORKSTATION

Just over a year ago, Roland began shipping its VS-880 Digital Studio Workstation, which defined the concept of digital-studio-in-a-box, offering a 14-channel automated digital mixer, 8-track hard disk recorder/editor and onboard digital effects. The VS-880 is available with a removable 1GB Iomega Jaz drive or a fixed hard drive, and two optional studio-quality effects processors can be added via an expansion slot. Features include eight virtual tracks per record track (up to 64 virtual tracks per song), four simultaneous record tracks, eight 3-band EQs, 14 2-band EQs, S/PDIF digital I/O, MIDI sync, MMC, SCSI port for storage/backup devices, nondestructive editing and scrub preview, time compression, time stretch, instantly resettable scene memories and dynamic automation of all fader/pan/mixer parameters via any MIDI sequencer.

Priced at \$2,795 with a 1GB Jaz drive, the VS-880 was remarkable—if not revolutionary—and it and the VS-880 V-Expanded (model with Version 2 software) went on to sell more than 50,000 units in a year. Now Roland is debuting a downmarket version, known as the VS-840, expected to be priced at about half of the cost of the VS-880.

Housed in a familiar table-top configuration, the VS-840 cuts back on some of the VS-880's features without sacrificing quality. And like its cousin, the VS-840 offers 8-track playback, 4-track simultaneous recording, 64 virtual tracks and nondestructive editing. Editing amenities include cut/copy/move/erase/exchange/insert commands, 999 levels of undo and audio scrubbing via a top panel jog wheel.

The digital mixer has 12 channels with 24 bands of parametric EQ; a stereo (or dual-mono) aux send bus is provided for connecting external processors, along with a stereo internal bus for accessing the onboard DSP effects. Digital effects include 25 algorithms, ranging from Roland's COSM guitar amp simulators to reverb, chorus, delay, vocal doubling and more. The mixer also boasts eight scene (or snapshot) recall, an in-place solo mode and an effects insert on the main stereo output bus.

The 8-track disk recorder handles up to four simultaneous record inputs, and standard functions include manual, footswitch or auto punch-in/out, eight locator points, 100 markers, loop record, MIDI Time Code and Song Position Pointer outputs for external sync, loop record and MIDI Machine Control in/out. The back panel has four un-

balanced 1/4-inch inputs and outputs, and S/PDIF digital outputs (co-ax and optical). The A/D and D/A converters are 20-bit, and all internal processing is 24-bit.

While the VS-880 offers an optional 1GB Jaz drive, the VS-840 includes a 100MB Zip drive, with a recording capacity of up to 50 track-minutes. Fifty minutes should be ample for creating a single song or commercial spot, and Zip disks are readily available and affordable (occasionally found in the \$10 to \$12 price range). For those who need more storage, a rear-panel SCSI port is a \$100 option. Also, song information recorded on the VS-840 is compatible with the VS-880, so one could presumably begin a project on the VS-840 and complete it on a VS-880 to access more mixing and DSP power.



With the debut of the VS-840, Roland offers a challenge to other affordable studio-in-a-box units, especially in terms of the VS-840's 8-track capacity, digital-domain mixing, onboard DSP effects and affordable media. Combined with a MIDI system, the VS-840 provides an easy method of adding acoustic tracks at low cost. Certainly, the unit will find users in "sketch pad" applications, but I wouldn't be surprised to see these units involved in other situations, such as creating audio for multimedia or in radio production. Time will tell.

Roland Corporation U.S., 7200 Dominion Circle, Los Angeles, CA 90040; 213/685-5141; fax 213/726-8865. Web site: www.rolandUS.com. ■

BY GEORGE PETERSEN

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STEINBERG WAVELAB 1.5

DIGITAL AUDIO EDITING PROGRAM

Most of us know that Steinberg is not a newcomer to the world of computer-based music software. When I was asked to review Steinberg's WaveLab real-time processor and wave editor for the PC, I already knew it would be a powerful program.

The WaveLab package boasts a Windows 95 or Windows NT-native program with 32-bit floating-point accuracy, 24-bit audio quality and real-time DSP.

ulaw and AU 16/24-bit PCM sound files. WaveLab works with any Win95-compatible sound card; it's up to you to choose the right card for the work you want to do. The program offers 8-, 16-, 20- and 24-bit resolution, and timecode sync at 24, 25, 29.97 and 30 fps.

RECORDING AND PLAYBACK

The familiar "tape transport" button bar has a big red dot on it that practically begs to be clicked once you

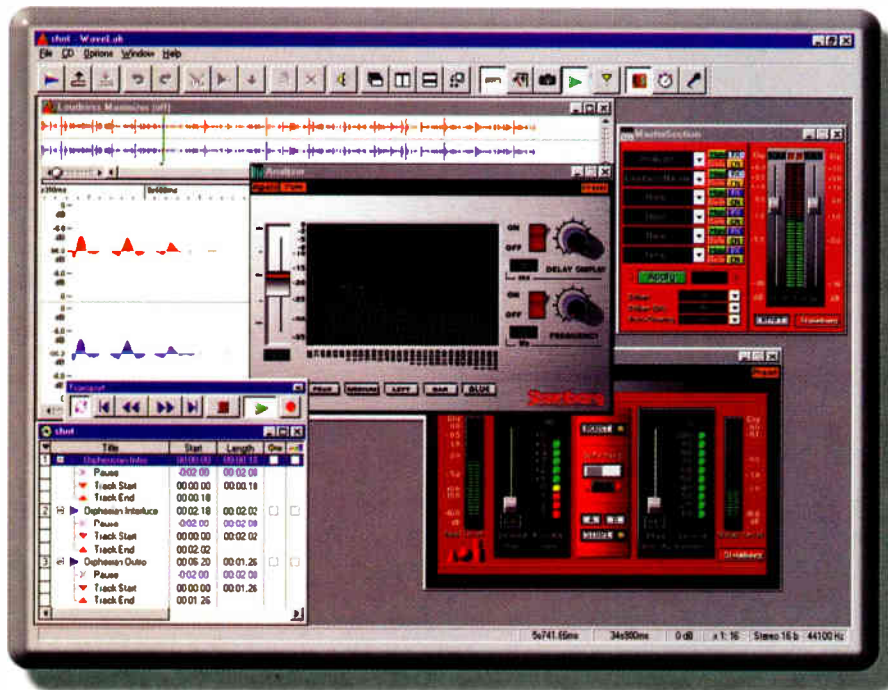
digital I/O (set in preferences), the Record dialog is the same. I had some difficulty getting a 70-minute program into the system—it seems WaveLab can only handle 1 GB worth of program at any given time under Win95 (the limit is increased to 2 gigs with Windows NT). But WaveLab is not a multi-track editing program: it can only play back one stereo .WAV at a time; and, though it can display several .WAVs, you can't play them back at the same time. WaveLab does function as any other digital audio editing program as far as cutting and pasting goes.

WaveLab uses a lot of icons similar to what you would find in Pro Tools—the Select tool looks like an "I," the Play tool looks like a speaker, and so on—which is good. The only problem with this is that it leads to a lot of clicking, and your left arm could possibly go limp and fall off, which is bad. However, some 10-key pad hot keys, similar to those used in Cubase (Enter=play, 0=Stop) increase speed of operation and, hence, productivity.

PROCESSING

WaveLab's real strength lies in its processing power, so I put it to the test. You can slot up to six real-time processes into the signal path. There are two main menus for manipulation: Level and Process. Level contains a Normalizing Filter which, when used in conjunction with the batch processor, quickly optimizes your samples. The Change Gain menu allows additional level increases to the point of saturation distortion.

WaveLab also offers level adjustments such as phase inversion, DC offset correction, fade in, fade out and crossfade. The Dynamics section comprises a fully functional compressor, expander, limiter and gate. There are many presets; I found the tube compressor/gate preset to be the most interesting in



WaveLab runs on Windows 95 or Windows NT, and offers 32-bit floating-point accuracy, with 24-bit audio quality and real-time DSP.

recommends a Pentium 90 or better with 16 megs of RAM for real-time processing. I tested this program in Windows 95, on a P150 with 64 MB—believe me, the manufacturers' recommended systems are minimum requirements. One can always use more RAM, faster clock speeds and faster hard drive access.

INSTALLATION

Installation from the WaveLab CD-ROM was easy. The program accepts .WAV, AIFF, RAW, AU 8-bit

open the WaveLab program. Next, a dialog box comes up that allows you to check the input levels to the system. Unfortunately, if you want to actually see the levels displayed, you need to click another little box to enable graphical viewing. However, if everything checks at this point, a mere click of the Record button enables your program to be recorded into the system.

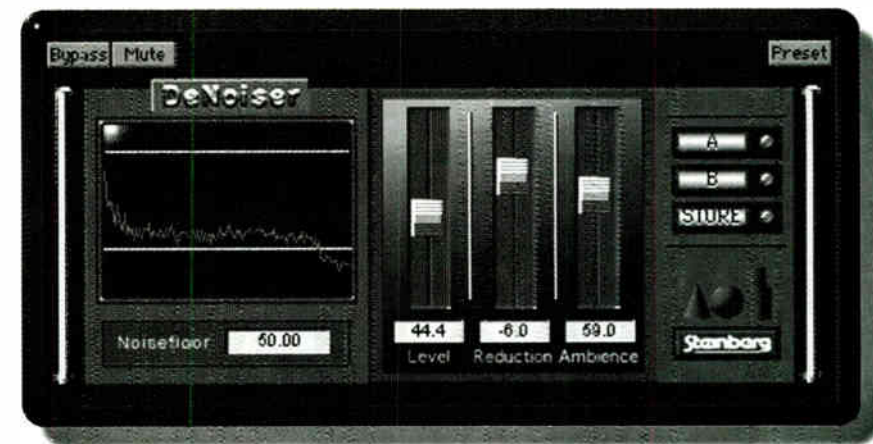
Whether you use an analog or

BY SCOTT COLBURN

that it added a bit of pleasant distortion.

The Process menu contains the real workhorse submenus. From here you can reverse the selection, correct pitch differences, add chorus, harmony processing, or convert the sample rate to 48, 44.1, 32, 22 or 11 kHz. The 3-band EQ features High (2 to 12.3 kHz), Low (45 to 2k Hz) and sweepable Mid (50 to 14.6k Hz) bands, with an adjustable Q of 1 to 18. The function I found most amazing is Time Stretching. This function is brutally accurate in that you can change any single parameter and the rest will change accordingly. You may time shift according to the number of samples, minutes and seconds, time signature, ratio, tempo (bpm or bars) or timecode to sync for film or video. The time shift range is twice as fast or half as fast. Note, however, that artifacts will increase as you push the extreme settings.

The Frequency Graph is an added bonus—you can display a selection as a FFT (Fast Fourier Transform) plot, useful for looking at your .WAV as a 3-D model to analyze frequency components. I used the Mix Reference CD (\$39.95 available from Mix Bookshelf, 800/233-9604) and recorded the tone sweeps into the computer with a con-



The DeNoiser, one of many plug-ins available for WaveLab, allows you to determine your noise floor and adjust noise reduction levels and parameter ratios.

denser mic at the mix position. I was then able to analyze my control room for modes and other acoustic problems.

MASTER SECTION

The Master Section contains master faders for overall output level adjustments, level indicators, clip indicators, peak hold values, dithering, noise shaping and the availability for six effects. The program comes with Auto Panner, Chorus, Echo (0.5 to 1000 ms), EQ (which is much more user-friendly than the EQ in the Process menu), Leveler,

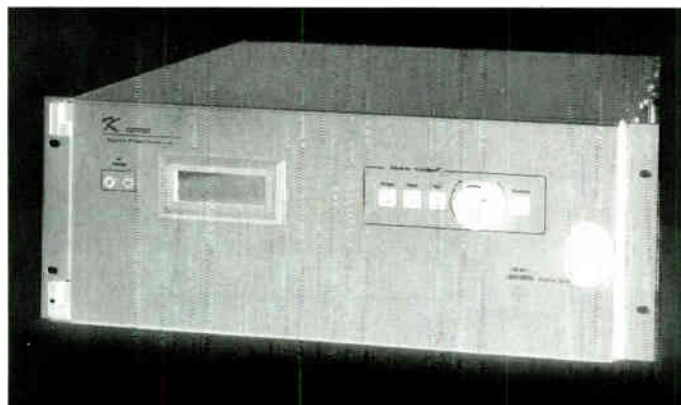
Resampler (which can adjust the sample rate in real time so you can preview what the conversion will sound like before you do it), Reverb and Tools One (including output adjustments, phase inversion and stereo reprocessing, simulating an MS or XY stereo recording pattern).

PLUG-INS

WaveLab features an open plug-in architecture, which is compatible with real-time plug-ins from Steinberg as well as third parties. At the time of this

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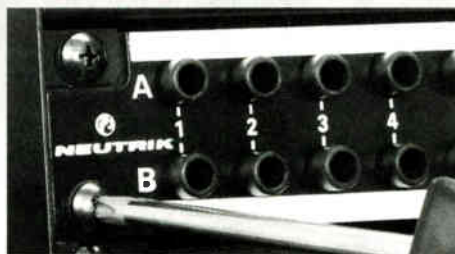
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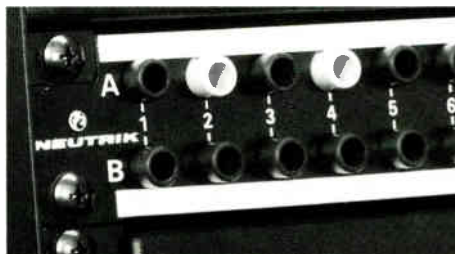
1. PatchLink SP encloses the PC cards within a cage like panel. To rotate a PC card, you simply remove the two bottom screws and pull the front panel forward.



2. There are no nuts on the back holding the PC cards in place. Just pull the PC card out of its position, rotate and replace. It's that easy. Identification strips are on the front and back so you know the exact purpose for each position.



3. With each vertical front-to-back pair half-normalled to the other, multiple combinations (normalled, paralleled, etc...) for linking your audio gear are a snap. Jacks are color coded in black and grey eliminating any guessing after changes are made.



Try PatchLink SP for yourself, it's the most cost-effective patching solution on the market today. Contact Neutrik USA or your local distributor for additional information.

SEE US AT AES BOOTH #839

NEUTRIK USA
CONNECTING THE WORLD

195 Lehigh Avenue, Lakewood, NJ 08701-4527
Phone: (908) 901-9488 • Fax: (908) 901-9608 • E-mail: neutrikusa@aol.com

CIRCLE #146 ON PRODUCT INFO CARD

FIELD TEST

review, Steinberg offered five plug-ins (\$399 each) for WaveLab. Unfortunately, these plug-ins require a dongle to be attached to the parallel port (you should see the tail my Zip drive has out the back!); however, Steinberg says future plug-ins won't require dongles. The installation disc features a bonus plug-in called the Grungelizer (and no, it doesn't make everything sound like Mudhoney). This plug-in operates in a very intuitive manner—you get six knobs to turn: one adds surface noise to make your .WAV sound like a 45, 33 or 78; Noise adds tape hiss; Distortion needs no explanation; EQ allows you to make your piece sound more and more like it's coming out of a Victrola; AC allows the introduction of 50- or 60-cycle hum; and Time Line is like the Tardis of audio, allowing you to travel back in time to the 1900s.

The DeClicker allows you to remove clicks from vinyl, but it can also be used to remove pick clicks or mouth noises. I tried this on an old 78 and monitored the filter, and was amazed by the results! The DeNoiser allows you to find a noise floor and adjust the level of reduction.

The Spectralizer adds in 2nd and 3rd harmonics based on frequency. Note that stereo processing requires an extremely fast computer for real time.

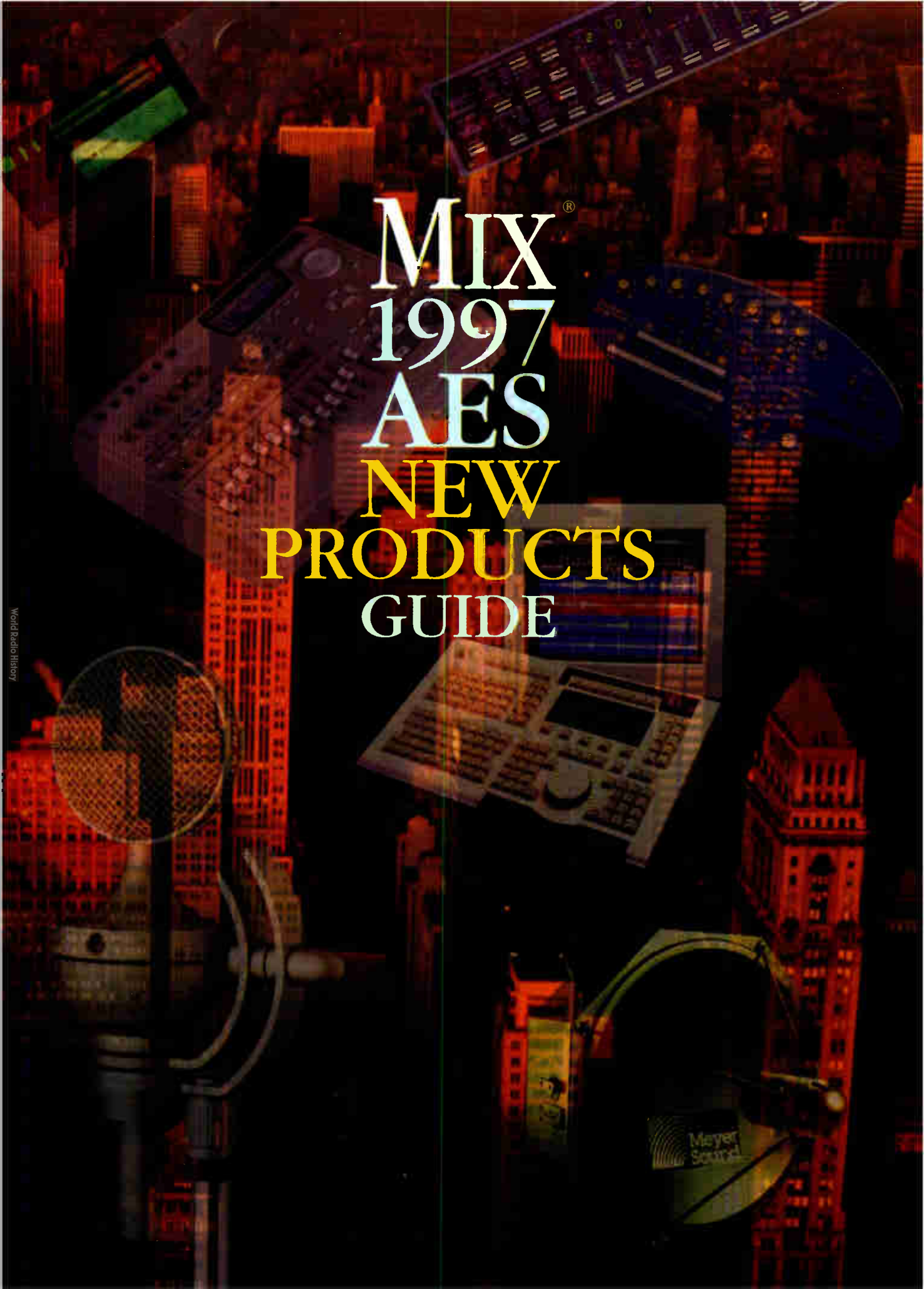
The Loudness Maximizer combines limiting and compression without altering the spectral content to maximize your level, similar to the processing used in radio broadcasts.

CONCLUSION

Steinberg WaveLab is a fully functional, clean, professional and fairly easy-to-use stereo editor. As a mastering/digital editing program, this is a fast and useful way to add that extra sparkle or final polish on the boot that will kick your production to the moon. *[Late breaking news: Steinberg is now shipping WaveLab 1.6, which offers CD-burning capability and Microsoft ActiveMovie support. Version 1.6 retails for \$499, the upgrade is free to Version 1.5 users, \$99 to Version 1.0 users.—Ed.]*

Steinberg North America, 9312 Deering Avenue, Chatsworth, CA 91311; 818/993-4161; fax 818/701-7452. Web site: www.steinberg-na.com. ■

Scott Colburn is secretly producing some of the best music the Seattle area has to offer; check out www.serv.net/~gravel for more info.



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Chung King House of Metal, N.Y. • Isley Bros. • Heart • Hall & Oates • Foreigner • Counting Crows • EMI Studios, Australia • Sunset Sound Factory, L.A.
Bearsville Studios, NY • Kevin Leonard (Whitney Houston) • Bad Religion Guy Babylon (Elton John Band) • Neil Dorfman (Sting, Paul McCartney, Def Leppard)
Bad Animals Studio • Margarita Mix, L.A. • Glen Phimister (Olivia Newton John), Australia • Bernie Becker (Neil Diamond) • Sony Studios, Japan
Walter Afanasieff (Mariah Carey, Barbara Streisand, Michael Bolton & Kenny G) • David J. Frangioni (Madonna, Aerosmith) • Green St. Recording N.Y.

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ADL 1000 Mono Tube Compressor

ADL 1500 Stereo Tube Compressor



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The Mix 1997 AES New Products Guide



Welcome to *Mix's* annual New Products Guide. In this guide, we focus on products that were introduced (or were shipping for the first time) in the months prior to—and including—the 103rd Audio Engineering Society convention in New York. For those who plan to attend, here's some of the new technology that will be on view at Manhattan's Jacob Javits Convention Center September 26-29, 1997. If you can't make it to AES in person, don't despair: We'll provide complete coverage of all of the show highlights in future issues. —*George Petersen*

Please note that all of the information presented here was supplied by the manufacturers. Specs, prices and availability may change, so contact the companies directly for more information.

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COVER

Photo Montage: Tim Gleason.
New York City photo: Harald Sund.

AC Power Products

Equi-Tech ET1R

The Model ET1R is a compact version of the popular ETR Series rackmount professional balanced AC power system with detachable rack ears for stand-alone placements. Inside each unit is a high-quality precision-wound toroid isolation transformer designed for powering sophisticated electronics. The applications for this unit include project studios, effects racks, test equipment, remote/mobile broadcasting, ENG, sound carts, STL, high-definition audio, home theater, musicians' racks, bands, etc.

Equi-Tech Corp.
PO Box 249
18258 Redwood Hwy.
Selma, OR 97508
541/597-4448; Fax: 541/597-4099
E-mail: rp@equitech.com
Web site: www.equitech.com



Furman Sound BP-1000

The rackmount BP-1000 is rated at 1 KVA, enough for the largest computer and monitor. It features online power, meaning that the batteries are continuously charged and connected to the inverter that supplies the output power, so there is no switchover dropout if a power outage occurs. The unit provides accurate voltage regulation in normal use, too. Backup time is 6 minutes at 100% load, 15 minutes at 50% load and as much as 80 minutes at 10% load.

Furman Sound Inc.
1997 McDowell Blvd.
Petaluma, CA 94954
707/763-1010; Fax: 707/763-1310
E-mail: Furmansnd@aol.com
Web site: www.furmansound.com

Galaxy/Valley Audio Far Outlet Personal Power Station

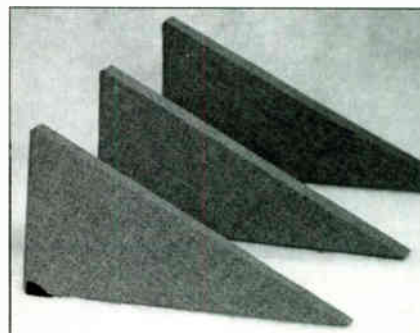
A self-contained portable AC power source, the Far Outlet



provides 250 W continuous and 400 W peak 110V household current. Thanks to Galaxy Audio's proprietary Digi-scrub filtering circuitry, the Far Outlet provides power that is as "clean" as that from a wall outlet.

Galaxy/Valley Audio
601 E. Pawnee
Wichita, KS 67211
316/263-2852; Fax: 316/263-0642
E-mail: galaxy@southwindct.net
Web site: www.galaxyaudio.com

Acoustical Materials



Acoustic Sciences Corp. Sound Flag

The Sound Flag, a dynamic new voice in acoustic treatment, provides five times more sound absorbing power

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than standard wall panels. In high contrast to the dead ambience effect of flat mounted wall panels, the edge-mounted Sound Flag controls reverb but not at the expense of the brightness. The patented Flags are simply mounted every 2 to 3 feet around the ceiling perimeter. The Sound Flag application is useful in both pro and project studios.

Acoustic Sciences Corp. Studio Trap

Studio Traps have become an important acoustic tool in today's recording studio. Recently, the diffusing reflector located inside of the Studio Trap was moved forward to produce an even hotter sound. The new placement started as a custom order for Michael Jackson's *HIStory* recording and was so successful that it has been adopted as the product standard. The adjustable Studio Trap is the preferred gobo for mixing, mastering and tracking in both pro and project studios.

Acoustic Sciences Corp.
PO Box 1189
Eugene, OR 97440
800/ASC-TUBE or 541/343-9727; Fax: 541/343-9245
E-mail: studio@tubetrap.com
Web site: www.tubetrap.com

Acoustical Solutions AlphaTec Ceiling Tile

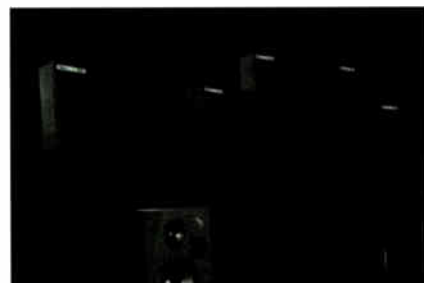
AlphaTec ceiling tiles are 2'x2'x2-1/8" drop-in ceiling tiles. They feature sound absorbing acoustical foam (NRC .75) and a rigid, fiber board backing for sound blocking (STC 21). AlphaTec tiles are available in 4 patterns plus a smooth-surfaced tile. Colors include white, tan and gray. Class 1 fire-rated.

Acoustical Solutions Inc.
3603 Mayland Ct.
Richmond, VA 23233
804/346-8350 or 800/782-5742; Fax: 804/346-8808
E-mail: acoustic@richmond.infi.net
Web site: www.acousticalsolutions.com

Industrial Acoustics Co. Quad Series Studios

Industrial Acoustics Company adds to their Accutone studio line the Quad Series 4, 5 and 8. These offer varying degrees of noise attenuation (isolation) suited to the needs of the facility. The walls can also be reflective or absorptive or diffusive as required to tune the space. Acoustical doors, windows and ventilation systems are also designed to meet the specific needs of the customer. Performance ranges from STC 45 to STC 65.

Industrial Acoustics Co. Inc.
1160 Commerce Ave.
Bronx, NY 10462
718/430-4591; Fax 718/430-4599
E-mail: archiac@aol.com
Web site: www.industrialacoustics.com



Pure Sound Technologies The BassSucker

Superior bass absorption at affordable prices. Narrow-band system designed to get the boom out of the room without degrading bass response at non-problematic frequencies. Prices: CX Series: \$269; BX Series: \$197. Pure Sound Technologies
2697 Lincoln Rd.

Victoria, B.C., Canada V8R 6A5
888/778-9757; Fax: 250/595-2956
E-mail: pst@coastnet.com
Web site: www.coastnet.com/pst

RPG AcousticTools for Project Studios

RPG Diffusor Systems continues to expand the AcousticTools for Project Studios product line by offering acoustic treatments in predefined packages. Packages include products to help control low-frequency (modal) buildup and first reflections that cause comb filtering. AcousticTools offers a wide range of acoustical accessories at affordable prices to improve the accuracy of your monitoring environment.

RPG ProFoam

To address the shortcomings of conventional wedge and convoluted foams, RPG research labs developed the first nestable profile foam. ProFoam is the only foam to offer patented Variable Depth Air Cavity (VDAC) technology to maximize absorption and minimize cost, with a revolutionary new and attractive designer shape profile, and a one-thickness profile that can be stacked to provide any amount of absorption. Polyurethane ProFoam is available in 2'x2' and 4'x2' panels for the lowest price in the industry.

RPG Diffusor Systems Inc.
651-C Commerce Dr.
Upper Marlboro, MD 20774
301/249-0044; Fax: 301/249-3912
E-mail: info@rpginc.com
Web site: www.rpginc.com

Automation, Synchronization and Control Systems



Aardvark Sync D.A.

This word clock distribution amplifier will allow you to sync more digital audio devices to one master clock. The Sync D.A. will distribute word clock (WC) digital audio sync using either WC or AES/EBU input. It is the only sync distribution system that can distribute low-jitter digital audio sync throughout a facility. Inputs: WC or AES/EBU. Outputs: 5 WC, 1 256 Superclock, AES thru. MSRP: \$795. Aardvark
202 E. Washington, Ste. 306
Ann Arbor, MI 48104
313/665-8899; Fax: 313/665-0694
E-mail: lovell@aardvark-pro.com
Web site: www.aardvark-pro.com



Peavey Electronics PC 1600x
Peavey has taken the PC 1600 to the next level and is ex-

cited to announce the PC 1600x MIDI command center for digital workstations, sequencer control or remote MIDI editing. The PC 1600x will edit and control just about any MIDI device and new, powerful presets give a good representation of its power. MIDI data is transmitted using 16 programmable faders and buttons in addition to two CV pedal inputs. List price: \$399.99.

Peavey Electronics Corp.
711 A St.
Meridian, MS 39301
601/483-5376; Fax: 601/486-1154
Web site: www.peavey.com

QSC QSControl2

The QSControl2 (pronounced "Q's Control Two") network audio system provides remote control and monitoring of QSC amplifiers via an Ethernet network. The user interface is a PC running QSC's new second-generation control software for the Windows operating system, which allows users to customize their control software with Microsoft's easy-to-use Visual Basic. An Ethernet network, the computer industry network standard, is used for distribution of monitor and control data. This allows the use of off-the-shelf network hardware from local computer equipment suppliers.

QSC Audio Products Inc.
1675 MacArthur Blvd.
Costa Mesa, CA 92626
714/754-6175; Fax: 714/754-6174
E-mail: info@qscaudio.com
Web site: www.qscaudio.com

Stage Tec Nexus

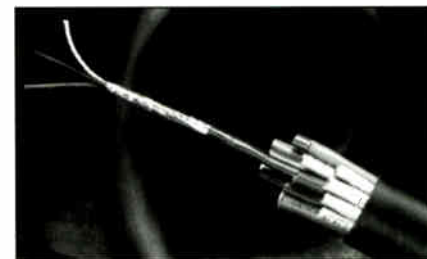
Nexus is a digital audio crosspoint & interconnect/routing system with power supply redundancy and integrated safety monitoring. With a capability of up to 4,095 inputs and outputs. The Nexus System will accept analog, AES/EBU, MADI, SDIF, S/PDIF and Y2 as well as other formats upon request. Nexus can be configured with a variety of options, including multichannel level display, MIDI control, amplifier control, talkback matrix and 1/3-octave equalizers all under software control.

Stage Tec, Dist. by Sascom
34 Nelson St.
Oakville, Ontario, Canada L6L 3H6
905/469-8080; Fax: 905/469-1129
E-mail: sales@sascom.com
Web site: www.sascom.com

Cables and Connectors

Belden 1172A

Flexible Star Quad microphone cable utilizes 26 AWG conductors. Packs a high degree of performance into a cable that is 23% smaller in diameter than standard 24 AWG Star Quads. Also uses the patented French Braid shield plus a flexible drain wire to guarantee optimum shield effectiveness, flexibility and ease of termination. Ideal for wiring mic booms.



Belden 1916A AudioFLEX

Snake cables that utilize Belden's patented French Braid shield within each individually jacketed pair. Design gives

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New York, NY 10003

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1997 AES NEW PRODUCTS GUIDE

—LISTING CONTINUED FROM PREVIOUS PAGE

these snakes both excellent flexibility and long flex life, while maintaining extremely low levels of microphonic and triboelectric noise. These high-performance snakes lay absolutely flat with no kinking and are available in 2, 4, 6, 8, 12, 16, 24 and 32 pairs. If you're using equipment with Elco/EDAC connectors, AudioFLEX 16 pair is the only 24 AWG snake that will fit with the jacket intact, making the easiest and most secure termination possible.

Belden 1800F

New flexible version of popular 1800A digital audio cable. Meets all AES/EBU requirements and has no performance drop-off from 1800A, so it is an excellent digital audio cable that may be used in long line-level runs or as a patch cable. Shielded with French Braid plus a drain wire. This highly flexible, effective braid makes 1800F an excellent microphone cable suitable for use on digital mics. Drain wire is highly stranded bare copper so it does not adversely affect flexibility and contrasts the tinned copper shield.

Belden Wire & Cable Co.
2200 U.S. 27 South
Richmond, IN 47374
765/983-5200; Fax: 765/983-5257
Web site: www.belden.com



CableTek Radial Convertible

50-channel snake optimized for flexibility, allows updates like zone snakes, transformer splits or Telecast fiber optics. Features recessed switches and LEDs, and 10 parallel channels on the last 50 to omit returns on small jobs. The Convertible includes a noise-sensing circuit that automatically looks for ground hum and buzzes, saving time during sound check. The Convertible is compatible with the Coupe, a 48 (16x3) modular snake for corporate gigs. CableTek Electronics Ltd.

#114-1585 Broadway
Port Coquitlam, BC V3C 2M7
Canada
604/942-1001; Fax: 604/942-1010
E-mail: cabletek@sprynet.com

Carver Professional Accessories

Carver Professional's diverse accessory line includes balanced and unbalanced interconnects, speaker cable, "Y" adaptors, 8-channel snakes, 24kt gold-plated audio connectors, adapters, terminals and a complete line of audio/video cables and connectors.

Carver Professional
9300 N. Decatur
Portland, OR 97203
503/978-3344; Fax: 503/978-3302
E-mail: carverpro@imagina.com
Web site: www.carverpro.com



Deltron Components RingLock DIN Connectors

The design of these connectors incorporates a quick-locking ring that requires just a half turn for positive connection. Accurate location of plug and chassis location is possible with the new easy-to-identify color-coded rings (black, blue, red, green, white and yellow). These robust, fully screened DIN connectors incorporate a cable grip and strain relief and are finished in bright nickel.

Deltron Components
PO Box 170426
Arlington, TX 76003
800/292-2834; Fax: 817/561-2916



Geppo International 7537 Supertrunk

The 7537 Supertrunk is a multicore cable available in bunches of 5, 10, 12 and 25 conductors. Designed for digital audio routing, the 7537 Supertrunk can carry up to 50 channels of AES audio in runs as long as 2,200 feet. The individual cable jackets are color-coded and printed alphanumerically for ease of identification. List price: \$8,499 per 1,000 feet.

Geppo International Inc.
2225 W. Hubbard
Chicago, IL 60612
312/733-9555; Fax: 312/733-6416
E-mail: geppo@geppo.com
Web site: geppo.com

Gotham Audio GAC-2/Foil AES/EBU Cable

110-ohm digital installation cable for use in AES/EBU systems. Quad twisted strands provide precise impedance throughout the whole run of the cable. Large conductor diameters for accurate attenuation without skin-effect disturbances. Aluminum foil shield is melted with jacket for easy removal with tools. Drain wire makes ground connection simple.

Gotham Audio Cable
PO Box 170426
Arlington, TX 76003
800/292-2834; Fax: 817/561-2916



Mogami Wire & Cable W3173 Long Run Digital Cable

Mogami introduces a long-run superflexible 110-ohm AES/EBU digital audio cable, designed for applications requiring lengths up to 1,000 feet. The cable has two conduc-

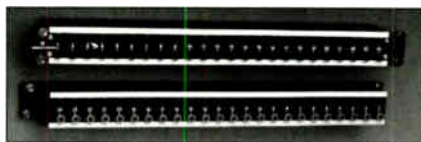
tors with a pure copper shield and drain wire. Each conductor is made up of 19 strands of 31-gauge wire. Overall conductor gauge is 18 AWG. Insulation is cpp. O.D. is 370." A CAD program to check out various working conditions is available at www.mogami-wire.co.jp. List price: \$1.06/ft. Mogami Wire & Cable
 PO Box 2027
 Culver City, CA 90230
 310/390-6608; Fax: 310/391-8926
 Web site: www.marc-cam.com

Monster Cable Monster DVD Products

Monster Cable Products Inc. has unveiled the first complete line of cables and audio/video interconnect kits designed to support Digital Versatile Disc (DVD) technology. The entire line is part of Monster's easy-to-use Just Hook It Up program. Prices for Monster's DVD products range from \$49.95 to \$179.95.

Monster Cable Monster Internet

Monster's ultrahigh-speed internet connection (Datspeed 100 IN) features XLN Xtra Low Noise technology and a low-loss dielectric for superior signal integrity, maximum bandwidth and minimal attenuation over long runs. It comes in 5 different colors: Navajo white, black, yellow, blue and red. Other Monster Internet products include high-speed 2-way and 3-way Internet splitters and an Internet/phone cable coupler. Monster Internet products range in price from \$9.95 to \$44.95.
 Monster Cable Products Inc.
 274 Wattis Way
 South San Francisco, CA 94080
 415/871-6000; Fax: 415/871-0641
 Web site: www.monstercable.com



Neutrik PatchLink SP

The PatchLink SP is the latest addition to the family of economical and versatile PatchLink 1/2" modular patching systems. No other patchbay at this price fully protects PC cards and gives the user total ease of use. Designed to streamline patchbay installations for most audio applications. Holds the PC boards within a cage-like panel, completely protecting the PC card and eliminating unscrewing a nut for each card on the back. The half-normaled jacks are visually identified by a light gray color so the user will know which jack is the half-normaled one.

Neutrik Z Series

These connectors are extremely fast and easy to assemble onto a cable. They are built ruggedly for the rigors needed to withstand various applications. All essential parts are enclosed by a heavy-duty rubber covering. The highly reliable contacts are designed to Neutrik's latest patented design (DBP 4416888, U.S. pending) tuning fork principle that comes standard gold-plated and is available in solder or Mil-Crimp versions.
 Neutrik
 195 Lehigh Ave.
 Lakewood, NJ 08701
 908/901-9488; Fax: 908/901-9608

Signal Transport Project Patch PP-96-2

Signal Transport has expanded its popular Project Patch line with the addition of a new 96-point bantam patchbay, the PP-96-2. The new patchbay fits in a single standard rackspace and features an innovative jumper system that allows each of the 48 jack pairs to be configured for any one of five different normaling options. Normaling options include non-normal, half normal, full normal, reverse normal (use of bottom row maintains normal connections) and double or "monitoring" normal (use of both jacks maintains normal connection).
 Signal Transport
 3219 Pierce St.
 Richmond, CA 94804
 510/528-6039; Fax: 510/528-6043
 E-mail: sales@signaltransport.com



Switchcraft TTPFA Front Access TT Patchbay

Innovative panel allows access to the 96 nickel-plated steel frame jacks from the front of the unit. Quarter-inch jacks;

—LISTING CONTINUED ON NEXT PAGE

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275 Martin Avenue Highland, NY 12528
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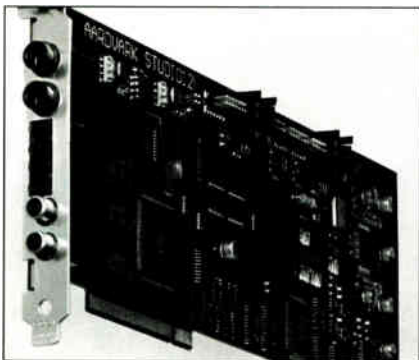


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1-3/4" panel height, IDC terminations, rugged cable tie bar, heavy-duty slide-out tray with captive nut design. Pricing varies by configuration.

Switchcraft Inc.
5555 N. Elston Ave.
Chicago, IL 60630
773/792-2700; Fax: 773/792-2129
Web site: www.switchcraft.com

Computer Hardware and Software



Aardvark Studio12

12-channel I/O card: Bring in all 8 ADAT tracks plus four more channels for audio editing on the PC. Turn your ADAT project studio into full-feature editing with your favorite software. Bounce tracks to/from DAT. Analog out for easy monitoring. 18-bit conversion. PCI bus. 12-channel I/O includes: 8-channel ADAT optical in/out, 2-channel S/PDIF in/out, 2-channel analog in/out.

Aardvark
202 E. Washington, Ste. 306
Ann Arbor, MI 48104
313/665-8899; Fax: 313/665-0694
E-mail: lovell@aardvark-pro.com
Web site: www.aardvark-pro.com

**Berkley Integrated Audio Software
BIAS Peak V.1.6**

This Mac and PowerPC program offers fast, nondestructive editing and processing; unique sound design and compositional tools; and full support of Kurzweil, E-mu, Ensoniq and Peavey samplers. Version 1.6 adds Akai S1000/S2000/S3000 and Roland S-760 sampler support. SMDI throughput for many samplers is increased 1,000%, and Peak 1.6 now works as the external editor from within MOTU's Digital Performer and Steinberg's Cubase Audio/VST.

Berkley Integrated Audio Software
Box 2481
Sausalito, CA 94966
415/331-2446; Fax: 415/331-2446
E-mail: support@bias-inc.com
Web site: www.bias-inc.com

Cakewalk Pro Audio 6.0

The leading digital audio and MIDI workstation for Windows 95. Unlimited digital audio tracks; 256 tracks of MIDI; CFX effects processing for reverb, chorus, flange, delay, time compression/expansion, pitch shifting and pitch to MIDI conversion; DirectX support for third-party audio plug-ins; Cakewalk Studioware for complete control and automation of studio gear; extensive digital audio hardware support; professional MIDI and digital audio editing; high-quality staff notation printing; SMPTE/MTC support and much more. List price: \$429. Street price: \$399.

Cakewalk Music Software
PO Box 760
Watertown, MA 02272

617/926-2480; Fax: 617/924-6657
E-mail: sales@cakewalk.com
Web site: www.cakewalk.com

Dolby Surround Tools TDM Plug-Ins

TDM plug-ins for producing Dolby Surround programs within Digidesign Pro Tools workstation environment. Features digital implementations of Dolby Surround encoding and Pro Logic decoding, built-in surround panners, game mode functions, decoder mode selection, setup calibration system, surround delay control and center speaker monitoring options. Dolby Surround Encoder and Decoder TDM plug-ins available bundled together from Digidesign dealers and distributors worldwide. List price: \$1,495 bundled. Dolby Laboratories Inc.
100 Potrero Ave.
San Francisco, CA 94103-4813
415/558-0200; Fax: 415/863-1373
E-mail: info@dolby.com
Web site: www.dolby.com

Emagic Audiowerk8

Audiowerk8 is a PCI-based audio card that is compatible with Mac or PC. The card provides 2-in/8-out analog and 2-in/2-out S/PDIF and supports 16-bit recording at 44.1 kHz or 48 kHz. The package includes VMR, a program that functions like an 8-track tape recorder. When used with Emagic's Logic Audio or Logic Audio Discovery, it provides playback of 12 or 24 simultaneous tracks, respectively. MSP: \$799.

Emagic Logic Audio V.3.0

Logic Audio is an integrated sequencing, hard disk recording, scoring and sample editing program available for Mac or PC. Version 3.0 adds multiple new features, including host-based DSP (chorus, flange, delay, reverb, EQ—parametric, shelving and bandpass); support of Adobe Premiere plug-ins (MacOS); seamless punch in/out on-the-fly; continuous resync of audio (when used with Audiowerk8); point and click "hyperdraw" automation superimposed over audio regions and more. MSP: \$799 (Mac) and \$699 (Windows 95). \$99 update to registered users of V.2.5 or later.

Emagic Inc.
13348 Grass Valley Ave.
Grass Valley, CA 95945
916/477-1051; Fax: 916/477-1052
E-mail: info@emagic.de
Web site: www.emagic.de

Gadget Labs Wave/4

4-channel professional-quality digital audio card for IBM-compatible PCs. Allows simultaneous record and playback of all 4 channels. Signal-to-noise ratio greater than 90 dB. Includes MIDI interface, connector for wavetable synthesizer card, plug-and-play support for Windows 95, Gold-wave PC Digital Audio Editor software. Compatible with popular audio software like Cakewalk Pro Audio, Cool Edit, Cubase, Musicator, SAW, Sound Forge. RCA audio cables and MIDI cable included. Direct price: \$399.

Gadget Labs WaveZIP

Software utility designed specifically for compressing audio files under Windows 95 or Windows NT. Completely loss-free compression with no degradation of audio. Typical compression rates of 30-60% (depending on file contents) allow savings on hard drive space and backup media costs. Supports compression of mono and stereo, 16-bit or 8-bit .WAV files, raw PCM files and Cakewalk BUN files. 15-day free trial copy available for download from www.gadgetlabs.com. Direct price: \$49.95.

Gadget Labs
333 SW 5th Ave., Ste. 202
Portland, OR 97204
503/827-7371; Fax: 404/685-0922
E-mail: info@gadgetlabs.com
Web site: www.gadgetlabs.com

Gefen Systems extend•it PCX241

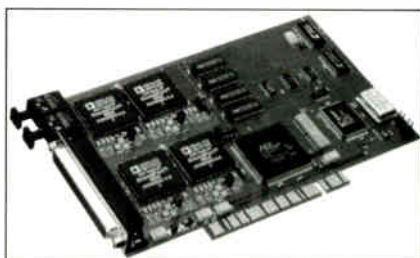
The PCX241 is a CPU Switcher that allows you to switch between two or more PC computers while using only one monitor, keyboard and mouse. The PCX241 eliminates the need for multiple monitors and keyboards when using multiple computers, and it supports any make and size of VGA or SVGA or RGB monitor. Retail: \$495.



Gefen Systems extend•it VCX600

The extend•it VDX600 DA distributes the same program source to up to 6 monitors. The VDX600 allows extension of your monitor up to 500 feet away. It supports PC, SGI, SUN or Mac computers using RGBHV co-ax and cable link extension cable.

Gefen Systems
6261 Variel Ave., Ste. C
Woodland Hills, CA 91367
800/545-6900; Fax: 818/884-3108
E-mail: gsinfo@gefen.com
Web site: www.gefen.com



Hohner Midia ARC 88 PCI Recording Card

PCI-based PC recording card featuring 8 (TRS) analog inputs 8 (TRS) analog outputs. ADAT LightPipe compatible 8-channel in/out on tos-optical connector, S/PDIF digital I/O (stereo) cascade up to 3 cards.

Hohner Midia Prodif 24

16-bit/24-bit ISA digital audio card. Stereo digital input/output with S/PDIF AES/EBU optical interface, 1/4" TRS plugs and optical Toslink connectors. Analog 18-bit DAC stereo output on 1/4" TRS plug. Advanced driver for Windows 95, Windows NT. No IRQ needed. Multiple cards possible. Analog output can be used for headphone monitoring. Price: \$399.

Hohner Midia Red Roaster 24 V.4.0 (Big Master)

High-resolution PC mastering software, CD burning 24-bit 96 kHz recording. 8 tracks at 24-bit 96 kHz. 32-bit floating point format. Syncs to SMPTE, MIDI clock, LTC, VITC. Automated (moving fader/pan knob) mixer with real-time parametric EQ, dynamics, enhancer, denoising, room simulation, FFT filter analyzer, 95 + NT 4.0 native. 3321 Industrial Dr.
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Liquid Audio Liquifier Pro V.2.0

Provides professional mastering to optimally prepare audio for Internet delivery, using an exclusive version of Dolby Digital. It features waveform editing, high-quality format conversion, world-class sample rate conversion, "single-click" upload and automated database storage. Liquifier Pro V.2.0 anti-piracy features include sophisticated encryption techniques and digital watermarking. It allows users to combine audio, at all modem speeds, with multimedia information about the music. Price: \$995.

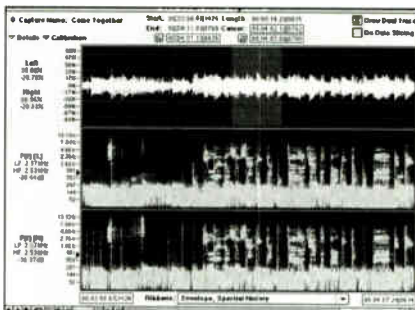
Liquid Audio MusicServer V.2.0

Utilizes standard protocols to deliver high-quality, scalable, Dolby-encoded audio and media over IP networks. The server can provide any number of simultaneous audio streams from Unix platforms. Future versions will support Intel and Windows NT platforms. Liquid Audio's secure server products provide a turnkey solution for asset management, copyright protection, royalty tracking and reporting, and all other aspects of transaction-based music commerce.

Liquid Audio
2421 Broadway
Redwood City, CA 94063
415/562-0880; Fax: 415/562-0889
E-mail: bwoods@liquidaudio.com
Web site: www.liquidaudio.com

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Micro Technology Unlimited MicroTools

MTU has evolved professional DAWs for 20 years. MicroTools DSP software runs with the Krystal DSP Engine. It provides noise removal (any sound removable, multiple removed in one pass), pitch change holding time, time change holding pitch, sample rate convert, filtering (low, hi, band, notch), and it computes digitally pure files (sine, square, triangular, etc.). It processes either SF or .WAV format files, writing a new destination file.

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Raleigh, NC 27615
919/870-0344; Fax: 919/870-7163
E-mail: info@mtu.com
Web site: www.mtu.com

MIDIMAN DiO

With MIDIMAN's DiO, a PC digital-only audio ISA card, you can perform up to 24-bit digital transfers, maintaining digital accuracy and integrity throughout the recording and production process. DiO allows you to directly send or receive digital audio via co-axial S/PDIF or AES/EBU to your DAT, digital multitrack or outboard A/D-D/A converter. An onboard D/A provides analog monitoring capability. Sample rates supported include word clock, 32, 44.1 and 48 kHz. Onboard DSP provides dynamic large data buffers resulting in flawless operation, even on systems that are heavily taxed. Win95 and Win3.1x drivers included. MSRP: \$349.95

MIDIMAN Dman 2044

The Dman 2044 is a PCI digital audio card with four independent full-duplex analog inputs and outputs, using 20-bit delta sigma converters with 128x oversampling. All converters are rated at 99dB dynamic range, 20-22k Hz with a frequency response of +/-5 dB. Dman 2044's 4 audio outputs have independently programmable pan, tremolo, vibrato and tone filtering, and onboard DSP able to perform audio effects such as reverb, chorus or flange independently on any audio channel. 2044 also has an onboard 56-voice wavetable synthesizer. Fully Windows 95 Plug-and-Play compliant and Win95 drivers are included. MSRP: \$349.95.

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Power Technology DSP/FX-SC

Power Technology's new DSP/FX-SC sound card provides users of PC digital audio workstation software packages with a powerful new choice for their sound card and effects processing needs. DSP/FX-SC combines the award-winning DSP/FX effects processing hardware with Windows drivers that provide up to 8 analog or digital channels of recording, playback and real-time effects processing. Prices start at \$799.

Power Technology DSP/FX-Monolith

Power Technology's new DSP/FX-Monolith is a multichannel sound I/O and effects processing system based on the award-winning DSP/FX-SC card. Monolith connects to any PC or laptop without requiring any slots and provides up to 8 channels of playback, recording and professional studio-quality effects processing. PC DAW users can start with a single DSP/FX-SC card and upgrade to a multichannel Monolith system as their I/O and effects processing requirements grow. Prices start at \$1,299.
Power Technology
100 Northhill Dr., Bldg. #24
Brisbane, CA 94005
415/467-7886; Fax: 415/467-7386
E-mail: dspfx@dspfx.com
Web site: www.dspfx.com

RPG RoomOptimizer

RPG announces the first Windows 95 program to determine the optimum locations for listener, loudspeakers and

acoustical surface treatment in rectangular rooms. The program uses the smoothness of the room response as an indicator of quality and a robust search engine to intelligently explore all possible solutions, while satisfying imposed symmetry constraints. The program includes Wizards for stereo and surround sound formats, the ability to load and save room configurations and print/save results.
RPG Diffusor Systems Inc.
651-C Commerce Dr.
Upper Marlboro, MD 20774
301/249-0044/ Fax: 301/249-3912
E-mail: info@rpginc.com
Web site: www.rpginc.com

Seer Systems Reality

This software-based synth is capable of multi-timbral performance of multiple synthesis techniques, including PCM (sampling, wavetable), subtractive (analog), FM, waveguide, physical modeling and modal synthesis. Reality's like having many different pro synths and samplers rolled into one product. Includes 100 MB of sounds on CD, or load any .WAV files as samples to be manipulated. Requirements: PC with Intel Pentium; 133MHz CPU (faster = more voices); 24 MB of RAM; and any Creative Labs 16-bit audio board.
Seer Systems
Box 137
Portola Valley, CA 94028
415/851-7993
Fax: 415/851-7994
Web site: www.seersystems.com

Sibelius 7

Sibelius is a high-speed computer system for score writing. It is designed to be very easy and fast to learn and use, but its expert system design produces the highest possible print quality for any kind of music. Users include the Juilliard School (New York), conductor Michael Tilson Thomas and the BBC. Software: \$1,499. Complete systems from \$3,398.
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The Helms Bldg., Ste. 216
8800 Venice Blvd.
Los Angeles, CA 90034
888/4-SIBELIUS; Fax: 310/559-9997
E-mail: infousa@sibelius-software.com
Web site: www.sibelius-software.com

Silicon Graphics PCI-AUD-8C

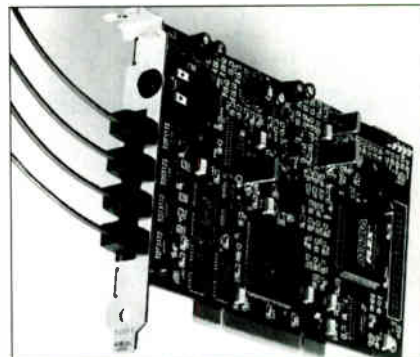
A PCI multichannel audio option card for OCTANE and O2 that will soon be available for Origin servers, as well. Each half-height PCI card adds ADAT optical input and output for 8 channels of 24-bit digital audio; AES3 input and output for 2 channels of 24-bit serial digital audio input/output, which also serves as a synchronization source (AES11) and provides professional jitter continuation; Video Composite Sync Input (blackburst); and PAL or NTSC to provide professional audio locked to video sample clock generation. SRP: \$1,000.
Silicon Graphics Inc.
2011 N. Shoreline Blvd.
Mountain View, CA 94043
800/800-7441
E-mail: webmaster@www.sgi.com
Web site: www.sgi.com

Sonic Foundry Acoustics Modeler

Sonic Foundry's Acoustics Modeler plug-in is a DirectX Audio plug-in that adds the acoustical coloration of real environments and sound altering devices to existing recordings. The Acoustics Modeler incorporates the acoustical responses of environments onto sound files and can simulate responses varying from concert halls to the vintage sound of old tube microphones. The Acoustics Modeler includes an extensive library of high-quality acoustic signatures (impulse responses) and allows you to collect your own. MSRP: \$249.

Sonic Foundry CD Architect

Design and build Red Book audio CDs with speed and precision. Sonic Foundry's CD Architect includes dozens of professional effects and tools to process sound files and can optionally function as a Sound Forge 4.0 plug-in. PQ editing is fully supported, including track times, subindexes, ISRC codes and the ability to generate printed cue sheets. For the most current list of supported CD-ROM drives, recorders and auto-loaders, see our Web site. MSRP: \$395.
Sonic Foundry Inc.
100 S. Baldwin St., Ste. 204
Madison, WI 53703
800/577-6642; Fax: 608/256-7300
E-mail: sales@sonicfoundry.com
Web site: www.sonicfoundry.com



Sonus STUDI/O

Sonus' STUDI/O is a 16-channel digital audio interface for PCI-based Windows 95 and Macintosh computers. STUDI/O includes 2 8-channel Alesis ADAT optical interfaces and a high-resolution, 18-bit stereo analog monitor output. For mastering applications, one or both ADAT interfaces can be software-configured for optical SPDIF input/output, including sample rate conversion. STUDI/O is shipped with Windows 95 WaveAudio and Steinberg ASIO drivers, so STUDI/O works with most current audio editing software. Available direct from Sonorus Inc. for \$989.
Sonorus Inc.
111 E. 12th St., 2nd Fl.
New York, NY 10003
212/253-7700; Fax: 212/253-7701
Web site: www.sonorus.com

Spatializer AS3D

The Spatializer AS3D 3-D Audio Suite plug-in provides Spatializer's patented, widely used professional 3-D audio processing for AudioSuite-capable workstations. Users can create a bigger mix and position any number of sounds in 3-D space using their familiar panning controls and AS3D's easy-to-use interface. AS3D also provides level meters, sum/difference meters and a Spatial Impression Meter for an intuitive and ergonomic display. MSRP: \$249.

Spatializer enCompass Pro

The Spatializer enCompass Pro DirectX Media plug-in provides Spatializer's brand-new, next-generation positional audio technology for DirectX Media (formerly Active-Movie)-capable workstations. Users can move and place sound sources in true 3-D (x, y and z) space. Featuring a unique and intuitive interface, Spatializer enCompass Pro takes 3-D audio to a new level. MSRP: \$399.

Spatializer PC3D

The Spatializer PC3D 3-D DirectX Media plug-in provides Spatializer's patented, widely used professional 3-D audio processing for DirectX Media (formerly Active/Movie)-ca-

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pable workstations. Users can create a bigger mix and position any number of sounds in 3-D space using their familiar panning controls and PC3D's easy-to-use interface. PC3D also provides level meters, sum/difference meters and a Spatial Impression Meter for an intuitive and ergonomic display. MSRP: \$249.

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818/227-3370; Fax: 818/227-9750
E-mail: info@spatializer.com
Web site: www.spatializer.com



Steinberg Cubase VST 3.5

Professional MIDI sequencing with integrated score and hard disk recording. Virtual Studio Technology is native host processing audio which features up to 32 tracks. Fully automated mixing, four bands of real-time EQ per channel, four effects sends to four real-time multi-effects processors with an open architecture plug-in interface, four additional spaces of plug-in processing in the Master Effects section and a Master section with digital mixdown features that include EQ, effects and automation.

Steinberg WaveLab 1.6

WaveLab is a 32-bit stereo graphic wave editor, sound processor, CD burner and audio database for the Windows 95/NT platform. In addition to the numerous processing tools, WaveLab offers 6 spaces of real-time plug-in effects processing with open architecture, integrated CD burning capabilities with full PQ code editing, batch processing and spectral analysis included for a complete audio mastering solution.

Steinberg North America
9312 Deering Ave.
Chatsworth, CA 91311-5857
818/993-4161; Fax: 818/701-7452
E-mail: info@steinberg-na.com
Web site: www.steinberg.net



Syntrillium Cool Edit Pro

Cool Edit Pro is a digital audio recorder, editor and mixer for Windows. It's based on Cool Edit 96, Syntrillium's ground-breaking and award-winning shareware application, and it's the digital audio software package you've been waiting for. Cool Edit Pro is a breeze to learn and use, offers more than 30 DSP effects and can mix up to 64 tracks together, using just about any sound card. List price: \$399.

Syntrillium Software Corp.
PO Box 62255
Phoenix, AZ 85082-2255
602/941-4327; Fax: 602/941-8170
E-mail: sales@syntrillium.com
Web site: www.syntrillium.com

Telos Systems Audioactive

Audioactive is Telos Systems' professional Internet audio streaming technology. Using word standard MP3 coding, Audioactive is easy to implement and offers exceptional fidelity and reliable performance. The Audioactive suite includes a hardware encoder, a software encoder, and a free-ware decoder. Audioactive is fully compatible with MacroMedia's Shockwave audio standard. Telos Systems is a technology provider for Microsoft's NetShow Internet information server and plans to take advantage of the IP Multicast standard in Audioactive.

Telos Systems
2101 Superior Ave.
Cleveland, OH 44114
216/241-7225; Fax: 216/241-4103
E-mail: info@zephyr.com
Web site: www.audioactive.com

Tracer Technologies Audio Master

Audio Master is a full MIDI and digital audio professional sequencer with 128 direct-to-disk digital audio tracks as well as 128 MIDI tracks. It provides separate mixing consoles for digital audio and MIDI, full SMPTE and MIDI timecode syncing, as well as a DSP effects section with parametric EQ, bandpass filtering, compression, noise gate, chorus, digital delay and auto-pan. Audio Master also includes a GM/GS and XG editor.

Tracer Technologies Dart Pro 32

Dart Pro, the industry's best noise-reduction software, just got better. Now, the popular de-hiss, de-noise and de-click algorithms have added processing speed and power of 32-bit processing. Dart Pro 32 also features new CD-making capabilities and additional new features.

Tracer Technologies SPOT

SPOT software is a playlist preparation software program ideal for editors, engineers, producers and directors in the TV/film industry. SPOT offers the speed and elegance of a program designed specifically to address the needs of individuals who must catalog effects, Foley, music and ADR lines, by allowing those users to capture frame-accurate hit points and descriptions while locked to SMPTE timecode. It replaces cryptic manual log sheets, frustrating word processors, generic spreadsheets and numerous other "jury-rigged" solutions developed over the years.

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York, PA 17404
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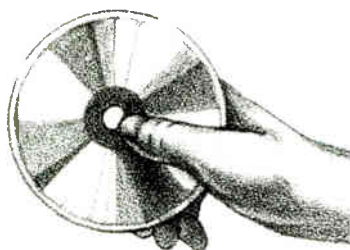
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Bag End Quartz-R

The Bag End Quartz-R concert subwoofer: ELF (Extended Low Frequency) flat response to 20 Hz (with ELF processor on); 4 EL-18 18" woofers, 1,600 W sine/3,200 W peak power; 8 heavy-duty handles and 4 heavy-duty wheels; 102 dB SPL @ 45 Hz; stand mounts, ATM Fly-Ware-compatible; 40" H x 30" W front 24" W back x 30" D; 225 lbs. Bag End Loudspeakers
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Web site: www.bryston.ca



Community Professional Airforce

Community introduces the AirForce Concert System loudspeakers with articulate, wide-range response to over 140 dB SPL. The series consists of low-distortion, horn-loaded systems utilizing forced-air cooled compression drivers designed and manufactured by Community. Arrays are easily assembled and rigged with varying coverage patterns for short to long-throw projection in arenas, stadiums and similar venues. Features include integral ATM Fly-Ware rigging hardware, 12-gauge perforated steel grilles, Baltic birch enclosures, caster pallets and protective slipcovers.

Community Professional CPL

Community introduces the CPL 2- and 3-way contractor loudspeakers and subwoofer for fixed installations. They are configured with 1" titanium compression drivers, large Fibreglas HF horns for wide-range pattern control, and 15" woofers for powerful bass. The trapezoidal Baltic birch enclosures feature integral load-rated rigging points, black

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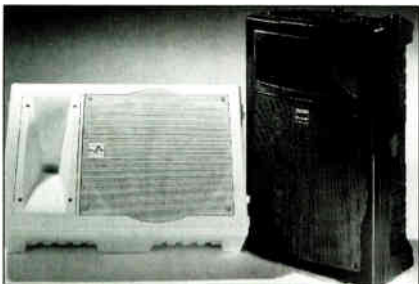
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*1996 Mix Audio Production Facilities Report

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painted finish and 16-gauge perforated steel grilles. Other performance features include passive/bi-amp and HF level switches, integral PowerSense Dynamic Driver Protection and Neutrik input jacks.

Community Professional Loudspeakers
333 E. 5th St.
Chester, PA 19013
610/876-3400; Fax: 610/874-0190
E-mail: info@community.chester.pa.us
Web site: www.community.chester.pa.us



D.A.S. Audio Dynamics Series

Designed entirely with the aid of advanced computer modeling programs, the Dynamics Series includes DS-8, DS-12 and DS-15. All cabinets utilize high-pressure injection molding techniques, high induction magnetic circuits and pure titanium diaphragm compression drivers with Kapton formers. DS-8 and DS-12 use 150W, 8" and 300W, 12" low-frequency transducers, respectively. Each uses M-3 1" exit compression driver with 2" diaphragm. The DS-15 contains a 300W, 15" low-frequency transducer with 3" voice coil and higher efficiency M-5 compression driver. DS-8: \$315; DS-12: \$599; DS-15: \$799.

D.A.S. Audio RF-116

A two-way vented loudspeaker system, the RF-116 offers versatility and high efficiency for a wide range of sound reinforcement applications. The unit contains a B-30 15" woofer, K-8 2" exit throat compression driver and 4" voice coil assembly. Available in paint finish and heavy-duty carpet finish, the RF-116 includes side bar handles, 16 individual fly points with internal steel bracing, perforated steel grilles and Neutrik Speakon connectors. Retail: \$1,350

D.A.S. Audio/USA
PO Box 987/1 Enterprise Dr.
Old Lyme, CT 06371
860/434-9190; Fax: 860/434-1759
E-mail: nhect@dasusa.com
Web site: www.dasaudio.com

Dynaudio Acoustics BM6

The BM6 is a passive 2-way system with a 7" magnesium silicate-impregnated polypropylene bass drive unit and a 1" Esotech soft-dome treble unit, both utilizing aluminum voice coils. The bass unit's 3" voice coil provides improved bass response, power handling and distortion figures over conventional systems. Its unique design makes it inherently well-shielded and suitable for use alongside video monitors. Transient capability exceeds 1 000 W without compression, distortion or damage, with LF response to below 45 Hz and smooth, detailed HF response to beyond 20 kHz. A single rear port optimizes low-frequency output and use of supplied damping plug allows for flush mounting installation. Price: \$1,169/pair.

Dynaudio Acoustics BM6A

Active 2-way system with a 7" magnesium silicate-impregnated polypropylene bass drive unit and a 1" Esotech soft-dome treble unit, both utilizing aluminum voice coils. The bass unit's 3" voice coil provides improved bass response, power handling and distortion figures over con-

ventional systems. Power and "clip on" indicators are mounted on the front baffle, which has specially radiused corners to minimize cabinet edge diffraction effects. Price: \$2,599/pair.

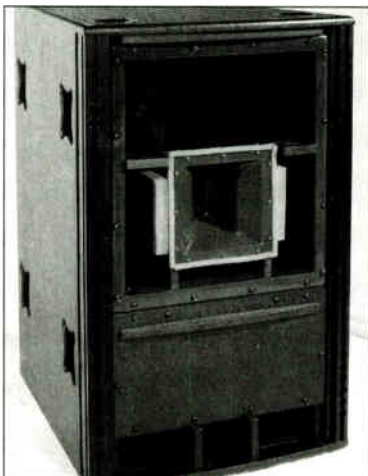
Dynaudio Acoustics BM15A

Active two-way system with a 9.5" magnesium silicate-impregnated polypropylene bass drive unit and an improved 1" Esotech soft-dome treble unit with aluminum voice coil. The bass unit uses a 4" voice coil for improved bass response, power handling and distortion figures over conventional systems. Power and "clip on" indicators are mounted on the front baffle, which has specially radiused corners to minimize cabinet edge diffraction effects. The BM15A is based on the 1996 TEC Award-nominated passive BM15. Price: \$3,599/pair.

Dynaudio Acoustics, Dist. by AXI
357 Liberty St.
Rockland, MA 02370
617/982-2626; Fax: 617/982-2625
E-mail: info@aximarketing.com
Web site: www.aximarketing.com

Electro-Voice T221M

Electro-Voice's new T221M bi-ampable, 12", 2-way floor monitor has 400W long term power handling and 100-20k Hz frequency response (+/-3 dB). Touring professionals will notice flatter response and more articulate vocals—the result of new cabinet design loaded with renowned Electro-Voice components. The unusual curved cabinet shape is unique to most floor monitors, producing a very professional, low-profile look for those who want very high performance from a nearly invisible wedge.



Electro-Voice X*Array

The new Electro-Voice X*Array large-format concert loudspeaker systems are loaded with the most efficient drivers in the industry, producing unusually detailed program reproduction and 6 to 10 dB more output potential than any other known cabinet configuration, but at half the weight and significantly reduced size. New horn configurations feature a ring-mode decoupling technique which reduces standing waves from building within the box. The result is a system that maintains its tonal characteristics when boosting output from low to medium or high SPLs. The system includes the XF far-field device, the XN near-field and the XS subwoofer enclosure.

Electro-Voice Inc.
600 Cecil St.
Buchanan, MI 49107
616/695-6831; Fax: 616/695-1304
Web site: www.eviaudio.com

Event Electronics Tria

The Tria comprises a floor-loaded, very low-frequency driver housed in a station that is also home to five separate power amplifiers, active crossovers and trim and level controls, plus two bi-amplified satellite speakers, each with a magnetically shielded 5/4" polypropylene cone driver and 1" natural silk dome neodymium high-frequency driver. Frequency response: 38-20k Hz, +/-2 dB (-3 dB at 35 Hz). Continuous power (VLF): 80 W; (satellite, per side) 80W/40W. \$849 (complete system).

Event Electronics
PO Box 4189
Santa Barbara, CA 93140-4189
805/566-7777; Fax: 805/566-7771
E-mail: info@event1.com
Web site: www.event1.com

Fender 115 sA and 118 sA Subwoofers

These subs feature one 15" (115sA) or 18" (118sA) 8-ohm woofer with a 2.5" voice coil; a bandpass design naturally rolls off high frequencies, so there's no need for crossover networks. Features parallel ¼" jacks for "daisy chaining" additional speakers, mounted side handles and rubber feet; it's covered in durable black carpet to withstand "on the road" use.

Fender Musical Instruments
7975 N. Hayden Rd., Ste. C-100
Scottsdale, AZ 85258
602/596-9690; Fax: 602/596-1384
Web site: www.fender.com

Garwood Plus 2

Stereo UHF 2-channel system. Half-rack-width unit with mic/line switch to match input gain. 48V phantom power.

Garwood Radio Station T.S.

Stereo UHF in-ear monitoring system. Frequency-agile with 16 onboard frequencies. Between 510-900 MHz. System can be interfaced with RTS and Clearcom intercom devices in broadcast applications.

Garwood Communications
305 River Rd.
Tullytown, PA 19007
215/949-3200; Fax: 215/949-8500
E-mail: garwoodusa@compuserve
Web site: www.garwood-radio.com

Hafler Trans*nova Powered Reference Monitors

The Trans*nova studio powered reference monitors are bi-amplified with a 75W Trans*nova channel running the tweeter, a 150W Trans*nova channel running woofer, active crossover, dual clip lights, 1" tweeter with waveguide, an 8" woofer and rear-mounted EQ adjustments for tailoring room acoustics. The new monitors exceed current industry standards at half the price, selling at approximately \$2,400/pair.

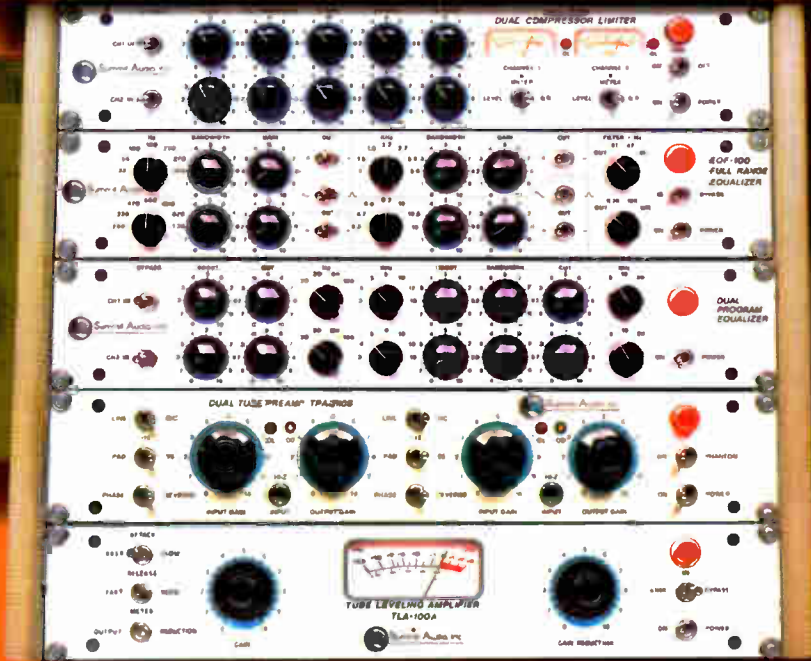
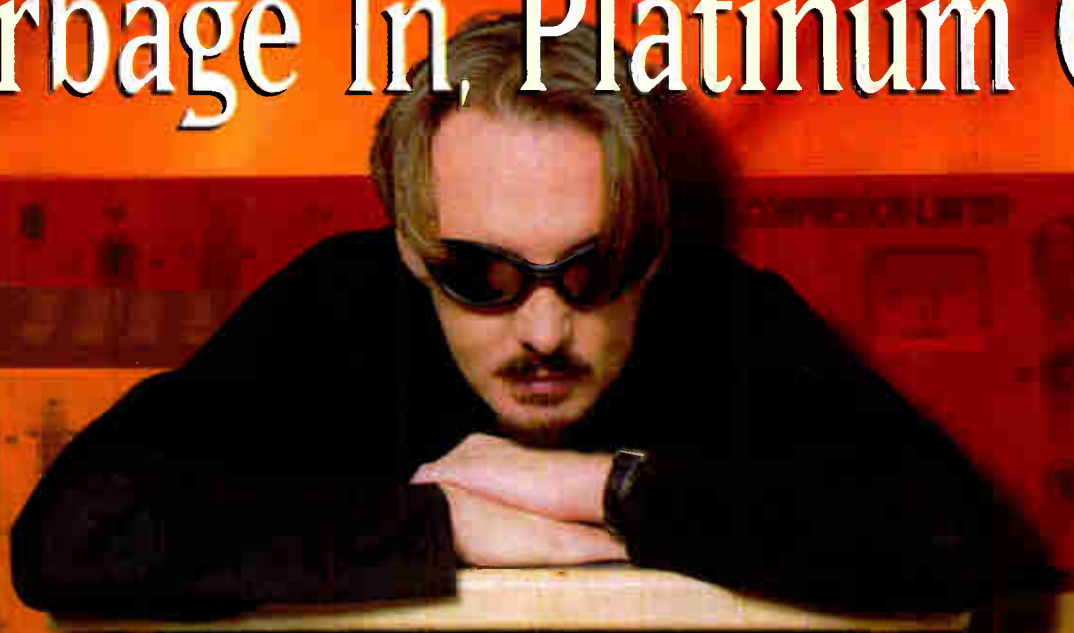
Hafler
546 S. Rockford Dr.
Tempe, AZ 85281
602/967-3565; Fax: 602/894-1528
E-mail: www.rockfordcorp.com
Web site: www.rockfordcorp.com

Hot House ASB110

At 18x20x18" and weighing in at just under 90lbs., the ASB110 is the most compact member of the Active Sub-Bass line. Designed for near or mid-field use, the 110 is sixth-order tuned, utilizing the 30-pound Hot House HV10 underhung driver powered by 450 W, and features the same sophisticated independently adjustable overlapping stereo high and lowpass crossover filters, contour circuits and XLR/TRS/RCA input/output connections found on the larger ASB112 and 212. Retail: \$2,999.

Hot House Professional Audio
275 Martin Ave.
Highland, NY 12528
914/691-6077; Fax: 914/691-6822

Garbage In, Platinum Out



Summit Audio Success Stories

Butch Vig, engineer, producer, co-owner of Smart Studios and the drummer for Garbage, relies on Summit gear for all his work. Vig engineered the group's latest platinum album, "Garbage," nominated for three Grammys this year, as well as producing albums for Smashing Pumpkins, Nirvana, Soul Asylum and Sonic Youth.

"Whether I'm working at Smart Studios or I'm on the road touring, I always use Summit tube gear. I particularly like using the DCL-200 Compressor Limiter for tracking vocals. It colors the sound very subtly, while retaining its warmth and transparency. Often I will compress a vocal performance quite a bit.

This allows me to place it exactly in the mix while maintaining a lot of presence and natural dynamics without sounding too loud. This works especially well when the mix is very dense."

"Summit just keeps coming out with great gear. We can't wait to get our hands on the new MPC-100A Mic Pre-Amp/Comp-Limiter. It is a high quality and great sounding input device that will further enhance our music."

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World Radio History



JBL LSR32

The JBL LSR32 Linear Spatial Reference is a 3-way monitor designed for today's modern production environments. Incorporating JBL's revolutionary DCD neodymium motor structures, the LSR32 has added the benefits of dynamic braking. The enclosure features complex radiused geometry and carbon fiber composites. The frequency response is accurate to +/-1.5 dB on-axis and a spatially measured response within a 1.5 dB window from 38-20k Hz. Power compression is less than 1 dB for stable spectral balance regardless of monitoring level. Price: \$995.

JBL Professional Installation Product Range

The JBL Professional Installation Product Range is a completely new and extremely comprehensive sound system designer tool kit for the worldwide fixed installation market. It is comprised of three distinct series of loudspeaker systems. Venue Series: 5 full-range 3-way systems, 3 mid/hi systems, 2 high-efficiency bass systems, 250-1,200W. Sound Power: 7 full-range bi-amp/passive selectable systems and 2 sub-bass systems 600W-1,200W. Marquis Series: five full-range compact systems 100-500W.

JBL Professional
8500 Balboa Blvd.
Northridge, CA 91329
818/895-3499; Fax: 818/830-7880
Web site: www.jblpro.com

Klipsch KP-396

Ported 2-way trapezoidal loudspeaker system. Exceptionally accurate and musical. High efficiency, low distortion and smooth frequency response make the KP-396 an excellent choice where clean, clear vocal intelligibility is of paramount importance. This system was designed with live music and live theater applications in mind. The KP-396 is also the right size for most corporate A/V and rental systems. Has a 15" (38cm) woofer with a large magnetic structure and vented pole. HF section features the new K-1132 large-format compression driver mounted on a 2" (5cm) throat, 90x40 medium format Tractrix Wave horn.

Klipsch Professional
PO Box 1320
Hope, AR 71802
870/777-0693; Fax: 870-777-0593
E-mail: kpinfo@klipschpro.com
Web site: www.klipschpro.com

KRK Systems Big RoK

Big RoKs are available passive, or upgradable to powered versions. Both versions feature the same cabinet design and drivers, 8" woofer, and 1" silk dome tweeter. Shielded option available.

KRK Systems RoKit

RoKit is from the same family as the popular K-RoK, representing the best quality studio monitor in its price range. Features include 76 W of power, 6 1/2" woofer, a 1" silk dome tweeter. Expected retail: \$329. Shielding is standard.

KRK Systems Inc./Group One Ltd.
80 Sea Ln.
Farmingdale, NY 11735
516/249-1399; Fax: 516/753-1020
E-mail: sales@krksys.com
Web site: www.krksys.com

Mackie Designs HR824 Studio Reference Monitor

This 6th-order system utilizes 2 6.5" passive radiators. Featuring low-frequency driver (8" mineral filled, polypropylene cone), high-frequency driver (1" metal dome), free field frequency response: 38Hz to 22.5kHz, maximum peak SPL per pair with music on top of console at 1 m (>121 dB), rated power output (150W/100W woofer/tweeter), electronic limiter section (independent low and high frequency limiting to prevent overload),



space switch (full-space, 1/2-space, 1/4-space), electronic crossover type (Linkwitz-Riley 24dB/octave), balanced female XLR and 1/4" input connectors, and mute switch on front. Price: \$1,498/pair.
Mackie Designs
16220 Wood-Red Rd. NE
Woodinville, WA 98072
800/898-3211 or 206/487-4333; Fax: 206/487-4337
E-mail: sales@mackie.com
Web site: www.mackie.com



Martin ICT 500

The Martin ICT 500 is a compact, full-range loudspeaker featuring two forward-facing 10" ICT drivers, plus 2 internally mounted, long excursion, high-powered 10" low-frequency drivers. This unique combination provides the user with the ability to deliver very high SPLs, extended low frequency detail and high fidelity usually associated with larger enclosures. Specs: Maximum SPL: 121 dB continuous, 127 dB peak. Connector: 1x Neutrik NL4. Frequency response: 45-18k Hz. Dispersion: 100° horizontal x 40° vertical. List price: \$1,795.

Martin Audio/TGI North America Inc.
300 Gage Ave., #1
Kitchener, ON Canada N2M 2C8
519/745-1158; Fax: 519/745-2364

Meyer MSL-6

The MSL-6 is Meyer's largest self-powered loudspeaker. Built into Meyer's unique trapezoidal cabinet, the MSL-6 is intended for tightly packed arrays. The MSL-6 features a 25°Vx30°H coverage pattern with minimal overlap between coverage areas. The system is comprised of two 12" low-frequency cone drivers and three high-frequency horn drivers (with 2" throat, 4" diaphragm). Each 12" driver is independently amplified and contained in a horn-loaded vented enclosure. Approx. list price: \$20,000.



Meyer SB-1

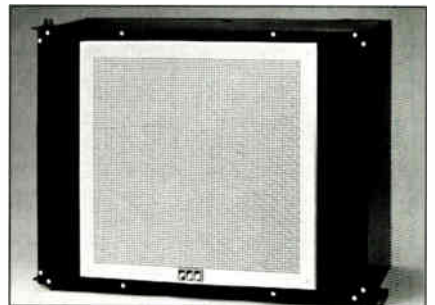
The patent-pending SB-1 is the world's first wide-band parabolic dish loudspeaker system. This self-powered speaker is designed to throw sound over extremely long distances—well over 400 feet—in an incredibly narrow, predictable beam. The SB-1 features a 12" low-frequency driver inside of a 48" reflective parabolic dish, and one high-frequency driver (4" diaphragm inside a spherical horn) suspended above the dish. The SB-1 allows for a 10° beam width above 1 kHz. Approx. list price: \$15,000.

Meyer Sound
2832 San Pablo Ave.
Berkeley, CA 94702
510/486-1166; Fax: 510/486-8356
E-mail: sales@meyersound.com
Web site: meyersound.com

OAP Q Series

The Q Series is a family of flyable products housed in hardwood enclosures, which includes large-format horns; 2-way systems with 3 component performance variations; stand-alone coaxial speakers with 2 different sizes and 4 horn/driver combinations; and subwoofers in 3 different sizes and 2 performance variations. A revolutionary group of mounting brackets is also available to array the components together in a flexible variety of combinations.

OAP Audio Products
310 Peachtree Industrial Blvd.
Buford, GA 30518
770/945-1033; Fax: 770/945-1843
E-mail: oap@mindspring.com
Web site: www.loudspeakers.com



PAS TOC 360 Series

The TOC 360 Series high-powered co-axial systems boast increased transient accuracy for dramatically higher intelligibility and sound quality in large coverage environments. With high power capacities and controlled dispersion to minimize overlaps and reflections, the TOC 360 Series is perfect for areas with high noise levels and very high ceilings.

Professional Audio Systems/PAS
2270 Cosmos Ct.

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costing many times more. Vocalists, announcers and engineers alike will be amazed at the OM6's rich, lush, full-bodied sound, which delivers unmatched clarity and detail. Audix
9730 SW Hillman Ct., #620
Wilsonville, OR 97070
800/966-8261



Azden 412UDR

The new 412UDR is a single-space rackmount design with BNC disconnects for the antennae on the front and back. The 412UDR receiver has 63 onboard user-selectable frequencies with a range of 794 to 806 MHz to be used with the 41HT and 41BT frequency-agile transmitters that also generate the 32.768MHz tone necessary for the tone squelch circuitry in the receiver. The 412UDR has $\frac{1}{2}$ " as well as XLR outputs. List price for receiver only is \$699. Azden Corp.

147 New Hyde Park Rd.
Franklin Square, NY 11010
516/328-7500; Fax: 516/328-7506
E-mail: azdenusa@aol.com
Web site: www.azdencorp.com

Beyerdynamic MCD 100

Beyerdynamic introduces the first-ever in the entire world, the MCD 100 digital condenser studio microphone. Pre-amplification and A/D conversion of the microphone signal, which was previously achieved at the input of a digital console, is now accomplished directly behind the microphone capsule of the MCD 100, therefore providing an AES/EBU signal output of the microphone.



Beyerdynamic U500 UHF Multichannel Wireless System

The new U500 UHF system offers true multichannel operation at an affordable price. The system can operate up to 32 frequencies in a 24MHz bandwidth. This PLL synthesized system is half-rackspace and comes in handheld or bodypack configurations.

Beyerdynamic
56 Central Ave.
Farmingdale, NY 11735
516/293-3200; Fax: 516/293-3288
E-mail: beyerusa@cris.com

Brüel & Kjaer 4061 Miniature Microphone

The DPA4061 is a new version of the very popular DPA 4060 featuring a 10dB pad. Designed for use with wireless

systems in theater, television, security and intelligence applications, it is compatible with all VHF and UHF professional systems. A complete line of popular microphone input standard connectors (i.e., lemo, TA4F, etc.) have been developed at Danish Pro Audio to accept mikrodot input, including a 48V phantom XLR. No more headaches in the field. Sensitivity: 6mV/Pa +/-3 dB. Maximum SPL: 144 dB peak. Frequency response: 20-20k Hz +/- 2 dB. Polar pattern: omnidirectional. Cartridge type: prepolarized condenser microphone element with vertical diaphragm. Diameter: 5.4 mm. Length: 12.7 mm. List price: \$430. Brüel & Kjaer/TGI North America Inc.
300 Gage Ave., #1
Kitchener, ON, Canada N2M 2C8
519/745-1158; Fax: 519/745-2364
Web site: www.danishproaudio.com

CAD VX2

Exclusive CAD design and manufactured dual 1.25" 2-micron proprietary polymer, gold-sputtered capsule. Proprietary and dual valve 'tube' head amp. Dual proprietary custom-wound transformers. Suggested list price: \$1,999. CAD Professional Microphones
PO Box 120
Conneaut, OH 44030
216/593-1111; Fax: 216/593-5395
Web site: www.ctiaudio.com

Earthworks M55 Measurement Microphone

Response: +/-1 dB from 9-40k Hz; +/-3dB from 5-55k Hz. The M55 offers laboratory-grade performance at a very reasonable price. Frequency and impulse response are both extremely accurate. Measured impulse and frequency response data are shipped with each mic, and impulse files are available for MLLSA (etc.). In preparing for the coming 96kHz capability, the M55 is a valuable tool. It doubles as an extraordinary recording microphone. Also available as matched pairs. Retail: \$1,500. Earthworks Inc.
P.O. Box 517
Wilton, NH 03086
603/654-6427; Fax: 603/654-6107
E-mail: earthwks@jlc.net
Web site: www.earthwks.com



Electro-Voice N/D957

The new Electro-Voice N/D957 microphone is a philosophical departure from all previous N/Dym neodymium microphones. It is designed for unparallelled off-axis rejection (feedback, drums, guitars, etc.) in high-volume concerts with loud monitors. The N/D957 also features a "personality" switch, which attenuates the low and mid frequencies (reduces proximity effect), giving the sound more cut when the singer's lips are on the grille. A unique

pop filter and windscreen can be removed and cleaned and sterilized for consistent high performance from the microphone and a major benefit to rental houses. Electro-Voice Inc.
600 Cecil St.
Buchanan, MI 49107
616/695-6831; Fax: 616/695-1304
Web site: www.eviaudio.com

Gemini NX-210

NX-210 true-diversity wireless systems. Dual antennae, exclusive "No Distortion" circuitry, total accuracy up to 300; adjustable output level switch. Frequency response: 40-20k Hz +3 dB. S/N ratio: greater than 100 dB. Total harmonic distortion: less than 0.5%. Audio output level: -20dBm typical, +4dBm max. RF sensitivity: 12 dB/mV at 60dB S/N. Power supply: DC 12 volts/500 ma. Dimensions: 1 $\frac{1}{2}$ "x10 $\frac{1}{2}$ "x5 $\frac{1}{2}$ "d (38x276x140 mm). Weight: 2 lbs./9 kg. Gemini Sound Products Corp.
8 Germak Dr.
Carteret, NJ 07008
732/969-9000; Fax: 732/969-9090
E-mail: davide@gemindj.com
Web site: www.gemindj.com

Groove Tubes Model Five: MD5SC and MD5SM

The MD5SM is a cardioid pattern condenser mic. Use for vocals or instruments. Large-diameter capsule. Class A FET-type preamp operates on 48V phantom power. Wide frequency response reminiscent of classic European mics at a much lower price. MD5SC: \$649. MD5SM: \$799. MD5SM is same mic as above, except offers three patterns: cardioid, omni and figure-8. 20-18k Hz +/-1.5 dB.

Groove Tubes Model Six: MD6TM

MD6TM is a large condenser dual diaphragm mic offering 4 patterns: cardioid, supercardioid, omni & figure-8. Vacuum tube preamp section using a 5840 tube. Frequency response is 20-20k Hz +/-1.5 dB. System 6 TM includes 2-port power supply, MD6TM, hard shell case, cable shock-mount and mic clip. Retail price: \$1,395. Groove Tubes
12866 Foothill Blvd.
Sylmar, CA 91342
818/361-4500; Fax: 818/365-9884
E-mail: groovetube@aol.com
Web site: www.groovetubes.com



Microtech Gefell UM900

Vacuum tube condenser microphone with 5 polar patterns, including cardioid, supercardioid, wide cardioid, figure-8 and omni. First vacuum tube microphone with 48V phantom powering. Features the M7 pickup capsule, which is renowned for its superb sound. Mic comes in

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For audio hardware and software, from the smallest audio part or accessory to the ultimate in cutting edge sound recording systems, your best source is Sam Ash Professional Audio Group. Hundreds of brands and thousands of products, a huge inventory and knowledgeable professionals ready to answer your most technical audio questions. At Sam Ash Professional Audio Group satisfied customers are our best endorsement and our people our greatest resources. How can we help you?

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• Middle Atlantic Products • ADC • Canare • Neutrik • Among many other professional audio products, parts, and accessories

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World Radio History

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wooden box with swivel and cable. Elastic suspension is optional.

Microtech Gefell, Dist. by G Prime
1790 Broadway #402
New York, NY 10019
212/765-3415; Fax: 212/581-8938
E-mail: info@gprime.com
Web site: www.gprime.com



Nady Systems Gold Series Wireless 441/442

VHF high band wireless microphone and instrument systems with 4 user switchable frequencies. Frequency-agile VHF systems available in single-antenna or dual-antenna digital diversity for maximum dropout protection. Available with wide range of 4-channel transmitters, including handheld, instrument, lavalier, headmic or snap-on. Systems start at \$319.95.

Nady Systems
6701 Bay St.
Emeryville, CA 94608
510/652-2411 ext. 252; Fax: 510/652-5075
Web site: www.nadywireless.com

Neumann AK20

The AK20 active capsule is a further addition to the Neumann KM100 miniature microphone system. It features the figure-8 directional characteristic, which is here realized with a single diaphragm, in contrast to switchable-pattern studio microphones. Frequency range: 20-20k Hz. Dynamic range: 124 dB. Retail: capsule only: \$975. KM120 (complete microphone): \$1,275.

Neumann N149A

Available as an upgrade/replacement for the supply delivered standard with the M149 tube microphone, Neumann has gone to great lengths to create this vintage-style power supply. Features a hammer-laquered finish, dome light power indicator, steel construction, toggle switch and detachable DIN power cable.

Neumann USA
PO Box 987
Old Lyme, CT 06371
860/434-5220; Fax: 860/434-3148
E-mail: neumtech@neumannusa.com
Web site: www.neumannusa.com

Ozark Pro Audio Mikrophon MKE 13M

Small-diaphragm cardioid condenser microphone. Frequency response: 31.5-20k Hz. Retail: \$655.

Ozark Pro Audio
HC3 Box 350
Gainesville, MO 65655
417/679-4302; Fax: 417/679-4665
Web site: www.ozarkproaudio.com

Schoeps CCML Compact Condenser Mics

Schoeps' CCML Series is a quick-disconnect version of its CCM ultracompact range of professional condenser microphones. Available patterns and types include omni, cardioid, wide-cardioid and supercardioid, and bidirectional pickups and a switchable cardioid/omni microphone. The quick-disconnect feature employs a special annular-ring connector, which can be inserted and screwed firmly in place without the need for aligning pins to their socket. Powering is 12V-48V universal phantom. Prices range from \$1,470 to \$1,890. A 15' cable with XLR-3M is included.

Schoeps CMXY 4V Stereo Mic

An ultracompact, coincident-cardioid condenser microphone with user-variable angle and spread. A unique gear linkage allows the main axes of the two microphones to be varied from 0° to 180° of included angle, for simple adjustment of stereo spread. 12V-48V phantom powered, the microphone pair is swivel-mounted on a base which accepts an XLR-5F connector and acts as a support for tabletop use or mounting on a stand or boom. Matte gray, 7 oz., radial pickup. \$4,285.

Schoeps/Posthorn Recordings
142 W. 26th St.
New York, NY 10001-6814
212/242-3737; Fax: 212/924-1243
E-mail: jbruck@tiac.net; Web site: www.posthorn.com

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CIRCLE #160 ON PRODUCT INFO CARD

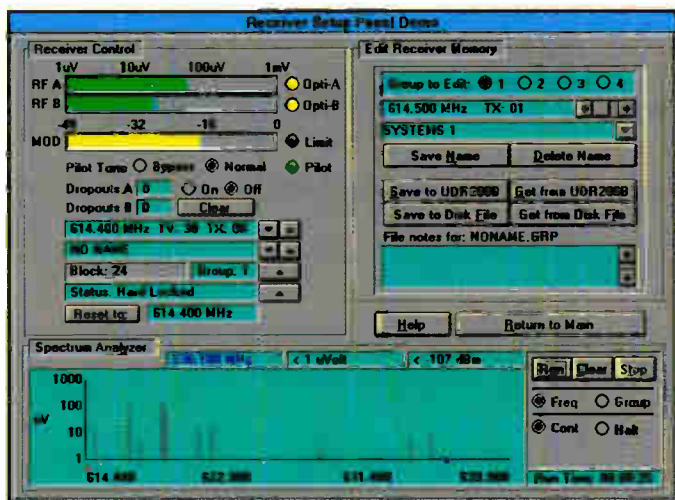
World Radio History

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- AutoTracking front-end filters
- Dual-band compandor
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The UDR200B receiver is supplied with LecNet™ software to run under the Windows® operating system. The control panel for an individual receiver shown here includes indicators of present receiver settings and levels, an edit section to make changes, store and retrieve files, and a spectrum analyzer section that provides a spectral plot of the tuning range of the receiver.

The AutoSearch scanning function provides a convenient and accurate way to conduct an RF site survey and display the results in the spectrum analyzer section. The AutoSearch function can scan all 256 frequencies in less than a minute, or selected frequency groups even faster.

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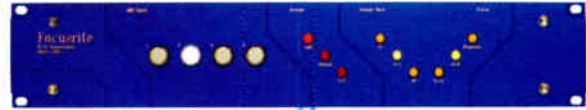
581 Laser Road, Rio Rancho, NM 87124 USA

FAX (505) 892-6243 - <http://www.lectro.com>

MASTER-PLAN:



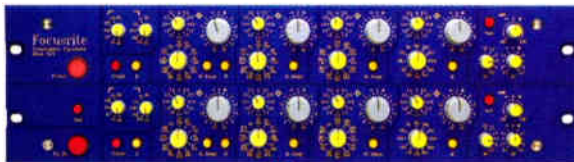
BLUE 245
20-BIT
A-D CONVERTER



BLUE 260
20-BIT
D-A CONVERTER



BLUE 315
ISOMORPHIC
MASTERING EQUALISER



BLUE 330
MASTERING
COMPRESSOR/LIMITER



BLUE 300 MASTERING CONTROLLER - REMOTE PANEL & MASTER MODULE



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With the introduction of the Blue 300 Mastering Controller, the Focusrite Mastering System is complete, providing all the functioning you need outside your Digital Audio Workstation. Recent improvements to the Blue 315 six band equaliser

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CIRCLE #156 ON PRODUCT INFO CARD



Sennheiser 3050 Series In-Ear Monitor System

A stereo UHF system, the 3050 Series includes SR3054-U single-channel or SR3056-U dual channel transmitter and EK3052-U belt-pack receiver. An operating range of 500 to 1,000 feet allows artists to perform creatively with a consistent, reliable monitor mix tailored to their needs. Transmitters offer 16 switchable frequencies within a 24MHz range between 450-960 MHz. The receiver produces an AF output of 50mW at 16 ohms and is powered by two AA batteries. SR3054-U: \$2,400; SR3056-U: \$3,800; EK3052-U: \$1,600.

Sennheiser SKM3072-U

A UHF handheld transmitter, the SKM3072-U utilizes phase-locked loop technology providing 32 switchable transmission frequencies. Other features include 50 mW of RF output power, frequency response of 80-20k Hz and signal-to-noise ratio of 120 dB. Integrated antenna, battery compartment located underneath the microphone head, LCD screen for frequencies and low battery indicator are also included. Retail: \$1,600. Sennheiser Electronic Corp. PO Box 987/1 Enterprise Dr. Old Lyme, CT 06371 860/434-9190; Fax: 860/434-1759 E-mail: rflit@sennheiserusa.com Web site: www.sennheiserusa.com



Sony Electronics 800 Series Wireless

Building on its long history of applications in television broadcasting, concert sound and live theater, Sony has expanded its 800 Series UHF wireless microphones with new, cost-effective components. Available in three prepackaged configurations (handheld, wireless guitar and lavalier), the new components bring UHF quality to a price point (under \$1,000 street price) that's practical for a broad range of users. The mics are capable of operating up to 11 channels simultaneously and providing instant access to 94 frequencies.

Sony Electronics Inc.
3 Paragon Dr.
Montvale, NJ 07645
201/358-4197; Fax: 201/358-4907
Web site: www.sony.com/proaudio

Stedman C-15

The Stedman model C-15 is a cardioid pattern low-noise condenser microphone in a cost-effective package. Hand-built in the USA including the capsule and electronics, the performance of the C-15 yields 25-19k Hz response. Includes hard case and clip adapter. List price: \$599.

Stedman 1100B

The Stedman 1100B offers 11 different patterns selectable from the power supply. The 1100B uses a 12AY7 twin triode tube and extra-large output transformer to yield outstanding performance. The 1100B dual capsule has ultra-light 3-4-micron mylar diaphragm housed in a hand-built brass with nickel-plated assembly. Freq. response is 40-18k Hz. Retail price: \$4,500.

Stedman Corp.
4167 Stedman Dr.
Richland, MI 49083
800/873-0544 or 616/629-5930; Fax: 616/629-4149

Telex VHF and UHF Pro Star Series

Telex has designed both units in a rugged, half-rackspace, plastic case. A new rack tray is available that accommodates 2 units, thereby reducing the amount of space taken up in the rack. The UHF unit is available in gray, while the VHF version is offered in black. Both systems are offered in a lapel and a handheld version. The handheld versions offer the choice of a condenser or a dynamic microphone. Both systems also come optimized for guitar applications with specially tuned circuitry that enhances the frequency response and attack characteristics of the guitar.

Telex Communications Inc.
9600 Aldrich Ave. S.
Minneapolis, MN 55420
612/884-4051; Fax: 612/884-0043
Web site: www.telex.com

Xwire X905

The X905 is a digital wireless system for guitar and microphone. The analog signal is converted to digital, then transmitted and received in digital form. Digital data is converted back to analog on the receiver's back end. This method requires no compander, also the audio signal is unaffected by RF interference. Range 100-200' under adverse conditions, five selectable UHF channels, S/N 120 dB, frequency response 20-20k Hz. List price: \$795.

Xwire Corp.
4630 Beloit Dr. #20
Sacramento, CA 95835
916/929-9473; Fax: 916/924-8065
Web site: www.xwire.com

Mixing Consoles

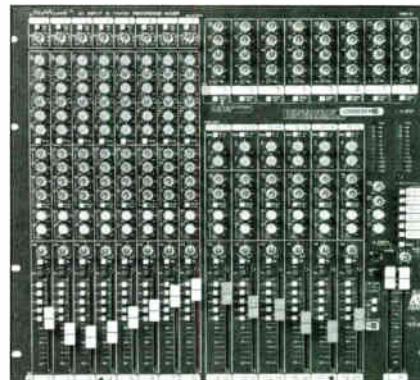
Alesis Studio 32

The Studio 32 is a 16-channel, 4-group, inline monitor recording console that offers sonic quality and routing versatility that goes far beyond the capabilities of any mixer in its price range. As a true inline console, the Studio 32 lets you send 16 audio signals to a recorder and simultaneously monitor 16 channels coming back from tape without repatching. Ultra high-quality mic preamps make it an excellent mixer for professional studio recording.

Alesis
3630 Holdrege Ave.
Los Angeles, CA 90016
800/5-ALESIS; Fax: 310/836-9192
E-mail: alecorp@alesis1.usa.com
Web site: www.alesis.com

Allen & Heath Mix Wizard 16:2

16 XLR and X balanced inputs, plus 2 stereo returns. All with direct outs and inserts. 6 auxes and 100mm Alps faders. Stereo returns have a -10dB/+4dB switch. Table-top or rack-mountable. List price: \$1,195.



Allen & Heath Mix Wizard 20:8:2

8-bus recording console. 8 tape return inputs, "Mix-down" switch, 6 auxes, 4-band EQ. Stereo returns have a -10dB/+4dB switch. 100mm Alps faders. Table top or rack-mountable. List price: \$1,295.

Allen & Heath
8760 S. Sandy Parkway
Sandy, UT 84070
801/568-7660; Fax: 801/568-7662
E-mail: akunz@dbxpro.com
Web site: dbxpro.com

AMS Neve Capricorn V.2.8 Software

Version 2.8 is the latest software release for the AMS Neve Capricorn large-format digital console. It provides significant enhancements to the automation of all console controls. In addition, routing information can now be displayed on the meter bridge and the new Browse/Copy Stores feature allows the user to view stores (snapshots) across configurations and to import them into a current configuration as required. V.2.8 also provides a range of multiformat mixing features (up to 8-way and IMAX) when used with the optional CSP hardware upgrade. These include double-resolution panning, three panning controls, joystick support and software linking of all pans in one group. Available free of charge to all console owners.

AMS Neve Logic Digital Film Console

The Logic DFC is the first fully automated digital mixing console designed specifically for multiformat film dubbing and post-production. It has been designed to mix an increasingly large number of inputs in a variety of surround formats, within a comfortable physical layout. All aspects of feature film mixing are addressed: multiformat surround panning, user-configurable predb inputs, one-touch stem routing with matrix displays, sophisticated monitor formatting with insertion of matrix processors, multi-operator capability (up to three) with independent, yet common, automation, and shared or discrete auxiliary and recorder buses. Price depends upon application.

AMS Neve Plc
Billington Rd.
Burnley, Lancashire BB11 5UB England
44/1282/457-011; Fax: 44/1282/417-377
E-mail: enquiry@ams-neve.com
Web site: www.ams-neve.com

Audio Technologies NanoAmp Series

The MXS100 is a miniature stereo 3-channel microphone/line input mixer for demanding analog and digital use in rackmount studio and field belt-pack applications. It features low noise balanced inputs, phantom power, pan-pots, switched lowcut filters and a test tone oscillator driving stereo, metered, low-distortion servo-balanced line outputs with switchable peak limiting and a stereo program/cue headphone output. Add an XPS100 or XPS200 mic or line input expander for additional inputs. MXS100 (mixer, stereo line out, 3 panned mic/line inputs): \$799; XPS100 (expander, stereo bus out, 4 panned mic inputs):

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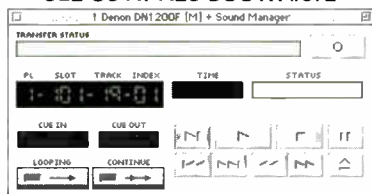
Vintage Mics?

Check out "12 Mics That Made History" on page 42

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contact:



Phone: 800-545-6900

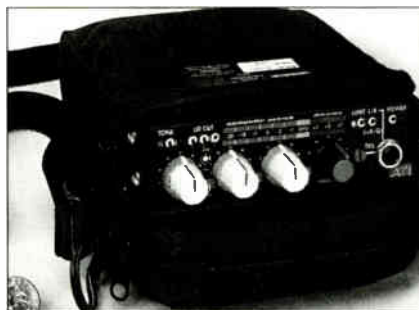
Fax: 818-884-3108

Internet: <http://www.gefen.com>

CIRCLE #163 ON PRODUCT INFO CARD

1997 AES NEW PRODUCTS GUIDE

—LISTING CONTINUED FROM PREVIOUS PAGE



\$549; XPS200 (expander, stereo bus out, 2 stereo line level inputs): \$379.

Audio Technologies Inc.
328 W. Maple Ave.
Horsham, PA 19044
215/443-0330; Fax: 215/443-0394
E-mail: les@atiguys.com
Web site: www.atiguys.com



Audio Toys Paragon MONITOR

The new ATI Paragon MONITOR is an automated mixing console. The inputs feature the patented ATI compressor and gate circuitry and 4 bands of parametric EQ. Each channel has a variable direct out that can be either stereo or dual mono. Group outs are 1-8 stereo, 9-16 stereo or dual mono. Ideal for in-ear and/or wedge monitor mixing, the console has multiple solo buses, insert points and extensive metering facilities.

Audio Toys Inc.
9017-C Mendenhall Ct.
Columbia, MD 21045
410/381-7879; Fax: 410/381-5025
E-mail: sales@audiotoys.com
Web site: www.audiotoys.com

Calrec Audio Compact 2

The all-new Compact 2 console is available with up to 40 inputs and with mono mic/line, stereo mic and stereo line inputs and 4 stereo or 8 mono subgroups. All channels have a 3-band equalizer with swept mid section, 3 high- and 3 lowpass filters, mix-minus output, 6 auxiliary sends, surround panning and 4 VCA groups. Comprehensive talk-back and monitor facilities are standard with available optional surround monitor panel.

Calrec Audio Q2

The all-new Q2 Series console has a dual in-line signal path: a maximum of 96 channels are available giving 192 inputs. Mono and stereo mic/line and stereo line/line channels are available, with 10 auxiliaries (2 stereo), optional 24/32 track routing, 4-band parametric equalizer, 2-band parametric filters, a mix-minus output per channel and optional VCA grouping. An optional surround monitor control panel is available.

Calrec Audio Ltd.
Nutchlough Mill
Hebden Bridge, West Yorkshire HX7 8EZ England
44/1422/842-159; Fax: 44/1422/845-244
E-mail: sales@calrec.com

Crest Audio V12

The V12 mixing console is our new flagship live perfor-

mance console for the high-end mobile and installed sound market. V12 has 12 VCA groups, doubles as a monitor mixer and has available "SideCar" expanders that can be linked to the main consoles for master operation of up to 220 mono or stereo input channels.

Crest Audio X Series

The X Series of mixing consoles is our new line of application-tailored mixing consoles, with specific feature sets to address particular installation and tour sound market disciplines. At AES, Crest will show two new models: X-8*HS (group and master sections are adaptable for FOH or stage monitor use) and X-8*RT (group and master sections are configured for live performance recording and theater applications). These models are available in three frame sizes up to 40 inputs and are the first FOH models of 4 new product groupings in the X Series. These groupings are X-Eight (8-bus), X-Four (4-bus), X-M (stage monitor) and X-Rack (rack-mount).

Crest Audio Inc.
100 Eisenhower Dr.
Paramus, NJ 07652
201/909-8700; Fax: 201/909-8744
E-mail: crstmk1@galaxy.net
Web site: www.crestaudio.com

D&R Octagon

Film/post-production/music mix recording console with 7.1, 5.1 and all surround formats. You must see it to believe it. Price range is \$80k to \$175k.

D&R Consoles
Rt. 1 Box 54F
Brashear, TX 75420
903/485-2344
E-mail: drna@koyote.com
Web site: www.d-r.nl

Furman Sound MM-3 Microphone Mixer

The half-rack MM-3 provides an easy-to-use audio control center for desktop audio/video production. It accepts up to 3 microphones and one line-level stereo source, making it ideal for applications where just a few mics are used along with a music playback source. Mic inputs are via balanced (TRS) 1/8" phone jacks (XLR inputs and outputs are available as an option).

Furman Sound Inc.
1997 McDowell Blvd.
Petaluma, CA 94954
707/763-1010; Fax: 707/763-1310
E-mail: Furmansnd@aol.com
Web site: www.furmansound.com

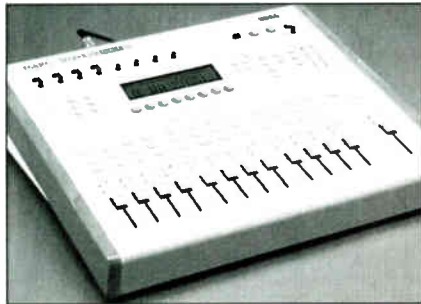
Hohner Midia 024 Visualizer V.2.0

Yamaha 02R mixer software for PC (Win 95, NT): Visualizer is an editor, remote control, library and control software that adds new functionality to the 02R digital mixer. Personal setups, mixes, effects, dynamics or EQ adjustments can be stored on disk. Install on laptop for full remote control. Adds Master Mute function, Lock function; Analog Gain can now be saved. Full offline operation. Displays all 02R features as an analog mixer on PC monitor. Price: \$999.

Hohner Midia
3321 Industrial Dr.
Santa Rosa, CA 95403-2075
800/330-7753; Fax: 707/578-2025
E-Mail: 100772.1052@compuserve.com
Web site: www.hohnermidia.com

Korg Soundlink 168RC

A fully digital 16x8x2 device equipped with two ADAT optical inputs, eight analog inputs with 18-bit A/D converters, two effects processors and full console automation. The 168RC features assignable digital routing matrix, channel strips control input interface select, level control and metering, panning, 2 aux and effects sends, muting, soloing and output bus; 12 channels of 3-band EQ memo-



ries; 32 types of onboard algorithms: reverb, delay, distortion, pitch shifting and speaker cabinet simulation; fully automated console for mixdown; and 100 scene-type memory settings.

Korg USA Inc.
316 S. Service Rd.
Melville, NY 11747
516/333-9100; Fax: 516/333-9108
Web site: www.korg.com

Lafont Audio Labs Panoramix

The Lafont Panoramix is an in-line film/audio post surround mixing console (32 to 96 channels, up to 296 inputs), with discrete 5.1 or SDDS panning and dynamics on each I/O module. Each module offers 2 line inputs simultaneously routed to 5 6-bus stems, plus a monitor return input routed to an 8-channel surround monitoring matrix. A 4-group film/bus (Pec Direct) monitor switching system and Uptown moving fader automation are standard.

Lafont Audio Labs
Dist. by Sascom

34 Nelson St.
Oakville, Ontario, Canada L6L 3H6
905/469-8080; Fax: 905/469-1129
E-mail: sales@sascom.com
Web site: www.sascom.com



Mackie Designs Digital 8-Bus

A 48-channel console—complete with meter bridge, built-in hard disk storage for effects libraries and automation sequences, 8 MB of RAM, 24 channels of analog tape I/O and UltraMix II automation. Add a standard PC-compatible SVGA color monitor, mouse and keyboard for ultimate control of DSP parameters and automation. A DOS-compatible floppy disk drive lets you back up and recall automation sessions—and instantly add DSP algorithms & future upgrades. Add up to 4 8-ch. digital cards for direct audio transfer to multitrack digital recorders, and an op-

tional sync card is available for SMPTE word clock, etc. Up to 4 DSP card slots for optional global effects processing (one card included). There's even a built-in Internet connection.

Mackie Designs
16220 Wood-Red Rd. NE
Woodinville, WA 98072
800/898-3211 or 206/487-4333; Fax: 206/487-4337
E-mail: sales@mackie.com
Web site: www.mackie.com

Millennia Media Passive Module PIM-01

Adding to the growing number of modules available for the TEC Award-nominated Mixing Suite, the PIM-01 passive input module becomes the first in a series of pure passive all balanced modules. Passive networks minimize active mix amplifiers and maximize sonic integrity. Of course, fully active mono and stereo input modules are also available. Price: \$100.

Millennia Media
4200 Dayspring Ct.
Placerville, CA 95667
916/647-0750; Fax: 916/647-9921
E-mail: jl@jps.net
Web site: www.mil-media.com

Neotek Multimedia Module

Neotek's Multimedia Module provides a complete multi-channel monitoring system for any Neotek console. It accommodates mono, stereo, LCR and 5.1-channel environments, 3 loudspeaker systems from mono to 5.1 and provides for insertion of an encode-decode processor. Price: \$1,999.

Neotek, a division of Martinisound Inc.

—LISTING CONTINUED ON NEXT PAGE



When buying a dubbing machine for your personal or project studio, TASCAM gives you high speed relief from duplicating chores. The 202mkII Dual Auto Reverse Cassette Deck is twin two-head decks in single 3U rack-mount design that can work together or separately with the touch of a button. It's perfect for making high speed dubs or creating composite tapes from multiple sources. Record on one deck while playing-back on the other, or program for continuous looping playback. The 202mkII is the perfect blend of multi-function capability, quality sound and user friendliness. And at \$529* it's ideal for budget-minded musicians and studios. Best of all, it's from TASCAM, so you know it's built to last.

For complete information and specs on the 202mkII, call TASCAM'S toll-free FaxBack line and request product #1520. We'll fax you within minutes.

DOUBLE DUTY.



SEE US AT AES BOOTH #400

The dual deck with some suite surprises. TASCAM has engineered a machine that gives duplicity a great name. The 302 Double Auto Reverse Bi-Directional Cassette Deck is really two fully independent 2-head decks in a single enclosure, adding twice the functionality to your creative suite or commercial application without duplicating your investment. Each deck can function independently or be linked together for normal or high speed dubbing, serial or parallel recording and playback. Capture long performances or get hours of hands-off continuous looping play—the creative uses are up to you. And with 3U rack-mountable design, the 302 won't be dueling the rest of your gear for workspace. A price of just \$699* makes it doubly attractive—and because it's TASCAM and built to last, doubly reliable.

For complete information and specs on the 302, call TASCAM'S toll-free FaxBack line and request product #1540. We'll fax you within minutes.



TASCAM
TAKE ADVANTAGE OF OUR EXPERIENCE.

*Manufacturer's Suggested Retail Price

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CIRCLE #164 ON PRODUCT INFO CARD

World Radio History

OCTOBER 1997, MIX 221

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CIRCLE #182 ON PRODUCT INFO CARD

Oram BEQ Series Four

The BEQ Series Four is a professional small-format console utilizing 4 submasters into dedicated 2 main and mono outputs. Applications include broadcast, theater, studios, and is perfect for mobile locations and surround sound. Designed to the highest of broadcast specifications, featuring individual 3mm aluminum panels in a steel frame. The input section is identical to the Oram BEQ Series 8 console. Available in 8-10 or 12 input versions with optional PPMs.

Oram Octamix

A 1U rackmount, 8-channel mixer. Primarily designed to be used in conjunction with Octasonic 8 mic pre, Octamix is a power unit in its own right. The balanced 8 inputs (TRS) can be routed via a pan to stereo mix outputs (XLR) and/or stereo cue outputs. 2 stereo master volume controls with LED level screen and a stereo headphone output. This small but powerful broadcast specification unit is ideal for any 8 into 4 mixing. Price: \$1,098.

Oram Pro Audio
The Old Forge, Hook Green
Meopham, Kent DA13 0J3, UK
44/1474/815-300; Fax: 44/1474/815-400
E-mail: sales@oram.co.uk
Web site: www.oram.co.uk

Ramsa DA7

The new Ramsa DA7 digital mixer delivers unrivaled sound quality utilizing new proprietary 114 dB S/N ratio A/D and D/A converters in an ergonomic, affordable design. Each channel on this 8-bus, 32-input fully automated moving fader mixer features a four-band fully parametric EQ and compressor/limiter, gate, expander and delay. The mixer has many unique features such as MIDI Machine Control, 50 scene memories and 5.1 surround mixing.

Ramsa/Panasonic
6550 Katella Ave.
Cypress, CA 90630
714/393-7277; Fax: 714/373-7903

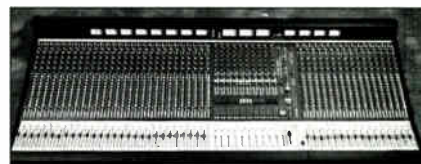
Rolls MX442 Field Mixer

The MX442 is a 4-channel broadcast recording mixer with four XLR-balanced inputs with phantom power, trim controls, a pan control, 20dB pad and lowcut switches. A Slate button, when pressed, sends out a 20Hz slate tone and activates the built-in microphone at the same time. It also has a 440Hz (A440) test tone. The output has a 30dB pad for line or mic level signal levels. It has 2 large VU meters that indicate whatever is being monitored. The monitor switch selects which signal goes to the monitors as well as the meters. Besides the four XLR ins, it also has a TRS stereo input for additional monitoring. There is also a TRS stereo bus input for cascading units. Retail price: \$1,200.

Rolls Corp.
5143 S. Main St.
Salt Lake City, UT 84107
801/263-9053; Fax: 801/263-9068
E-mail: rolls@rolls.com
Web site: www.xmission.com/~rollsrfx

Soundcraft B400

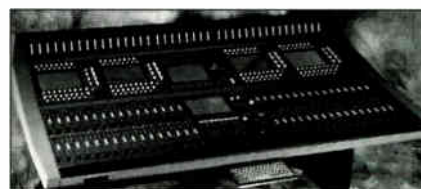
B400 is the latest broadcast on-air console from Soundcraft and utilizes many of the features of the highly popular B800, but at a more affordable price level. B400 is designed to address the radio production, TV production and outside broadcast markets and is available in frame sizes from 16 input channels.



Soundcraft Series Five

Series Five is the latest front-of-house console from Soundcraft, available in a range of sizes from 24 to 48 mono input channels. Other features: 8 groups, 12 aux buses, sweepable high and lowpass filters, true LCR panning, 256 MIDI snapshot memory, 10 matrix outputs and 10 VCA groups. Series Five also boasts a brand-new power supply with a three-year warranty, featuring a built-in redundancy link, industry standard linear circuit design and plenty of headroom.

Soundcraft
Dist. by Harman International Industries Ltd.
Cranborne House, Cranborne Rd.
Potters Bar, EN6 3JN
England
44/1707/665-000; Fax: 44/1707/660-742
E-mail: info@soundcraft.co.uk
Web site: www.soundcraft.com



Soundtracs DPC II Digital Production Console

The DPC II digital production console is an extension of the Virtua technology, utilizing more ergonomic "fader per input" worksurface, and a scalable processing structure from 64 to 160 channels. Also features dynamic automation, extensive editing, 64 or 96 motor faders, LCD touch screen displays and hi-res meterbridge.



Soundtracs Virtua Software V2.0

Created in response to user feedback, Version 2.0 allows highpass filters, dynamic EQ, gate keying, autosave, power failure recovery, bus reconfiguration, external talkback, touch update in automation, MS decoding and in-place solo. This is in addition to existing 4-band EQ, compressor and gate on every one of 48 channels. VTR control and highly integrated timecode sync functions. Upgrade is free.

Soundtracs PLC
21-d Benheim Rd., Longmead Industrial Estate
Epsom, Surrey KT19 9XN, UK
44/181/388-5000; Fax 44/181/388-550
E-mail: info@soundtracs.co.uk
Web site: www.soundtracs.co.uk

James Taylor, on recording *Hourglass* using the Yamaha O2R Digital Mixer:

"The O2R allowed us to choose our most comfortable place for making the music and to stay digital the whole way and to do it at a very high level. We were really very happy."

James Taylor (R) Frank Filipetti (L) at the Yamaha O2R during the recording of *Hourglass*



When James Taylor and producer/engineer Frank Filipetti set out to record James' new CD, their determination to capture the strongest musical performance was paramount. "I think it's often the case in the recording studio that you sacrifice some sort of comfort level and vibe for sound quality," reflects Taylor. For this project, "we were willing to go in the other direction to make the performance the priority and not necessarily the technology. But, in fact, it turned out we didn't have to sacrifice anything to do that."

A summer home on Martha's Vineyard, MA, provided the environment.

The Yamaha O2R digital recording console provided the all the mixing power and

sonic performance needed to make what was to become James Taylor's next hit album, *Hourglass*. Filipetti adds, "Being able to listen to playbacks as aurally satisfying as they were, allowed all of us to relax and just enjoy what I consider to be one of the most fulfilling recording sessions I've ever been on." To hear great performances and the sound of the Yamaha O2R digital recording console, pick up a copy of James Taylor's *Hourglass* on Columbia Records, available at music stores everywhere. To receive your copy of *Hourglass* Session Notes and learn more about the Yamaha O2R, O3D and ProMix 01 digital mixers, call 800-937-7171 x648.



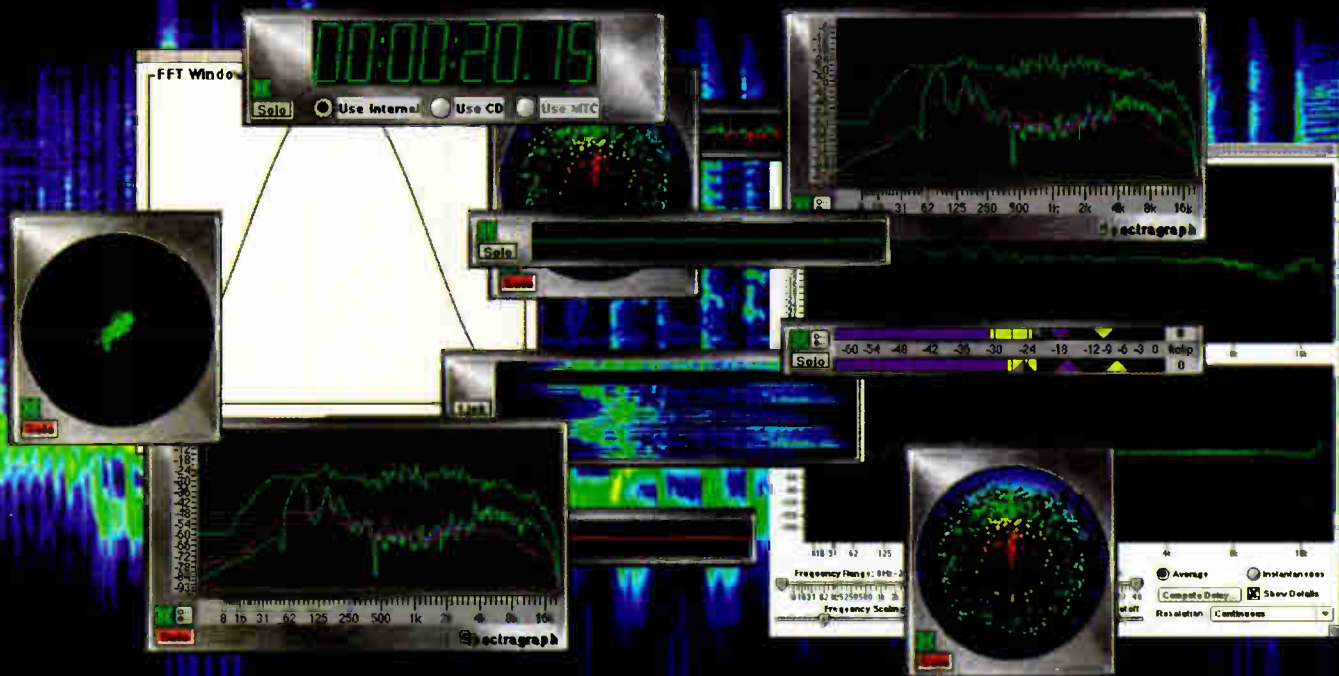
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DIGITAL RECORDING CONSOLE
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SPECTRAFOO™

VISUAL AUDIO MONITORING SYSTEM



The World's First Audio Analysis & Monitoring System Designed Expressly for Recording, Mastering & Live Sound Engineers

The problem with existing audio analysis tools is that they ask you to trade your ears for your eyes. But your ears are your stock in trade. You need tools that will work with your ears, not replace them.

Introducing *SpectraFoo*: the world's only audio analyzer that works with your ears to enhance your ability to mix and master music. It provides virtual synesthesia... the ability to see sound.

The core of *SpectraFoo* is its synesthetic monitoring engine. *SpectraFoo* uses this engine to update its displays 42 times a second resulting in analysis so fast you can see the music. But you don't have give up resolution and precision in the quest for speed. *SpectraFoo* can show you the harmonic structure of any instrument or voice and how the parts interrelate in a complex mix.

SpectraFoo unlocks the power of your parametric. Before *SpectraFoo*, the only analysis tools that could even approach real-time response used 1/3-octave displays. To get the most out of today's precision equalizers, you need precision measurements. *SpectraFoo* shows you spectral features smaller than a seritone (10 Hz) and with a resolution of 1/100th of a dB. Completely locked to the music!

In addition to its high-resolution spectrum analyzers, *SpectraFoo* includes oscilloscopes, Lissajous phase scope, Peak, RMS, and VU meters, Power Histories, L-R Power Balance History, Timecode Clock, Channel Envelope History, Spectral Power History, and the revolutionary Phase Torch.™

SEE US AT AES BOOTH #187

The Phase Torch compares the phase difference between two channels as a function of frequency, independent of power. Now you can instantly detect subtle delays and phase shifts, as well as gross polarity problems and mono compatibility. Besides, it looks *really cool!*

For Live Sound, *SpectraFoo* provides *Music Based Measurement (MBM)*. MBM shows you the power and phase response of any audio or acoustic system, and allows you to use *music* as your "test tone". Although it uses a sophisticated thresholding system to remove noise, it always shows you all of the response information, so that you can make your own informed decisions.

MBM also makes component & system testing affordable. Your gear needs to be in top condition to provide high-quality sound. *SpectraFoo* allows you to ensure signal integrity in both old and new equipment.

In addition to all of its real-time capabilities, *SpectraFoo* provides a complete timecode-locked capture and static analysis environment that provides lab-grade precision with an incredibly transparent user interface.

Don't do another project blindfolded. Call today for a demo. Visit us at AES in New York and check our website at www.mhllabs.com for more details.

Metric Halo Laboratories, Inc.
Studio M • 841 South Road
Poughkeepsie, NY 12601
tel (914) 298-0451 • fax (914) 298-4089
email: bj@metric-halo.com
<http://www.mhllabs.com>



Speck Electronics XTRAMIXcx

The XTRAMIXcx is Speck Electronics' most recent rack-mount audio mixer. The new CX now includes significant improvements over the original Xtramix such as talkback, program inserts and balanced program outputs. The XTRAMIXcx is a 40x8x2 ultracompact recording mixer that occupies only 4 rackspaces. Features: 76 total inputs; 20 stereo channels, 8 stereo effects returns, 8 stereo line returns, 2 stereo aux returns, 18 output buses, 8 subgroup buses, 8 efx buses, stereo program/monitoring buses. Suggested list price: \$4,215.

Speck Electronics
925 S. Main St.
Fallbrook, CA 92028
760/723-4281
Web site: www.speck.com



Spirit by Soundcraft Monitor²

Available in 24-, 32- and 40-channel frame sizes, the Monitor² offers an impressive total of 12 monitor sends (8 mono/2 stereo), each with 100mm faders and 12-segment tri-color LED meters. The stereo sends are particularly well-suited for in-ear monitoring. Additional amenities include a built-in splitter, ten subgroups, individual PCBs throughout and facilities for stereo engineer wedges. The Monitor² can also serve as a front-of-house console.

Spirit by Soundcraft
11820 Kemper Rd.
Auburn, CA 95603
916/888-0488; Fax: 916/888-0480
Web site: www.spiritbysoundcraft.com

Stage Tec Cantus

The Cantus digital console systems are professional mixing consoles designed with reliable and intuitive operation as primary considerations. Featuring 40-bit floating point DSP, proprietary 28-bit A/D converters, and simultaneous processing of 480 channels, Cantus digital consoles redefine cutting edge. Input/output connections are handled by an integral Nexus digital audio routing system capable of controlling 4,096 input/outputs. Console work surfaces are available for general recording, broadcast, theater and film/television audio post-production.

Stage Tec, Dist. by Sascom
34 Nelson St.
Oakville, Ontario, Canada L6L 3H6
905/469-8080; Fax: 905/469-1129
E-mail: sales@sascom.com
Web site: www.sascom.com



Studer D950

Full digital production console, up to 256 channels. Scaleable DSP-core using share DSPs with a maximum of more than 5 billion flying-point calculations per second. Full reset, full static and dynamic automation, timecode based matrix integrated. Reconfiguration within seconds. Studer Professional Audio
1449 Donelson Pike
Nashville, TN 37210

615/391-3399
Fax: 615/259-4452
Web site: www.studer.ch/studer

Studiomaster Trilogy TR326

24-channel, 4-bus mixing console featuring 20 mono mic/line channels and 4 mono mic/stereo line (monster) channels (21-24). Main channel features include direct outs, inserts, 3-band EQ w/ midsweep, 100Hz highpass filters, 6 discrete auxiliary sends, channel mutes, PFL and Solo In Place and Signal Present LEDs. Master section features 4 stereo auxiliary returns, aux 5 & 6 sends (stereo returns), balanced group, main, mono and auxiliary outputs. Control room, 2-track and headphone outputs are also standard. List price: \$1,795.

Studiomaster Inc.
3941 Miraloma Ave.
Anaheim, CA 92806
714/524-2227; Fax: 714/524-5096
E-mail: stmstr@ix.netcom.com
Web site: www.studiomaster.com

Yamaha O2R V.2

Version 2 software for the O2R digital recording console. Adds new features for recording and post-production customers, including surround sound, digital aux sends, new automation features and more. Price: O2R with V.2.0 software installed: \$8,899. V.2.0 software-only update kit: \$200.

Yamaha Corp. of America
6600 Orangethorpe Ave.
Buena Park, CA 90622
714/522-9011; Fax: 714/739-2680
E-mail: info@yamaha.com
Web site: www.yamaha.com

Yorkville Sound AP812

Yorkville's AP812 is a low-profile 400W/ch stereo mixer with 2 assignable 9-band graphic EQs, 255 preset digital effects processor and phantom power. Available in 12 or 18 channels (AP818), the AP812 features 8 mono channels with XLR and 1/4" phone jack inputs and channels 9-12 configured in stereo with switchable cueing and RCA inputs for DJ and live theater applications. Uniquely engineered internal fan cooling provides quieter performance. A 19" rackmount option is also available. List price: \$1,649.

Yorkville Sound
4625 Witmer Industrial Estate
Niagara Falls, NY 14305
716/297-2920; Fax: 716/297-3689
E-mail: yssales@yorkville.com
Web site: www.yorkville.com

Music Products



Akai MPC2000 MIDI Production Center

The Akai MPC2000 combines a powerful drum sampler and sequencer in a convenient portable package. The MPC2000 sports a backlit graphic display, 16 pressure- and velocity-sensitive drum pads, a 100,000-note sequencer, and 32MB maximum sample RAM capacity. Powerful options include SampleVerb, Akai's 4-bus voice-as-

signable effects processor, a SMPTE reader, generator and the Multi8/Dm, adding 8 individual outputs and S/PDIF digital I/O. All these features are available for an amazing \$1,499.

Akai Musical Instrument Corp.
1316 E. Lancaster Ave.
Fort Worth, TX 76102
817/336-5114; Fax: 817/870-1271
E-mail: akaiusa@ix.netcom.com
Web site: www.akai.com/akaipro

Doepfer Musikelektronik Regelwerk

24-channel MIDI fader/controller with basic sequencer functions.

Doepfer Musikelektronik
Geigerstr. 13
D-82166 Graefelfing
Germany
49/89/8980-9510; Fax: 49/89/8980-9511
E-mail: vertrieb@doepfer.de
Web site: www.doepfer.com

E-mu Systems ESI-4000 Sampler

Key features include 64-voice polyphony, 4 MB of RAM expandable to 128 MB, 64 digital 6-pole filters, over 200 MB of sample data standard (thousands of presets), 4 audio outputs expandable to 8, 24-bit dual stereo-effects option (comes standard with Turbo unit). Compatible with Akai S-1000/100 and E-mu E-IIIx, ESI-32 and EMAX II libraries via SCSI. Prices: ESI-4000, \$1,499; ESI-4000 Turbo, \$1,949; ESI-4000 Turbo w/Zip drive, \$2,149.



E-mu Systems E-Synth Keyboard and Rack Module

Available in rackmount (\$3,595) and 76-note keyboard versions, these ROM-based synthesizer/samplers offer 64-note polyphony, 16 MB of high-quality instruments, 8 balanced 1/4" outputs, 24-bit stereo effects processing, stereo sampling (expandable to 64 MB), 48-track sequencer, SCSI interface, 2 CD-ROMs, 256 editable/non-volatile presets with 64 editable 6-pole filters and Emagic Sound Diver preset editor for PC/Mac.

E-mu Systems Inc.
1600 Green Hills Rd./PO Box 660015
Scotts Valley, CA 95067-0015
408/438-1921; Fax: 408/438-8612
E-mail: tamara-snowden@emu.com
Web site: www.emu.com

Encore Electronics Expressionist

The Expressionist (\$599) is a 1U rackmount MIDI to CV converter providing eight control voltage outputs and eight corresponding triggers that can be programmed as positive gates or S-triggers. The Expressionist supports exponential and linear oscillators. Each CV can be programmed to a unique MIDI channel and multiple CVs can be grouped polyphonically. 3 global LFOs offer six waveforms each. Each CV has pitch bend, 4 modulations, transpose, portamento and scaling. It also includes Roland DIN sync.

Encore Electronics
611 Laird Ln.
Lafayette, CA 94549
510/229-8875; Fax: 510/229-8875
E-mail: encore@value.net
Web site: pwp.valve.net/encore



Ensoniq ASR-X

The ASR-X is a sampler, resampler, synthesizer, effects processor and sequencer all in one. It has 13 velocity-sensitive pads that have been carefully designed for incredible accuracy and feel. The ASR-X is one of the easiest samplers to use, and the built-in synthesizer has over 200 sounds as well as an expansion slot giving access to even more waves and more sounds. The RAM can be expanded to 34MB. U.S. Retail: \$1,595.

Ensoniq
155 Great Valley Pkwy.
Malvern, PA 19355
610/647-3930; Fax: 610/647-8908
E-mail: music-support@ensoniq.com
Web site: www.ensoniq.com

Johnson Amplification Millennium Stereo 150

The Johnson Amplification Stereo 150 integrated modeling amplifier is a 150W (75 + 75) power amp and dual tube preamp guitar amplifier that uses integrated modeling to provide the user with almost any guitar amp tone from Fender to Mesa Boogie to Soldano by simply pressing a button. In addition to the full palette of amplifier tones, the Millennium is equipped with an S-DISC II processor that will give the user any effect from flangers to auto wah. The Millennium also offers chromatic tuner, up to 4 outputs and XLR direct/recording outputs. Suggested list: \$1,599.95.

Johnson Amplification
8760 S. Sandy Pkwy.
Sandy, UT 84070
800/777-3637; Fax: 800/333-7363
Web site: www.digitech.com

Graham Lear's Latin Rock Drumscales Vol. 3

Audio sampling and production CD. Features drum performances by Graham Lear (formerly with Santana) and percussion performances by Orestes V. Lato (Santana). Besides complete percussion "song structures," the CD contains over 500 individual drum and percussion samples, including congas, timbales, bongos, guiros, etc. Price: \$89.95, license-free.

Northstar Productions
13716 S.E. Ramona
Portland, OR 97236
503/760-7777; Fax: 503/760-4342
E-mail: northstar@spiritone.com

Roland A-70

The A-70 is an "organ-touch" weighted, velocity-sensitive 76-note professional MIDI Master Control keyboard with many of the same innovative MIDI control features as Roland's flagship A-90. Four independent MIDI outs allow for the control of up to 64 MIDI channels, while optional Roland Expansion boards give the affordable A-70 massive internal and external sonic flexibility. The A-70 also features a dedicated Sequencer Control section and 20 on-board controllers that include aftertouch, a bender/modulation lever and wheels and sliders. List price: \$1,495.

Roland BOSS SP-202 Dr. Sample

Breaking the price/performance barrier once again, BOSS has introduced the SP-202 Dr. Sample. This easy-to-use sampler gives DJs, techno-heads and dance music artists powerful, professional capabilities, built-in effects processing and unprecedented sample storage via SmartMedia cards—all housed in a cool-looking tabletop box.

The SP-202 features four user-selectable sampling rates and a maximum of 4 min. 20 sec. internal sampling time. External sample storage is provided via affordable 2MB or 4MB SmartMedia cards, the same cards used in digital cameras. List price: \$395.

Roland SR-JV80-II Techno Collection

With the SR-JV80-11, users can turn their Roland JV/XP synthesizers into the ultimate dance and techno machines. The SR-JV80-11 Techno Collection expansion board contains cutting-edge drum, synth and effects sounds meticulously collected from sources ranging from classic Roland synths to visionary young techno music pioneers. Sound effects include noise, hits and industrial sounds. The SR-JV80-11 features 255 waveforms, more than 200 patches and 8 full rhythm sets. List price: \$475.

Roland Corporation U.S.
7200 Dominion Circle
Los Angeles, CA 90040-3696
213/685-5141; Fax: 213/722-9233
Web site: www.rolandus.com

Power Amplifiers



BGW Systems Millennium Series Model 2X

Ideal for permanent commercial installations, the MIL2X has a 5-year warranty, complies with all worldwide safety standards and is THX-approved. Equipped with 2 autoformers, the MIL2X can be used with low impedance 70/100V loads. Additional features include modular construction, adjustable highpass filter, transient-free switching, LED indicators, balanced inputs, forced-air cooling and detented gain controls. Height: 3U; Width: 19" standard rack front panel (48.3 cm); Depth: 14.8"; weight: 34 lbs. List price: \$1,057.

BGW Systems Millennium Series Model 3X

5-year warranty. Complies with all worldwide safety standards. THX-approved. Equipped with 2 autoformers, MIL3X delivers 50% more power into 4-ohm, 70 or 100V loads. Features include modular construction, adjustable highpass filter, transient free switching, LED indicators, balanced inputs, forced-air cooling and detented gain controls. 3U, 19" standard rack front panel, 19.2" deep and 40 lbs. List price: \$1,417.
BGW Systems Inc.
13130 Yukon Ave.
Hawthorne, CA 90250
800/468-2677; Fax: 310/676-6713
E-mail: sales@bgw.com
Web site: www.bgw.com

Carver Professional PX Series

The PX1450 (725 W per channel/4 ohms) and PX850 (425 W per channel/4 ohms) are designed to deliver startling sonic clarity, chest pounding bass, real-world 2-ohm performance and rock-solid reliability in a value-priced package. Unlike the competition, value-priced does not result in feature-starved products at Carver Professional. These amplifiers are equipped with Signal Smart Standby Cir-

cuitry, variable speed fan control, front/rear gain controls (user-configurable) and externally selectable sensitivity. The PX Series is an excellent choice for the medium to small venue fixed installation, DJs or working musicians and is ideal for installations in houses of worship. Suggested retail price for the PX1450 is \$1,245 and \$895 for the PX850.

Carver Professional
9300 N. Decatur
Portland, OR 97203
503/978-3344; Fax: 503/978-3302
E-mail: carverpro@imagina.com
Web site: www.carverpro.com

Crest Audio Pro Light

The PRO2 Series finally brings the market a cost-effective, feature-packed lightweight amplifier that sounds like a Crest. A less cumbersome version of the renowned Pro Series. Pro Light amps will be initially available at 3 power levels: 600, 1,000 and 1,200 WPC at 4 ohms with full 2-ohm operating capability. The new series also incorporates Power Factor Correction, a radical power supply and a highly efficient power output section to provide the dynamic and transient handling.

Crest Audio TKS

The new TKS marks the next technological leap forward in high-end tour sound amplification. TKS amplifiers are more compact and considerably lighter in weight than the current Professional Series, while providing features such as direct computer control network connection for NexSys software monitoring, control and load analysis and available onboard DSP modules with digital or analog input capability. The TKS design incorporates Power Factor Correction, which allows the amplifier to produce consistent output power anywhere in the world or under low or over voltage conditions.

Crest Audio Inc.
100 Eisenhower Dr.
Paramus, NJ 07652
201/909-8700; Fax: 201/909-8744
E-mail: crstmk@galaxy.net
Web site: www.crestaudio.com

Fender SRM 6302 and 8302

Clean, quiet, dual 150Ws at 4 ohms; power amps can be run in tandem or configured mains/monitor with the push of a button. Assignable 9-band graphic EQ, channel features: mic/line inputs, main level, monitor level, 3-band EQ and EFX send. Foot-switchable 3-spring reverb, convection cooling. RCA input jacks for audio playback, record out control adjusts tape level for capturing live performance and phantom power. SRM 6302 list price: \$619.99. SRM 8302 list price: \$729.99

Fender Musical Instruments
7975 N. Hayden Rd., Ste. C-100
Scottsdale, AZ 85258
602/596-9690; Fax: 602/596-1384
Web site: www.fender.com

Gemini Sound XP-1200

19" professional power amp. 600 W per channel at 4 ohms, 400 W per channel at 8 ohms. 1200 W at 8 ohms in bridged mode. 20-20k Hz frequency response 0.05% THD, 1.23 V (+4dBu) sensitivity. Protection: short circuit, DC, overheat, sub/ultrasonic input, current inrush/soft start. Level controls, "stereo-mono/bridge" switch, 2-speed rear-to-front fan cooling. Connectors: XLRs and 1/4" jacks on inputs, 5-way binding posts and 3 Neutrik Speakons on outputs. 19"x14"x5 1/2" (483 mm x 355 mm x 133 mm), 42 lbs. (19 kg).

Gemini Sound Products Corp.
8 Germak Dr.
Carteret, NJ 07008
732/969-9000; Fax: 732/96-9090
E-mail: davide@geminiidj.com
Web site: www.geminiidj.com

The TOP TEN Reasons to Buy a PV™ 2000

When the show absolutely must go on, choose the proven dependability of the PV™ Series of professional duty power amplifiers. The PV™ 2000 uses 32 rugged

TO-3 metal power transistors (28 outputs/4 drivers) to reliably deliver 1000 Watts per channel into 2 ohms. There is debate over plastic vs. metal*, but when it comes to dealing with heat, metal is the obvious winner. *How many plastic frying pans have you ever seen?*

How many plastic frying pans have you ever seen?

Just about every "top of the line" amplifier on the market offers some form of clipping protection. DDT really works, protecting your speakers and the amp.

Built-in "real" subwoofer crossovers and low-cut filters are rear panel switchable. We don't play the "my amp has more gizmos than your amp" game. We add features only after careful research and evaluation. Our "staggered pole, under-lapped, universal" subwoofer crossovers will outperform most rack-mount crossovers and give you high-pass outputs too!

The PV 2000 is built by America's largest manufacturer of sound reinforcement equipment, with over two million square feet of factory space in the U.S.

If you need to get loud, for a long time, but are spending your hard earned money, check out the PV™ 2000. We invented "bang for the buck!"

➔ **1. RELIABILITY**
32 metal TO-3 power transistors

➔ **2. POWER**
2,000W RMS Into 4 ohms bridged

➔ **3. RELIABILITY**
Peavey's patented DDT™ protection circuitry

➔ **4. PERFORMANCE**
20V/μSec slew rate, low distortion, and high damping factor for accurate sonic reproduction

➔ **5. RELIABILITY**
Huge 25 lb. power transformer

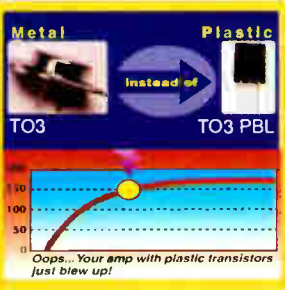
➔ **6. FEATURES**
Two "real" subwoofer crossovers (w/ High-pass outputs!) & two 40 Hz HP filters

➔ **7. RELIABILITY**
Massive heat sinks and 10W emitter degeneration resistors

➔ **8. PRICE**
\$749.99 U.S. Suggested Retail

➔ **9. RELIABILITY**
Special high current speaker connectors

➔ **10. EXPERIENCE**
Peavey has over 32 years of constant improvement under the same ownership and management.



DDT™ is perhaps the most imitated power amp feature in recent history. Imitated but not duplicated because it's protected by U.S. patent (4,318,053).



\$749.99

U.S. Suggested Retail
Higher in other nations.

**2 X 1000 Watts / 37.5¢
@ 2 Ohms / Per Watt!**

PEAVEY®

DESIGNED AND MANUFACTURED IN U.S.A.

PV™ 2000
PROFESSIONAL STEREO
POWER AMPLIFIER

1000 WATTS X 2

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CIRCLE #167 ON PRODUCT INFO CARD

EXPERIENCE THE DIFFERENCE

see our web site or read Monitor Magazine for the long explanation. <http://www.peavey.com>
The MONITOR Magazine is a publication filled with the latest information musicians want to know. To receive 4 issues for only \$5 (price good in U.S. only) send check or money order to
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World Radio History



Hafler P4000 Transnova Diamond

The Hafler P4000 Transnova Diamond (Dynamic Invariant Amplification Optimized Nodal Drive) is a 200W-per-channel @ 8-ohm convection-cooled amplifier designed for the studio market. It features Professor Jim Strickland's Transnova circuitry (patent #4467288) and the Diamond Transconductance driver stage, which combines the linearity of Class A operation with the current headroom of Class B. The Diamond technology can also be found on Hafler's top-of-the-line 9505.

Hafler
546 S. Rockford Dr.
Tempe, AZ 85281
602/967-3565; Fax: 602/894-1528
E-mail: www.rockfordcorp.com
Web site: www.rockfordcorp.com

Hot House Model 400

Building on the tradition of the industry's first dedicated control room amplifier, our original S400 introduced in 1987, and drawing upon the highly refined new model 600, the 400 will be the first "popularly priced" Hot House amp under \$1,700 retail. With 125 W/ch at 8 ohms and 200 W/ch at 4 ohms, it is geared toward powering high resolution near-field speakers in precision mixing and mastering situations, while affording small project studios quality amplification at a rational price.

Hot House Professional Audio
275 Martin Ave.
Highland, NY 12528
914/691-6077; Fax: 914/691-6822

Mackie Designs FR Series M•1400

Features low negative feedback; T-design constant gradient cooling for enhanced thermal stability; sustained ultra-low impedance capability (1,400 W, 4 ohms bridged: 700 + 700 W into 2 ohms), built-in sweepable constant directivity horn compensation, built-in variable highpass filter, built-in limiter and switchable lowpass electronic subwoofer crossover, defeatable clip eliminator, ultra-low frequency subsonic stabilizer. Detented input gain controls calibrated in volts and dB, 5-segment level LEDs, and 6 status LEDs and has a built-in Neutrik Speakon connector to handle European audio community power requirements.

Mackie Designs
16220 Wood-Red Rd. NE
Woodinville, WA 98072
800/898-3211 or 206/487-4333; Fax: 206/487-4337
E-mail: sales@mackie.com
Web site: www.mackie.com



Tubeworks 1160 MosValve

The 1160 MosValve is the only stereo power amp that features the world-renowned patented MosValve technology. The 1160 delivers 160 W RMS power at 4 ohms, 80 W a side. The amp will produce your warm, clear tone, not reproduce it. The 1160 is the most musical power amp

made. S/N: better than 95 dB at 8 ohms. Hum and noise: better than -65 dBv at 8 ohms. Sensitivity: 450 mV. Input impedance: 50 K ohms. Presence control +/-8 dB at 10 kHz. Constant turbulence internal fan. Size: 3 1/2 x 19 x 7 (HxWxD). Depth: 8 1/2. Weight: 13 lbs.

Tubeworks
10421 Burnham Dr. NW #4
Gig Harbor, WA 98332
253/851-8054; Fax: 253/853-5562
E-mail: twinfo@tubewrks.com
Web site: www.tubewrks.com

Yamaha P Series

Rugged, compact yet lightweight design. Second-generation high-efficiency drive technology. Front panel power temp. protection, signal and clip indicators. Internal heat sink and variable speed forced air cooling. P4500: \$999 (450Wx2 @ 8-ohm). P1600: \$599 (160Wx2 @ 8-ohm). P3200: \$849 (320Wx2 @ 8-ohm).

Yamaha Corp. of America
6600 Orangethorpe Ave.
Buena Park, CA 90622
714/522-9011; Fax: 714/739-2680
E-mail: info@yamaha.com
Web site: www.yamaha.com

Recording/Editing Devices

Advanced Audio Devices Discribe Recorder

AAD announces their Discribe CD recorder, a stand-alone unit to record from stereo audio inputs to standard CD-R discs with the same ease as recording to tape, but with significantly enhanced functionality. Selections can be recorded, played, repositioned and edited in random-access fashion, using simple, intuitive transport and function keys. Recorded CDs play in standard players and can serve as CD masters. Production quantities will be available in the 4th quarter.

Advanced Audio Devices LLC
PO Box 769
Lake Forest, IL 60045-0769
847/604-9630; Fax: 847/604-8528
E-mail: discribe@advaudiodev.com
Web site: www.advaudiodev.com

Akai DPS12 Digital Personal Studio

The new Akai DPS12 digital personal studio combines a professional quality 12-track digital recorder and a 20-channel digital mixer into one easy-to-use package. Up to 8 tracks can be recorded simultaneously, without compression, onto convenient internal removable media or external drives. The DPS12's 250 virtual tracks can be freely allocated between the 12 physical tracks. 18-bit A/D and 20-bit D/A conversion ensure professional-quality sound. All these features at \$1,499, a price that's nothing short of spectacular.

Akai Musical Instrument Corp.
1316 E. Lancaster Ave.
Fort Worth, TX 76102
817/336-5114; Fax: 817/870-1271
E-mail: akaiusa@ix.netcom.com
Web site: www.akai.com/akaipro



Alesis M20

The Alesis M20 is a 20-bit professional-quality 8-track MDM recorder specifically created for commercial recording facilities and high-end video and film/post studios.

With a new full servo direct drive transport, the M20 is engineered for demanding applications and includes built-in SMPTE/EBU timecode, a jog shuttle wheel, an analog aux track, an optional remote, optional meter bridge and more. The M20 records in the new ADAT Type II or original ADAT format on standard S-VHS tape.

Alesis
3630 Holdrege Ave.
Los Angeles, CA 90016
800/5-ALESIS; Fax: 310/836-9192
E-mail: alesc corp@alesis1.usa.com
Web site: www.alesis.com

ATR Service Co. VS-20

Introducing the VS-20 mastering-grade variable-speed oscillator. The VS-20 is fully self-contained and will control capstan speed on any analog recorder that uses 9,600 Hz as standard servo reference frequency. The VS-20 is digitally controlled and features a 5-digit readout with 0.05% speed steps from nominal speed with repeatable accuracy. VS-20s are supplied with connecting cable and UL-approved power supply. The VS-20 complements our other mastering products.

ATR Service Co.
1502 Cobb St.
San Mateo, CA 94401
415/574-1165; Fax: 415/574-2064

Augan Instruments OMX24

The Augan OMX24 Master Recorder is a 24-track 24-I/O nondestructive random-access recording and editing system configured as a master recorder for film re-recording applications. Recordings are 24-bit (via AES/EBU or the newly designed 24-bit A-to-D converters), onto optical disk or removable hard drive. Numerous remote control options, synchronization capabilities and serial/parallel interfacing are available. A 24-track playback-only configuration (expandable to over 500 outputs) is also available.

Augan Instruments OMX48

The Augan OMX48 is a 48-track, 48-I/O random-access recording and editing system designed for the rigors of the professional recording studio. The OMX48 records 24-bit audio (via AES/EBU or newly designed 24-bit A/D converters), onto optical disk or removable hard drive. The RC48 remote offers familiar multitrack transport controls and includes a dual TFT display for sophisticated nondestructive waveform editing. A suite of advanced real-time DSP functions are available.

Augan Instruments, Dist. by Sascom
34 Nelson St.
Oakville, ON, Canada L6L 3H6
905/469-8080; Fax: 905/469-1129
E-mail: sales@sascom.com
Web site: www.sascom.com

CreamWare CUTmaster

Full digital broadcast component system for Pentium PCs. Fully scalable as stand-alone workstations or built into a fully databased and networkable solution. Audio hardware, database, record/edit station, real-time DSP suite, Red Book CD writing, play/preview station, record/edit for mobile notebooks, playlist/audition station and longtime record module are some of the possibilities. Various linear and reduced audio formats are supported. Start with stand-alone modules from \$250 through \$3,000 full production components. Server pricing depends on number of site licenses.

CreamWare osiris

Real-time audio restoration plug-in for MasterPort, triple-DAT, TDAI-16 and CUTmaster production systems. Click and pop removal, noise elimination, sonic enhancement, all in real time on a Pentium 166 or better. Full analysis tools and editing adjustments available. MSRP: \$698. You have to hear and see osiris to believe...and you will.

System Two

A New Standard For Audio Testing



Leading edge performance has been a defining feature of Audio Precision products since the inception of our company in 1984. Thousands of our System One audio analyzers are in use worldwide, selected by design engineers for high performance and by test engineers for our comprehensive programmable analog and digital audio measurement capabilities.

Now our System Two true Dual Domain audio analyzer joins the System One, setting a new standard for performance and flexibility in audio frequency test & measurement.

System Two is a true Dual Domain analyzer. Other test instruments may have both analog and digital inputs and outputs ... but they're not true Dual Domain! They rely on performance-limiting converters to pass analog signals back and forth to a DSP core of digital-only hardware. Passing signals through a/d or d/a converters for every measurement robs the test instrument of performance. System Two includes

separate, independent hardware for direct audio measurements in both domains, plus additional and extensive interface measurement capability including jitter measurements, eye patterns and all other parameters described in AES3, the serial audio interface standard.

The new standard of System Two is represented by performance specifications such as guaranteed analog generator and analyzer residual THD+N of -108 dB, guaranteed analog signal flatness of ± 0.01 dB for the generator and analyzer; and 24 bit digital signal generation with 48 bit FFT dynamic range.

From aircraft to automobiles, satellites to cell phones, headsets to hearing aids, System Two represents a new standard for audio frequency test & measurement applications. Compare for yourself - our worldwide force of representatives will be pleased to provide comprehensive specifications and a true Dual Domain on-site demonstration.

SEE US AT AES BOOTH #608

**Audio
precision**

**Audio Precision
PO Box 2209
Beaverton, Oregon 97075-3070
Tel: (503) 627-0832 FAX: (503) 641-8906
US Toll Free: 1-800-231-7350**

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Dual Domain, is a registered trademark of Audio Precision

CreamWare TDAT-16

TDAT-16 builds on CreamWare's successful tripleDAT by offering a PCI card with two ADAT interfaces. 16 channels of I/O between an Intel Pentium PC and any ADAT optical interface. Either 8 or 16 channel AD/DA analog rackmount units are optional. TDAT-16: \$2,198. A-8: \$898, A-16: \$1,298. The system provides full multitrack recording, editing, 256 tracks, mixing, real-time 80-bit DSP, mastering and full Red Book CD writing. Software: the key to desktop studio power.
 CreamWare U.S. Inc.
 446 Harrison St. #32
 Sumas, WA 98295
 604/527-9924; Fax: 604/527-9934
 E-mail: info@creamware.com
 Web site: www.creamware.com

Digidesign AudioVision 4.0

AudioVision 4.0 represents the next generation in digital audio workstations, combining broadcast-quality picture with comprehensive edition tools specifically designed to meet the needs of audio post professionals. AudioVision comes bundled with a full-featured version of Pro Tools III software, allowing you to take advantage of Pro Tools' powerful mixing and processing capabilities—including the ability to run TDM plug-ins from more than 100 Digidesign development partners. List price: \$21,000 plus CPU, drive and synchronization device.
 Digidesign Inc.
 3401A Hillview Ave.
 Palo Alto, CA 94304
 415/842-7900; Fax: 415/842-7999
 Web site: www.digidesign.com

Digital Audio Labs MDM Custom for DA-88

DA-88 interface for the V8 system. Provides both the digital audio interface and the sync interface for the DA-88. A single MDM custom card can control up to 15 DA-88s and transfer up to 8 tracks of audio. 2 cards can be used to transfer up to 16 tracks. The MDM Custom keeps the DA-88s automatically synched up to the V8 system.

Digital Audio Labs Timing Gear for V8

Synchronization interface for the V8 system. Sends and receives VITC and LTC timecode. Provides MTC out. Performs timecode window burn. The Timing Gear has 2 RS422 for machine control of external transports. With the Timing Gear, you can effortlessly synchronize audio between your video decks, V8, ADATs and DA-88s.
 Digital Audio Labs
 13705 26th Ave. N.
 Plymouth, MN 55441
 612/559-9098; Fax: 612/559-0124
 E-mail: info@digitalaudio.com
 Web site: www.digitalaudio.com

Dolby Drive

Digital magnetic disk-based replacement for the classic 35mm mag film dubber. 8-track record/play and 16-track playback only versions use removable 1-gigabyte magnetic disks that can store more than 45 minutes of 8-track audio at 20-bit resolution. Features: operates under bi-phase, timecode or 9-pin control; remote-control capability for up to 100 machines; seamless audio punch-in/punch-out across all 8 tracks; individual track and whole machine slipping; editing facilities; and file interchange with DAWs supporting the OMF-II standard. List price: \$12,000 for 8-track record/play and \$14,000 for 16-track playback-only units.
 Dolby Laboratories Inc.
 100 Potrero Ave.
 San Francisco, CA 94103-4813
 415/558-0200; Fax: 415/863-1373
 E-mail: info@dolby.com
 Web site: www.dolby.com

Ensoniq PARIS

PARIS (Professional Audio Recording Integrated System) is a complete 24-bit, 128-track hard disk recording studio. The core PARIS system includes an extremely powerful EDS-1000 PCI card, a dedicated control surface and cross-platform software that can be run under either the MacOS or Windows 95/NT. There are many input/output options, making it easy to configure the system for many different applications ranging from project studio to post-production facilities. The complete PARIS system starts at \$2,895 U.S. retail.
 Ensoniq
 155 Great Valley Pkwy.
 Malvern, PA 19355
 610/647-3930; Fax: 610/647-8908
 E-mail: parisweb@ensoniq.com
 Web site: www.ensoniq.com

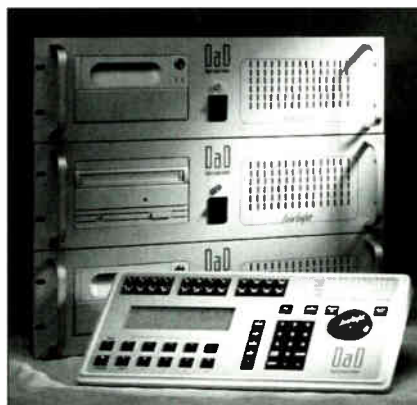
Event Electronics Layla

This digital audio interface for PC and Macintosh computers comprises a PCI bus-master host card and a rack-mount audio interface with 8 balanced 20-bit 128x oversampling ADCs, 10 balanced 20-bit 128x oversampling DACs, S/PDIF stereo digital I/O, word clock, I/O, MIDI in/out/thru, and onboard Motorola 56301 DSP (80MIPS); 24-bit internal audio path resolution; frequency response: 10-22k Hz, +/-0.5 dB; dynamic range >=98 dB. Price: \$999.
 Event Electronics
 PO Box 4189
 Santa Barbara, CA 93140-4189
 805/566-7777; Fax: 805/566-7771
 E-mail: info@event1.com
 Web site: www.event1.com



Fairlight MFX3plus

MFX3plus is designed with the future in mind; equipped with PCI bus capability, MFX3plus supports current and future hardware technology for data storage, communications, networking and connectivity. MFX3plus is purpose-built for digital audio, operating within a multiprocessor architecture that uses a true multitasking, real-time disk operating system adapted for the unique needs of large digital audio files.
 Fairlight USA
 3855 Hughes Ave., 2nd Fl.
 Culver City, CA 90232
 310/287-1400; Fax: 310/287-0200



Fairlight DaD

DaD, digital audio dubber, is a disk-based playback-only machine that works with project files created by Fairlight MFX3plus DAWs. DaD was created for use as a playback device in sound mixing sessions, replacing commonly used machines such as magnetic sprocketed dubbers and multitrack tape machines. It is useful wherever large numbers of tracks must be played back cost-effectively.



HHB CDR-800 CD Recorder

Priced at \$2,095, the new CDR-800 recorder features a full complement of professional features, including balanced XLR analog inputs, unbalanced phono analog inputs and outputs, an AES/EBU digital input, and optical and coaxial digital I/Os. Direct digital copying from DAT masters and other digital formats is made simple by an onboard SRC, which instantly recognizes sample rates between 32 and 48 kHz, with up to +/- 3% speed variance and converts them to the CD standard of 44.1kHz. A built-in indexer converts DAT IDs to CD tracks. Digital transfer from CD is equally straightforward, thanks to a synchronous dubbing mode.
 HHB Communications LLC
 626 Santa Monica Blvd., Ste. 110
 Santa Monica, CA 90401
 310/319-1111; Fax: 310/319-1311
 E-mail: hhbcomm@qwi.net

JRF/Studer Conversion Kit for Studer A80

Kit converts Studer A80VU and RC Series 1/4" tape recorders to 1/2" 2-track. Kit is complete with transport tape guides, new pinch roller, set of heads mounted on customer's head assembly, conversion of assembly to 1/2" guidance and optical alignment of completed head assembly. Options include choice of premium PLX record and playback heads or extended performance Flux Magnetics heads; head assembly base plate. Kit with PLX heads: \$2,950. Flux heads: \$3,575. Custom heads compatible with tube electronics also available.

Next Month in *Mix*:

Power Amplifier Specs Explained

—LISTING CONTINUED ON NEXT PAGE

Now includes 6 effects processors, 3 applications and full Source Designer II and NuBus integration*

Bring Outboard Power to Your Desktop With Waves MultiRack

Simultaneous Access & Control

Now you can use Waves Plug-Ins anywhere in real time. Simply plug MultiRack directly into the send & receive of your mixer and you can re-route any track through any effects processor with a click of the mouse. Hit Save and a racks worth of award-winning processors will come back up next session, just the way you left them.

Maximum DSP Card Power

MultiRack integrates easily into any studio and operates on almost any Mac with supported DSP cards. Waves' DSP Resource Management lets you run multiple effects on a single DSP chip with true real-time 24 bit throughput and very low lag-time.

In the example shown 5 processors are running simultaneously on a single Audiomedia III board with DSP power to spare! Use more than one card and create multiple "virtual" racks, each with its own I/O, sample rate and stereo/mono combinations.

Now MultiRack even allows you to record to, or play from disk while processing through Waves Plug-Ins. No matter how you use MultiRack, you'll find that the power of complete preview, save and recall improves your creative process.

Find out how to bring the flexibility, value and sonic excellence of the MultiRack Bundle to your desktop. Call us or visit www.multitrack.net.

See us at AES booth 1160



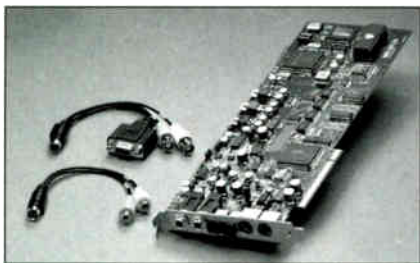
*The current MultiRack bundle includes the L1 Ultramaximizer, PAZ Psychoacoustic Analyzer, Q10 ParaGraphic EQ, S1 Stereo Imager, C1 Compressor/Gate, TrueVerb (Native only), DLA StereoDelay, IDR WaveConvert (Mac) and TrackPos Pro, plus the Native versions of the bundle. ©1997 Waves Inc. All of the above and Waves are trademarks of Waves Inc. All other trademarks are the property of their respective holders.

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tel: 44.1637.877170 • fax: 44.1637.850495 • Waves Headquarters
Tel-Aviv, Israel • tel: 972.3.5107667 • fax: 972.3.5105881
e-mail: sales-info.ks@waves.com • www.waves.com

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JRF Magnetic Sciences Inc.
249 Kennedy Rd.
Greendell, NJ 07839
973/579-5773; Fax: 973/579-6021
Web site: jrfmagnetics.com



Korg SoundLink DRS 1212

SoundLink DRS will feature model 1212 I/O multichannel audio interface. Features 12 inputs and 12 outputs configured as 2 analog I/Os, an S/PDIF I/O and an 8-channel ADAT optical I/O.

Korg USA Inc.
316 S. Service Rd.
Melville, NY 11747
516/333-9100; Fax: 516/333-9108
Web site: www.korg.com

Lexicon Studio

Lexicon Studio provides the next generation of professional hard disk recording tools: high-quality analog conversion, digital connectivity, format conversion, signal routing, synchronization, system acceleration and audio DSP—hardware solutions that work with your favorite software. Lexicon Studio offers 32 simultaneous audio record and 32 simultaneous audio playback channels. Starter system includes Core-32 card, LDI-12T interface and PC-90 processor. List price: \$3,000 MSRP.

Lexicon
3 Oak Park
Bedford, MA 01730
617/280-0300; Fax: 617/280-0490
E-mail: info@lexicon.com
Web site: www.lexicon.com



Mackie Designs HUI DAW Control Surface

Designed in collaboration with Digidesign for mixing with Pro Tools 4.0, it will eventually be compatible with other Digidesign DAE-compatible software (MOTU, Opcode, Steinberg, etc.). Featuring 8 100mm motor faders, 4-character LED scribble strip, dedicated pan and send encoders, illuminated switches for mute, solo, automation write and record-enabling, dual LED ladders per channel, dedicated plug-in section to edit and automate your favorite DSP functions, and F-keys for macro style operations, control room section with talkback and assignable routing for 3 stereo or surround audio pairs, tool and keyboard shortcuts to maximize efficiency. Rear panel includes 2 mic pre-amp sections, 3 pairs of analog I/O jacks (configurable for stereo or surround application), headphone out, 4 general-purpose I/O trigger jacks, ADB mouse/keyboard ports,

MIDI I/O, an expansion port for joystick or additional V-POTS and RS-232/422 port.
Mackie Designs
16220 Wood-Red Rd. NE
Woodinville, WA 98072
800/898-3211 or 206/487-4333; Fax: 206/487-4337
E-mail: sales@mackie.com
Web site: www.mackie.com



MediaForm CD-2601 CD-R Stand-Alone Duplicator

The CD-2601 automatically duplicates up to 25 CD-Rs unattended. The CD-2601 uses MediaForm's batch recording feature, allowing your autoloader to determine originals from blanks. The CD-2601 allows you to choose from Copy mode or Verify mode, making it the only CD-R stand-alone autoloader in the industry that lets you copy and verify on the same machine. The CD-2601 has separate accept and reject bins. List price: \$5,995.

MediaForm CD4600-CD2CD/PRO Series

The CD2CD/PRO stand-alone duplicator copies up to 6 CD-Rs simultaneously on the fly, from a single CD source with a touch of a button. The CD2CD/PRO will allow audio producers to interface existing DAT drives to the CD2CD/PRO via the S/PDIF port, optional CD2CD/PRO can be upgraded to support up to 24 CD-R drives and is compatible with MediaForm's CD-2600 CD-R autoloader. CD2CD/PRO with 6 4x CD-R drives retail price is \$8,995.

MediaForm
400 Eagleview Blvd.
Exton, PA 19341
610/458-9200; Fax: 610/458-9554
E-mail: info@mediaform.com
Web site: www.mediaform.com

Merging Technologies Pyramix V.1.2

Digital audio workstation for Windows 95 and NT 4.0, featuring 32-bit DSP, 96kHz/24-bit support, multichannel recording/editing, effects, automated mixing, networking and CD-R mastering. List price for DSP card + software = \$7,595.

Merging Technologies Sphynx

An 8-in/8-out audio interface for Pyramix. The I/O configuration is customizable, allowing any combination of 18, 20 or 24-bit A-D/D-A converters, or AES/EBU channels. Also includes Word clock in/thru, built-in sample rate conversion, optical connection to Pyramix. List price: approx. \$4,000 (depends on configuration).

Merging Technologies
3340 Dundee Rd., 2C-3
Northbrook, IL 60062
847/272-0500; Fax: 847/272-0597
E-mail: info@merging.com
Web site: www.merging.com

Metalithic Systems Digital Wings for Audio

Ideal for project recording, remixing and multimedia content development, Digital Wings for Audio delivers 128 tracks of hard disk recording. A fully integrated hardware and software solution, DWA also includes an extensive suite of DSP plug-ins, including reverb, EQ, noise reduction, time delay, distortion, nondestructive amplitude changes and crossfades and much more. Metalithic Systems Inc. provides a 5-year limited warranty on hardware, along with complete technical support.

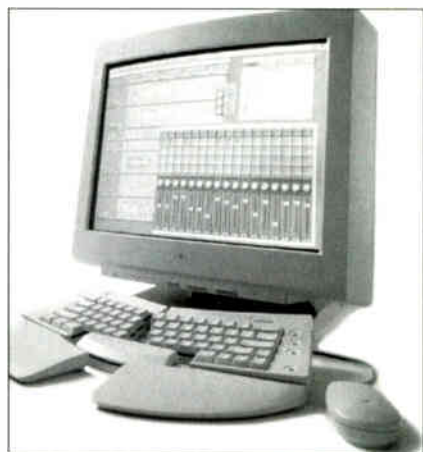
Metalithic Systems Inc.
3 Harbor Dr., Ste. 206
Sausalito, CA 94965
415/332-2690; Fax: 415/332-6735
E-mail: info@metalithic.com
Web site: www.metalithic.com



Solid State Logic Altimix

Altimix seamlessly integrates all the required elements of audio post-production, including recording, editing and mixing, providing a total post solution. The advanced audio editing tools are dynamically linked to the console automation data so that complete flexibility is achieved at any stage of the production process in accommodating editorial changes. In addition, Altimix incorporates video. SSL's unique DiskTrack technology is used to store both video and audio in a shared hardware environment. Altimix is totally compatible and networkable with SSL's Axiom and Aysis digital console systems.

Solid State Logic
Springhill Rd., Begbroke
Oxford OXS 1RU England
44/1865/842-300; Fax: 44/1865/842-118
E-mail: judithp@solid-state-logic.com
Web site: www.solid-state-logic.com



Sonic Solutions SonicStudio Master V.5.3

SonicStudio Master Version 5.3 redefines the high end of audio mastering with significant new capabilities: 96kHz high-density audio support; integration of the new DDP 2.0 mastering format; PQ verify, read and rewrite; and DDP playback and DDP loadback. This new system provides mastering engineers with the tools they need to produce

—LISTING CONTINUED ON NEXT PAGE

Now When The Client Asks If You Have AudioVision® or Pro Tools®...



You'll Have The Right Answer.



We understand how hard you work to keep your clients happy.

Which is why we've made it easy for you to own the two audio workstations that more people are asking for: Now, when you buy AudioVision, you also get Pro Tools.

Chances are you already know Pro Tools, with its acclaimed editing, mixing, and signal processing features. And if post-production is your business, it's time for you to know AudioVision 4.0, with its unequalled wealth of dedicated audio-post features.

Only AudioVision gives you seamless project sharing with the Avid Media Composer® family, the standard in digital video editing. You get **plug-and-play compatibility** for everything – even video cuts – with no conforming necessary. Which doesn't just ease transfer bottlenecks. It eliminates them.

Only AudioVision gives you an **integrated broadcast-quality picture**, for ultimate confidence during ADR, editing, and SFX spotting. You can also edit the picture within AudioVision, without redigitizing, and even use it online.

Only AudioVision gives you the **most intuitive audio-post workspace** you've ever seen. Plus the best ADR/Loop Record and clip-based DSP toolsets; incredibly powerful database management

and logging; and a host of other post-centric features.

Only AudioVision gives you our **award-winning MCXpress™ option**.

Which, amazingly enough, turns AudioVision into a broadcast-quality, digital video editing and finishing system.

And now, only AudioVision also gives you a **fully loaded Pro Tools system**. Together, they're perfect partners, and offer everything you – and your clients – could want.

So if you've been trying to decide between AudioVision or Pro Tools, now there's a decidedly unbeatable solution: **Have them both**. It's the answer you've been looking for.



Find out for yourself what thousands of studios already know!

Call us today at 1-800-333-2137 ext. 304, or visit us at www.digidesign.com. We'll be happy to send you a free video that reveals the power of AudioVision or schedule a personalized demonstration of AudioVision and Pro Tools.



digidesign®

A division of **Avid**

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the high-quality work their customers demand—sample-accurate editing, infinitely variable crossfades, high-resolution filtering, noise-shaped dithering and complete control of CD subcode data.

Sonic Solutions SonicStudio Post V.5.3

SonicStudio Post Version 5.3 provides audio post facilities with master-quality recording and editing for music, dialog, sound effects and multitrack mixing and production. It includes 24-bit resolution, up to 96 channels of I/O, real-time crossfades and automated mixing. SonicStudio Post is designed to work in nonlinear, digital video and film production environments for both online and offline applications. Industry-standard file-format support is included for QuickTime and CMX.

Sonic Solutions
101 Rowland Way
Novato, CA 94945
415/893-8000; Fax: 415/893-8008
E-mail: info@sonic.com
Web site: www.sonic.com

Sonifex Courier

The Sonifex Courier portable recorder is a breakthrough in digital audio recording. Using PCMCIA hard drives as its storage medium, the Courier provides this user feature not available on any other portable recorder. The Courier is elegantly designed with a sleek look, low weight and full feature set as well as providing a rugged and reliable portable recording device. Please stop by the Sonifex booth for more information.

Sonifex, Dist. by Independent Audio
43 Deerfield Rd.
Portland, ME 04101-1805
207/773-2424; Fax: 207/773-2422
E-mail: ia@gwi.net



Sony Electronics PCM-3348HR

The PCM-3348HR 48-track DASH PLUS digital multitrack adds 24-bit capability to Sony's industry-leading PCM-3348 DASH recorder. Providing 48 channels of 24-bit digital audio recording, the PCM-3348HR also includes, as standard, high resolution A/D and D/A converters, as well as AES/EBU and MADI interfaces. When operating in its 16-bit mode, the PCM-3348HR is fully record- and play-compatible with all Sony DASH recorders.

Sony Electronics Inc.
3 Paragon Dr.
Montvale, NJ 07645
201/358-4197; Fax: 201/358-4907
Web site: www.sony.com/proaudio

Soundscape SSHDRI+, SS8ID, SSACI

12-track version of our popular SSHDRI with a fully definable digital mixer and numerous other features added. SS8IO-1 is an 8-in/8-out box with ADAT LightPipe, Tascam TDIF and Superclock/Word clock I/Os on rear panel. SSAC-1 is the accelerator card for updating older units to

current specs. All items connect to all existing units worldwide.

Soundscape Digital Technology Inc.
4478 Market St., Ste. 704
Ventura, CA 93003
805/658-7375; Fax: 805/658-6395
E-mail: Jbreiner@west.net
Web site: soundscape-digital.com



Studer V-8

ADAT Type II (20-bit) modular digital multitrack recorder, storing 8-tracks of audio on an S-VHS tape, with switchable 16- or 20-bit word length, die-cast drive mechanism, Studer converters, built-in SMPTE chase sync and integrated monitor mixer. Compatible with Alesis ADAT Type I and II machines. Two or more units (up to 16) can be locked in sample-accurate sync for up to 128 tracks.

Studer Professional Audio
1449 Donelson Pike
Nashville, TN 37210
615/391-3399
fax: 615/259-4452
Web site: www.studer.ch/studer



Studio Audio & Video Ltd. SADiE3

SADiE3 is the new software from digital audio editing specialists Studio Audio & Video Ltd. A free upgrade from all SADiE users, SADiE3 is designed to work across a variety of digital audio platforms manufactured by SAVL. SADiE3 offers a host of new features, including 96kHz sampling, streamlined editing tools and enhanced CD premastering functionality. SADiE systems are found in CD premastering, radio and Film/TV post-production. SADiE users enjoy exceptional customer support.

Studio Audio & Video Ltd.
1808 W. End Ave., Ste. 1119
Nashville, TN 37203
615/327-1140; Fax: 615/327-1699
E-mail: jboggs@sadieus.com
Web site: www.sadieus.com

Tascam DA-20 MkII

The DA-20 MkII builds upon the success of the original DA-20. New features include a sampling monitor function, Auto ID detection level switching, an error rate display function and self-diagnostic capability. The unit also provides multiple sampling rates, long play X record mode, S/PDIF digital I/O and a wireless remote controller.

Tascam DA-302

The DA-302 Dual DAT recorder offers both simultaneous and relay record and playback capabilities. Multiple units can be interconnected for large duplication jobs or long

format record/playback tasks. The DA-302 offers high-speed dubbing capability, S/PDIF or AES/EBU digital output format selection along with independent digital I/O for each deck. Append dubbing facilitates starting from any position on the master tape for dubbing functions.

Tascam DA-98

The world's only MDM with confidence monitoring, the DA-98 provides individual monitor reflect switches for source/tape monitoring, switchable reference levels, digital track copy and electronic patchbay functions, and an improved interface that incorporates a backlit LCD. The unit has dedicated function and numeric keys for faster operation. Includes full synchronization capabilities and can be used with the Accuride 200 rail system.

Tascam
7733 Telegraph Rd.
Montebello, CA 90640
213/726-0303; Fax: 213/727-7635
Web site: www.teac.com



Telex EDAT

The EDAT (Editing Digital Analog Transfer) digital audio master editing and duplicating system was developed in response to requests from the radio, religious, talking book and project studio markets. EDAT addresses the growing need for making high-speed compact cassette copies from digital sources. EDAT bridges the gap between digital and analog source material, and existing Telex high-speed compact cassette duplicating machines. EDAT also provides a digital editing environment for re-ordering program material or removing or changing such things as vocal anomalies in a spoken performance. EDAT is the first product of its kind to merge these two vital functions with high-speed duplication.

Telex Communications Inc.
9600 Aldrich Ave. S.
Minneapolis, MN 55420
612/884-4051; Fax: 612/884-0043
Web site: www.telex.com



360 Systems DigiCart/II Plus

DigiCart/II Plus is a stereo digital recorder that accommodates 2 internal hard disks and also uses removable Zip disks. It is capable of storing 48 hours of digital audio internally, and over 148 hours with the use of an external

—LISTING CONTINUED ON NEXT PAGE

Westlake Audio



LC6.75

Hand-crafted compact monitors with the award winning sound. 1996 TEC Award Nominee for outstanding technical achievement in studio monitor technology.



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Westlake Audio

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2696 Lavery Court, Unit 18, Newbury Park, CA 91320

Telephone (805) 499-3686 FAX (805) 498-2571

<http://www.westlakeaudio.com>

—LISTING CONTINUED FROM PREVIOUS PAGE

hard disk system enclosure. DigiCart/II Plus features instant access to cuts, editing and automated playlisting functions, comprehensive remote-control options including RS-422, GPI, alphanumeric keyboard and compatibility with all DigiCart/II RC Series remote controls.

360 Systems Shortcut V.2.0

Shortcut V.2.0 improves on 360 Systems' popular Shortcut Personal Audio editor. New features include access to Hot Keys through rear panel GPI inputs; use of external Zip disks for recording, editing, archival and transfers; D-NET network transfers of audio files to other 360 Systems products. Shortcut is a 2-track digital audio editor with built-in hard disk, speakers and large waveform display. It offers fast cut/copy/insert/erase editing, realistic scrub and conventional tape transport.

360 Systems
5321 Sterling Center Dr.
Westlake Village, CA 91361
818/991-0360; Fax: 818/991-1360
E-mail: info@360systems.com
Web site: www.360systems.com

WaveFrame 408

WaveFrame is introducing its newest product, the 408 digital audio workstation. As the successor to the 401, DCS and DAW-80, the 408 brings more processing power and speed to your task; be it dialog, ADR, Foley or music recording or editing, the 408 will help you do it faster and at a lower cost than ever before. Version 6.2 software includes accelerated waveforms, OMF, SDII, AIF, WAV file I/O and multichannel AES I/O. Basic System 8-8-8 end user price is \$10,000 for a turnkey system including a rackmount 166MHz Pentium.

WaveFrame Inc.
947 Kagawa St.
Pacific Palisades, CA 90272
510/528-8054; Fax 510/526-1982
E-mail: dvh@compuserve.com
Web site: www.waveframe.com

Recording Media/Tape



Apogee Master ADAT Tape

40-minute ADAT tape, "AA-40" optimized for multipass digital audio operation. Includes studio engineer-designed inlays and labels. Special guides designed for high-speed operation, e.g. Meridian, V-8. Special binder for resilience under repeated passes during editing, etc. Non-stretch polyester base film for high-speed winding.

Apogee Electronics Corp.
3145 Donald Douglas Loop S.
Santa Monica, CA 90405
310/915-1000; Fax: 310/391-6262
E-mail: info@apogeedigital.com
Web site: www.apogeedigital.com

BASF ADAT Master Tape

BASF ADAT Master tape has been developed especially for professional digital audio recording. BASF ADAT Master delivers constantly lower error rates than other tapes on

the market. A specially designed ABS shell provides rock-solid tracking and reduces risk of dropout due to static, dirt and debris. Sliding erase-lock safeguards masters. Available in 40- or 60-minute lengths.

BASF DTRS Master Tape

DTRS Master is a new tape specifically designed to give you the ultimate performance from any DA-88-compatible digital audio recorder. DTRS Master delivers consistently lower error rates than other tapes on the market. The specially formatted metal powder tape and super smooth surface help prolong head life while standing up to the repeated shuttling and playback required in professional studio applications. Specially constructed ABS shell provides precision tracking and reduces risk of dropout due to static and dirt. Available in 30, 60 and 113-minute lengths.

BASF/JR Pro Sales Inc.
25050 Avenue Kearney
Valencia, CA 91355
805/295-5551

HNB DA113

A new high-quality Hi-8 tape specifically developed for audio use in the Tascam DA-88 digital multitrack recorder and its derivatives, such as the Sony PCM800. The tape has a unique "dual layer" formulation, exhibiting the qualities of both metal evaporated and metal particle recording media, essential for use in the DA-88 format. Allows 113 minutes of recording in the DA-88-type recorder and has particularly good pack qualities and extremely low error rate performance.

HNB Communications LLC
626 Santa Monica Blvd., Suite 110
Santa Monica, CA 90401
310/319-1111; Fax: 310/319-1311
E-mail: hnbcomm@gwi.net

Quantegy AVX/IRC

Quantegy Inc. introduces two new lines of analog audio cassettes, Quantegy AVX Professional Audio Cassettes and Quantegy IRC Instant Record Cassettes. Benefits include convenient play lengths, advanced high output, low noise ferric oxide tape formulation, precision injection molded five-screw polystyrene shell, superior binder formulation and unique ribbed slip sheet. IRC's also has a magnetic leader that allows instant recording. AVX is Quantegy's re-entry in the normal bias professional audio cassette marketplace.



Quantegy 480

Quantegy Inc. recently introduced the Quantegy 480—the highest-quality analog tape on the market today. It is based on the extremely successful family of Quantegy 478 low print tape products. Its advanced back coat achieves optimal performance through additional cleaning and rewinding steps during manufacturing and takes advantage of advanced quality processing. The tape has significantly improved packing and tensioning characteristics, as well as a wide dynamic range, low distortion and high fidelity.

Quantegy Inc.
800 Commerce Dr.
Peachtree City, GA 30269

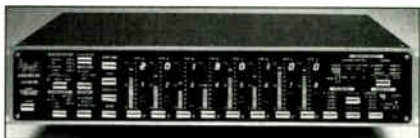
770/486-2800; Fax: 770/486-2808
Web site: www.quantegy.com

Signal Processing Devices

Amek System 9098 Dual Microphone Amplifier

The System 9098 Twin Microphone Amplifier by Rupert Neve and built by Amek to his exacting standards, contains two separate channels each with microphone amplifier and direct inject input. Maximum gain range is 72 dB with switched and fine gain controls. Highpass filter, mute switch, 7-segment LED meters, phase switch and phantom power are standard. Stereo operation is provided and A/B and M/S (main and side) decoding circuits with width control are included.

Amek Systems & Controls Ltd.
New Islington Mill
Regent Trading Estate
Oldfield Road
Salford M5 4DE, UK
U.S. offices: 818/508-9788; Fax: 818/508-8619
E-mail: amek@pacificnet.net
Web site: www.amek.com



Apogee AD-8000

8-channel 24-bit A/D conversion system. Optional 24-bit 2- and 8-channel D/A cards, 4x Ambus slots for interface cards, e.g. ADAT, Tascam, Pro Tools, Sonic Solutions, MADI, etc. Many cards include Apogee Bit Splitting to record 24 bits on multiple 16-bit tracks. 6-mode light-bar metering; numeric over indication, built-in headphone monitor D/A, built-in AES/EBU and S/PDIF in/out.

Apogee Electronics Corp.
3145 Donald Douglas Loop S.
Santa Monica, CA 90405
310/915-1000; Fax: 310/391-6262
E-mail: info@apogeedigital.com
Web site: www.apogeedigital.com

ART Signal Processing

New signal processing products from Applied Research & Technology at AES include the Model 128 tube parametric equalizer; the 310 stereo 2-way crossover; the 355 dual 31-band graphic equalizer and the ART 415 digital audio processor.

ART
215 Tremont St.
Rochester, NY 14608
716/436-2720; Fax: 716/436-3942
E-mail: artroch@aol.com
Web site: www.artroch.com

Avalon Design VT-737

Direct-to-tape signal processor in a 2-rackspace chassis. Pure Class A tube/discrete. Mono mic/line/CI preamp, opto-compressor, 4-band equalizer, output gain with high-quality VU meter. Price: \$2,195. Specs: low noise, special tube meter, 30 dB headroom, fully balanced, custom toroidal internal power supply.

Avalon Design
PO Box 5976
San Clemente, CA 92673
714/492-2000; Fax: 714/492-4284
E-mail: avalon@avalondesign.com
Web site: avalondesign.com

Barcus-Berry Matchmaker

The Matchmaker accepts line-level and speaker-level sig-

nals via 1/4" jacks. It can be inserted between your instrument preamp and mixer/recorder, or between your amplifier speaker out and mixer/recorder. Its speaker-simulating filter, when engaged via a front panel switch, effectively mimics the frequency response characteristics of a loudspeaker. This works especially well for direct injection of distorted electric guitar, but can be used on bass and other instruments as well. List price: \$129.

Barcus-Berry 3500 Universal Interface

The 3500 is an impedance-matching preamp with treble and bass EQ. As the words on its front panel say, it is truly a Universal Interface. It will accept any and all magnetic and piezo crystal pickups, and deliver a strong signal to a mixer, recorder or amplifier. And with its internally adjustable gain control (up to 12 dB), you can boost even the weakest signal to a usable level. Price: \$129.

Barcus-Berry
5381 Production Dr.
Huntington Beach, CA 92649
714/897-6766; Fax: 714/896-0736
Web site: www.barcusberry.com

BBE DI-100

With its built-in BBE processor, the DI-100 is much more than a standard direct box. Its independent Process and Lo Contour controls add clarity, definition and unique tone-shaping expressions to your music. The BBE process adds extra "bite" and "fullness" to acoustic and electric guitars, basses, keyboards and any other instrument or line-level source that you plug into it. The DI-100 can also be used as a standalone instrument preamp or as a single-channel BBE Sonic Maximizer. Price: \$159.

BBE 262

Housed in a stamped-frame, 16-gauge steel box, this new Sonic Maximizer is built to withstand the rigors of the road. With its compact size (6.29"x1.33"x5.25"), it is equally at home on a stage floor, tucked in the back of your combo amp, or sitting next to a mixer in your project studio. Designed to perform flawlessly under demanding conditions, the 262 is backed by a full 5-year warranty. Price: \$229.

BBE Sound Inc.
5381 Production Dr.
Huntington Beach, CA 92649
714/897-6766; Fax: 714/896-0736
Web site: www.bbesound.com

Bellari RP520

The Bellari RP520 studio tube mic preamp is a 2-channel microphone or instrument preamp. Each channel uses one Bellari premium 7025 tube. The unit has a true transformer-balanced input with both XLR and 1/4" input and output jacks. It has pad switches and phase reverse switches. Bellari

5143 S. Main St.
Salt Lake City, UT 84107
801/263-9053; Fax: 801/263-9068
E-mail: bellari@rolls.com
Web site: www.xmission.com/~rollsrfx

BSS Opal DPR-422

The DPR-422 combines a high-quality compressor with a sophisticated de-esser. Each channel provides a full range of signal level control facilities: a dedicated and tuneable de-esser section, a compressor section with comprehensive control of all main parameters, an AUTOMode option for general use, and an LED metering section. The DPR-

422 uses a unique internal architecture, pioneered on the classic DPR-402, which combines a double side-chain with a subtractor to eliminate the distortion, noise and unwanted side-effects found in conventional compressors. BSS Audio
1449 Donelson Pike
Nashville, TN 37217
615/399-2199; Fax: 615/367-9046



CableTek Radial JDV Direct Box

Class-A design, emulates the front end found on vintage amplifiers, presenting a very high impedance to the instrument to reduce loading. Features isolated power supply for ultralow noise, mic and line-level outputs and provisions for phantom, battery or 9V adapter. Developed by John Vrtacic, technical engineer at world-class studios, including Little Mountain (AC/DC, Loverboy, Aerosmith), Greenhouse (Bruce Fairbairn) and Bob Rock's studio in Hawaii. CableTek is pleased to finally bring this jewel to the market.

CableTek Electronics Ltd.
#114-1585 Broadway

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IS WHAT THEY HEAR.**

Picking the right tape can help make your performance. Inventing much of the DAT format was not enough. So we unleashed the technology behind Sony Pro DAT Plus™ tape. Manufacturing more DAT than all other companies combined, we create audio products that you can trust. For more information, call 1-800-955-SONY.



SONY

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 Port Coquitlam, BC V3C 2M7 Canada
 604/942-1001; Fax: 604/942-1010
 E-mail: cabletek@sprynet.com

Cedar NR-3

NR-3 supersedes Cedar's world-beating Hiss-2 noise reduction module, adding more features and improved noise removal algorithms. Running under Cedar for Windows, NR-3 allows users to cascade up to 8 simultaneous stereo processes, or apply restoration to 16 channels of audio in real time. Ideal for multitrack and DVD premastering. NR-3 is already installed in sites across the USA, Canada and Europe.

Cedar Audio Ltd.
 9 Clifton Ct.
 Cambridge C81 48N, UK
 44/1223/414-117; Fax: 44/1223/414-118
 E-mail: cedar.sales@dial.pipex.com

Crane Song Flamingo

Flamingo is a 2-channel discrete Class A mic preamp that has a 22-segment meter, stepped gain controls, phase and phantom power switches. Also included are two switches to change the sound of the preamp by selecting between 2 different amplifiers and by putting iron in the audio path.

Crane Song Ltd.
 2117 E. 5th St.
 Superior, WI 54880
 715/398-3627; Fax: 715/398-3279

Cutting Edge Technologies Omnia.DSP

This fully digital system, stereo encoder included, applies an advanced design philosophy, yielding performance and flexibility, with crystal-clear highs, thundering bass and

amazing loudness with no "digital grunge." Processing resources are entirely configured by software and contained on a plug-in PC Card. Even fundamental rearrangements of the system architecture may be accomplished by simply changing the card or by remote download. A second PC card slot is available for combined 10BaseT/modem connection for remote access. Communication is via local RS-232, modem, 10Base T, or even the Internet.

Cutting Edge Technologies
 2101 Superior Ave.
 Cleveland, OH 44114
 216/241-3343; Fax: 216/241-4103
 Web site: www.edgedsp.com

dbx ML6

Full stereo operation with dbx true RMS Power Summing dual mode for program-dependent or fully selectable attack and release times. Dual mode operation optimizes auto settings for vocals or instruments. Rear panel footswitch bypass jack allows convenient hands-free use. Switchable line or instrument level operation. Balanced 1/4 TRS inputs and outputs. Switchable OverEasy or hard-knee compression. List price: \$139.95.

dbx Professional
 8760 S. Sandy Parkway
 Sandy, UT 84070
 801/568-7660; Fax: 801/568-7662
 E-mail: akunz@dbxpro.com
 Web site: dbxpro.com

Anthony Demaria Labs 300-G

All-tube 3-6922. 2 channels, ground lift, transformers out. Hand-built in U.S.A. Rackmount/standalone. Great for analog and digital recording use; stereo keyboards, guitars, bass drum machines, etc.

Anthony Demaria Labs
 95 Dubois Rd.
 New Paltz, NY 12561
 818/340-0228; Fax: 818/340-4331
 Web site: www.adl-tube.com

DigiTech RP-20 Valve

The RP-20 Valve is the only floor-mounted tube guitar preamp/multi-effects processor available on the market. There is no need to clutter up precious floor space with numerous effect pedals. The RP-20 provides great tube and solid-state preamp tones (or both), along with state-of-the-art digital effects via the legendary S-DISC II processor. It's a breeze to program and edit on-the-fly. In addition to all these features, the RP-20 also provides the user with a built-in expression pedal and chromatic tuner to make this unit the only tone tool needed. List: \$799.95.

DigiTech 2112 SGS


The 2112 is the newest guitar preamp/multi-effects processor to be offered by DigiTech. The 2112 SGS offers a dual tube preamp section, true amp-like controls, instant editing functions and instant tuner access to make programming easier. In addition, the 2112 SGS has some great features such as Wah module, programmable cabinet emulation and the ability to be controlled by up to 4 expression pedals. With the flexibility that the 2112 SGS offers, even the most discriminating guitarist can achieve tones and effects never thought possible. List: \$1,099.95.

DigiTech VCS-1

The VCS-1 is a dual tube dynamics processor that features compression, de-essing, noise gating and peak limiting that all reside in a 2-space rack unit. The VCS-1 is a dual-channel unit that is stereo-linkable with selectable auto at-

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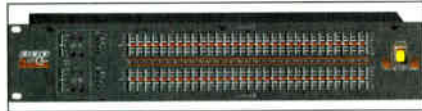
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tack and release times with individual bypass for both channels. The large, illuminated averaging VU meters and 1/8" TRS and XLR inputs and outputs make the VCS-1 an absolute studio necessity. Suggested list: \$999.95.

DigiTech
8760 S. Sandy Pkwy.
Sandy, UT 84070
800/777-3637; Fax: 800/333-7363
Web site: www.digitech.com



DOD Electronics SR231 EQ

The DOD SR231 QX is a dual 31-band constant Q graphic equalizer. The SR231 boasts 12 dB of boost/cut per band with low-noise potentiometers, +/-12dB input gain control with LED bar graph metering and balanced XLR inputs and outputs. Also featured is a THD of less than .004% at 1 kHz, and a signal to noise of >106 dB, non A-weighted. List: \$374.95.

DOD Electronics SR866

The DOD SR866 is a stereo gated compressor/limiter that can be operated as 2 independent compressor/limiters or as a single stereo unit. The SR866 has a THD of 0.06%, an input gain of +12 dB and a signal-to-noise ratio of >95 dB. Full control of attack, release, ratio, threshold and gate threshold round out the 866's implementation. List: \$239.95.

DOD Electronics
8760 S. Sandy Pkwy.
Sandy, UT 84070
801/566-8800; Fax: 801/566-7005

Dolby Model DP562 Multichannel Reference Decoder

Decodes all Dolby Digital formats, including 5.1-channel DVD, digital TV and laserdisc audio, plus provides digitally implemented 4-channel Dolby Pro Logic decoding for Dolby Surround-encoded audio. AES/EBU input for Dolby Digital data stream or Dolby Surround PCM signal, and both digital and analog outputs. Front panel decoding, listening mode, dynamic compression, test noise and setup selection, plus headphone volume/output. List: \$4,000.

Dolby Laboratories Inc.
100 Potrero Ave.
San Francisco, CA 94103-4813
415/558-0200; Fax: 415/863-1373
E-mail: info@dolby.com
Web site: www.dolby.com

Drawmer MX 30

The MX 30 2-channel Compressor/Limiter/Gate (\$449) is a pro-quality dynamics processor containing proprietary circuitry used in the more expensive Drawmer models. Automated features enable easy operation without sacrificing the control, sonic character and high technical specification that have made Drawmer an industry standard. Individual Gate, Compressor and Limiter sections are offered on each channel, with a link function for stereo operation. Distributed by Transamerica Audio Group Inc.

2721 Calle Olivo
Thousand Oaks, CA, 91360
805/241-4443
Fax: 805/241-7839
E-mail: TransamAG@aol.com

Eastern Acoustic Works MX8600

Close-coupled digital signal processor designed to optimize the performance of a wide range of EAW loudspeakers. Incorporates exclusive EAW-authorized parameters and factory presets. Supplies dozens of programmable



memories, protected by a security lockout function. MIDI capability allows external control and linking of master and slave MX8600s via a PC. Each has 2 inputs and 4 outputs, with 1 output able to be configured as a direct subwoofer output. Each output has its own 3-band parametric EQ, offering a wide range of Qs with +15dB and -25dB of gain at any center frequency (20-20k Hz) controllable in 0.1dB steps.

Eastern Acoustic Works
One Main St.
Whitinsville, MA 01588
508/234-6158; Fax: 508/234-8251

E-mail: litperson@eaw.com
Web site: www.eaw.com



Focusrite Blue 300

The Blue 300 mastering controller uses an oval-shaped remote panel connected to a 2U master module, with the

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The DAC2004 and its sibling, the AD2004, set new benchmarks in audio conversion performance.

Input options include balanced 110Ω AES and unbalanced 75Ω AES or S/PDIF. Analog outputs are on gold pin XLRs.

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sonic benefits of an audio path optimized for wide bandwidth, low noise, low distortion and crosstalk. Features include 8 stereo analog inputs that can be selected onto 2 independent stereo signal paths. In addition to the analog inputs, 6x digital inputs can be added to the Blue 300 using the Focusrite Blue 260 D/A converter. The remote panel is divided into four sections: Source Selection, Meter Selection, Monitor Selection and Master Selection.

Focusrite Green 6

The Green Quad compressor/limiter is the most cost-effective and versatile dynamics unit from Focusrite yet. Designed for applications where multiple channels of high-quality dynamic control are required, such as 8-bus recording/mixing and sound reinforcement. Each channel contains a separate compressor and limiter with independent threshold control and has the same level of a high-quality Class A VCA engineering as its predecessors.

Focusrite Audio Engineering/Group One Ltd.

80 Sea Lane
Farmingdale, NY 11735
516/249-1399; Fax: 516/753-1020
E-mail: sales@focusrite.com
Web site: www.focusrite.com

Freeform Analogue Technologies Procoder

The Procoder is a 12-band vocoder equipped with real-time controls and a quiet, clean output stage. This quality analog unit provides a cost-effective way to do traditional vocoding. A musician no longer has to rely on the inferior vocoders included in many of today's instruments, which were never intended to do what is in reality a very specialized job. This processor fills a void that has long been empty, even though always in demand.

Freeform Analogue Technologies,

Dist. by Radikal Technologies
1119 N. Wilson Ave.
Teaneck, NJ 07666
201/836-5116; Fax: 201/836-0661
E-mail: jskl@mail.idt.net



Furman Sound C-132 Limiter/Compressor

The C-132 offers compression adjustable from 2:1 (gentle compression) to 50:1 (hard limiting). Front panel controls include Limit Threshold, Ratio, Attack (.05 to 50 ms), Release (50 ms to 5 seconds), and Output Level. The C-132 features 3 function push buttons: Compress, De-Ess (for excessive sibilance) and Side Chain (allowing frequency-selective compression or for "ducking"). 2 C-132s may be linked together as a stereo pair. Available for either 120 VAC, 60 Hz or 230 VAC, 50/60 Hz power.

Furman Sound Inc.
1997 McDowell Blvd.
Petaluma, CA 94954
707/763-1010; Fax: 707/763-1310
E-mail: Furmansnd@aol.com
Web site: www.furmansound.com



Goldline EQ2

The EQ2 is a cost-effective 2-channel digital EQ featuring an easy-to-use computer interface, selectable parametric or graphic filters, feedback elimination filters, delay lines and 8 memories (selectable via faceplate or external con-

tact closure). The system can be combined with Gold Line's DSP30 RTA for state-of-the-art single screen integration of equalization and analysis. Available in +4 or -10 versions and in a soon to be released AES/EBU version. Suggested retail is \$895.

Goldline
Box 500
W. Redding, CT 06896
203/938-2588; Fax: 203/938-8740
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Web site: www.gold.line.com

JBL Smaart-95

Sound System Optimization and Acoustic Measurement Tool. JBL Smaart-95 is a Windows 95/NT based software package designed to provide sound system contractors, consultants and audio professionals with practical tools to analyze, understand and optimize audio and acoustic systems. The JBL Smaart-95 software package uses standard Windows sound cards to access audio data and provides real-time spectrum analysis, transfer functions, impulse response measurements and a wide range of calculation and display capabilities.

JBL Professional
8500 Balboa Blvd.
Northridge, CA 91329
818/895-3499; Fax: 818/830-7880
Web site: www.jblpro.com



Lighthouse OZ Analog Audio Switcher

OZ is a connectivity device similar in function to a traditional routing switcher, except it does not have a cross-point matrix. Instead, it uses a DSP in the processing core. OZ DSP does not care if the inputs are analog, digital, synchronous, asynchronous or MAD1. All these input types can be mixed and synchronously switched in the same system with any input to any output. OZ can read and generate timecode/machine control.

Lighthouse Digital Systems Inc.
PO Box 1802
Grass Valley, CA 95945
800/323-8289; Fax: 916/272-8248
E-mail: litehs@oro.net
Web site: www.litehs.com

Manley Vox Box

The Vox Box is a combination compressor, microphone preamplifier, 33 frequency Pultec-style equalizer, de-esser and limiter based on several of Manley's legendary tube designs. It elegantly combines a minimalist audio path with real processing power. Features include: a variable attack/release opto-compressor located before the mic pre-amp (!), instrument and line inputs, VU meter, highpass filters, phase and phantom switches. While designed for vocals, the Vox Box is well-suited for drums, guitars, synths and bass.

Manley Laboratories
13880 Magnolia Ave.
Chino, CA 91710
909/627-4256; Fax: 909/628-2482
E-mail: emanley@netcom.com
Web site: www.manleylabs.com

Martech MSS-10

The MSS-10 microphone preamplifier is the first in a new line of high-definition audio modules for the professional industry. The MSS-10 is an all-discrete, solid-state microphone preamplifier. Maximum gain: 65 dB. Maximum out-

put level: +24 dBu. Equivalent input noise. Frequency response: 20 dB gain, 10-20k Hz, inputs shorted -0.0/+0.5; 65dB gain, 10-20k Hz, 150-ohm source. Total harmonic distortion+noise: 20 dB gain @ 1 kHz, +4 dBu out ≤0.0015%. Martech, a Division of Martinsound Inc.
1151 W. Valley Blvd.
Alhambra, CA 91803
626/281-3555; Fax: 626/284-3092

MIDIMAN Flying Cow

MIDIMAN's Flying Cow is an external digital audio converter, using 20-bit delta sigma A/D and D/A converters with 128x oversampling and a dynamic range of nearly 100 dB. Flying Cow supports AES/EBU digital I/O on XLR connectors and S/PDIF digital I/O on RCA connectors, with balanced analog signals on XLR connectors. Sample rate conversion is provided, with rates of 48, 44.1 and 32 kHz, and an EXT mode allows for word clock operation. The sample rate automatically locks to the incoming digital data. MSRP: \$399.95.

MIDIMAN
45 E. St. Joseph St.
Arcadia, CA 91006
626/445-2842; Fax: 626/445-7564
E-mail: info@midiman.net
Web site: www.midiman.net

Millennia Media HV-3C Upgrade

New high-performance 24-bit upgrade for the HV-3C A/D converter. Upgrade allows native 24 or 20-bit conversion with full access to UV-22 noise shaping, triangular dither, soft limit, full format conversion, master or slave sync and Paqrat options. Upgrade is \$700.

Millennia Media
4200 Dayspring Ct.
Placerville, CA 95667
916/647-0750; Fax: 916/647-9921
E-mail: jl@jps.net
Web site: www.mil-media.com

OmniSound OPS1 Panning System

The OPS-1 OmniSound Panning System is a fully automated, frame-accurate, ultralow-noise and low-distortion audio signal panner for any surround sound format, including stereo, LCR, Dolby Stereo (LCRS), Dolby Digital, DTS, AC-3 (5.1), SDDS, Omnimax, IMAX and IMAX PSE. The OPS-1 records in SMPTE lock the horizontal and vertical Sound Position, level, intervergence (Intelligent Divergence) and Stereo Image Width. Any format can be translated to any other format by pressing one switch.

OmniSound, Dist. by Sascom
34 Nelson St.
Oakville, ON, Canada L6L 3H6
905/469-8080; Fax: 905/469-1129
E-mail: sales@sascom.com
Web site: www.sascom.com



Oram Octasonic

This latest design from John Oram features 8 channels of precision mic pre with Oram Sonics for users requiring high precision amplification of microphones. Perfect for the project studio, location recording or direct to disk applications. Every channel has switchable +48V phantom power and a balanced output. When used in conjunction with Octamix, the unit becomes an LR and Stereo Cue output, 8-channel mixer, ideal for live sound reinforcement, broadcast and theater applications.

Oram Pro Audio

—LISTING CONTINUED ON NEXT PAGE

One Jump Ahead

For over 22 years Fairlight has led the industry with digital audio products for post production, broadcast, music recording and multimedia. Headquartered in Sydney, Australia, and represented throughout the world, Fairlight delivers audio solutions second to none.



SEE US AT AES BOOTH #748

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EUROPE London Tel: +44 171 267 3323 Fax: +44 171 267 0919
Paris Tel: +33 1 4610 5050 Fax: +33 1 4610 5013
JAPAN Tokyo Tel: +81 3 5450 8531 Fax: +81 3 5450 8530



FAME - Fairlight Audio Mixer Editor

MFX seamlessly integrated with an automated mixing control surface - the complete digital audio production environment. 50 FAME systems sold in the first year.

fame

mfx3^{plus}



MFX3^{plus} - Digital Audio Workstation

The 21st Century digital audio platform that grows with your requirements, combining speed and power with intuitive operation. Over 650 systems worldwide supported by a global sales and service network.



DaD

DaD - Digital Audio Dubber

The ultimate audio playback system with up to 576 track capacity and powerful slip & slide, reverse play and SmartLock functions. 70 DaDs committed into Hollywood during the first months of production.

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THE BENCHMARK IN DIGITAL AUDIO

Fairlight USA
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Toll Free: 1800-4-FAIRLIGHT
Los Angeles Tel: (310) 287 1400 Fax: (310) 287 0200

www.fairlightesp.com.au

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The Old Forge, Hook Green
Meopham, Kent DA13 0J3, UK
44/1474/815-300; Fax: 44/1474/815-400
E-mail: sales@oram.co.uk
Web site: www.oram.co.uk

Pacific Microsonics Model One HDCD Processor

The 88.2kHz, 24-bit Model One HDCD processor is a high-resolution mastering system that includes two channels of A/D and D/A and digital processing. Analog signals can be converted to 88.2 kHz, 24-bit signals for post-production and archiving, and then encoded to 44.1kHz, 16-bit for release. HDCD-encoded CDs are compatible with all CD players. In addition, 88.2kHz, 24-bit signals can be input for processing down to 44.1 kHz, 16-bit.

Pacific Microsonics Inc.
2560 9th St., Ste. 219
Berkeley, CA 94710
510/644-2442; Fax: 510/644-3559
E-mail: info@hccd.com
Web site: www.hccd.com



Peavey Electronics MediaMatrix X-Frame

The MediaMatrix X-Frame provides a digital, parallel processing system utilizing three Motorola 56002 DSPs. It comes with a GUI software package for the design, setup and operation of the unit. The X-Frame also comes standard with 2 inputs/4 outputs analog and AES/EBU I/O. I/O can be expanded (to 10 inputs and 12 outputs analog) with MM-8800 Series digital interface. The X-Frame has well over 100 audio devices from which to choose.

Peavey Electronics Corp.
711 A St.
Meridian, MS 39301
601/483-5376; Fax: 601/486-1154
Web site: www.peavey.com

PreSonus ACP-88

PreSonus will introduce the ACP-88 8-channel compressor/limiter with full-featured gates. Built on the platform of our ACP-8, second-generation features include full-featured gate as well as incorporating other cool changes suggested by field users.

PreSonus Audio Electronics
501 Government St.
Baton Rouge, LA 70802
504/344-7887; Fax: 504/344-8881
E-mail: preonus@preonus.com
Web site: www.preonus.com



Rane CP 52

Rane's new CP 52 commercial processor solves single-page, single-zone installations as the lower-cost alternative to the CP-64 commercial processor. The CP 52 provides 4 stereo line level program inputs with a mic/line paging input and adjustable ducker, while delivering 3 levels of priority. The outputs feature a 7-band EQ with Rane's Servo-Locked Limiter. A separate expand output provides page, program or both. The CP 52's unique features include an independent page limiter, high and low-cut page filters, ramped ducker release and an independent expand

output level control. The optional ZR 1 remote control allows program selection and level adjustment from within the zone. The unit features RCA inputs and balanced Euroblock connectors. Retail price: \$599.

Rane RPM 26

Rane's RPM 26 DSP multiprocessor contains all the signal processing you need between the mixer and amplifiers in small to medium fixed installations. With its insightful, pre-programmed configurations and user-friendly RaneWare software, the RPM 26 provides a wide variety of intuitive signal processing functions: high and low cut filters, compression, delay, crossover, parametric EQ, splitting, input summing, limiting, level control and sine wave or pink noise generation. The RPM 26 contains 2 analog inputs, 6 analog outputs and saves several rackspaces with a tamper-proof dead front, 1U chassis. Configurations and settings are stored in 16 internal, nonvolatile memories, 8 of which are contact closure accessible from the rear panel remote switch interface port. Price: \$2,295.

Rane Corp.
10802 47th Ave. W.
Mukilteo, WA 98275
425/355-6000; Fax: 425/347-7757
E-mail: info@rain.com
Web site: www.rane.com

Reference Audio Design MS2 Dual Mic Preamp

The MS2 is a portable, affordable, professional mic preamp that includes a mid-side (MS) matrix. Features include +48V phantom powering and -15dB pads. Eliminates the usual stereo dropouts and dead spots. Retail: \$749 with case and power supply.

Reference Audio Design PC2 Compressor

The PortaTech PC2 2-channel RMS compressor is a fully functional portable compressor/limiter with full automatic attack and release controls. Retail: \$869, with case and power supply.

Reference Audio Design
2508 SE Torbank Road
Portland, OR 97222
503/653-3441
E-mail: Mbrad@teleport.com

Rolls RDB104

The RDB104 is an active impedance-matching device with each channel having the added benefit of a variable level control. Its four channels include two 1/4" inputs, one XLR balanced output and a ground lift switch. Retail price: \$199.

Rolls Corp.
5143 S. Main St.
Salt Lake City, UT 84107
801/263-9053; Fax: 801/263-9068
E-mail: rolls@rolls.com
Web site: www.xmission.com/~rollsrfx



Sabine Power-Q AOF-4000

The Power-Q is 7 audio products—FBX Feedback Extreminator, Parametric EQ, Graphic EQ, RTA, compressor/limiter, gate and delay—all in one. It includes Sabine's ClipGuard adaptive clip level control and automatic room equalization function. The Power-Q also has an easy-to-use interface with data wheel and hot keys. Several options are available. List: \$1,799.95.

Sabine SDA-102

The new SDA-102 Instant Delay is designed for acoustical

alignment of speaker systems in venues of all sizes and configurations. The SDA offers powerful delay features in a compact, inexpensive package. The 1-input, 2-output unit provides 20-bit digital processing, 20-microsecond resolution, up to 999.98ms delay per channel, input and output level controls and front panel lockout. List: \$424.95.

Sabine Inc.
13301 Highway 441
Alachua, FL 32615-8544
904/418-2000; Fax: 904/418-2001
E-mail: sabine@sabineinc.com
Web site: www.sabineinc.com

SPL Dynamaxx

The new Dynamaxx compressor/limiter offers ease of use due to musically automated time constants and premieres the decompressor to retain vitality from highly compressed audio files. Dynamaxx is used for unobtrusive compression or as a sound tool delivering compression effects. It makes use of the new That 2181 VCAs in differential-drive technology for maximum transparency, dynamics and lowest distortion. Dynamaxx is equipped with XLR connectors and TRS-stereo jacks for balanced operation.

SPL Machine Head

Machine head is the first 19" processor to simulate tape saturation effects of analog tape machines, hitherto unavailable in the digital domain. The unit is designed for mastering applications where it increases loudness, power and punch at identical peak level. The sound becomes warmer, eliminating the harshness usually associated with digital recordings. Machine head offers 24-bit processing using 2 66 MHz DSPs. Connections are AES/EBU and S/PDIF I/O stages, MIDI and word clock.

SPL, Dist. by Beyerdynamic
56 Central Ave.
Farmingdale, NY 11735
516/293-3200; Fax: 516/293-3288
E-mail: spl-electronics@t-online.de
Web site: www.spl-electronics.com

Summit EQP-200B

The EQP-200B offers a low-frequency 6dB-per-octave shelving filter at 50 Hz. The low-frequency section has the addition of 180 Hz to the existing 20, 30, 60 and 100 Hz. The high-frequency boost section is enhanced with the addition of 1.5 kHz to the existing 3, 4, 5, 8, 10, 12 and 16 kHz. The high-frequency cut section offers shelving filters at 5, 10 and 20 kHz. It sounds great.

Summit Audio Inc.
PO Box 223306
Carmel, CA 93922
408/464-2448; Fax: 408/464-7659



Symetrix 562E Windowing Expander/Gate

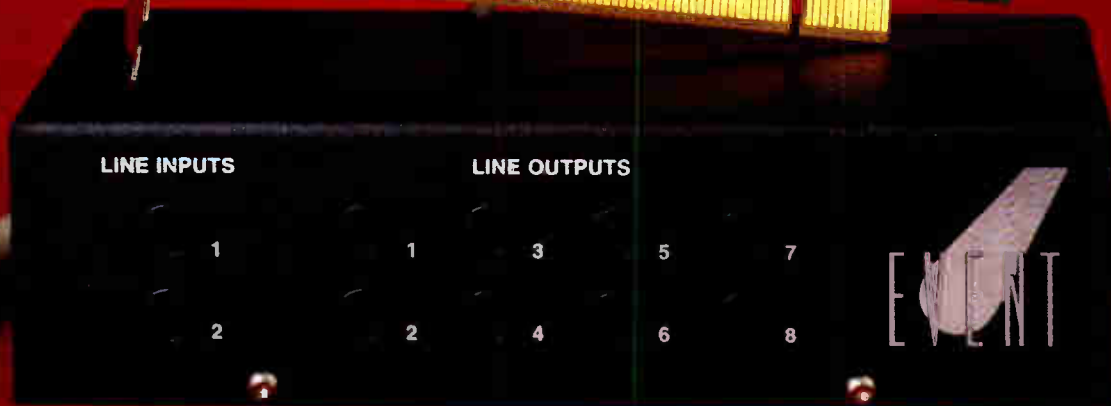
Proprietary technology powers features of the 2-channel 562E Windowing Expander/Gate. AutoWindowing and Window Advance are two features that reduce "pops" typically produced by envelope edges and eliminate the "clicky" noises normally associated with lightspeed attack times. Other features include High and Low Key filters, which ensure precise triggering, even in noisy environments; External Key Input; balanced and unbalanced inputs and outputs; XLR and 1/4" connectors; and an internal power supply. U.S. retail: \$579.

Symetrix Inc.
14926 35th Ave. West
Lynnwood, WA 98037

—LISTING CONTINUED ON NEXT PAGE

Gina™ Digital Multitrack.

So cool,
you just
might
like your
computer
again.



install your audio card with absolutely no hassles. • plug into it via 1/4" jacks mounted in a rugged breakout box record two audio tracks through the latest 20-bit 128x oversampling ADCs while simultaneously recording two other tracks via the 24-bit S/PDIF digital input and playing eight tracks back through state-of-the-art 20-bit 128x oversampling DACs while playing two more tracks through the digital out with 24-bit resolution (Whew!) • build megatrack masterpieces, tweak them to perfection, and master them to DAT or CD using your favorite Win 95 audio software • hear your tracks with thumping bass, crystal-clear mids and sparkling highs (frequency response: 10Hz-22kHz, ±0.5dB; THD+n: 0.003%) and stunning dynamic range (greater than 98dB) • do all of the above and still have plenty of money left over to serve the good champagne at your signing party

Gina™ by ECHO® Multitrack Digital Audio Recorder / \$499

includes Syntrillium Software's
Cool Edit Pro™—Gina Special Edition
multitrack recording/editing software



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425/787-3222; Fax: 425/787-3211
E-mail: symetrix@symetrixaudio.com
Web site: www.symetrixaudio.com

TC Electronic Fireworx

Ultra high-performance studio multi-effects processor capable of performing up to 8 effects simultaneously. Features 24-bit A-D/D-A converters, AES/EBU, S/PDIF and ADAT optical I/O. System resource monitor helps allocate DSP resources.

TC Electronic DBMAX

DBMAX: Digital Broadcast Maximizer—a new model with separate clipper, limiter and compressor functions. Also features new 24-bit A-D/D-A converters, AES/EBU, S/PDIF, word clock input, digital EQ and multiple insertion tools. List price: \$3,995.

TC Electronic TCTools V.2.0

TCTools Version 2.0: Upgraded version for compatibility with Pro Tools 4.0 automation. Includes new EQ functions and other program refinements. List price: \$995.

TC Electronic
790-H Hampshire Rd.
Westlake Village, CA 91361
805/373-1828; Fax: 805/379-2648
E-mail: tcus@tcelectronic.com
Web site: www.tcelectronic.com

Tech 21 SansAmp Acoustic DI

Tech 21's exclusive Sansamp circuitry eliminates artificial high end and warms up the sound of any acoustic guitar onstage and in the studio. Features parametric EQ to control feedback and 1/2" outputs.

Tech 21 Inc.
1600 Broadway
New York, NY 10019
212/315-1116; Fax: 212/315-0825
E-mail: info@tech21nyc.com
Web site: www.tech21nyc.com

Telos Systems ZephyrExpress

ZephyrExpress is the ideal solution for remote broadcasts and other applications, eliminating the need to lug additional electronics. It combines a full-featured audio codec with MPEG Audio Layers III and II as well as G.722, a built-in ISDN terminal adapter, and an audio mixing/monitoring system in a road-rugged chassis. Designed for ease of use by nontechnical staff, ZephyrExpress has a selectable SAFE feature that locks it into the preferred configuration.

Telos Systems
2101 Superior Ave.
Cleveland, OH 44114
216/241-7225; Fax: 216/241-4103
E-mail: info@zephyr.com
Web site: www.zephyr.com

Tube Tech MEC-1A

Tube Tech MEC-1A Mic Channel. Combination microphone preamp, 3-band equalizer and compressor in one. EQ and compressor order may be reversed. Balanced transformer input and output with 48V phantom and DI input. List price TBA.

Tube Tech
790-H Hampshire Rd.
Westlake Village, CA 91361
805/373-1828; Fax: 805/379-2648
E-mail: tcus@tcelectronic.com
Web site: www.tcelectronic.com

Tubeworks Tube Direct Box

Rack-mount stereo or mono box. This Tube Direct box offers all your studio needs. Direct to board convenience with tube enhancing sound. The RTD is studio quiet. The RTD will convert single-ended instrument signal into a true balanced microphone level send for direct connection to



the microphone into a true balanced microphone input of a mixing console. Your instrument will be brighter and actually more direct-sounding. Input voltage range: 0 to 3.8 volts RMS. Max output voltage: 3.8 volts RMS, 0.5 volts/phase ref. to pin 1. Output impedance: line and balance: 100 ohms (65 best). S/N ratio: better than 90 dB. Hum and noise: better than 75 dB (no load). Distortion (THD): less than 0.5%. Frequency response: 15-50k Hz. Power requirement: 30 VCA, 600mA (external). Tube complement: 12AX7A.

Tubeworks
10421 Burnham Dr. NW #4
Gig Harbor, WA 98332
253/851-8054; Fax: 253/853-5562
E-mail: twinfo@tubeworks.com
Web site: www.tubeworks.com

Weiss EQ1

Parametric digital equalizer with 24-bit, 96kHz high-definition processing. Features internal up and down samplers to create high-definition signals from normal 44.1 or 48kHz audio path. EQ1 has 7 bands of filtering, each selectable to cut, shelf or peak. Each band covers entire frequency range. Snapshot memory and complete MIDI interface.

Weiss, Dist. by G Prime
1790 Broadway #402
New York, NY 10019
212/765-3415; Fax: 212/581-8938
E-mail: info@gprime.com
Web site: www.gprime.com

Z-Systems rdm-1

The rdm-1 is based on a purist design and is suitable for the very highest-quality 24-bit recording and mixing projects. The rdm-1 features 2 AES/EBU stereo inputs; 2 AES/EBU stereo outputs; full bus routing, phase and level controls on all inputs and outputs; overall polarity control (16, 20 and 24 bits); output dither control; digital delay on input channels 1 and 2, adjustable in 1ms increments; 24-bit-96kHz capable; gain control from -95 dB to +12 dB; 32-bit floating-point processing; digital overload indicators; small (15x7x3") form factor; 99 presets, which can be stored and recalled. Will work in synchronous or almost synchronous modes. Retail price: \$4,495.

Test Gear

Audio Precision SWR-2122 Series

High-performance, stackable audio test switches for managing up to 192 inputs and outputs. The SWR-2122 Series features both balanced and unbalanced configurations, as well as LED indicators.

Audio Precision
PO Box 2209
Beaverton, OR 97075
503/627-0832; Fax: 503/641-8906

Dorrough Electronics Meter for Stage Work

This loudness meter measures 23x8x4 inches. It is designed for post-production stages and is placed under the screen.

Dorrough Electronics
5221 Collier Pl.

Woodland Hills, CA 91364
818/998-2824; Fax: 818/998-1507
E-mail: dorrough1@aol.com
Web site: www.dorrough.com

Earthworks LAB1

The LAB1 is a precision (+/-0.05 dB from 2 Hz to 100 kHz, +/-0.2 dB from 1 Hz to 200 kHz) microphone preamplifier intended for engineering, field test and production measurement applications. It offers calibrated stepped numerical gain in 1, 2, 5, 10 sequence (equivalent to 0 to 66dB gain), has a separate output for 20 dB of vernier gain reduction and an additional buffered output to avoid interaction between equipment inputs. Time domain behavior is near perfect. Recording preamp coming soon! Retail: \$800.

Earthworks Inc.
PO Box 517
Wilton, NH 03086
603/654-6427; Fax: 603/654-6107
E-mail: earthworks@jlc.net
Web site: www.earthwks.com

SoundTech MCT7 Cable Check

The MCT7 Cable Check is the most versatile cable test device on the market. Inverted pins, conductor to conductor shorts, conductor to shield shorts and open connections become immediately evident, thanks to the 11 LED indicators. BNC, RCA, 1/4" (stereo and mono) 1/8" (stereo and mono), MIDI, XLR and Speakon cables may be tested with the MCT 7. Cable Check is housed in an all-steel chassis and powered by a single 9V battery. List price: \$149.

SoundTech Professional Audio
235 Corporate Woods Pkwy.
Vernon Hills, IL 60061
847/913-5511; Fax: 847/913-7772
E-mail: washburn@washburn.com
Web site: www.washburn.com

SoundTech Phase Check PH13

Phase Check diagnoses polarity problems simply and effectively. Its generator and detector are compact and easy to use. The generator creates an asymmetrical pulse injected into any line or mic input. The detector is held close to each speaker component or attached elsewhere in the audio chain. Its simple red and green LED indicators tell if the component is in proper polarity or reversed. List price: \$299.90.

Whirlwind Qbox

The Qbox is the all-in-one audio line tester that you'll want in the toolbox for A2 applications, live sound, installation work—anywhere you're running audio down an XLR cable. In one battery-powered box, you have a microphone, a speaker, a test tone generator, outputs for standard headphones, a 1/4" jack for line in or a 2k-ohm (telephone) earpiece out, and voltage presence LEDs for confirming phantom or intercom power. Suggested retail: \$199.95.

Whirlwind
99 Ling Rd.
Rochester, NY 14612
716/663-8820; Fax: 716/865-9930
E-mail: sales@whirlwindusa.com
Web site: www.whirlwindusa.com

Other Products

Crystal Freed/SKB Cases Gig Rig

10U slant mixer on top. 10U rackable space on bottom for effects/amps. Large rear wheels. Locking latches. Front wheels 360° rotational. Suggested retail: \$499.

Which FFT Analyzer? You be the Judge.

The Charges:

The SR780 FFT Spectrum Analyzer
Is Faster
Has a Wider Frequency Range
Is Easier to Use
Has More Standard Features
And Costs Half as Much

The HP35670A Spectrum Analyzer
Is Slower
Has a Smaller Frequency Range
Is Harder to Use
Has Fewer Standard Features
And Costs Twice as Much

The Evidence:

Exhibit A

SR780	HP 35670A
2 Ch. Freq Range	102.4 kHz 51.2 kHz
Real-time BW	102.4 kHz 12.8 kHz
Source Distor.	<-80 dBc(<30kHz) <-60 dBc(<30kHz)
Swept-Sine	Standard \$1020
1/3 Octave	Standard \$2040
Analysis	
Arb. Source	Standard \$510
Std. Memory	2 Msamples 500 kSamples
Price w/options	\$10,945 \$20,820

The Verdict:

The SR780 wins on all counts.
Don't believe it? We'll let you
examine the evidence yourself.



Stanford Research Systems

Telephone: (408)744-9040 FAX: (408)744-9049

Email: info@srsys.com WWW: <http://www.srsys.com/srsys/>

©1996 Stanford Research Systems. HP prices and specifications per 1996 catalog and data sheets.



We're so confident you'll prefer the SR780 two channel spectrum analyzer from Stanford Research Systems over any competing analyzer that we'll send you one to try with no obligation. We're convinced that you will see why customers with applications including modal testing, control system design, filter design, audio research, and environmental noise measurements have switched to the SR780. For a detailed transcript of all the evidence, just call us at (408) 744-9040.



Crystal Freed/SKB Cases SKB-19-35

3U shallow rack unit. Removable front and back. Molded handle. Suggested retail: \$119.95.
 Crystal Freed/SKB Cases
 13501 SW 128th St., Ste. 204
 Miami, FL 33186
 305/378-1818; Fax: 305/378-6669
 E-mail: welc@me@skbcases.com
 Web site: www.skbcases.com



Fender Passport

Fender's Passport portable audio system includes everything you need to provide great sound anywhere. Perfect for voices, musical instruments, CD, tape playback and more. It's powerful, easily set up in minutes, covers large audiences, is extremely simple to operate and works on any AC voltage. Specs: 250 W of dual power, four high-efficiency 6.5" speakers per cabinet. Features: built-in digital reverb, VIP (Vocal Input Priority), automatically lowers

music when someone speaks into a mic.
 Fender Musical Instruments
 7975 N. Hayden Rd., Ste. C-100
 Scottsdale, AZ 85258
 602/596-9690; Fax: 602/596-1384
 Web site: www.fender.com

Lexicon MPX R1

The Lexicon MPX R1 foot controller allows the user to take their favorite studio effects on the road. A single cable provides power and 2-way communication with the MPX 1. The MPX R1 employs all-metal construction and dedicated stomp-box style buttons with status LEDs. The MPX R1 also offers dual relays for remote switching of as many as four amp channels, MIDI program select and control, programmable expression pedal with toe switch and more. List price: \$549.

Lexicon
 3 Oak Park
 Bedford, MA 01730
 617/280-0300; Fax: 617/280-0490
 E-mail: info@lexicon.com
 Web site: www.lexicon.com

Looking for Used Gear?
**Check out
 Mix Classifieds
 on page 356**



Musicam RoadRunner

An economical, portable ISDN codec/mixer that lets you send and receive mono audio over the highest quality phone lines available. Built in ISDN terminal adapter with NT, 15kHz mono audio over a single 64 kb/s B channel, 20 kHz mono audio over 128 kb/s. Optimized for ISO/MPEG Layer II and III at 56, 64, 112 and 128 kb/s and G.722. Price: \$2,800.
 Musicam USA
 670 N. Beers St., Bldg. 4
 Holmdel, NJ 07733
 732/739-5600; Fax: 732/739-1818
 E-mail: darlth@musicamusa.com
 Web site: www.musicamusa.com




QSC Rave

The new Rave digital audio routers are the first products to incorporate the revolutionary CobraNet technology, a communications system that allows multiple channels of uncompressed 20-bit, 48kHz digital audio to be routed over standard Ethernet networks with no bit rate reduction processing or other quality compromises. Up to 64 channels can be transmitted on a single cable over distances up to 200 meters (650') using CAT-5 cable, or 2 kilometers (1.25 miles) using optical fiber.
 QSC Audio Products Inc.
 1675 MacArthur Blvd.
 Costa Mesa, CA 92626
 714/754-6175; Fax: 714/754-6174
 E-mail: info@qscaudio.com
 Web site: www.qscaudio.com

THAT Corporation 2002 Series VCAs


THAT 2002 Series Modular Voltage Controlled Amplifiers (VCAs) retrofit analog recording consoles using dbx and THAT 2002 Series VCA modules. The 2002 Series offers improved THD, bandwidth, noise and dynamic range compared to all prior modular VCAs and makes an audible difference in the performance of older consoles from SSL, Neve, Harrison and Sony/MCI. All 2002 Series VCAs feature dynamic range and control range of over 130 dB and typical THD under .002%. Versions are available to retrofit all previous dbx and THAT models. The 2002 is priced at \$65 in lots of 48 or more.
 THAT Corporation
 734 Forest St.
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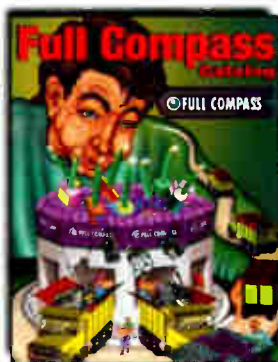
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THE YEAR OF THE

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TECHNOLOGY

MAKES IT

TO THE STAGE

You may have heard the term "digital dubber" by now and still not be aware of its relevance or application. To best understand this new technology, we need to take a brief look at audio mixing/film dubbing operations from a historical perspective.

Traditionally, film dubbing stages have worked almost exclusively with 35mm film media. Film is part of a chain that includes the projector, playback-only dubbers and sprocketed recorders. This "film chain" can move at a relatively slow rate of 2x play speed and 2x reverse, accomplished usually through a twin signal stream known as "bi-phase," where speed and direction are extracted from this quadrature signal. It is often very convenient to "rough in" a mix while in Reverse Play mode, and for many re-recording mixers, this has become an accepted standard of operation. While film dubbers are a proven tool for film editorial and mixing, new technologies are knocking on the mixing stage door. We are moving steadily closer to networked, online picture and sound editorial facilities. One major spoke in this wheel recently has been the modular digital multitrack recorder.

MDMs, in particular the Tascam DA-88, have gained widespread acceptance in post-production. This format is so popular that its analog 25-pin connector pinout has been adopted by Akai, Dolby and TimeLine in their digital dubbers. There are many reasons that MDMs have made their mark in post, many of them based on simple economics:

by Jay Palmer



SoundStar DMS



Fairlight DaD



Timeline MMR-8

HNB Genex GX8000



Akai DD8



- 30 minutes of 8-track digital audio fit on a \$5 tape.
- A complete machine costs less than the price of a film recorder's headstack.
- 48 tracks of digital audio cost less than \$30,000.
- A machine could conveniently live with a workstation for layback and deliver a Hi-8 digital tape to the stage.

Doc Goldstein, director of engineering at Universal Studios Sound Facility (and my boss) has stated that "the DA-88 is the Bic Pen of modern recording." (This is one quote that he'll never live down.)

Though MDM use has proven to be both convenient and cost-effective, it has not met all of the needs for film dubbing applications as currently practiced, and most people in the film world recognize it as an interim technology. MDMs cannot lock in reverse; there is no "off tape" confidence monitoring as provided on magnetic film; the desired "feel" of all machines moving together, or "hard sprocket locked," is gone; the 16-bit noise floor is higher than that of a Dolby SR noise-reduced

film recorder; they do not synchronize (lock) as quickly; Hi-8 8mm tape is not considered an archival format.

THE WAVE

But now, the digital dubber wave is just beginning to crest, after being talked about and in development around the world for the past five years. We are literally seeing new machines every other week (and this article may be somewhat dated by press time). The basic technical specification is generally the same for these machines. In the words of my colleague Jeff Taylor, "We need to lock a Magnatech and a Pro Tools in a room, have them mate and see what we get."

It is very interesting to see the various optional features each manufacturer is offering, as they have set out to differentiate their products from one another in order to gain a market advantage. I do not envision any clear-cut winner here; this article was never intended to be a shootout. The intent is to convey information on this exciting new technology as we struggle with the transition to fully digital facilities. It is the opinion of this author that we are all winners as we continue to get more power and increased functionality at a lower price.

THE PLAYERS

The dubbing field is currently covered by a handful of digital audio companies. As of this writing we have the Akai DD8, Dolby Drive, Fairlight DaD, HiIB/Genex GX8000, SoundStar DMS and TimeLine MMR-8. The DD8, Dolby Drive, GX8000 and MMR-8 are being targeted as direct plug-and-play replacements for an MDM. The Fairlight DaD is a "play only" device that must be used with a remote, since there are no front panel controls. Similarly, the SoundStar DMS must be addressed by a controller and is currently a play-only device. A recorder is in the works. While these may seem like disadvantages, as you read on you will see that in their unique environments, each has reason to be proud. Conspicuous by their absence are the likes of Sony, Tascam, Otari, Studer and Avid/Digidesign. Somehow, I feel that this will not be the case for very long.

DaD, DD8, DMS, MMR-8, GX8000 and what...Dolby Drive? What does all this mean? Right now I would like to thank the folks at Dolby for not succumbing to the urge to abbreviate or hyphenate with catchy acronyms and mnemonics, even if Dolby Drive sounds like the name of a street in England. However, I did spot some familiar Cat

numbers in front of the names of their remotes. Tradition is not lost.

AKAI DD8

From the people who brought you those cool samplers for the MI market comes a product that builds upon that tradition and on their experience in workstation editors to create an impressive implementation of the digital dubber.

This unit can serve as a direct plug-and-play replacement for an MDM. Unique to this model is the fact that you can do cut/paste editing (and save it) and also enjoy the benefits of waveform editing via the VGA output on the

DL1500 remote controller. The machine is built on a proprietary, job-specific, Akai-optimized processing platform.

The folks at Akai Japan have the art of manufacturing well in hand, and this machine is the most user-configurable of the breed. You order optional cards a la carte for your custom configuration. The options are: A/D converters, D/A converters, TDIF Tascam digital I/O, AES/EBU digital I/O, SCSI interface, LTC, MIDI, ADAT optical, bi-phase (for film use), GPIO (parallel record and motion control), AKAINET (an implementation of Ethernet) and more. The current DD8 is available only in 16-bit resolution.

SPECS FOR THE IDEAL DUBBER

(ONE MAN'S OPINION)

Noise floor and headroom are prime concerns when dealing with some of these megatrack film mixes, and, naturally, I would like to see true 20-bit noncompressed digital audio, among a few other features, like:

1. Recording in 20-bit resolution could net you 4 dB or 5 dB more headroom while still improving the noise floor over current standards.
2. Lock to any type of timecode or bi-phase pulses in forward or reverse.
3. Machine operation in timecode or feet-and-frames mode.
4. Individual track slip (any track or groups of tracks) in timecode or feet-and-frames to any location on the reel.
5. 9-pin serial (Sony P2 protocol) remote capability for motion and track record/arming.
6. Parallel remote with track-arming and status tallies.
7. Robust, high-capacity removable media.
8. Control link bus (Ethernet, 422, Firewire, etc.).
9. Daisy-chainable remotes.
10. Operate in film emulation winding mode or nonlinear mode.
11. SCSI bus for additional drives and data acquisition.
12. Future integration of Fibre channel storage solutions to enable more devices to be connected, networking over greater distances and make it hot-plug-capable.
13. Auto backup utility.
14. Data Interchange. This can of worms is still a major issue for work-

station manufacturers. However, new software products promise that the brand of digital dubber you use will not dictate the type of file format necessary for delivery to the stage. (See sidebar on Mezzo Interchange.)

15. Open audio and track width architecture. The audio-only spec for DVD supports 24-bit word length and a sample rate of 96 kHz. Dubbers should be configurable so that your memory vs. time vs. number of tracks options are readily available.
16. Digital I/O...AES/EBU.
17. Headroom A/Ds and D/As should be adjustable. The range should be between -12 dBFS to -24 dBFS. Maximum input and output levels should be +28 dBu. Nominal level should be +4 dBu = 0 VU.
18. A headphone jack and level control...please!
19. Film-style ramp up/down without a stepping sound, and a smooth scrubbing function.
20. Varispeed control.
21. All timecode and feet/frames formats supported.
22. Common DAW editing functions like cut, copy, paste, undo, etc.
23. Virtual track/take stacking.
24. Sample-accurate locking between machines.

There are also a number of functions I think would be necessary in a basic remote controller, including the fact that they should mirror the function of a JSK Smart DA, but perhaps we'll save that for next year's update.

—Jay Palmer

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However, the plan is to offer a complete, easy upgrade path to 20-bit and 24-bit operation with a hardware change to all users. The new hardware will support all the way up to the DVD Audio spec of 96kHz sample and 24-bit word resolution. The current A/D converters are 24-bit, and the D/As are 20-bit.

The current fail-safe way of "hot recording" is to a removable hard drive. Data transfers and playback-only applications support MO as the preferable transportable media type. The Akai method of protecting or backing up is to use a RAID array. The data is shared or distributed between multiple drives to

ensure safety in the event of catastrophic failures.

The Akai DL1500 is the remote that allows control of up to 16 DD8s (probably more by the time you read this) via AKAINET. Up to two remotes can be used, i.e., one for the machine room and one for the dubbing stage. All forms of slipping machines and tracks and the interrogation of all individual DD8 machine functions can be accessed through this device. There are also two more specialized remotes being readied for production.

The DD8 has its own (but of course) file format, but the company has recent-

ly implemented a direct file import of Sound Designer II Pro Tools files. Also, other file formats will be supported via the Mezzo Interchange utility from Grey Matter Response (see sidebar).

This product has gained wide acceptance in Europe and on the East Coast, and it has been used on various feature film projects on the West Coast. An upcoming high-budget animated feature from a company that begins with "F" will be pressing these units into duty.

The current list price for a DD8 outfit with A/Ds, D/As, additional SCSI port, AKAINET, bi-phase, LTC and AES/EBU Digital I/O is \$8,062 (less drives).

DOLBY DRIVE

From the company that brought you A,B,C and SR noise reduction, Dolby Stereo, Dolby Digital film tracks; that virtually owns the DVD and laserdisc audio in this country; and that developed the specified format for ATV, comes something special, Dolby Drive. The people at Dolby have spent more hours on dubbing stages than most anyone save for the mixers and editors themselves. This wealth of experience has resulted in the manufacturer's first foray into the field of a commercial recording machine. Dolby Drive comes with much of the technical specification listed earlier. Furthermore, it separates itself in a few key areas. The Dolby Drive uses as its primary media type the Omega Jaz Drive. According to Stan Cossette, the project manager of Dolby Drive, this has worked out to be a very reliable solution in all of their testing. The 1-Gigabyte capacity necessitated the use of compression when in 20-bit mode. They call it AC-M, for multigenerational use. (No track sharing here!)

As of this writing (July '97), Dolby was entering the beta test phase. Production units are slated for October/November. One of the neat things about the layout is that each machine has a large, two-digit LED for easy identification at a distance, so you know which machine number the mixer is screaming about. The file format has its roots with the same company (Creation Technologies Inc. of Vancouver) that developed the Otari RADAR. The two onboard Jaz drives in the 8-track recorder can be configured as two identically recording "mirrored" drives (also known as RAID Level 1). In the 16-track player, the first eight tracks are coming from the first drive, the second eight from the second drive. There will be an accessory SCSI drive rack so as to facilitate any compatible, removable media drive you desire.

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Dolby Drive

Two remotes will be available. There will be one for typical film usage (Cat. 707) with no jog wheel or transport control buttons, and a full remote (Cat. 707T) with jog wheel and transport control buttons that might be better suited in a video-style mixing application. Currently, the unit is configured for 16-bit PCM or 20-bit AC-M. According to Dolby representatives, there is a plan afoot to offer a true 20-bit noncompressed version for those who are not quite enamored with the thought of using any data compression during the early stages of post-production. While

seemingly slow getting out of the gate, this will be a product to watch out for. And knowing these people, I'm sure they will include some very interesting "special applications," as well. With the support and input of people like David Gray, VP Hollywood Film, and their fine worldwide support network,

these machines promise to be winners.

The preliminary list price for a Dolby Drive 8-channel recorder outfitted with A Ds and D/As will be in the \$10,000 to \$12,000 range. Preliminary list for a 16-channel player with 16 D/As will be slightly more.

FAIRLIGHT DaD

From a company some of us remember as "that synthesizer company from Down Under" comes the DaD, or Digital audio Dubber. The DaD is designed as an extension of Fairlight's MFX-3 digital audio workstation as a way to get

STORAGE AND BACKUP

While most manufacturers experimented with magneto-optical, or MO media, they found that the only reliable way to do "hot" punch-in and punch-out recording (with multiple sets of hands doing it, as on a working dub stage) was to use the fastest available hard drives. One exception to this is the HHB/Genex GX8000, which writes to an MO drive in a linear, almost tape-style of recording. Currently, all of the manufacturers are using a SCSI implementation to read and write data to the drives. Most are using removable hard drives. Dolby is advocating the use of the Iomega Jaz (1GB) removable cartridge using its proprietary data compression scheme. The SyQuest SyJet (1.5GB) removable cartridge is also currently being qualified by these manufacturers.

And from the Mo' Better MO file comes the latest wrinkle, LIMDOW (Light Intensity Modulation Direct OverWrite) removable MO technology. The Nikon Beluga, Sony SMO, Maxoptix T5 series and the Maxell RO Series are competing for your LIMDOW dollars. This Direct Overwrite technology eliminates the erase cycle and allows for the writing of new data directly over existing data,

thereby cutting the burst transfer time in half! As these drive technologies advance, so do the new technical requirements for formats such as the DVD-Audio specification (96k, 24-bit). What kind of a drive would it take to be capable of enabling "hot recording" or punching in and out 8/16/24 tracks at 96k, 24-bit?

In order for digital recorder/dubbers to be direct replacements of film, it appears that a method of covering your digital derriere must be employed. Film affords you the luxury of immediate confidence from a playback head while in record. The thought of a hard drive crash containing your valuable master mix is something that may cause massive resume-update disease. So in order to cover yourself, the best thing to do is either:

- Archive in the background.
- Mirror your record drive with another drive
- Record to a RAID array of drives with built-in redundancy. (For more information see "The Basics of RAID Technology" at <http://www.risingedge.com/industry/overview/raid.htm>.

—Jay Palmer



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tracks to the mixing stage efficiently. This machine is a "playback only" device, and there are no front panel controls to speak of. It boasts the highest playback track-per-dollar ratio and can simultaneously play up to 24 tracks off of one removable hard drive. The story goes that just a few short years ago, the latest incarnation of Fairlight resurfaced at Todd-AO Studios in Hollywood. It seems that the studio laid out a fairly daunting technical specification as only John Haeny, then editorial technical director for Todd-AO, could produce. It was then basically up to the folks at Fairlight to put up or go home. Well,

guess what? They really came through. And it is largely because of this showing that they are now realizing significant market penetration.

The DaD is 24 tracks wide—sound effects editors in particular need the megatrack capability. According to Tim Cuthbertson, VP sales Western region, the MFX-3 will take a file from an Avid Audiovision or Pro Tools via the OMF transfer tool in the Avid and convert it to a Fairlight file format. Playback is then just a matter of grabbing the drive and plugging it into the DaD. The functionality is very straightforward. The 20-bit version is slated for intro in the first

quarter of 1998, and existing DaDs will be upgradable. Recently, I had the opportunity to observe the operation of this unit on a dubbing stage. The whole process was seamless, and the mixers had nothing but good things to say. The operation of the remote had a very short learning curve. Regarding the remote, its logic works like this: A remote plugs into a machine, therefore you can never have more remotes than machines in the loop. The advertised limit of machines allowed in a loop is 24, for a grand total of 576 tracks! That should be just enough to handle backgrounds on some of these megatrack movies. (No kidding!) The unit itself contains six slot positions for their 4-track audio cards. You can configure as needed. As of this writing, Fairlight is back-ordered on DaDs, with rental companies and studios on the waiting list.

The list price for a 24-channel DaD with D/As is \$15,700. List for an FC-100 remote is \$2,300.

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SOUNDSTAR DMS

The Digital Machine Room System (DMS) was probably the first digital dubber to hit Hollywood, sometime in mid-1996. While most of the items in the specification (see sidebar) are covered here, there are some distinguishing features that should be explored. The DMS uses a touchscreen for its Master Control Unit and subsequent remote controllers. The 24-track player is configured as three groups of eight channels, using hardware from Spectral's PRISMA Digital Audio Engine, with a corresponding removable hard drive for each. Currently, the unit is a player only, with plans under way to produce a recorder (SRU). This current incarnation is available in a 16-bit storage configuration with 18-bit converters. According to David Oren, director of marketing, the system was used with much success in the feature *Batman and Robin*. The DMS can be configured for up to 3,000 actual tracks. Updates can be accomplished in the background while the DMS is still involved in the dubbing process.

DMS pricing is as follows: SIU Stage Interface Unit, \$3,695; MCU Master Control Unit, \$5,495; DDU 8 Digital Dubber Unit 8-track, \$11,995; DDU 16 Digital Dubber Unit 16-track, \$16,995; DDU 24 Digital Dubber Unit 24-track, \$24,995.

HNB GENEX GX8000

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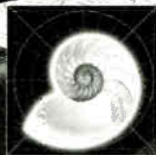
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back are done in a linear mode, i.e., the formatted MO disk acts as its own timing reference. Whether you record a piece at the beginning or middle, you have committed the whole length, just as in linear tape recording. In contrast to the other machines, the GX8000 records to MO media, which is a destructive recording format. On first contact with this feature, one may be alarmed until the realization hits that, previously, all the tape machines operated this way without any apparent penalty. The advantage of the MO drive, of course, is its long life. HHB is so confident in their MO disks that they offer a lifetime (100 years) warranty!

An interesting feature is that when linking multiple GX8000s, you can develop a 2-track monitor mix between all of the machines and listen straight through the headphone jack. And multiple GX8000s are absolutely sample-accurate between machines. This unit also enjoys the function of being able to use

lossless compression for archiving live recording in a single-pass operation. One of its best applications would seem to be as a music scoring master recorder. Because it runs in a linear-style mode, multiple takes (with noncontinuous timecode) can be consecutively recorded with no confusion of virtual timecode numbers, which is how a scoring stage functions using a standard tape machine.

The GX8000 has its lineage from the earlier model, the GX2000 2-track. The design engineers came from the Decca Recording Centre in England before spinning off to form Genex Research. Their goal was to achieve the utmost in high-fidelity audio, and in this field, they have no equal. While fulfilling all of the requirements of a mastering music recorder, it can also fill the needs on the dubbing stage, executing most of the requirements specified in the dubber specifications with ease.

The list price for the GX8000 8-chan-

MEZZO INTERCHANGE

How will editors using computer-based DAWs interact with all of the new digital dubbers hitting the streets, each with independent file-formats for EDL and audio data? Grey Matter Response recently announced an addition to its Mezzo product line of data-management solutions, offering automated translation between popular DAWs and stand-alone digital dubbers. This new software product, Mezzo Interchange, could very well be the glue that binds these systems together, finally bringing the whole dubbing process into the digital age.

Today, most dubbing stages depend on editors with DAWs to prepare audio tracks for a final mix. To move audio onto the dubbing stage, they must copy the data from the DAW to a dubber, a very time-consuming process that can unexpectedly cause delays in production. Mezzo Interchange solves this problem by working as the "middle-man" between each system, automatically converting EDLs and translating audio files back and forth.

Mezzo Interchange does all the file-format conversion and transfer of data in the background on the host computer (currently Macintosh only),

so an editor can continue to work without interruption. Translation is bi-directional, which means that an editor can take material from the DAW to the dubbing stage, make some changes there and then bring it back into the DAW for fine-tuning. It's virtually a plug-and-play scenario, since only audio files that have been edited will need to be transferred.

Digital dubbers supported in the initial release of Mezzo Interchange include Akai's DD8, and the Dolby Drive, and there are plans to support most of the others mentioned in this article in future releases. (Other digital recording devices are also supported, such as the Otari RADAR system.) On the DAW side, Mezzo Interchange supports any OMF-compliant application (Avid AudioVision and Media Composer, Digidesign Pro Tools, and Sonic Solution's SonicStudio, among others). Select DAWs are supported with direct file translation, eliminating the extra step of OMF export/import (currently, only SonicStudio permits this). Mezzo Interchange should be shipping by the time this article prints. Contact Grey Matter Response for more information.

—Jay Palmer

nel MO Disk Recorder with digital I/O only will be in the \$9,500 range. List for the GX8000 8-channel MO Disk Recorder with analog and digital I/O will be around \$12,000.

TIMELINE MMR-8

From the company that brought you the most successful electronic machine synchronization systems ever comes a product that has been under development anywhere from three to five years. The MMR-8 is a PC-based product with its roots in the Waveframe DAW platform. The architecture allows recording at up to 24-bit resolution at a 48kHz sampling rate. While nailing almost all of the dubber specifications listed earlier, it has some features that are unique. First, it has (you guessed it) a Lynx bus available. This means that instead of plugging into your Lynx module, you can plug the MMR-8 directly into the Lynx 422 daisy-chain loop. In its current configuration, you could then control up to six MMR-8 dubbers from one Keyboard Control Unit (KCU).

While Waveframe/Studioframe files play in native mode, the MMR-8 has also demonstrated the ability to play Digidesign's Sound Designer II files via

OMF. The internal multimachine linking bus will provide for sample accuracy between units. This is quite impressive for a company that literally had one foot in the grave on numerous occasions over the past few years and has shown remarkable resiliency under its current CEO, Bob McDonald. That merry band of gypsies (Oh! I mean technical engineers) from San Marcos, Calif., led by timecode sync guru Gerry Lester, are beating the odds in developing a flexible recording/dubbing platform. Plans for a 16-track dubber for release in the fourth quarter of 1997 are well in place. With continuously variable input and output levels to and from the converters, one can literally align the machine with any of the many required operating levels. It seems that TimeLine has scored a major home run with a substantial sale of MMR-8s to that leading Hollywood editorial house, Soundelux.

Currently, a multimachine remote is under development for release in the fourth quarter of this year. With technical support from the one and only Debi (Cool) Cole and director of marketing Ron Franklin, the team in place has all the ear markings of a sure winner.

Contact TimeLine Vista for pricing information.

CONCLUSION AND THANKS

When you consider that this technology was not commercially available just one year ago, I hope that everyone can appreciate the great strides and competent engineering showcased here.

I would like to thank all of the people who contributed to the development of this article, especially Doc and the Universal Sound Engineering staff, and the manufacturers who made this all possible. Also a special thanks to my brother Thom (from Thom Palmer Photography), who came up from Orange County for a late-night photo shoot, and my editor with an attitude, my other brother Chris (from Aura Systems), who also spent some late nights creating multiple opposing opinions to help me crank this one out. A very special thanks to my dear wife, Rose, for putting up with me during the completion of this article. ■

Jay Palmer is an engineer at the Universal Sound Facility at Universal Studios, Hollywood. He spends his time there designing and maintaining editorial, transfer and film/TV dubbing stages. He also designs "digital proof" subwoofers and surround speakers.

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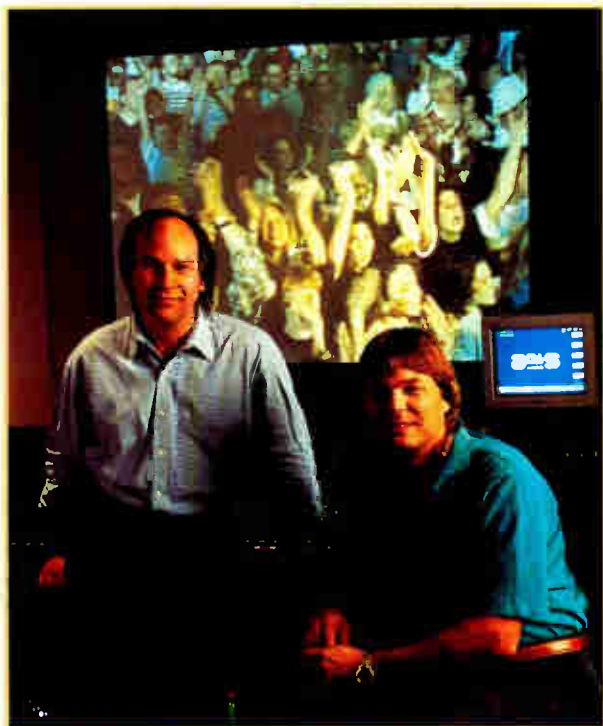
Prime Time *For New York Post*

New York has always been a television town.

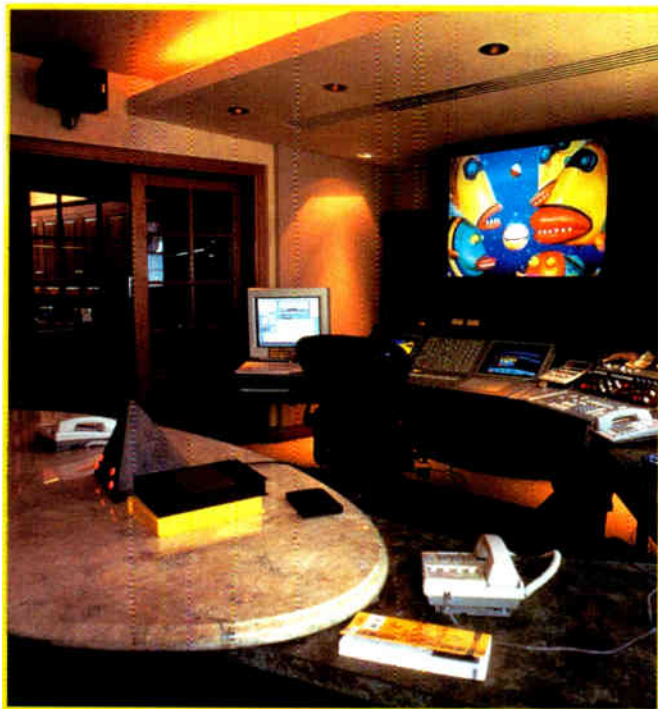
From the very development of the medium and its roots in live, event-based programming, New York was the capital of the production and advertising worlds. The networks were mini-versions of studios, producing daily news, sports and variety-show programming. Until the advent of edited sitcom and drama series, and the corresponding production shift to Los Angeles, New York was it.

by Tom Kenny

PHOTO: HARALD SUNO/MAISE BANK



Clockwise from top: Bill Morino, left, and Ken Hahn at Sync Sound's Logic 2; Howard Schwartz at the new Axiom; L to R, Chris Floberg, Sue Pelino and John Alberts of Sony Music Studios at the OmniMix; Superdupe engineer Mitch Raboy at the new Fairlight F.A.M.E.; Peter Fish, composer and director of audio post at National Sound working on his Synclover.



The new audio room at Aural Fixation, designed by John Storyk

PHOTO DAMON CLAYTON

And in a sense, New York still is the center of the television universe, just not the prime time production universe. News and sports still mostly originate in New York. Talk shows are huge, as are the daytime soaps. Cable is big. And depending on whom you talk to, it's a documentary town, a jingle-town-turned-on-air-promo town, a radio town or a PBS town. And if current trends continue, it may soon re-establish itself as a prime time town.

A few years back, Sync Sound picked up the audio post for *Homicide*,

the Barry Levinson-produced hour-long crime drama. Last year, National Sound began editing and mixing the Michael J. Fox sitcom *Spin City* (shot, edited and mixed entirely in New York; music by New York native Shelly Palmer), renewed now for another season. And just this summer, Howard Schwartz Recording won the audio post job on the *Cosby* show (formerly shot in New York, posted in Los Angeles).

Granted, the impact of these shows in real terms on the growth of the local audio post industry is a few rooms

busier for a few days a week, with the small jobs that work replaces then having to be farmed out to other facilities. But the impact in *perceived* terms ripples through the entire community. In the relatively small, tight-knit, friendly-but-competitive world of New York TV audio post, what's good for one member of the community can be good for all, especially if it projects a positive working image.

For a variety of reasons, the New York production/post-production industry was in a slump in the late-'80s and early '90s. The permit process was expensive and slow. There was union trouble. The city had a poor overall image and was viewed as an unfriendly place to work. Ad budgets followed the poor economy down. Then, the economy picked up, the problems with the unions were solved, the permit process was streamlined, a production-friendly, more image-oriented mayor took office, and earthquakes and fires hit Los Angeles. Production returned. Post-production returned.

Obviously, the story isn't that simple. The trades have been trumpeting the return of entertainment-based production to New York City for a couple years now, but much of that is motion picture production, and many of those follow the negative home to Los Angeles for editing and mixing. New York has been experiencing a mini-boom recently, but as *Mix* found out on a summer tour through a few TV post facilities, it's more due to traditional New York business and the ever-booming cable production industry. On the West Coast, we used to hear the comment that MTV and HBO fed New York. Well, today, it's those plus VH1, A&E, Nickelodeon, Discovery, Lifetime, USA and many others.

SYNC SOUND

The big news at Sync Sound is the recent completion of the large film mixing room in a building around the corner from the company's West 56th Street location. More importantly, however, owners Bill Marino and Ken Hahn formed a partnership with Academy Award-winning re-recording mixer Rick Dior to run the new stage. For the past decade or so (it was founded in 1983), Sync has virtually owned the long-format market in New York. And a number of films have been posted in the Logic 2 room. But now they are making a major push, and true to their digital roots, Marino-Hahn-Dior are installing an AMS Neve Digital Film Console.

"It's the room we've always need-



Part of the crew at Pomann Sound surround the OmniMix.

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crets in the New York audio post community involves Sony, more specifically Sony Music Studios. The audio post division of the massive, bustling complex (which houses seven recording studios, five video edit suites, two large shooting stages, nine mastering rooms, remote services, satellite services, duplication and full graphics abilities, including a FLAME system) comprises four rooms, with Euphonix, Neve and SSL consoles, including an Omnimix, and Pro Tools and ScreenSound workstations. Even the competition admits that Sony is busy.

Heading up the audio post department is New York audio post veteran

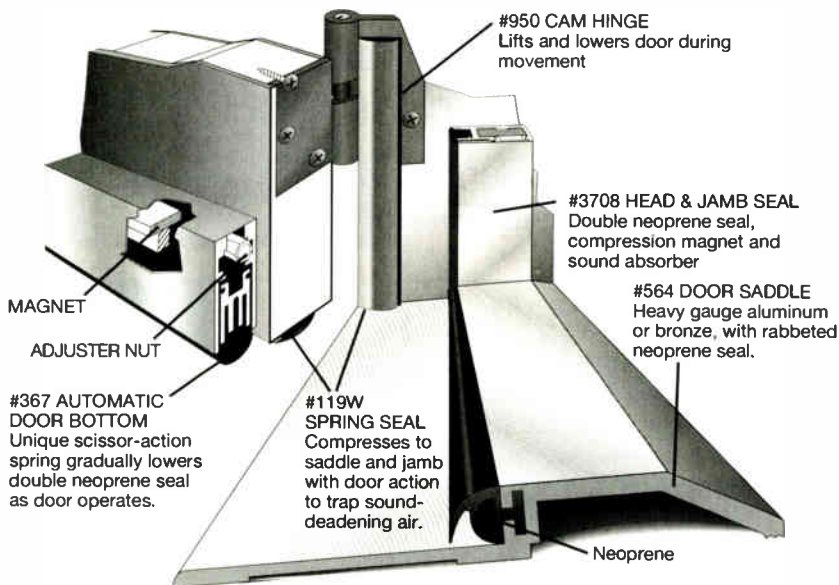
and multiple TEC Award-nominee John Alberts, longtime mixer for *Saturday Night Live* and countless music specials. The most notable recent addition was the hiring of noted mixer Sue Pelino, who has engineered many of the VH1 *Storytellers* projects at the facility.

One of the early high-profile clients at the facility was *The Dana Carvey Show*. But the staples have been *MTV Unplugged*, Bill Moyers' series, and an endless supply of music- and comedy-based specials, including projects for Eric Clapton, Mariah Carey, Harry Connick Jr., Comedy Central, *Shouttime at the Apollo* and *Def Comedy Jam*. The company also does on-air promos and

commercials, and recently finished and aired the first sequences for the series *Sessions From West 54th Street*, involving "live" gigs from one of the shooting stages.

"I think it's been a good time in TV production everywhere," Alberts says, "and if you believe what you read in the local trades, the unions are easier to deal with, the city itself is easier to deal with. Whatever it is, it's a good time to be in post-production in New York. This place opened to service Sony Music, and now it's turned into a full-service production facility for anyone who wants to use it. And it's busy. Every thing here seems busy all the time. The stages? *Hard Rock Live* is juggling time there with *Sessions From West 54th*, and a 100-piece orchestra is in there now doing a Disney film. Everybody in town is busy."

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NATIONAL SOUND

National Sound, a division of National Video Center headed by composer/creative director Peter Fish that includes five digital post-production rooms and The Edison recording studios, hired engineer David Browning in February 1995 and picked up the *Spin City* mix the following year. Perhaps the two were related, as Browning is one of the few East Coast mixers with sitcom experience, having worked on *Kate and Allie* (the last sitcom to be shot and posted in New York), *Working It Out* and *The Life and Times of Molly Dodd*.

Fish's credits include music themes for all of the network morning talk shows, CBS and NBC evening news, numerous network specials, *48 Hours* and the new program *CBS Eye on People*. The facility does its share of promo work for the major networks and cable alike, but has placed more of an emphasis on mixing longer-format shows, including A&E's *Biography* series, *Nature* specials, *National Geographic Explorer* and Discovery network programs. Browning also received Emmy nominations the past two years for his work on film clips used on *Sesame Street*. While the five rooms vary in size and dimension, the equipment package is the same: Euphonix consoles, Synclavier/PostPros and Meyer HD1s.

"We're very big on standardization," Fish explains. "I don't want to have six rooms with six different file formats, because then my schedulers lose flexibility. Right now, they can fit any job in any room, and it's always a Euphonix console, so all the automation files are

—CONTINUED ON PAGE 315

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SOUND FOR FILM

ONE
SOUNDTRACK,
ONE OSCAR

by Larry Blake

I remember a very funny parody of *Billy Jack* on *Saturday Night Live* awhile back. Paul Simon came on and did his best Billy Jack impersonation—a slow burn, a lament over the need for violence, followed by a lecture to the bad guys before beating the crap out of them.

After Simon had wreaked his politically correct revenge on some rednecks who had thrown flour in the faces of a black man and his white girlfriend, he paused, turned to the camera and expressed a fervent wish that all races could live together on one cone—just like chocolate, vanilla and strawberry.

In the past three years of this column, I have ranged from the picky technical (correct sync pops) to the more far-reaching creative points of film sound. And though none of the issues bears any relationship to world hunger, the one that bothers me most is the Montague and Capulet separation between the different crafts in film sound: production recording, sound editing and re-recording.

Although the three crafts coexist peacefully on one soundtrack, in the workplace we haven't yet reached Mr. Simon's hope for a Neapolitan Utopia because there are still too many artificial job distinctions floating around. Why should any-

one care how someone is credited on a film—sound designer, supervising sound editor, re-recording mixer—as long as that person can do the job? And, more importantly, why should the acclaim for a good film soundtrack, in the form of Academy Awards, go to a boiler-plated list of job titles that may or may not apply to the film in question? As necessary background, let's take a look at the method in which the Academy of Motion Picture Arts and Sciences rewards film sound.

The rules for the award for Best Sound have changed over the years, getting closer and closer to giving the Oscar statuettes to the right people. Consider that for the first 40 years the award was given to the sound depart-

ment head, and not to the people who actually worked on the film—a concept just north of obscene in many people's eyes.

After many complaints from directors and sound mixers alike, in 1969 the rules were changed and the award was given to both the lead re-recording mixer and the production mixer. This continued until 1975, when it was decided to recognize three re-recording mixers and production mixers.

Recognition of the work of sound editors has had a much more checkered past. Before 1963, the only way you could get an Oscar for sound effects editing was to win a generic Special Effects award along with your visual effects colleagues on that film, although no mention

would ever be made as to who did what. Although in the mid-'60s a separate award for Sound Effects came into being, it was discontinued after a few years.

After this point, a sound effects editor's only chance was through a Special Achievement Award voted by the Academy's Board of Governors. This was eventually transformed in the early '80s to the situation we have today: a Sound Effects Editing award that may or may not be included in the Oscar ceremony alongside the regular classifications like Cinematography or Film Editing, for example. And unlike the other categories, which are allowed five nominees each, a maximum of three sound jobs can compete for the Sound Effects Editing award. Selection of the final three is made at an event known affectionately in the world of film sound as the Bake Off.

I have attended every
—CONTINUED ON PAGE 277



PHOTO MONTAGE TIM GLEASON

CARTER BURWELL

AN IRONIC TWIST ON FILM SCORING

by Tom Kenny

Carter Burwell has just come off completing his sixth feature film score in the past six months, including his biggest-budget picture to date, *Conspiracy Theory*, and the Bruce Willis action remake *Jackal*. It's not exactly typical fare for the composer best known for his work with the Coen brothers. And he's not even completely sure how he made the leap from the world of New York independent cinema to megabucks Hollywood fare, admitting that his previous credits made him an unlikely choice for a Mel Gibson/Julia Roberts thriller. But right now he's hot and in demand. Producers are calling to book him in advance because of his crowded schedule. Next up is his seventh picture with Joel and Ethan Coen, *The Big Lebowski*.

Not bad for a New York native who hated piano lessons as a kid—"all that classical music and scales." But a friend in high school asked Burwell to accompany him on I-IV-V blues progressions for local gigs, and the interest was rekindled. "I was listening to Muddy Waters and Otis Spann, stuff like that at the time," Burwell says. "No one had suggested to me that you could make things up on the piano."

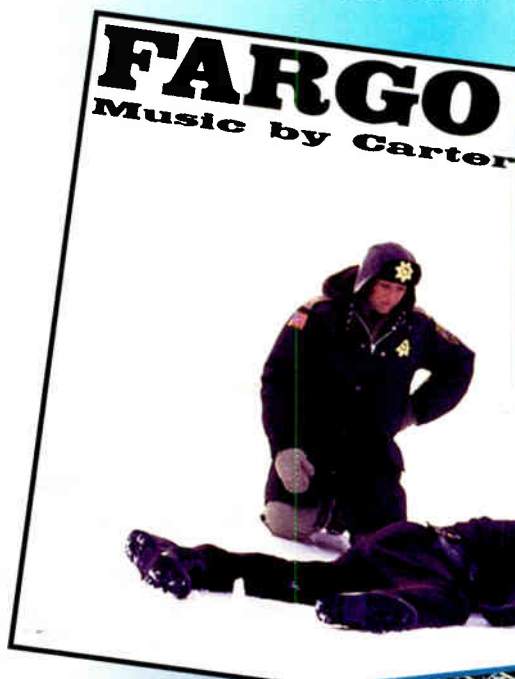
Four years at Harvard concluded with plans for graduate study in architecture, but he ultimately decided that wasn't the field for him. Following a year of independent study under Paul Pangaro and Nicholas Negroponte at the MIT Media Lab, Burwell's interest turned back to music, spurred by the emergence of punk and experimental work being done in electronic and computer-based music.

"A couple of influential things happened to me at the time," he explains. "One was seeing one of Iggy Pop's first comeback tours. David Bowie was playing piano; the Sales' brothers were on bass and drums. Blondie opened for them—I think it was before Blondie had any albums out. It was just so exciting compared with what life was like at the graduate school of design, where people would stay up all night

continues. "This professor at Harvard, Ivan Tcherpnin, had an electronic music studio and was just doing the most wonderful stuff. He had this piece called the 'Santur Opera,' which he would perform on the santur, this Persian dulcimer, then send it into these synthesizers that his brother, Serge Tcherpnin, built in San Francis-

mances. The Iggy Pop stuff had all the energy and sex, but what Ivan was doing had a lot of thought and unfathomable weirdness to it that I liked."

Later on in the '80s, Burwell worked as a computer animator in Tokyo, develop-



Above, Carter Burwell; at left, his Fargo/Barton Fink CD onTVT Records; below, the Euphonix CS2000 in his composing studio

making little cardboard models of buildings that would never be built. The sheer spontaneity of performing music made me and a bunch of my friends think, 'Maybe we should take a year off before grad school and start a band.' It just so happened to be a time in history when people were encouraged to do that, so we came to New York and started playing CBGB's and the Mudd Club and all those places.

"The second thing was that I started to look around at what people were doing with electronic music," he



co—Serge synthesizers. It came out of these four huge rock 'n' roll speaker cabinets in the corners of the room. So you had this professor of composition at Harvard doing these trippy, almost rock 'n' roll perfor-

ing 3-D worlds through procedural modeling, and he continued in his performance career while working at the New York Institute of Technology. In 1984, while in Manchester, England, recording tracks with Stanton

—CONTINUED ON PAGE 272

DUBEYTUNES STUDIOS

by David John Farinella

DubeyTunes Studios' sound designer/engineer Vance Walden leans back in a black leather chair and says, "One of the things we have to balance around here is creativity vs. speed. You want to be creative, but the client often needs to get out of here in record time. Digital hasn't sped things up, it just allows you more choices. You can go through three times as much stuff in an hour as you could before. That's something you have to keep in balance. We've got the rooms and equipment set up so that the technology is transparent. The machines are taking care of the speed, which gives us lots of room for creativity."

According to DubeyTunes' owner/producer/composer Stuart Dubey, that was a key factor behind the layout and implementation of the new facility, which was designed with the assistance of Los Angeles-based acoustical architects studio bau:ton. "The goal was to design a facility that could handle the most demand-

*Below, owner/producer/
engineer Stuart Dubey.
At right,
engineer Vance Walden.*



The Amek Big mix position in one of two matching rooms at DubeyTunes Studios

ing audio post projects, as well as have the acoustics and atmosphere for music production. The way the industry is right now, you have to wed the two," he explains. "We went for a style that has elegance as well as a comfortable and creative feel. DubeyTunes is an

'auditorial' post house. The work continually varies. For some projects, we do original music, sound design, post and the mix. Other clients come to us just to get a great mix, or to do some intricate sound design. We've got an excellent team, so each area is equally as strong."

Dubey originally came to the San Francisco Bay Area from Los Angeles, where he had worked for five years as a composer/songwriter penning tunes for music publishers, TV and commercials. "When I moved to San Francisco, there wasn't much of a music business going on here, and I immediately fell into composing for picture," he says. After a couple of years he outgrew his one-room shop and decided to build a new multiroom facility that could handle post-production, as well. DubeyTunes Studios, located in the heart of San Francisco's Multimedia Gulch, opened its doors in the beginning of 1996.

In addition to Dubey, the staff comprises sound designer/engineers Walden and Hunter Pipes (both recently awarded Clios), engineer Dave Lippe, and administrator/client services goddess Rebecca Schwartz. Upstairs is one of Northern California's most respected digital special effects houses, Western Images, and throughout the building are a number of multimedia companies such as Macromedia and Silicon Graphics. DubeyTunes and Western have teamed up to give clients a new level of efficiency and convenience by running digital/analog audio tielines, video and serial controls between their two shops. This enables the DubeyTunes staff to control any of Western's vast array of video decks for laybacks. Both facilities are also synchronized to the same house black, and DubeyTunes provides Western with use of their APT and Telos Zephyr digital land patch systems. The relationship has benefited both companies, as well as their associated clients. For example, Walden says, "One time we were working on some heavy effects thing for a toy spot. We were piping a mix in digitally from New York and then patching it upstairs. The clients were listening to it as they cut picture and making comments. They were able to tweak the video to match what we were doing with the audio, and vice versa."

DubeyTunes consists of two studios that share identical equipment and philosophy. "Most of our clients are ad agencies and media producers who come back with last-minute revisions, so we needed both rooms to be inter-compatible with total recall," Dubey says. "That way we can pull up any project in any room at any time." Both



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the Blue Room and the Green Room (which come with matching lava lamps) are outfitted with an Amek Big console with SuperTrue Automation and Virtual Dynamics, Power PC 8100s including 32 tracks of Digidesign's Pro Tools, with TDM plug-ins such as SampleCell II, Dolby Surround Processor, TC Reverb, MDT (Multi Dynamics Tool), DINR (noise reduction), DPP (Digital Pitch Processor) and Focusrite D2 EQ. The Blue Room is also set up for surround work with a high-res projection video monitor. The studio also includes such outboard gear as Dolby Decoder SDU4, Dolby Encoder SEU4, Eventide Ultra Harmonizer H300SEs, Sony 7040 TC DATs, Tascam DA-88s, Lexicon 300s, Neve 9098 EQ mic pre's, Microlynx synchronizers, a handful of dbx 166 modules and a pair of BBE Sonic Maximizers. Genelec speakers are in the Green Room, and there's a Dynaudio surround monitoring system in the Blue Room. In addition, the facility houses a digital edit/MIDI studio, office, kitchen and reception area. A third mixing room is planned for the near future.

Dubey, who oversees the composing for the company, relies on a Kurzweil 2500XS, Roland 2080, Roland D50, Korg M1, Korg Wavestation, Alesis D4, and SampleCell II in conjunction with Digital Performer. "In order to make all of the studios integrated for music composing," Dubey explains, "we set up the keyboards and MIDI gear so it could be easily moved between the rooms. Everything is terminated to an Elco snake that can be plugged into a patchbay in each room. That way, the synths come up in the exact same location on each room's console."

In addition to the standard music libraries, Walden and Pipes have accumulated a vast array of sound effect samples and files, which they have relied on to create sound design for clients like Dell Computers, Boston Market, Einstein Brothers Bagels, Black Angus and Nike. What simplifies the whole process, Walden says, is the use of the Mezzo Media program, which they use to back up all of their spots.

The next step at DubeyTunes may be to push for more surround sound in TV spots. "The whole idea of advertising is to have your message come across," Dubey says. "If you're watching a show in stereo and a surround spot comes on, it's like you're sitting in the middle of the action. It has tremendous impact, and we've been introducing our clients to the concept.

"We're always striving for the best, most innovative work possible" Dubey continues. "Clients can come in and we handle the entire audio concept, from sound design all the way to final mix. Being able to integrate all of those elements together in the same facility, as well as our link-up with Western Images in case of video revisions, makes things move very smoothly and keeps everyone on the same page." ■

David John Farinella is a freelance writer based in the San Francisco Bay Area.

—FROM PAGE 269, CARTER BURWELL

Miranda and some members of New Order, Joel and Ethan Coen called and asked when he could start the music for their first film, *Blood Simple*. But we're getting ahead of ourselves. The introduction to the Coens had come through

had no examples of having done this before. So I went by and looked at a reel or two of the rough cut of the film. At the time I was working at the New York Institute of Technology, and we had some synthesizers and some multi-track machines, so I went back and did sketches—four or five different melodies or approaches I might take. I brought them back in to the Coens, they played them, but they still went many months before deciding who to hire for the music.

At this point I didn't know anything about the process—I didn't know technologically and dramaturgically how to score a film. The people who put up the money didn't want to hire someone completely naive, because Joel and Ethan [Coen] didn't know these things either. But I guess they interviewed a lot of other composers, and in the end, they liked the themes I had written on that first day. And those are the themes that are in the movie.

Was it a good match with the Coens right from the start?

Yeah, it was. At the time, I didn't really appreciate it because I wandered in and here were these young guys. It's in New York, they have a movie. I was doing similar things in music, putting out low-budget albums or whatever. It just seemed natural that we would get along. We all have very ironic sensibilities. It wasn't until I started working with other filmmakers that I realized how unique our relationship was.

I didn't appreciate that the rapport we have is so special.

In Blood Simple, then, you were trying to figure this scoring process out. Did you have a spotting session to start?

[Laughs] *Blood Simple* is no help in this question. We didn't know what a spotting session was, and I don't recall that we actually did one. At some point we looked at the rough cut of the film and talked about it. One of the nice things about Joel and Ethan, which is not true of all directors by any means, is that when they shoot the film, they leave places for music. It sounds like a simple thing to say, but to a composer, of course, that's very important. Those set pieces are, in a way, their chance to exercise themselves as filmmakers, as op-



noted New York sound editor/mixer Skip Lievsay, a bass player who knew Burwell through the local music scene...

How were you introduced to the film world?

Skip [Lievsay] knew people I was playing with, so when the Coen brothers hired him to do sound for *Blood Simple*, they were looking for music, and obviously they were looking for someone who would do it for almost nothing—it was a very low-budget film. So Skip asked whether I would be interested. Usually, if someone asks me if I'm interested in doing something I've never done before, as a rule I say yes. That's just a rule in my life. But of course I had no demo reel or anything like that. I

posed to as writers. Like in *Hudsucker Proxy*, the hula hoop montage, or in *Miller's Crossing*, the scene when the house burns up and ends with Albert Finney on the street with a Tommy gun. Those are wonderful exercises in montage and everything that filmmaking can be about.

Let's talk a bit about interaction. First, with filmmakers. How has that relationship changed as you've grown, particularly with the Coen brothers?

With Joel and Ethan, it usually begins with them saying, "We don't think there's going to be much music in this movie." [Laughs] You can tell by looking at their films. They like to maintain control over what they are doing, and to almost every director, music represents an area in which they are going to have the least control. They write the lines the actor is going to read, they make sure they read the lines, they tell the set decorator they want more blue, or older or newer, things like that. But when it comes to music, every director feels, I think, compared to all the other areas of endeavor, a bit of a loss of control because they can't say, "Well, that should be a G sharp." And thank good-

ness they don't. One of the most wonderful things about being a film composer is that you're in that mysterious area in which they don't know the language. They're always apologizing, saying, "I'm sorry, I don't know anything about music, I don't know if that's an oboe or a French horn." But that's nothing to apologize about, because the language you have to use is the language of emotion and the language of cinema. There is no call for a director to speak in musical terms. That's my job.

Then we'll look at the film. I prefer to watch a film all the way through once, so I've seen it in its entirety before we actually discuss it bit by bit. I think some directors don't really understand this, but until I know where it's going to end up, until I know what the ultimate point of the music is, there's no point in saying, "Oh, the music is gonna start here and stop here." I think I probably fall into more of a minimalist category—I don't especially like to score wall-to-wall music, and I don't especially like to play it under dialog, where I know the music is going to get turned down anyway. I like music to be in there if there's a specific reason for it to be there. But

for it to be there just to lend comfort to the audience is the last thing I usually want to do. Of course, with Joel and Ethan, we're essentially trying to lend discomfort.

What about some of the recent Hollywood films you've scored?

I just worked on *Conspiracy Theory*, which has 90 minutes of score, two or three times what I usually put into a film. So it was completely unlike my style of spotting. We began as we normally would, saying, "Oh, music will begin here and end here." And then at about the halfway point, the producer, Joel Silver, turns to me and says, "Then it's music from here to the end." [Laughs] I thought he was joking, or at least half-joking. But I don't think he was even half-joking. We ended up not even spotting the last half of the movie. We just wrote it down as one cue, and that's the way it is. I watched a press screening of it the other night here in New York, and about halfway in, this scene comes up, and I know this is the last scene that doesn't have music in it. It almost makes me faint to think about the amount of notes that are coming. As I say, it's not my normal approach.

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Are you in a place now where you enjoy complete freedom, or do you get a lot of direction?

It depends. I do get a lot of freedom, and there are pluses and minuses to living in New York when the business is mostly in Los Angeles, and to working in independent films. Certainly one of the luxuries is that anyone who hires me has gone out of their way to do it. There are a lot of great composers in Los Angeles they can hire, and if they go out of their way to hire me, I'm assuming they've done it because they want something a little different reflected in their film. If a director really knows beforehand what he or she wants, and I sense that, even on the telephone, usually that's a good sign to me that I don't want to do the film. There's a down side to that, because a lot of the directors I admire the most, like Scorsese or Kubrick, probably have extremely strong opinions about what the music in their films should be. But for that very reason, I don't think they

would probably be any fun to work with. Of course, I've never worked with them so I don't know. [Laughs]

Let's switch to your interaction with supervising sound editors. You seem to put a lot of effects into your score, and Skip, at least, always speaks musically from an effects point of view.

Skip's amazing, and I'll take the best examples of it, as it varies a little bit from film to film depending on schedules. But one of the best examples, for sure, is *Barton Fink*, where we all knew from the beginning that sound effects were going to be as important as the music. Joel and Ethan knew it, Skip knew it and I knew it. So we spotted the film together, going through each scene. Skip would say, "I have this wind sound that's in the hallway." I would say, "What's that like? High- or low-frequency?" He would say, "Well, it's actually like a submarine sound."

Then we had another scene with a mosquito, and we all know mosquitoes are in the high frequencies. Another

scene had these surreal plumbing sounds. In *Barton Fink*, we made trade-off points, saying, "Okay, you have these submarine sounds happening in the pipes, and they're gonna be really low, like submarines compressing under pressure. So you have the low frequencies and I'll take the highs. I'll put the violins here." The scene with the mosquito: "Great, I'll take this sample of this banging sound that I want to put in with the percussion and the bass trombone, so I'll take low frequencies and you take the highs." We parceled them out so that, later on at the mix, battles between music and sound effects wouldn't have to be fought.

As *Barton Fink* went on, I wrote melodies and would send them to Skip. He would make sound effects and send them to me. There was a lot of back and forth. I did that with Wylie [Stetman, of Soundelux] on *The Chamber*, too. In fact, he had created sound effects that had to do with the death chamber, metallic sounds like doors closing. He sent me a whole slew of samples that I then used. I pitched them down and insinuated them into parts of the score, not dealing with the actual gas chamber but much earlier in the film so that it's almost like a sound theme that rose upward.

Do you go to the final mixes?

If I can, I try to go to the mix. And for every composer it's inevitably a very depressing experience, because until then you've heard your music in pristine conditions, and then suddenly there are the barnyard animals and the gunshots. Any composer considering going to a mix should know in advance that it's going to be an awful experience, but I think if you care about how your music is going to play in the film, then it's your responsibility to go. You're the only one who knows what your music is supposed to sound like.

I'll give you an example from *Barton Fink*, which in every other way was very well planned out. I couldn't be there for the last day of the mix, but I came back in time for the playback. One of the things I missed on the last day was the end-titles, which seems simple because there's no mixing involved, it's just music. But as the end titles were rolling, I had this feeling that, "Well, my scores are minimal, but this still sounds more minimal than I had in mind." Then I realized that the piano, which carries all the melody, was not there. All we were hearing was this extremely slow and plodding string movement that is supposed to contrast with

WRITING AT HOME

Carter Burwell has moved to TriBeCa, but the apartment he lived in for many years on Manhattan's west side continues to serve as his writing studio, complete with a Euphonix CS2000 and racks of Roland gear. It doesn't appear to have much acoustical treatment, but it is bursting with modules and rack-mount gear, and it's worked well enough that he's recorded bands there and handled all the premastering for his own album projects, including soundtrack releases.

The Euphonix, he says, is perfect for a New Yorker because of its small footprint and the fact that he can pack all his sampler and synth outputs into just a few stereo faders. An avowed Roland fan, his main controller is an A-80, and when he travels to Big Sur, Calif. to sometimes write in a coastal hideaway, he packs a JV-1080 and two Roland 760 modules. "I've been waiting for a new sampler for a while now, and probably a lot of people are because the E-IV is out there seeming so much more capable on a technical basis, but I love the sound of Roland equipment and I'd rather stick with it."

He writes and edits in Performer, then goes into Finale when he orchestrates himself to put the notes on paper. "About ten years ago, I found equipment fascinating and loved buy-

ing new pieces of equipment," Burwell says. "These days, I really don't. I was originally a synthesist—I started with analog and patch cords—and it was wonderful to buy every new synth to come out, or all the new sounds that came out for the JV-1080. But if I buy a new piece of equipment one time a year, all I ever have time to do is use the preset sounds and I never get around to any real sound design. The only hope of doing that is to stick with an instrument for years. Take a fine instrument you love and stick with it.

"I still use the DX7," he continues. "I've taken it out to Big Sur now, but the DX7 is wonderful because we all know how to program it. We've all made our sounds and we've had ten years to do it. Basically, I'm extremely disenchanted with gear these days. In my career, I've always been stepping backward through time. I started out with computers and synthesizers and went from that to an interest in the orchestra. Then I learned orchestration by working with people like Sonny, and now what fascinates me, my favorite piece of gear honestly, is my laser printer, which prints my 11x17 scores. I'm now totally fascinated by things like the printed piece of music, which I had no interest in 15 years ago."

—Tom Kenny

the lightness of the piano. The movie ends, and everybody else is perfectly happy with the film. I turn to Ethan and Joel and say, "Well, there's a little problem with the end titles. We're missing the melody." Through technical, clerical errors, someone can forget to turn on a fader.

What about your relationship with Mike Farrow, your engineer?

Miller's Crossing was the first orchestral score I ever did, and Mike was the engineer on that, and he's been the engineer on every orchestral score I've done since. He just has this intuitive gift for what an orchestra is supposed to sound like, and also for solving the problems that inevitably arise. You're going to all these different rooms—back and forth to London, or Dublin or here. So every room is different, and they aren't all appropriate for recording symphony orchestras. Some are too small or the walls are too dead. So he's very good at solving those problems.

So he inspires confidence; you don't have to worry about putting your hands on the faders?

Oh, I get to put my hands on the faders. [Laughs] One of the reasons I like Mike is that he lets me put my hand on the faders. But that's only at the end of the mix. Occasionally when I work on low-budget films and they don't want to pay for Mike, I explain to them that he saves a lot of time because hours in conversation and misunderstanding are avoided, because he knows what I expect from the sound and I know what he is going to do. I know where he's gonna put all the mics, and he knows the amount of separation I want from sections—he knows the way I like to lay out the orchestra.

Does he do a live mix as you are tracking?

These days, Mike does a 48-track record, and we are simultaneously laying down an LCR mix to DA-88, with dialog. Then we're also writing DATs. The point of the DA-88 mix—we've only done it on a couple of films now, but it's been really useful—is that putting the 48-track tapes up and down takes some time, so if the producer, director or I want to hear something we recorded earlier, we just throw in the DA-88 tape. It's a wonderful way of speeding up the whole process.

Themes: My guess is that your interaction with filmmakers begins there. Irony is a word that keeps coming up when I mention your music.

I think irony is one of the reasons I love working with the Coens, and it's one of

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the things I miss in a lot of other films—films that I watch and films that I work on. Of course, what irony means technically, I suppose, is that the music will be telling you something different than what you're seeing, and that cognitive dissonance will make you both uncomfortable and maybe laugh. And in a way, isn't that what is special about the Coens' movies? They make you uncomfortable, and you get your release by laughing.

The lack of irony—it's extraordinary that so many filmmakers want to have music say the same thing that's happening on the screen. What's the point? I just don't understand that, unless it's sheer insecurity, that they think someone is being beaten to death on the screen and they need to have the music beat the audience to death, too. What would make you want to do that? I don't understand it, so when we're talking about irony, I have to admit that I don't understand the nonironic point of view. It seems pointless.

The lead character in *Fargo*, for example. His plans take him from bad to worse. In a situation like that, it always seemed natural to me that if you really want to feel how bad that character is feeling, you don't want to just play depressing music. What you want to play is their hopes and dreams, because that's what's really sad about the situation—that they have hopes and dreams

that are being destroyed and that are always confounding them. That, to me, is the cruelest thing you could do with the music in a situation like that.

Listening to Fargo on CD [available with Barton Fink onTVT Records, New York], I get this sense of triumph in the most horrible moments.

Exactly. The main melodic theme in *Fargo* is an old Norwegian folk tune called "The Lost Sheep." Before I even saw the film, I started listening to Scandinavian music—especially *hardanger* fiddle music. It's very icy. The fiddle appearing in *Fargo* is our attempt to capture that. There's a coldness to it, sort of reminiscent of that landscape. There's also a lot of Scandinavian music that is very, very sad. It's the music of the six-month night. A lot of those old songs were then picked up by Calvinism and other religions, so I think "The Lost Sheep" actually then became a hymn, but it was originally a folk tune.

I had not intended to use a folk song for a theme, but when you find the perfect piece, why fight it. The yodeling theme in *Raising Arizona* is this old cowboy tune. We traced it back as far as we could—through Pete Seeger to the Sons of the Pioneers, and then the trail goes cold. The Sons of the Pioneers credited it as a public domain folk song, so we'll never know who wrote that yodeling tune. Similar situation with this. "The Lost Sheep" is just perfect. His

character is a lost sheep. Of course he's despicable, but the way he's played, and the way I would choose to play him, is as a lost sheep. It just brings out to me the humor of the situation by playing it as pathetically as possible.

What about treachery and fear?

Well, *Conspiracy Theory* is a good example of me playing things a little more straight, but again, you have a main character, played by Mel Gibson, who is a bit deranged. He's been psychologically damaged by brainwashing. The music essentially plays the character all through the movie.

They asked you to play deranged? No?

I guess that answers the question of why they hired me. [Laughs] But there's a lot of treachery and fear and pain in the film. He's tortured. He's a conspiracy theorist, a para-



Carter Burwell at the CS2000 in his home away from home

noiac and, of course, it turns out that all his paranoias are true and well-founded. So there's a lot of darkness in the movie, a lot of quarter-tones in the strings. Sonny Companeck, my orchestrator, did a great job. We had to go from happy-go-lucky to the darkest possible music, and it was fun to explore those areas. In that case, treachery and fear were played pretty much straight because I didn't want anyone to laugh at the fact that he's a paranoiac—you can't just laugh at his derangement, because what he is saying is true. You should be able to laugh and at the same time believe he is suffering. At the same time that the music is often kind of bouncy and there are light, romantic, pretty themes, there's always something dark lurking somewhere all through the score, which of course is what I love. One of the things that you can say about my writing is that it can be very simple, but there is always more than one thing going on. ■

Tom Kenny is Mix's managing editor.

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—FROM PAGE 268, ONE SOUNDTRACK, ONE OSCAR Bake Off since 1982 because it is the only opportunity to hear seven of the best sound jobs of that year in the same theater at the same time (not to mention at the same fader level!). It's also a good chance for many of us to catch up with these films outside their theatrical runs.

Under the current rules, ten minutes from each film is screened in the Academy's Samuel Goldwyn Theater and voted for on the spot by sound editors in the Academy sound branch (plus members of the sound branch executive committee). If two or three films score high enough, they get to compete for the Best Sound Effects Editing award at the Oscar ceremony.

However, a curious situation occurs if only one film gets an average score above 8.0 at the Bake Off. It is then up to the Academy's Board of Governors to decide whether that film merits a Sound Effects Editing Oscar, which would then be handed out at the Scientific and Technical Awards banquet rather than at the Academy Awards broadcast. All of a sudden, the people whose work was judged by their peers to be clearly the best of the year are seated at a banquet next to those who designed new and improved fog machines.

But my biggest problem is still on the table even when the system is functioning and worthy films are nominated for—and win—Best Sound and Best Sound Effects Editing awards. The reason is this: The supervising sound editor always has a lot to do with a film that wins Best Sound, and excluding them from the chosen four mixers (which will happen unless they're also a re-recording mixer) is simply unfair. The rigid three-re-recording-mixers-plus-production-mixer letter of the law does not give the director any flexibility in listing the people who were most responsible for that specific soundtrack, regardless of how their screen credits read.

The solution I am proposing is simple: Eliminate the Sound Effects Editing award by folding it into the Best Sound award, and in the one category distribute the same six statuettes that are given to the sound team today (up to four for mixing and up to two for sound effects editing). The producer and director would be responsible for choosing the people who made the greatest contribution to the soundtrack. The only mandatory personnel would be the supervising sound editor and the lead re-recording mixer because these two make a huge contribution to every soundtrack. The other four spots would

be the only ones in question.

I have discussed these issues many times with film sound colleagues who, despite agreeing with most of my points, are quick to point out some potential roadblocks. One potential problem is that the producer/director team will nominate someone who has no business being there. Let's be frank: We already have this problem today since there are often multiple teams of mixers vying for the three re-recording mixer spots; that is just a fact of life caused by the way this business has become spread out. Producers today must choose which team gets the glory; the only difference between this state of af-

fairs and what I am proposing is that the former relies on the archaic assumption that the re-recording team and production mixer are the lords and masters of feature film soundtracks.

The situation is made all the more complicated by the fact that the sound-related credits for no two films are alike: Some sound designers spend a few days creating a few effects while others will work on a film for six months and are truly in charge of the sound job. Some re-recording mixers edit, and some sound editors mix. And sometimes the credits on movies are just plain wrong!

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my's Sound Branch executive committee would then, as it does now, have the final decision. If there were the slightest doubt that someone who was not "deserving" was on the submitted list, or that someone else was "more deserving," then the committee would have the right to investigate the producer's selections. In reality, the film sound people on this planet make up a very small group, and there would be many on the Sound Branch executive committee who would be only One Degree of Separation away from finding out what the real story is.

For example, imagine if the rule change that I'm suggesting had been in effect in 1977: Someone would have questioned whether this unknown guy named Ben Burt really merited being nominated for the sound effects of *Star*

whether the material was looped because the production mixer couldn't get the track—their fault or not—or because the director wasn't sound conscious and didn't give the production team a chance to get good tracks. If the track the public hears was, in the main, from a looping stage, then the award should go to the person who did *that* work, not the production sound. If the film is an animated feature, then the primary ADR mixer should always be nominated; ditto for live-action films that are almost exclusively looped.

On the flip side, with regard to production mixers, on a production dialog-driven show such as *All the President's Men*, it would be fair to see the boom operator go up onstage to collect an Oscar. Indeed, I remember Jim Webb, the production mixer of that film, ac-

cepting it by saying that he had "truly shared the award" with his boom operator, Chris McLaughlin.

Sound editors who complain that they would no longer have their own award should stop and consider that they would now have five chances a year to win, and not just a maximum of three under the current rules. I know that they have fought long and hard to get the recognition they now have, and fear that the Board of Governors will one year say, "To hell with these sound editors, let's put the sound effects editing award in with the Sci-Tech Awards every year."

My one-award format answers this worry in two ways: First, it will ensure that supervising sound editors will eat caviar with Michelle Pfeiffer at the Governor's Ball instead of rubber chicken with fog machine designers. And every year, without fail, the supervising sound editor of the film that wins the Best Sound award will receive a statuette.

Second, I can't imagine that the Academy at large wouldn't be thrilled to see one less Oscar category handed out, leaving more time for Rob Lowe to sing duets with Snow White on the air. And all of this without reducing the total number of statuettes devoted to the art and craft of film sound.

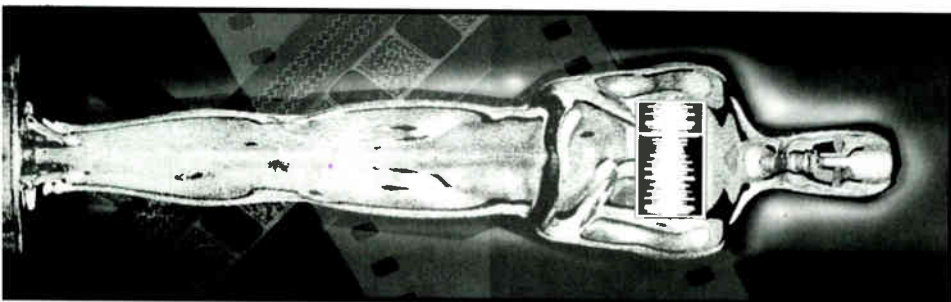
The last issue that remains is how this single-award system would affect the Bake Off. Films with good-sounding music and dialog would for the first time have a chance to show their wares alongside sound effects; in fact, it should be mandatory that each clip would have to showcase all three food groups.

I propose that ten films make the Bake Off, giving a wider range of sound jobs from which to choose the five finalists, as opposed to the current situation where seven Sound Effects Bake Off clips compete for three slots. The running time of the clips should be reduced to eight minutes so that the night doesn't get too long and those in attendance don't go completely deaf.

I am thrilled at the thought of one day sitting in the Goldwyn theater listening to the industry's best dialog, music and sound effects work, all playing together on one cone.

Please send your Oscar suggestions and comments to P.O. Box 24609, New Orleans, LA 70184, fax 504/488-5139, or via the Internet: swelltone@aol.com. ■

Larry Blake is a sound editor/re-recording mixer who lives in New Orleans for reasons too numerous to mention, although one of them would have to be Angelo Brocato's spumoni ice cream.



Wars, what with his bizarre Special Sound Effects and Creature Voices credit. If no one on the committee had worked on the film, they would have picked up the phone, called the Samuel Goldwyn Studios mix facility and received a loud, affirmative answer real quick. (Indeed, he won the first of his many Oscars that year.)

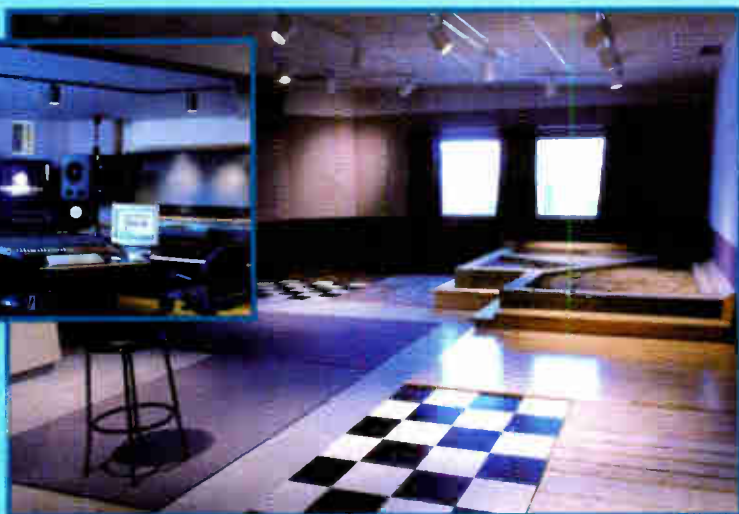
This same thing could have happened this past year had the film *Shine* made it to the Bake Off. Although there is no credited sound designer or supervising sound editor, I have it on good authority that all the sound effects in the film were cut by Gareth Vanderhope, who is credited merely as Sound Effects Editor. In my scenario, had *Shine* been nominated for and won Best Sound, he would have gone up onstage with everyone else, as he in fact did when *Shine* won the BAFTA (British Academy) sound award.

As a result of the current rules for the Best Sound award, it has happened that some people get Oscars while the people primarily responsible for the soundtrack have gone overlooked and unrewarded. The classic example is production mixers who take home statuettes for films that had over 90% of the dialog replaced in ADR. It doesn't matter

cepting it by saying that he had "truly shared the award" with his boom operator, Chris McLaughlin.

What is worse than people being unfairly included is that there is one group that is, *de facto*, always excluded from Oscar consideration: music scoring mixers. If a musical is nominated, the person who might have spent two months recording and mixing down the score (prior to the tracks getting to the re-recording stage) is left out in the rain. Speaking as someone who *doesn't* record music but who handles it as a re-recording mixer, I would be embarrassed to be nominated for a musical without at least sharing the credit with the person who did the all-important microphone placement and was more responsible than I for the sound of the score.

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Jim Keller, director of technical operations for NBC Entertainment, stands behind the first SSL Altimix Digital Post-Production System purchased in the United States, to be installed at NBC Network in Burbank. A new room is being built to house the Altimix, designed by Fran Manzella to accommodate HDTV and AC3 5.1-channel technology. The room will also be outfitted with Genelec 1037B monitors and 1094 subwoofers.



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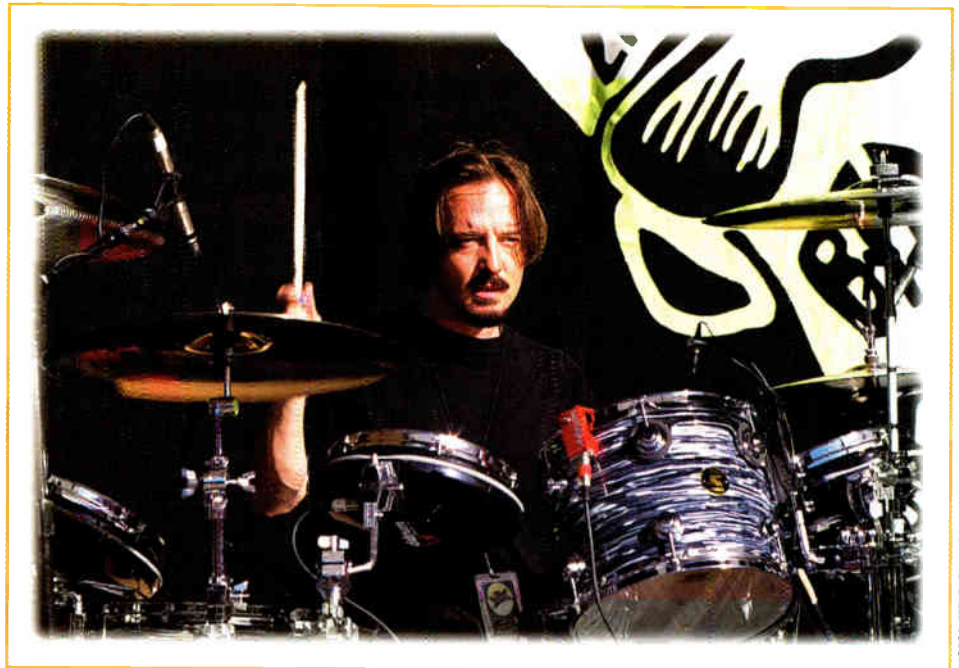
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PHOTOS: STEVE JENNINGS

BUTCH VIG

SMART ART

by Maureen Droney

"The deeper you scratch, the better they get." That's what one hip friend of mine said about Garbage, the band. She's not alone in her opinion; besides achieving major commercial success, the act was an instant hit with that surprising group of cognoscenti, studio rats. Definition? People who are singularly unimpressed with most pop music, from the jaded, long-suffering studio manager to the hyper-critical engineer/producer. "Why so?" I wondered, so I delved a little deeper into this fan base. Explanations varied, but all roads led to Butch Vig, self-described "pop geek" and Garbage's producer/engineer/songwriter/drummer, a player who'd been laboring in the musical trenches for some years before he co-produced Nirvana's *Nevermind* and was catapulted into "instant" stardom.

I caught up with the Madison, Wis.-based Vig as

he spent a week in L.A. after completing 14 months of touring with Garbage. Ostensibly on a break, he was writing material for the next Garbage album and working at Westlake Studios, where he was remixing a cut from U2's latest album with his production team, The Sonic Morticians, comprising Vig, producer Danny Saber and mixer John X.

Tell me about the U2 remix.

The song is called "Staring at the Sun." It's a half-time, acoustic guitar-driven piece,

and we went the opposite way, adding noisy loops. We sampled a segment of the bass and ran it through a fuzz box, and we found one of Larry Mullen's drumbeats on the outro and looped it, but starting it from bar three so it goes through the downbeat the opposite way from how he played it. Basically we just put a lot of noise and crazy stuff on it.

How do you get inspiration for a remix? It's not always easy to redo a song.

I don't like to stay close to

—CONTINUED ON PAGE 285



Garbage, L to R: Shirley Manson, Steve Markes, Duke Erikson, Butch Vig

EXOTIC WORLD FUSION

ETHNIC SOUNDS FOR
THE '90S

by Bryan Reesman

As technology continues to make the world a smaller place, we see more and more crossover between different cultures in all of the arts, particularly music.

Whether it's in the form of world pop, ethno-tech-no or any other sub-genre, new forms of exotic world fusion are steadily making their way into mainstream consciousness.

Mix sat down with three purveyors of new ethno-fusion sounds to learn more about their craft: Afro-Celt Sound System, the British ensemble that marries Celtic sounds with African percussion and modern dance beats; Vas, a Los Angeles-based duo who create unique vocal and percussion pieces; and Trial of the Bow, an Australian duo who combine aspects of Western and Eastern sounds. None of these groups will claim any sort of authenticity with



regards to the ethnic purity of their music. But they all share a desire to explore the world of ethnic music by experimenting with traditional instruments and music in modern contexts, and the results are often quite fascinating.

TRIAL OF THE BOW: FOREIGN WESTERN SOUNDS

The Australian duo Trial of the Bow represent an aesthetic more than a sound, and their sonic merging of

Western and Eastern sensibilities is timeless and engrossing. Renato Gallina and Matthew Skarajew began their musical odyssey with the 1995 four-song EP *Ornamentation* (Release), a reverb-drenched work that combines the Renaissance, Middle Eastern and Eastern



components also found on their new full-length album *Rite of Passage* (Release). "We're basically creating
—CONTINUED ON PAGE 289



MUSIC MINUS ONE

EDUCATION AND
KARAOKE DO MIX!

by Blair Jackson

They've never earned a Gold or Platinum album. Their musicians aren't drawing packed houses at the arena near you. They don't run full-page ads for their new releases in *Billboard*. They're an "indie" label, but not in the way you've come to know that word. They've been around for nearly 50 years, but nobody is going to fete them with a star-studded tribute.

They're Music Minus One

(or MMO), and for five decades they've filled an important little niche—turning out play-along discs and cassettes for aspiring musicians of every stripe—and have given a lot of work to engi-

neers, players and studios in the process. Oh yes, they were also one of the first companies to strike it rich when the karaoke craze hit a few years back, but don't hold that against them. And

no snickering, please—we have videotape of you singing a karaoke version of "New York New York" at your company Christmas party last year.

"Music Minus One was created with the idea of music students having something that they could play along with to pace themselves without having an accompanist or teacher present," says Stephen Roane, an accomplished musician who has served as MMO's department head of audio engineering since 1992. "Then it kind of grew into something even bigger, where instead of having a clarinet reading music with a pianist, you could have a full orchestra minus the vio-



PHOTO: MARTY KOUNITZ

Stephen Roane of Music Minus One

—CONTINUED ON PAGE 295

SAM COOKE'S "BRING IT ON HOME TO ME"

by Blair Jackson

Sam Cooke was one of the most talented and versatile singers and songwriters of the '50s and early '60s, a performer with seemingly limitless potential before he was cut down in the prime of his career. He was one of the first black singers to attract a large white audience—I should know; as a 9-year-old kid growing up in a lily-white New York suburb, I bought the single of "Cupid." Yet he also influenced the entire generation of soul singers who followed him, and he never lost his African American constituency. In some ways, Cooke is the link between the pleasing, middle-of-the-road stylings of Nat King Cole and the gritty, gospel-tinged soul of Otis Redding, who idolized Cooke and even covered a few of his songs, most notably "Shake."

Cooke was born in Clarksdale, Miss., in 1931 but raised in Chicago, where his father was a minister. All of young Sam's early musical training was connected to the church. By the age of 9, he and three of his siblings were performing together in a group called the Singing Children. When he hit his teens he joined a gospel group called the Highway QC's, who were coached by a singer from one of the top gospel groups of the day, the Soul Stirrers' R.B. Robinson. Cooke stayed with the QC's until 1950, when the 20-year-old was suddenly tapped by Robinson to join the Soul Stirrers to replace their immensely popular lead singer Rebert Harris, who quit because he was no longer comfortable singing sacred music exclusively. So great was the shadow cast by Harris that it took awhile for Cooke to find his own voice, so to speak, with the Soul Stirrers, but after he was fully broken into the group, Cooke became a bona fide star attraction. The Soul Stirrers with Cooke recorded a number of sides for Specialty Records in the early and mid-'50s, and the group sold enough records and

filled big enough theaters that by the mid-'50s various manager and record company types were sniffing around Cooke's door, wondering if he was interested in making secular records. Ray Charles had done it and become successful, and Cooke wasn't nearly as overtly *church* in his delivery as Brother Ray.

Cooke's first secular single, "Lovable," was a rewrite of one of the many songs he penned for the Soul Stirrers, so no one was fooled when it came out under the name Dale Cook in early



PHOTO: MICHAEL OCHS ARCHIVES

1957. Many in the gospel community were aghast that Cooke would record a pop song, and though he continued to tour with the Soul Stirrers awhile longer, he had in effect made the jump away from gospel by mid-year. He was signed to Keen Records, and his first single for that fledgling label, "You Send Me," shot straight to Number One and put Sam Cooke on the map permanently. With his easygoing, velvety tenor, all-American good looks and catchy songs (nearly all of which he wrote himself), Cooke couldn't miss. In a country where music was still largely segregated, Cooke managed to appeal equally to whites and blacks. There was still always a touch of

gospel in his delivery, but mainly he wrote sweet, lightweight pop tunes that were completely likable on their own merits, but also nonthreatening to people who didn't care for "colored music" or the other great "threat" to white society, rock 'n' roll.

In 1960, with several hits already under his belt, Cooke signed with RCA Records, and that marks the beginning of his fruitful association with staff producers Hugo & Luigi (Hugo Peretti and Luigi Creatore) and engineer Al Schmitt, recipient of this year's TEC Awards Hall of Fame honor. Schmitt, who was already a ten-year veteran, says, "Sam was the best. He was the easiest person I ever worked with. He and [Henry] Mancini. Just a fabulous guy. We became really good friends. Everybody loved him. And he was a total professional, too."

By the time Hugo & Luigi and Schmitt began working with Cooke, the elements of his sound were fairly well fixed. Rene Hall wrote many of the arrangements, which were often lush, string-filled affairs. Once Cooke began recording at RCA in Hollywood, Schmitt says, "Luigi ended up doing most of the production because Hugo didn't fly, and he lived in New York. If he was going to come, he'd have to take the train out, so we didn't see that much of him."

Schmitt believes that some of his own famously calm studio demeanor comes from working with Hugo & Luigi: "One of the things about them is they were very patient about things. Luigi was this great guy, with a wonderful sense of humor, and he was very relaxed. He always knew it was going to get done, and he didn't panic. He wasn't a screamer, he didn't curse. Unfortunately, some of the producers were like that—they were just maniacs. I worked on dates where a .32 automatic would be sitting on the producer's desk. And working with Sam was cool because he was so relaxed most of the time, so there wasn't any tension. Everybody had a job to do and knew what they were doing and did it well, and that was it."

Though Schmitt notes that Hugo & Luigi would make some suggestions

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from the control room, "Once we got our sounds, Sam pretty much produced himself. He wrote most of the songs, he knew what he wanted. He had a vision in his head of the way these things should be and that was pretty much it. He worked fast in the studio. We'd do three and sometimes even four songs in three hours, and then we'd usually just choose the best take and that was the record."

In the early '60s, RCA's main studio was equipped with a custom console that had 16 inputs—"four groups of four," Schmitt says. "But there was no EQ on the board and no limiters at all. I had one limiter that I'd patch in on something if I wanted it. So since I didn't have much limiting or EQ, I had to rely on microphone technique to get the sounds I wanted."

For Cooke's vocal, Schmitt always used a tube Neumann U47. "For drums back then it would vary; sometimes just one or two mics; three at the most. That Altec 'salt-shaker' was a mic a lot of us out here in California used at that point. It was good as an overhead. I also remember using a little 8-ball kind of microphone on the kick—I don't even remember what it was; it was a cheap \$25 mic in those days. But then you could buy a Telefunken for \$300! When I was in New York we used a lot of tube mics, and when I first arrived in California I was surprised that not a lot of tube microphones were being used. But I used them all the time; as many as I could scrape. It took awhile for people out here to get away from dynamic mics."

Typical of most artists of that day, Cooke's recording sessions were cut completely live, including lead vocals and strings. "RCA was a great room for strings," Schmitt notes. "There was almost never any overdubbing with Sam, unless he was going to do his own backing vocal or something. And when I did 'Bring It on Home,' that was Lou Rawls with Sam and that was live; they sang it together."

Lou Rawls and Sam Cooke already had a long friendship before teaming up for the 1962 hit, "Bring It on Home to Me." Rawls had been a singer in the gospel group the Pilgrim Travelers at the same time Cooke was in the Soul Stirrers, and after Cooke became a solo sensation, Rawls sometimes toured with him. In 1958, the two were involved in an automobile accident that nearly killed Rawls—he was in a coma for five days. Cooke even briefly managed Rawls, whose own rise to stardom began right after "Bring It on Home to Me."

"Lou was great," Schmitt comments. "That was just before he busted wide open. Just the other day I was talking to Nick Venet, who produced a lot of Lou's early stuff [on Capitol]. In those days, he would come by with Lou to Sam's sessions and I'd go up with Sam and we'd visit him when he was working with Lou or Bobby Darin or whoever. We were a couple of blocks away from Capitol and everybody hung out; it was real close. We all had the same bars we went to and so forth, so there was a real camaraderie in the recording community at that point."

"We all used to spend a lot of time listening to the top records of the day; what was happening, who was doing what. I used to listen to a lot of Columbia Records just to see how they were approaching their records. 'Let's see what they're doing with Johnny Mathis.' That sort of thing. I'd talk to their engineers and ask what they were using to get a particular sound I liked, and they would do the same with me. Nobody was keeping any secrets back then."

In those days, there weren't many secrets to keep, the recording gear was so minimal. There were no real "effects" to speak of. RCA had five echo chambers and some EMT plates, and then there were a few tricks engineers could do using tape delay. Schmitt remembers "Bring It on Home to Me" as being a very straightforward session with Cooke's band and live strings.

Musically, the song actually represented a slight departure for Cooke in the early '60s, a step back toward his gospel roots after a series of more pop-oriented confections. The blend between Rawls and Cooke is positively electrifying, particularly when they get down to trading soulful *yeabs*. Amazingly enough, the song was cut the same day another Cooke smash was recorded—"Having a Party," which was much more typical of Cooke's teen-oriented *oeuvre*.

According to Cliff White, who along with Bobby Womack (before *he* became famous), played guitar in Cooke's band, after the group had completed 13 takes of "Having a Party," there was a break and then, "Sam brought in a couple of jugs, you know. And these guys got full of that yocky-dock, man! And by the time they got around to doing ['Bring It on Home to Me'], I think that was one of the things that gave it its flavor."

The single "Having a Party" b/w "Bring It on Home to Me" was released in the spring of 1962, and both songs made it to the Top 20—the former to

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Number 17, the latter to Number 13. Significantly, "Bring It on Home to Me" was a smash on R&B radio, rocketing up to Number 2 and staying there for a month. (It was never quite able to unseat Ray Charles' "I Can't Stop Loving You," which was Number One for ten weeks.)

Cooke went on to have a number of charting tunes the next two years, including "Send Me Some Lovin'," "Another Saturday Night," "Little Red Rooster" and "Good Times," but his escalating career was tragically ended when he was shot to death by the night manager of a Hollywood motel where he'd had a liaison with a young woman who stole his pants and vanished—Cooke apparently ranted at the manager about the whereabouts of the woman so aggressively that the manager, fearing for her life, fired a shot at Cooke in what she believed was self-defense. A sordid end to an incandescent life. More than 200,000 showed up for his funeral and filed by his body. As often happens, the hits kept coming for Cooke posthumously—in 1965, "Shake" made it into the Top 10, and his socially conscious anthem "A Change Is Gonna Come" made it to the Top Ten of the R&B charts (Number 31 on the pop charts). And in the years since his death Cooke has become one more pop icon in the crowded pantheon—forever smiling and handsome and unquestionably cool. ■

—FROM PAGE 280, BUTCH VIG

the original version. I prefer to take it in some new direction. If it's quiet, I'll try to make it more aggressive. If it's noisy, I'll try to make it more poppy. I really enjoy doing it—actually, remixes are the whole reason that I got interested in forming a band again, and got Garbage going, because Steve Markes and I started doing remixes and we started writing together again. You basically rewrite a song when you remix, and you're also able to utilize technology to bring in different elements of pop and techno, hip hop, punk rock and stuff. This [for U2] is actually a quick one—we did three mixes in three days. Usually when I do a remix it takes me up to a week, because I don't know what I'm doing when I start. You have to try stuff. We usually record a lot of stuff, and then it's by trial and error, and juxtaposition of different kinds of elements, that something starts to make sense.

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Best Mics on Record



at your own Smart Studio in Madison. How did you get from there to co-producer on Seattle-based Nirvana's *Nevermind*?

During college I was in bands, and there were no studios around and we wanted to record our own music. I met Steve in film school, and when we graduated we pooled our resources, bought an 8-track, and started recording all these punk bands that were in the scene at the time. We progressed to doing stuff for Touch & Go, Twin Tone, Mammoth and a lot of other indie labels.

We have analog guitar pedals that we've modified and that you probably shouldn't run hot signals from tape through—we run drums through 'em, everything from guitars to vocals and bass.

That's how I met Sub Pop's Jonathan Poneman—they called because they'd heard some Killdozer records I'd done. It was: "I love the sound of your records, and I know you're cost-efficient and easy to work with," and he started sending me bands. I did the Fluid, and Tad, and a couple of singles for Laughing Hyenas and Sonic Youth, and a single for Smashing Pumpkins. It just kind of escalated, maybe because I'm such a pop geek. The bands I was in with Duke [Erikson, fellow Garbage member] were always very melodic in the guitars and the vocals. Even when I was recording noisy bands I always tried to really focus whatever melodic elements they had.

*Were you involved in song arrangements on *Nevermind*?*

Sometimes. Some of the songs didn't need any arrangement work at all; Kurt [Cobain] had such a great sensibility of how to structure a song. "Teen Spirit" we worked on because it was pretty long when we came in. We made it tighter, so it flowed better. The little tag at the end of the chorus Kurt had originally as an outro piece and we put that in. We cut the chorus down to six pro-

gressions and dropped that tag in for a little hook transition at the end of the chorus back into the verse. "Come as You Are" was also kind of long, and we worked on that. Kurt would sing a melody two or three ways and ask me what I thought. But most of the time he had good instincts, or the band had good instincts for what would work. It was very collaborative.

What was tracking like? Did you do lots of takes?

Most of the songs were the second or third or fourth. "Something in the Way" took a long time. We tried to track it as a live band and it wasn't working. Kurt finally came in the control room out of frustration and was sitting on the couch playing his five-string acoustic, barely singing so it was almost a mumble. And he kept saying, "This is how I hear it in my head." So I turned all the fans off, unplugged the phones, and he sat on the couch and I recorded him doing the acoustic and the vocal right there. Then we went back and overdubbed the drums and bass, and we put cello on, and background harmonies and things. That was kind of hard, because it's difficult to put drums over someone who's played an acoustic track—there's that ebb and flow to the feel of it. But Dave Grohl was great at it. The hardest thing for him was to hit the drums really lightly; we wanted a delicate sound on that song. And he was used to absolutely pummeling the drums. I remember we were yelling at him, "You've got to play wimpy!" I think "Lithium" was the only track that Dave played to a click on, because for some reason it was going all over the place. He'd never played to a click, but he ran it down once and he was fine with it. That's when you know a drummer is good, when they can do that the first time and not bat an eye.

*I've read that Kurt Cobain felt that the completed *Nevermind* was too polished. Was there ever a chance it wouldn't come out the way it did?*

He didn't feel that way at all at the time. I think that feeling was a result of selling 10 million copies. It's hard to retaining your punk integrity when you're the biggest thing since Wonder bread.

How did you come to get Andy Wallace as the mix engineer?

Early on, the band and I had mixed a few tracks, and none of us were too pleased. With all of the band mixing in the studio it was much more punk rock—the vocals were way down in the mix, the guitars were really loud, it was really, really bass-heavy, but it didn't

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sound very good. You couldn't hear the singing or the definition on the instruments. And everybody went, "This is not happening." We decided to get a mix engineer and Geffen Records sent me over this list of something like 20 engineer/producers, remix guys, all these names, like Scott Litt, and Kurt would look at it and say, "No, I don't want to sound like R.E.M.," and Ed Stasium, "No I don't want to sound like Smithereens," and he ran down the whole list, 15 names with their band credits behind them and Kurt would just go "No, no, no." And at the bottom of the list was Andy Wallace and it had Slayer behind it and Kurt went, "That's who I want!" Kurt was into that record *Reign in Blood* by Slayer that Andy had done.

You work in collaboration a lot, co-producing, and you've said that you enjoy the conflicts that can happen with a band—how people can get at odds with each other creatively. How do you keep those conflicts from escalating and being destructive?

I don't know that I necessarily want conflict, or look for it, but sometimes if a record is going really easy I start to become a little nervous that something is wrong. I don't deliberately force issues or conflict, but a lot of times to get to where the vision is coming from in the band or the artist, if you push them you may get them to do things they are not aware of or ready for. And sometimes that can be awkward and tense. But a lot of times that tension makes for better albums, and for better music. But I'm generally pretty easygoing; that's part of my Midwestern upbringing—being really pragmatic and low-key—I can deal with a lot of stress in the studio. When I ask someone to do something, I'm not intimidating about it. I'd rather that they just make up their minds themselves: "Yeah, that sounds cool, we should try that." But sometimes it can be awkward and tense. I've worked with a lot of artists who can be very driven and intense, and sometimes there are days that you just say, "Let's forget about today." And then you come back tomorrow and start it up again.

Your projects really seem to get it right with vocals and guitars, which can be difficult with all that midrange flying around. And especially with Garbage, because Shirley Manson sings in a low range a lot and is a more delicate singer. How do you make vocals cut through?

It's a combination of things. On the Garbage record, there were so many

tracks of loops and layers and sound effects and just noise—there comes a point in the mix process where you just have to start taking things out and deciding what's most important. And obviously when she's singing, that's most important. You try to work with everything else around it and still have her become the focus of attention.

There's definitely a lot going on on the Garbage tracks.

Somehow we were able to keep a lot of detail in it, and on repeated listenings of that record you hear little things popping in and out that you maybe didn't hear the first time.

There's a lot of stuff in there—we deliberately set out to do that and I'm sure a lot of people think it's over-produced. But we wanted to get away from the organic approach: "Guitar, bass and drums is what we do live so let's record it that way." We'd never played live as a band so we just threw that concept out the window and decided to make as interesting a record as possible. A lot of the reason it works is that when I record and I start to get a lot of things in the track, I'll filter sounds, or use different kinds of narrower EQs on things. So if you hear something in the track it's gonna sound

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full-bodied, but if you listen to it on its own, it might have a big chunk of frequency missing. By narrowly placing things and finding the right kind of frequencies for them you can put a lot of things in the mix.

So you might use filtering more than adding EQ?

Yeah, we have this old Harrison console—actually two of them from the '70s that we soldered together to make 64-in and upgraded quite a bit. The first one was from the Osmonds' studio—it's autographed on the back. It originally had Allison automation, but we took all that out because I hate VCAs, and put Uptown moving fader automation in. We also had work done to the EQ and the preamps and it sounds great. The EQ is very soft—you can crank something and it sounds really smooth. It's also got these high- and lowpass filters that are really extreme—I love them.

Shirley's vocals feel like they were done without headphones.

Some of them. I know "Milk" was sung with a [Shure] 58 in the back of a dark control room about midnight. We did that whole thing really fast—it was the last track we had recorded for the record. We already had about half of the songs mixed, and Shirley was strumming an acoustic guitar one night and had the idea for the song. We decided to try and record it right away, so I just got a loop going, Steve played bass and Duke played a Mellotron and we set up a scratch vocal mic and did it in about 45 minutes. And then, Garbage being Garbage, we recorded vibes, clarinet, piano—we had all these droney guitars, all this stuff. But I had made a rough mix that night that I had on cassette, and two weeks later when it came time to mix it, I played the rough and said, "Man, it should just sound like the way we recorded it." So it became the only song that we didn't tamper with—there's a lot of information on all the other tracks and we decided it would be nice to end the record with something bare and minimal.

Did you think Garbage would be a hit? No. Number one, because I had some notoriety as a producer we thought that people would look at it cynically. I mean, if I heard about three producers getting together and putting a record out, I would think, "Ah, these guys are egomaniacs." But actually, we were always in bands and were songwriters years before we became engineers and producers. And, as I said, I'm a super pop geek, I love well-crafted songs. And then, we wanted to make something

that didn't sound like the *au naturel* rock—even though I love that music, and have worked with a lot of bands. We wanted to do something different and to be able to utilize the technology. I think that we thought we'd get trashed, that people would give us a lot of shit. And we did get a few reviews where people got their digs in, but for the most part I think people were really surprised when they heard the record. I think they thought it was either going to sound like Nirvana or Nine Inch Nails. Industrial, heavy, super-intense.

Some specific Garbage questions. On "Supervixen," are the stops in the main instrumental riff digital edits?

Originally, that riff just flowed through the stop. It was a twangy, almost rockabilly thing, from the demo I brought in, which was basically that riff and some acoustic guitar chords. At one point we were recording and put the machine into auto loop and it kept picking up on that beat—somehow it dawned on us that it'd be cool to accentuate that pause. Of course because things played through, in the mix we had to mute a ton of stuff. And then after we mastered it, the hole was there but there was still tape hiss, so in Sonic Solutions we dug a little "V" right in there where it goes to a black hole for a nanosecond.

In general, did you splice different mixes together?

Yeah, a lot of times when you hear scene changes, the verse or the chorus will have significantly different drums or guitars or maybe a different stereo feel or things in Shirley's vocal. We did a lot of mixes of the songs, and then what we did was master them and put them together in Sonic Solutions postmastering. There's even a couple of rough mix segments in "Milk," and the whole outro of "My Lover's Box" was a rough mix. Scott Hall did a great thing there: Instead of a blunt cut, he did a four- or five-second crossfade so the mixes are just slightly off—they phase, and you hear the most amazing deep flange. That's one of my favorite parts on the record because I always forget it's there, and when it comes up I go, "Whoa."

Is that the Smart room sound on the snare in "Vow"?

No, I took the snare and split it and ran one track of it through a SansAmp and then through a flanger with a slow warble and triggered that from the acoustic snare and then mixed it in 50/50.

So you guys use lots of patch cords.

Yeah, I feel sorry for Mike Zirkel, the chief engineer at Smart, who'd document the mixes and keep track of what

we were doing—we're not very methodical in terms of keeping good notes. Sometimes it'd take him half a day to figure out how we had everything hooked up. I don't know that we could do a recall in an hour.

Do you have any favorite gear lately?

My favorite mic lately that we used for vocals is an ELAM 250. I used that on Soul Asylum, and [on the Garbage CD] Shirley sang on that on about two-thirds of the tracks. It brings the breath out on the top—with the tube compression and stuff, it's an amazing sound.

We have a lot of analog guitar pedals that we've modified and that you probably shouldn't run hot signals from tape through—we run drums through 'em, everything from guitars to vocals and bass. We have a lot of old tube gear, and I'm particularly fond of Summit stuff; I like the limiters a lot. I use the TLA 100, which is a mono compressor that sounds great on guitars and vocals. I also use the SansAmp a lot for processing stuff, and we use Kurzweil and Akai S1000 samplers.

Is performing and touring more fun than producing and working in the studio?

I'm kind of itching to get back in the studio. We toured for 14 months. [Being onstage] is the best part, it's a huge adrenaline rush you can't get in the studio. But the traveling, the lack of sleep, the junky food—and we did a ton of interviews; we promoted this record as hard as any band I've ever known that's gone out, because we're proud of the record. But it was hard work.

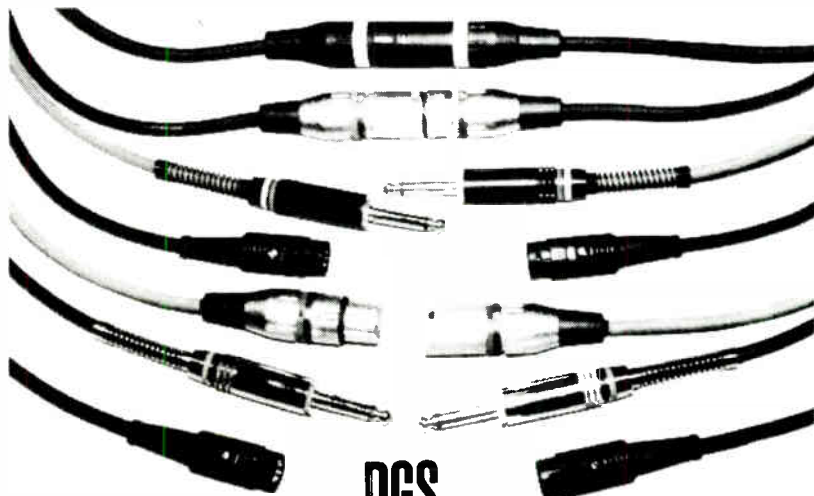
[Since this interview was conducted, Vig has completed a remix of Beck's "Jack-ass" and has begun work on a new Garbage LP.] ■

—FROM PAGE 281, EXOTIC WORLD FUSION

Western music; we're just using Eastern instrumentation," remarks Gallina.

Passage is a more fully realized work than its predecessor. The reverb is still there, but it does not permeate the recording as much. Whereas *Ornamentation* sounds like it was recorded in a massive temple, the new album has a more intimate feeling, and the music is more wide-ranging, from the dark ambient drones of "The Eyre of Awakening" to the dense percussive tapestry of "Ceilidh for the Sallow Ground," which features a shenai (an Indian flute) calling out over a gradual crescendo of intense drum rhythms.

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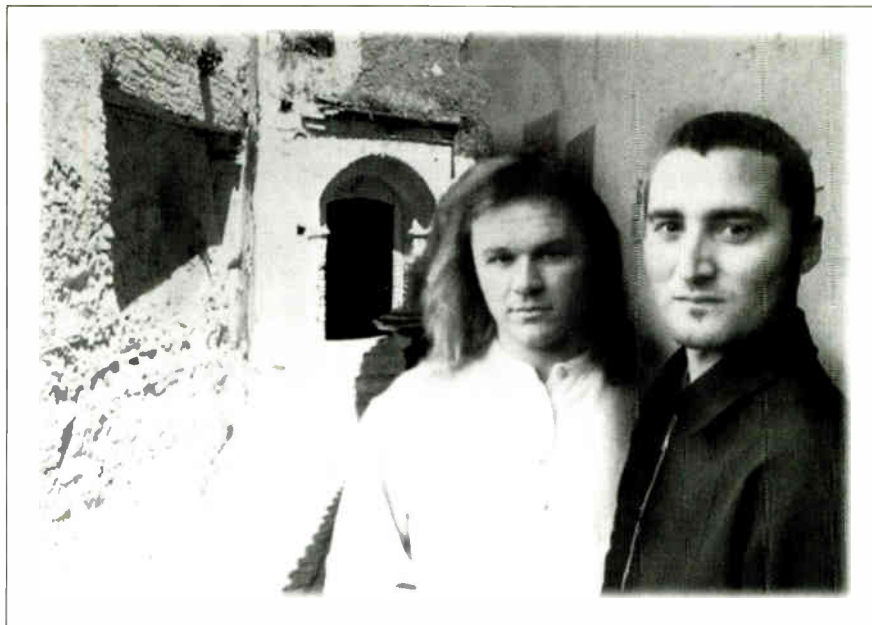
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Trial of the Bow

This time out, Gallina and Skarajew recorded over a six-month period in 1996 at Toyland Recording Studios in Melbourne, Australia, which is run by engineer Adam Calaitzis. Gallina and Skarajew felt that when they recorded *Ornamentation*, they rushed themselves in the studio, trying to record too much too fast. This time they worked in four- and five-hour blocks spread out by a few days and focused on one song per day, rather than attempting to work on two songs in an eight-hour session.

Though Toyland's control room is equipped with a Mackie 32'8 console, Calaitzis says that "most signals were recorded straight to tape on an analog 24-track Tascam MSR24 via a Neve Prism input module—which has a mic pre, gate, compressor and EQ—then into either a UREI 1178 or 1176." All the overdubs were recorded that way, and "the songs that were recorded as a group were tracked through the Mackie." The main mics for the album included a Microtech Gefell MT711S for vocals and some instruments, an AKG C414 and D12 for the "big low drum," and the Neumann U87 and KM84 for most other instruments. A Milab XY-82 stereo mic setup was used for a few specific applications.

When writing songs, Trial of the Bow work in an improvisatory way. "We actually start with a very, very basic melody and a drum pattern/rhythm," says Gallina. "From there we try and add more instruments to the melody and make sure we find the right instruments to create the mood for the song. In the studio, there's a lot of


spontaneous stuff." After recording two or three tracks, they would evaluate them to see how the parts fit together or if some might work better in a different place.

A key process in the creation of a Trial of the Bow song is layering the tracks of different instruments, in this case everything from frame drum to dulcimer to acoustic guitar. "It's always interesting recording those instruments because you can achieve so many sounds with them, by adding reverb and delays and stuff like that," says Gallina. Then there are the vocals, which often have a rather otherworldly quality. "For some of the vocals we did, we were standing in an enclosed hallway and the microphone was at one end of the hallway and I was at the other end," recalls Gallina.

Of the 24 tracks available, Gallina estimates that they used 12 or 13 on most songs, with the "Sallow Ground" song using the most. "That song was a primary example of layering," he notes. "We started off with the basic rhythm, which is played on the darabuhka, then we recorded five or six percussion tracks on top of that. The whole song builds up to a really big finale. The tempo shifts from rhythm to rhythm, and toward the end, it's so chaotic and fever-pitched, it just makes you want to turn it off."

As always, reverb played a key role in the album. "We love reverb," laughs Gallina. "Too much, I'm afraid." He admits that their EP suffered from too much of it, with the instruments practically drowning in a sea of echo and giving the project a mushy sound. This

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time out they attempted to use reverb more moderately. And where does this love for reverb come from? "It definitely comes from listening to Harold Budd and Brian Eno," says Gallina, who also mentions David Hykes and the Harmonic Choir, particularly their recordings of harmonic chanting in an echoing temple space, as influences.

According to engineer Calaitzis, his main processing on *Passage* was "my pride and joy, an old Lexicon 224X, which I prefer to any of the newer Lexicons. This was used quite a lot on this recording. A couple of songs had a Yamaha REV5 on vocal, with my special patches, and a lot of the percussion was treated with a Roland SRV-2000, another one of my favorites. There was even a MidiVerb2 in there somewhere."

The album was mixed on the Mackie to a Sony 2300 DAT. "Automation was via Niche audio control modules running from Logic Audio," states Calaitzis. The album mastering was done by Dave Shirk and Bill Yurkiewicz at MWorks in Cambridge, Mass.

Rite of Passage shows Trial of the Bow's style of East-West/modern-medieval fusion maturing. It's a style of music rich with possibilities.

VAS: ORGANIC CHEMISTRY

Greg Ellis, percussionist and one half of Los Angeles-based group Vas, calls their music "alternative world." He elaborates: "There's an edge about it. I just read an interview with Brian Eno, and he was saying how when punk came in, you could tell it was real in the same way that when you see gritty video footage, you get a sense that the grittiness makes it real." Relating that to Vas' music, they avoid using the studio gloss that's common to many world music albums, preferring to record in the moment. "It's a very low-tech way we lay this stuff down. We don't rehearse a song forever. We record it immediately and learn the song as we're writing it. Once we tap into and share this common muse, it just goes."

His debut with musical partner singer Azam Ali is entitled *Sunyata* (Narada), and the album is a wonderfully atmospheric melding of Ali's beautiful voice (she sings in her own designed language) and Ellis' hypnotic percussion. Recorded in their house, *Sunyata* defies easy description, and its multiple layers slowly reveal themselves over time. The strong grooves make the music accessible even as it takes on a mystical presence.

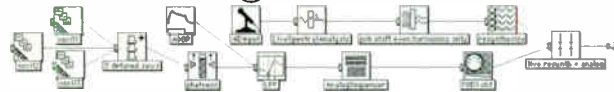
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Ali's enigmatic vocal language gives listeners an unusual element to tap into, drawing on the listeners' imaginations to interpret the pieces in their own way. She explains that part of her desire to avoid singing lyrics is that "I really don't think I have that much to say that's so important that the whole world needs to hear it. You're going to be reaching so many people, so you have to have something to say." But she does make a statement by challenging the mainstream notion that songs need words. The voice is her instrument, and she showcases it well.

Sunyata was recorded on two Alesis ADATs with a Mackie 24'8 board, and essentially one mic, an AKG C-414. The duo approached each song differently, often starting with a vocal and drone from Ali, over which Ellis would create rhythmic patterns, a reversal of the way Ellis had worked on so many rock projects. Ali's vocals were recorded at different stages of recording and often layered. In fact, alternate vocal takes were sometimes used as harmonies once the pieces were shaped.

"You have to go with the whole Michelangelo concept," explains Ali. "Just take away the unnecessary pieces, because it's already there. We just would stumble upon these things. Like coming in a beat later and playing it back, and wow, those two notes just sound so good together." Ellis adds that "a lot of the breaks in the songs were mutes that we were playing around with that just seemed to work."

While he has been in many studios as a musician, Ellis is not a professional engineer. "I engineer completely by ear," the percussionist admits. "I know the sound that needs to get to tape, and I have the perseverance to do it long enough until I get it. A terrible record can sound great, but I don't think a great-sounding record will ever save an album in the sense of material. Once we get the performance down, the sound is secondary."

Ellis found little difficulty in recording Ali's voice. "To me, any mic with her voice will work." For his various hand drums, Ellis placed the 414 about two feet above his lap, then switched drums as needed, which included a dumbek, udu and tambura. "Maybe I would move the mic within a few inches, but these drums sound so beautiful, you don't really have to do much to them; just get a pure signal to tape and that's it."

Sunyata was mixed on an SSL console at Music Grinder Studios in Los

Angeles by engineer Dan Harjung, who notes, "The most difficult thing was that it wasn't recorded with any compression, and Greg is not a recording engineer, so he wasn't able to identify problems in the way that a normal recording engineer would. There were some level problems and some distortion, and some of the punches were not very good. So that was the biggest problem. Otherwise, he did a great job recording."

"They really wanted to keep a very organic sound, very true to the music and very true to what they believe in," Harjung continues. "So mixing it really wasn't a matter of coming up with a lot of cool things and making it real slick. It was just a matter of finding the right place for everything to work together real well. Greg didn't have any automation at his house. He doesn't want to be dealing with hitting mutes on and off whenever they're coming up on 16 or 24 channels worth of stuff, so he only records parts where he wants them. That made it a lot easier on my end when it came to mixing, except smoothing some of those transitions in and out."

The album was mastered by Trevor Sadler at Narada's in-house facility using Sonic Solutions; the analog chain comprised a Massenburg parametric EQ, a Summit compressor and an Apogee AD1000 analog-to-digital converter.

Ali and Ellis proudly note that no click tracks were used (other than those that Ellis created from live playing), and the only sample is the harp used on "Refuge." The finished work is warm and inviting, an enchanting and trance-inducing union of voice and drums.

AFRO CELT SOUND SYSTEM: CELTIC FUSION

Simon Emmerson, producer, programmer and guitarist for British-based Afro Celt Sound System, calls his group's music "global trance." On Afro Celt's debut, *Volume 1: Sound Magic* (Real World), he and his musical companions take traditional Celtic and African instrumentation and wrap them in modern world fusion and dance clothing, as exemplified by "Sure-As-Not," a tune that starts off in a Celtic dub vein before transforming into a Celtic jungle song.

After working on some West African projects in the early '90s and consulting with renowned uilleann pipes and whistle player Davy Spillane, who "pointed me in the direction of the Afro-Celts and said this is really worth pursuing," Emmerson spent the next four or five years summoning the courage and the inspi-

ration to embark on the project. "It's not something to handle lightly. I really didn't want to resort to the European style of world music that samples a couple of bars of some exotic outpost of the world and then puts an easy, comfy club beat underneath it."

Combining his love for both world music and electronic dance projects, Emmerson aspired to create an album on which the technology did not dominate, but instead became an organic part of the music. "We wanted home-grown samples that we had recorded ourselves, and which we had grown within the context of the track as opposed to listening to stuff off of sample CDs," he says. "I think that's what gives

**I didn't want to
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puts an easy,
comfy club beat
underneath it.**

—Simon Emmerson

the album an earthy sound as opposed to the more synthetic sounds of other contemporary world music albums such as *Deep Forest*."

The bulk of the recording was done during the semi-annual recording week at Peter Gabriel's Real World studio, where the facilities are opened up to deserving new musical projects and performers. Emmerson got a couple of backing tracks together, as did recording engineers/programmers Martin Russell and Jo Bruce; this was done as the group was scheduled to perform at the WOMAD festival prior to recording for the first time. This proved challenging, as the band had never played live, but they pulled it off. "After having done this gig, which got an amazing reaction given that it was a fairly scratch thing musically, we went down to Real World," recalls Russell. They took the

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Afro Celt Sound System

PHOTO: JONATHAN OPGONG WIAFE

contents of his London studio with them.

Emmerson wanted to keep things focused in the studio. "I didn't want things to degenerate into an unfocused jam, which I think a lot of world music can become," he says. "I wanted it to be song-based as well, which is a real challenge. Everyone in the band had a very strong melodic tradition, and it was fairly well-planned, but there were moments of pure spontaneity as well."

To record *Sound Magic*, Emmerson, Russell and Bruce implemented an open-door policy. "We were recording from the minute people came in, catching their first reactions to the tunes, from people tuning up to when they walked out the door," says Russell. Everything was recorded onto a SADiE hard disk system and later manipulated in the studio. Russell draws the analogy to a trawler throwing a net out to sea and pulling in all sorts of exotic fishes to be sorted out.

The trio used an AKG tube mic for mono recording and Neumann KM84s for stereo, and in one instance B&K 4006s set fairly high overhead to record a folk band. Russell used a Crookwood Paintpot preamp, "basically a stereo microphone amplifier which looks literally like a paint pot." Running through a Mackie rackmount desk and either the Paintpot or a valve front end, Russell monitored output levels through the SADiE. "I was using a Summit Valve EQ and a TLA Valve EQ and mic outputs on them. A combination of those and the Paintpot, so everything was kind of valved up at source, which was of reasonable benefit, because the sounds were quite pleasing when we

got them back here. At the time, it was so fast and furious, it was very difficult to keep track of what you were getting. The main thing was to just keep the thing moving." The group recorded a wide variety of instruments, from African kora to Irish bodhran.

Russell notes that the 8-foot-square iso booth at the studio possessed a "boxy" sound, so they avoided using it and instead close-miked most of the instruments and vocals in the main room. Capturing the singing didn't prove to be too difficult, either. "The vocal stuff was very fresh and spontaneous, essentially one-take performances which we tied the backing tracks to," states Russell.

Once the recording process was over, Emmerson, Russell and Bruce spent three months reworking the material on the SADiE, programming new parts and rearranging older ones, working from the viewpoint that if they had a tempo and sync reference, they could move music around and structure songs accordingly. "What we tried to do, more than anything, is keep the spirit of the original performances, although we definitely moved things out of context," Russell says.

Though they primarily worked off the SADiE, Emmerson and company also used sequencers running on other computers. "We laid the stuff onto 24 tracks of ADAT and had various things running live on the mix," explains Russell. "Some of the textural stuff was run live from an MPC60 sequencer [with MIDI] so Dave [Bottrill] would have some options when he mixed it.

"Everything was run as a piece of live SADiE/programming material until the point where we had to actually pre-

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pare it to be handed over and mixed, because it was going to be mixed by Dave down at Real World," he continues. "So we actually delivered it on 24 tracks of ADAT with a few things running live in sync with that. Wherever possible, when Simon and I have done anything, we like to leave stuff as up in the air as possible to retain tweaking, timing and tuning options."

Sound Magic was mixed on an SSL E console. During compiling, digital editing and crossfading, Russell came back in command, shortening some tunes with "soundscape crossfading." The team assembled a compiled pre-master and took it to Metropolis Mastering, which also uses SADiE, easing the mastering process.

Afro Celt Sound System's debut deftly incorporates traditional musics in modern contexts, proving that you can merge the past and present without sacrificing integrity. ■

—FROM PAGE 281, MUSIC MINUS ONE

lin, with the student, obviously, playing the violin part, which was on sheet music that came with the record."

The Music Minus One catalog contains several hundred different selections, tailored for players of 16 different instruments and a variety of skill levels, from beginner to advanced. Though the majority of the selections are geared toward classical musicians, there's also quite a bit of jazz instruction available, and for singers, there's a good selection of new and classic Broadway shows to sing along to. Dating back to the '50s, MMO brought in highly skilled players to record: top orchestras like the Stuttgart Festival Orchestra and the New York Philharmonic, and in the late '50s and early '60s, well-known jazz players like Zoot Sims, Stan Getz, Jimmy Raney, Clark Terry and Hank Jones. (MMO founder Irv Kratka was also the man behind the Inner City jazz label, so his connections in that world ran deep.)

Stephen Roane, who has had his own studio in the picturesque New York suburb of Irvington for many years, originally hooked up with Kratka to transfer the original analog MMO and Inner City masters to DAT. "He had 700 albums he wanted transferred," Roane says. "It was supposed to be a two-month job, but it lasted five years," eventually swelling the catalog to about 1,000 titles. And during that time, Roane's responsibilities kept increasing. He re-

mastered hundreds of titles for CD and supervised the recording of many new ones. At the same time, solos were added back into some discs that had previously left the solo space for the musician at home playing along. This way, Roane notes, the student, instrumentalist or singer can now have a reference as to how the peer performance should sound. "With the soloist panned to the right side, the listener can raise the balance of the left side to eliminate the soloist," he explains.

One instance in which Roane added a new solo part was on *For Guitarists Only: Jimmy Raney*, which featured an all-star jazz group playing Raney's arrangements on ten standards. Roane says, "We had these great jams, and the only way you could really play with them was if you were on a very high musical level." Since Raney passed away, Roane had to find a new guitarist to add to the written heads and to solo, eventually settling on Jack Wilkins, who not only had been a friend of Raney's, but had owned the original 1962 MMO album to play along with.

"For this new recording, which was engineered by Joe DiGiorgi at Headline Sound in New Rochelle, New York," Roane says, "Jack played a '62 Gibson L-5 through an Anthony DeMaria tube direct box to the console, and an AKG 460 microphone was placed six inches from the end of the fingerboard. A warm, natural sound was achieved by blending the two elements. The stereo tracks from the original recording were sent to a DA-88 along with the overdubbed guitar tracks, bringing these two guitar legends together after 34 years. No editing was done; complete sections were punched in."

Though MMO had its own studio on 61st Street in Manhattan for many years, and later used Inner City's facilities, now they book time in a number of different large and small commercial facilities—Headline Sound most of all. However, most of the recordings made for the company's lucrative karaoke division—Pocket Songs—are cut in project studios.

Pocket Songs' catalog lists about 11,000 titles, and, because of the nature of the karaoke beast, new songs are being recorded all the time—people want to sing along with what they're hearing on the radio *right now*, not just hits from the past (though they want that, too.) MMO has a large stable of musicians from different genres who play and sing sound-alike recordings of popular songs with varying degrees of verisimilitude.

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"It's such a broad range of styles that not every one of them is going to sound just like the original," Roane says. "I mean it's Whitney Houston and Frank Sinatra, Bonnie Raitt, Tom Jones, Broadway shows, The Mavericks, the Box Tops; you name it. There's a guy who does the Box Tops *and* James Taylor. We have a guy who does Neil Diamond and Julio Iglesias—incredible. We've got another guy who does Sinatra better than Sinatra, but then some of the early Sinatra stuff the company did sounds like Uncle Louie. But then, we don't really have anybody who can do Mick Jagger."

Also, Roane notes, "Some artists don't want to be associated with karaoke—people like Bruce Springsteen, Paul Simon, Mariah Carey. I respect that. By law you can record anything and pay royalties, but it's up to the artists if you can print the lyrics, so we just don't print the lyrics for their songs."

Recently MMO/Pocket Songs has also branched out into licensing some of their sound-alike songs for films and TV programs that want to use a particular song but don't want to pay the high rates using the original artists' version of a tune. "Usually it's not going to be too prominent in the mix because it's not the original artist," Roane says, "but on 'Mony Mony,' which we licensed, our version sounds just like Tommy James & The Shondells."

Just as Roane has gone back and added solo parts to many of the MMO discs, he's also overseen the recording of lead vocal tracks, heretofore missing, for many of the Pocket Songs. Between the transfer of old titles from analog to digital, mastering tapes for CD release and an unending stream of new recording, Roane is a busy man indeed. Yet somehow he also manages to find time to write and record his own music, perform with a variety of jazz musicians, and teach both privately and at Pace University and the Westchester Conservatory of Music. Basically the guy lives and breathes music.

Which is why he can master six Dixieland MMO albums—listening to each piece on it four times for each of six instruments; a total of 24 listens to each song—and not go completely insane. "It gets a little rough if you hate a particular tune," he says with a laugh. But if that MMO disc is going to make that student in Cleveland or Munich or Tokyo play a little better, then the effort is worth it. And as for recording and mastering the Kenny Rogers and Aretha Franklin imitators? Hey, it's a living... ■

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COAST TO

L.A. GRAPEVINE

by Maureen Droney

Planet One Music Productions has moved into hyper-drive. If you've watched *Hard Copy*, *Real TV*, *Entertainment Tonight* or The Discovery Channel's *Amazing Tails* lately, you've heard music created by these



Planet One partners (L to R) Bob DeMarco, Kenneth Sean Rogers and Michael Egizi

guys—a soundtrack production company comprising partners Bob DeMarco, Michael Egizi and Kenneth Sean Rogers. No overnight success, the company has been in existence since '91 (turning out tracks for commercials, trailers, PSAs, series and features) but in the past year has stepped up production with work for several hit weekly series.

Curious about how a triumvirate of musicians manage to work together, I stopped in at DeMarco's home studio, where the three were ensconced writing a pilot theme for the upcoming variety series *Off the Wall* starring raconteur/race car driver John Force.

"In some ways we're a lot like a band," explains Rogers. "We come from completely different musical backgrounds, and we each bring a different element. Bob's main instrument is guitar, Michael's is keyboards, and I do a little bit of everything. There's very little redundancy in the three of us."

Egizi, whose past experience includes being a producer, composer and music supervisor for the Walt Disney Co. and stints as keyboardist with Richard Marx, Cher and Brian Wilson, concurs. "Sometimes it seems like we have four people who work in the company instead of three," he says. "There are three distinct personalities and styles that show up when we write cues separately. Then, when we write together, it's like there's a fourth person."

"That's true," laughs Rogers, a recording artist on the EMI label who also spent time working at Lion's Share and Capitol Recording studios. "Seriously, though, there's not much stepping on toes creatively because we respect each other's ability. We realize we're very fortunate to have built something where the sum is greater than the parts."

The team works out of separate home studios,

—CONTINUED ON PAGE 302

NY METRO REPORT

by Dan Daley

U.S. Getting Re-Pro-ed? After several years of trying, it looks as if the UK-based producers' guild Re-Pro, part of the APRS, may finally be gaining a foothold in the States. L.A.-based engineer/producer Ed Cherney has taken on the task of getting a U.S. version of a producers' organization started here, initially with help from former New Yorker and voice-over performer Beth Wernick (Wernick, however, has since left the organization).

Many top producers have evinced mixed feelings about joining such an organization. They are concerned about how it could limit the ability of the most sought-after producers to negotiate fees. But some of the highest potential benefits would come to remixer, a genus of the producer species that has a high concentration in New York, still the dance capital of the Western world.

Producer/mixer Tony Maserati (Mary J. Blige, Mariah Carey) has been running his Allied Pool, an engineers' cooperative, for more than two years and says

that he welcomes a pro-active effort on a national level that can complement the grass roots ventures such as his in New York. "Everyone knows that remixers often create new melodies and entire new tracks," he says. "It's important that they start getting points and credits on products that they've created. And it would also be good if a

producer's organization can help promote some of these people."

Re-Pro's initial attempts at organizing the U.S. producer, engineer and mixer community began two years ago at the AES convention in New York City. "We attended AES under the auspices of Re-Pro International," said Re-Pro's chief officer, Peter Filleul, who held a meeting at the Hilton Hotel that was attended by approximately 40 people. A similar off-site meeting, co-sponsored by BASF, was held at the Peterson

—CONTINUED ON PAGE 306



PHOTO: ALEX TOWNE

Plotkin Music & Sound opened this new studio, designed by Francis Manzella Design Ltd., last January. Offering a view over midtown New York's Seventh Ave., the room is equipped with a Yamaha 02R, a Pro Tools system and Tascam DA-88s. Acoustic panels and diffusors are by RPG.

COAST

SESSIONS & STUDIO NEWS



At Sorcerer Sound in New York City, Love Among Freaks cut basics for their new project with engineer Tim Conklin. Behind the board are (L to R) Michael Lau, producer Bruce Buchanan and assistant Mark Mitchell. At front are bandmembers Bobby Pantella, Steve Smyth and Alexis Lehman.

Jam PolyGram with engineer Tom Soares...Swamp Boogie Queen tracked their N2K Encoded Music debut at Bear Tracks Recording (Suffern, NY) with producer Phil Ramone, engineer Elliot Scheiner and assistant Steve Regina...At Philadelphia's Sigma Sound Services, Interscope artist Mya Harrison tracked, overdubbed and mixed for her next one with the production team of Myron and Alex, engineers Gordon Rice, Mike Tarsia and David Ivory, and assistants Keith Cramer and Glen Miller...Cub Koda spent four days cutting his new CD at Trod Nossel Recording in Wallingford, CT. Marshall Crenshaw guested on guitar...Belizbeha tracked at CMG Studios in Saratoga Springs, NY, with producer/engineer Rob Stevens...

SOUTHERN CALIFORNIA

At Conway Recording in Hollywood, Green Day worked on their new Warner Bros. release with producer Rob Cavallo, engineer Ken Allardyce and assistant Tony Flores in Studio A. Singer/songwriter Denny Brown mixed in Studio B with producer Erik Nielsen and engineer Bill Halverson. Conway recently installed a Coastal Acoustics Boxer T5 monitoring system into Studio C and plans to install the monitors in other rooms as well...Agnes Gooch tracked their Revolution Records debut, *Blind*, with producer/engineer Michael Douglass at Grandmaster Recorders in Hollywood...Stevie B.'s new album was recorded and mixed at Dance 2000 Records' new complex, Platinum Paradise (North Hollywood), formerly Amigo Studios...Jann Arden recorded for her upcoming album, *Happy?*, at Record Plant, Hollywood, with producer/engineer Ed Cherney...

NORTHWEST

San Francisco's Coast Recorders had guitarist Joe Satriani in mixing his new Epic CD with engineer Mike Fraser and as-

NORTHEAST

Andrienne Wilson recorded and mixed her latest release at East Side Sound in New York City with producer Norman Hedman, engineer Lou Holtzman and assistant Fran Cathcart...At Normandy Sound (Warren, RI) White Devil (formerly The Cro-Mags) worked on material for Def

A HANDS-ON NEW YORK MUSEUM

by Tom Kenny

If you're in town for the AES convention and looking for a bit of pro audio history, the Museum of Sound Recording is an excellent local resource. Founded in 1995 as a hands-on, working studio, the museum is run by volunteers, with a core group of eight or ten sometimes swelling to 30 with interns from NYU. Dan Gaydos, adjunct professor at NYU's Tisch School of the Arts, serves as the museum's director, chief fund-raiser and head engineer.

The museum is entirely nonprofit and relies on donations of time, equipment and tape to stay afloat. Three key packages have enabled the facility to run working sessions. The first was the gift of an MGM 1947 Western Electric console from the Paramount stages in New York, along with the entire film chain designed by Robert Fine and Red Everenz, including custom Magnasync dubbers and Westrex 1850 3-track mag recorder. The second installation was from Aura Re-



"Session Night" producer Gary Heidt, deep into mixing on the ADM console, with museum director Dan Gaydos

recording with a solid state, discrete ADM console from 1969, to go with the Scully 280 1-inch, 8-track recorder. The museum also has a wealth of Ampex machines, everything from the 300 mono machine to the ATR100 Series.

The most recent installation was the meticulously maintained project studio of Eric Siday, noted TV jingle writer from the '50s and '60s. The heart of Siday's studio was the console from Studio A at Capitol Records—all tubes, Langevin electronics, lots of RCA preamps. The museum also received his Magnasync recorder with custom 8-track heads and his 3M 1-inch 8-track, along with a bevy of Ampex machines and Altec "salt shaker" mics.

The mission of the museum is all about preservation and education, particularly for student interns. Recognizing the rather limited appeal, Gaydos and the museum task force decided to host a series of Friday and Saturday "Session Nights," where local bands have a chance to come in for free and track a couple of songs in a cafe-style setting, with the public invited.

At presstime, the museum was in the process of relocating. If you're interested in visiting, call 914/667-0488 for more information.

—CONTINUED ON PAGE 306

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STUDIO SPOTLIGHT

TONGUE & GROOVE RECORDING by Rick Clark

Located in the heart of urban Philadelphia, Tongue & Groove Productions comprises both an impressive studio outfitted with vintage gear and a production company that has developed a reputation for its success in spotting and developing talent. Formed in 1995 by Michael Block and Dave "Stiff" Johnson, Tongue & Groove has enjoyed a high success rate in landing major label deals for its in-house productions. Acts that have benefited from Tongue & Groove's A&R acumen include G Love & Special Sauce (Epic), Spillred (Warner/Chapell), Dahveed (Atlantic), Wanderlust (RCA) and Emory Swank (Watermark).

Since 1974, Block has been a successful studio owner in Austin, Texas (The Production Block), and Harrisburg, Pa. (3rd Coast). Block is also one of the country's foremost vintage recording gear collectors and dealers. Johnson established a reputation as a producer/engineer and co-owner of the successful Philly-based Studio 4 facility. When Studio 4 moved to a new location outside of Philadelphia, Block purchased the old room and offered Johnson (who was no longer actively involved with Studio 4) a partnership in the new undertaking. The idea of joining forces was appealing, as the two had a deep appreciation for quality vintage gear and understood the sonic nuances of the old Studio 4 room, which had hosted many hugely successful projects by artists such as Boyz II Men, the Rolling Stones, Sting, Bob Dylan, Aerosmith and Bruce Springsteen.

Tongue & Groove's main cutting room is 41x24 feet, with 14-foot ceilings. There are three iso booths and a Tony Bongiovi and Lance Quinn-designed control room, outfitted with Westlake and Genelec monitors. "The console, which is seven-and-a-half feet long and 2,700 lbs., is the original Sunset Sound A room console," says Block of the 32x8x24 desk. "It was rebuilt by Paul Wolfe at API seven years ago. It's the console that part of *Led Zeppelin IV* was recorded [and mixed] on. The Rolling Stones' *Exile on Main Street* was mixed on it. *Purple Rain* was recorded and mixed on it. Almost all the Steely Dan stuff was done on it. It's the most powerful console I've ever heard. It truly is. It's just got a magic to it."

Tongue & Groove also stocks a number of Class A and tube limiters.



Tube microphones are by Neumann, AKG, Telefunken, RCA, Western Electric, Schoeps and others. There is also a sizable complement of guitar amplifiers, drums, keyboards and instruments.

Bands who come from out of town to work with Tongue & Groove often stay in Block's nearby 17,000-square-foot mansion, which was built in 1843. Within ten blocks of the studio and the house are more than 200 restaurants.

Like many production houses, Tongue & Groove rents to the occasional outside client, but such projects occupy only 20% of the facility's booking sheets. The rest is allotted to in-house production work. "The intention of Tongue & Groove was never to sell studio time primarily," Block says. "Tongue & Groove is a production company, and that is our main thrust."

Nevertheless, Tongue & Groove does host and record the syndicated WXPB-FM *World Cafe* show, a live radio broadcast production that reaches more than 90 markets worldwide and has featured Roger McGuinn, Michelle Shocked, Bruce Cockburn, Madeleine Peyroux, Freedy Johnston and Ray Davies, among others.

Though Tongue & Groove is well-equipped, it is obvious that the facility's success comes from a street smart in-house A&R sensibility, as evidenced by the list of recent and current projects. "Dahveed is a songwriter from Austin, Texas, who was recently signed to Atlantic," Johnson says. "He's got a three-piece band and does great pop material. We're in the middle of developing a band called Daisy, from Athens, Georgia. Their stuff is very contemporary pop, not unlike Weezer or The Presidents of the United States of America or The Eels. It's got a real arty approach to production and a real cynical, kind of comical edge. So far we've played a few rough demos and people are pretty excited about hearing what we are doing."

"Over the years, I have found that the best way to get work is to create it," Johnson continues. "You find talent you think is worthy of the big machine and develop it and bring it to the table and try to get record deals. That's what we set out to do, and so far, we're batting a thousand. We haven't missed." ■

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NASHVILLE SKYLINE

by Dan Daley

Terror in the Skies—On July 30, American Airlines announced that it was canceling its sole remaining nonstop flight between Nashville and Los Angeles, effective November 1. This announcement will likely have significant long-term implications for Nashville's studio community and entertainment industry. Many studios in this city rely to some degree on clients beyond Nashville's immediate music industry, particularly in light of recent contractions in country music sales and budgets. The elimination of American Airlines' sole remaining L.A. nonstop could put a significant crimp in the accessibility of Nashville to West Coast and Pacific Rim clients.

Southwest Airlines recently moved into the L.A.-Nashville market, but while Southwest is a fine airline for taking the family to Orlando, its lack of a first-class cabin and reserved seating don't make it a primary choice for those in the entertainment industry. Try to picture a top-echelon producer, label head or recording artist scrambling for a seat, then having peanuts thrown at them by failed actors who proceed to sing the emergency evacuation procedures. It's not a pretty picture.

The first-class cabin on American, however, is regarded as a schmooze on a par with dinner at Sunset Grill or drinks at Le Mondrian. Allen Sides, owner of Ocean Way Studios in Los Angeles and Nashville, frequently makes the round trip between the two in first class. As he puts it, "On most days you could either put together a band or a new record company on that flight. It was a great opportunity to do business. It's going to be missed, and I think the reality of what it means to Nashville's studio industry is going to take awhile to fully sink in." The cancellation graphically illustrates how the infrastructure necessary to support a large studio community like Nashville's is more complex—and subject to larger business forces—than often meets the eye.

The first surround audio remix of a major-label country record was done at Masterfonics' The Tracking Room in July. Engineer Chuck Ainlay handled the remix of Vince Gill's *High Lonesome Sound* on the room's SSL 9000J console—the same studio and board that the 1996 record was originally recorded and mixed on. Supervising were producer Tony Brown and Rory Kaplan. Kaplan

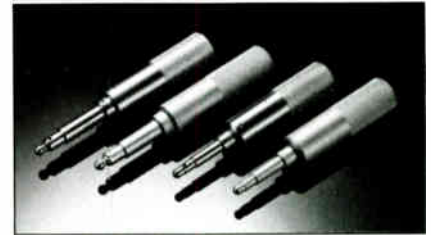
has been the point man for cinema sound company DTS's year-long program of 5.1-channel remixes of high-profile records—a bid to establish the company's codec for the consumer market.

The control room was rigged for surround using Dynaudio speakers for the surround and center channels and an M&K MX5000 subwoofer. Mixing was done to three Pacific Microsonics' HDCD stereo systems synchronized via house sync. Kaplan has been part of a series of such remixes, which match classic records with their original engineers or other high-profile mixers. The first projects were the first Boyz II Men record and a Marvin Gaye's greatest hits package, remixed by Bob Margouleff, followed by remixes of The Eagles' *Hell Freezes Over*, Eric Clapton's *Ocean Avenue* and several others. "This is the first ever [surround] remix of a country album," Kaplan says. "I contacted Tony Brown, and he put me in touch with Chuck, who wanted to do the remix in the same studio that he cut and mixed the record in, so we came back to The Tracking Room."

Ainlay thinks that surround could be a good medium for country records. "Tony [Brown] and I were talking about it, and we both felt that it was more natural-sounding, which is what country records tend to be. The dynamics can be left a lot more open instead of compressing them as much as is done. It's also brighter; you don't have things masking each other like they can in the stereo field. Besides, country isn't what it was five years ago. You can be a lot more adventurous." Ainlay used the 9000J's quad compressor for the LCR and sub channels, sending the surround channels through a separate stereo compressor. The effect required some manual compensation now and then, he says. "Until we have a 5.1 compressor, that's how we'll have to do it."

It was Brown's first surround mix as well, and the producer, who also heads MCA Records Nashville, agrees with Ainlay's assessment of surround's potential sonic benefits for country records. However, he adds that country mixes tend to be center-heavy, mainly to accommodate country radio, which is still the primary sales conduit for the genre. "Country's about the lead vocal, not a wall of sound," Brown says. "Keeping the track away from the vocal means that sometimes you can't make as punchy a record as you can in pop and rock. But we always have to consider radio in our mixes." Brown adds that MCA Records would not have a policy on surround

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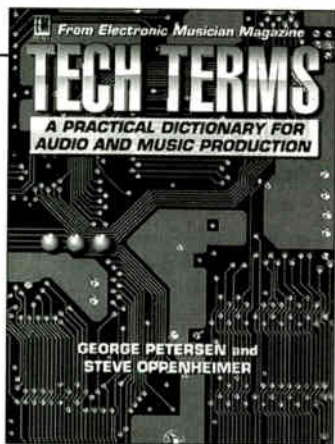
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mixes in the near future but says that he would consider it on an artist-by-artist basis. "It's not for everyone," he cautions. "Surround can give the track more personality, but it can give the singer a little less because the rest of the track becomes more important. I want to keep the focus on the singer and the vocal."

The mastering was done in August at Georgetown Masters by Denny Purcell. After considering using Ocean Way's Oxford console, Purcell decided to stay at Georgetown and used a loaned Yamaha 02R digital console with a new—and as yet unreleased—5.1 chip that Yamaha provided, as well as the same Dynaudio speakers and M&K sub used for the remix. Purcell, blunt as usual, observes, "[DTS] is on a fishing expedition, part of its plan to go after Dolby in the consumer market. So in that sense it's not truly meaningful to Nashville any more than the other mixes were to the other cities. But it's good that we got the chance to experience working in surround, because surround could have a big future in music."

CDQ PDQ: A series of optical disc quality comparison listening sessions organized by BMG Records was held at various mastering facilities in Nashville. Kicked off by a forum held in January, with mastering engineers, record label production personnel and replication facility representatives present, the following months saw Sonopress, Cinram and other manufacturers each come to town with between eight and 12 variously mastered CDs so listeners could make notes as to which combinations of technologies—1x, 2x, direct-to-disk, 1630, PMCD, etc.—worked best for final-product CD quality. Denny Purcell of Georgetown Masters, which hosted the majority of the sessions, says that though the heightened awareness that production departments and replication plants got from the series was good, the real achievement of the sessions was that they contributed to refocusing the entire industry on CD quality. "These sessions brought together the people who make half the world's CDs," he says, "and I've been getting calls on what's gone down here from all over the world. So it's really refocused overdue attention on this issue. And I think Nashville was the only place that this could have been done as smoothly as it was because it's the only music business city where it's easy to get people together and involved. That's how we get things done down here."

The experience profoundly changed how at least one major record label will

specify its replication in the future. Susan Heard, senior director of production and A&R administration at Arista Nashville, and one of the originators of the forum, said that the consensus was that direct-to-glass mastering from either a 1630 or a PCM 9000 using no transfer media in between produced the best results, and that is how Arista Nashville is now specifying its projects to replicators. "This whole experience has helped make the production people in this town realize how important it is that there be no transfer medium used before glass mastering," she says. ■

Fax your Nashville news to Dan Daley at 615/646-0102, or e-mail danwriter@aol.com.

—FROM PAGE 298, L.A. GRAPEVINE

meeting in the middle at DeMarco's for projects that require the presence of all three. "Our egos don't need a big complex with our names on it," says DeMarco, the most technically minded (one of his previous titles was product specialist for Mesa/Boogie, where he worked with artists such as Don Henley and Toto). He acts as engineer when the three are collaborating. "Also, we have families, and with the hours we work, the ability to work at home can't be beat."

The main composing tools for all three partners are Macintosh computers with V. 2.1 Digital Performer. Other stalwarts are DA-88s and Mackie consoles, and the team transfers material between their studios on Syquest Syjet 1.5GB cartridges. Monitoring is on Tannoy PBM 6.5s and on speakers they swear by—Radio Shack Optimas ("The best 20 bucks you'll ever spend!" DeMarco says). Material is delivered to clients on a mastered CD. Planet One does the mastering, transferring the final mix DAT digitally into the Macintosh with Sound Designer II, then processing with a Waves program bundle that supplies a series of plug-in modules of compression and EQ.

Asked to explain their success, the trio has (not surprisingly) several different opinions. "We try to give the person in charge confidence—to make them aware that we'll really listen to them to get their vision," Rogers says. "Some composers come to a project with their own vision, and they'll do the score they want to do. Instead, we work hard to see what the film needs and what the person in charge wants."

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jump," comments Egizi. "We've done everything from comedy and really hard industrial rock to big orchestral pieces, ethnic music, opera, Dixieland, bad '70s TV show-type themes, you name it. Also, our tracks use a lot of live instruments, and I think we take more of a film approach in our writing, making it more dramatic than the standard TV library fare."

"We approach each project like it's the end of the world," DeMarco concludes, "because you never know what piece of music is going to represent you. Like with *Real TV*—even the day before the show came on the air there was concern over whether it was going to fly. Now it's a hit. Who knew?"

At Burbank's Royaltone Studios, I found legendary producer Tony Visconti at work on Studio B's SSL mixing guitarist singer/songwriter Christian Lane's upcoming Geffen Records release. Visconti and Lane had actually started the project in Royaltone's A room, where they tracked 15 songs in 14 days, and also laid down Lane's "heavy shredder" guitar parts. "[Engineer] Jeffrey Thomas is actually quite an expert in that kind of sound," Visconti says. "We put up a few big mics and got some earth-shattering rhythm guitars."

After basics and rhythm guitars were finished, the tracks were transferred to ADAT XTs and the project moved to Visconti's project studio in New York. "We made slaves, so we had unlimited ADAT cartridges to do all the vocals, looping, acoustic guitars, solos, keyboards—all that middle part of the album, the nice juicy stuff that takes a lot of concentration but where you often only need to use one fader at a time," Visconti says. "I have a Soundtracs board that I use for monitoring and for combining tracks—it's very simple and clean. Mostly we went from high-quality preamps directly into the XTs. I like to record the middle part of a record in my home because I've set it up like a cockpit, with all my toys readily accessible—my computer and my racks of synths and samplers. I can easily send everything to everything, usually in the digital domain. I do my editing and make loops in the Mac and never really have to walk around the room."

"I wouldn't pretend to mix at home though," he adds. "I'm an SSL fan for mixing—there's no beating it for convenience. For example, on this song we're using two sets of drums with different processing that we switch in and out for different sections of the song. I suppose I could approximate this kind of mixing

at home with loads and loads of edits, but it would take a lot longer. I prefer SSL, and in Los Angeles I always come back to Royaltone. I can't imagine finding better ambience, and we never have any technical breakdowns."

After overdubs, the ADAT tapes were transferred back to analog slave reels for mixing. "That worked beautifully, by the way," Visconti says. "We hit the tape pretty hard, and it warmed up the tracks—they sound absolutely fat. Now, to mix we're using our drum tracks that were put away after tracking and are nice and fresh. That makes a big difference."

Special gear on the project? "We must have gone through 15 miles of vacuum tubes," Visconti laughs, "including these ART ProVLA compressors and ProMPA mic preamps that I like a lot. Fairchild and Manley, of course. And we got a remarkable sound on vocals using something very new. Ray Benson, who's in the band Asleep at the Wheel and is a good friend of mine, has a studio in Austin, Texas, and a repair facility with a crew of guys who also build hotrod, one-off pieces of equipment. He flew us out one—a mic preamp that comes in two sections, with an enormous rectifier tube in one section and fairly normal preamp in the other. It was a real prototype—everything still written on it in pencil and very impressive. It's great for vocals—warm on the low end with an incredibly percussive sound, then clear as a bell on the top with beautiful third harmonic distortion when you want to crank it. It's also got a switch so you can choose between solid-state transistors and tube circuitry. I'm having them make me a stereo model—no name for it yet, though, it's just 'Ray's box.'"

All vocals and most guitars on the album were by Lane, with the studio band consisting of Matt Chamberlain on drums and Sheldon Glomberg on bass. Visconti provided string arrangements on six songs, with a cameo slide guitar intro on one cut by his son Morgan Visconti, a successful New York jingle writer.

Guitar sounds, of course, were key to the project, with a variety of different axes used: Les Pauls for the crunchy big stuff, a Gibson 330 for rhythm and a funky Ibanez that belongs to Visconti for leads. "Great guitar," Visconti says. "Not very expensive, but the Ibanez are all wonderfully individual in their sound. Also it has lipstick pickups, which I'm a big fan of—that's the pickup that's inside a tube of metal and doesn't have the six

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individual poles. They're on all the old Danelectro guitars. Now, in Nashville, Jerry Jones has remade them with better materials. They make for really hot guitars, a little wild, a little out of control. We also used a beautiful Taylor acoustic of Christian's that really shines on this album, miked with an Audio-Technica 4041 through the valve ART mic preamp and then through the Aphex 109 to equalize it."

The project is being mixed to both half-inch and to DAT. "I'm always amazed at the difference there can be," Visconti says. "Sometimes the half-inch mix sounds great, sometimes the DAT sounds better. There's still that mystery."

There wasn't any mystery about the track I heard while I was there—it sounded great, big and fat with lots of presence. Watch for Lane's as yet untitled album, set for an early 1998 release. ■

Fax your L.A. news to 818/346-3062 or e-mail to MsMDK@aol.com.

—FROM PAGE 298, NY METRO REPORT

Automotive Museum in L.A. during last year's AES. The latter meeting drew 200 people, more than the year before but fewer than were hoped for. But, added Filleul, "The party has [created] a core of interested people, of whom Ed Cherney has been a prime mover."

Originally known as the British Record Producers Guild, Re-Pro reinvented itself in 1992, seeking to both address industry changes and to broaden its appeal; the elimination of "British" from the name reflects an acknowledged need to bring American producers into the fold. In the UK, Re-Pro's 220-strong membership includes major producers Rupert Hine, Hugh Padgham, Gus Dudgeon and Alan Parsons. According to Filleul, one-third of European recordings that achieved Platinum status were recorded by Re-Pro UK members.

Christmas in July: Reflecting the kinder, gentler New York of today (this week, anyway), here's the kind of human interest story that we don't get enough of: Stevie Wonder, a regular at the Sam Ash store on West 48th Street, was in the store one day this past summer. Helping him was sales clerk Chris Burke, who, since he had been hired at the store in March, had spent some time with Wonder, helping him learn new keyboards. Wonder ended up buying two pairs of Genelec speakers and two Fostex hard disk recording sys-

tems. Burke assumed that one of each would be for Wonder's son, Akita, who accompanied his father on the shopping trip. But while Burke (a keyboardist, bassist and home recordist himself) was writing the sale up, Wonder came over and handed him one of the Fostex units, a DMT-8VL with a 1.3GB hard drive.

"At first I thought, 'Oh no, he changed his mind,' recalls Burke. "But instead, he says to me, 'Here, you said this system is the best and you'd want one for yourself, so this is for you.' I almost lost it after that. I was barely able to finish writing the order up. I was shaking so much you could have made a milkshake. I would not have expected that to happen in a million years. I mean, the most successful artists with the longest careers often turn out to be as wonderful as human beings as they are as artists. But Stevie Wonder really goes that one step further. That sort of generosity tells you what kind of a person he really is."

dBm Pro Audio/Music Services is sponsoring an AES workshop at the show, with the rather non-Metro title of "Cleanliness Is Next to Godliness." dBm principal Steve Dwork says the point of the workshop is to impress upon engineers that "there is no more effective way to keep any moving mechanical recording device in proper working order than timely cleaning." Dwork adds that the workshop comes at a time when more young engineers are entering the industry than ever before; many haven't yet acquired a tradition of thorough maintenance tactics. In related news, dBm Services has been designated an authorized ADAT and ADAT-XT repair and maintenance facility. During the show, the company is running a special: For a flat \$50, ADAT users can have their units cleaned and aligned and have the belts and rollers replaced. ■

New York items? Fax to Dan Daley 615/646-0102 or e-mail danuriter@aol.com.

—FROM PAGE 299, SESSIONS & STUDIO NEWS
sistant Zac Allentuck. Chris Isaak was also in, recording for Reprise with producer Erik Jacobsen, engineer Mark Needham and assistant Mike Johnson...Blues prodigy Kenny Wayne Shepard worked on his next Revolution Records release with producer Jerry Harrison, engineer Karl Derfler and assistant Mike Cresswell at Studio D Recording in Sausalito, CA...R&B duo Christi6n

recorded and mixed for their new Roc-A-Fella/Def Jam release at Music Annex (Menlo Park, CA). Kenni Ski produced. Dave G engineered and Christopher Scott assisted...

NORTH CENTRAL

Bungalow Trailer Park mixed their new CD at The Digital Living Room in Omaha, NE, with producer/engineer Eric Medley...Alexander Inmate tracked their third Nub Records release with producer/engineer Corey Roberts at Nub Studios in Norman, OK...

SOUTHEAST

Boyz II Men mixed for Motown at Masterfonics (Nashville) with producer Durrell Bottoms, engineers Dave Dillbeck and Ronnie Brookshire and assistant John Saylor...At Nashville's Emerald Sound Pam Tillis tracked for Arista with producer Billy Joe Walker Jr. and engineer Steve Tillisch...Engineer Alex Nesmith and producer Fitzgerald Scott were recently tracking Bad Boy R&B artist Tanya Blount at Success Entertainment in Atlanta...Sound Emporium (Nashville) had Misty Pierson in mixing and overdubbing for Outwest Records with producer Denny Diante and engineers Dave Sinko and Matt Andrews...The Merry Band worked on a new CD highlighting the heritage of early British music in Appalachia at Allgood Productions in Atlanta. The studio recently added a slew of mastering gear, including a 24-bit Sonic Solutions system...Warner/Reprise artist Russ Taff was in mixing at Recording Arts (Nashville) with producer Doug Grau and engineer John Jaszcz and assistant Anthony Kogok...Production team Organized Noize brought Goodie Mob to Doppler Studios (Atlanta) to track vocals. Carlos Glover engineered, assisted by Mike Wilson...Julio Iglesias Jr. mixed singles at Miami's South Beach Studios with producer Rodolfo Castillo, engineer Cesar Sogbe and assistant Femio Hernandez...

SOUTHWEST

Artist Moby was in producer-mode at The Hit Shack (Austin, TX), working with Texas denizens The Butthole Surfers on a song for the *Spawn* soundtrack. Andy Taub engineered...Recent projects at Groveton, TX, facility Stone Wall Studios included Dallas alternative faves Spiff in with producer/engineer Tom Peirce Baker. The studio just added a pondside bunkhouse and several new Neumann and AKG mics...Lazy Lester recorded for Antone's Records with producer Derek O'Brien and engineer Stuart Sullivan at Arlyn Studios, Austin, TX. ■

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With a focus on vocals and overdubs. Our goal is to provide a no-compromise microphone choice for each vocalist and instrumentalist. We feature a Neve 8068, a Studer A827, and 50 microphones including AKG C-12s, C-24s, Neumann U47s, U67s, M-249s, SM-2s, 582s; Schoeps C-221s, Telefunken Elam 250, 251. Our new digital room features a Neve Logic 3 and AMS AudioFile for music editing and post applications.



Triad Studios

4572 105th Ave. NE
Redmond, WA 98052
(206) 881-9322; Fax (206) 881-3645
e-mail: kyasi@triadstudios.com
http://www.triadstudios.com

We make terrific recordings within reasonable budgets. Our acoustically fat studios have everything you need for a great sounding record including seeds of vintage tube microphones and compressors, stereo Dolby SR for mixdown, extensive MIDI, DAWs and we're ADAT compatible. Recent clients include Narada Records, Music for Little People, Muzak, hundreds of Seattle area bands.



Troposphere Studios

One Naylon Place
Livingston, NJ 07039
(201) 994-2990; Fax (201) 994-2965
e-mail: troposphere@garden.net
http://www.garden.net/users/troposphere

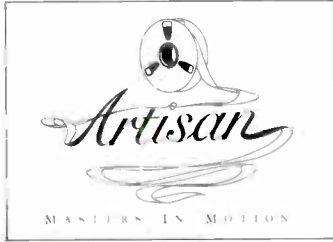
Conveniently located in northeast NJ, just 20 miles outside of NYC, Troposphere Studios offers its clients a huge, 7,000-sq-ft., acoustically tuned facility designed for tracking, mixing, and film or video lockup. We feature an SSL 4048 G Plus Series console with Total Recall, an Otari MTR 9011 2-inch 24-track, and a large selection of microphones and outboard gear. Our spacious iso booths and 38x40-foot live room also offer comfort to the performer. In short, Troposphere Studios is one of a kind.



Starke Lake Studios

275 North Lakeshore Drive
Ocoee, FL 34761
(407) 656-8989; Fax (407) 656-9862
e-mail: pdminer@sprynet.com
http://www.gettings@sprynet.com

Sitting on beautiful Starke Lake, the studio boasts a Euphonix CS-2000 console, a Synclavier/16-trk. Post-Pro system, an MTR-9011, Genelec & HD-1 near-field monitors and a large assortment of outboard gear and microphones. Our 45x45-foot main room w/18-foot ceilings has a great sound and features a Yamaha C-7 piano. We also have a MIDI room for composition. Starke Lake and our parent company, Gettings Productions, has worldwide clients, including Disney, MGM, Epcot and many more.



Artisan Recorders Mobile

PO Box 70247
Ft. Lauderdale, FL 33037
(954) 566-1800; Fax (954) 566-3090
e-mail: mobile_red@aol.com

For over 20 years, Artisan Recorders has been providing excellence in remote recording and broadcast. Along with an extensive array of equipment in a comfortable aesthetic environment, our 36' "Mobile Red" studio boasts an expert staff of technicians with love of music and desire for perfection. Recent credits include: The Artist (formerly known as Prince), the "Big Bang" concert series with performances by Kathy Mattea, Travis Tritt, Modern English and World Party, MTV Latino Unplugged, Luciano Pavarotti, Sheryl Crow and many more.



The Sound Lab

1006 E. Guadalupe
Tempe, AZ 85283
(602) 345-0906; Fax (602) 345-6966

Arizona's finest audio facility features a NEVE VRP 48-channel console with Flying Faders automation, Otari 32-track digital DTR900, analog, or 32 tracks of ADAT XT, Yamaha concert grand, vintage Neumann and AKG tube mics, classic guitars, amps and a Gretsch drum kit along with the finest in outboard gear. Experienced professionals in a relaxed atmosphere with Arizona's world-class amenities nearby! Great package rates available on hotel, car and studio time. Highest quality at the best price.

STUDIO SHOWCASE



Coyote Recording Studios

100 North 6th St.,
Brooklyn, NY 11211
(718) 387-7958; Fax (718) 388-3898
<http://www.Influx.com/coyote.html>

A 24-track analog recording studio with spacious design. 4 isolation booths—perfect for live recordings. Oversized control room stocked with world-class gear like preamps from API, Demeter, John Hardy; mics from Microtech, Neumann, AKG; EQs from API, Summit, Aphex; compressors from UREI, Manley, Tube Tech and much more. Amenities include private lounge, B&B accommodations, and many groovy restaurants, bars and cafes nearby.



Jolly Roger Recording

(201) 656-4747; Fax (201) 656-3936
1015 Clinton St
Hoboken, N.J. 07030
<http://www.jollyrogerrecording.com>

Jolly Roger Recording is located in a renovated 5000-sq.-ft. factory loft in Hoboken, N.J. The studio maintains the rich musical history of Hoboken in a comfortable single-client setting. We make records the way they did in the '60s and '70s. Vintage equipment from Neve, Neumann, AKG, Pultec, United Audio, API, dbx... check the Web site for photos and our always expanding equipment list.

THE VINYL FRONTIER

infinity studios

Est. 1989

Infinity Studios

27 Cobek Court
Brooklyn, NY 11223
(718) 339-1336; Fax (718) 339-1424

The only Neve VR60 with Flying Faders and Recall in NYC outside of Manhattan. Newly renovated control room. 24- or 48-track recording on new Studer A-827s or ADAT digital formats, at low block rates. Studio B, refurbished Harrison Raven console. MIDI suite for pre-production work. Mackie 8-Bus 32-input console. ADATs. "All-in" lockout. All three rooms for one low price! Program in the MIDI suite. Cut tracks in Studio B, mix on the Neve in Studio A! We'll even supply the transportation from any midtown location!



Remote Recording Services

PO Box 334
Lahaska, PA 18931
(215) 794-5005; Fax (215) 794-3263

Remote Recording Services, owned by five-time TEC award winner David Hewitt, offers the Silver Studio, a first-class Neve and Studer equipped mobile recording studio. The evolutionary design of our facility allows us to handle over 100 inputs and gives us the flexibility to accommodate five multitrack machines. Our crew brings an unparalleled 25 years of location recording experience to your session, resulting in flawless execution of any audio task. Our credits range from the Allman Brothers to Frank Zappa; from the Metropolitan Opera to the Three Tenors and Beyond.

The CLUB

The ClubHouse

Box 373
Germantown, NY 12526
(518) 537-6305; Fax (518) 537-5829

The ClubHouse recently installed a Neve 8058 MkII mixing desk. Vintage Neumann tube microphones and Telefunken preamplifiers have been added to the collection. Our large studio is 50'x25'x20', and the smaller room is a more intimate 19'x16'x8'. Located on the scenic Hudson River only two hours north of New York City, The ClubHouse provides a large selection of fine equipment in a relaxed country setting.



Chicago Masterworks

PO Box 1519
Crystal Lake, IL 60039
(800) 675-9454; Fax (815) 356-9066
e-mail: cmasterw@aol.com

Chicago's source for quality CD and cassette mastering and manufacturing. From digital transfers and premastering to complete manufacturing services, we have the expertise to net the highest-quality results. Featuring Sonic Solutions, TC Electronic, award-winning graphic design, printing and packaging. We work closely with our customers to meet their artistic vision, budget and deadlines. All major credit cards accepted.

■ STUDIO SHOWCASE ■

STEPBRIDGE
studios

Stepbridge Recording

528 Jose Street
Santa Fe, NM 87501
(505) 988-7051; Fax (505) 988-7052
email: stepbridge@sprynet.com
http://home.sprynet.com/sprynet/stepbridge

Our SSL is mated with a Neve "sidecar." The tracking room is spacious, the mic list extensive, and the racks are loaded with the finest digital, class A and tube processing. Recent projects include Robbie Robertson, Rita Coolidge, Herbie Mann, Dwight Yoakam, Gene Hackman and James Woods. A five-minute walk from the historic plaza, Stepbridge offers charm, privacy, on-site accommodations and an experienced, fully professional staff—the perfect combination for your next project.



The Cutting Room

678 Broadway, 5th Flr.
New York, NY 10012
(212) 260-0905; Fax: (212) 358-0041
e-mail: redeye@dorsai.org

The Cutting Room provides a unique alternative to today's high-priced commercial studios. The facilities and staff provide the ideal environment for your creative needs including a large live room with a skylight. Recording options include 48 tracks of analog recording, 32 tracks of Pro Tools, 24 tracks of both ADAT and DA-88 and a full MIDI suite. Recent clients include Bruce Hornsby, Whitney Houston, Groove Theory, SWV, Roy Ayers and George Clinton.



Atlanta Digital

500 Means Street, Suite E
Atlanta, GA 30318
(404) 522-4777; Fax (404) 522-3723

Atlanta Digital provides CD Mastering and post-production. The studio features Sonic Solutions with NoNoise and CD printer in an audiophile monitoring environment. Outboard processing is by Focusrite, Manley, Apogee and TC Electronic. Video formats include Beta SP and 3". Supported audio formats encompass Time Code DAT, Sony PCM-800 (DA-88) and analog tape. Recent credits include Arrested Development's Speech and Headliner, Vagabond and post-production credits from Bigelow and Eigel, Harcourt Brace and Optical Data.

Sony Music Studios



RECORDING MIXING MASTERING AUDIO POST REMOTES

G r a m m y E m m y A c e M o n i t o r

460 West 54th Street New York, New York 10019 212-833-7373 Fax: 212-833-8412
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 OR FAX 24 HOURS:
800 947-2215 • 212 366-3738

HARD DISK RECORDING



A Division of Avid Technology, Inc.

ProTools Project™ Digital Audio Workstation for Macintosh

With Pro Tools Project you get 8 tracks of digital audio &, on some Power Mac systems, up to 16 tracks of playback & 64 virtual tracks! The Pro Tools Project system includes an audio card as well as award winning Pro Tools software. You choose either an 888 or an 882 I/O to complete the package. Project also features MIDI recording and playback as well as Quickpunch™ punch-on-the-fly & when you read, to upgrade its ready too

REQUIRES-

- Qualified NuBus or PCI Macintosh CPU
- 24M8 RAM minimum
- Hard Drive, system software 7.1 or greater
- 14" monitor (17" recommended)



MAC

ProTools 4.0 Software Digital Audio Software for Macintosh

Pro Tools version 4.0 software provides the next step in the evolution of Digidesign's award winning digital audio production software for the Mac. Fully Power Mac native, 4.0 features noticeable improvements in every major area. ProControl support, improved automation features, real-time fader groupings & group nesting, plug-in MIDI personality files, multiple edit play lists, Sound Designer II functionality, Finder-style searching & sorting, and I'm out of breath.



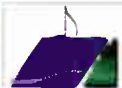
WINDOWS

Session 8™ Digital Audio Workstation for Windows

Session 8 is a professional quality digital audio recording, editing, & mixing system created specifically for personal and project recording studios. Designed to operate with Windows 35 or Windows 3.11, Session 8 offers professional recording features, powerful random access editing, a automated digital mixing, & unparalleled integration with most popular MIDI sequencers.

FEATURES-

- 8-channel direct to disk digital recording
- Random access, non-destructive editing
- Automated intuitive digital mixing environment
- Built-in volume & pan automation
- Complete SMPTE frame rate support
- Frame accurate sync with built-in AVI video playback window
- Digital parametric EQ
- Support for multiple hard drive partitions
- Auto sample rate convert to 44.1 or 48 kHz mono WAV file format
- Choice of audio interface options



SOUNDSCAPE DIGITAL TECHNOLOGY LTD.

A professional Multitrack Digital Audio Workstation, the SSHDR-1 combines the highest quality processing hardware with easy-to-use Windows-based software. The most complete and affordable solution for high quality digital audio on the PC, the SSHDR-1 has over 50 powerful editing tools and is expandable from 8 to 128 tracks with up to 32 inputs and 64 outputs. Ideal for a wide range of applications ranging from project studios, to multi-unit 32, 48 and 64 track systems for major TV and film studios needing audio post production linked to video.

SSAC-1 Accelerator Card

The new SSAC-1 is a DSP card that can be added to any existing SSHDR-1 system for faster processing as well as an additional 8 channels of I/O in the form of a TDIF port. This card is needed by anyone who wants to upgrade an existing system to V2.0.

SS810-1 8 Channel I/O

This rack mount unit connects to the SSAC-1 card via the expansion port to give you 8 XLR ins & outs with superb A/D-D/A conversion. It also features an ADAT Optical interface. The SS810-0 comes with out the analog converters for connecting an ADAT without additional channels.

SSHRD-1 Hard Disk Recorder/Editor

Version
 2.0



CD & CASSETTE DUPLICATION

marantz CDR615 / CDR620 Compact Disc Recorder



Both next-generation standard one write-once CD recorders, the CDR615 & 620 offer built-in sample rate conversion, CD/DAT/MIDI-DCC sub-code conversion, and adjustable dB level sensing. Additional features include adjustable fade in/out, record mute time, & analog level automatic track incrementing. A 9-pin parallel (GPI) port and telephone output with level control are also included.

CDR620 Additional Features-

- SCSI-II Port • XLR (AES/EBU) Digital In/Out and Digital cascading
- 2x speed recording • Index Recording and playing
- Deletable copy prohibit and emphasis • 34 key, 2-way wired remote (RC620)
- * Available on CDR615 w/optional Wired Remote (RC620)

Telex ACC2000/ACC4000 Cassette Duplicators

Designed for high performance & high production, Telex duplicators offer easy maintenance and operation. The ACC2000 is a 2-channel mono duplicator while the ACC4000 is stereo. Each produces 3 copies from a cassette master at 16x normal speed & by linking additional copy modules, you can duplicate up to 27 copies of a 60 minute original in under two minutes.



ACC2000XL / ACC4000XL

The XL Series feature "Extended Life" cassette heads for increased performance and wear characteristics. They also offer improvements in wow and flutter, frequency response, S/N ratio & bias.

STUDIO DAT RECORDERS

SONY PCM-R500



Incorporating Sony's legendary high reliability 4D D Mechanism, the PCM-R500 sets a new standard for professional DAT recorders. The Jog/shuttle wheel offers outstanding operational ease while extensive interface options and multiple menu modes meet a wide range of application needs.

FEATURES-

- Set-up menu for preference selection. Use this menu for setting ID6 level sync threshold, date & more. Also selects error indicator.
- Includes 8-pin parallel & wireless remote controls
- S/BM recording for improved S/N (Sounds like 20bit)
- Independent L/R recording levels
- Equipped with auto head cleaning for improved sound quality

TASCAM DA-20/DA-30mkII



- Multiple sampling rates (48, 44.1, and 32kHz)
- Extended (4-hour) play at 32kHz
- S/PDIF Digital I/O, RCA Unbalanced In/Out
- SCMS-free recording. Full function wireless remote

DA-30mkII Additional Features-

- Variable speed shuttle wheel
- Digital I/O featuring both AES/EBU and S/PDIF
- XLR balanced and RCA unbalanced connections
- SCMS-free recording with selectable ID.
- Parallel port for control I/O from external equipment.

Panasonic SV-3800/SV-4100



The SV-3800 & SV-4100 feature highly accurate and reliable transport mechanisms with linear speeds of up to 400X normal. Built-in 20-bit D/A converters to satisfy even the highest professional requirements. The SV-4100 adds features such as instant start, program cue assignment, enhanced system diagnostics, multiple digital interfaces and more.

Fostex D-15



The new Fostex D-15 is the least expensive timecode DAT on the market. It has a host of new features aimed at audio post production and recording studio environments.

FEATURES-

- Chase mode functions built in
- Hold the peak reading on the digital bargraph with a choice of 5 different settings
- Set cue levels and cue times
- Support: a 1 frame rates including 30fps
- Newly designed transport is faster and more efficient utilizing a 4-motor design. 120 minute tape shuttles about 60 seconds
- Parallel interface
- Front panel trim pots in addition to the level inputs



Announcing our relocation on September 2, 1997 to a larger expanded facility at 420 Ninth Avenue (Between 33rd & 34th Streets) New York, N.Y. 10001

MICROPHONES

AKG **JUST IN**

C414B/ULS

A reputation for flawless performance & uncommon flexibility in the most demanding studio & concert sound applications.

- Dual 1" Gold-sputtered diaphragms.
- Flat on-axis response. • 126dB dynamic range.
- Switchable 10dB and 20dB pad. • 20Hz-20kHz.

E-300

Studio Condenser Microphone

A multi-patterned side address mic that combines vintage capsule design with advanced head-amp electronics, the E-300 has an unusually wide frequency response of 10Hz to 20kHz & an exceptional dynamic range of 137 dB. It also features extremely low self noise of 11dB. Ideal for even the most critical studio applications.

Shown with optional ZM-1 Shockmount

Unique powering of all Equitek Series microphones is accomplished with a pair of rechargeable nicad 9-volt batteries in combination with 48V phantom power. This overcomes inherent current limiting associated with most phantom power supplies & can supply 10x the current.

audio-technica

AT4050/CM5

Cardioid Capacitor Microphone

The AT4050 multi-pattern condenser expands upon the AT4033 to set the standard for studio performance mics.

- 2 capacitor elements.
- Cardioid, Omnidirectional, & Figure 8 polar pattern settings.
- Vapor-deposits of pure gold on specially-contoured large diaphragms are aged through 5 steps to ensure optimum characteristics over years of use.
- Transformerless circuitry results in exceptional transient response and clean output even under extremely high SPL conditions.

AZDEN

UHF Performance Series

Breaking new ground, Azden's new UHF receiver and microphone transmitters offer superb performance and features at prices far below anything you've ever seen.

411UDR UHF Receiver

- Crystal-controlled, PLL synthesized UHF receiver with 63 user-selectable channels in the 794-806 MHz band. Up to 9 systems may be used simultaneously. Features both 1/4-inch and XLR output jacks, volume adjustment; and can rack mounted.

41HT Handheld Microphone Transmitter

- Newly-designed handheld with supercardioid uni-directional mic element and 63 user-selectable channels. Uses 2 AA alkaline batteries or Azden ni-cads with the AMC-2A Charging Station.

41BT Bodypack Transmitter

- 63 user-selectable channels, input level control, standby switch, locking mini-plug connector and metal clip. Ideal for use with lavalier and headset microphones or as an instrument transmitter.

AMC Ni-cad Battery Charging Station

- Turns the 41HT into the only rechargeable UHF microphone available. (Uses Azden AN-1A nicad batteries only). Fully charged, the 41HT will run for 4 hours. Charging time is approximately 12 hours.

SENNHEISER

ME66/K6P

Short Shotgun Microphone

This road ready mic system is perfect for camera mount and other short gun applications. It's professional sound quality and affordable price combined with the flexibility of a modular setup make it a hard choice to beat.

MIXING BOARDS

MACKIE

SR24x4 • SR32x4

Sound Reinforcement Consoles

These consoles do for live sound what the acclaimed 8-bus series has done for studio recording. Both professional grade mixing consoles, the SR32-4 and SR24-4 were built to deliver the same kind of useful features found on "bigger boards" while standing up to 24-hr-a-day use.

- Fast, accurate, easy level setting via "solo".
- 4 submix buses.
- 3 band EQ w/ sweepable mids.
- 6 Aux sends
- Globally switchable AFL/PFL.
- Mackies "VLZ" technology for low noise.
- Tape return to main mix, mono out w/level control.

The new MS-1202, 1402, 1604 & SR Series all include VLZ (Very Low Impedance) circuitry at critical signal path points. Developed for Mackie's acclaimed 8-Bus console series, VLZ effectively reduces thermal noise and minimizes crosstalk by raising current and decreasing resistance.

TASCAM

M-1600

16 & 24 Channel 8-bus Consoles

Great for modular Digital Multitrack setups and hard disk recording, the M-1600 is part of Tascam's next generation series of recording consoles. It features multiple options for inputs and outputs and uses the same, easy to install D-sub connectors as Tascam's more expensive consoles, all in "a compact design."

- XLR Mic inputs w/phantom power on 8 channels.
- Signal present/overflow indicators on each channel.
- Balanced & Unbalanced tape returns & Balanced Group/Direct outputs using D-sub connectors.
- TRS Balanced Line Inputs on all channels.
- 3-band EQ with sweepable mids.
- 5 Aux sends (1 stereo)
- 4 assignable aux returns.
- Perfect for use with DA-88 and ADAT setups.

MINIDISC MULTITRACKS

TASCAM

564 Digital Portastudio

The Tascam 564 Digital Portastudio combines the flexibility and superior sound quality of digital recording with the simplicity and versatility of a portable multitrack. Using MiniDisc technology, the 564 has many powerful recording and editing features never before found in a portable 4-track machine.

FEATURES-

- Self-contained digital recorder/mixer.
- Uses low-cost, removable MiniDiscs.
- 2 AUX sends / 2 Stereo returns.
- 4 XLR mic inputs.
- Channel inserts on inputs 1 & 2.
- 5 takes per track, 20 patterns, 20 indexes per song.
- Random access and instant locate.
- Non-destructive editing features with undo capability include: bounce forward, cut, copy, move.
- Full-range EQ with mid-range sweep.
- S/POIF digital output for archiving.
- MIDI clock and MTC

JUST IN

SONY

MDM-X4 MD Multi-Track Recorder

MD recorders are here! Offering up to 37 minutes of high-quality 4-track digital recording, the MDM-X4 is truly the next generation of personal multi-tracks. With a built-in mixer, exclusive Track Edit system, and a Jog/Shuttle wheel for sophisticated editing with ease, the MDM-X4 will encourage you to flex your creativity.

FEATURES-

- Records on high quality, removable MD data discs
- 3.5-gen. ATRAC LSI for wide dynamic range.
- 10 Input / 4Bus mixer.
- 2 AUX sends, 3-band EQ. • 11-point locator.
- Random access memory for quick playback and record from anywhere on the disk.
- Editing features include Undo, Redo, & Section/Song editing for flying material between different tracks.

STUDIO MONITORS

ALESIS

Point Seven

DESIGNED FOR MULTI-MEDIA!

NEW DESIGN

- Shielded reference monitor.
- Front ported venting system for great bass response.
- 50 watts RMS-100 watts peak @ 4Ω
- 85Hz-27kHz, ±3dB
- 2kHz crossover for accurate phase and a wide "sweet spot" for mixing.
- Accurate flat sound reproduction.
- Great for studio and multi-media applications.

TANNOY

PBM 6.5II

Studio Reference Monitors

The PBM 6.5 II is the industry standard for studio reference monitors. They provide true dynamic capability and real world accuracy.

- 6.5" lowfrequency driver and 3/4" tweeter
- Fully radised and ported cabinet design reduces resonance and diffraction while providing deep linear extended bass.

SONY

SMS-1P

Powered Studio Reference Monitors

The new SMS-1P monitors are perfect for post production environments. They feature 2 types of inputs with independent volume adjustment, 15 watts of power, bass/treble control and shielding for use near computer monitors.

JBL

4206 & 4208

Studio Reference Monitors

The 4206 & 4208 studio reference monitors are 5" and 8" respectively. Both offer exceptional sonic performance, setting the standard for today's multi-purpose studio environments.

- Multi-Radial baffle ABS baffle virtually eliminates baffle distortion.
- Superb imaging & reduced phase distortion.
- Pure titanium diaphragm high frequency transducer provides smooth, extended response.
- Magnetically shielded for use near video monitors.



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PRO CASSETTE DECKS

TASCAM 202 mkIII / 302



These decks provide high-fidelity sound reproduction and a wide frequency response, as well as a host of editing and play back features.

- Dual Auto Reverse, Normal and high-speed dubbing.
- DblHy HX Pro™ extends high frequency performance and minimizes distortion.
- Auto sensing for Normal, Metal & CrO2 tape.
- Intro Check, Computerized Program Search, Blank Scan and One Program quickly find the beginning of tracks.

302 Advanced Features—

The 302 is 2 independent decks, each with their own set of RCA connectors, transport control keys, auto-reverse, and noise reducing functions. Cascade and Control I/O let you link up to 10 additional machines for multiple dubbing or long rec & playback.

112mkII/112RmkII



A classic "no frills" production workhorse, the 112mkII is a 2-head, cost effective deck for musicians and production studios. It features a parallel port for external control and an optional balanced connector kit for integration into any production studio. The 112RmkII features a 3-head transport with separate high performance record and playback heads as well as precision FG servo direct drive capstan motors.

SIGNAL PROCESSING

BEHRINGER

MDX 2100 Composer



- Integrated Auto/Manual Compressor, Expander & Peak Limiter.
- Interactive Gain Control (IGC) combines a clipper and peak limiter for distortion-free limitation on signal peaks.
- Servo-balanced inputs & outputs are switchable between +4dB & -10dB. **NEW LOW PRICE!**

APHEX 107 Tubessence 2 Channel Mic Preamp



- The 107 delivers outstanding sonic performance, as well as a great degree of presence, detail, & image.
- Up to 64dB of gain available
- 20dB pad with red LED indicator, 2 LED input meter
- Full 48V phantom power with red LED indicator
- Low cut filter at 80Hz, 12dB/octave
- Polarity inversion switch with LED indicator
- Switchable +4dB/-10dB output, 1/4" Balanced.

109 Tubessence Parametric EQ



The Apex 109 is an extremely versatile high performance parametric vacuum tube EQ with professional flexibility and sound quality.

Great for "warming up" digital signals.

EFFECTS PROCESSING



Lexicon

PCM-80 & PCM-90 Digital Signal Processors



A great combination for any studio owner with an ear for the best. The PCM-80 delivers high quality multi-effects based on the legendary PCM 70, maintaining Lexicon's high standards for sonic clarity and extraordinary processing power. The PCM 90 is a digital reverb with its roots stemming from the studio standard 480L and 340L effects systems. Reverbs from telephone booths to the grand canyon, the PCM 90 is incredibly realistic. Together, they make an excellent addition to any rack mount arsenal.

Buy a PCM-80 and receive a FREE Pitch FX Card offer valid thru 8-31-97

Lexicon MPX-1 Multi-Effects Processor



Lexicon's latest addition to their Digital effects family, the MPX-1 features top-quality effects in an easy to use, 1 rack space unit. With 56 Pitch, Chorus, EQ, Modulation, Delay, and world-class reverb effects accessible from the front panel, as well as TRS and XLR balanced I/O and complete MIDI implementation, the MPX-1 creates a new standard for cost and quality in a multi-effects device.

t.c.electronics

Wizard M2000 Studio Effects Processor



The M2000 features a "Dual Engine" architecture that permits multiple effects and 6 different routing modes making it a great choice for high-end studio effects processing.

FEATURES—

- 250 factory programs including reverb, pitch delay, chorus, flange, phase, EQ, de-essing, compression, limiting, expansion, gating and stereo enhancement
- 20-bit A/D conversion, AES/EBU and S/PDIF digital I/O.
- "Wizard" help menus, 15-bit dithering tools,
- Tap and MIDI tempo modes.
- Single page parameter editing, 1 rack space.

SONY

DPS-V77 2 Ch. Master Effects Processor



Sony's latest effects processor, the DPS-V77 yields excellent sonic quality combined with realtime control, a digital I/O and many more features that will put a smile on the face of any discerning studio engineer.

FEATURES—

- 198 preset & 194 user-definable programs.
- Control up to 6 parameters in realtime via MIDI information and an optional foot pedal.
- Use the AES/EBU & SPDIF digital I/O to link multiple V-77s together & when working with digital mixers
- 10-key pad input
- Shuttle-ring equipped rotary encoder allows for quick patch changing.
- A noise gate circuit is provided ahead of the input for guitar players and other instrumentalists who want top quality effects without sacrificing tone.

ALESIS

QuadraVerb 2 2 Ch. Master Effects Processor



Alesis' most powerful signal processor, the Q2 offers amazing audio fidelity in a versatile multi-effects unit. Great for professional & project studio owners, its large backlit display making parameter editing intuitive and quick.

FEATURES—

- 100 preset & 200 user-editable programs.
- Octal Processing allows use of up to 8 effects simultaneously in any order.
- Choose between over 50 different effects types for each block, including reverb, delay, chorus, flange, rotary speaker, pitch shift, graphic and parametric EQ, overdriver and more.
- 5 seconds sampling, triggered pan and surround sound encoding are built in.
- Selectable -10 dB and -4dB levels, servo-balanced TRS inputs and outputs.
- ADAT Digital Interface allows you to work entirely in the digital between the Q2 and an ADAT XT.

PRO HEADPHONES



K240M

The first headphone of choice in the recording industry. A highly accurate dynamic transducer and an acoustically tuned venting structure produce a naturally open sound.

- Integrated semi-open air design.
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- Steel cable, self adjusting headband.
- 15Hz-20kHz, 600Ω



SONY MDR 7506

The Sony 7506's have been proven in the "most trying studio situations. Their rugged, closed-ear design makes their great for keyboard players and home studio owners.

- Folding construction
- Frequency Response 10Hz to 20k Hz
- 1/4" & 1/8" Gold connectors
- Soft carrying case
- Plug directly into keyboards



beyerdynamic))) DT 770 Pro

These comfortable closed headphones are designed for professionals who require full bass response to compliment accurate high and mid-range reproduction.

- Wide frequency response
- Durable lightweight construction
- Equalized to meet diffused field requirements
- Padded headband ensures long term comfort



SENNHEISER HD 265/HD580

The HD-265 is a closed dynamic stereo HiFi-professional headphone offering high level background noise attenuation for domestic listening and professional monitoring applications. The HD 580 is a top class open dynamic stereo HiFi-professional headphone that can be connected directly to DAT, DCC, CD and other pro players. The advanced design of the diaphragm avoids resonant frequencies making it an ideal choice for the professional recording engineer.



Announcing our relocation on September 2, 1997 to a larger expanded facility at 420 Ninth Avenue (Between 33rd & 34th Streets) New York, N.Y. 10001



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Rotary 2 head design, 2 direct drive motors. XLR mic/line inputs (w/phantom power). Analog and S/PDIF (RCA) digital I/O. 32/44.1/48kHz sample rates & SCMS-free recording. Built in MIC limiter and 20dB pad. TRS jack w/level control for monitoring. Includes shoulder-belt, AC adapter, & battery.



PDR1000/PDR1000TC



4 head Direct Drive transport. XLR mic & line analog ins. Digital I/O includes S/PDIF (RCA) and AES/EBU (XLR). L/R channel mic input attenuation selector (0dB-30dB). 48V phantom power, limiter & internal speaker. Illuminated LCD display shows clock and counter, peak level metering, margin display, battery status, ID number, tape source status and machine status. Nickel Metal Hydride battery powers the PDR1000 for 2 hours, AC Adapter/charger included. **PDR1000TC Additional Features--** All standard SMPTE/EBU time codes are supported, including 24, 25, 29.97, 29.97DF, & 30 fps. External sync to video, field sync and word sync.

NEW! 1200 Monitor Sync readout ensures drift will be no more than 1 frame in 10 ars. **NEW!** 1200 Reversible Mute provides a rotary switch for selection of Stereo, Mono Left, Mono Sum, & M/S (mid-side) Stereo modes.

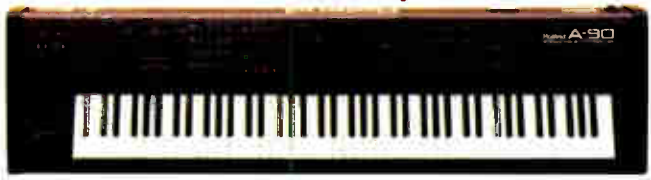
SONY TCD-D8

This is the least expensive portable DAT machine available. It features 18kHz, 16-bit sampling, automatic and manual recording level, a long play mode for 4 hours of recording on a 120 minute tape, & an auto-shock mechanism. It includes a carrying case, a DT-10CLA cleaning cassette and an AC-E60HG AC adaptor.



KEYBOARDS & SOUND MODULES

Roland A-90EX Master Keyboard Controller



The A-90EX is an 88-note, weighted master controller with one of the best keyboard actions currently on the market. It offers incredibly realistic piano sounds, powerful controller capabilities and 'virtual' programmable buttons which can be configured to operate your software and other devices. The A-90EX combines the majestic sound of a concert grand, the expressive action of a fine acoustic keyboard and the comprehensive MIDI functions of a master controller—all in a portable stage unit.



JV-2080 64-Voice Synthesizer Module



Roland resets the standard with the incredibly expandable JV-2080 64-Voice Synthesizer Module. This amazingly powerful package offers unprecedented expandability, digital signal processing, and remarkable operational ease. All housed in a 2-unit rack-mount design.

- FEATURES**
- 64-Voice polyphony / 16-part multitimbral capability.
 - 8 slots for SR-JV80-series expansion boards.
 - 3 independent effects sets plus independent reverb/delay and chorus.
 - 6 outputs: Main Stereo and 4 assignable.
 - **NEW** patch finder and Phrase Preview functions for easy access to the huge selection of patches.
 - Large backlit graphic display.
 - Compatible with the JV-1080, XP-50, and XP-80.



JP-8000 Analog Modeling Synthesizer

Analog is back—FOR REAL! This synth delivers a killer array of real-time control. Roland's revolutionary new analog modeling technology, and **FAT, FAT SOUNDS!** The assignable ribbon controller, 4 octave keyboard, built-in arpeggiator w/ external sync capability, and RPS function will make this little gem a must have for DJs and re-mixers as well as that funk musician looking for some new inspiration.



FEATURES

- 8 note polyphonic, 49-key velocity sensitive keyboard.
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- Single, Dual, & Split mode, assignable "on-the-fly".
- 128 user/128 preset patches, 64 user/64 preset performances.
- Tone control, 12 choruses, & 5 delay effects. *Flay of soul.*

PORTABLE HARD DISK RECORDING

Roland VS-880 V2

This new version of the popular VS880 incorporates powerful additional software functions that allow you to get the most out of this baby's incredible creative potential.

FEATURES

- Auto Mixing Function records and plays back your mix in realtime.
- Easy recording with an insert-effect in "INPUT-TRACK" mode.
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- Scene change by MIDI program change message.
- Simultaneous playback of 6 tracks in MASTER MODE recording.
- Digital output with copy protection.
- 10 additional effect algorithms (30 total) including Voice Transformer, Mic Simulator, 19-band Vocoder, Hunc Cancelor, Lo-Fi Sound Processor, Space Chorus, Reverb 2 4-band Parametric EQ, 10-band Graphic EQ, and Vocal Canceller.
- 100 additional preset effects patches.
- Use MIDI program & control change messages to edit and change effects.
- In total, over 20 powerful and convenient features in editing/sync sections have been added. Some require the optional effects expansion board.



Fostex DMT-8 VL

The latest in the Fostex HD recording family, the DM-8 VL truly brings the familiarity of the personal multi-track to the digital domain.

FEATURES

- 1 & 1/2 bit A/D, 20 bit D/A conversion.
- Built in 8 channel mixer, Ch 1 & 2 feature mic & line level.
- 2 band EQ and 2 A/X sends per channel.
- Cut/Copy/Move/Paste within single or multiple tracks.
- Built-in MIDI Sync, 6 memory locations.
- Dual function Jog/Shuttle wheel provides digital "scrub" from tape or buffer without pitch change. 1/2X to 16X.
- Divide the drive into 5 separate "real" cells, each with it's own limiting information.
- **NO COMPRESSION!**



MIDI

OPCODE

Studio 5 LX Macintosh MIDI Interface



The Studio 5 LX is arguably the most advanced MIDI interface on the market today. It incorporates a MIDI patchbay, MIDI processor, and SMPTE synchronizer with it's interface functions, all in a 2 rack space unit.

- 15 Independent MIDI ins and outs.
- SMPTE reads and writes all formats—24, 25/29.97/29.97DF and 30.
- Network multiple units, 240 MIDI channels each.
- 128 patches, unlimited virtual instrument controls.
- 2 assignable footswitch inputs, 1 controller input.
- 8X speed when used with OMS.
- Internal power supply.

Studio 3 & 4 MIDI interfaces, and Vision 3.5 sequencing software also available.



Mark of the Unicorn MIDI Time Piece AV 8x8 Mac/PC MIDI interface



The MTP AV takes the world renowned MTP II and adds synchronization that you really need like video genlock, ADAT sync, and word clock sync, even Digidesign superclock!

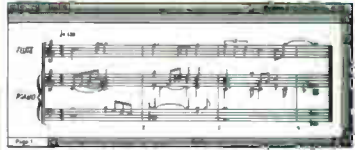
- Same unit works on both Mac & PC platforms.
- 8x8 MIDI merge matrix, 128 MIDI channels.
- Fully programmable from the front panel.
- 128 scene, battery-backed memory.
- Fast 1x mode for high-speed MIDI data transfer.

Pocket Express Mac/PC MIDI Interface



With the pocket express you get a 2 in, 4 out, 32-channel interface that supports both Mac and PC. It also features a computer bypass button that allows you to use it **EVEN WHEN THE COMPUTER IS TURNED OFF.**

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INTERNATIONAL UPDATE

—FROM PAGE 117, RIDGE FARM STUDIOS
ing, peaked ceiling supported by filigreed buttresses carved from ancient oaks. You don't get materials like this at Home Depot, so it's safe to say that Ridge Farm has a unique sound.

A large iso booth was added at the far end, and on the opposite end of the rectangular building the floor was split-leveled, with the control room raised and flanked by brick columns to support the Queded Q215 main monitors (with BSS Omnidrive crossovers); the space below it was turned into an iso room/machine room housing a pair of analog Studer A800 MkIII 24-track decks and, more recently, the electronic guts of the SSL 9000J, which replaced a Neve VR60. At the same time as the new console installation, additional wall-mounted outboard bays were added. There is also a new AC system; the shiny aluminum ducting attached to the exterior rear wall of the studio seems anomalous

—FROM PAGE 120, "BRASSED OFF"

you've got comprehensive panning between the outputs, so you can actually do five-speaker pans and things like that.

"I think the first thing we started off with was the 48-track editing," he continues, "because they prerecorded the band and then went along and shot the film to it. They cut the whole film to the band. But they'd done some offline edits, and we had to do some proper edits, which we did using a Sony 3000 editor controlling two 48-tracks. We'd mix down back onto the 48-track and also onto a pair of DA-88s that were striped to the same code that's on the video. So, we made them SMPTE chase to video, and we'd drop them into Record when we're ready to lay our mix down. That way, everything's all striped up; one Tascam reel equals one film reel. I do a CD reduction at the same time as the film mix."

One of the challenges this project posed concerned the way the camera pans of the brass band matched the music. "They'd pan onto instruments that weren't actually playing anything, and we had to create an illusion that you were actually close to those instruments," Rhodes explains. "We just had to mix with sensitivity

with the building's stone-tiled roofing and Elizabethan architecture, but Andrews says the ducts will be covered quickly enough by the assertive ivy that clings to almost every other vertical surface on the property.

Residential recording studios were not a new phenomenon at the time Andrews opened his facility; Ridge Farm, though, has the distinction of having outlived many of its contemporaries. Andrews attributes that to a combination of service—the studio's personnel complement includes housekeeping for the multibedroom guest house and on-site cooking—and to the improving economy in the UK music industry. "We had once considered adding a second studio to the facility," says Andrews. "But we realized that it would take away from the primary positive points of Ridge Farm, chief among which is its privacy. When you hire this studio, you're the only client, and that lets us serve that client much more fully."

to that." Other jobs included adding varying amounts of reverb (Lexicon, TC, etc.) to the mix to enhance the illusion of the band performing in different locations: in an outdoor gazebo for one competition, the Royal Albert Hall for the Finals, etc.

Rhodes has worked with Jones on a number of film scores, and over the course of their work, they have developed a custom monitor setup in conjunction with ATC: three of the large self-powered SCM100s or 150s LCR, and two Focusrite-powered SCM20s in the rear. "And I check the Dolby box frequently," Rhodes says. "We're very pleased with the system. "We always take our mixes to the dubbing theater after we've done and check them to make sure we're in the ballpark, and we've never had to redo anything."

The entire process of recording and mixing the brass band tracks took only one week. Both Shedy and Rhodes say it was a particularly nice assignment, because the band played so well and so professionally, and because the film itself was such a pleasure. "It was very long days, and we worked very hard, but it was terribly enjoyable," Rhodes says. "Every day you have a chance to work with a brass band is great fun." ■

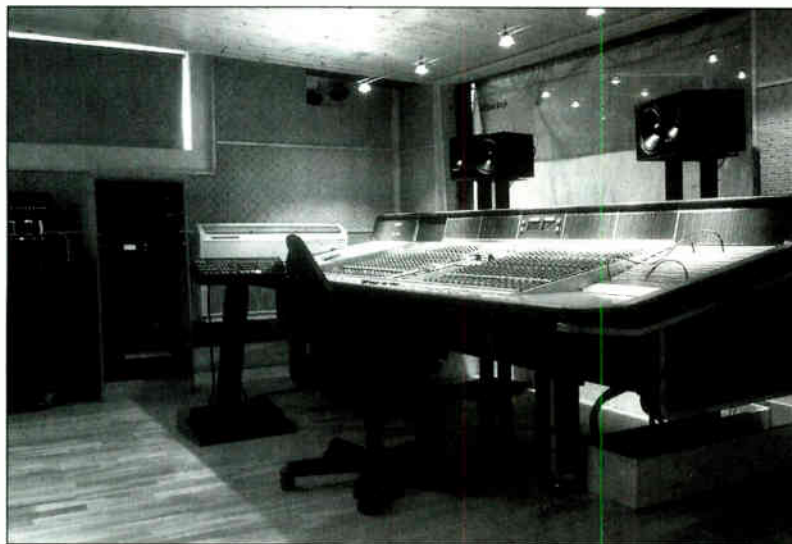
In addition, Andrews cites the fact that the UK music industry has recovered its balance: "There's a level of confidence out there in the music industry that hasn't been seen since before the recession a few years ago," observes Andrews. "[Record companies] are investing in music again."

That has sparked a new round of investment in studio infrastructure in the UK, e.g. Ridge Farm's new SSL 9000J, which was installed in June of this year. "It's an investment in longevity," says Andrews. "It perfectly fulfills the requirements of the business for the foreseeable future, and that aside, the sound quality is outstanding." But Andrews plans to stick with the pair of analog Studer A800 multitrack decks the studio has used for years. He prefers to rent digital multitracks when the clients request them. "That's another reason that being a one-studio facility helps us," he says. "Rentals of major equipment like [Sony] 3348 decks are done on a long-term basis, so you can get a better rate."

Andrews was a bit fidgety about having to take the studio down for three weeks while the new console was in-

stalled in time for a return visit by Japanese band Razz Ma Tazz. As a result, the place is in danger of having more structures built, laughs POM, one of Ridge Farm's staff engineers, a Frenchman whose name is an acronym for a moniker he says is unpronounceable for most native English-speakers. POM is also involved in the design of a rather solid and hefty tube DI box that the studio markets mainly to passing engineers. There are plans for the box to form, at some point, the basis of a small product line (the unit can be adapted as a mic pre, too), a move that some other studios are considering as a way to enhance revenues. The unit is a tad pricey at about \$700, but Ridge Farm's client list is an affluent one, including Oasis, M People, Pearl Jam and Paul Weller.

Despite his kinetic nature, however, Andrews knows not to change things too much. "People come here and come back here for a combination of things," he says. "It's not just the technology—although that's always improving—but it's also the environment. They come for the package. And the more complete you can make that, the better." ■



The new SSL room at SAE Technology College, London

NEW OFFERINGS FROM SAE TECHNOLOGY COLLEGE

SAE Technology College in London (formerly known as the School of Audio Engineering) was refurbished recently. A new SSL 4000-equipped studio was added (pictured above), plus a Yamaha 02R-based digital studio/teaching room. Programs available at SAETC include a new short course resulting in a DJ Certificate and a new Diploma in Multimedia, as well as the full- or part-time Audio Engineering Diploma and Studio Sound Certificate courses the school has always offered. ■

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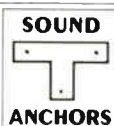
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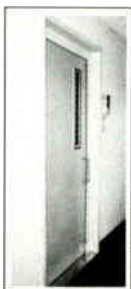
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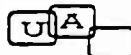
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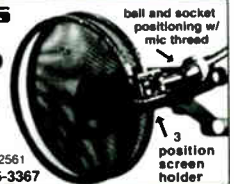
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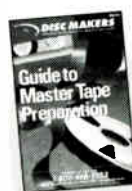
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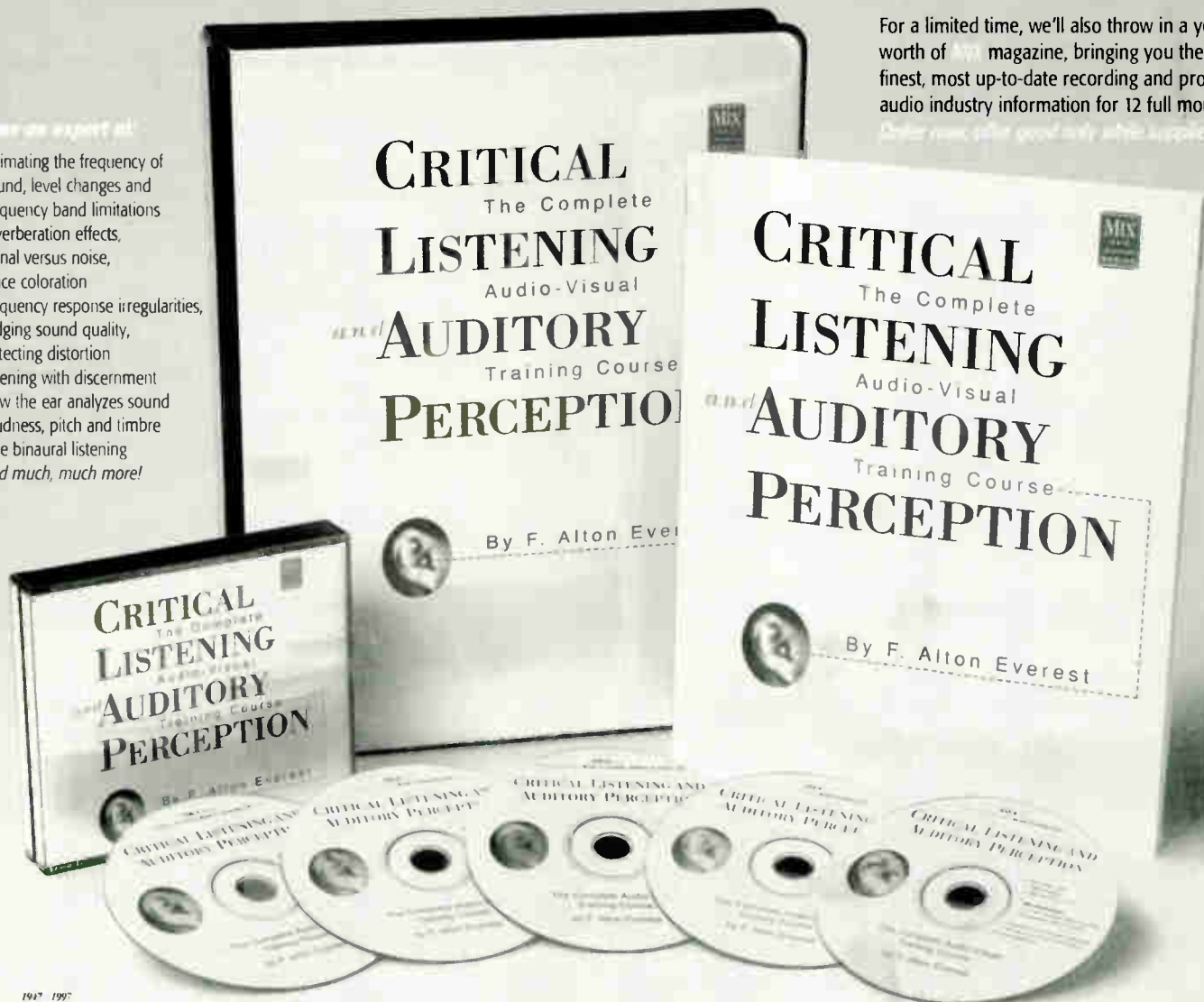
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—FROM PAGE 344, FEEDBACK

CORRECTION

While KNOX would have been a great set of call letters for a radio station in Knoxville, Tenn., Chet Atkins played fiddle on WNOX, probably on the "Mid-Day Merry Go Round." (East of the Mississippi, you know!)

*Kevin G. Crothers
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HEALTHY HEARING

It was really nice to see a technically astute article comparing the various ear pieces used with in-ear monitor systems ("Choosing Custom In-Ear Monitors" by Mark Frink, July '97 *Mix*). These are questions that I find myself answering over and over again when I'm approached by an artist who is examining these systems for the first time.

The emphasis on hearing conservation was reassuring. I can't stress enough how important it is for professional listeners to have a baseline hearing test after a 24-hour period of relative

quiet and have their hearing monitored regularly. In-ear monitors and ear plugs are good protection against noise-induced hearing loss only if they're used properly.

A professional fitting of custom hearing devices, education and awareness about hearing and hearing loss, and comparisons of one's hearing acuity against their baseline are the measures of how much good the devices are doing as far as hearing protection is concerned.

I also want to comment on the impression-taking process. This is an important step for a proper fit. IEM users should see a licensed audiologist for this process. Every state has a medical regulatory board that determines who can do what to an individual's ear and has qualifying practical exams. Taking an impression is considered to be an invasive procedure and should not be taken lightly. Make sure impressions are taken by someone who has been trained and is licensed to do so; otherwise, they are operating outside the laws of most states. Even then, the impressions for IEMs have specific requirements (some of which Mark mentioned), unlike most impressions

taken for hearing aids.

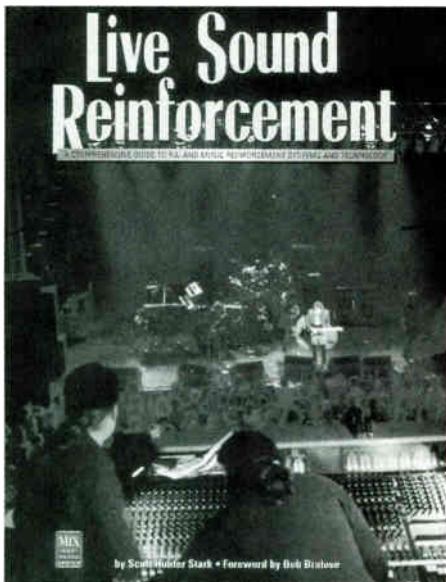
The next wave of articles might look at comparisons among the radios, the front end electronics, the headphone electronics, the companding circuitry and the need for multiband compression in the headphone amp for hearing protection. Although the market is maturing and the concept has been well-established in the industry, there is still a lot of room for improvement—meaning, as cool as it is now, it's only going to get better. There are many reasons for this and many issues to address, but these are left for another time.

*Robert M. Ghent, M.S., FAAA, CCC-A
The Musician's Hearing Institute
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FEEDBACK

THANKS FOR THE MEMORIES

Another excellent issue, in August 1997. Have read you since your first issue! Steve St.Croix was his usual irreverent, provocative best (could that ultrasonic speaker method be the next cold fusion device, do ya' think?). Nevermind, we'll find out soon enough. I just must always value skepticism.

It was particularly good to read Paul Lehman's "Retro This, Part 2." The memories of working in Columbia's Room 106 Electronic Music Studio were most nostalgic for me, and I caught the double-edged sword of those days. (I'd used that room a few years before Paul did, in going for my MA in composition.) I seem to recall getting more than one copy (composition per year) finished, though. But it was only by inventing many "bits of business," to get around the limitations and anachronisms.

Is this so different from the way we work today? Methinks not. I find I still have to invent tricks, some using such essential tools as QuickKeys (my favorite Mac program, hands down!) and ResEdit (another goodie), to regain control of items that the code designers don't think important, or even relevant. Always room to disagree, of course...

But Paul's ending was most apt, as the real nostalgia (for those of us old enough to remember how the music business once operated) is the way the music, artists and recordings got published and selected. Being good/creative was somehow still important. It was not just the bottom line that counted, as if one can gauge talent or genius using a sliding dollar scale. Perhaps the truth will out again someday.

For those also old enough to remember some of my pioneering synth efforts, you can see what I've been up to lately at: www.apocalypse.org/pub/u/wendy.

Thanks, and keep up the good work!
Wendy Carlos

THANKS AGAIN

Thank you, thank you for the "Retro This, Buddy!" piece in the July edition. Finally someone with the gonzos to spit into the status quo wind! I have followed the trend over the past few years in amazement at the return of tubes.

When solid-state came along, with all its problems, at least I never had a tube bite the big one after flipping on my guitar amp, just brought in from a -20° winter night. Not to mention the current-sucking behemoths that warm a good-sized room like a kerosene heater.

Every electronic item has its setbacks, of sorts, but the current trend to old technology is just that: trend. I have recorded music for nearly 25 years. I DO NOT miss the days without drum machines, sequencers, samplers and little Mackie mixers. I revel in the ease and quality of my hard disk recorder and mega-program FX units. And I have never heard a single person tell me that recordings were noisy or unprofessional compared to the sound I would have achieved had I used a \$10,000 vintage Telefunken microphone on a vocal. The listening public neither knows nor cares. If that were the case, the cassette would have followed the way of the 8-track. So while we were on this quest to perfect digital technology (and have for the most part), someone has gotten the marketing savvy to convince people that we need to return to the days of Eisenhower.

There is no doubt that the old mono, wide track-width Ampex recorders put out some marvelous recordings for Bing Crosby and the like, but they couldn't have even thought about mixing and editing a current movie track with 100 input channels whizzing along full of dialog, effects and music, not to mention the dynamic range and noise-free environments we enjoy today. I'll agree that classic recordings were made on some wonderful analog equipment, with a lot of creative production and artistic work. But, as Lehrman mentioned, it was done in spite of the technology of the day—not due to it. Because of all that great experimentation, we now have zillions of pop-up programs to use. I've often wondered if the brainchild behind this trend is someone who missed out on the analog age—maybe someone who hasn't had to physically splice tape or hunt all over for that 6L6 two hours before a gig.

I honestly believe that trends like this occur due to people's reminiscing over

simpler times. Although monster analog boards were the rage in the '70s and '80s, they were still pretty straightforward as far as being bused directly to the multitracks—a pretty intuitive path. Now, with computers and numerous editing tools, not to mention MIDI, the need for technical knowledge is much greater, and I think that shakes up some people from the old school. It's easier to look back and sigh and wish "if only." Justification for time travel.

In the meantime, I still use all digital recording and solid-state electronics. And until someone gives me a side-by-side comparison showing that Bobby Ray down the road and his brother J.P. can tell the difference between "Born to Be Wild" played back on a Kenwood compared to a Manley, I'll stick to what I got. Not to mention the cost difference. Wish I'd kept my Marvel comics and my MXR phaser, though!

*Randy DeFord, Owner
Oak Road Project Studio
Monticello, Ind.*

I CAN'T TAKE IT ANYMORE!

I've come across a sure sign that the world is coming to an end. A few weeks ago, I called Sterling Sound to ask a mastering engineer a question (about UV22 and why you can still cook food on Apogee products after they stop converting properly, in case you wanted to know why I called). I was told that his manager would call me back, but, like a typical manager, he or she didn't.

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Mastering engineers with managers!
*Mark Bingham
New Orleans*

—CONTINUED ON PAGE 343

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■ **Built-in subwoofer filter.** Power your subwoofer with an M•1400 and you've saved the \$250 to \$400 cost of an outboard electronic crossover (or the expense and hassle of "optional" plug-in cards). You get an 18dB per octave, linear-phase, uniform-time-delay design that's switchable between 63Hz and 125Hz. Since clipping elimination is undesirable when driving a subwoofer, that M•1400 feature is automatically disengaged when you switch to subwoofer mode (a critical detail not found on many comparably-priced amps with inconvenient plug-in subwoofer cards).

■ **Both 1/4" TRS & XLR inputs.**

■ **Constant directivity HF horn compensation.** "CD" horns dramatically improve high-end dispersion. But to make them work right, you have to add special equalization. Until now, that's meant hard-to-find, harder-to-adjust speaker modules (or using a graphic equalizer...which simply doesn't work). The M•1400's separate left & right CD horn adjustments are continuously adjustable from 2kHz to 6kHz.



■ **Massive, state-of-the-art TO-3PBL-case power transistors** with perforated emitters for maximum gain linearity. (Some amps use cheap, 20-year-old-technology metal TO-2 transistors... possibly due to lack of robust cooling resources.)

*20Hz to 20kHz

Below: a few of the 400+ folks who work at Mackie Designs in Woodinville, WA, 20 miles northeast of Seattle.

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