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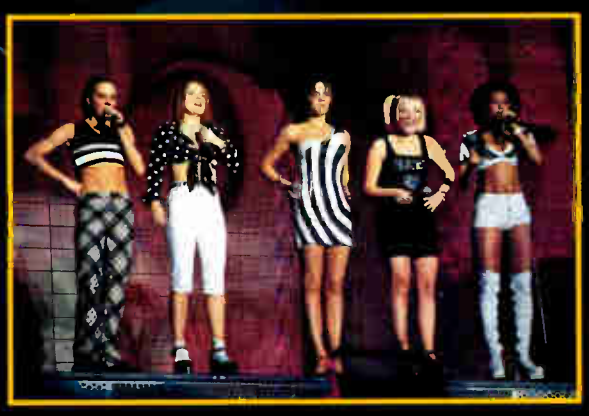

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"Mrs Brown" Image courtesy Ecosse Films.

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HR824 ACTIVE NEAR FIELD

UNFLINCHING ACCURACY.

We've claimed it. Reviewers and power users are confirming it: the HR824 is the most accurate 8-inch 2-way near field monitor you can buy. It lets you hear exactly what was recorded — from microphones right through to your mixdown deck. You'll suddenly discern fine nuances of sonic texture, dynamics, equalization and stereo perspective that were sonically invisible before. As one owner put it, *"I am correcting a lot of mixes I have made in the past."*

HR824

According to ***Mix*** magazine's recent field test of the HR824...

"Frequency response was the flattest we have measured so far... *there can be no question... they speak the truth."*

"The HR824s performed admirably, allowing us to distinguish very fine shades of tonal color and to establish subtle timbral and harmonic relationships between sounds. When the mixes were played on other monitors, including some that cost more than twice as much, they translated very well. The overall imaging was extraordinarily clear and detailed."

Because the HR824 is active, we can precisely match each transducer's actual output. During final assembly, each HR824 is carefully hand-trimmed to ±1.5 dB, 39 Hz 20kHz. As proof, each monitor comes with its own serialized, guaranteed frequency response printout.

EXTREMELY WIDE SWEET SPOT.

Instead of a traditional, narrow "sweet spot" directly between the monitors, you'll discover that the HR824s have a wide, "sweet zone." They maintain a wide, coherent, stereo panorama that lets you move from side to side — and share what you hear with others.

Again, *Mix* magazine...

"[HR824s] also have a wide off-axis listening range, due to the high-frequency dispersion of the waveguide...*the mids and highs were tightly focused, and the stereo image well defined."*

EXTENDED LOW FREQUENCY RESPONSE (sub woofer is built in*).

The HR824 has the lowest frequency response of any 8-inch near-field monitor. It really IS capable of flat, accurate, articulated response below 39 Hz and usable response to 30Hz — low frequency accuracy that simply can't be achieved with passive speakers. Bass notes start and stop instantly, without overhang, distortion or "tubbiness."

*A large honeycomb composite piston mounted on the back of the cabinet couples with the front woofer, acting as a subwoofer.

AC power and input connectors (1/4" & XLR) extend directly from the bottom of the amplifier down, allowing the cabinet to fit flush against any surface.

Mix **further states...**

"The HR824s handled the ultra-low bass remarkably well... *Mackie asserts that the HR824s are smooth from 39 to 20k Hz (±1.5 dB), and our tests corroborated the claim. This is no mean feat for monitors this size, and at this price."*

BRING ON THE HR824s. HOLD THE ICEBERGS.

Simon Franglen and his cohorts worked on the blockbuster hit Titanic at Castle Oaks Studio in Calabasas, CA. The studio was equipped with expensive studio monitors (one each for left, center and right) and a matched sub woofer. When Simon received three Mackie HR824s, he immediately did a series of rigorous listening tests against the old monitors. The unanimous decision: replace the studio's previous near field monitors with the HR824s.

"The difference was extremely pronounced," explains Simon. *"Three HR824s gave us better bass response than the larger monitors with a sub woofer. The HR824s were louder, had more dynamic response, and the imaging throughout the room [was incredible]."* Simon says the HR824's sweet spot is much larger, which made listening to things easier, *"when you were off to the side of the room."* *"Apart from very expensive speakers,"* says Simon, *"I've not come across any other speakers that sound as good. They absolutely tell me what I'm putting on tape."*

One person who's taken Mackie to heart is British-born synth player/producer SIMON FRANGLEN. You may not know his name, but you most certainly know his work. Simon Franglen's curriculum vitae includes work with Grammy winners Eric Clapton, Madonna, and Celine Dion (including the single from the blockbuster movie *Titanic*), rockers Yes and Crash Test Dummies, and legendary performers such as Michael Jackson and Barbra Streisand. Simon's done work in the movies, too, including Titanic, The Client, Dances With Wolves, Mission Impossible, Seven, and Contact. He's won seven Clio Awards for his work in television commercials—his clients have included Nike and Lee Jeans. His talents as a session synth player and programmer, as well as producer, are well-known throughout the entertainment world. With such credits, you'd think the guy was using incredibly esoteric, expensive gear. How else could he get such award-winning results? Well, Simon will be the first to say: you don't have to spend wads of money to get tough, quality sound gear. Not with Mackie.

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MONITOR—WELL WORTH DISCOVERING.

How much is unflinching accuracy worth to you?
As we talk to more and more professional engineers who have converted to Mackie HR824s, one thing is becoming especially apparent — our near field monitors can uncover nuances that other speakers miss. In fact, one Very Prestigious Major Los Angeles Studio Complex has now installed HR824s in its Quality Control Department — because our monitors can uncover miniscule audio flaws that were undiscovered during the tracking and mixdown process on "big studio monitors." When you value the quality of your creative product, HR824s should be in your studio, too.

HUMBERTO GATICA, TRIPLE GRAMMY AWARD-WINNING ENGINEER/ PRODUCER

Being at least nominally humble we thought it would take years for mixing/producing legends like Humberto Gatica to publicly admit — much less proudly proclaim — to prefer our HR824 near field monitors.

We're delighted the esteemed Mr. Gatica proved us wrong. After being turned on to HR824s by Simon Franglen, Humberto now uses them at his private facility and has carrying cases for a second pair so he can get the same accuracy in studios that haven't yet become HR824 converts. Talk about a traveling ad!

Humberto's stellar ear for mixing has served him well as a producer: Grammy awards and nominations for engineering (Chicago, Michael Jackson, Streisand) led the way to a Grammy for producing Celine Dion's "Falling Into You" and mixing/producing her 18X platinum album "Let's Talk About Love."

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Mix Magazine quotes from Mix Magazine Field Test by Barry Cleveland, April 1998. Reprinted by permission. And this isn't the only glowing review we've gotten. Check out the February 1998 issue of Recording Magazine, beginning on page 30; the April issue of Pro Audio Review, page 16; and the October 1997 issue of Audio Media, page 46.

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World Radio History

FROM THE EDITOR

AUDIO EDUCATION—BEYOND BUTTON-PUSHING

When considering the types of careers in engineering, the choices are numerous. There are civil engineers, aerospace engineers, structural engineers, chemical engineers, nuclear engineers, electrical engineers—even locomotive engineers. Each of these disciplines requires formal training, followed by some sort of license, diploma, certificate and, in many cases, the posting of a bond and/or insurance. Yet when it comes to audio engineers, the training requirements are a little less strict. In fact, there are none whatsoever, and the sad truth is that anyone who's ever adjusted a mic stand in an elementary school cafeteria is qualified to become a self-proclaimed "audio engineer."

This observation is in no way meant to belittle the efforts of serious, dedicated organizations such as AES, IEEE, SMPTE, etc., in their efforts to educate, inform and raise the standards of the industry as a whole. However, for the student seeking a career in audio, there is no single, set educational path toward that goal, as is the case with students intent on becoming future doctors, lawyers, teachers, etc. And unless the future audio engineer plans on a traditional four- to five-year college program, the options and choices available become rather complex.

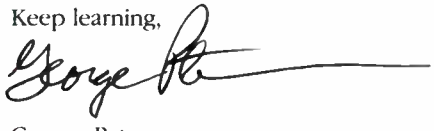
A question frequently posed to *Mix* editors is, "What program should I take to become a professional audio engineer?" Part of the answer hinges on the background of the person asking the question. A college degree program may be considered the ideal, but this is not always feasible due to financial and/or family considerations. Fortunately, short-term programs provide a more accessible alternative. In these cases, I always recommend that the student supplement the course work with as much electronics and/or computer training as possible, and such courses are often available at bargain rates at community colleges.

Typically, students are all-too-eager to get right to the hands-on stage without first attaining a grasp of audio fundamentals. One of the great secrets of success in audio engineering is the ability to adapt, and a knowledge of computer, electronics and audio basics gives a student the skill set needed to adapt, evolve and grow.

Consider two assistant engineers working in identical situations. Called in on a holiday weekend, they're the only ones available to cover an emergency session with an important client. Both set up for the session, and on the first downbeat, the sound from the vocalist's mic disappears. Understanding signal flow, one engineer systematically solves the problem (a faulty phantom power switch on the console strip) and continues the session. After spending an hour swapping mics and cables with no success, the other assistant hears a door slam as the client leaves the building. Which of these engineers would you want on your next session?

This month, our issue focus turns to education, with a directory of audio programs and schools beginning on page 200. But no matter what stage any of us are at in our careers, education is a lifelong process that hones our skills, sharpens our wits and prepares us for audio's brave new world.

Keep learning,



George Petersen
Editor

BPA INTERNATIONAL SPARS ABP American Business Press

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FEEDBACK

MORE REQUIRED COURSES

I thoroughly enjoyed Paul Lehrman's "Course Catalog for the Real World" ("Insider Audio," April '98). Most of the classes offered cover all-too-real situations. In an effort to improve his basic curriculum, I suggest that the following additional courses be required.

Psychology 125dB: The ongoing study of how to convince the diva onstage that the laws of physics really do apply to her and that you cannot possibly give her any more monitor.

Economics $0.00: Special course work in how to survive in some of the country's most expensive cities while performing an internship.

I also propose that Psychology Net30 (Trying Not to Hate the Client) should include a special non-credit seminar on resisting the urge to strangle the producer after hearing, "Once more from the top" for the 100th time as we try to comp one "perfect" vocal part to a lame, cookie-cutter song from 48 tracks of mediocre singing. Thanks for a great column and a great magazine.

Captain Analogue
cptanalog@aol.com

CAN WE ADD ONE MORE?

Thank you very much for the cover photo and accompanying text on FM Studios in the May issue. But a key part of our studio team was inadvertently left out, namely Robert Remiker Architects of Berkeley, Calif., and project architect Jacqueline Lange. The recording facilities, inside a 40-year-old warehouse, demanded precise insertion of the new studio spaces amid the concrete walls and "bowstring" trusses. They created laterally resistant steel cages not only for the monitor bridge but for the entire studio/control room assembly, making a building within a building.

Denzil Foster and I met Robert Remiker in 1991 while he was engaged in the reconstruction of the Skywalker Sound scoring stage at Lucasfilm's Skywalker Ranch. Remiker and Lange were the architects for the recent rebuilding of Studio A at The Plant in Sausalito, Calif. And Remiker continues to work with FM Studios as our business evolves, considering future expansion and development in pursuit of a truly artist-friendly environment.

Thomas McElroy
FM Studios
Emeryville, Calif.

DID WE SAY MOST? WE MEANT...

I just read Philip De Lancie's article entitled "Long Distance Audio Transmission Systems" (April '98). He did a nice job. I thought he laid the scenario out quite well and posed well-thought-out questions to those interviewed. And the article was accurate, other than a statement in the sidebar entitled "Hello, New York, It's Los Angeles," in which Gary Eskow states that the DolbyFax is "perhaps the most popular" of the ISDN codecs.

I maintain a database of ISDN codec users worldwide and post it on the Web at www.digifon.com, and unless EDnet has sold more than 300 new DolbyFax systems in the last four months, I expect that DolbyFax is the least popular of the major ISDN codec systems out there. Anyway, it's always nice to see this technology get positive press.

Dave Immer
President, DIGIFON
Fairfield, Conn.

ADVICE FOR INTERNS

I am compelled to reply to the letter from An Anonymous Engineer (June '98 "Feedback"). Anonymous Engineer, it seems that you are confused about your internship. Its purpose was not to give you seat time or expose others to your enthusiasm (may you never lose it) but to teach you two very important and linked lessons:

Lesson 1: Shut Up. No one on the session cares about your passion or your commitment to music. They do care that you run the machine, get the coffee or set up the mic correctly. Your passion, and any expression of it, is inappropriate. Period.

Lesson 2: Listen. While you aren't talking, you should be listening—to everything in the room. How does the program material sound? I cannot tell you the number of times you will ask and be asked this question. This is the time to learn what things sound like because you'll be using the information later. And pay attention. You can learn an awful lot by listening and watching. Quietly.

The stuff you learn in school is important but pales to insignificance compared to your ability to fit smoothly and unobtrusively into the session. Try it for a while.

Phil Brown
North Hollywood, Calif.

DVD DEBATE

I can't believe that people continue to have these wet dreams about DVD-Audio. The only people that have the slightest interest in it are audio professionals and their groupies. The vast consumer base is clearly indifferent to higher bit rates and, if there was even the slightest price penalty, overtly hostile.

Only three things can give DVD-Audio a fighting chance:

1. Pictures. If you can get your music along with music video, your symphonies and operas with a view of the stage, etc., this would have some fighting chance of success. (Of course, it's now no longer DVD-Audio, is it?)

2. Surround sound. Unlike high sampling rates, surround sound provides an immediately recognizable improvement (or at least a change) in sound.

3. Longer playing time. Although this is the single most important advantage of DVD for the public, I'm sure the RIAA will fight it to their last breath. The one thing they don't want is the ability to put more on the disc. Nonetheless, the ability to capture all nine Beethoven symphonies on a single-side, single-layer disc is a definite advance for the customer.

None of the above will work, however, unless the discs can be played on *every* DVD player on the market. Add-ons and special players are not in the cards. And that means 448kb/s Dolby AC-3 sound, which, like it or not, is the way surround sound is going to be provided in the future.

Norm Strong
Seattle

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CURRENT

GEARING UP FOR THE 105TH AES CONVENTION

With memories of the highly successful 104th AES convention, held in Amsterdam earlier this year, slowly fading, convention co-chairs David Robinson and Valerie Tyler have been busy preparing for the 105th AES convention, to take place in San Francisco's Moscone Convention Center September 26-29. A press breakfast was held in New York in June to discuss the event, which will feature a keynote address by Alan Parsons.

At the breakfast, AES executive director Roger Furness said that more than 20,000 visitors attended sessions at the 103rd convention, held in New York last fall. Furness expects a record number of attendees at the San Francisco event, based on the proliferation of affordable, high-quality digital recording environments, which has helped the industry grow robustly and has led to more than 325 pre-registered exhibitors, already up from last year's fall convention.

Educating new recording enthusiasts has become a critical part of the society's mission, according to Furness, who told journalists that student papers were an important part of the Amsterdam convention.

Parsons' credit list trails back to the early days of *Abbey Road*, where he served as an assistant engineer on The Beatles' "Let It Be" and "Abbey Road" sessions, and continues with his engineering of Pink Floyd's *Dark Side of the Moon* and his own Alan Parsons Project. He will kick off the convention with what promises to be a visionary talk on the future of the music industry. Sidney Harman will host an afternoon session, and the ever-popular NARAS Grammy Recording Forum will be back for its tenth go-around. Featured workshops will cover audio on the Internet (systems and production) and multichannel music.

The highlight of after-hours activities will be the party jointly hosted by the AES and the San Francisco Bay Area Audio Manufacturers (BAAM), to be held at Yerba Buena Center for the Arts on Saturday, September 26. Tickets will be available from the AES at a cost of $30 for members (limit of two per member), $40 for nonmembers (limit four per person) and $40 for exhibitors (minimum ten). Convention attendees also will have the opportunity to tour Skywalker Ranch, Sonic Solutions and Dolby Laboratories.

The AES has blocked out a number of hotel rooms. Reservations for both the convention and accommodations can be made through the AES Web site: www.aes.org. —*Gary Eskow*

Alan Parsons will be the keynote speaker for the 105th AES convention.

MACKIE ANNOUNCES TWO ACQUISITIONS

Woodinville, Wash.-based Mackie Designs has entered the compact, high-performance speaker market with the acquisition of Radio Cine Forniture (R.C.F.) S.p.A. of Reggio Emilia, Italy, and Fussion Audio Inc. of Costa Mesa, Calif.

RCF has been in business for almost 50 years and has established itself in Europe as representing the upper end of the pro audio speaker market. Fussion, a start-up formed by former RCF acoustic engineers, has developed proprietary active loudspeaker technology and has maintained a relationship with RCF.

"Mackie has been moving in the direction of the high-end sound reinforcement speaker market for quite some time by virtue of the power amps and also the active studio reference monitors that we've been building in the last year. Part of this integration with Fussion and RCF is in powered, active speakers and that's a technology that we've been moving toward for the last two years, so we feel it's a natural extension for us," says Greg Perry, Mackie's director of advertising and public relations.

"We've had an OEM agreement with RCF since last year, and it was after working closely with them that we realized a real opportunity for us. We're looking at integrated systems in the sense that we build mixers and power amplifiers, and the next obvious choice for us was the cabinets to reproduce the sound. You'll be seeing a lot more from us later in the year. We'll be releasing new technology at AES this fall."

SPONSORS LINED UP FOR 14TH ANNUAL TEC AWARDS

The Mix Foundation for Excellence in Audio has announced the sponsors for the 14th Annual Technical Excellence & Creativity Awards, to be held Sunday September 27 at the Fairmont Hotel in San Francisco.

Platinum sponsors are JBL Professional, *Mix* magazine and Quantegy Inc. Gold sponsors are Alesis Corp., AMS Neve, Audio-Technica U.S. Inc., Disc Makers, Gibson Musical Instruments, Harman Music Group, Solid State Logic, Sony Electronics Inc. and Yamaha Corp. of America. Silver Sponsors are Aphex Systems, Apogee Electronics Corp., Clair Brothers, Digidesign, Emtec Pro Media/BASF, Euphonix Inc., Lexicon Inc., Mackie Designs, Meyer Sound Labs, Panasonic/Ramsa, Roland Corp. U.S., Shure Brothers, Skywalker Sound, Studer North America, TC Electronic, Telex/EVI Audio and The Village Recorder. Bronze Sponsors are Akai Musical Instruments, Otari Corporation, Sony Music and Lisa Roy's Studio A Consulting.

For more information about the 1998 TEC Awards sponsors, see page 126. A limited number of sponsorships and

—CONTINUED ON PAGE 16

World Radio History

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Regardless of your recording gear, the single best way to improve your sound is with Neumann microphones. Utilizing a large-diaphragm capsule derived from our world-standard U 87, our new TLM 103 gives you the full, rich, warm sound that Neumann is famous for. It has the lowest self-noise of any condenser mic in the world – important in today's low-noise digital recording environment. And with our new TLM 103, owning a Neumann has never been easier...for less than $1000 US, you can have the most important piece of equipment you'll ever own.

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Buying a new mi

When you're looking for a top quality professional-standard mixer with plenty of inputs, versatile auxes and terrific EQ, the new WZ16:2 is it.

Designed and built in Britain by Allen & Heath, its ergonomic panel layout guides you smoothly through setups, fades, cues, fx and monitors with speed and precision.

Wide gain front ends match all sources, full 100 mm faders give you total control over the mix, led's indicate pfl selection and warn against clipping, and balanced XLR outputs for L-R feed long lines with ease.

Wide-gain front end matches any source on any mono channel

Low-cut filters on all channels cuts mic thumps & stage rumble

4-band 2-sweep EQ for excellent sonic control

Individual controls, no fiddly concentrics

MSP signal path for sonic transparency (distortion less than 0.009%, better than 105dB dynamic range and an EIN of 129dBu)

All metal chassis, for solid and reliable service

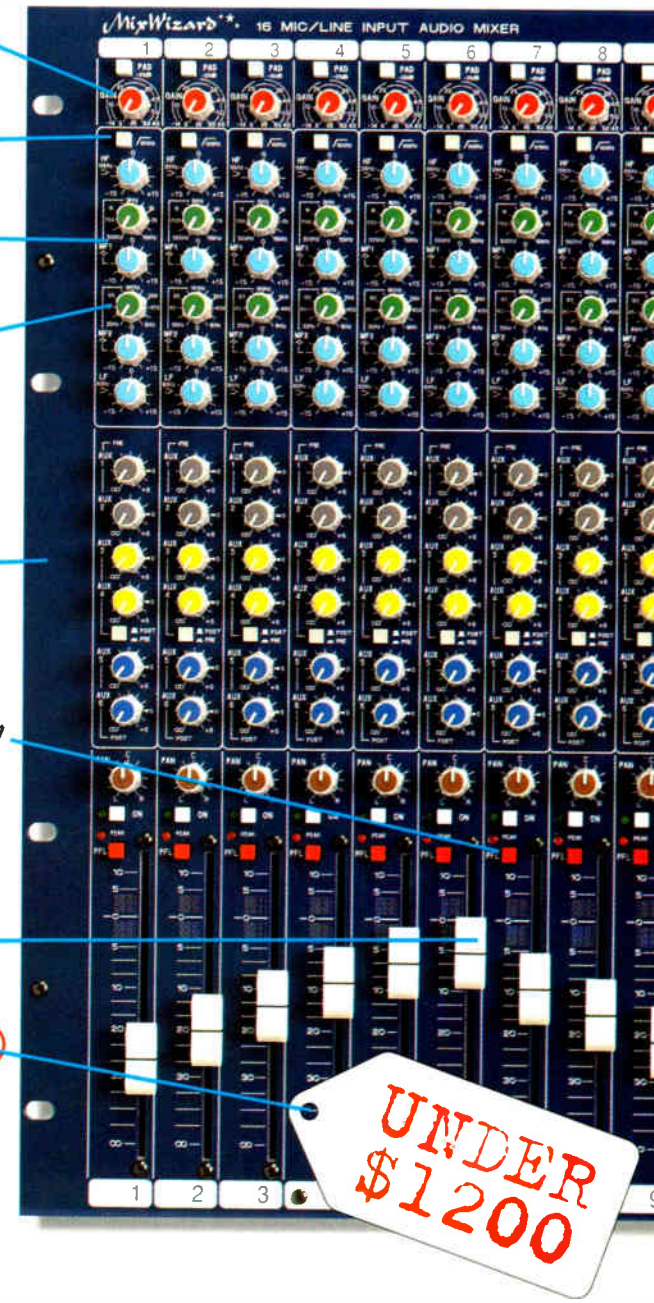
16 XLR mic/line inputs - 20 incl stereos

channel peak LEDs indicate potential clipping

Inserts on all channels for compressors, gates dedicated fx etc

100 mm faders, full length for smooth precision control

unbeatable!



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Stereo/Mono aux monitoring easy checks, very versatile monitors

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INDUSTRY NOTES

Don Wershba was promoted to vice president, music—Eastern Region at **Solid State Logic**. Wershba, who joined SSL in April 1991, will be based in the company's New York office. Wershba formerly worked as a recording engineer at Right Track, Electric Lady, Quad Recording and others...Opcode Systems' president and CEO **Chris Halaby** was appointed to the **Berklee College of Music** Board of Trustees...**Bob Tulloch** was named head of soon-to-be Los Angeles-based **Otari Corporation of America**'s Optical Data Division...**LA Audio** (London) announced that it is setting up a new dealer-direct sales service to the U.S. For more information call (44/171) 241-3644...**AMEK** recently relocated from Hollywood to Nashville and named **Allan Nichols** VP of sales and marketing...Old Lyme, CT-based **Sennheiser Electronic Corporation** announced the appointment of **Chevin Research** as exclusive distributor for North, Central and South America. Sennheiser will warehouse, market, sell and service the complete line of Chevin Research amplifiers...**Rane Corporation** (Mukilteo, WA) expanded its research and development group by hiring **Ray Bennett** as analog audio design engineer and **Dana Troxel** as a senior digital audio design engineer...**Eastern Acoustic Works International** (Buckinghamshire, UK) named **Sound Dept** as its exclusive UK distributor. By mutual agreement, EAW and LTP Audio, the previous UK distributor, will discontinue their relationship. Back in the States, EAW announced an expansion of its woodworking operation based in Whitinsville, MA. The site will also host a custom Fiberglas shop and specialized prototype lab...Former **Euphonix** (Palo Alto, CA) marketing communications coordinator Kirstin Nelson's duties have been disbursed among the following: **Peggy Blaze**, advertising, public relations, customer photo shoots; **Alex von Minden**, promotional items, sales-related marcom, collateral; and **Rob Lewis**, trade shows and special events. Nelson left the company to pursue an MBA...**EMTEC Pro Media** (Valencia, CA) named Jan Alan of **Burlington A/V Recording Media** in New York its U.S. Dealer of the Year. Peter Noddle of Audio Cine Services in Toronto was named Canadian Audio Dealer of the Year...**JVC Professional** (Elmwood Park, NJ) created a new division, the Digital Broadcast Systems Group, which will coordinate large-scale purchases by broadcasters and post-production users...Parsippany, NJ-based **Denon Electronics** appointed **James McGuinness** to the position of field engineer and broadcast products specialist for its professional products division. **Silvio Zeppieri** was promoted to technical support specialist in the same division...**Irwin Zucker** was tapped for vice president of engineering at **JBL Professional**, where he'll manage all strategic engineering and product development programs...**BGW Systems** (Hawthorne, CA) brought onboard **Glenn Del Valle** as an inside sales associate of the Audio/Amplifier division...**Ken Blaustein** was named vice president of sales at **Audio Plus Video International**'s (Northvale, NJ) new West Coast facility in Burbank. The facility will be known as Audio Plus Video/West...**Yamaha Corporation of America** (Buena Park, CA) hired **Daniel Craik** as product manager, Commercial Audio...Manhattan-based **The Toy Specialists** became the Master Distributor for the complete **Prism-Sound** product line...**Kevin Witt**, formerly of **Dynaudio Acoustics/AXI** and **Pyramid Audio**, passed away on June 23. The Witt family has requested that in lieu of flowers, financial donations be made in support of Witt's young son. Donations can be sent to: Keillor Witt, c/o Kerry Witt, 2006 Tall Tree Drive, Atlanta, GA 30324. ■

—FROM PAGE 12, CURRENT

tickets are still available. For information, call Karen Dunn at (925) 939-6149 or e-mail KarenTEC@aol.com.

OTARI MOVES HEADQUARTERS

Otari Corporation, based in Northern California since 1970, announced an upcoming move of its North American headquarters to the Los Angeles area. All service and support will continue without interruption during the move, which is scheduled to occur this fall.

"Our intention for the move is to get closer to the largest market for our products," says Otari president Jack Soma. "The relocation will facilitate better service for our customers and a closer communication with market needs."

GET THE VIBE

The Fourth Annual Vibe Music Seminar takes place this month, August 5-9 in New York City. Held at the Hilton Hotel, the event will bring together members of the urban entertainment community, with events, workshops and panels covering the music, film, new media, television, sports and fashion industries. For more information call 212/488-7328 or visit www.vmsvibe.com.

UPCOMING SHOWS

The Broadcast India Exhibition and Symposium '98 will be held October 29-31 at the World Trade Center, Mumbai (Bombay), India. For more information call 91-22/215-1396; e-mail saicom@bom2.vsnl.net.in; or visit www.saicom.com/broadcastindia.

The NAB Radio Show occurs October 14-17 in Seattle. The show includes exhibits, management sessions, engineering certification workshops, special events and more. Visit www.nab.org/conventions or call 800/342-2460.

NEW WEB SITES

Neutrik updated its Web site, www.neutrikusa.com, to include expanded distributor and new product pages, along with a page dedicated to the trade shows that Neutrik USA attends.

TOA Electronics' new site allows users to access data on the company's entire product line, and dealers can view and print spec sheets. Visit www.toaelectronics.com. ■

CHECK OUT THIS MONTH'S MIX ONLINE!
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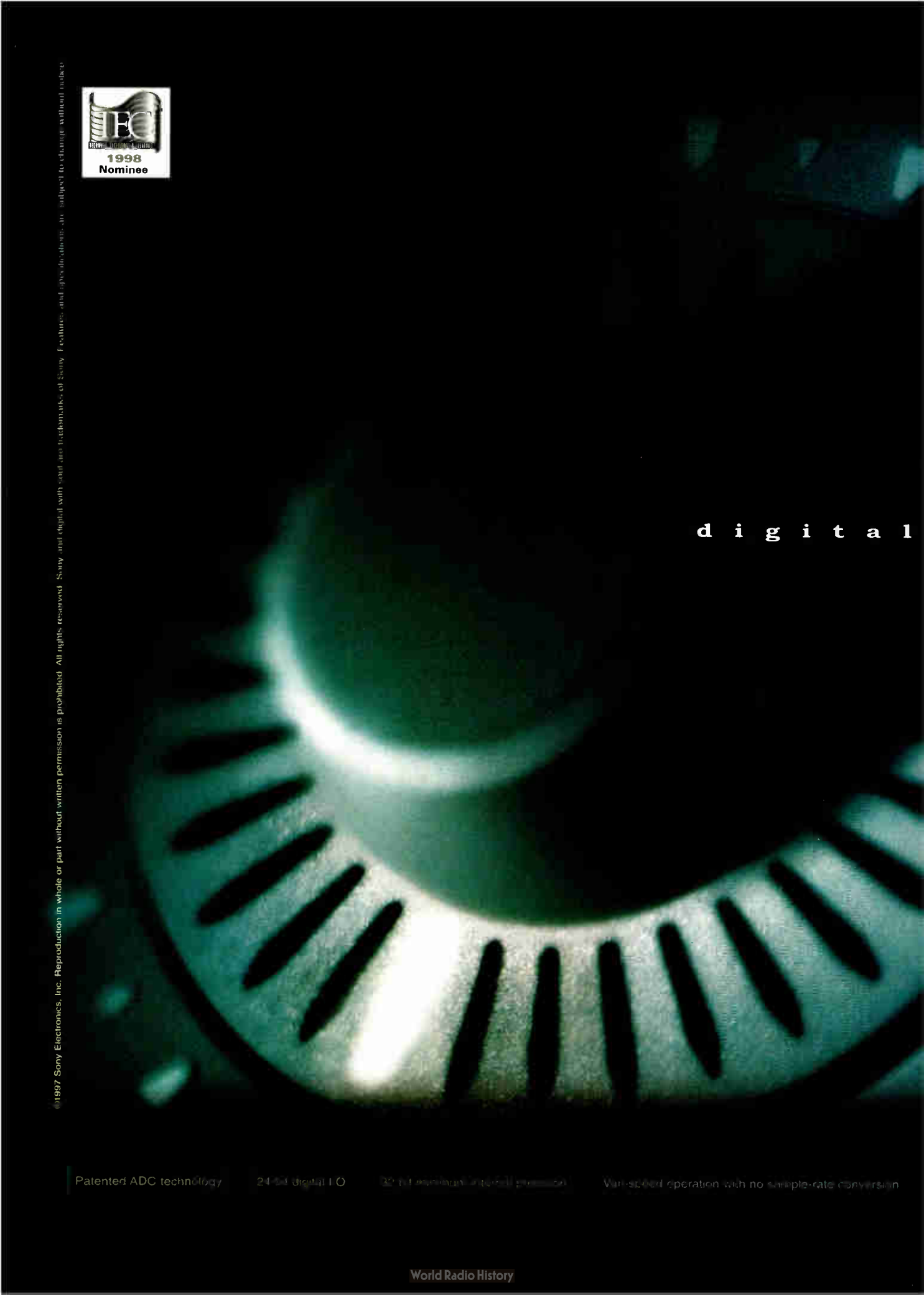

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Direct interface to DASH DASH PLUS recorders

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LOST IN SPACE

WHAT WE HAVE HERE IS A FAILURE TO COMMUNICATE

Okay, so a satellite hits a few used syringes and an old empty Mickey-D wrapper or two. Fine. It's gonna happen, sooner or later. I mean junkies gotta eat too; even the really spaced ones.

I guess the real problem came up when the pointy end of one of the syringes poked a hole in the code and the bird rashed. And you know the rest of the story. Pagers went down, phones went down, and a good bit of the first world's ongoing data stream just went away for a while. A failure to communicate. Half of everybody who got cut off panicked, half went surfing. A few camels preoccupied with the realities of a daylight desert crossing didn't even notice until they got to the oasis and were denied water because their owner's credit card couldn't be verified.

So what have we all learned from this sudden unraveling of the very fabric of data linking a couple of months ago? Absolutely nothing! You see, there is nothing we *can* learn, nothing we can do. It is far too late to back up—too late to back up our data, and too late to back up in time to when we *could* back up our data. Maybe I should back up a bit. Not my data, but my story.

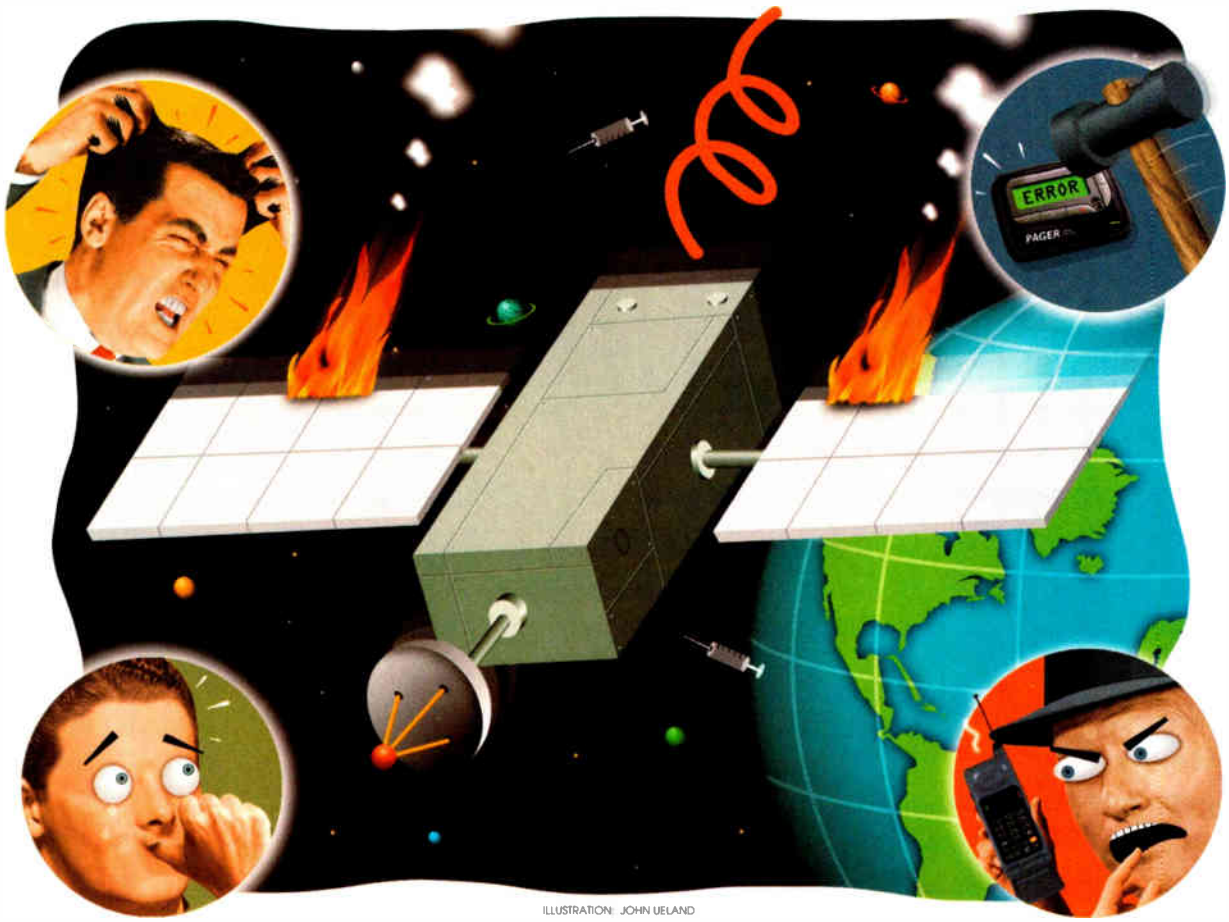
Anybody who relies on computers knows you have to back up. I know, I know—you hear this every day from everybody. You probably tell it to everybody. I'm sure you back up every hour of every day. But you have also lost critical data, haven't you?

BY STEPHEN ST.CROIX

THE GOOD OLD DAYS—WHEN COMPUTERS WERE BIG AND DRIVES WERE TINY

Two thousand years ago I started the pro division of Marshall with an analog delay line called the Marshall Time Modulator. I wrote the owner's manual on a CPM machine with a word processor called Electric Pencil. My system hard drive was a very, very expensive 5-megabyte anchor from Micropolis. I actually went to Micropolis with Tom Oberheim to pick it up and was glad to pay thousands for it. It was amazingly fast, and would actually format in less than one hour. It weighed about 28 pounds.

—CONTINUED ON PAGE 241



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by Otari

1998
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8 Channel MO Recorder/ Editor

Fully self-contained, with dedicated controller and no external computer required.

Easy to edit. On screen waveform display with DSP

Ideal for Post Production and Broadcast applications

Sonically Superior 20 bit D/A's and A/D's

DX-5050

2 Channel MO Recorder/ Editor

Familiar tape-like interface, lightweight and easy to use

Standard PC WAV file format

Inexpensive 1/4" 2 track machine replacement

Compatible with most PC based editors

PD-20

2 Channel MO Recorder/ Editor

Comprehensive editing and DSP functions

Ideal playback system for fixed venue installation

20 bit D/A's and A/D's

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For decades Otari has pioneered the art of analog Multitrack Recording. With hundreds of thousands of machines installed worldwide, Otari is clearly the benchmark in recording technology. In this spirit of innovation a new generation of leading edge Digital Recorders has emerged.

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PD-20

PD-80

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World Radio History

CIRCLE #010 ON PRODUCT INFO CARD

SOUND MAKES THE PICTURE.

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YOU MAKE THE SOUND.

TASCAM MAKES THE TOOLS.

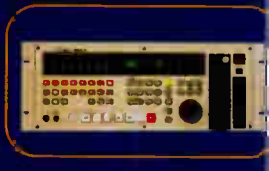
The race to all-digital post is on and it's critical to choose the right tools. Unfortunately you're faced with many choices that create as many problems as they solve — like system incompatibility due to closed, proprietary platforms and file formats, for starters. That's why TASCAM is dedicated to an open systems approach to audio post with recording, dubbing and mixing technology that broadens your horizons, not limits them.

TASCAM's complete line of advanced digital audio tools helps you manage the wide array of media and file formats you deal with every day. Each is designed with input from leading industry professionals who know what works — and that means better technical and creative control of production, ADR, foley, scoring environments and dub stage.

TASCAM's advanced tools include the new MMR-8 Digital Dubber and MMP-16 Digital Player. Both feature removable hard drives and true cross-platform, multi-format capability that virtually eliminates transfers. Hi8 Modular Digital Multitracks like the DA-88 and the DA-98 with Confidence Monitoring offer the industry standard DTRS® tape medium and performance. And perhaps the best surround sound and DVD mixer in its class — the TM-D8000 digital console — gives you superbly flexible routing plus complete control of your video and audio machines. These open system production tools read, write and deliver the most popular recording formats making the handling and management of your audio assets a breeze. Open your mind. Call TASCAM today and get to know the tools that will increase your productivity, creativity, and ultimately give you the one thing you really want — more credits.

DA-88 Modular Digital Multitrack

DA-98 Modular Digital Multitrack



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World Radio History

FUTURE DOCS, PART I

HOW MANY TREES MUST A MANUAL CUT DOWN?

Where are you reading this? Are you in your living room, having a quiet catch-up on your magazine stack after supper? Are you in your studio with your feet up, keeping one eye on the computer screen as you burn the day's work onto CD-ROM? Are you in the smallest room of the house, hiding from the family, performing two functions—input and output—at the same time? Maybe you're at the beach, in a park with the kids or on an airplane. Or perhaps you're online, staring at your monitor as the words scroll down the page of your browser. Or are you in your car, listening to my words on your built-in ASCII-to-speech converter? (Oh, you haven't got one of those yet? You will...)

When it comes to reading magazine articles, these days you have lots of choices about when, where and how. Magazine pieces are small, have a handful of graphics at most, and are meant to be read in one sitting, while you're not doing much of anything else that demands your attention. That's why they translate so well from one medium to another. Once this article is written (and edited), putting it on the Mix Online Web site will require someone to spend about five minutes converting into HTML format, and about eight seconds transferring it to *Mix*'s server. If you don't want to read it on the screen, you can download it and print it out and shove it in your pocket, to be perused over lunch, or while you're waiting for the jerk in front of you at the toll booth to get change back for his $20 bill.

BY PAUL D. LEHRMAN

But there are other written materials that are critical to our industry—perhaps even more important (yes, it's true!) than magazine articles—which don't flow so well from one medium to another. User manuals, despite the fact that many people claim never to read them, are the best—often the only—way that the makers of the tools central to our industry have to teach their customers how to use those tools. I've written before about the sorry state of pro audio documentation, and I'll no doubt do it again, but this month I want to talk less about the quality level and more about the *form* of user

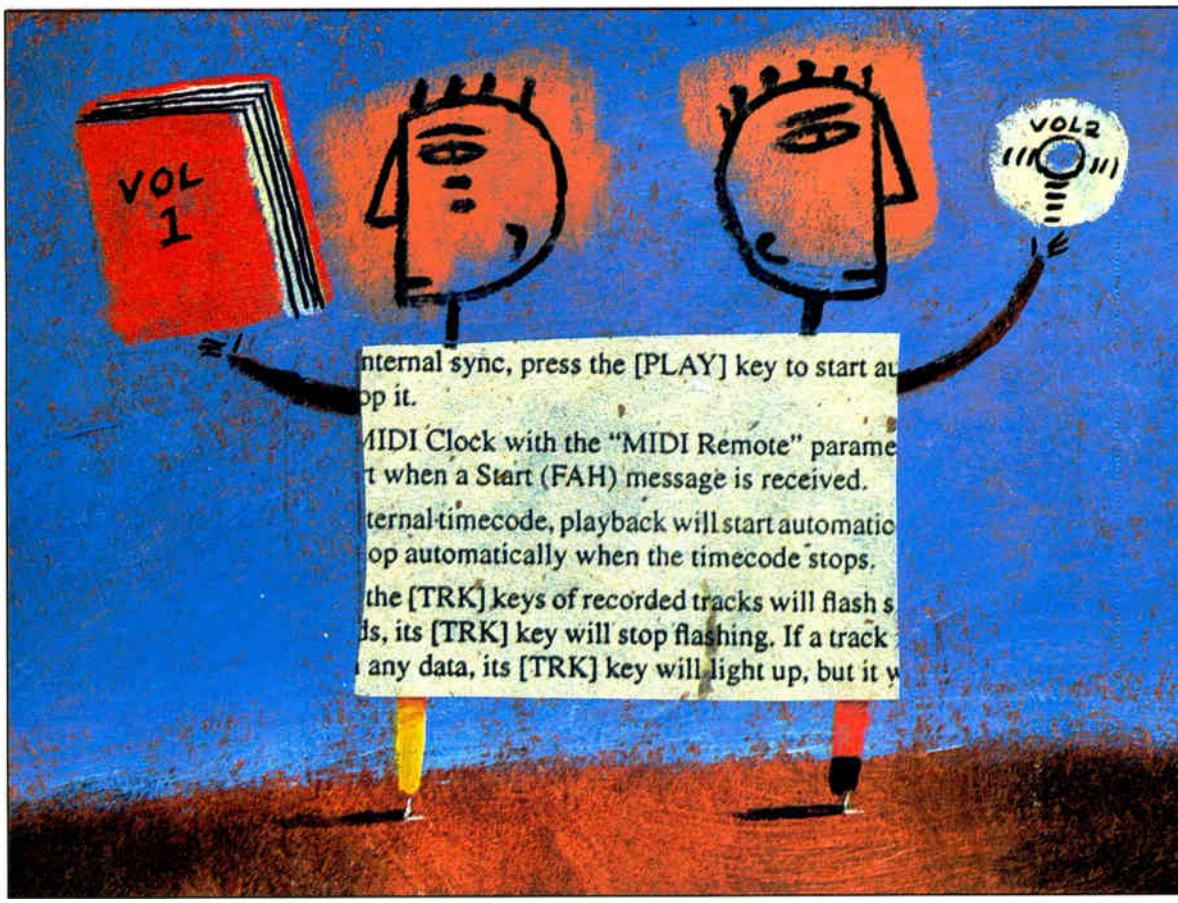

ILLUSTRATION: JAMES YANG

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EXPERIENCE THE WARMTH OF AKG'S SOLIDTUBE MICROPHONE.

John Guess and AKG's SOLIDTUBE Microphone Bring The Warmth of Sound to The Studio.

As a leading producer and studio engineer, John Guess appreciates the rich sound, ruggedness, high SPL capability, and extremely low self-noise of AKG's new SOLIDTUBE microphone.

The heart of AKG's SOLIDTUBE is the combination of the capsule and tube. The capsule features the same gold-sputtered mylar material as used in the legendary C12. The ECC 83 (12Ax7) tube is field replaceable and available at most pro studio dealers.

Try out the new AKG SOLIDTUBE and experience the warmth.

"AKG's SOLIDTUBE is the best overall value of any high performance condenser tube microphone that I've ever used."

John Guess

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The VS-1680. It's huge. Make room.

Finally, the studio of your dreams is within your reach. With 16 tracks (8 simultaneous record), 4 stereo or 8 mono effects processors*, 26-channel automated digital mixer, 256 virtual tracks, direct CD burning capability and MT Pro 24-bit recording mode, the VS-1680 looms large in any room. Make it yours.

Call (800) 386-7575, ext. 595 for your Demo Video ($5.00).

* With two optional VS8F-2 Dual Stereo Effect Expansion Boards

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Roland
VS-1680 Digital
Studio Workstation

World Radio History

manuals—a topic that is becoming increasingly significant as our headlong plunge into converting all media to digital continues to pick up speed.

Traditionally, of course, user manuals are big, thick books, sometimes in multiple volumes, that contain what the manufacturer thinks you need to know about their software or hardware product. Sometimes these books contain tutorials that teach you some of the important features of the product by walking you through various procedures, step by step. They also include reference sections, in which every feature, critical and insignificant, is explained, usually in an order defined not by how they are used or how they work together, but by the screen layout or by the letters of the alphabet. Smart users read the tutorials first, so they can feel right away that they have a handle on what this new toy is about, and leave the reference for times when they need to find out about something specific.

But pro audio manufacturers, like magazine publishers, are recognizing that large books with small type may no longer be the best way to get information to users. Paper is getting more and more expensive, both in terms of sheer dollars and the effect its manufacture is having on the environment, while data bandwidth is getting exponentially cheaper. Storage space in most studios (especially private ones) for manuals from old but still-occasionally-useful gadgets and programs is increasingly harder to justify, as the continuous flow of docs for new, flashier tools demand their place on the shelf. We all know that CD-ROMs (or the forthcoming DVD-ROMs) take up only a small fraction of this space—a shelfful of manuals on polycarbonate can replace a whole houseful of bound sheets of bleached cellulose. And then there's the call of the Internet: With computers and modems so ubiquitous, and the cost of online storage and access dwindling down to insignificance, there's a feeling among many that this is the best medium of all. A lot of folks think, as Nicholas Negroponte preaches from the back page of *Wired* every month, that it's time for us to stop delivering atoms in favor of delivering electrons.

In the circles I run around in, and the companies I consult for, this is one of the hottest debates of the moment. And despite the fact that everyone wants to and is ready to take advantage of new media, exactly how that's going to be done is a long way from being resolved, because there's a really important factor that has nothing to do with the technology itself and everything to do with how effective the technology will be—the human factor: what people want and need from documentation.

When you learn a new tool, you adjust your habits and techniques to accommodate that tool. Film composers don't think in feet and frames any more; they think in SMPTE time because the tools work that way. Users of hard-disk workstations no longer need to equate "tracks" with "channels," since the physical restrictions that created those fixed relationships no longer exist. Part of the responsibility—not to mention the fun—of being in a technology-driven industry is that we constantly have to learn new ways to think and operate.

Pro audio manufacturers are recognizing that large books with small type may no longer be the best way to get information to users.

But delivering documentation in new formats demands an extra level of adjustment—we must also learn new ways to *learn*. Learning how to learn was what we were supposed to get from our childhood schooling: how to find information, how to absorb it, how to use it to find more information, how to log what we learn in our brains or on a fixed medium for future reference and study. But as working adults, how ready are we to make significant changes in these very basic skills—and should we be required to?

Despite the millennial declarations of the techno-priesthood, many old ways of learning still work and will continue to do so for a while. The classic image of the new synthesizer user sitting down with the manual sprawled out on top of the keyboard, flipping pages to see what this beastie can do, is still as valid as ever. Years of dealing with paper resources—marking them by folding corners of pages or scribbling in the margins, retaining visual memories of where things are on pages, finding page numbers no matter how small or badly placed they are when searching out index items—have made us comfortable with the medium, so comfortable that we literally don't have to think about what we're doing or how we're doing it. And there are a few strange folks out there (among whom I count myself) who like to read manuals, even the reference sections, completely "offline." This gives us a chance to think about what we are reading, to absorb the gestalt of a product without immediately jumping over to the new toy to try out each titillating concept we come across, inevitably getting distracted by the other features surrounding it.

Having the medium be transparent to the message, Marshall McLuhan notwithstanding, is key to making an effective educational tool. Video manuals, the darlings of the late '80s, never took off, in large part because the medium couldn't help but trip all over itself. First, people don't approach documentation linearly, and videotape's utterly nonrandom-access format made many people feel they were in a vise, or worse, a third-grade classroom. Presenters on video need to be (or at least pretend to be) attractive and engaging people—and let's face it, most design engineers don't exhibit too many of those qualities. Finding professional actors who can present this stuff convincingly isn't easy because we're a very critical audience—the first time they mispronounce "SMPTE," they've lost us. (When was the last time you stuck around a demo at a trade show after you realized that, despite the presenter's flashy demeanor, glib delivery and presumed passion for the product, you knew far more about what they were talking about than they did?) And good video production values are expensive—just putting up a camera and pointing it at the box while a disembodied finger pushes buttons will have viewers asleep within seconds.

Computers offer us far more flexibility in terms of access and format, but many of the questions remain. We can't assume that somehow we will be able to develop the same intuitive

—CONTINUED ON PAGE 242

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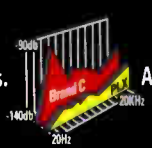

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ALAN DOUGLAS

ONE OF "THE GOOD OL' BOYS," LONDON STYLE

In this business, as in many creative occupations, getting your first break is everything. Be in the right place at the right time and your career drops into place. For Scots-born engineer and producer Alan Douglas, a stint at The Manor in the late '70s proved to be a turning point. Without a day's previous experience of working in a professional recording studio, Douglas secured a position at Richard Branson's rural retreat in the rolling hills of Oxfordshire and, to borrow a cliché, never looked back.

Over the past two decades, Douglas has worked with a wide variety of recording talent, including The Jam, Queen, Adam Ant, Grace Jones, Wet Wet Wet, Squeeze and, most recently, Eric Clapton, including remixes for the "Motherless Child" single, plus recording *From the Cradle* and *Pilgrim*. He also engineered and mixed Clapton's soundtrack contributions for *The Van* and director Gary Oldman's gritty *Nil By Mouth*.

Mix caught up with this canny Scot at an unexpected location: former Jethro Tull drummer Barry Barlow's The Dog House Studios, located within the wooded grounds of his country house close to the River Thames, west of London. Douglas was recording tracks for a new Echo & The Bunnymen album and wanted a minimum of distractions. That the band had been working until dawn the previous night suggested that his tactic was working.

Tell us a little more about your background.

I had worked in an office for 18 months while waiting to get a job in a studio—I always wanted to work in a studio. I loved music and had a technical interest. But it was actually sparked by reading the back of one of the early Steely Dan albums. They talked at boring length about the expensive German microphones they used. At that point, I realized that someone actually did the recording. Then I got into reading *Studio Sound* in the college library; I'd never been in a recording studio.

PHOTO: MEL LAMBERT

I wrote to the [then] editor of *Studio Sound*, Mike Thorne, and he very kindly photocopied the pages from Kemps [a trade directory]. I wrote to about 70 studios and got a dozen replies. I had an interview at IBC Studios [central London, close to the BBC's Broadcasting House in Portland Place], where the guy was really sweet but pointed out that I couldn't possibly survive in London on 30 quid a week! [Then, about $75.]

Out of the blue, I got a letter from The Manor, which had just upgraded to 24-track and had a new Tom Hidley-designed room. So I started as a tape op [equivalent to a second engineer] at The Manor in November 1976. I was very fortunate that the chief engineer there, Mick Glossop, was a demon! You learned very quickly—or you were out. I was really lucky; I got the job.

As an engineer/producer, what do you bring to the party?

I'm good with people, I guess. If you don't get on well, then you're not going to have a good session. I've always been lucky; it just seems to have worked. I'm fairly technical, but not nearly as technical as a lot of engineers I know. The thing about being in studios practically every day of your life is that you learn a lot about music, even though you can't play. You can appreciate when things work, emotionally and musically. Your ear becomes trained in the way it would if you were a musician, but with other people doing the playing. It's a sort of "second-hand" musical training.

Do you specialize in any particular genre?

I'd say that guitar-based bands are

BY MEL LAMBERT

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my favorite—I love the performance aspect. When great musicians play in a room together, sparks fly and magic happens—an outflowing of creativity—in front of you.

What do you want to know about a band before a session?

Unless they specifically want to revisit old ground, I don't listen too much to what they've done before. I don't want to pigeon-hole them or lock the band into something that they may not feel is current. Generally, we meet and sit around chatting. Then you get a feeling for whether you can bring something to the date, and the band gets a feeling whether or not they can live with you. After all, you spend weeks of close time together.

I don't want to dictate. I'm trying to capture them the best I can and get it on tape—and, at the same time, subtly influence it to make sure that whatever emotional or musical point they're trying to make comes across. If it's possible, I like to see them play live, but it's difficult because you tend to go straight from one project to another.

Rehearsal, for me, works better with people who need more direction and focus—younger bands. But I'm not that keen on it, because I hate "chasing the demo." You end up making a demo that's not necessarily so good, technically, but so definite in its direction that you've left yourself nowhere else to go. You can spend forever trying to make something as good as the demo. So much of it is perception, rather than reality. Maybe when you did the other version the only thing that stood out was the solo because it was a very raw track. But, when you go back to the one you've spent a bit of time on, you discover that it is actually much better. Everyone's just remembering that the other one was "better," because that was the only thing they had to hang onto.

What do you look for in a studio?

Today, I'm working in what you'd call a project studio. It has a great ambience, and it keeps the band [Echo & The Bunnymen] away from distractions. Yes, it suits the purpose to be here [in The Dog House]. If the board was not up to par, I'd just make it work. On a technical level, I'd much rather be in Olympic Studios, because they have great-sounding rooms, great mic cupboards and great consoles. But, if this is what it takes, then you make it work. That's the engineer's job!

And your favorite is the big room at Olympic, Studio 1?

Yes, for everything. I had a lot of input into its design. I picked what's in the mic cupboard. It's got an SSL J Series, so it's really comfortable for me. All of Eric's *From the Cradle* was recorded in that room—live blues, with no overdubs. I think it sounds pretty good.

What was your favorite project?

There have been so many, on so many different levels. My Top Three? *From the Cradle*, because we spent ten weeks total, and eight weeks of that was just recording. Eric was absolutely insistent on capturing every nuance that he heard in the originals. We did maybe six takes and then moved on to another song. But just having a fantastic band, playing live all day, was great.

One thing about [Olympic] Studio 1 is that at the far end of the studio there's an isolation booth on each side that makes the center—the main room—narrow it down. But it is flared like a horn. You can bring baffles down from the ceiling to accentuate the spread. If you put the drums there, you get this fantastic throw down the length of the room. I had overhead mics [on the kit], plus a closer ambience mic and then four distant mics—three pairs in all. The room and its flare let you develop some remarkable natural ambiences, which we captured on the album.

And the other two projects to round out your Top Three?

I'm really enjoying this Bunnymen session; it's exciting and fresh. We started with a couple of tracks that were potential singles, "Rust" and "Fools Like Us." It was just to see how well we would get along. It went so well that now we're doing an album. We're getting on very well, and I love the guys. We're the same age; we've got the same musical background and interests.

Ian McCulloch is a fantastic songwriter with a great sense of melody, and Will Sergeant, the guitarist, comes from a completely different direction to Ian. The combination of Will's weirdness—plus his intuitive playing—and Ian's songs is just fantastic.

Squeeze [the album *Ridiculous*] was also great. Everything I've done with Steve Lillywhite, including [remix of the Rolling Stones'] "Harlem Shuffle," was a great experience—he's the most intuitive producer I've ever worked with. Just observing him work with bands was a fantastic education; he really gets them. He knows exactly what it should be and grabs it. Without imposing, he captures the absolute essence of what they're doing and gets it on tape.

Adam Ant [*Friend or Foe* album, plus "Goody Two Shoes" and "Stand and Deliver" singles] was great fun, working with Chris Hughes, who's a great producer. The guitarist, Marko Prenty, is fantastic with a very weird, eclectic taste—that's when guitarists are the most interesting.

Have you any experience working at a U.S. studio?

Ocean Way, Hollywood, is the only facility that I've spent a lot of time at. We used the Big Room—which from the pictures in the lobby looks entirely unchanged from its United Western days—to record *Pilgrim* with Eric. It's a fantastic room. We were there for two months, but Eric wasn't really hearing what he wanted—he wanted it to sound more contemporary. When your band includes Steve Gadd, Nathan East and Greg Phillinganes, it's gonna be great. But it wasn't what Eric wanted. So we went back to England and pretty much started over again.

Eric wanted *Pilgrim* to sound like the records he was listening to. He found out that they were heavily sequenced and wanted that genre. [Co-producer was keyboard player Simon

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Climie.] Having someone like Steve Gadd playing with you [means] that once you have the song structure, in two takes it's done. But, if you want to write songs in the studio, like Eric wanted to, you can't do it with Gaddy fulfilling the function of a click-track—it's totally disrespectful, and would kill the vibe.

Maybe what all blues guitarists love about drum machines is that they don't get tired! For me, the "feel" is probably the most important aspect, so it wouldn't be my first choice as a way of working. Predictability is great if you're playing a guitar against it and you're trying to discover something.

What do you use to record Eric Clapton's guitar?

If the mics are available, I pretty much use the same setup every time. Eric has an old 50W Tweed Fender that's been hot-rodded to 75W. The very first time I worked with Eric—a film soundtrack for Communion—his guitar tech arrives five minutes before we are due to start. Completely out of breath, he brings in Eric's guitar and dumps it. So I said, "Where's the amp?" Well, it turns out that he didn't think that we needed an amp on the date. So I said, "I'm going to record Eric Clapton and you couldn't be bothered to bring his amp?" In the end, I had to plug it straight into the board, but this is not a good feeling!

Anyway, Eric comes in and asks, "Did you bring an amp?" And the tech says, "No, I had a bit of a problem with it this morning." "What are we going to do?" Eric asks. "We'll go straight through the board," I replied. The thing is, you plug Eric's guitar straight into the board, put some delay and reverb on it, and it sounds exactly like Eric Clapton. It's all in the fingers.

When we did *From the Cradle*, he used a couple of different amps and a lot of different guitars. But on *Pilgrim* we used the Tweed amp pretty much with his Signature Strat. For guitar, I use pretty much the same mics every time, close on the cabinet. A Beyer M88 in the center, and I place an SM57 offset from the middle of the cone, and something like an [Electro-Voice] RE20. And then whatever room or ambience mics might be available. At Ocean Way, we were using [AKG] C24s and [Neumann] M50s, both of them in stereo. At Olympic we used an M49 and lots of [Neumann] U67s. Sometimes I just used whatever vocal mic we had up, depending on what was in the room there. That's pretty much how I approach guitars, because it means that I use less EQ and I can effectively move the microphone by moving the faders. So you've instantly got at least three choices of sounds without leaving your seat. And we used all the toys—Lexicon 480s and the rest—to process the guitar during the mix.

What vocal mic did you use?

For a gritty, bluesy sound, it would be a Beyer M88. I have a special-edition silver M88 that I really love, despite the fact that [the design] is over 30 years old. It's a fantastic vocal mic, through a Summit Audio valve [tube] mic pre. People use dynamics to record guide vocals—SM57s and 58s—just because there's always lots of them around. But, depending on the voice, the M88 works really well. Sing close, standard technique. Or I'll use whichever condenser suits the artist best.

I've just started using one of these DW Fearn valve mic preamps—it's the only valve mic amp I've used that sounds really good on drums. It's really punchy on bass drum and snare. I'm

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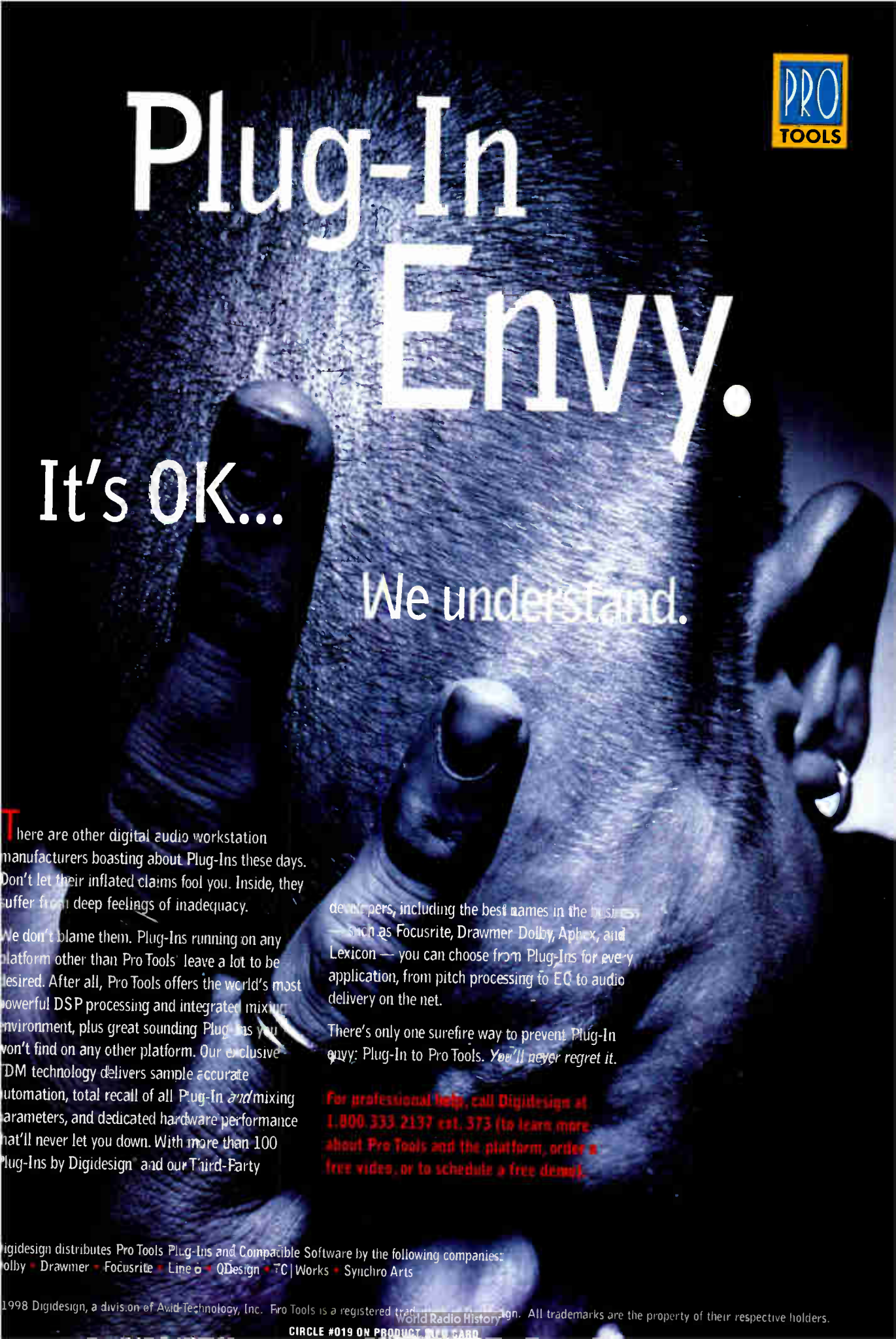

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also using it extensively on keyboards and acoustic guitars, as well as electric guitar. It manages to sound fat while still retaining a nice, very open top end. Highly recommended!

I also use a Summit [TPA200B] valve preamp. The beauty of the Summit is that it's very easy to go from a clean to an overdriven valve sound. We used it a lot on *From the Cradle* on a combination of vocals. And on a couple of tracks for *Pilgrim*.

Do you comp a lot of Clapton's vocals?

Once he's got the angle, it's pretty much there. I think he's singing better now than he's ever sung. Part of the reason that he took 14 months to record *Pilgrim* was that he was just loving coming into the studio every day.

Does Clapton work well to the mic?

From the Cradle was really easy because, apart from one song which was in a difficult key for him, Eric is completely consistent. *Pilgrim* was very different because he's using a lot of breathy vocal sounds—and almost falsetto in places—so there was a lot more attention needed in terms of limiting and compression on that album than *From the Cradle*.

PHOTO: MEL LAMBERT

What do you use as a limiter?

It depends on the voice, but I like LA-1176s as a record limiter, occasionally coupled with an LA-2A. Vintage stuff. And for the mix, I really love the UREI LA-3A on the vocal. I usually always use my [Valley People] Dynamite for guitar—that's my favorite guitar compressor, because it lets you get more of the attack and the pick on the string.

I read that you mastered* Pilgrim *at 24-bit/96kHz using dcs A-to-D converters

—CONTINUED ON PAGE 243

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Hot Glass, Cool Sounds

BY LOREN ALLDRIN

LOOKING INTO THE NEW TUBE MICROPHONES

Neumann M149

Have you noticed how everybody seems to love a tube microphone? Pull a tube mic out of the closet, and vocalists start singing better. Cranky producers lighten up. Guitarists feel a few frets closer to tonal perfection. It's like a beer commercial, where the whole world's a better place because someone twisted the lid off a frosty brew.

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Okay—I might have been exaggerating somewhat. But not much. Whether or not it deserves such reverence, this marriage of a glowing glass bubble and a wisp of gold is viewed by many as having almost magical properties. When you consider all the incredible music recorded with tube mics in the past seven decades, the superstition vs. sonics argument becomes a moot point. The tube mic is the centerpiece of many studios, and its most-favored status shows no signs of being threatened in the near future.

In fact, the tube mic market is growing at a rapid clip. There are nearly two dozen tube mics currently in production, with more models on the drawing boards. Thanks to the newest inexpensive models, tube mics are now within the grasp of smaller home and project studios. On the high end, you can spend more on a pair of tube mics than on a new car.

In the next few pages, we'll survey the tube microphone market from top to bottom. This alphabetical list represents all the mics currently available, including those that are new to the market and those that have been around for several years. If you're looking to install a new tube mic at the top of your signal path, you've come to the right place.

THE MICROPHONES

AKG's SOLIDTUBE ($1,500) offers a large-diaphragm capsule with fixed cardioid pickup pattern. Other features of the SOLIDTUBE include internal pop screen, transformer-balanced output, 20dB attenuator on mic body and lowcut filter on power supply. Supplied elastic suspension mount allows the SOLIDTUBE to be placed at virtually any angle; a threaded bottom hole also allows the mic to be hard-mounted directly to a mic stand.

The essence of AKG's revered C12 tube mic is still available in the form of the AKG C12 VR vintage re-issue ($4,737). The TEC Award-winning C12 VR uses a 1-inch twin-diaphragm capsule assembly derived from the original C12, as well as an original 6072 vacuum tube and output transformer. The C12 VR's external power supply allows selection of nine pickup patterns between omni and bidirectional; a lowcut switch offers two shelf frequencies. Other controls include 10dB and 20dB attenuation on the mic itself and an internal 10dB sensitivity boost switch.

Announced at last month's NAMM show in Nashville, the AT4060 is Audio-Technica's entry into the tube microphone market. Priced at $1,695 (including mic, cable, shock mount and rackmountable power supply), the AT4060 is based around a 25mm-diameter capsule with a gold-evaporated diaphragm and a 6922 tube providing low-noise performance. In keeping with its minimalist design, the AT4060 has no bass roll-off filter or pad in the audio path, although its maximum SPL handling of 149 dB (at 0.5% THD) should handle nearly any session.

Those who value a nostalgic look in their tube

AKG C12 VR

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Groove Tubes MD3A

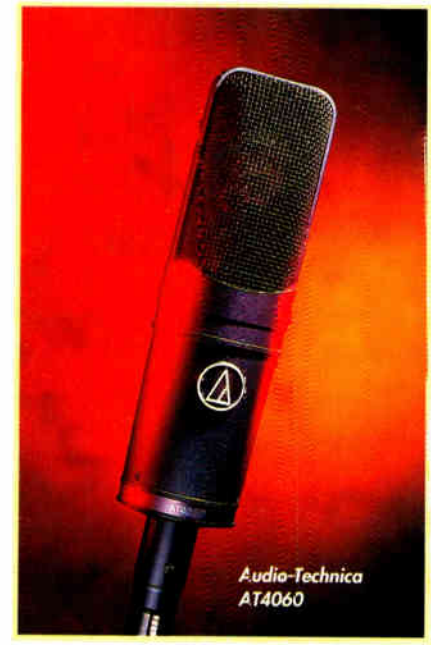
mics will appreciate the **Baltic Latvian Universal Electronics** (B.L.U.E.) Bottle microphone. Modeled after the original Neumann CMV-3 microphone, the Bottle ($4,500) uses an interchangeable capsule system with seven available

CAD VX2

capsules: small-, medium- and large-diaphragm cardioid condenser capsules, single-backplate cardioid, pressure omni, Perspex sphere omni and Elam 251-style large-diaphragm capsule. The B.L.U.E. Bottle uses an EF86 tube in triode mode, and offers a slow-start-up supply to extend tube life.

Hand-made in Berlin, and now distributed in the states by Peninsula Marketing & Import, the **BPM Studiotechnik** TB-95 is a large-diaphragm tube mic with three selectable pickup patterns (omni, cardioid, figure-8). The TB-95's frequency response is stated as 20 to 20k Hz; noise is 22 dBa; and max. SPL handling is 138 dB (at 0.5% distortion). Retail is $1,999. The mic is shipped with a dual-voltage power supply, case, shock-mount, pop filter and cable.

Relative newcomers to our shores are the **Dirk Brauner** VM1 and VM1S tube mics. Both the VM1 ($4,995) and VM1S stereo version (price TBA) are entirely handmade in Germany and boast an extremely low 13dBA self-noise spec, ultralinear phase response and high SPL handling. The large-diaphragm VM1 and VM1S mics offer infinitely variable pickup patterns and 10dB attenuator on the power supply.


Audio-Technica AT4060

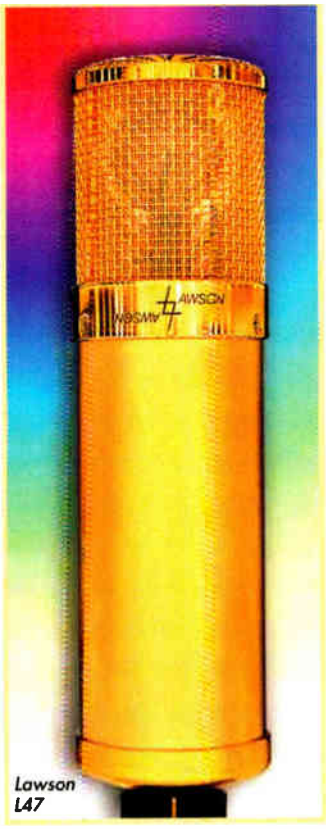
BPM Studiotechnik TB-95

Conneaut Audio Devices (CAD) recently began shipping its VX2 ($2,295), a tube microphone with several unique design approaches. Most notable are the VX2's low-noise (13dBA) dual-tube electronics, which devote a tube amplification and output driver stage to each side of the 1.25-inch capsule. Pickup patterns are selectable on the mic itself and include cardioid, omni and bidirectional patterns. The VX2 also offers interchangeable capsule assemblies, an optional 24-bit, 96kHz A/D converter, two-position attenuator and lowcut filter.

The Curtis Technology AL-1 System is a pair of tube microphones designed for stereo recording applications. The single-pattern (elongated cardioid) mics feature matched 12AU7 tubes, and have

Danish Pro Audio (B&K) Type 4040

World Radio History



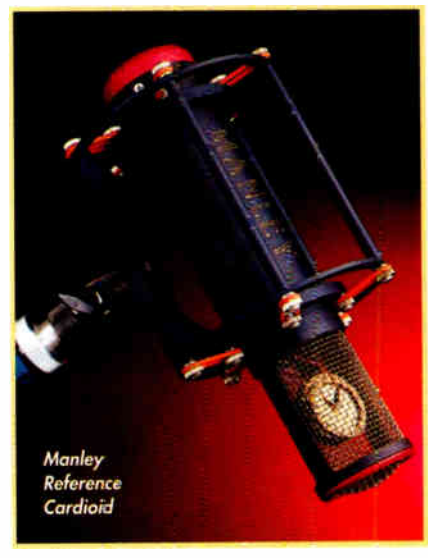
22mm diaphragms. Frequency response extends to 30 kHz, and maximum SPL is stated at 125 dB. The set comes with shock mounts, premium Canare cable and power supply with front panel mic inputs. List price is $2,995 for the pair.

The Type 4040 Hybrid Microphone ($8,995) from Danish Pro Audio is a large-diaphragm (24mm) omnidirectional mic with two parallel Class A preamplifier outputs. One channel is based on high-performance transistor technology; the other is a tube channel using a special quality, sub-miniature vacuum tube. Both amplifiers are matched in terms of amplitude and phase (better than 0.5°), allowing users to mix the two preamp outputs to create a variety of sounds. Frequency response is from 10 to 20k Hz (±2dB) with a 4- to 6dB soft boost at 8 kHz designed especially for soloist recordings. The mic is available in a limited edition of only 100 units.

With the addition of their newest tube mic, the MD6TM, Groove Tubes expands its tube mic line to four models. The MD6TM ($1,395 with power supply) uses a large-diaphragm capsule, GT5840 sub-miniature tube, nickel-core output transformer and wide-bandwidth electronics. Switches on the MD6TM include pattern selection (cardioid, hypercardioid, bidirectional and omni), 10dB pad and lowcut filter.

The affordable Groove Tubes MD1A ($1,195 with supply) is a cardioid-only tube condenser mic with dual-triode all-tube amplifier and transformer-balanced output. The MD2A ($1,695 with supply) uses a 3-micron diaphragm, dual-triode tube electronics and low-turn-ratio transformer. The MD2A also offers a 20dB variable sensitivity control on the mic itself. The MD3A ($2,195 with supply) boasts a large-diaphragm, 3-micron capsule with a mechanically selectable variable pickup pattern; directivity ranges from omni to cardioid. Like the MD2A, the MD3A offers a variable sensitivity knob at the base of the mic.

As American-designed and built tube mics, the hand-made Lawson L47MP



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($1,995) and L47C ($1,695) are in rare company. The L47MP and L47C use a 3-micron capsule modeled after the classic Neumann M7, 6072 tube-based electronics (similar to that of the ELAM 251 and AKG C12) and Jensen output transformer. The L47MP and L47C capsules are mounted in an internal suspension system that eliminates the need for an external shock mount. The L47MP offers continuously variable pickup patterns from omni through bidirectional. The L47C offers a fixed cardioid pattern and 4dB higher sensitivity than the L47MP.

Manley Laboratories' Reference Gold ($5,500), Reference Stereo ($8,000) and Reference Cardioid ($3,000) feature 1-inch gold-sputtered capsules, all-tube dual-triode military 6072 circuitry, custom-wound output transformers and external high-voltage supply. Other common features include a very loose-weave wire mesh grille for maximum acoustic transparency, permanently attached elastic shock suspension and balanced XLR output on the mic itself.

The Manley Reference Gold and Reference Stereo mics offer 3-micron capsules infinitely adjustable between omni, cardioid and figure-8 pickup patterns. The Reference Stereo mic adds a second mic assembly into the same housing, allowing the upper capsule to rotate through a 90-degree arc for Blumlein or X-Y stereo miking. The Reference Cardioid mic uses a simpler 6-micron capsule assembly for cardioid-only pickup.

Microtech Gefell has two tube designs in its lineup of German-made mics. The UM 900 ($3,750) uses a unique internal supply circuit to power the tube from standard 48-volt phantom power, thus eliminating the need for a bulky external supply. The UM 900 uses a large-diaphragm, dual-membrane capsule assembly with five switch-selectable pickup patterns. Other controls include bass roll-off, 10dB attenuator and 4dB sensitivity boost (cardioid pattern only). The UM 900's unorthodox shape minimizes reflections from the mic body and provides an acoustically uncolored space to house the capsule.

Microtech Gefell's UM 92.1 S ($2,695) is a more traditional side-address studio microphone that features the classic M7 capsule. Pickup patterns include

Soundelux U95

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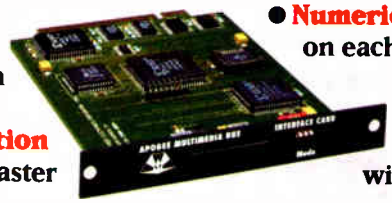

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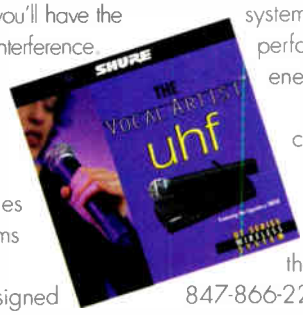

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omni, cardioid and bidirectional; the UM 92.1 S comes standard with a basket-style elastic suspension holder. Unlike the UM 900, the UM 92.1 S uses an external high-voltage supply to power its EF 86 tube.

The world's first transformerless tube microphone, the TEC Award-winning M149 ($4,750) from Neumann uses a large dual-diaphragm capsule derived from that of the classic U47 and M49 microphones. The M149 offers nine polar patterns selected from the mic itself, as well as a seven-position bass roll-off filter. The M149's triode tube drives a low-noise, high-output transformerless buffer stage. A large, open mesh grille assembly assures minimal acoustic coloration.

Peavey's T9000 tube microphone ($1,300) uses a self-polarized condenser capsule to deliver a fixed cardioid pickup pattern. The mic features a 12AX7 tube and custom-wound output transformer. Switches on the mic body engage a 200Hz lowcut filter and 10dB attenuator; with attenuator on, the T9000 can handle sound pressure levels in excess of 137 dB. The T9000 shock mount (provided) also functions as a heat sink to reduce operating temperatures of the mic.

The RØDE Classic tube mic uses a 6072 tube in a dual-triode arrangement mated to a custom Jensen output transformer. The Classic ($1,999) offers nine pickup patterns selectable from its remote power supply, as well as a two-position lowcut filter and 10dB or 20dB attenuator. The Classic's large-diaphragm capsule assembly is internally shock mounted to minimize mechanical noise.

Now celebrating its 50th anniversary, Schoeps offers its newest tube mic, the M 222 ($1,985), built into the same compact size as the company's popular CMC Series mics. The M 222's external power supply offers a "tube direct" mode that eliminates all semiconductors from the signal path. The NT 222 supply also offers variable gain from -10 dB to 30 dB in 10dB steps, two-frequency lowcut filter and Harmonics switch for increased tube distortion and harmonics. The M 222 will work with any of the Schoeps Colette Series capsules and active accessories.

The Sony C-800G ($5,170) large-diaphragm studio tube mic uses a unique Peltier thermoelectric device and external heat sink assembly to lower operating temperatures of the 6AU6A tube. This reduces the C-800G's self-noise to 18 dBA and lowers distortion. The C-800G offers two electrically selected pickup patterns: omnidirectional and cardioid. The Sony C-800 ($3,850), successor to the Sony C-37A, uses more traditional convection cooling for its tube circuit. The C-800 also offers a large-diaphragm capsule in a side-address arrangement; omnidirectional and cardioid patterns are selectable with a mechanical assembly.

Soundelux offers its U95 tube microphone, a large-diaphragm studio mic designed for music recording, sound effects and voice-over. The U95 ($1,995) uses a 1-inch, 6-micron capsule assembly with nine pickup patterns selectable from the remote power supply. The U95's two-stage 6072A tube amplifier is mated to a custom-wound output transformer. ■

Loren Alldrin is a Nashville-based engineer, producer and studio owner. He is the author of The Home Studio Guide to Microphones, *distributed by Hal Leonard Books.*

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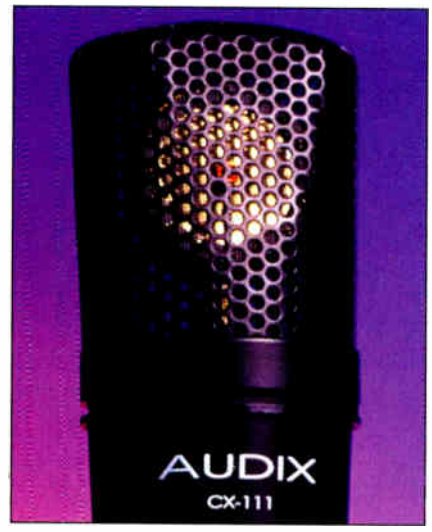
NAMM '98 SUMMER SESSION

Product Hits from Music City

By Sarah Jones

Nashville in July may not be the most hospitable place weather-wise, with temperatures and humidity both in the 90s, but the thriving recording community and lively music scene make it the natural locale for the annual Summer NAMM Show. Although the summer session was resurrected as a smaller alternative to the winter show in Southern California, it has grown into a huge event: This year's convention, the sixth in Nashville, attracted more than 20,000 attendees and more than 500 exhibitors. For those of you who couldn't make it out to the show last month, here's a taste of some of the cool products we saw.

Audio product introductions tend to run in cycles. At this NAMM, there were plenty of new mic products. **Audio-Technica** (www.audio-technica.com) debuted its new AT-4060 tube mic (reviewed in last month's *Mix*). **Audix** (www.audixusa.com) showed its CX-101 ($499) and CX-111 ($599) large-diaphragm, cardioid studio condenser mics, as well as the TR40, a flat omni measurement/test mic priced at $249. **AKG**'s C300 is a two-pattern (cardioid/hypercardioid), large-diaphragm condenser priced at $322. **Earthworks** (www.earthwks.com) has taken its popular studio mic design and adapted it into the SR71 ($399), a cardioid model built for live sound applications. And speaking of live mics, **Shure** (www.shure.com) has repackaged its venerable SM 87 and Beta 87 into the SM 87A and Beta 87A, now with thicker handles that can be gripped easily and actually fit into standard mic clips.



Audix CX-111 studio condenser

More than a few people were wowed by **Fender**'s (www.fender.com) new SFX (Stereo Field eXpansion) instrument amplifier system. SFX creates wide stereo effects with two speakers mounted mid-side in the same cabinet, combined with electronics that process stereo signals into sum and difference paths that combine acoustically to create a huge stereo image. For an in-depth look at SFX, check out the technology spotlight in last month's *Mix*.

Tascam (www.tascam.com) showed the DA-45 HR (see the article in this month's issue), a $1,999 studio DAT deck switchable to operate at 16- or 24-bit resolution.

Alesis (www.alesis.com) has reduced—by $400—the price of its XT20 (now $2,599) and LX20 (now $1,899) 20-bit ADAT Type II-format digital 8-tracks, the first time an ADAT recorder has carried an under-$2,000 SRP. In other Alesis-related news, **Midiman** (www.midiman.net) plans to ship S.A.M., an S/PDIF-to-ADAT converter/mixer (ADAT channels can be

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1997 to 1998

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Soul Asylum
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The Man In The Iron Mask
Con Air
Mad City
Speed 2
Ally McBeal
Lion King on Broadway
Home Alone 3
Meet the Deedles
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Anastasia
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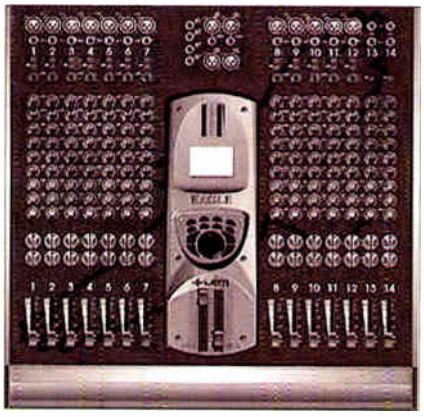


Generalmusic's Eagle digital mixer

mixed down to stereo during transfer to S/PDIF), by the end of this month.

The good news from **Event Electronics** (www.event1.com) is that the long-awaited Layla digital recording system is finally shipping. Enhancements added while we waited include a power supply, DDS low-jitter clock circuit and added slave/master sync support. Also new from Event is the DSP•FX Virtual Pack Version 4.0, the first product released through Event's alliance with DSP/FX Inc., formerly known as Power Technology.

We got a hot tip from **T.C. Electronic** (www.tcelectronic.com), on a product you didn't see at the show: As you read this, the Finalizer Express, a scaled-down version of the Finalizer, should be hitting stores. Express offers core Finalizer technology with a simplified hardware user interface ("real" knobs instead of the familiar screen display controls), multiple simultaneous digital I/O (S/PDIF and AES/EBU), 24-bit converters and presets that can be saved—at an affordable $1,599 list, $1,300 less than the full-featured version.

Mackie (www.mackie.com) had some big news at NAMM: Not only is the D8B 48-channel digital 8-bus console shipping, but the company announced that it has just acquired high-performance speaker manufacturers Radio Cine Forniture (RCF) and Fussion Audio. We're guessing that there'll be new speaker products from Mackie at the AES show in San Francisco next month.

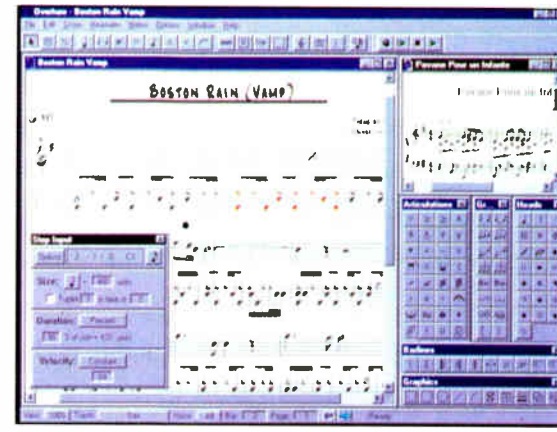
Italian company **Generalmusic** (www.generalmusic.com), best known for its synth line, enters the U.S. console market with the NAMM debut of the Eagle and Falcon digital mixers, offered by its LEM division. Both mixers feature 40-bit internal processing (20-bit converters), plus a host of DSP and automation functions, and they simulate an analog console interface by offering real-time hardware control of many parameters—making them ideal for live sound applications. In addition, both units support an optional ADAT extension card, which adds eight channels and 12 effects processors. The card can also be used to interface with an optional 8-in, 8-out AES/EBU unit to further expand I/O. The Falcon offers six mono mic/line ins, two stereo inputs and one AES/EBU in, and retails at $1,395. The Eagle adds six more mono ins and lists for $2,595.

Another digital unit offering "analog" hands-on control is the new Graphi-Q Series from **Sabine** (www.sabineinc.com), which combines a 31-band graphic EQ, FBX Feedback Exterminator, compressor and delay in one unit. The Graphi-Q is available in four models: a dual-channel unit and a single-channel unit that offer front panel parameter controls, and single- and dual-channel blank-face slave units. All units are also software-controllable and feature rear-panel Euro-block remote switching connections, which provide access to seven Graphi-Q memory locations for scene changes. Prices range from $699 to $1,299.

Of note from **Auralex** (www.auralex.com) is the Sunburst-360, a spherical, stand-mounted near-field acoustical control device for providing linear broadband absorption. Multiple Sunbursts may be arrayed to create the Eclipse acoustical subspace environment.

A growing number of manufacturers are starting to offer support for the Universal Serial Bus. **Opcode** (www.opcode.com), which was recently acquired by Gibson Musical Instruments (www.gibson.com), debuted the first in a new family of products supporting USB: DATport ($199) is a USB-to-S/PDIF interface box for easy data transfer between digital audio gear and USB-compatible computers. Look for more products in this line over the coming months. Opcode also debuted Vision DSP, which adds the powerful features found in Studio Vision, minus TDM support and pitch-MIDI conversion. The package is $495 new, $99 as an upgrade from Vision.

Steinberg (www.steinberg.net) is now shipping Cubase VST 24/4.0, optimized for the G3 Macintosh. Version 4.0 includes additional EQ features and an expanded mixer with four plug-in inserts per channel, eight aux sends, and busing to a variety of cards. Other features include new 15,360 pulse-per-quarter-note resolution and scoring enhancements. Cubase VST/24 is now supported by Lexicon Studio.



Cakewalk Overture notation software

A few notation software packages are now cross-platform. UK-based **Sibelius Software** (www.sibelius-software.com) announced that the Windows and Mac versions of its powerful notation package are shipping this month. And **Cakewalk** (www.cakewalk.com) announced that its Overture notation software, previously available only for Macintosh, is now also Windows-compatible, making it a single, dual-platform application.

Watch our regular product columns for continued coverage of these and other exciting new products from NAMM. From January 28-31, 1999, the NAMM International Music Market will return to Los Angeles. Don't miss it! ■

Sarah Jones is an assistant editor at Mix.

Auralex Eclipse acoustical subspace environment

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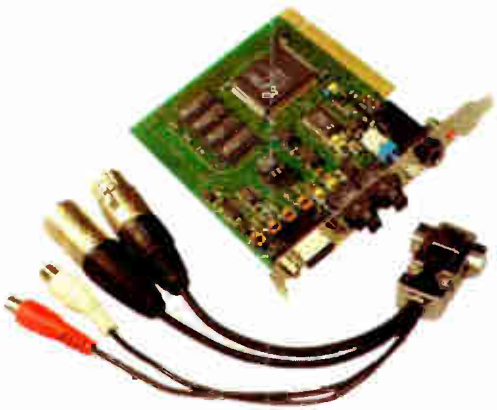

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RAY DAVIES

THE STORYTELLER

"Alternately marked by intramural brawling and inexplicable banishments, transcendent brilliance and shameless pandering, emotional collapses, punch-ups and sellouts, scandalous affairs and utter discretion, drunkenness and cruelty and failed attempts at fratricide, altruism, and greed, The Kinks' long history is among the most fascinating in rock."

—*John Mendelssohn*, The Kinks Kronicles © *1985*

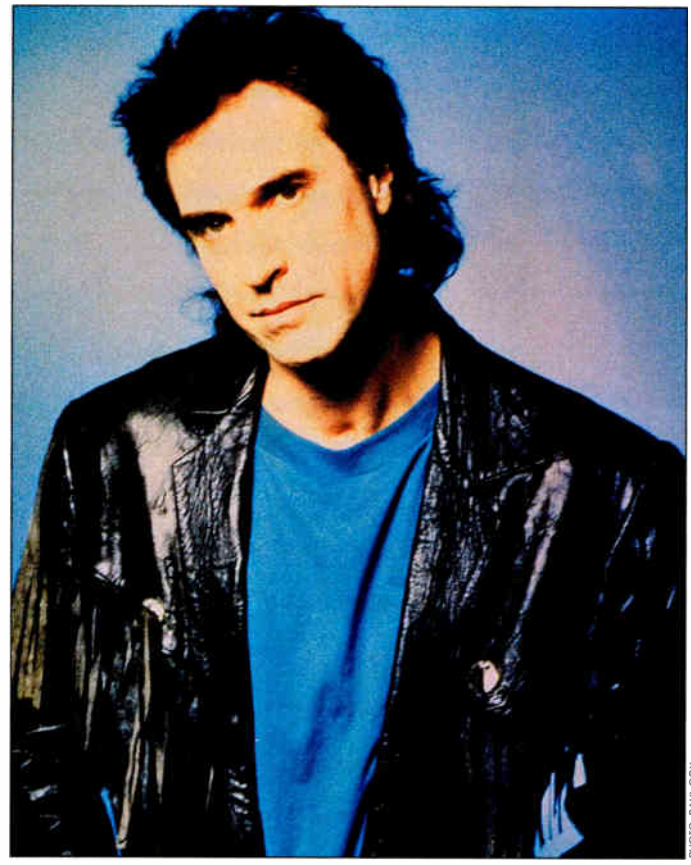

PHOTO: PAUL COX

"You Really Got Me," banged out on an upright piano that stood in the family parlor, ignited The Kinks' career. The year was 1964. Still teenagers, Ray Davies, his brother Dave, along with drummer Mick Avory and bass player Pete Quaife, followed up this hit recording with "All Day and All of the Night" and "Tired of Waiting for You."

The Kinks never quite established themselves as individuals in the public eye the way some of the other British Invasion groups did, but so what? Their legacy is clear: They and their peers (The Beatles, Rolling Stones, The Who, The Animals, etc.) helped give the blues back to America, as then-modern takes on traditional blues songs and forms rekindled our country's interest in our own folk music.

Though The Kinks have not toured for several years, and Ray Davies seems to have lacked the charisma to maintain mainstream interest through the down-cycles of his career, he continues to inspire a devoted following. And he keeps working. His catalog currently holds more than 400 titles. And in 1994, he released his autobiography, *X-Ray*. Rather than reveal himself directly, Davies chose the artistic conceit of writing in biographical form: Set some time in the future, an unnamed young writer transcribes conversations with the now aged artist, who provides details of his youth and a perspective on the history of The Kinks.

Violent outbursts between the Davies brothers feature prominently in that history. Young Ray also found an outlet in sports: He was a boxer, a soccer star and a sprinter in his early days. The competitive fire, and the will to dominate, that had fueled his athletic endeavours stayed with Davies as The Kinks battled other groups up the charts, and each other for space on the lonely peak of pop superstardom.

But Davies was so emotionally troubled that, he writes in *X-Ray*, "People spoke to me as if I were from another galaxy and did not fully understand the strange beings from Planet Earth...My loneliness was complete, and any comfort received from the outside was superficial only, because inside the safe world of my own invention, my soul could not be touched."

Davies was on tour, promoting his *Storyteller* album in Ashland, Ky., when *Mix* tracked him down—on the day Frank Sinatra died. We began our discussion reflecting on that great singer's legacy.

In the '60s, Sinatra was often quoted as saying that rock music was written and performed by cretins with limited talent. He represented a booze and broads mentality that seems light years from the psychedelic mentality of the time. And yet he was the ultimate hipster, as well. How did you feel about his work back then?

Now people will realize what a great singer he was. He was like a great actor, letting other people's songs take him over. He's a

BY GARY ESKOW

World Radio History

The compressor that forgives, but never forgets...

Gate

Start with the gate. Set parameters for threshold, ratio, attack, hold, release, and output gain. See the effect of your settings on the graphical display, as well as on the gain reduction and audio level meters; they all interact in real time with your manipulation of the parameters. Start with a threshold setting of about -60dB to clean off the noise in between the vocal takes. You can save your final gate settings as a "gate preset" building block and recall it into any other setup you do.

Compressor

Then move to the compressor. The effects of the gate settings are still visible on the graphic display, so let that help you determine where to set your compressor threshold. The parameters you change here will also effect the curve on the graphical display in real time. Move through all the regular parameters, like threshold, ratio, attack, release, and output gain. For vocals use a threshold of about -25dB, a ratio of about 3:1 or 4:1, and a slow attack and fast release for that more natural sounding effect. Your compressor settings can also be saved off as a building block to be called up into any other preset.

Limiter

On to the limiter. Changes you make to the limiter settings are also seen on the graphical display. Adjust the level up or down to suit your needs. The flat top line of the display moves up and down as you adjust the level. You can also set the speed at which the the limiter lets go of the signal as it goes below the threshold. This is truly smooth limiting, with patented dbx PeakPlus™ algorithms, so rest assured that where ever you set your threshold level, your tape will not distort. And your signal will not get ratcheted as is often across the threshold. And like the other parts of the processor your limiter settings can be named and saved for later use.

De-esser

De-essing works the same way: see the effects of your settings displayed on the graph. Parameters here are the common ones: threshold in frequency, 800Hz to 8kHz, and amount in percent. Other available processing includes EQ - both in-path and sidechain, for special-effect types of processing. When you are editing any of the building blocks, its icon is visible on the display, and the parameters are shown on the graph, so it's always easy to know where you are. Remember: no easy to use in this page driven operating system. Wish it's as complex as this, it's nice to know somebody was thinking when it was put together.

and More

You can also work in stereo, or set up a completely different and independent processing chain for the other channel. Also, notice that the audio meters are capable of showing both peak and average levels for input and output. Optional digital output with the TYPE IV™ Conversion System with TSE™ (Tape Saturation Emulation) provides up to 24-bit output in either AES/EBU or S/PDIF formats with the trademark digital processing of TYPE IV™. The DDP also has full MIDI/Automation capability, with separate midi in and thru jacks. Entire processing setups may also be saved into one of 50 user defined presets, or use one of the 50 factory setups.

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great example for any vocal stylist and a great tribute to the songwriters of his era. Writing a song is only part of it—you have to cast it for the right singer. He put life and breath into every song he sang.

The Kinks recorded on his Reprise label...

Right. I was young—19 years old—when I walked into the Reprise office. What a thrill! On one wall I saw a picture of Frank Sinatra, and on the other a shot of The Kinks. We all were thrilled to be on the same label as him. In many strange ways, Sinatra was one of the most rock people alive, in the example he set with the way he walked and handled himself with the world. He was a rock 'n' roller.

Technically, The Kinks' sound, especially the distorted guitar sound your brother Dave favored, is about as far removed from the post-Impressionist orchestral colors of Sinatra arrangers like Nelson Riddle and Billy May as you can get. You describe the "green amp," a tiny tube amplifier that Dave used in some detail. How important was that amplifier to The Kinks' sound?

The green amp had a major impact. We were just lucky. We liked to play records loud on the radiogram, and they all came out distorted. That was bound to have an effect on the way we conceived of music. The green amp, which we all plugged into, gave that distorted sound to our own performances.

You have your own project studio, KONK, in London. Have the new recording technologies affected your writing process?

Oh yes, absolutely. I have a Pro Tools setup and ADAT recorders as well. These days you can record a vocal demo against a click track while timecode is running and know that you'll be able to throw anything into the mix later on. With the earlier analog technologies, there was only so far you could take the overdub process.

I tend to get my best vocals first, and so I'll often record them to an ADAT and then strip them and the click track off so that they can be dropped into Pro Tools. The computer helps a lot with writing. I like to combine MIDI and analog recording into the process as well.

Do you still use guitar strings until they break?

Absolutely! I know a bass player—Herbie Flowers, a great English session musician—who has had the same strings on his Hofner bass for 20 years. He's afraid that if he changes the strings he'll lose the sound he's got!

Shel Talmy was The Kinks' producer through the recording of Dead End Street. ***What did he contribute to the band's sound?***

Shel's a great producer. There are two schools of producers. Type A goes into the studio and dominates the proceeding, while the Type B producer disappears and lets the record take place. Talmy was one of those guys. My work was changing so quickly. Not to be big-headed, but he found it hard to keep up.

Do you produce your own recordings these days?

Actually, I've never recorded a solo studio album, but that's something I'm planning on doing.

Anyone in mind you'd like to work with?

As a remixer, Bob Clearmountain is great. My ideal producers would come in at the beginning, when I had the framework of the songs, and make suggestions. That person would then come back in several months, when I was ready to record. In the old days we knocked out records, but today the process is more like making a movie: You can't have someone come in for three weeks and make a significant contribution. I'm actually looking for a producer now.

In your autobiography, you say that "...I persevered with my sporting endeavors. One thing was certain; where I could, whenever I could, I needed to win." Have the competitive fires cooled with age?

I've learned over the years to take pride in the work itself, and not to worry about the chart game.

Were you ever contemptuous of the Flower Power children who shared none of your physical aggression?

No, I understood them. My life, since childhood, has been characterized by a combination of sport and its opposite. The sensitive painter was what I was earliest on, and art helped form me as a person. I understood the sensitivity of flower power.

Wasn't there a prominently outrageous aspect to The Kinks?

Yes, the clothing and so on. But the outrageousness was part of the band, it was never really me.

Was camp behavior a way for you to exit the aggressive mode?

That's a fair point. I learned a lesson when I wrote "Dedicated Follower of

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Fashion." That song was inspired by a real fist fight I had over fashion, but it was a humorous statement.

I wondered if the rugby guys thought I was weird. My manager said that those kind of people were the easy pickings—tough on the outside but soft inside. A lot of straight people were afraid to say what they really were. The overt camp attitude was a bit of the stereotype, to show that sensitivity exists in all people.

Every artist goes through ups and downs in the career cycle. The Kinks hit so quickly—were you glad when the bubble burst?

Yeah, the first thing I realized was that I had three hits in Britain, and when the fourth ("Everybody's Gonna Be Happy") went to number 29 everybody said it was over!

About this time, I came to realize that there's a fine line between being experimental and innovative in pop music. Take The Beatles. "Ticket To Ride" had that great guitar riff and the dense textures. It was innovative, but still palatable to the audience. You have to give people something they think is different, but not too different.

PHOTO MICHAEL OCHS ARCHIVES/VENICE, CA

On stage in the mid-'60s (L to R): Ray Davies, Pete Quaife, Dave Davies and Mick Avory.

What music do you listen to?

I like to listen to the classical station in the car. I also listen to a lot of indie records—I veer to the indie scene rather than pure pop. I don't listen to Janet Jackson, etc.—I hear enough of that in the gym.

Do you spend a lot of time in the gym?

I broke my knee about ten years ago, and so I have to work out now. The kind of show I put on stresses my body, and I do about forty minutes of aerobic and light weight work several times a week to stay in shape. I also love playing tennis.

Do you play a baseline game, or come to the net?

I'll come to the net, but my strength is playing on the baseline, and it con-

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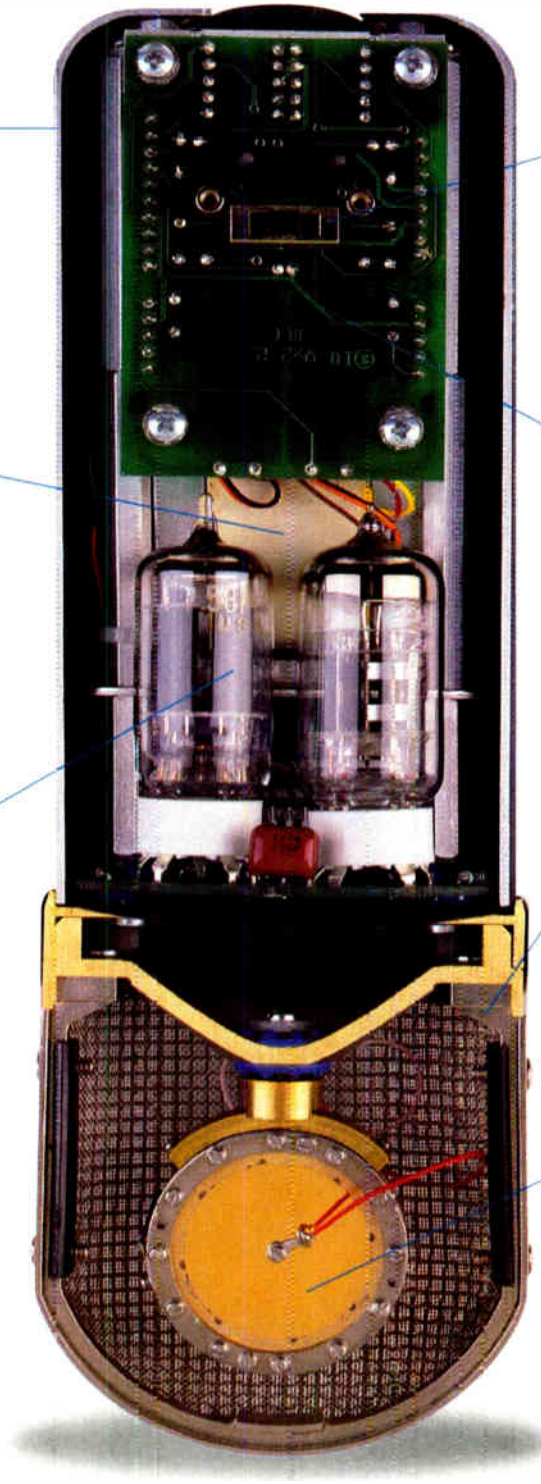

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serves my legs to hit from there. I have to look after the hamstrings, since I'm onstage for two-and-a-half to three hours a night. I really bang my legs and heels.

On your* Storyteller *CD you throw in a liberal number of Kinks tunes along with newer material. What's it like to play songs written by a teenager?

Depends on the song, really. I was a smart teen, and I also always wrote songs for parental approval, so they were older in a sense.

What about the hippie credo "Don't trust anyone over 30"?

My dad was kind of square, but in a cool way, and I would always sit down at the piano and sing my latest song for him. As a result of working this way I didn't write teen songs, apart from "All Day and All of the Night," and "You Really Got Me." If the song stands up, I can sing it today.

At one point in* X-Ray *you excoriate your young "biographer" for suggesting that you might have benefited from more formal training in music. Do you think, then, that the top songwriters of your generation turned out their best work as youths, and that a lack of continuing study was partly responsible for the diminished quality of their later work?

A lot of songwriters aren't virtuoso musicians. In fact, it's very rare to find both in one person. I took composition and orchestration lessons privately for 18 months when I was in my late 20s. I could read, write and play four staves at a time, but my private teacher said that the training was killing my natural feel.

I do think it's important to accept new challenges. I was recently asked to write a choral piece, and I'd like to find the time to do it because, although there would be no money in it, composing the piece would stretch my brain.

The best musicians out there keep learning, and that goes for Ray Davies, for sure. Right now I'm trying to find out about the Russian music of the 1960s—the stuff that was repressed. Earlier, Stalin had repressed Shostakovich's work, who nonetheless tried to get his message out through his music. I find that fascinating—I love political writing of that sort.

What's the difference between a songwriter and composer?

Songwriting has a straight format—verse, verse, chorus, A, A, B, and so forth. The pieces are generally three- to five-minute works. Composers work over longer stretches of time. I write pop songs, but I tend to use a composing technique that takes a theme and develops it. Burt Bacharach is both a songwriter and composer.

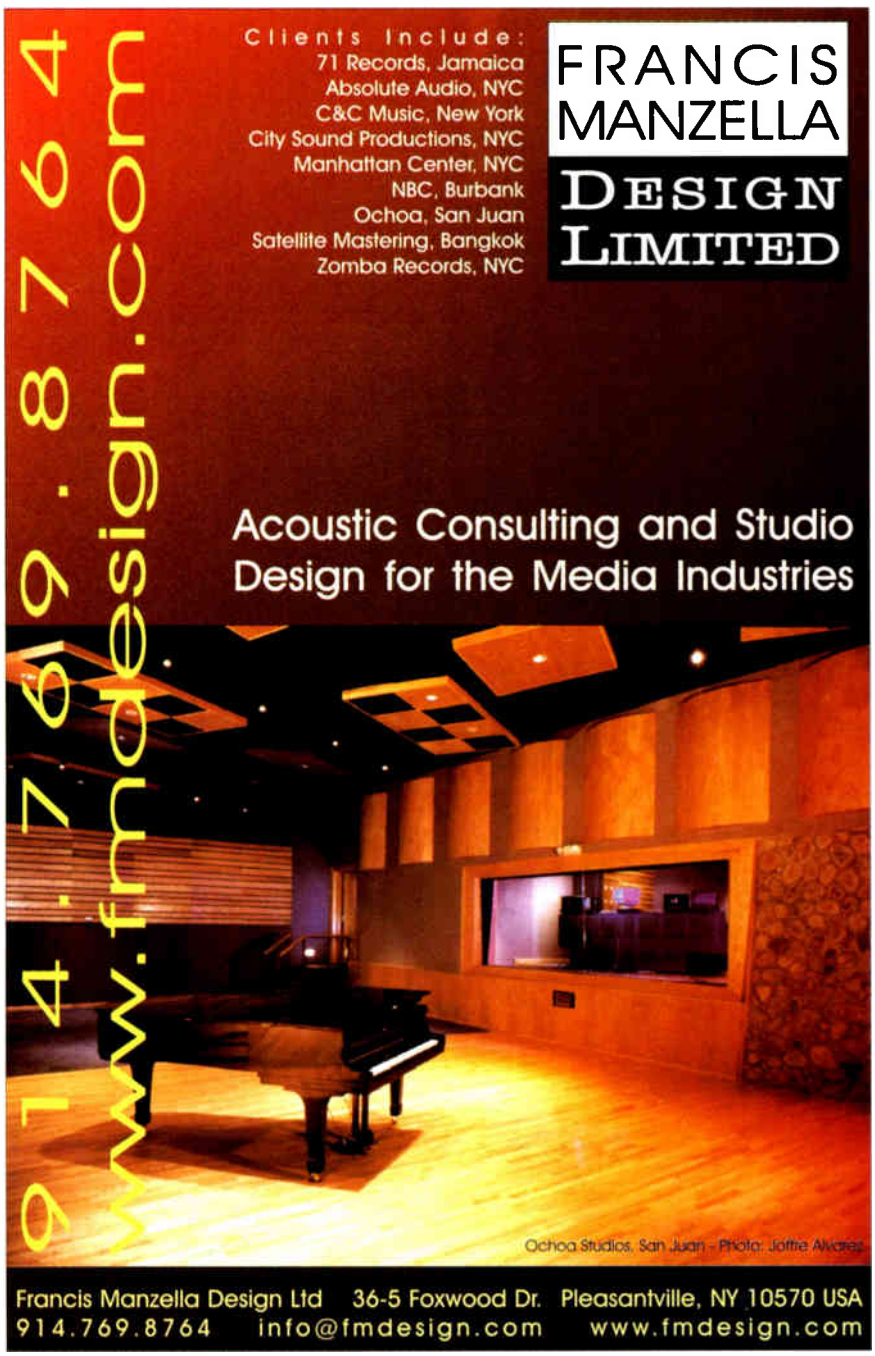
You're sometimes referred to as the Godfather of Brit Pop. Your early accomplishments are now a part of English culture. Have you in any way become the kind of character you lampooned in "Well Respected Man"?

That song is a document that was saying "This is what you must never become." The tragedy is we all become something we didn't want to be, that has to do with living, living in different ways.

I'm trying my best not to be respectable! I get the "Sir," and "Mr. Davies" elder statesman stuff, but give me a break! I'm a person. I'm proud that people respect me for having traveled a certain distance in my life. I try to live as best I can and forget about the ballyhoo.

The business aspect of the world fills me with terror! I'm still an idealist in the sense that the creative work is most important. ■

Gary Eskow is Mix*'s New York editor.*



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World Radio History

CIRCLE #036 ON PRODUCT INFO CARD

MUSIC RECORDING IN THE UK

SERVICE-ORIENTED STUDIOS MAKE THE TRANSITION TO 5.1-CHANNEL MIXING

PHOTO: YORK W. TILYER

Peter Gabriel's Real World Studio

London has always been an important center for the international music industry. What began with Four Lads From Liverpool in the early '60s has blossomed into a major crossroads of creative influences and technological advances. And, despite a downturn in studio bookings during the mid- to late '80s, the majority of this fair city's leading facilities report that business is good—and getting better. New trends include forays into DVD mastering and 5.1-channel mixing, plus diversification into film and audio post sessions

Founded in 1931, **Abbey Road** is the reigning dean of London facilities, with a track record second to none. Currently owned by the EMI Music Group, the complex comprises four primary recording rooms and a number of post-production suites, with a full-time staff of 70. Creature comforts include an on-site canteen, with resident cook.

Recent clients have included Soraya, Jamiroquai, Spiritualised, Manic Street Preachers, Dr. John, Ofra Haza, Bruce Broughton, Oasis, John Williams, Tom Robinson (a live, one-hour TV broadcast in late March), Spice Girls (*Spice World* album), Radiohead and Paul Weller. Acts such as Pure Essence, Kottonmouth Kings, Super Furry Animals, Hothouse Flowers, Papa Wemba, Tanita Tikaram, Ultrasound and Robbie Williams have been booking time in the post-production suites.

"Studio One is our flagship," offers Chris Buchanon, director of operations. Used primarily for orchestral and scoring sessions, the control room boasts a 64-channel Neve VRP console with Flying Faders. Recent film scoring work in Studio One includes *Braveheart*, *Lost in Space*, *Virus*, *Merlin* and *Quest for Camelot*.

Studio Two also features a 64-channel AMS Neve VRP with Flying Faders, with a control room that looks directly down into a spacious tracking area. Home to many of The Beatles' sessions, Studio Two's control room was remodeled and enlarged a couple of years ago. "Jimmy Page and Robert Plant used Two for several months to complete their new album," reports bookings coordinator Collette Barber.

Studio Three boasts a large, flexible tracking room linked to a control room that houses a 72-channel SSL 4000 G Series console that was installed ten years ago.

Town House Studio 1

The Penthouse specializes in stereo and surround-sound remixing and features one of the first installed AMS Neve Capricorn digital consoles, with full 5.1-channel surround-sound monitoring. Finally, a total of 18 post-production rooms are available, including three vinyl mastering suites, a DVD authoring suite, an Enhanced-CD and Web

BY MEL LAMBERT

World Radio History

Air Studios' The Hall

authoring room, plus various classical music editing rooms and remastering suites.

Room rates for Abbey Road's prime-time studios, in line with the majority of London facilities, are around £1,200 per day (approximately $2,000), including an analog multitrack and second engineer.

Buchanon is quick to acknowledge that Abbey Road's reputation has, at times, worked against it. "Yes," he agrees, "clients often have the wrong perception about us—that we are an 'establishment' studio of the '60s. That is a total misconception. We are fully up-to-date with technology and attempt to create a friendly, open environment in which we can support the creativity of our artists and producers.

"In terms of the future, we are venturing into the multimedia arena," he continues. "With the official European launch of DVD players this summer, we are seeing an increase in demand for 5.1-channel mixing and have made a move into post-production. Our 13 Sonic Solutions editorial suites are connected via a high-speed network, allowing us to share data quickly and efficiently."

The original Air Studios, built in 1970 across several floors of an office and retail complex in London's Oxford Circus, was forced to move when the lease expired in the early '90s. The studio reopened in 1993 within Lyndhurst Hall, a Victorian chapel and lecture hall in the Hampstead suburb of North London. Air Lyndhurst now comprises five studio areas, a post-production suite, plus residential accommodations with in-house catering. The complex, which cost a reported £15 million (just over $25 million) to renovate, is jointly owned by The Chrysalis Group, AIR Ltd. (Artists Independent Recording, founded by Sir George Martin and his partners) and Pioneer.

The new studio complex includes two main areas. The original lecture hall is now The Hall, Air's largest recording area, with a companion control room. Four new, identically sized control rooms were built one above the other within the core of the main building, with corridors and recording areas leading off. (In this way, all load-bearing walls could be laid out in the same plane, which simplified the design of foundations and support walls.)

"The Hall serves as our main orchestral recording environment," says general manager Malcolm Atkins. "We recently added a 5.1-channel monitoring panel to the control room's 72-channel AMS Neve VRP Legend console to handle surround-sound mixing." Recent film scores completed at Air include *The English Patient*, *Emma*, *Mask of Zorro*, *City of Angels*, and a project code-named "Titanic II"—Oscar-winning composer James Horner re-recording music from the movie.

"The Hall provides over 5,000 square feet of recording area," Atkins continues, "and will easily hold a 100-piece orchestra. Three large galleries can accommodate up to 300 people, either as an audience or standing in a choir." Apparently, a new agreement with the country's Musicians' Union has resulted in more sessions being recorded in the UK. "It has brought back the big orchestra, which is our bread and butter. We have had a wonderful year!"

One of Strongroom's many colorful studios

PHOTO: CHARLIE ROFF

THE VIEW FROM APRS

The UK's Association of Professional Recording Services just celebrated its 50th anniversary. "The association plays a vital role in three ways," says Mark Broad, APRS executive director. "First, we promote our member studios' services to a wide client base; second, we provide an interface between hardware manufacturers and users; and third, we encourage a healthy market condition."

By way of an example, Broad cites recent meetings he's had with members of various licensing organizations, including the British Phonograph Institute (BPI), to ensure that member facilities are kept fully aware of any changes in copyright laws. He is also in regular contact with the Musicians' Union. "We are all part of the same industry," he stresses. "The interests of producers, engineers and sound designers that work in British studios overlap and coincide."

Business for the UK studio industry is healthy, Broad concedes, with extensions being made by a growing number of

—CONTINUED ON PAGE 64

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But Air has also attracted other musical genres. "We've seen sessions with Oasis [recording the *Be Here Now* album], plus Radiohead [*OK Computer*]. Our calendar is roughly divided into equal thirds, with film scoring, general sessions and video/mix-to-picture. Our philosophy is simple: Give the client what they want."

Studio 1's large recording area is capable of accommodating up to 60 musicians. It is linked to a control room equipped with a vintage 72-channel Neve 8078/Focusrite console with GML automation that was originally installed in Air Studio 1 at Oxford Circus. Studio 2 serves as a remix suite and features an 80-frame/72-input SSL 8000 G Plus console with Total Recall and Ultimation.

Studio 3 is a music and film/video post room, with a 48-channel/four-layer AMS Neve Logic 2 digital console with AudioFile Spectra Plus and LCRS monitoring. Dub A is designed primarily for TV/video post, with a 20-channel/four-layer Logic 2 with SpectraPlus and LCRS monitoring. "We handle a lot of long-format dramas and episodic television for BBC Television and Hatrick Productions," Atkins says.

Finally, the Prep Room has a 32-channel Logic 3 digital console and is used primarily for prelaying material from timecode DAT to AudioFile hard disk. Analog/digital multitracks available in various machine rooms include Sony PCM-3348 and -3324As, a Mitsubishi X-850, plus Studer A800 MkIII and Otari MTR-90 MkII analog decks.

Abbey Road's Penthouse

In a former London Transport power station in the Chiswick suburb of West London, **Metropolis Studios** was opened in 1989 and currently operates five rooms. The facility's overall aesthetic is true to Fritz Lang's silent movie from which the facility derives its name: spare, minimalist decor, with high-tech piping, steel and wood surfaces in the control rooms. On the lower floor are two self-contained pre-production rooms equipped with a variety of synthesizers, sequencers, keyboards, Mackie consoles and Pro Tools editing stations. "We can also provide sound design and mix-to-picture if the client needs it," explains John Goldstraw, the facility's technical manager.

Studio A features a 72-input Focusrite console with Mackie sidecar (to provide either monitoring during track laying/overdubs, or additional inputs during double-machine remix), while Studio B offers a 64-channel SSL 4000 G Series. Both Studios A and B include large tracking areas and private lounge areas.

Studio C is intended for overdubs and mixdown and features a 72-channel AMS Neve VR console capable of accommodating 144 inputs—three synchronized multitracks—during remix. Studio D is a small mix suite equipped with a 48-channel SSL 4000 E Series dating from 1982, while Studio E offers an 80-frame/72-channel SSL 9000 J Series. Multitracks available in any room include four Otari MTR-100s and one MTR-90 analog, plus a Mitsubishi X-850 digital machine. Genex GX8000 MO recorders in each room are provided with Prism A-to-D and D-to-A converters; also available are Ampex ATR-100 ½-inch mastering decks.

"We also offer three mastering suites," Goldstraw continues. "Two are equipped with Neumann VMS-80 cutting lathes, while the third was recently refurbished to accommodate 5.1-channel mixing, with a PMC surround sound monitoring system. We also have a number of editing suites equipped with SADiE and Octavia systems."

The majority of sessions at Metropolis are booked by domestic clients; 30% are from European or Japanese producers or artists. "In terms of the future," Goldstraw explains, "we are investigating new forms of recording media. We have found that DASH-format digital tape can be unreliable—our PD-format Mitsubishi is much more forgiving of tape damage, for example. But our industry needs a reliable, removable medium. Hard disk is too cumbersome; maybe these new optical formats might hold the answer."

Making up one division of the EMI Studio Group—the other being the

—FROM PAGE 63, THE VIEW FROM APRS

facilities into film soundtrack recording/mixing and post-production. "The music recording side fluctuates from month to month. There has been a cutback in orchestras that record in this country, and many labels specify a leaner recording budget.

"In addition, we are seeing an increase in the number of artists and producers that begin a project in a pre-production or songwriting project studio but then move into a larger, better-equipped facility for overdubs and mixing. We expect these two types of facilities to complement one another, rather than compete for budgets."

A case in point: Last November the APRS awarded its prestigious "Most Exciting Production of 1997" award to producer Jim Abbiss, in recognition for his creative and technical work with the band Sneaker Pimps. The *Becoming X* album project, Broad explains, began as a demo session that was put together using ADATs and a Cubase hard disk system. "He then took the tapes into The Strongroom to finish the project, yet still retaining the basic elements that he and the band liked so much."

As Abbiss explained in a recent interview for the APRS newsletter, "Sounds and structures developed along the way, but for me a great part of the challenge was in preserving the original 'Lo-Fi' charm—a certain magic which the demo has—whilst building the tracks up to a level of power they need for radio play." Abbiss acknowledges being heavily influenced by the work of Ultravox and Portishead, whose sounds, he says, "fascinated me, with their peculiar balance of 'posh' and 'grunge,' in that closed, muddy atmosphere." —*Mel Lambert*

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multiroom complex at Abbey Road—Town House and Olympic Studios in, respectively, the Shepherd's Bush and Barnes suburbs of West London, are run jointly under the direction of operations director Ian Davidson. "Our primary clients are bands and artists who produce live music," he says, "They like our large, spacious tracking areas. But we also have a great selection of outboard when it comes time to mix."

Celebrating its 20th anniversary this year, The Town House offers three SSL-equipped music-recording rooms, plus a quartet of mastering suites, in a former film studio. Studio 1 houses a 72-channel SSL 4000 G Plus, Studio 2 a 72-channel SSL 9000 J Series, and Studio 4 (the newest room) a 72-channel SSL 4000 E Series with G Series automation. (Studio 3 used to be Rampart Studios, which was purchased from The Who in the '80s, but has since closed.)

Four mastering suites and copy rooms are available, the former equipped with a trio of Sonic Solutions workstations and a Fairlight FAME system. "Between 25 and 30 percent of our capacity is for EMI Music," Davidson reports. "The remainder is booked by outside clients. We also plan to upgrade the Sonic units to 96kHz/24-bit operation. And we are considering converting the FAME room to handle sound-for-picture, which would be a better use of that system!"

Olympic Studios Studio 1

Olympic Studios comprises an additional three—soon to be four—SSL-equipped tracking and mixdown rooms in a former Edwardian music hall. Founded in the early '60s and purchased in 1988 by Richard Branson's Virgin Studios Group, the entire operation was purchased by Thorn/EMI in 1993.

Studio 1 features a 72-input SSL 9000 J Series, Studio 2 a 56-input 4000 G Series, and Studio 3 a 60-input 4000 G Series. Multitracks available throughout the complex include Studer A800 and A820 analog decks, plus three PCM-3348s, a PCM-3324, two Studer D827s and a Mitsubishi X-880.

"In August of this year," Davidson reports, "we will be completing Studio 4 within the garden area at Olympic. The new room, to be designed by Sam Toyoshima, is a joint venture with [producer/mixer] Mark

—CONTINUED ON PAGE 244

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CHRIS TSANGERIDES

METAL AND MORE

In the realm of hard rock and heavy metal, some producers find a steady path and stay with it, developing a formula or sticking with certain types of bands. But Chris Tsangerides avoids such uniformity by exploring not only different metal pathways but a gamut of modern rock and pop styles. From his beginnings as engineer to the legendary likes of Judas Priest and UFO up to his recent studio forays with guitar wizard Yngwie Malmsteen, including the recent *Facing the Animal* (Mercury), the UK-based producer has always striven to expand his aural palette.

Tsangerides began his career with an apprenticeship in the early '70s at the independent, four-studio complex known as Morgan Studios, where artists such as Jethro Tull, Yes and Black Sabbath cut albums. The young engineer got his breakthrough gig with Gary Moore in 1978; the rest came naturally. Many of his clients' names will no doubt be familiar to *Mix* readers—Joan Armatrading, Tom Jones, Billy Ocean, Ozzy Osbourne, Samantha Fox—while others are more obscure in the States, including Girlschool, Magnum, Rock Goddess and TNT. But that only solidifies his credibility, for Tsangerides works on what he likes, irrespective of its relationship to other music he has produced.

At the time of this interview, the jovial Tsangerides—by the way, the first "s" is silent—was recording Brazilian symphonic metal band Angra and then planned to mix Malmsteen's next live album. After that, the producer was scheduled to work with metal-techno band Future Culture, then record his own like-minded project, Pro-Z-ac, which he describes as guitar-based techno in the vein of The Prodigy and The Propellerheads.

Did you have a taste for heavy rock at the beginning?

Yeah, I did. I always liked heavy rock, and it was what was happening when I started my career. We had that sort of clientele at the studio, so you naturally got involved. Gary Moore was playing guitar with Colosseum II at the time. Then he had a solo album to make, and I was put on as an engineer. Simon Phillips was the drummer, Don Airey was the keyboard player and a couple of the guys from Thin Lizzy came over. Gary said, "You can produce this," and I said, "Yeah, right, whatever," thinking he was joking around. But he wasn't. So that was good. We recorded a song called "Parisienne Walkways" on this album, and it was a massively big hit over here [Britain]. And suddenly you become a producer. [Laughs]

I understand that you play guitar.

I do. And that ran alongside when I was an assistant learning in the studio. I had a band when I was at school. We just carried on with our little band in little places. When I got my day job as a studio assistant—which was a day and night job basically—we would do the occasional gig.

Does being a guitarist help you to look at things from more of an artistic angle, or a technical angle?

Because I did go through the motions and become an engineer as well, I must say I do look at things from more of an artistic point of view, but I also look at whether I can do this artistically with the technical knowledge that I have, and try to get a fine balance between the two of them. Having the knowledge of the technology can help the creativity, if you like, by being able to do something in a slightly different manner—because you know how these new computers work and what you can do with them and what you can't. The trick is to harness the technology, not let it harness you, so that you don't become a slave to the MIDI, which is total boring shit. If I'm going to go down that electronic route, I have programmers because I can't be dealing with computer screens when I've got a whole bunch of people to be looking after and a whole project to be supervised. So I prefer to delegate these little matters, which is, I think, the way to do it.

You work with a wide range of people. How do you approach each individual project?

First and foremost, I do a project if I like the music. It's got to be down to that at the beginning, because you can't work with something if you don't like it. I've been producing 21 years. To be doing the same thing for 21 years would drive you absolutely insane. It's really nice for me that I can get to work with somebody like Concrete Blonde and then do a Judas Priest, or work with an Ian Gillan then work with a Killing Joke or Lords of the New Church, because it does keep you fresh. But the approach is essentially the same: to basically get the

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best out of the performer that you can. I've been lucky that the people I've worked with have been very open to crazy suggestions, because after their first few albums, they're always looking for something different to do, as well.

Do you find that when guitar players get involved in a production that they want their guitars to be louder than everyone else? Do you have to teach some guitarists that it's a shared experience?

Basically, "It's not your solo album, pal." Everything's important in the song, and you have to be as loud as you have to be. Likewise, the drums, the bass, the voice and anybody else on the damn thing. We normally do what's called the guitar player's mix, then send him off and cut the real one on the record. [Laughs]

And do they notice?

Nope. Absolutely not. And I have done that, I really have. To this day, they don't know the difference.

What types of studios do you prefer to work in?

I prefer big rooms for tracking the drums and such. If I'm in the States, I like Criteria Studio A, and if I'm over here in England, I use Metropolis' studio, which I'm in now. And I have my own place, as well, called Rainmaker, where I tend to do overdubs and mixes if the project requires it to be there. Metropolis is a fine complex over here. I reckon it's probably one of the best in the world because of its various side studios and mixing consoles. In Studio A there's a Focusrite desk, which is bloody superb. And then they've got the new SSL in their new Studio E, so you can go complete high-tech if you like. I do like Criteria Studio B for mixing also, because that's got a nice SSL G Plus automation situation. It's very good.

You've produced Baron Rojo, Anvil, Killer Dwarfs, Helloween, Sinner...do you have any favorite metal bands that you've worked with?

I suppose the true metallists—if there's such a word—would be Anvil. They were very early on in the speed stakes. They were a really fast band in the beginning of the '80s. Absolutely crazy, hysterical sexist lyrics, totally. And these guys were total rock 'n' roll animals. They played stuff that literally inspired the likes of Metallica and all bands after that. They couldn't get arrested in the States with a deal. Lieber & Krebs were their managers, who were the big heavyweights at the time. They loved them, but no record company could see where it was going. Then a few years later, Metallica and the speed bands came in. It's good to know that a lot of these bands look back to them for inspiration. I liked them.

You co-wrote the wonderfully gothic "A Touch of Evil" with Judas Priest [on the album* Painkiller*]. How did that come about?

I do library music for a publisher, Bruton Music. They use these albums I make. If a film company wants a heavy metal riff to put behind somebody getting murdered in a scene, or whatever, they can go to the library and say, "Take one of these and use it." So I had a couple of these CDs of mine down at the studio, and I was just testing the monitors. And I played "A Touch of Evil," which I had written for this library album, and Glenn [Tipton, Priest guitar player] came in and went, "Bloody hell, what's that?" And I told him, and he said, "Just a minute." Then he came back and said, "We could work with that." Rob [Halford] wrote the lyrics, Glenn came up with the middle eight and some choruses, and there you have it. All the riffs and the bridge is me. The

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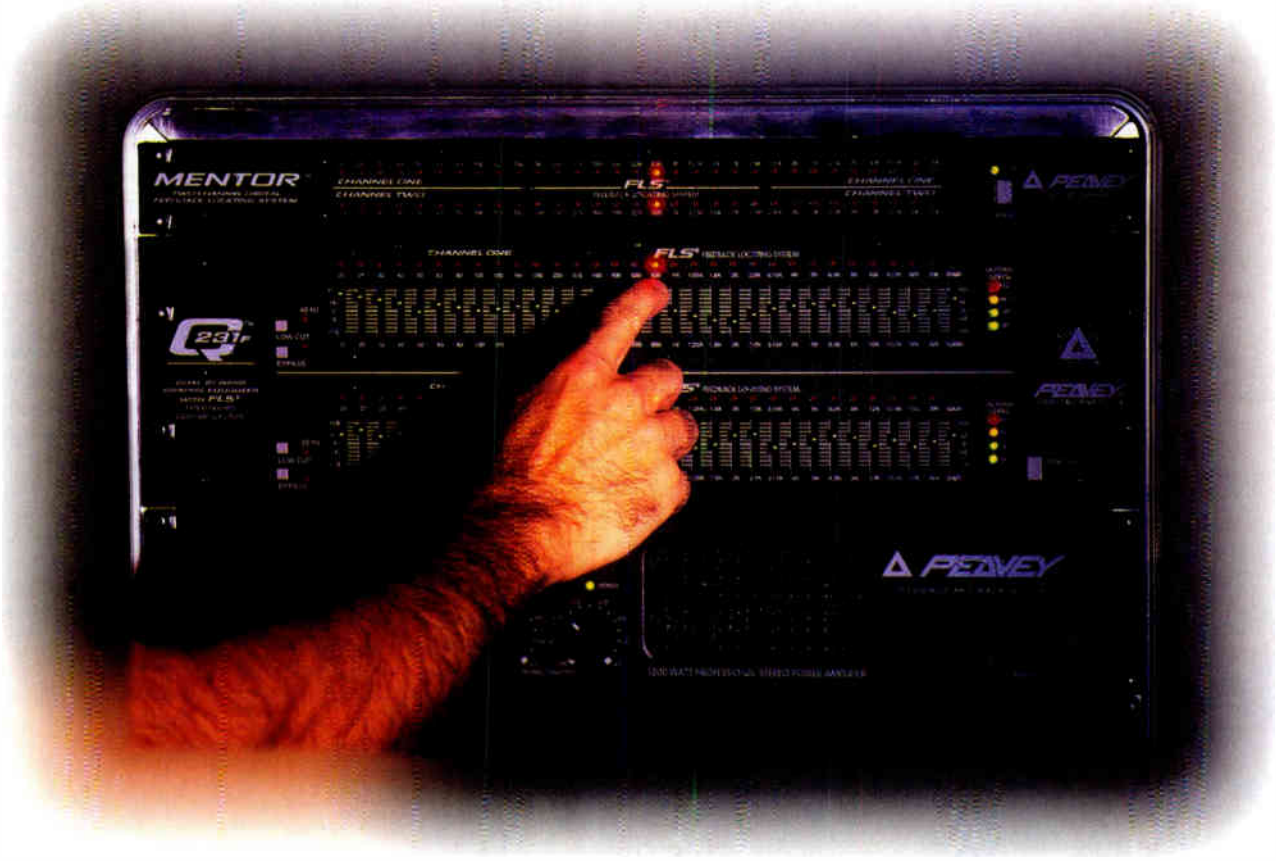

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solo section is Glenn.

What I like about that song is the solo section builds up with four guitar tracks—two electric and two acoustic—and they weave together nicely. Was that a challenge to mix?

Do you know what? That was probably the most instrumentalized—if that's the right word—song on the whole album, the most overdubs. There's so many synthesizers, little effects, noises, acoustic guitars, backing vocals and Lord knows what, and I really thought, "Here we go, this is going to take me three weeks to get this one sorted." It was the quickest mix of the lot. [It took] just a day really. Fabulous, fabulous. I didn't mix this one first. The way I mix is I tend to take a couple of days getting the vibe right, the sound that I want for the album, and then things happen after that fairly quickly, at least one [song] a day. I think we did "A Touch of Evil" in the middle of the mix session.

How do you feel that metal has evolved production-wise over the years?

It's become how big can you make a guitar, how big can you make a drum, how big can you make it really. And that's how it's evolved with digital technology. You can put virtually anything on a CD, and it will play back. Whether your speakers can handle it is another thing, but in the good old days of vinyl, you were restricted to how much bass end you could put on something. [Things like] phasing, whether it could track, and all sorts of technical, mechanical limitations were put on you before you mixed anything. But now, you can do virtually anything.

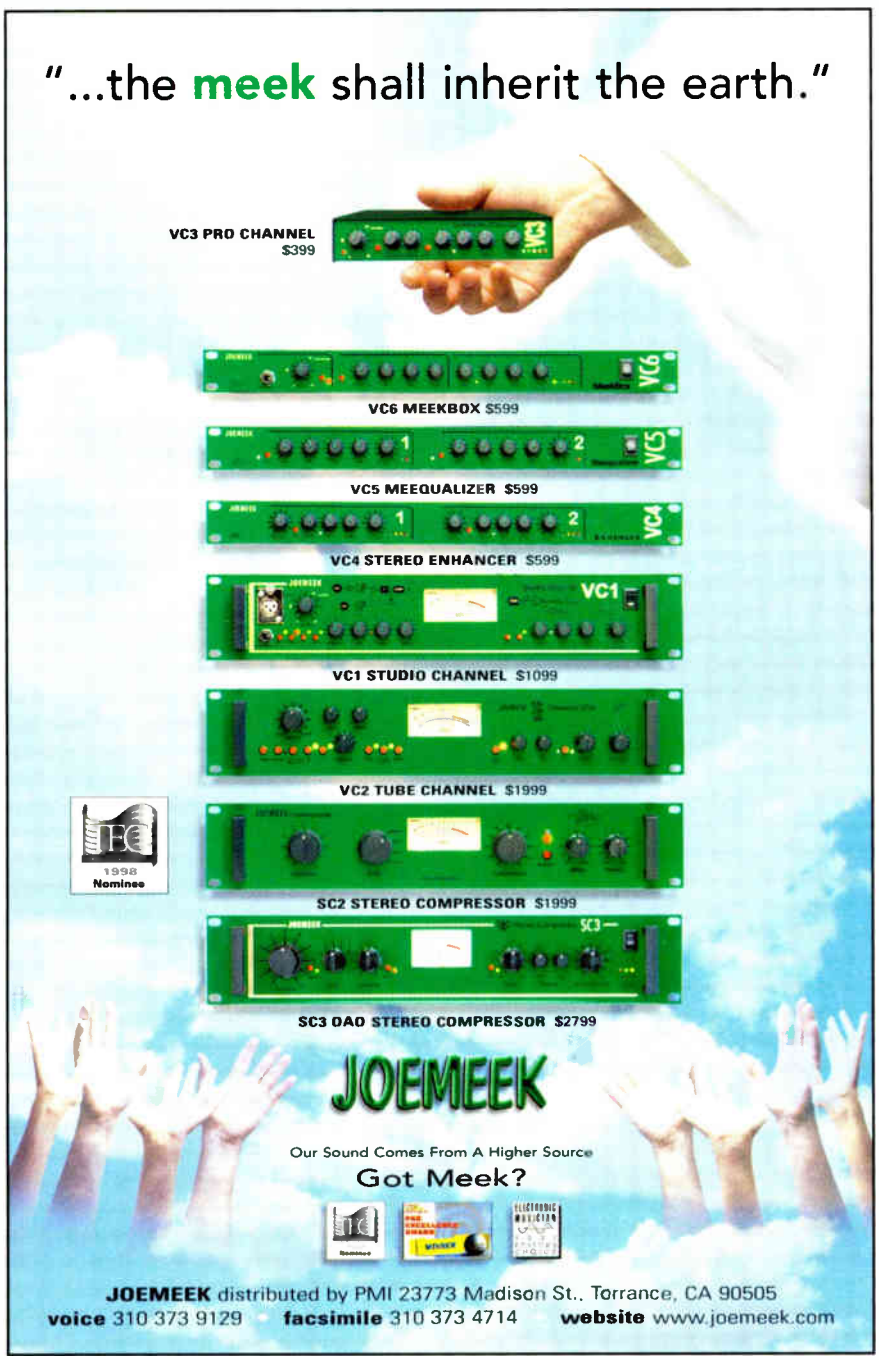
I think albums today are a bit too polished. I don't like to hear a producer, you know what I mean? I like to hear the group or the artist. I don't want to hear a production, I want to see through it, I want to go, "Shit, that was such a cool song, that was great!" Then you realize, "My God, that sounded amazing! Why?" Then you start listening and finding out what the hell was going on there. I don't want to say, "Ah, jeez, look, he's put the bleeding drums through one of these, and listen to that guitar, he's phasing the shit out of it." That's where I come from. I'm the chap who can push a phaser up and down and make Mr. Bloggs that's playing his guitar sound like Mr. Bloggs, as opposed to him and me. It's not my album. I'll save all that for my own records.

You're working with Angra right now, who are like Yes given a thrash kick in the butt.

Right. Some of the music that we're doing on this album still has that symphony edge. In fact, we're using some of the chaps from the LSO to play down at Abbey Road to do proper strings on it for the first time, which is pretty cool. We're getting rid of all the digital keyboards and going back to analog—Hammonds, Moogs and that sort of thing. Of the tracks we've done, it's so much heavier than they've ever been. They have more of a rock base to it. We've taken all the things and thrown out what, in my view, isn't where it should be and are putting it back together. And it really does sound good and refreshing, because my God, can they play. Very good music. So it's been a lot of fun so far.

What's the wildest session you've ever had? Or the wildest thing that's ever happened in a session?

One time I was working with Gary Moore, and Black Sabbath happened to be at the next studio at Morgan. Nothing to do with us, but they decided that they were gonna come and have some fun. Ozzy and Bill and Geezer came over, and it was just me mixing with my assistant engineer there, this chap we used to call Victim because he did get



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*John Meyer holds numerous patents including a low distortion driver/horn combination which is utilized in the UM-1P, and one for the perfectly aligned phase response through crossover (zero-pole crossover) utilized in both the UPA-1P and UM-1P.

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sony pictures, hollywood twickenham studios, uk creative café, hollywood de lane lea, london

1

in Film.

in the U.K.

in Europe.

in Australia.

in Hollywood.

in the world.

period.

Representative Film Console Users:

ARRI, *Munich* • ARRI Contrast, *Berlin*
ATLAB, *Melbourne* • Audis de Joinville, *Paris*
Australian Film, TV and Radio School, *New South Wales*
Bavaria Film, *Munich* • Betatechnic, *Munich*
BR Film, *Mumbai* • Cinepost AB, *Stockholm*
Creative Café, *Hollywood* • dB Post, *London*
DeLane Lea, *London* • EFX Systems, *Hollywood*• FEMIS, *Paris*
FR3, *Lyon* • FFS, *Munich* • Finnish Film Foundation, *Helsinki*
FeltWave, *Copenhagen* • Four Media Company (4MC), *Hollywood*
Goldcrest Post Production, *London* • Granada TV, *Manchester*
Lyrick Studios, *Dallas* • Magmasters, *London*
National Film & Television School, *London*
Post Film and Video, *Sydney* • Ruhr Sound, *Dortmund*
Shepperton Studios, *London* • Sony Pictures, *Hollywood*
SounDelux Vine Street Studios, *Hollywood* • Soundfirm, *Melbourne*
Soundfirm, *Sydney* • South Australian Film Corporation, *Adelaide*
Studio Babelsberg, *Berlin* • Taran Studios, *Cardiff*
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Universal Studios, *Hollywood*
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CIRCLE #043 ON PRODUCT INFO CARD

World Radio History

victimized by everybody. It starts off with Ozzy chasing him round the desk with his pants down like a penguin, running behind him going, "Come here Vic, I love you, I want to f— you, come here." And he was like, "F— off, Ozzy, go away." Then as Ozzy walks out, he proceeds to smash his head against the wall. He takes two steps back, hits it again on purpose, then three steps back and smashes into the wall. I'm looking at him going, "What the hell is he doing?" Ozzy ends up running right across the studio and launching himself headfirst into the studio wall and crashing in a heap!

Five minutes later, I get a phone call from Tony Iommi, saying, "What have you done to Ozzy? He's dead!" I said, "What are you talking about?" "He can't feel anything from his neck down." They call an ambulance and take him to the hospital, and they throw him out five minutes later because they realize he's numbed himself so much on the old coke that he can't feel his body. [Laughs] Many things relate around Sabbath, really. Whenever they were in, whether I was working with them or not, the place would just be in an uproar. They would spend hours just thinking up tricks to play on people. It was great, really funny.

Which album did Yngwie have the orchestra on?

His concerto. It's called *Millennium Suite.* It came out in Japan in February. It's done superbly over there. Pony Canyon Classics commissioned the work, and it's specifically written for electric guitar and orchestra. There's no drums; it's a total classical piece.

What was it like to record that?

That was fantastic. Absolutely bloody brilliant. We went to the Czech Republic with the Prague Symphony, and it was dynamite. We recorded it in this beautiful old concert hall and came back to America and put the guitars on, and then mixed it down at Criteria. It's gone past the Gold mark over there; so far it's done 80,000 copies in Japan. For a classical recording, they normally sell between 5,000 and 10,000. It hasn't been released as a rock piece—it was done for the classical people. I'm not sure what the deal is with it being released worldwide, but it certainly was a great experience. And we had such a hoot doing it, with 150 people hacking away at this stuff. We were loving it. ■

Bryan Reesman is a freelance writer living in Boston.

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World Radio History

BY TOM KENNY

POST SCRIPT

SOUND FOR FILM

DIGITAL TECHNOLOGY FOR THE UK FILM INDUSTRY

ANVIL POST PRODUCTION AND VIDEOSONICS ADD ALL-DIGITAL CONSOLES

by Mel Lambert

There was a time, not too many decades ago, when a large number of UK-financed and -produced movies were regularly shown around the world. Then, the '80s to early '90s saw a drop-off and a depressed film studio climate. But in recent years, movies such as *Four Weddings and a Funeral*, *Trainspotting* and, most recently, *The Full Monty* have surprised their investors by becoming phenomenal successes on these and other shores. The trend for profitable, small-budget productions is again on the rise.

Financing for such movies has come not from the conventional film companies but from a variety of hybrid associations formed by the familiar UK-based broadcasters—which include BBC Productions, Channel 4 and many of the Independent Television Companies (notably Carlton TV and Granada TV)—and less traditional investors, such as insurance companies and other financial organizations.

The current renaissance of British film production has resulted in an increase in post sessions booked by UK-based film producers and directors. As I discovered during recent visits to two of the country's leading film post-production facilities, there is a pressing need for efficiency and new technologies. Both Anvil Post Production and Videosonics Cinema Sound have responded by adding all-digital consoles. Anvil recently added a Solid State Logic Avant Digital Film Dubbing Console—with a second scheduled to be installed last month—while Videosonics now offers an AMS Neve Digital Film Console in a new THX-certified room.

"Without a doubt, digital technologies have made us more cost-effective at what we can offer the budget-conscious [UK movie and TV] producer," says Dennis Weinreich, an American-born former music producer now serving as managing director of Videosonics Cinema Sound. "There is no denying that an all-digital signal path can provide enhanced quality in the final mix. But, for our facility, digital lets us offer more creative options for a director and streamline the process from editorial through dubbing."

VIDEOSONICS

Videosonics, established in 1983, has an interesting history. As Weinreich recalls, "In 1980 the [British] government published a White Paper stating that, by 1984, independent productions should account for 25 percent of programming shown on UK television. Although that goal was never achieved, it did encourage the development of independently funded film and TV productions, a market segment that we saw as representing new business op-

—CONTINUED ON PAGE 84

Film Sound columnist Larry Blake has been busy editing and mixing the feature film *Out of Sight*, which opened June 26. He will return next month.

SSL's Avant Film Console at Anvil Post Production.

World Radio History

PRODUCTION MUSIC LIBRARIES

NEW OPTIONS, NEW OPPORTUNITIES

by Sarah Jones

The expansion of new media markets and the merging of digital technologies are providing opportunities for both makers and users of production music. Growth in areas such as the Internet, multimedia, broadcast/cable television and game development has created issues that have an impact on everyone whose work involves production music libraries, from composers and musicians to end-users.

ILLUSTRATION ALEX BUTKUS

MUSIC TRENDS

Today, there are more music libraries than ever before, thanks in no small part to increased accessibility of music synthesis, sequencing and recording gear. A competitive market means low prices and more choices, from buyouts to custom compositions. And the popularity of electronica, techno and dance music has trickled down to the music library market, creating yet more demand. Yet at the same time, a growing number of end-users are now requesting acoustic production music for their projects.

Michael Nurko, president of TRF and formerly eight-year president of the Production Music Library Association, elaborates on the trend: "Up until about three or four years ago, there seeemed to be an increase in usage of synthesizers and sampled sounds. It was a new thing and offered inexpensive access to production, but over the last few years and increasing at this point is a return to acoustic recordings." He adds that this trend is apparent not just for music libraries but in feature films, "especially if a company is using classical music or wants a large *Star Wars*, *Superman* kind of sound, a John Williams kind of sound—they need 'real' instruments."

Nurko says that TRF is getting more requests for "archival music," authentic recordings from various eras. "You can see this in typical television commercials and television programming," he says. "There's more usage of older music, what's known as period music, and we're putting out a lot of material that was originally recorded literally in the '30s, '40s or '50s; and we're putting that music out now on CD, and there's a demand for even more of it. In fact, what a few of the major music libraries are doing is archiving their previous material, even going back to 78 records, and they're making it available on CD."

THE INTERNET: AN INDUSTRY TRANSITION

Gary Gross of Killer Tracks credits the Internet with bringing the production music library market to a turning point. "I think we will see dramatic changes in the way people get their music over the next few years; the Internet has made it much easier for people to access information and shortly access music in both real time, as well as a delayed version. There are some technologies being tested now but not been proven yet that will allow electronic downloading of CD-quality compressed music off the Internet. I think we will start seeing that within the next year."

Nurko agrees, saying that although the compact disc is still the standard delivery medium, "the direction that things seem to be headed in is to access music via the Internet, and personally I think within the next five years, ten years tops, that music will be received predominantly over the Internet. But it's a process that will take awhile because most companies have access to the Internet but they don't have the proper sound equipment yet."

Already, production music library makers are providing Internet databases to offer information online. Customers can search for a particular category or keyword, research licensing information and in some cases preview sound files. For example, Creative Support Services' Web site features more than 6,000 tracks online that can be auditioned in RealAudio and ShockWave without downloading.

Manhattan Production Music sales and marketing director Ron Goldberg predicts growth in online music library stores, a pretty safe forecast. "That's the way it's going to be—audition, delivery, everything—probably within three years. Of course, everyone has to be on the same page as far as

—CONTINUED ON PAGE 80

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PRODUCTION MUSIC LIBRARIES

Advance Audio Productions
203/459-0869

Aircraft Production Libraries
617/482-7447

Airworks
403/424-9922

Alan Ett Music Group
818/955-7010

Arcade Music Productions
602/582-1107

Arpeggio Self-Editing Music Library
800/250-3657

Associated Production Music
800/543-4276

Audio Action
800/533-1293

Audisee
206/AUDISEE

Backtracks
800/258-7570

BLC Productions
514/424-2827

The Blue Ribbon Soundworks Ltd.
604/315-0212

Brian Bennett Music
818/789-9100

BRG Music Works
610/971-9490

Cambium Development Inc.
800/231-1779

Canary Productions
800/368-0033

Capitol/CGM Production Music
213/461-2701

Cathedral Sound Productions
301/350-3181

CD Underscore
972/931-1130

Chameleon Music
413/789-1917 fax

Chess Media Unlimited Inc.
800/344-TRAX order line
914/925-4262 demo line

ConTempo Music Library
888/687-4285

Crank City Music
800/547-6547

Creative Sound Design
206/441-7421

Creative Support Services
800/468-6874

Davenport Productions
800/951-6666

Dewolfe Music Library
212/382-0220
800/221-6713 outside NY

Dimension Music and Sound Effects Inc.
800/634-0091

Disney I.D.E.A.S.
407/560-5600

Don Great Music Library
800/321-6967

DSM Producers Inc.
212/245-0006

Earwax Productions
415/775-8561

East-West Communications Inc.
800/833-8339

ELS Productions Inc.
801/265-1552

Energetic Music Inc.
800/323-2972 demo line
206/467-6931

Eye and I Productions
Voice Crystal
408/945-0139

Fandango USA
800/979-8922

Films for the Humanities and Sciences
800/257-5126

Firstcom Music
800/858-8880

Flying Hands Production Music
800/536-6007

Fresh Music Library
800/545-0688

From the Top Productions
602/623-9161

Gefen Music Systems
800/545-6900

Gene Michael Productions
800/955-0619

GMI Media Group
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Manchester Music Library
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Manhattan Production Music
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Mark Haffner News Packages
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Match Production Music Inc.
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Megatrax Production Music
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Metro Music Productions Inc.
800/697-7392

Multimedia Soundtracks
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770/932-3517 demo line
770/587-6060 order line

Music Bakery
800/229-0313

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610/687-4433

Musicrafters Library
215/425-8863

Narrator Tracks Music
800/448-6467

Network Music Inc.
800/854-2075

NFL Films
609/778-1600

NonStop Music Library
800/554-6462

Northstar Productions
503/760-7777

Nuestro Ritmo Inc.
800/331-9801

Omnimusic
800/828-6664

OneMusic
800/858-8880

Onyx Music & Post
514/849-0714

Opus 1
818/955-7010

PolyGram Records Inc. (Tape Facility)
732/287-0008

Production Garden Music
800/247-5317

Promusic Inc.
800/322-7879

Prosonus
818/766-5221

QCCS Productions Inc.
541/345-0212

Q Up Arts
800/454-4563

Rarefaction
415/333-7653

Redman Productions
407/648-8666

River City Sound Productions
800/755-8729

RTV Communications Group
954/922-8020

Saturn Studios
213/661-0259

The Raymond Scott Archives
201/653-1063

Scharren Studios
419/241-5432

2nd Generation Productions
217/728-7532

Signature Music Library
800/888-7151

615 Music Library
888/615-TRAX

Sonic Science
800/26-SONIC

Sonoton Recorded Music Library
310/397-5499

Soper Sound
800/227-9980

Sound Ideas
905/886-5000

The Sound Patrol/SongSearchers Inc.
800/SONGS-4-U

Sounds Interesting Productions
508/947-7387

Soundstage Music Inc.
800/321-0047

Southern Library of Recorded Music
213/469-9910

Sweetsong Productions
304/428-7773

Sweetwater Sound Inc.
219/432-8176

Techsonics
801/547-4000

TM Century Inc.
972/406-6800

Tone International
810/626-1194

TRF Production Music Libraries
800/899-MUSIC

Tunedge
800/279-0014

Unapix/Miramar Productions
800/245-6472

Valentino Production Music and Sound Effects
800/233-6278

Vertical Music Library
718/436-1587

Videohelper Inc.
212/633-7909

Voyetra Technologies
800/233-9377

The Well-Tempered Music
617/354-7012

Who Did That Music?
800/400-6767

Windswept Studios
703/256-3279

Wink Music Group Inc.
312/787-TUNE

Wolfetone Productions
770/992-7500

World Sounds
800/501-2328

Zedz Music-The Production Music Boutique
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Great Studios Of The World

PRODUCTION NOTES

Both of Larrabee North's 80 input SL9000 consoles were used during the recording of the latest Madonna album 'Ray of Light'. Co-producer Patrick Leonard also co-wrote several tracks, including the hit single 'Frozen'. "This was a very complex album because it included a large amount of virtual information" says Leonard. "In working with the SL9000, it was wonderful to have all of the virtual setups recalled perfectly every time. It all worked so well together, and the sound is so big! I really enjoy working on this console."

Larrabee SOUND STUDIO

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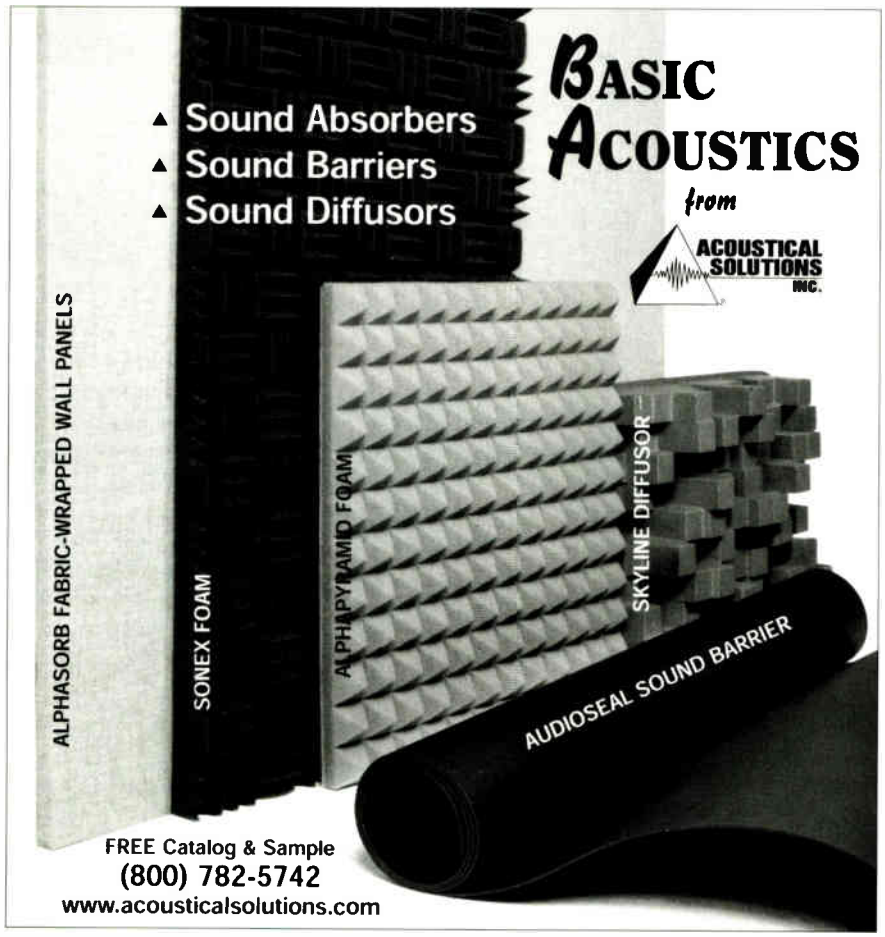

CIRCLE #045 ON PRODUCT INFO CARD

CIRCLE #046 ON PRODUCT INFO CARD

—FROM PAGE 77, PRODUCTION MUSIC LIBRARIES

software is concerned. They're all going to need ISDN lines. Without that, it's not going to work. It doesn't work now, even with an ISDN line. The majority of people who work in production facilities don't have ISDN, the people at home don't have it, so Internet delivery is not ready yet." Also, he says, efficiently auditioning quality audio over the Internet is still an obstacle: "We don't have any clips on our Web site because in order to get the clips up there you have to delineate the value a little, like 8 bits, and we record at 20-bit."

Is ISDN a viable delivery medium for music libraries? "For a while, there was the possibility of doing it over phone lines—ISDN—but that is very costly," says Nurko. "However, on the Internet, you have to get the proper equipment, but it's a one-time investment and then you have access to music from that point on." Although ISDN may be a practical alternative for those with the resources, it looks as if the Internet will win out as the cost-effective delivery choice for most.

CUSTOM OPTIONS

As for media delivery format, CD is still the overwhelmingly popular choice, although some companies do offer an alternative: Dimension has released some of its production music on MiniDisc, and Valentino offers collections on JAZ cartridge, MO disc or DVD format.

For those with time for extra creative control, a variety of alternatives offer added flexibility. Many companies, such as Aircraft and Cathedral Sound Productions, offer editable MIDI files; others offer thematic collections with varied arrangements, multitrack segments and split or layered mixes, most designed specifically for use with narration. And Headspace, a company founded by musician Thomas Dolby to create and deliver interactive music over the Web, offers interactive music libraries for Web sites, played with Headspace's Beatnik plug-in.

Of course, deadlines often take precedence over creative freedom. "Almost every one of our pieces of music comes pre-edited in a variety of lengths, and most come with a narration track as well, so you pull a lead instrument or vocal off and it allows you to be able to use it with a narrator," says Killer Tracks' Gross. "We have some music editing software that we also make available, but most of our clients really haven't expressed that much interest in

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COPYRIGHT PROTECTION/ ROYALTY TRACKING

One of the biggest issues facing audio creators in the age of the Internet is copyright protection. That, in combination with increased avenues for broadcast (DTV, expanded cable distribution), has sparked changes in the traditional methods for tracking copyright information and distributing royalties. "The way ASCAP tracks broadcast performance of production music is a 'dinosaur' system, using cassettes," says Goldberg. "The problem is that they cannot ID the music because they don't know one library from the other. So they have to send us copies of the tapes [to identify]." Currently, many new encrypting systems are in development that will not only "watermark" material for copyright protection but will also automatically track broadcast of music through various media and identify and report relevant information for royalty distribution.

Gross is one of many looking into the encrypting systems currently in development. "We are looking at the various encoding processes that are out there now, to make sure performance dollars are tracked and logged properly and so on. For us to be able to electronically capture each time the music is used will finally get us the payments that are due to the production music libraries.

"There have been some studies that show that the vast majority of music that's used on television right now is from production music libraries, but the vast dollars are paid toward popular music," Gross continues. "And it's just because there's so much music from the production music libraries that can't be identified. These systems will help finally start identifying it." Although no standard has been defined, Gross hopes to see something develop within the next year. "I think it's just waiting to see how the technology is. I think everybody independently is conducting their own tests; I know we are, just to see how well these technologies work, how robust they are, how well they stand up to recording, re-recording, and broadcasting and so forth. If these technologies do work, then I think everyone's going to want to start making a move toward them—just start getting the money that's owed you."

Even with advancements in technology providing a variety of new options for the delivery, presentation and customization of music libraries, the ultimate goal is to meet the needs of the producer. Ron Goldberg says, "I just tell people if they really need something right away, they can come into our facility to sample tracks, or we'll send it overnight. Plus you get the actual CD with liner notes, artwork, and better presentation than downloading something right onto your hard disk. There are obvious advantages with an actual CD that the Internet may never replace." Gross adds, "It's just taking the technologies that are out there now and making the producer's job that much easier; it's really just trying to simplify and make their lives easier so that they can cut out some time and the music selection becomes an easier thing to do." ■

Sarah Jones is an assistant editor at Mix.

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CIRCLE #050 ON PRODUCT INFO CARD

—FROM PAGE 76, UK FILM INDUSTRY

portunities." And in 1982, an additional TV channel—the commercial Channel Four—began broadcasting a number of new programs from both the network and outside production companies.

Set up initially to provide audio post for television—including the successful *Mr. Bean* series starring comedian Rowan Atkinson—Videosonics currently operates a pair of multiroom facilities in London's Camden Town district and specializes in all aspects of post-production, from the simplest voice-over to complete sound design and dubbing. Most of the rooms feature digital storage and replay systems; a number provide an all-digital signal path.

Current film projects include *Burning Up (Vigo)* for Impact Pictures/Nitrate Films, *Love Is the Devil*, a BFI/BBC co-production, *The Titchborne Claimant* for The Bigger Picture Company, *Tangier Cop* for La Sabre, and *24:7* for Scala Productions; television work ranges from *Donald's Lot* and *Heaven on Earth* for Red Rooster Film & Television, to *The Unknown Soldier* for Carlton Productions.

"Our Hawley Crescent location houses Studio One, Studio Two and edit suites," Weinreich explains. Designed for mixing documentaries, sitcoms, variety shows, TV dramas and similar fare, Studio One features a 24-fader/72-channel AMS Neve Libra console, linked to a 24-track AudioFile workstation, plus Tascam DA-88s and Akai DD8 8-track MO recorder/players for digital mixdown. Intended more for documentaries, corporate videos, trailers, and news and current affairs programming, Studio Two features a 32-channel SSL 4000E console with G Series automation, linked to a 16-track AudioFile, DA-88s and MO recorders, plus analog 24-tracks and a selection of outboard effects.

Close by, in the firm's Delancey Street facility, are Studio Three, Studio Four, Theatre I, Theatre II, plus several editorial suites (or "prep rooms," as they are called). Again, handling a wide cross-section of multichannel film and TV projects, the all-digital Studio Three houses a 16-fader/32-channel AMS Neve Logic 3 console with built-in AudioFile, plus companion Akai DR16 16-track workstations and DA-88s. A companion recording area handles ADR and Foley sessions, as well as commentary/voice-overs. Studio Four also features a recording area that can accommodate a large number of actors for radio-drama recording, plus an extensive Foley area; the control room is centered around a 48-channel SSL 6000E console with G Series automation, linked to a 16-track AudioFile, DA-88s and MO recorders.

"Theatres I and II are our 'aces in the hole' for film directors and producers," Weinreich says. "When the time came [in 1995] to move into feature film dubbing, we decided to build a pair of rooms that were not only technically advanced, but which would meet the demanding expectations of the most critical film director. We needed rooms with audio monitoring that would translate to cinemas all over the world." Theatre I and the recently completed Theatre II are reported to be the only THX-certified dubbing theaters in the UK; acoustic design was by Andy Munro of

Dennis Weinreich, managing director of Videosonics, at the AMS Neve DFC

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Compact in size and housing a 12-foot screen, Theatre I features a 28-fader/112-channel Logic 2 digital console with integral AudioFile Spectra; mixing is to Akai DD1500 MO and DR-8 hard disk recorders. But it is Videosonics' new Theatre II—or "Big Blue" as it's fondly called, a reference to the room's decor—that is the core of Weinreich's plans. Equipped with an AMS Neve Logic Digital Film Console (DFC), the new room features lay-up/replay from a pair of onboard 24-track AudioFile editing systems, and stem/final mixdown to 32 tracks of Akai DD8 MO recorders.

Already happy with the Logic 2, Weinreich was particularly excited about the fact that the DFC "adds automated premix routing to the list of features. Our new console is a 64-fader frame with a minimum of 160-channel capability and, if required, two-person operation. We currently have 48 faders fitted to the system and could, in theory, access some 224 channel paths; we may increase the fader and I/O capacity in the future. But, since we have four layers per fader, and the ability to control up to eight simultaneous premix signal paths from a single fader, we think that we have enough capacity at the moment."

Weinreich and his team of sound editors and mixers have long been familiar with random-access digital audio workstations. "Three years ago, when we upgraded Theatre I with an AMS L2, it was in response to the fact that producers coming from a TV background were used to working with DAWs and expected the same speed and efficiency on the dubbing stage—particularly their ability to quickly handle picture and editorial changes.

"More importantly, there has been a dramatic change in the funding of UK-produced films. We are seeing an increase in the number of films with budgets of less than £1.6 million [around $2.6 million]. The British Screen Institute [using money from the National Lottery] offers funding up to £800,000, with TV companies like Channel Four and BBC Productions coming up with a matching balance.

"For those types of films on a tight budget, we developed a package that might involve £100,000 for editorial and dubbing: between 15 and 30 days of sound editorial within our AudioFile-equipped prep rooms, followed by ten to 15 days on the re-recording stage. Only digital technology and convenient file exchange via removable hard drives lets us be that cost-efficient, yet offers the creative options directors demand these days."

Standard film-dubbing procedure at Videosonics involves editing source materials, effects and music on AudioFile or Pro Tools workstations, preloading cues to the console's built-in AudioFile, then premixing to multiple Akai DD1500 16-track MO recorders. "The DD1500 is cheaper than [adding extra AudioFile capacity] and lets us access more tracks as necessary," Weinreich says. "Premixed music and other materials might be replayed directly from DA-88 or hard drive/MO recorders; 4/6/8-track stems and finals are normally made to DA-88 plus Akai DR16 hard-disk and DD8 MO systems. "And since both our L2 and new DFC feature built-in AudioFiles, we can re-edit source elements or dialog tracks on the stage if necessary, or maybe select new sound effects."

The first feature film to be dubbed on Videosonics' DFC by lead mixer Tim Alban and assistant Hugh Johnson was *Titanic Town*, a contemporary drama

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Then he listened to his work on a pair of Exposé E8s. Now he's using them exclusively on his current projects, the next releases from Steely Dan, Fleetwood Mac, John Fogerty and Toto. "The moment I heard the first sounds come out I knew these were right." What he means is the exceptional accuracy and ultra-low distortion Exposé offers to track and mix with confidence. With the smoothness and musicality that would otherwise make long sessions difficult.

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He was also impressed by the expanse and depth of the stereo image they create. Elliot says, "I don't know how they do it, only that they seem to do it better than anyone else. Very, very clear. Everything is distinctly audible and natural. It's pretty amazing how they open up a mix."

So should you go out and buy a pair of Exposés today just because Elliot Scheiner uses them exclusively? No, but you owe it to your next project to run down to the nearest KRK dealer and get a demo for many of the same reasons.

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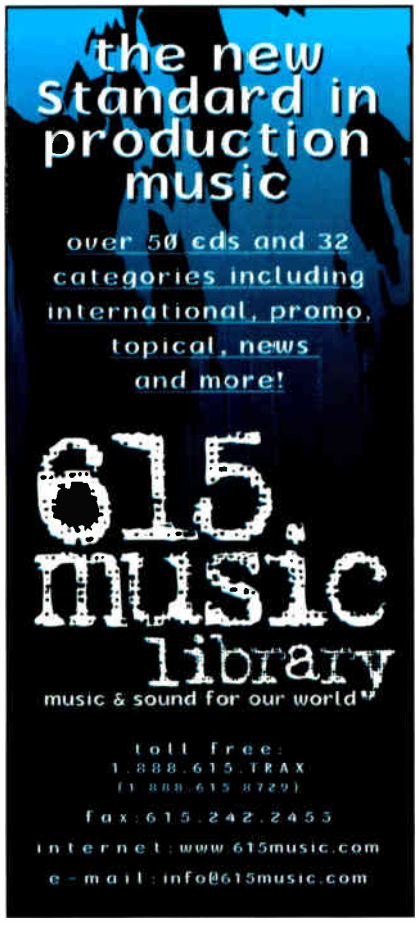

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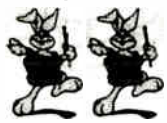

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set in Belfast and starring Julie Walters. "Foley and ADR were edited to AudioFile and then transferred via removable hard drive to the DFC," Weinreich explains. "Dialog was auto-conformed on AudioFile using an EDL output from the LightWorks [picture editor], while effects were edited by Simon Gershon on another AudioFile. We premixed from AudioFile tracks to five DD8 MO recorders—two effects, plus dialog, music and Foley—and then made stem recordings, finals and [5.1-channel] print masters to more DD8s." Print masters also contain a Dolby Surround Lt-Rt mix for the optical track.

"We normally print a reel at a time from the DFC's Encore. We do have PEC/Direct [switches] on the DFC [to provide punch-in recording during a mix]. It comes in handy for group monitoring and the odd drop-in that comes up. In fact, this switching has proved more valuable than we could have imagined, but not as the designers intended. As a central monitor-selection panel, it is *very* useful. It also ties into the automated bus system.

"The time savings and efficiencies we realize with the L2 and DFC are important to our streamlined operation," Weinreich concludes. "A major advantage is that, if there are picture or editorial changes, we can quickly recall all of the channel/submix levels, EQ and pan settings and be back to where we were during the mix. We have no reservations at all about installing a DFC in Theatre II; our clients and mixers have been utterly satisfied with the decision."

ANVIL POST PRODUCTION

Across town at Anvil Post Production, in the North London suburb of Uxbridge, co-directors Ken Somerville and Alan Snelling explain that the facility opened in 1952 following the closure of the government-run Crown Film Unit. "We expanded with a move to Korda Studios' Denham location in 1968 and handled a lot of film music between then and 1980," Somerville recalls. Scores included *Chitty-Chitty Bang-Bang* and the *Star Wars* trilogy. In 1980, Korda Studios was demolished, and Anvil lost its large scoring stage.

Anvil subsequently formed a liaison with Abbey Road Studios as Anvil Abbey Road Screen Sound and took over running of one of the studio's large rooms, with scoring engineers Eric Tomlinson and Alan Snelling. That alliance ended in 1984, following Thorn-EMI's purchase of Abbey Road, and Anvil moved to a new location within the Rank Film Laboratories facility, to concentrate primarily on TV dramas and feature films. In 1993, following a fire, the post complex moved into its current, purpose-built facility, which comprises a main dubbing stage, a pair of post-sync and Foley/ADR theaters equipped with Mackie 8-bus consoles, and a number of editorial suites. Recent films to have passed through Anvil include *Pride and Prejudice, Kidnapped, The Waking of Ned Divine* and *Her Majesty Mrs. Brown,* as well as foreign-language dubs of such films as *Babe, Golden Eye, Lost World* and *Independence Day.*

"We have been using [TimeLine] WaveFrame workstations for several years," Somerville says, "both to edit sound elements and to provide random-access playback on the stage. And we were also using [Tascam] DA-88s for ADR and Foley recording, as well as stem and master recorders. But we soon realized that our [non-automated] Soundcraft Series 3200 console in the dubbing stage was long overdue for an upgrade."

After shopping around, Anvil ordered a pair of SSL Avant digital film dubbing consoles—one for a new dubbing theater constructed in a space formerly occupied by three film-cutting rooms, and another installed last month as a replacement for the Series 3200. "We wanted to remain online with the analog console," Somerville explains, "and decided to outfit the new room first. That way we could train our staff without having to turn away business."

Both Avants feature a 72-fader frame fitted with 48 on-surface faders. Each channel strip can control up to four signal paths: two with EQ and dynamics and two predub inputs with automated panning and routing only. The total of 192 available inputs hence comprise 96 full-specification sources plus 96 premix inputs. A built-in 64x8 monitor matrix is featured, along with up to three recorder-control/monitor panels for multiple operators. A Hub Router and DiskTrack recorder enable available I/O resources to be shared between the two dubbing theaters. An SSL Audio Preparation Station will also allow offline transfer of sound files into the integral DiskTrack.

The new Avant was recently put through its paces on Irish director Cullum Villa's film *Sunset Heights,* mixed by Snelling. "The Avant sounds great and offered comprehensive automation," Snelling says. "The parametric EQ, in particular, is very powerful and resets with stunning accuracy; I can recall an entire control surface and I/O routing setup in a couple of seconds, allowing me to re-

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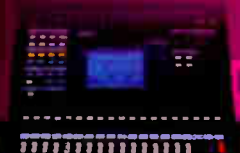

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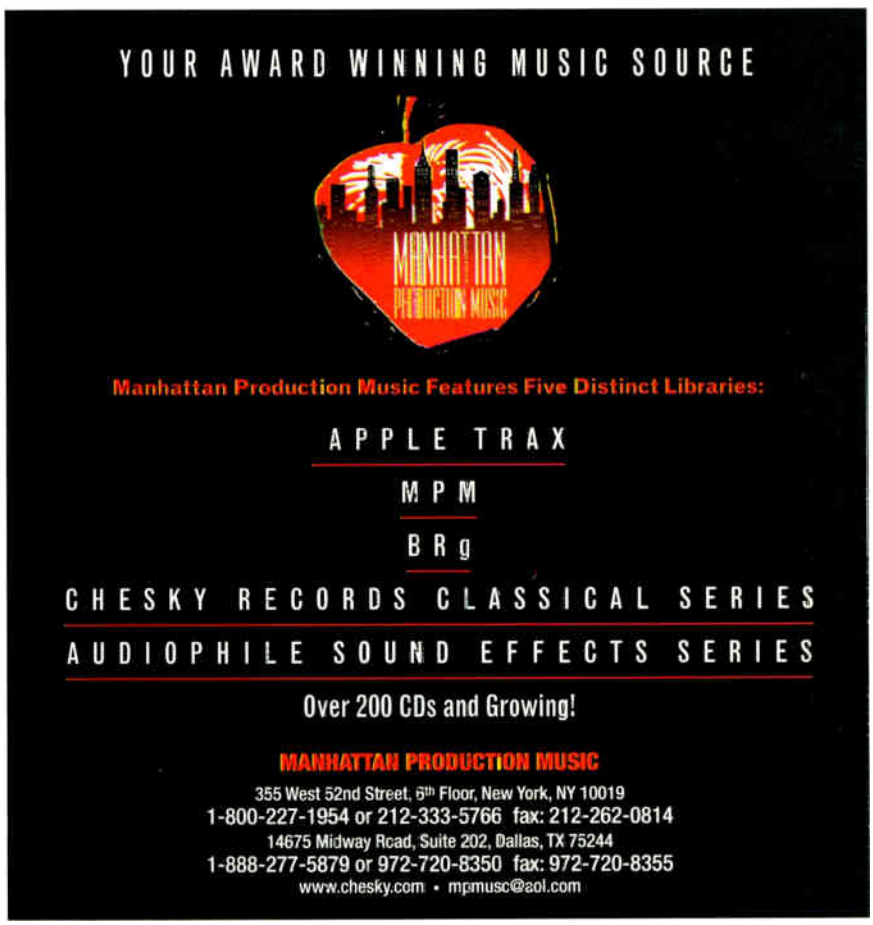

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create a mix very quickly and efficiently."

To streamline his learning curve during the re-recording of *Sunset Heights*, Snelling decided to predub source elements to Tascam DA-88 and MO recorders. "Of course, I could have used DiskTrack to both replay elements and record various premixes. Eventually, when we have more experience with the system, that'll be the way we work. In the meantime, I replayed elements from WaveFrame [and other edited sources] against picture from a [FED] V-MOD [100 random-access video deck] and recorded 6-track effects and music premixes, plus LCR dialog and stereo Foley to a pair of DA-88s." The final 6-track Dolby Digital and Lt-Rt print masters were dubbed to an Akai DD8 MO drive.

"The Avant's Bay Swapping functions allow me to remain in the sweet spot as I [bank-switch arrays of 8-channel bays] via programmable macro keys to my central mix location. But the surprising bonus of this [all-digital] design is the built-in input and output routing. During the past ten days [while completing predubs for *Sunset Heights*], I have not touched the patchbay once! I can access any input source via the Hub Router and insert outboards as necessary. I can cross-connect sources and destinations just as easily—it's a great time-saver, both during a dubbing session and between dubs as I reset the console to handle different sources and recorder outputs. And I just love the fully automated EQ, panning and dynamics."

And, until Snelling fully masters the Avant's snapshot and dynamic automation system, he plans to use the console's PEC/Direct switches to punch-in on the DA-88 submixes and finals. "The integral timecode synchronizer and machine control handle the V-MOD, a pair of DA-88s and a master MO recorder very efficiently," he says. "Eventually, I plan to work with 'Virtual Reels' and make a final recorder pass under automation, but until then, my current technique works okay."

"Yes, our two new Avant-equipped theaters represent a bold step for Anvil," Somerville concedes. "In embracing the advantages of digital technology, we will be enhancing considerably our long-established service to the film and TV community. We chose the Avant [because] we perceived that Solid State Logic exhibited a great deal of lateral thinking and could provide us with a more comprehensive *studio* solution. While such features as automation are obviously very important, it's the overall flexibility and expansion capabilities that Avant offers our clients that convinced us to go in that direction." ■

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The ENG 618 integrated boom pole/shotgun microphone from Electro-Voice (Buchanan, MI) combines a 6-foot collapsible boom with an integrated condenser microphone (which may be battery- or phantom-powered). The mic's response is optimized for voice recording, and a low-end roll-off switch is provided. An internal battery-powered headphone amp provides an on-the-spot monitoring facility. The complete ENG 618 system weighs just over two pounds and may be collapsed to fit in an 18-inch utility belt pouch.

Circle 301 on Product Info Card

WAVEFRAME NOW EDITS IN 24-BIT

WaveFrame (Emeryville, CA) now has 24-bit editing capability by means of a link to the Tascam MMR-8 digital recorder. In use, 24-bit audio can be truncated to a 16-bit copy during the editing process on WaveFrame; once the EDL is complete, WaveFrame's edit commands can be applied directly to the MMR-8's for 24-bit playback.

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STUDIOCOMM 5.1 MONITOR CONTROLLER

Studio Technologies (Skokie, IL) has introduced the StudioComm for Surround Model 68/69, an add-on monitoring control system for 5.1 monitoring. Suitable for workstations and traditional mixing consoles, the system provides a desktop control panel (Model 69) that provides dim, mute, solo, bypass and level control for two 6-channel multitrack and two stereo sources. A single-space rackmount unit (Model 68) provides input and output connection facilities, plus level trim calibration pots. All inputs/outputs are electronically balanced, and the unit has power up/down protection. Software configuration allows for presetting of dim and reference monitor levels and remote control parameters, and the system may be integrated with a console's existing monitor control facilities. Multiple sources may be monitored simultaneously (at preset levels), and PEC/Direct switching is supported. Price is $1,599.

Circle 303 on Product Info Card

CEDAR ADDS DEBUZZ

CEDAR Audio (distributed by Independent Audio, Portland, ME) announces Debuzz, a software module that runs within the CEDAR for Windows suite of real-time sound restoration software. Debuzz is designed to remove camera noise and AC hum in particular, and can be used to restore up to 16 channels of audio simultaneously. The onscreen control panel provides virtual controls for center frequency and bandwidth and provides attenuation controls for surrounding frequencies.

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MARTINSOUND RECORDER MONITOR SYSTEM

Martinsound's (Alhambra, CA) Recorder Monitor System is a modular rackmount switching and monitoring system for multiple 8-track recorders that provides monitor, switching and track combining facilities for up to 128 tracks of audio. Based around the 2U Primary Control Unit (which accommodates four 8-track inputs), the system is expandable with up to three additional 32-track input modules. Optional VU meter panels offer peak-hold capabilities, and a serial-control interface allows for remote switching of monitor and oscillator functions. Stereo headphone and speaker outputs are standard. Price depends on configuration; the Primary Control Unit is $6,200.

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FAIRLIGHT UPGRADES SOFTWARE

Fairlight USA (Culver City, CA) offers software revision 14.3 for the company's MFX3^{plus} and FAME digital audio recording editing systems. Revision 14.3 supports 18-, 20- and 24-bit audio and allows them to be freely mixed within a project, even providing real-time crossfade facility between mixed bit-width clips. Also new are multichannel drop-in and drop-out, fade in/out across a range of clips, and enhancements to solo and conversion rate facilities. The upgrade supports file import and playback from Lightworks, and the company has also demonstrated file interchange with WaveFrame and TimeLine projects. Fairlight also adds functionality to its DaD (digital audio dubber): A multi-project load function allows the 24-channel DaD to simultaneously support as many as 24 separate projects and up to six disks by reconfiguring it as multiple 12-, 8-, 4- or even 1-track dubbers.

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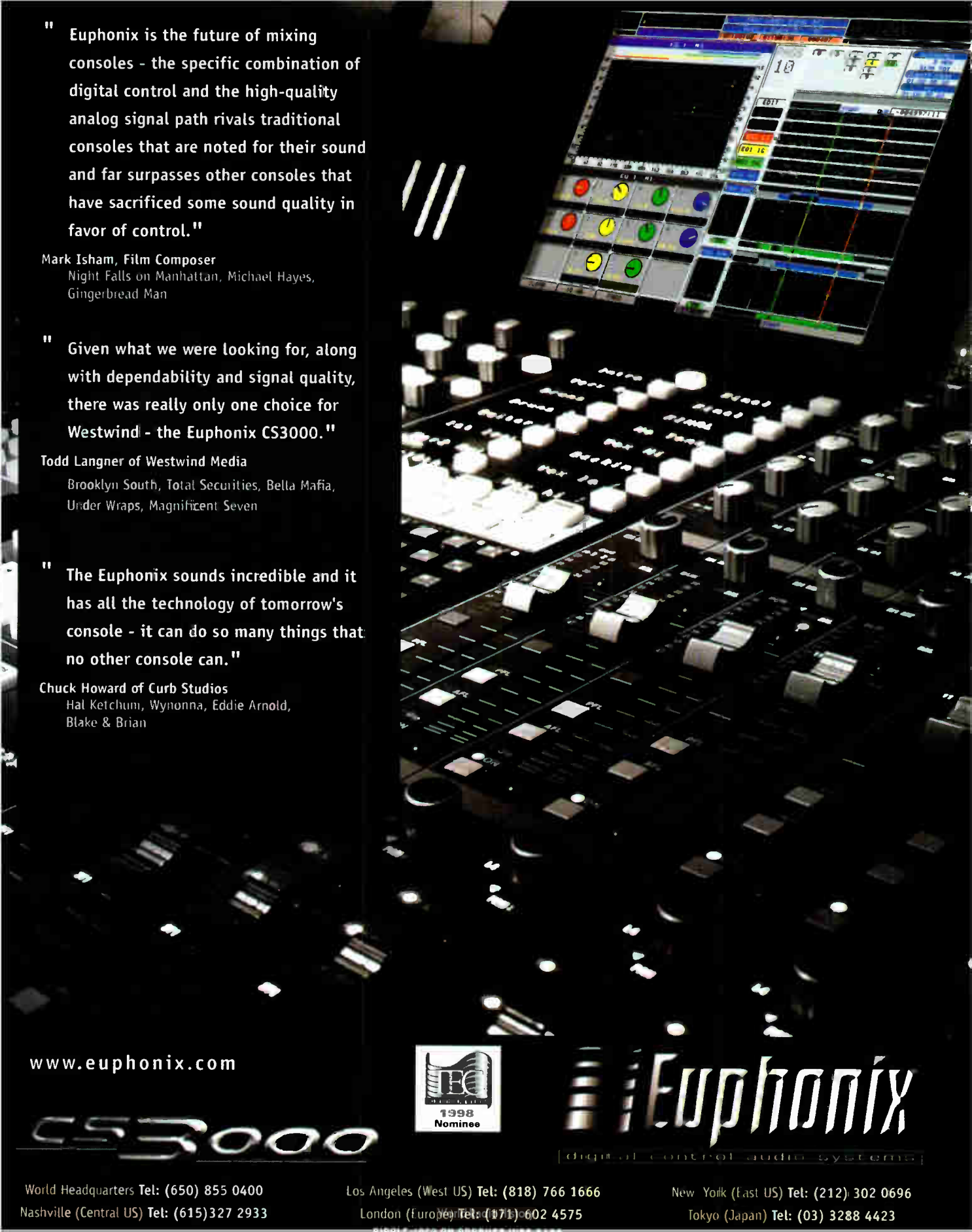

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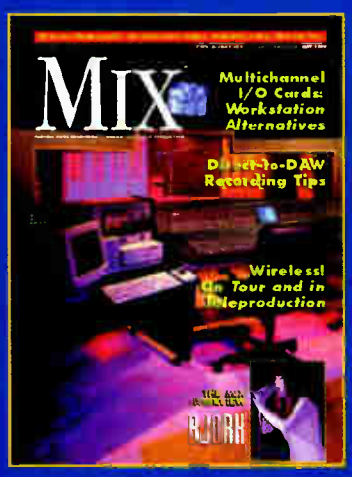

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Audio Batch

COMPARING

TurboMorph

&

WaveConvert Pro

by Philip De Lancie

Most of us who work in professional audio are used to spending a lot of time on details, typically perfecting a drum sound or a mix one small step at a time. But the advent of audio for multimedia and Web applications has created a new kind of work, in which hundreds or perhaps even thousands of files must be converted *en masse* from a production format—usually full-fidelity—to a delivery format whose fidelity is often compromised by limited data bandwidth or storage capacity.

When more than an album's worth of music is involved, few have the time, patience or sheer endurance to open each source file manually and go through the many steps that are often required to convert to a different format. It may be possible to automate some conversion tasks using a macro utility such as QuicKeys, which supports "batch" operations on multiple files. And if you have SoundEdit 16, you can use its included "Automator" utility for simple conversions involving file type, bit depth and sample rate. But truly effective conversions involve not only changing these basic characteristics but also treating the files to compensate for the effects of the conversion on audio fidelity. So if you find yourself doing a lot of conversion from one format to another, it may be time to consider a specialized application.

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Processing

Two such audio batch processing applications are examined here: WaveConvert Pro (V.2.3) from Waves (www.waves.com) is available for both Macintosh and Windows; TurboMorph (V.1.69) from Gallery Software (www.gallery.co.uk) is available for the Mac only. The programs were evaluated on a 233MHz Power Macintosh G3 running Mac OS 8.1.

TurboMorph supports conversion from the two most common types of source files on the Mac: Sound Designer II (SDII) and AIFF. WaveConvert supports a broader range of source file types, including AIFF, SDII, .WAV, .SND, QuickTime and Raw. (One big oversight in both programs is that neither supports conversion—either singly or in a batch—of tracks from an audio CD in the host machine's CD-ROM drive. That's a shame for anyone who needs to make a large number of sample clips from CD-Audio tracks to put on a Web site or a CD-ROM catalog.)

Both programs allow at least two ways to add files to the source file list. If you have a large number of files already in their own folder, the drag-and-drop method is the most convenient: You simply drag a file or folder full of files over the application's icon on the desktop. The program will open (if it's not already), and the files will automatically be added to the list. In WaveConvert, you can also add files (or folders of files) to the list by dragging them from the desktop into the application's window.

You can also add files in both programs using conventional dialog boxes. In TurboMorph, the file-selection dialog is the first screen to open when the program is launched. It allows you to find files in standard fashion and add them to your list of files to be processed. One nice touch is that you can listen to the files before you add them. When you are satisfied with your list, click Done to move on to TurboMorph's main screen, where you will see a display indicating the number of files in your list (but not the list itself). If you later want to work more with the list, you click the View button, which takes you to a screen where you can listen to files, add or remove them, and specify which file will be used when previewing conversion settings.

WaveConvert has a somewhat more limited file-selection dialog box, in that it does not allow you to listen to files before adding them to the input list, but you can listen to them from the main screen once they are added. WaveConvert also allows you to save a list of source files as a "job list," which can be reloaded at another time. This could prove very handy if you need to go back and re-run a list assembled from files that do not all reside in the same folder (to change a processing parameter, for instance).

MORPHING FILES

Processing and conversion are what TurboMorph and WaveConvert are all about. The two programs have a basic set of options in common, and each also allows external plug-ins to be inserted into the processing chain. In TurboMorph, available operations include (in the order they are performed) normalizing, stereo/mono channel change, sample rate conversion, plug-in processing (only one plug-in at a time) and bit depth change (16 to 8). It's not clear to me why Gallery chose to put normalizing before stereo-to-mono channel change, since combining channels will affect the peak value to which you are normalizing.

The basic working procedure in TurboMorph is very straightforward—simply add source files to the input list, define the desired parameters for the output files, preview to confirm your settings and press "Morph." All files in the input list are processed with whatever settings are active at the time.

TurboMorph's main screen (see Fig. 1) is very cleanly set up to define the operations to be performed. For each parameter, TurboMorph allows you to define the setting and to determine separately (using check boxes) which processes are active. A wide variety of destination sample rates is supported on the sample rate pop-up menu, as is the ability to enter a custom rate. One weakness here is in the Normalize setup, where the value is given in samples only (no dB or percent) and can be changed only with up/down arrows (you can't type in the value directly).

TurboMorph accepts plug-ins in the Premiere format,

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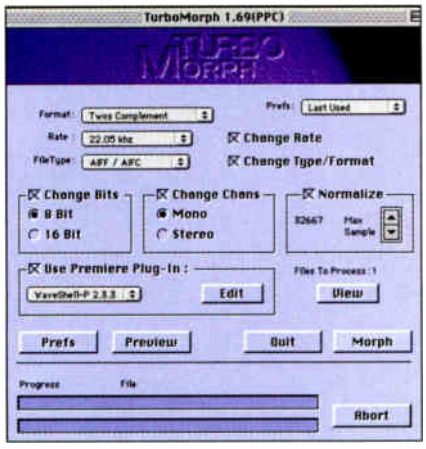

Figure 1: Conversion options are set and previewed in TurboMorph's main window.

which use the computer's CPU so you don't need a separate audio card with a DSP chip. To use Waves plug-ins such as Q10, L1, C1, etc., you need Waves' Premiere software shell, Waveshell-P (at this writing, current shell and plug-in versions are 2.3). According to Gallery, other plug-ins that work with TurboMorph include DUY, SFXMachine and Hyperprism-MMP.

Waves plug-ins come in both mono and stereo versions; the correct version is loaded depending on the setting of the "Change Chans" checkbox. This creates a trap, however, if using plug-ins when also changing the number of channels. If mono is selected in the check box, the shell will load mono plug-ins, which won't work properly with stereo source files. This won't be immediately evident, however, because you will be able to set up the plug-in and preview your settings in the plug-in's own window. Only when you click OK and switch back to the TurboMorph main window will you find that any previewing or Morphing you do with "Use Premiere Plug-in" selected will result in silence.

The workaround for this problem (which Gallery attributes to Waveshell-P rather than TurboMorph) is to uncheck the "Change Chans" box each time before opening a Waves plug-in to make any changes to its settings, and then to recheck it when you go back to the TurboMorph main screen. Unfortunately, this is not mentioned in the TurboMorph manual. Also, because this procedure is easy to forget, it's a good idea to save your settings within the plug-in so you can get them back; otherwise, they may be lost when the shell opens the "wrong" version of the plug-in.

Gallery recognizes that many situations call for using more than one plug-in at a time. But rather than building that capability into TurboMorph directly, the company has come up with an approach it calls "process chaining." This involves making a copy of the program for each plug-in you want to use and setting each copy in the chain to "watch" the output folder of the preceding copy, processing any files that appear there. In effect, the "out box" for one step becomes the "in box" for the next. Theoretically, you drag your source files into the input folder of the first step in the chain, and they move through the chain, emerging fully processed in the last output folder. In practice, I found setting up the chain to be time-consuming and inconvenient. Further, the chain did not run properly without intervention (which defeats the whole purpose of running a batch) because each successive copy of TurboMorph issued an "error-49" message when it tried to read the first file in its "in box," interrupting the process until I clicked OK in the error dialog.

PREVIEW PARAMETERS

Once you have your plug-in and all

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your processing parameters set, you will want to hear a preview of your conversion before running your entire batch. The Preview button is easy to find on TurboMorph's main screen, but setting up preview parameters is a bit inconvenient. As noted earlier, you use the View screen to set which file will be used for the preview. But the duration of the preview is set on a different screen, TurboMorph Preferences (click Prefs). Once again, you can't simply click on the value and enter a new number; you have to press up or down arrows, changing the value one second per click (the default value is a brief three seconds). The preview always starts from the beginning of the file, which may not be the part you really need to hear to check the effect of your settings. (Preview length may be limited by the amount of memory you have allocated to the program.)

While you are on the Preferences screen (see Fig. 2), you will want to consider some of the other available options. Unless you are extraordinarily patient or starved for entertainment, you'll be relieved to know that you can "disable graphics scrolling" so that TurboMorph will move instantly from screen to screen. More importantly, you have a

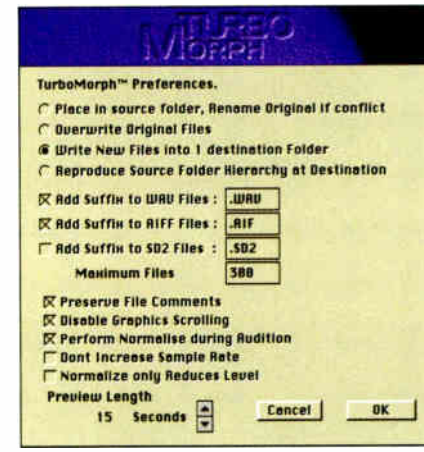

Figure 2: TurboMorph's Preferences window is used to set output file writing options and the length of previews.

number of options for where the output files are placed and whether they overwrite the original files (a risky proposition, in my view). One nice touch is that you can have TurboMorph re-create in a new location the hierarchy of a set of source folders that have been dragged and dropped onto TurboMorph's desktop icon. Additional sets of preferences control the adding of suffixes (normally .WAV, .AIF or .SD2) to the end of output file names and specify normalization options.

Clicking OK to get back to the main screen, you are ready to preview. Depending on the preview length and processing options, previews can take several seconds to build. If you like what you hear in your preview, and you expect to run a batch through a similar setup in the future, you can save your setup on TurboMorph's main screen by selecting "Save Current Settings As..." from the drop-down Prefs menu in the upper right. To begin the conversions, press "Morph," which will (depending on how you set your preferences) bring up a dialog box asking where you want to save the output files. As soon as you specify a folder, processing begins. TurboMorph works in the background, so you don't lose the use of your computer during the conversion process, though you will slow down the processing while you do other tasks.

USING WAVECONVERT PRO

The setup and preview process in WaveConvert Pro is potentially a bit more complicated than in TurboMorph. This stems partly from the fact that WaveConvert gives you more processing options and partly from a major conceptual difference between the programs. In TurboMorph, all files in the source list are processed with the same

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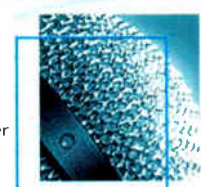

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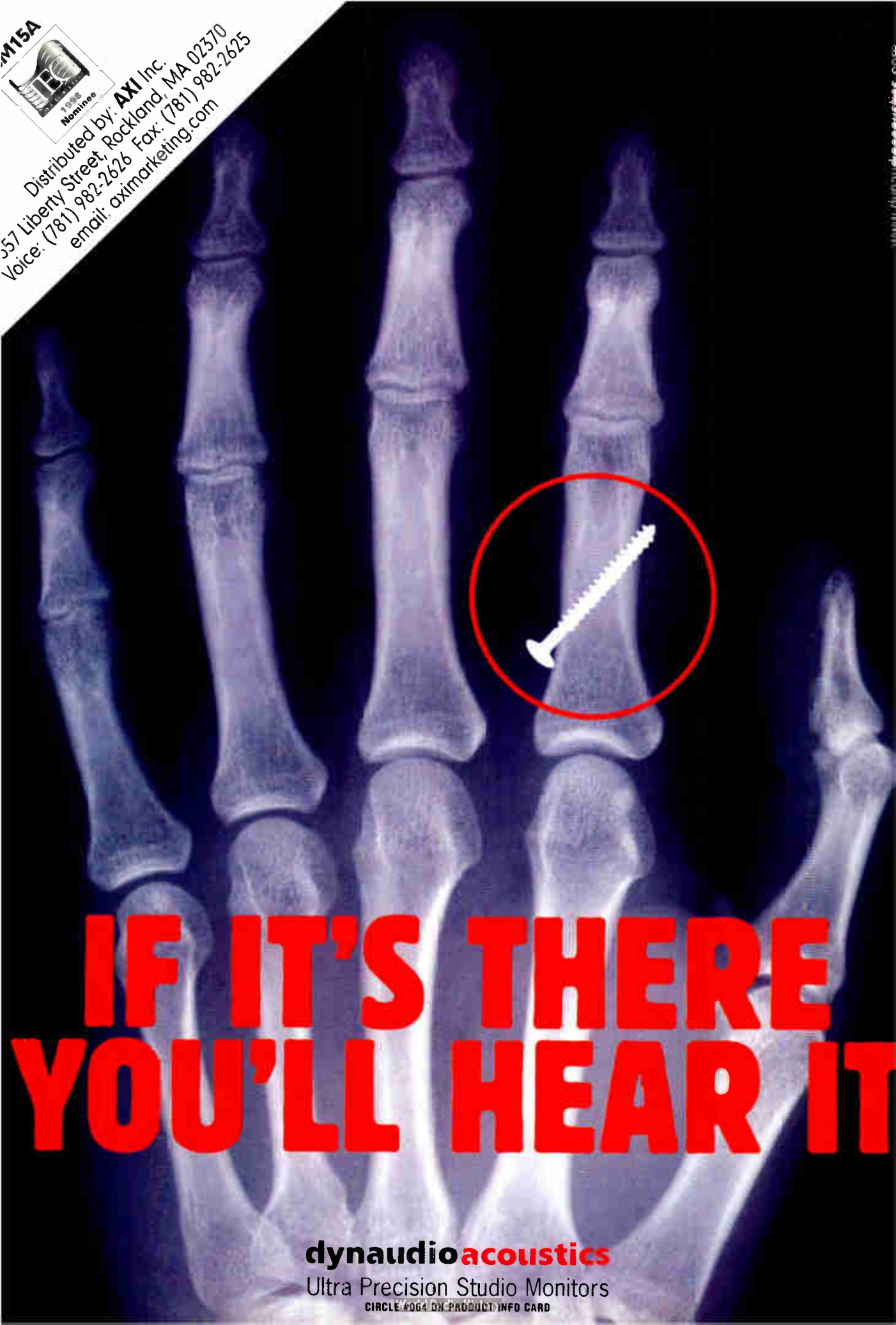
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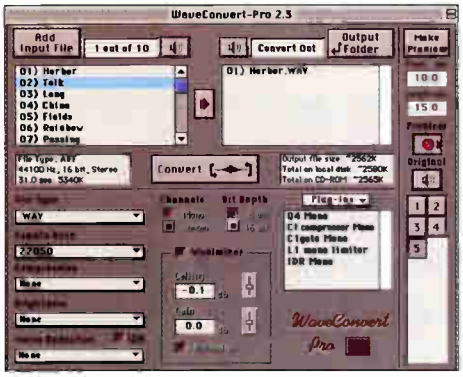

Figure 3: WaveConvert Pro's main window is used to create input and output file lists and to define processing parameters, including multiple Waves plug-ins. Up to 16 previews may be created and compared using the preview section on the right.

settings. In WaveConvert, each source file may be processed differently, and a given source file may be processed multiple times with different settings. Naturally, the interface that allows this greater flexibility is somewhat more complex (see Fig. 3).

The basic working process in WaveConvert is the same as with TurboMorph: Add files to the input list, define conversion parameters, preview the resulting conversion and convert the files. But to allow differing processes within the same batch, WaveConvert has an input list *and* an output list. The important thing to remember is that the processes operating on any given file are determined by the settings in WaveConvert's main window at the time that file is added to the output list. Files are added to the output list (also referred to as the job list) by selecting them in the input list and clicking the arrow button between the lists.

The parameters are set in the conversion settings area at the lower right of WaveConvert's main screen. Like TurboMorph, WaveConvert can change audio file attributes such as File Type, Sample Rate (custom rates between 3 kHz and 48 kHz are supported), Channels (mono or stereo) and Bit Depth. WaveConvert has more output file options, however, including QuickTime (as well as .snd and Raw). And WaveConvert includes Waves' IDR process, which improves bit depth reductions by adding dither and shifting quantization noise to frequencies where it is least noticeable to the human ear. My comparisons of conversions with IDR in and out convinced me that IDR does improve the final sound.

WaveConvert also has a normalizing function (after channel combining, if any), allowing you to specify a ceiling (expressed as dBs below digital zero) that will be the value of the loudest sample in the file. Normalize is part of WaveConvert's Maximizer section, which also allows you to add additional gain beyond normalization, relying on the Maximizer's peak limiting feature to avoid clipping. You'll have to experiment with your program material to see how far you can push the gain; be sure to try the "Automatic Analog Domain Clip Prevention" option in the Preferences (File menu) as part of your tests (see Fig. 4).

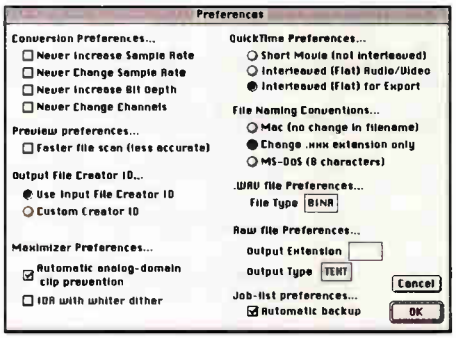

Figure 4: WaveConvert Pro's analog domain clip prevention option is selected in the program's Preferences window.

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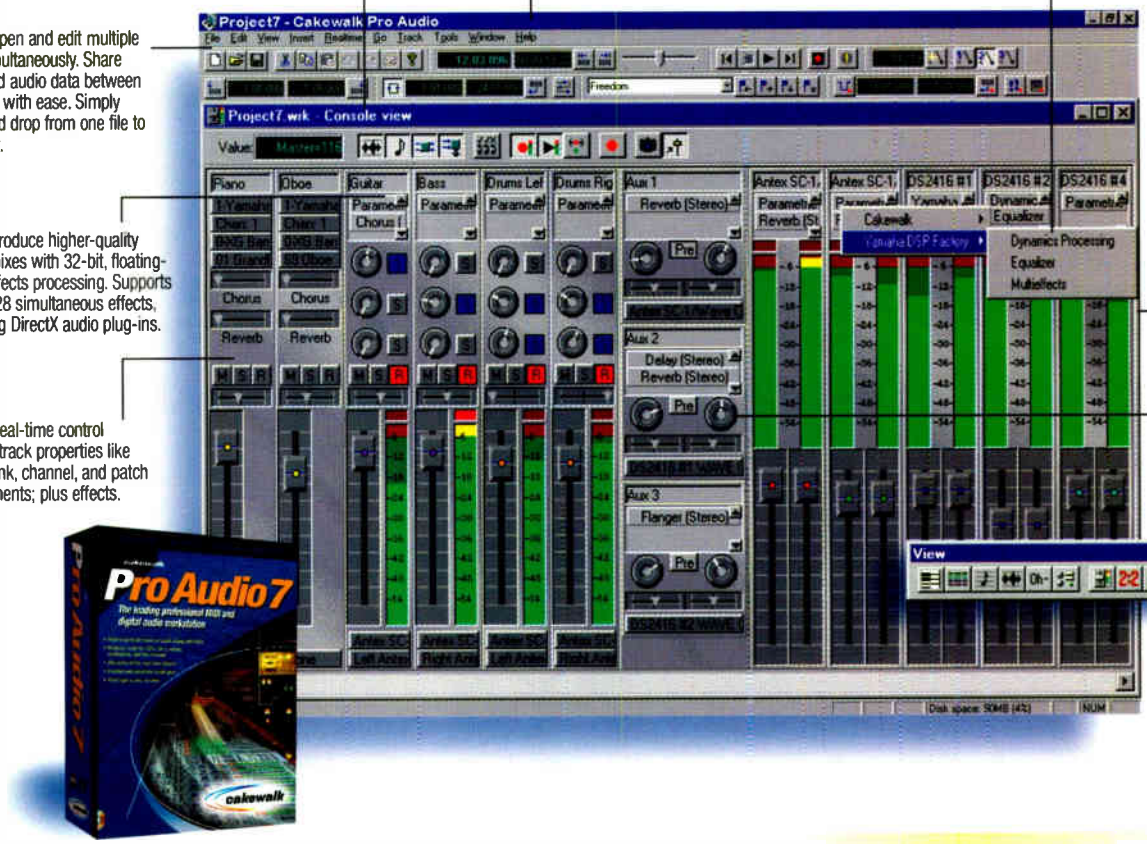

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PRESET OPTIONS

Also included are a number of preset options designed to facilitate common batch processing applications. The Noise Reduction pop-up includes a rumble filter, as well as "hard" and "soft" gates. The gates are supposed to minimize quantization noise introduced in bit depth reduction, but there are no controls for adjusting the threshold. I tried them each on solo piano music and found the opening and closing of the gate more irritating than the noise itself. They may be useful for speech, however.

Additional options are found on the Brightness pop-up, which includes a couple of brightening options to compensate for the dulling effects of sample rate reduction, a speech de-esser, four presets for preparing files for encoding with the RealAudio Encoder for Web delivery at various modem speeds, and four more for preparing for encoding for Web delivery with Shockwave. (The actual encoding into RealAudio or Shockwave files is not included.)

The extent to which these presets help you depends on how much you agree with the judgments that Waves' engineers have made about how to optimize sound for these various applications, and also how much time you have available for experimenting with your own approaches to optimizing. I did not try the RealAudio or Shockwave presets, but I did check the brightening options ("hard" and "soft") while converting music (both solo piano and full rock band) from Red Book to mono 8-bit/22kHz. I found the results of both presets to be too harsh, and instead preferred a subtler brightening that I set up using the Q4 variant of Waves' Q10 plug-in. But the presets may work well for other types of music or for lower sample rates.

The fact that you can't make any adjustments to the presets makes the plug-in feature even more attractive. Unlike TurboMorph, WaveConvert works only with Waves plug-ins, a limitation the company could no doubt remove if it so chose. But WaveConvert does allow multiple plug-ins to be used on a batch by adding plug-ins in the desired order using the plug-in pop-up. (It would be nice if you could rearrange the order by clicking and dragging on the list.)

At any time while setting your conversion parameters you can make a preview, setting both the starting point and the duration of the preview segment. A particularly nice feature is the fact that you can store up to 16 pre-

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views of any input file and compare them to both the original and each other by using the preview buttons at the right of the main screen. It would be nice if you could switch between previews directly without stopping and starting, and even better if the program kept track of where you were in the currently playing preview and switched to the same point in the next one. But even without this true A/B comparison capability, the preview implementation is a tremendous help in comparing and refining settings.

Whenever a preview is selected with the preview buttons, the main screen is set to the settings used to create it. Once you know which preview you like, click on that preview's button and then transfer from the input list to the job list any files you want processed with those settings. You can then change settings and transfer the same or different files to the job list with the new settings. Once you have defined all the conversions you want to make from the input list, you define the output folder (button at upper right) and then click the "Convert" button. Like TurboMorph, WaveConvert does its work in the background.

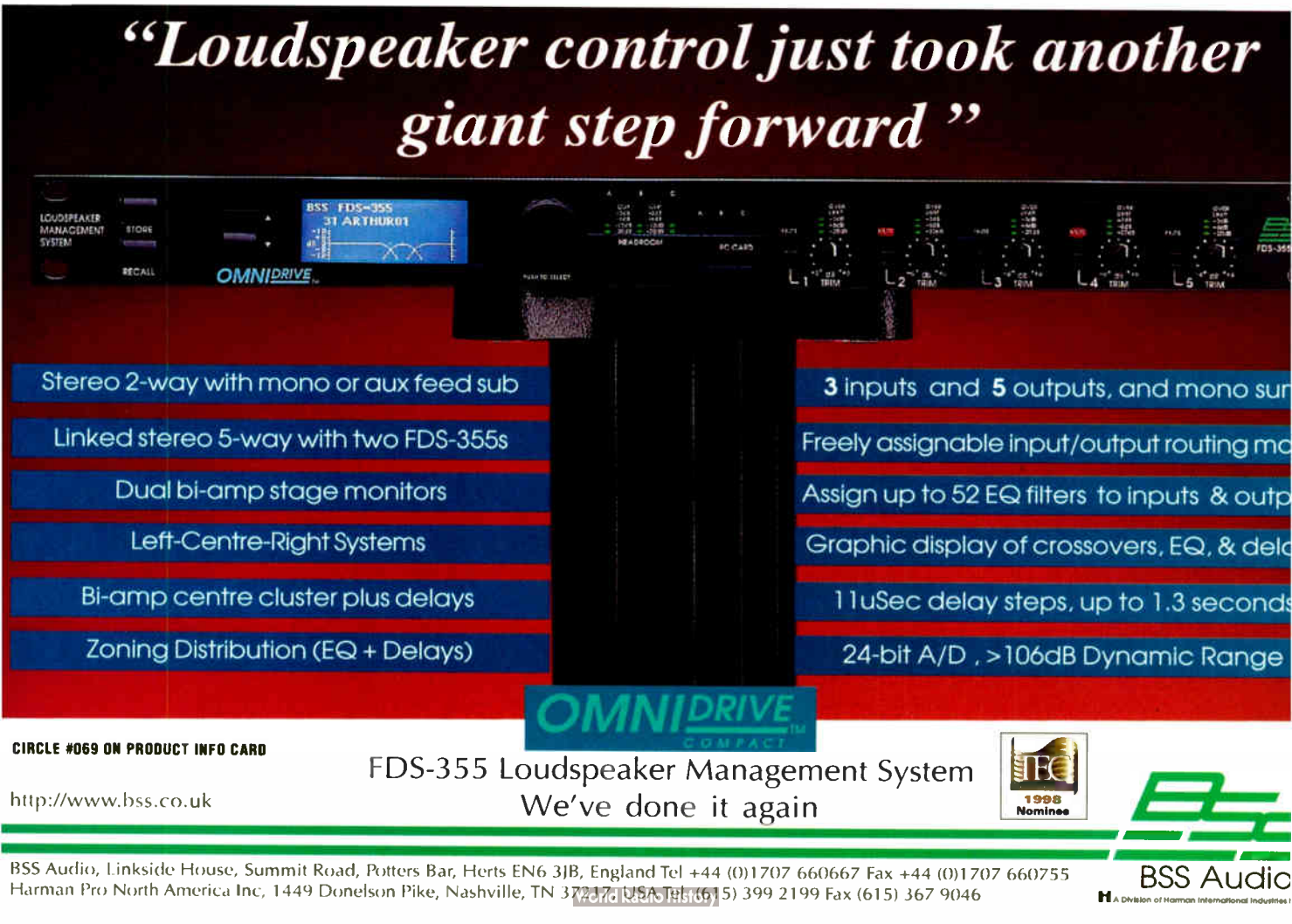
SUMMARY THOUGHTS

In terms of audio fidelity, it's hard to pick a clear winner between these programs. Both do a reasonable job at the thankless task of taking full-fidelity music and squeezing it into limited-fidelity formats. It's not that there is no difference in the way they sound; in general, files processed with similar settings in both programs seem to turn out harder and crisper in TurboMorph, while the WaveConvert files sound somewhat fuller but less punchy. Which you like better depends on both personal preference and the type of music you are working with.

If you plan to do a lot of processing with a plug-in that is not put out by Waves and is available in the Premiere format, TurboMorph is your best bet until (if ever) Waves allows WaveConvert to work with non-Waves plug-ins. If you don't need all the extra processing presets offered by WaveConvert, TurboMorph's simpler interface can be an advantage, and at $249, it costs about $50 less than WaveConvert Pro. Also, TurboMorph runs somewhat faster: Using similar settings, two-minute files averaged just over 30 seconds of processing compared to 45 seconds in WaveConvert, while 30-second files took ten seconds in TurboMorph and close to 20 in WaveConvert. Because both programs run in the background, however, and batches are often run unattended (overnight) anyway, this extra speed may not offer much practical advantage.

WaveConvert, on the other hand, shines in a few areas where TurboMorph is a bit weak. Its previewing capabilities are far better for comparing processing options, its processing order makes more sense, and it offers more tools to optimize the sound for a variety of common conversion situations. Being able to run multiple plug-ins easily is another major plus, and though the artificial prohibition on using other companies' plug-ins is irritating, Waves does have the broadest selection available. The ability to run a single batch involving a variety of different output settings seems less crucial to me, but it also could come in handy. And Waves' documentation is more thorough and informative. All in all, if you can accept being limited to using only Waves plug-ins, WaveConvert Pro feels to me to be the stronger package. ■

Philip De Lancie is Mix's Media & Mastering editor.



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We promise

dbx has long been known as the leader in signal processing technology, and mic preamps have always been a strong part of that reputation. Our 586 Dual Vacuum Tube Preamp carries the heritage of those past products into the vacuum tube arena. As usual we have left no stone unturned to bring to the 586 all the standard features one could possibly want in a preamp, including custom designed analog VU meters that monitor tube level, insert path or output levels, +48V Phantom Power, 20dB pad, phase invert, and low cut filter. Line/Instrument and mic inputs make the 586 versatile enough to use with virtually *any* source device. Add to this impressive list of standard features extras like a three band EQ with sweepable mids and adjustable mid Q (with hardwire bypass switch), insert loop, and the new patent-pending PeakPlus™ limiting topology and you've got a winner.

All this would be enough, but you've come to expect more from us than just "enough", and we deliver the goods with the 586. Hand-selected and matched premium 12AU7 vacuum tubes ensure ideal triode gain matching, distortion, microphonics and drive characteristics. What does all that mean? It means you get the best tube sound with the most versatility available today.

Have you ever wanted to go directly from the wonderfully warm sound of tube processing to the digital domain without losing that great sound? Well, now you can. With the optional TYPE IV™ Conversion System output, you can capture the essence of tube processing directly into the digital world, without leaving the box. The digital output offers the ability to communicate in either AES/EBU or S/PDIF at 16 or 20bit word lengths. In addition, TYPE IV™ offers the ability to select noise shape algorithms and dither types that best suit your music and your medium. So get down to your pro audio dealer today and hear the beauty for yourself.

Save The Planet (It's The Only Market We've Got)

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dbx PROFESSIONAL PRODUCTS

World Radio History

PREVIEW

YORKVILLE AUDIOPRO AMPS

Audiopro Series 2-channel amplifiers from Yorkville (Niagara Falls, NY) feature balanced XLR and TRS inputs, switchable limiters and subsonic filters, toroidal power supplies, comprehensive protection circuitry, and Speakon™ and binding post outputs. These two-rackspace units include the AP4040 (2,400 watts into 4 ohms), the AP4020 (2,400 watts into 2 ohms), and the AP2020 (1,200 watts into 2 or 4 ohms). All Yorkville amps are covered by a two-year, transferable warranty.

Circle 327 on Product Info Card

ROLLS PARAMETRIC EQ

Rolls Corporation (Salt Lake City) intros the RPQ160 parametric EQ, a single-channel, single-rackspace, 4-band unit using T-filter technology. Each frequency band offers a variable frequency control, a Q control variable from 0.3 to 3 octaves and ±15dB gain control. Additional high and low shelving filters offer 12dB/octave roll-off at up to ±12 dB. An internal power supply is standard, and inputs/outputs are XLR, RCA and TRS. Price is $299.99.

Circle 328 on Product Info Card

OPCODE STUDIO 128X

Opcode Systems' (Palo Alto, CA) Studio 128X is a Mac/PC-compatible MIDI interface providing eight fully independent MIDI inputs/outputs, allowing for up to 128 channels of simultaneous MIDI input and output. The unit also functions as a MIDI patchbay with extensive routing/merging capabilities. The 128X offers SMPTE sync, reads/writes SMPTE timecode in all formats, and supports OMS, MTC and MIDI Beat Clock. Eight memory locations allow for recall of stored configurations. Other features include MIDI filtering, additional front panel MIDI ins/outs and memory backup. Retail: $429.95.

Circle 329 on Product Info Card

BRYSTON 5-CHANNEL AMP

Bryston (Peterborough, Ontario) offers the 9B-ST 5-channel power amplifier. Each of the five modular channels has its own power supply and is capable of delivering 120 watts into 8 ohms (200 watts/4 ohms). The unit's rackmountable chassis measures 19x5.25x16 inches (a 17-inch version is available) and offers front panel LEDs to indicate status. The unit has RCA and XLR connectors and can operate balanced or unbalanced; outputs are five-way binding post. Retail: $3,695. A THX-certified version with remote 12V trigger is $3,795.

Circle 330 on Product Info Card

CLM DYNAMICS 4-CHANNEL MIC PRE

UK manufacturer CLM Dynamics (distributed by Peninsula Marketing, Torrance, CA) introduces the DB400S 4-channel microphone preamp. The two-rackspace unit offers switches for selecting 48V phantom power, 20dB pad, polarity reverse, 80Hz highpass filter and mute for each channel. Rotary pots control input gain (up to 70 dB) and output levels (+4dBu/-10dBv switchable), with 10-segment peak-hold bar graphs indicating output levels. Each channel also includes a limiter, with variable threshold control and a fast-attack select control; limiters for channels 1/2 and 3/4 can be stereo-linked. Pairs of channels may be used for M/S stereo recording. Additional features include XLR I/Os, line-level TRS inserts, LED limit/mute/link/phantom power indicators, and additional stereo processing capabilities. Retail: $2,995.

Circle 331 on Product Info Card

AKG UPGRADES STUDIO CONDENSER

AKG Acoustics (Nashville) has improved its C 1000 S studio condenser microphone with the addition of a new acoustic adapter, the PB 1000 Presence Boost Adapter, which provides a 5dB peak between 5 kHz and 9 kHz when the mic is in cardioid mode. Like the previous model (introduced 11 years ago), the new C 1000 S also includes the PPC Polar Pattern Converter, which changes the pattern from cardioid to hypercardioid. Other features include a recessed and silent on/off switch, rugged construction, low noise, high SPL handling and an improved battery compartment.

Circle 332 on Product Info Card

MICROAUDIO ACOUSTICAL ANALYSIS SOFTWARE

MicroAudio (Bend, OR) offers the SpectraPROacoustic Series of acoustical analysis software for Windows 95/NT platforms. The base model ($795) offers single-channel real-time spectral analysis and monitor-

World Radio History

PREVIEW

ing functions, including FFT analysis, multiple data viewing options, and import/export and printing facilities. More complex versions range in price up to $1,750 and include advanced functions such as dual-channel processing, delay finder, coherence, distortion measurements, extended octave-band analysis, tone generators and Dynamic Data Exchange facilities.

Circle 333 on Product Info Card

MARTINSOUND AUTOMATED CONSOLE EXPANDER

Martinsound (Alhambra, CA) introduces the Automated Console Expander (ACX™), a flexible side-panel system for providing additional inputs on Flying Faders-equipped consoles. Available in 16, 24 and 32-input frames, ACX integrates with any console's multitrack, auxiliary, stereo and solo buses. Channels feature two line inputs with trim control, 4-band EQ with two variable filters, four aux sends, eight buses, stereo panning, direct output, insert, solo and mute, plus faders. All inputs and outputs are balanced. Input selection, EQ in and insert switches are managed by Flying Faders events control facilities.

Circle 334 on Product Info Card

HOT OFF THE SHELF

Charles M. Salter Associates' *ACOUSTICS: Architecture, Engineering, the Environment* is a book for architects, engineers, facilities managers and others. The 320-page reference text includes more than 50 case studies, describes 32 types of projects and includes chapters on costs and benefits and multimedia design issues. Call publisher William Stout at 415/391-6757…The eighth CD from the **Flying Hands Production Music Library**—"Reflections"—is from the Unplugged Underscore Series, which includes Light Rock, Country and Ambient styles. Call 502/451-8001…**Celestion's CDX1-1750** high-performance 1-inch exit compression driver is available to OEM customers. Designed by means of Finite Element Analysis techniques, the CDX1-1750 employs an innovative diaphragm-clamping system to simplify field maintenance. Call Group One Ltd. at 516/249-1399. .**BBE's two new active direct boxes** automatically select a power source from battery, external or phantom sources. The DI-100 ($159) has a 15dB switchable pad and Sonic Maximizer circuitry—two front panel controls add "bite" and low-frequency contouring effects. The DI-10 ($129) provides speaker Thru and Input connections and includes a switch-activated speaker simulator circuit. Call 714/897-6766 or visit www.bbesound.com…**Crest's NC-DSP control module** plugs in to the rear of any Crest CK amplifier and can implement a range of signal processing duties. Up to four programs can be stored, offering mixer, crossover, EQ, delay and dynamics functions. Inputs can be analog or digital, and NC-DSP-equipped amplifiers may be controlled remotely via NexSys network software; stand-alone programming is via Windows 95 or 3.1 and Crest's N-Coder software. Call 201/909-8700 or visit www.crestaudio.com…**Antex Electronics announces 20% price reductions** on many of its digital audio adapters, including the Series 2/SX line of PC sound cards. Antex's audio-for-video PC sound card, the StudioCard AV Pro, will drop from $1,595 to $1,395. Call 310/532-3092 or visit www.antex.com…The third edition of **Switchcraft's 350-page Engineering Design Guide** features over 5,000 electronic and electromechanical components, including switches, connectors, jacks and jackfields, molded cable assemblies and patch cords. To get your copy, call 773/792-2700, ext. 243, or visit www.switchcraft.com…**Belden's 1883A Analog Audio Cable** features a pair of 24 AWG stranded, tinned copper conductors, insulated with polypropylene, and includes a 24 AWG copper drain wire. The cable is NEC- and CEC-type CM-rated and is available in various cover colors. Call 765/983-5200…**EVI Audio's ArraySHOW™ software** calculates and analyzes loudspeaker interaction and interference patterns. The CD-ROM software requires a 486MHz PC, Windows 95 or NT and a browser. Call 800/234-6831…**Music Bakery has expanded its buyout production music library** in the following categories: Acoustic Underscores; Classic Westerns; Bleeding Edge Concepts; and Corporate Promotions. MusicSearch Software aids and speeds selection, and customers may order individual selections on personal "custom-baked" CDs. Call 800/229-0313 for a free CD demo…Designed for high-performance analog and digital applications, **Gepco's 5522M Digital Audio Microphone Cable** is less than half the price of conventional high-end digital cables and consists of two twisted 22-gauge tinned copper conductors and a 22-gauge tinned copper drain wire, cased in a 95% tinned copper braid and a matte PVC jacket. Call 312/733-9555 or visit www.gepco.com…**Contact East's 1998 catalog** features quality, brand-name products for testing, repairing and assembling electronic gear. For a free copy call 978/682-2000 or visit www.contacteast.com. ■

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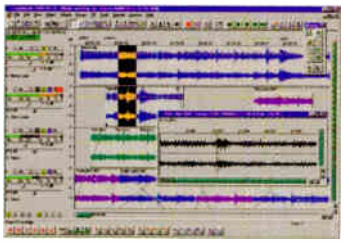
SOFTWARE AND HARDWARE FOR AUDIO PRODUCTION



SEK'D SHIPS 24-BIT, 96KHZ SYSTEM

SEK'D America (Santa Rosa, CA) announced shipment of its complete hardware system for PC-based, high-resolution audio multitracking and mastering. The system comes with the PRODIF 96 24-bit/96kHz PCI card, Samplitude 2496 editing software (offering up to 999 tracks, sample rates up to 96 kHz, DSP effects and other tools plus DirectX support) and a choice of two converters: The 2496 ADDA S converter features balanced XLR I/Os, plus AES/EBU and S/PDIF I/O; the 2496 ADDA DSP converter features dual A/D and D/A converters, plus real-time dither and noise shaping, Word Clock sync and ability to store 24-bit/96kHz audio on 16-bit DATs, plus real-time sample rate conversion. The system retails for $3,297, including the 2496 ADDA S, or $6,297, including the 2496 ADDA DSP. Components may also be purchased separately.

Circle 335 on Product Info Card

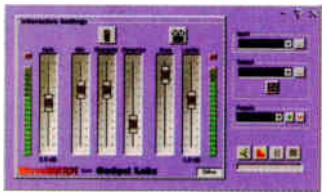
SOUNDSCAPE MIXTREME

Retailing around $700, Mixtreme from Soundscape Technology (www.soundscape-digital.com) is a 16-channel PCI card featuring 16 I/Os via 2 TDIF ports (an optional S/PDIF daughterboard is available), plus word clock I/O and MIDI. Based on the Motorola 80MHz 56301 processor, the card will run the Soundscape V2 mixer, enabling use of Soundscape V2 plug-ins. Mixtreme is compatible with major editing programs such as Cakewalk, Logic, Sound Forge, Cubase VST, Samplitude, SAW, Cool Edit and Adobe Premiere. An ADAT-to-TDIF converter and TDIF-to-unbalanced-analog converter are planned for next quarter.

Circle 336 on Product Info Card

GADGET LABS WAVEWARM SOFTWARE

Gadget Labs (Portland, OR) recently began shipping WaveWARM, a software application that adds "warmth" associated with analog recordings and vacuum tube amplification to digital recordings, using proprietary algorithms developed by Acoustic Information



Processing Labs. The system, which runs on Windows 95/NT, features two operating modes: standalone processing of files, or as Direct-X plug-in for integration with other software. The interface incorporates faders for gain, mix, "character," dynamics, knee and limiter control, plus virtual LED meters for monitoring input and output levels. Users can audition in real time, and presets can be stored and recalled easily. A production version lists for $99; download a free evaluation copy at www.gadgetlabs.com.

Circle 337 on Product Info Card.

STEINBERG CUBASE VST/24 4.0

Introduced at AES Amsterdam, Steinberg's (Chatsworth, CA) Cubase VST/24 Version 4.0, optimized for the Apple G3,

offers 64 tracks of 24-bit/96kHz-quality digital audio, with up to four bands of new EQ per channel. Up to four plug-in inserts per channel may be added, plus eight aux sends for addressing up to eight effects or plug-ins in the aux effects rack. Internal resolution is 15,360 ppqn for sample-precise editing. Other upgrades include enhanced layout options, symbol palettes, enhanced lyric functionality, choice of notation styles, and additional preferences.

Circle 338 on Product Info Card.

UPGRADES AND UPDATES

Sonic Solutions' (www.sonic.com) SonicStudio Version 5.4 release enhances Sonic's High-Density Audio systems with multitrack 96kHz, 24-bit production and editing, double-precision filters, increased mastering capabilities, 96-44.1kHz single-step sample-rate conversion, Dolby Digital encoding and support for new CD encoders. The upgrade is $699 or free to SonicCare users...**Digigram** (www.digigram.com) intros the PCX820np (analog) and PCX821np (all-digital) stereo PCI cards in its PCXnp range, and the LCM 440 and LCM 220 PCI cards for its value-priced LCM range...**Cycling74** (www.cycling74.com) announces the ability to host and create VST plug-ins from within MSP...**AudioControl Industrial** (www.iasys-tech.com) offers a new update to its Iasys (Version 1.15) that adds a spectrum analysis mode. The upgrade is $150, or free to current users...**Frontier Design Group** is now shipping Tango, a single-rack-space, 20-bit professional external digital conversion system providing 20-bit A/D and D/A conversion, eight balanced analog outs and up to eight balanced analog ins. Price starts at $698; visit www.frontierdesign.com...**Wave Mechanics** (www.wavedistribution.com) is now bundling its Pitch Doctor intonation correction tool with PurePitch 2.0 plug-in for Pro Tools. List is $695...**Minnetonka's MxTrax 2.0** adds support of the Mackie HUI and the JLCooper MCS-3800. Visit www.minnetonkasoftware.com...**Bertsch Electronics** (www.pgonline.com/Bertsch) released a free Version 4.0 software upgrade for the DPR8; features include DOS file compatibility and enhanced editing features...**Iomega** (www.iomega.com) recently reduced the price of its 1GB removable Jaz drive from $399 to $299. ■

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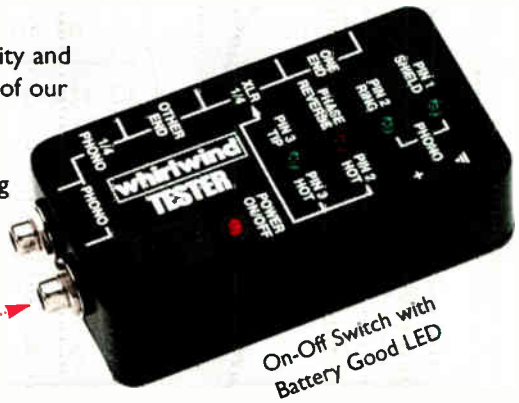
TOOLBOX MAGIC

Whirlwind custom panels and wiring systems ensure the reliability and performance of installations throughout the world. But many of our favorite products in the field are housed in smaller venues — toolboxes, toolbags, briefcases and gadget drawers. These are the magic items that get you through the day on an installation or trouble-shooting mission, and we dedicate them to everyone who has had to make a system work on a deadline.



On-Off Switch with Battery Good LED

The TESTER quickly and reliably checks cables with almost any combination of XLR, Phone, and Phono connectors for shorts, opens, or cross wiring.

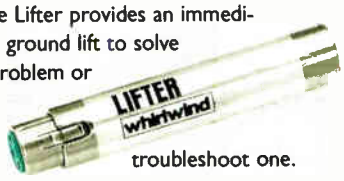
MICPOWER provides phantom power for most condenser mics from two 9V batteries.

The Qbox® packs a built-in speaker with amp, a built-in mic with preamp, a built-in reference tone generator and Voltage Present LEDs for detecting phantom or 3-wire intercom power. It drives headphones and carbon earpieces and operates at mic or line level. A real life saver for audio line testing.

The PHASE REVERSER is the quick cure for an "out of phase" mic

or piece of processing gear.

The Lifter provides an immediate ground lift to solve a problem or



troubleshoot one.

IMP PADs come in 10, 20, 30, and 40dB versions for temporary or

permanent level correction.

The MD-1™ combines a studio-quality mic preamp with a transformer-isolated line driver and a built-in headphone amp. The mic input and headphone driver have individual gain adjustments and phantom power is switch selectable. An innovative Mix control mixes the preamp input and a separate aux input to permit simultaneous headphone monitoring of an additional line level signal.

The LINE BALANCER SPLITTER balances and isolates or splits line level signals. With individual ground lift switches on each output and both XLR and 1/4" TRS for maximum flexibility.

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FAIRMAN TMC

TUBE MASTER COMPRESSOR

Over the past 40 years, the Fairchild 670 compressor (and the mono Fairchild 660) has achieved legendary status in the eyes and ears of audio pilgrims. Revered for its gentle action and huge, warm sound, this stereo tube behemoth weighs in at around 70 pounds and appears on the used market in the $20,000 range—sometimes even higher. So when Danish manufacturer Fairman decided to produce a no-compromise compressor modeled after the Fairchild 670, the developers knew this was no easy act to follow.

Carrying a $9,500 retail price tag (including shipping), along with its large illuminated VU meters and huge rotary controls mounted on a massive, 55-pound, six-rackspace black-finished chassis, the Fairman TMC makes a bold—if not backbreaking—statement. And if its sizable requirements for rack real estate or lack of MIDI control worries you, then you clearly are the wrong customer for this box: The TMC is intended for those who appreciate performance over convenience.

EXTERNAL POWER SUPPLY

Like many other esoteric high-end devices, the TMC has an external power supply—with tube rectifier, of course—that, incidentally, weighs more than most compressors on the market. Although somewhat inconvenient (there's that word again), the external PS reduces the unit's overall noise floor as compared to an internal supply.

Front panel controls include rotary knobs for threshold, attack/release, and makeup gain adjustment and toggle switches for bypass and stereo link. Switchable VU meters indicate level or gain reduction. Inputs and outputs are balanced XLRs (pin 2 hot).

Under the hood, no shortcuts have been taken and the TMC features meticulous point-to-point (no circuit board) hand wiring to its two quartets of matched ECC81 and ECC82 tubes for each channel (16 tubes total). The tube VCA circuit is based on a pure Class A operating push-pull stage. I/O transformers are custom, hand-wound designs. The TMC uses no potentiometers—gain, attack/release and threshold controls are gold-plated rotary switches. Wired directly to the switch contacts, precision resistors provide gain settings in exact 0.5dB increments. For finer dynamics control in critical applications, the threshold control starts in 0.125dB increments, then to 0.25dB steps and ends up in 0.5dB steps. Another benefit of the stepped controls is absolute repeatability, a must in mastering situations.

After the recommended one-hour warm-up time, I found the TMC simple to set up. But some explanation is required concerning the attack/release controls. Though both the TMC and the 670 have six settings, the original offered fast, slow and two medium settings with two user "presets," while the TMC offers 11 variants ranging from a fast 8ms attack to a slow 2.8-second release. TMC also lacks the 670's lateral/vertical controls for disc-cutting applications.

I started with the TMC's attack/release control set at "MM" (a medium 162ms attack/1.2 sec release setting). The gain make-up and threshold controls interact, so the net amount of compression depends on the input level and threshold point, with the ratio rising progressively to the point of limiting.

Feeding the TMC program mixes from a variety of sources, ranging from analog 2-track to 24-bit PaqRat digital recordings, the following points became obvious: The channel bypass switches are so

BY GEORGE PETERSEN

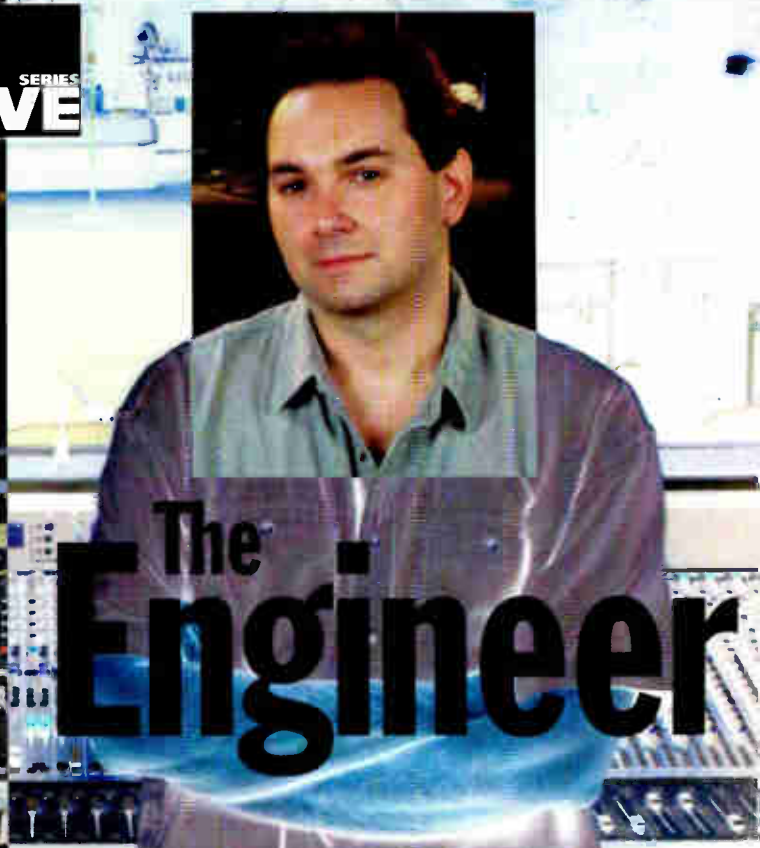
World Radio History

TEC 1998 Nominee

SERIES FIVE

The Console

Soundcraft Series FIVE Front-Of-House



The Engineer

"I was totally sold on the feature package, which offered exactly what I wanted and no extra crap. I get 10 VCAs, and a great 16 x 10 matrix that no other desk has. I think the Series FIVE is it - all the features in a weight and size that is much more manageable."

Tom Abraham, Sound Engineer, on tour with SSE Hire mixing Garbage.

And Now, The New Series FIVE

Monitor

SERIES FIVE MONITOR

- The features that made the Series FIVE Front-Of-House console an instant success, in a dedicated monitor mixing console with comprehensive routing and unrivalled output control • 24 and 32-bus frame types • 23 x 12 (24-bus) and 23 x 16 (32-bus) output matrixes • 38 (24-bus) and 50 (32-bus) balanced outputs • 9 (24-bus) and 17 (32-bus) stereo outputs • 2 selectable solo systems (eg. wedge / in-ear) • Direct interface to BSS FPC-900 Varicurve™ for slave EQ selection • Matrix or parametric EQ on outputs • Stereo inputs available • 44, 52 or 60 input channels (24-bus) / 40, 48 or 56 input channels (32-bus) • Compact, light, rugged and road-proven Series FIVE frame

Soundcraft

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www.soundcraft.com

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far apart that using one hand to toggle the compressor in/out of the audio chain requires some dexterity and/or large hands. Also, a slight audio glitch is audible when using the bypass switch.

SMOOOOOOTH COMPRESSION

At first, I thought I couldn't detect any change, as I didn't hear any artifacts, and a common way of setting compressors is to push them into pumping or breathing and then back them off until the unpleasantries disappear. The TMC's compression is absolutely smoooooth, and it's necessary to keep an eye on the console or recorder meters, because although the compression is happening (and probably to a greater degree than you would expect), you just don't hear it as you would with the typical modern compressor.

When tracking lead and background vocals through a Dirk Brauner VM1 tube mic, the TMC shone. The tracks sounded intimate and under control, free of any crunching or squashed feeling. Bass (acoustic or electric) was big, round and full, without becoming overbearing. And in every case, the audio was stunningly clear (extending beyond 50 kHz) and sonically pristine, thanks to its -106dB noise floor.

The obvious question is whether the TMC sounds the same as a Fairchild 670, and the answer is no, although both handle dynamics identically. But at the same time, I should note that not all Fairchilds sound the same, as the aging process affects all pieces of vintage electronics differently, whether as a result of leaking capacitors, decaying wire insulation, dirty switch contacts or the inevitable well-meaning-but-misguided design "improvements" along the way, which often replace parts with low-grade substitutions or implement mods of dubious value.

And, lacking the versatility of modern units, neither Fairchild nor Fairman is the single compressor for every task. But without a doubt, the Fairman TMC is an impressive device that packs the spirit (if not the absolute exact sound) of the Fairchild 670 into a modern, superbly built product at about half the price of the vintage classic.

Fairman, distributed by ATR Service Company, 1502 Cobb Street, San Mateo, CA 94401; 650/574-1165; fax 650/574-2064. ■

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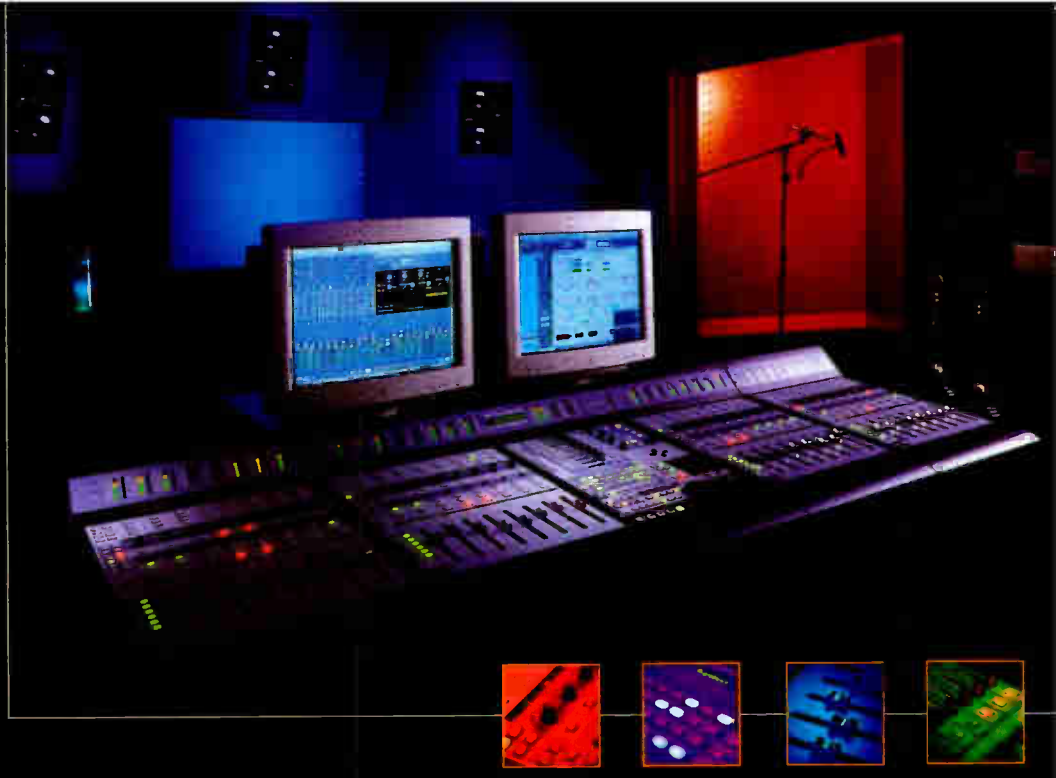

THE FUTURE OF MIXING HAS ARRIVED

It's not another million dollar mixing console. And it's not the impossible dream. ProControl is, quite simply, the most powerful tactile control surface for the world's leading digital audio production environment — Pro Tools.

Anything you can do with your Pro Tools TDM system, you can do from ProControl. Record, mix, edit, and automate everything — including mutes, sends, volume, panning, and all Plug-In parameters — with instant and total recall. Access all the tracks in your session from the ProControl Main unit, or add Fader Expansion Packs (in eight-channel increments) for up to 32 faders. ProControl even has a comprehensive monitoring section, so it's the only mix controller you'll need in your studio.

We could go on and on about ProControl's patented DigiFader touch-sensitive moving faders, the unique Channel Matrix, and other powerful features, but here's the bottom line: a Pro Tools / ProControl system runs circles around consoles and recorders costing 5 or 10 times more. So what are you waiting for? Put the future of mixing in your hands today.

PRO TOOLS

Call Digidesign at **1.800.333.2137** ext. **374** for a full-color brochure or to schedule a personal demo.

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BSS OPAL SERIES

DYNAMICS PROCESSORS

BSS Audio's new Opal Series of dynamics processors features a striking visual appearance and some unique features, combined with attractive pricing. Introduced last year, the first two Opal products were the DPR-422 Dual Compressor/De-Esser ($899 list) and the DPR-522 Dual Noise Gate ($799 list). The newest addition to the range is the 4-channel DPR-944 ($899 list), which includes two gates *and* two compressors in a single-rack-space unit.

DPR-422 Dual Compressor

DPR-522 Dual Gate

DPR-944 2+2 Parametric Compressor and Gate

All three Opal processors are marked by a well-thought-out front panel layout that provides an intuitive control surface featuring illuminated oval switches and metering. Aside from the new look on the face-plate, construction is similar to BSS's other DPR processors, save for the omission of socketed chips inside and the inclusion of an IEC power cord connector on the back panel. All three Opal models are shallower than other DPR processors by four inches and feature balanced XLR I/Os; on the 422 and 522, the sidechain inserts are also balanced on individual TRS jacks. For stereo signals, channels can be linked under control of the left-hand settings. The audio quality is what you'd expect from BSS, and few compromises have been made on this affordable line of dynamics processors.

DPR-422 DUAL COMPRESSOR

Like the BSS DPR-402, which lists for almost twice as much, the DPR-422 Dual Compressor offers a choice on each channel between a tunable de-esser and a compressor, and offers comprehensive control of all parameters. The internal architecture is based on the 402, uses a subtractor to minimize distortion and lacks only the 402's peak limiter. Each channel includes a variable ratio compressor with BSS's proprietary "progressive knee" characteristic. This gives "soft knee" musicality at low ratios, varying toward "hard knee" limiting at the maximum ratio setting of infinity. In Auto mode, the attack and release time are automatically regulated by the program material. The Auto mode offers a snappy response on vocals—more transparent than on older automatic compressors.

The DPR-422 offers two de-essing options. Broadband de-essing compresses the whole signal when HF signals exceed the preset de-ess threshold. Threshold, attack and release controls can be used for greater precision. HF-Only de-essing creates a dedicated, frequency-selective de-esser channel that compresses high-frequency signals while leaving low-frequency content unmodified. For project studio applications, the DPR-422's inputs and outputs can be switched to operate at +4dBu or -10dBV on either channel.

DPR-522 DUAL GATE

The DPR-522 Dual Gate offers a comprehensive array of features. A parametric key filter allows the trigger signal to be tuned precisely, with filter width adjustable down to a tenth of an octave. The illuminated Key Listen switch (also found on the 944) allows quick adjustment of the filter by ear. The momentary Check key forces the gate open for line checks, though I can't imagine reaching to hold this button while running the console PFL bus. In addition to fully adjustable threshold, attack, hold and release controls, a range control sweeps from open to 80 dB of gain reduction. Easy-to-read metering gives clear visual status of the gate, with a signal meter that shows the key signal strength relative to the preset threshold, along with a two-LED Open-Shut indicator conveniently located above the attack-and-hold controls.

As with any full-featured gate, attack time can be set sufficiently fast to cause the gate to click when opened. However, if one selects an attack time just slow enough to

BY MARK FRINK

World Radio History

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prevent the gate from clicking open, the leading information of sharp transients can be lost, imparting a gated characteristic to the sound that lacks the impact of the original. The 522's ADE (Auto Dynamic Enhancement) feature restores some punch when slower attack times are selected—and is particularly effective on drums.

Other notable features include a contact-closure input, accessible by an 8-pin DIN connector on the rear, that allows the gate to be remotely activated. A ducking switch reverses the gate's function to reduce output when the key signal exceeds the threshold—useful for broadcast applications and other situations when it's necessary to automatically reduce program levels for voice-over.

DPR-944 2+2 PARAMETRIC COMPRESSOR AND GATE

The DPR-944 2+2 Parametric Compressor and Gate has two discrete channels, each offering gating and compression functions. The value of four channels of processing in a single rackspace needs no explanation, and all inputs and outputs are independent, so the processors can be patched in multiple configurations. In addition to two frequency-conscious noise gates, the DPR-944 offers two channels of parametric frequency-selective compression (comparable to a single-band version of BSS's 901 Dynamic Equalizer). The parametric EQ filter allows specific frequency bands to be compressed without compressing the entire signal at the same time. This feature is particularly useful for eliminating sibilance, microphone popping and proximity effects, and for taming tonal characteristics that vary with level. Unlike the 901, the 944 allows the operator to listen to the parametric filter via a Sidechain Listen feature.

The 944 lacks a few features present in the 422 and 522. For example, the 944 only offers a key insert (send and return) for its two gates on a single, unbalanced TRS jack. The gates' tunable key filter has a choice of only two filter widths—three octaves or half an octave (Narrow)—though these settings should cover most applications. Instead of an adjustable gate Range control, a Depth switch offers a choice of 80 dB or 20 dB of gain reduction. Gone also are the Attack and Hold knobs and the ADE function. Attack has two fixed settings of 0.04 and 2 milliseconds, sufficiently fast for drums and just slow enough not to click. Though these are compromises, they are all well-chosen.

The 944's compressors operate in Auto mode exclusively, so there are no Attack or Release controls. A switch labeled Fast Release speeds up the automatic release by a factor of ten for percussive sounds. The De-essing shelving filters on the 422 are replaced by parametric controls that allow frequency-conscious compression to be applied to a much broader range of frequencies for a wider array of applications, including de-essing. If you don't already own a 901, and you need a couple of extra gates for rack toms plus a unique and versatile compressor, the 944 is for you. It offers only a fraction of the possibilities of a 901, but still offers much more functionality than a traditional compressor.

BSS Audio, 1449 Donelson Pike, Nashville, TN 37217; 615/399-2199; fax 615/367-9046. Web site: www.bss.co.uk. ■

Mark Frink is Mix*'s sound reinforcement editor.*

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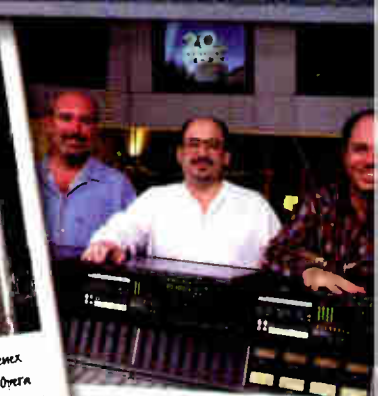
London – At the world famous Abbey Road Studios. "Our GX8000s move between the studios and on location for use on a wide range of projects." Neil Aldridge, Chief Engineer.

Nashville – Mastering the new George Strait album at Georgetown Masters. "Everyone was astounded when they heard it at 88.2kHz compared to 44.1kHz. Its reliability has also been amazing." Denny Purcell.

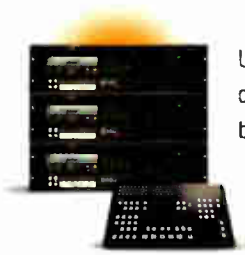
Montreal – Major multinational TV production company CINAR uses its GX8000s in a variety of applications. "By recording at the maximum possible dynamic range, we're preparing for new formats as they become available." Francois Deschamps, VP of Studios.

London – Digital Audio Technology supplied its 48 track Genex system for 20-bit location recording at the Glyndebourne Opera Festival. "The ability to access remote drives made the continuous recording of a two and half hour performance possible. It couldn't have been done with tape." Ian Worrester, Owner.



Hollywood – Recording the new 20th Century Fox fanfare at the Newman Scoring Stage. "We liked the sound of the live mix so much that we didn't remix it at all." John Kurlander, Grammy award winning scoring Mixer.

AROUND THE WORLD IN 24-BITS



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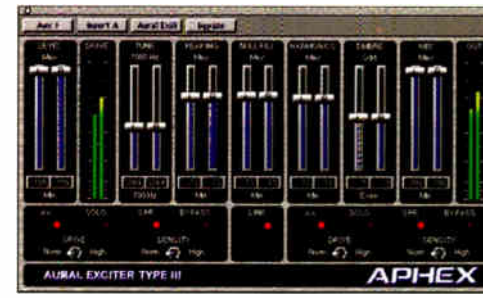
APHEX AURAL EXCITER

TDM PLUG-IN FOR PRO TOOLS



The interface offers fader control of parameters.

First introduced as a hardware peripheral in 1975, the Aphex Aural Exciter is also available as a DSP plug-in for Pro Tools TDM systems. Modeled after the 1985 vintage Type III Aural Exciter, this $495 plug-in offers all the features that you'll find on its hardware cousin.

Essentially, the Aural Exciter introduces harmonic detail to audio material. By adding harmonics based on the original audio track(s), the Exciter can enhance the signal brightness, clarity and presence, effectively improving detail and intelligibility. Unlike EQs, which boost existing frequencies, the Exciter extends the high frequencies, often resulting in a greater perceived loudness and enhanced stereo image.

The input signal is split into two paths: an unmodified main, and a sidechain, comprising a tunable highpass filter and an adjustable harmonics generator. The resulting signal is then mixed in with the original at the output stage.

The Aural Exciter can be used either as an individual "in-line" processor on an audio track or as an insert on a mono or stereo auxiliary input that receives bused, mixed signals from several tracks. Whether used in mono or stereo, each Aural Exciter Plug-In in the Pro Tools audio chain requires one DSP chip (out of four on a DSP Farm card).

THE INTERFACE

Incoming signal level is monitored by a Drive meter and adjusted by Level faders and by a Drive, which boosts the signal by 6 or 18 dB—a useful option for low-level signals.

The Tune fader—adjustable from 700 to 7k Hz—sets the frequency of the highpass filter. The Peaking fader allows adjustment of the damping effect on the leading edge of the highpass filter. The Null Fill fader compensates for the null in the highpass filter curve—a side effect of the signal filtering/summing process. The Harmonics fader sets the amount of harmonics being generated, a function of both the incoming signal and the highpass filter frequency. The Timbre fader determines the mix between odd and even harmonics, and the Mix fader adjusts the amount of filtered sidechain signal to be combined with the original signal; maximum level adds 12 dB when the Drive switch is set to Normal, and 24 dB when the Drive switch is set to High.

At the bottom of the control panel are several on/off switches with corresponding "LEDs": Ax turns the processor on and off; Solo lets you hear only the sidechain filtered signal; SPR controls the Spectral Phase Refractor effect, which adjusts the phase of the low frequencies to compensate for the natural low-end delay that occurs in the filtering process; Bypass provides the same function as the Bypass option on the Pro Tools Inserts/Sends Editor, completely bypassing the Plug-in; and Link (when in stereo mode) locks all L/R faders together. Finally, the Density toggle switch determines which of two harmonics generator algorithms are used. When set on High, the output from the harmonic generator expands low-level signals and compresses the highest peaks.

THE TEST

The installation and operation were trouble-free, and the manual is clear. But the best way to familiarize yourself with the plug-in is to play with the settings, using a variety of audio material. Depending on the input signal, some of the above controls are pretty subtle. Experiments on some tracks offered modest to dramatic improvements. A sports car sound effect, a narration and a solo recorder track were each only mildly improved at nominal settings; beyond a certain point the signals became harsh and distorted. But when the Exciter was applied to a lackluster orchestral piece and Bill Withers' "Lean on Me," both came alive with sparkle, clarity and separation.

Use of the plug-in on a digitized MIDI drum track with a cross-stick and hi-hat pattern yielded excellent results: I applied a Tune setting around 6 kHz, with nominal levels on Peak and Infill, and the cross-stick and hi-hat popped out of the mix without being intrusive. A subtle application to an orchestral mix enhanced the high end of the string section, especially at lower-frequency Tune settings. However, anything more than modest Peaking and Harmonics settings caused severe distortion. But I observed the most dramatic improvements to vocal and narration tracks. Without changing levels, I was able to use the Aural Exciter to lift vocals out of a mix without making them sound strident. The amount of control the tool offered in this setting was impressive indeed.

Though I don't expect to be using the Exciter plug-in on a daily basis, there will be occasions that it will be the perfect solution. And for those engineers and producers who have come to know and love the Aphex hardware box, this $495 gem offers new opportunities to work with it in an all-digital environment.

Aphex Systems, 11068 Randall St., Sun Valley, CA 91352; 818/767-2929; fax 818/767-2641; Web site: www.aphexsys.com. ■

BY PAUL POTYEN

Paul Potyen is an independent composer, producer and co-founder of Site4Sound (www.site4sound.com).

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TASCAM DA-45HR

HIGH-RESOLUTION 24-BIT DAT RECORDER

It's hard to believe, but it's been 12 years since the first prototype DAT recorders (we called them R-DATs in those days) were developed. And although numerous advancements to the format—improved A/D and D/A converters, better filters, oversampling, etc.—have been incorporated into these recorders over the years, the DAT format itself has remained essentially unchanged. But all that may change with the introduction of the Tascam DA-45HR.

Making its U.S. debut at last month's NAMM show in Nashville, the DA-45HR is similar from a features standpoint to Tascam's DA-30 Mk II DAT recorder, but by pressing a front panel switch, the new machine becomes a high-performance mastering deck, capable of recording at 24-bit resolution, at the DVD-supported 48kHz sampling rate (or 44.1 kHz). Flip the switch again, and the DA-45HR is backward-compatible, to record or play tapes at the worldwide 16-bit DAT standard.

A major plus of the DA-45HR is its use of standard DAT tapes, which are affordable and widely available, especially when compared to other high-resolution formats that use removable (and pricey) optical, magnetic or MO disk media. However, when the DA-45HR is operated in 24-bit mode, the tape speed is doubled, so a 120-minute DAT yields 60 minutes of record/play time. The 24-bit tapes recorded on the DA-45HR are not playable on conventional DAT recorders.

Another advantage the DA-45HR offers is that the machine's interface is logical and straightforward: There is no learning curve to overcome, and anyone who's familiar with a DAT deck could start using the DA-45HR right away. The front panel has the usual REW/FFD/STOP/PLAY/PAUSE/REC transport keys, along with a data/shuttle wheel, independent left/right analog input level pots, headphone out with level control, and toggle switches for selecting internal/external/word clock; 16/24-bit recording mode; 44.1/48kHz sampling rates (32 kHz is also supported, but only for playback); and a choice of analog (XLR or RCA) or digital (S/PDIF coaxial or AES/EBU) sources. A multicolored LED status display shows metering, operating status, and location points and time; along with a choice of program number + headroom margin, frame + margin, or frame + program number. The current number of head drum hours can also be displayed.

The DA-45HR offers an extensive array of functions for adapting the recorder to any specific application, but rather than bury these features under 17 subpages of menus, Tascam has made them directly accessible via 12 front panel buttons. These customizable settings include three selectable reference operating levels (-20/-18/-16 dB); two programmable locator points; single play or continuous looping between any two preselected points; alphanumeric data entry for naming programs; Copy ID on/off (to prevent unauthorized copying); subcode editing of Start/Stop ID, Skip ID, character and TOC data; Auto ID level (-48/-54/-60/-66 dB); Auto ID time (1 to 4 seconds in 0.2-second intervals); record mute (1 to 8 seconds in 0.5-second steps); and a repeat function

BY GEORGE PETERSEN

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providing from two to 15, or unlimited, repeats.

The rear panel offers enough flexibility to integrate into any production environment. Analog inputs and outputs are either -10dBV unbalanced line on RCA jacks or +4dBu balanced line on XLRs—the latter also include recessed trim pots for adjusting the level of the balanced outs. The digital inputs and outputs are provided in both S/PDIF coaxial (RCA) and AES/EBU (XLR) formats. There is also a port for the optional RC-D45 hardwired remote control. Rounding out the back panel are BNC word sync in/thru connectors and a parallel interface on a 15-pin D-sub for automation use, fader start control or GPI (general purpose interface) applications.

Inside the DA-45HR are 20-bit D/A (with dither) and 24-bit A/D converters, so the unit can store 24-bit audio from either its analog or digital inputs. In addition to providing a handy interface for today's new 24-bit-capable digital consoles, the 24-bit ports are ideal as a convenient means of storing edited material from workstations or as a means of making backup files from other 2-track sources.

Rear panel detail of the Tascam DA-45HR

Shipping this month at $1,999—slightly more than other pro studio DAT recorders—and offering a range of useful features (not the least of which is dual 16/24-bit capability, using low-cost media) the DA-45HR offers a lot. However, some questions remain, such as whether other manufacturers will offer compatible machines. No one knows exactly what the future holds, but for the time being, the Tascam DA-45HR provides a 24-bit solution that nearly any studio can afford.

Tascam, 7733 Telegraph Road, Montebello, CA 90640; 213/726-0303; Web site: www.tascam.com; or call 800/827-2268 and request document #2340 using the company's automated Faxback service. ■

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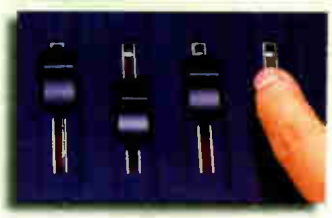

Just push the Wedge's edit button and start adjusting your reverb with the four edit sliders. It's easy to get creative with the Wedge's powerful parameters like decay, frequency damping, swirl, early reflection room shape, width, density and diffusion.

For as long as effects processors have been bolted into racks, customizing your reverb sound has been about as much fun as setting the time on a digital watch. But the Alesis Wedge™ offers an ingenious new angle to the way you approach reverb and ambient effects.

Unlike racked effects, the Wedge is a dedicated Desktop Master Reverb, cleverly designed to be used on or near a mixing console where you do your most critical listening... in the sweet spot of your mix. And with four edit sliders to access several effects parameters at once, you'll find yourself tweaking aspects of your sound you would never dream of editing in a rackmount box. Result: more inspiration for recording and mixing, and less limitation on your creativity.

There's more to the Wedge than its great design, like all-new algorithms that represent the finest, most detailed, best-sounding reverb you've ever heard, especially in an affordable processor. Don't limit yourself to the rack; instead, think differently and try out a new slant on reverb. The Wedge. At your Alesis Dealer now.

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ALESIS

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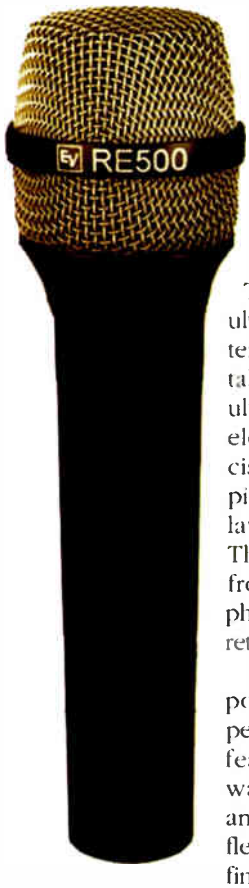
ELECTRO-VOICE RE500

CARDIOID TRUE CONDENSER MICROPHONE

The Electro-Voice RE500 is a cardioid, true condenser microphone. Designed for live stage vocal performance, the mic may also be used in broadcast and home recording applications.



On the technical side, the RE500 is an externally biased true condenser microphone with a frequency response of 80 to 18k Hz. The diaphragm is ultrathin, gold-sputtered, environmentally stabilized and ultralow mass. The electrode is a precision-cut, single-piece ceramic disc, layered with gold. The mic operates from 12 to 52VDC phantom power and retails for $375.

The RE500 incorporates useful live performance design features such as a warm grip handle and a black, nonreflective, micromatte finish. The 8-ounce, 6.5-inch mic handles comfortably, especially for first-time performances when sweaty palms may be an uncontrollable factor.

To minimize wind and breath noises, the RE500 offers a three-stage wind and pop filter and incorporates a fixed lowcut filter set at 80 Hz. The mic also incorporates a shock-mounted transducer, which, combined with the lowcut filter, results in extremely low handling noise.

In home recording and broadcast situations, the mic's wide dynamic range and low self-noise will be best appreciated. The RE500 also features a "presence rise," a frequency lift above 1 kHz. According to EV, this is designed to "...enhance the sound quality (and) lend an open, transparent detail to the recorded sound." Unfortunately, this little boost makes for some tough times in monitor-land, but more on that later.

IN THE FIELD

When I received the RE500, I took it home, plugged it into a mixer and listened to it through Sony MDR-V600 headphones. From the first word, I detected some sort of high-frequency boost. To confirm this, I grabbed my old standby, a Shure SM58 (the industry standard for stage vocal microphones) and A/B'd the two mics. Relative to the 58, the RE500 had a bump around 4 to 5 kHz, and another between 10 and 12 kHz, with a noticeable high-frequency boost throughout the higher register of the spectrum.

The microphone sounded clear and defined through headphones. But I was curious to see how the RE500 would respond in a more demanding environment, so I went to JK Sound, a San Francisco-based rental company, and ran it through some of JK's standard PAS SW1.2 floor monitors, a coaxial design offering a natural sound with a flat frequency response. The microphone that sounded clear and defined through headphones now sounded harsh and bright and resulted in some excruciatingly painful feedback when the microphone was opened up. It took quite a bit of equalizing to get the RE500 to respond at a real-world volume without feeding back. Once I had finished hacking away at the equalizer, I proceeded to test the microphone. The RE500 lacked body and a solid, well-defined low end. I have a low-end-heavy voice, and the RE500 didn't capture the "body" I am used to hearing. My results were similar through various other speaker systems.

Next I took the RE500 home to conduct some extensive tests in a more controlled (and less demanding) environment. My first reaction to the microphone had been positive, and I was pleased with the overall sound of the RE500. But headphones are not the ideal monitoring system for microphone testing, so I recorded some vocal passages to analog tape. The RE500 responded well and vocals were clear and present. With the built-in high-frequency boost, there was no need to add any EQ to get "air" into the vocal mix. However, the RE500 may accentuate sibilance more than other microphones. Apart from that, the RE500 performed quite nicely in a home studio environment, and I have no doubt that it would do the same in a broadcast environment.

CONCLUSION

The RE500's design and construction are solid and well-thought-out, and the mic is comfortable to hold and well-balanced. But in the live setting, for which it was designed, the RE500 falls short. The gain before feedback was only fair, and the mic lacks body in the lower frequencies, which are important when trying to get vocals to cut through in a monitor mix. However, the RE500's low noise and clear, crisp response are well-suited to studio recording. In its goal to create a live performance condenser microphone with a "studio sound," Electro-Voice may have missed the mark, yet at $375, the RE500 provides an alternative for anyone seeking an affordable, versatile condenser microphone for the studio.

Electro-Voice Inc., 600 Cecil Street, Buchanan, MI 49107; 616/695-6831; fax 616/695-1304. Web site: www.eviaudio.com. ■

BY JAVIER ALCARAZ

Javier Alcaraz is an independent engineer based in San Francisco.

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In its 14-year history, the TEC Awards has raised more than $360,000 for these worthy causes, while offering attendees the opportunity to mingle with audio and music industry luminaries at what has become one of the most important annual events for audio professionals.

The TEC Awards is divided into three major categories—Outstanding Technical, Creative and Institutional Achievement—and 27 subcategories. Voting for the TEC Awards winners is a two-step process. A Nominating Panel, comprising approximately 200 prominent members of the professional audio industry, makes initial selections in March. Their nominations appear on the Voting Ballot in this issue of *Mix*. The winners of the 14th Annual TEC Awards will be announced at a ceremony on Sunday, September 27, at the Fairmont Hotel in San Francisco.

Sunday September 27, 1998

The Fairmont Grand Ballroom San Francisco

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Dinner 7:00 p.m.

Awards Ceremony 8:15 p.m.

A benefit for hearing conservation and audio education.

For information about TEC Awards tickets, contact Karen Dunn, TEC Awards Executive Director, at (925) 939 6149

[Beginning on page 130 are seven pages of nominee descriptions and biographies. Please take the time to read the information before voting. (Ballots are in subscribers' issues only.) Entries must be postmarked by ***Monday, August 31, 1998.****]*

Proceeds from the 14th Annual TEC Awards will be distributed to the following organizations:

- Hearing Is Priceless (HIP), co-founded by *Mix* magazine and the House Ear Institute of Los Angeles
- Hearing Education and Awareness for Rockers (H.E.A.R.), San Francisco
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Mix Magazine • Founded in 1977, *Mix* is the world's leading publication for professional recording, sound and music production, with more than 53,000 subscribers in more than 90 countries. *Mix* covers a wide range of topics, including studio and location recording, audio for film and video, live sound production, facility design and acoustics and other subjects of relevance to audio professionals. *Mix* also publishes the *Mix Master Directory*, *Mix Edicion en Espanol* two annual Sound for Picture supplements, and maintains a Web site, mixonline.com. *Mix* is the founding sponsor of the TEC Awards.

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Alesis Corporation • Alesis Corporation is a full-line manufacturer of products for the professional audio and musical instrument industries. Founded in 1984 by electronics genius Keith Barr, Alesis has gone on to produce some of the most innovative and popular tools for music and audio recording, performance and composition. The Alesis ADAT digital recorder helped to found an entirely new classification of recording environments—the professional project studio. Alesis' product line also encompasses some of the most widely used devices for signal processing, mixing, monitoring, amplification and electronic musical instruments. Alesis products have been nominated for more than a dozen TEC Awards.

AMS Neve • Formed by combining the significant analog and digital expertise of two of the industry's leading designers and manufacturers, AMS Neve has a history of innovation, from the development of classic mic preamps and early DSP effects to the first hard disk editor and first digital console. Recent achievements include a multiformat version of the Capricorn digital music desk and the installation of the world's largest digital desks—the Digital Film Console (DFC), with 500-plus paths—used on Hollywood's dubbing stages.

Audio-Technica • Audio-Technica has been dedicated to advancing the art and technology of electro-acoustic design and manufacturing since 1962. From a beginning in state-of-the-art phono cartridges, Audio-Technica has expanded over the years into high-performance microphones, headphones and other audio equipment. Best known for the 40 Series line of precision capacitor microphones, Audio-Technica strives to create innovative, problem-solving products in each new area it enters. Audio-Technica is proud to be a Gold Sponsor of this year's TEC Awards.

Disc Makers • Disc Makers is one of North America's leading manufacturers of independent media and offers "CD-ROM Manufacturing Made Easy." With design, film, print and packaging all in house, Disc Makers has quick, reliable turnaround times and a high level of customer service. Disc Makers also offers a free guide to making CD-ROMs.

Gibson Musical Instruments • Headquartered in Nashville since 1984, Gibson Musical Instruments, sponsor of this year's Les Paul Award, is the parent company of Gibson guitars and a diverse family of famous instruments companies. The Gibson name has always symbolized a combination of traditional craftsmanship and innovative technology. The GMI family now includes Epiphone fretted instruments and amplifiers, Steinberger guitars and basses, Tobias basses, DOBRO resonator guitars, Flatiron mandolins, Slingerland drums and Oberheim keyboards.

Harman Music Group • The Harman Music Group manufactures dbx, DigiTech and DOD products in Sandy, Utah, and distributes the British-manufactured Allen & Heath product. The group has evolved a state-of-the-art factory utilizing the latest in computer-aided manufacturing and testing equipment. HMG is an integrated leading manufacturer of signal processing equipment, digital effects processors, equalizers, limiters, crossovers, mixers, pedals and other audio electronic components. Allen & Heath, dbx, DigiTech and DOD are trademarks of the Harman International family.

Solid State Logic • Solid State Logic is one of the world's largest and most successful manufacturers of audio consoles and post-production systems for the music, broadcasting, film and video industries. Still a major supplier of analog consoles for the music and film markets, since 1994, SSL has developed the widest range of large-format digital consoles in the world, including Aysis Air, the digital broadcast console, Avant, SSL's digital film and video post-production console, and Axiom-MT, the world's first digital multitrack console with a traditional in-line control surface.

Sony Professional Audio • Sony Professional Audio is both an inventor and manufacturer of audio hardware technologies, with diverse offerings that include digital multitrack recorders, DAT recorders, CD/MD mastering systems, mixers and consoles, and professional microphones. Sony Professional Media Group is a leading supplier of professional audio and video tape. The full range of professional audio tape products includes Pro DAT, DARS, DARS-AME, DASV, DASH, MDU, NT, audio cassettes (Type II and IV only), CDR, DDS, D8 and MO.

Yamaha Corporation of America • Yamaha is a leading manufacturer of innovative acoustic and electronic musical instruments, audio mixers, speakers, amplifiers, signal processors and multitrack recorders. Utilizing proprietary DSP technology, Yamaha leads the market with powerful, cost-effective digital mixing consoles for professional recording, post-production and installed sound applications. This year, James Taylor's *Hourglass* CD, recorded using the Yamaha 02R Digital Mixing Console, won Grammy® Awards for best pop album and best engineered recording.

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14th ANNUAL VOTER'S GUIDE TEC AWARDS

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I. OUTSTANDING INSTITUTIONAL ACHIEVEMENT

A. ACOUSTICS/FACILITY DESIGN COMPANY

Russ Berger Design Group, Inc., *Dallas*: RBDG has provided design for more than 60 projects during this year's eligibility period. A partial list includes: GPTV/FM-Georgia Public Television and Radio, ION Storm, Discovery Communications LABF, Texas Instruments, Michael Bolton Foundation-Safe Space Studios, 615 Productions, NFL Films Expansion, TNN Non-Linear Edit Expansion, NPR Los Angeles Bureau, and BET Soundstage at Disney's Pleasure Island.

Pelonis Sound, *Santa Barbara*: Completed sound design studio for Skywalker Ranch; screening/recording studio for Jeff Bridges; recording facility Surco/Universal; personal studios for Glen Phillips of Toad The Wet Sprocket, Def Leppard drummer Richard Allen, and singer/actress Katie Segal; mastering facility at Quadim, Inc.; recording facility for Sound Matrix; recording studio for Big Bang Productions; and audio production facilities for CD interactive companies Interplay, Knowledge Adventure and Digital Manga.

studio bau:ton, *Los Angeles*: Eligibility year projects included Newman Scoring Stage, 20th Century Fox, Century City, Calif.; Creative Cafe Wilshire, Los Angeles; Future Studios, Teddy Riley, Virginia Beach, Va.; James and Ron Last Studio, Miami Beach; Complex Studios, Studio C, West Los Angeles; Yello Studio, Los Feliz, Calif.; Musicians Institute, Studio C, Hollywood; David Lynch Studio and Dubbing Stage, Las Angeles; Duran Studios, Paris; Symphony Studios, Buenos Aires.

Walters-Storyk Design Group, *Highland, NY*: During the eligibility period, Walters-Storyk Design Group completed Circo Beat Studios (Fito Paez), Buenos Aires; Crescendo! Studios, San Francisco; Dubway Recording, New York City; Producers' Video, Baltimore; Hunter College Distance Learning Center, New York City; MJI Broadcasting, New York City; Bonadio Studios, Brazil; AR Studios, Brazil; IBM Global Services, New York City and Georgia; and Ross School, East Hampton, NY.

Waterland Group, *Los Angeles*: During the eligibility period, Waterland Design L.L.C. completed Java Records/Capitol Hallywood (Glen Ballard's composers' and mixdown suite); Brasher Sound, Glendale, CA (John Brasher's Foley/ADR stage and control room); Sony Music Studios, NYC (DVD/5.1 suite); Capitol Recording Studios, Hollywood (DVD/7.1 suite); Guggenheim, SoHo (3x5.1 matrix public space installation); and A&M Studio C (DVD/DTS mix room).

B. SOUND REINFORCEMENT COMPANY

A-1 Audio, Inc., *Hollywood*: Credits include (touring): Aerosmith, Van Halen, Counting Crows/Wallflowers, Jane's Addiction, Barry Manilow, Chicago/Beach Boys, Motley Crue/Cheap Trick, Julio Iglesias, Luis Miguel, Johnny Mathis, Carrot Top, Paul Weller and Morrissey; (premiers): *Hercules* and *Tomorrow Never Dies*; (events): New Year's Eve Las Vegas, Snowboarding Championships, MTV Movie and Music Awards Official After Show Parties, Nickelodeon Studio Opening, Nickelodeon Kid's Choice Awards Party; and (theater/showroom): *Grease* and Danny Gans at The Rio.

Clair Brothers, *Lititz, PA*: Eligibility year credits included U2, Elton John, Billy Joel, Michael Jackson, Mariah Carey, Fleetwood Mac, Gloria Estefon, Tina Turner, The Who, Enrique Iglesias, Bush, No Doubt, Yes, John Mellencamp, Steve Miller Band, Indigo Girls and Lionel Richie. Credits through MD Systems/CBA Nashville include Garth Brooks, Tim McGraw, Amy Grant, LeAnn Rimes/Bryan White, Tracy Lawrence, Sheryl Crow and Kenny Rogers.

db Sound, *Chicago, IL*: During the eligibility period, db provided sound reinforcement services for the Rolling Stones "Bridges to Babylon" world tour, two productions of Riverdance, Barney's Big Surprise, OZZfest, the Allman Brothers Band, Faith No More and REO Speedwagon, and provided service to the Illinois State Fair as well as Summerfest. They also have a complete stadium system on long-term contract to Ocesa Presents in Mexico City.

Electrotec Productions, Inc., *Westlake Village, CA*: Electrotec's eligibility year credits include Bob Dylan, Tom Petty, Diana Ross, Rush, Marilyn Manson, Rod Stewart, Tool, The Orb, Queensryche, Tibetan Freedom Concert '97, Electric Highway, The Artist Formerly Known As Prince and Kula Shaker.

Jason Sound Industries, *North Vancouver, BC*: Eligibility years credits include Bryan Adams, Lilith Fair with Sarah McLachlan, Jewel, Indigo Girls, Fiona Apple, Another Roadside Attraction with Tragically Hip, Sheryl Crow, Los Lobos, Sarah McLachlan, Edgefest with Our Lady Peace, Collective Soul, Silverchair, Tea Party and Barenaked Ladies, Bruce Cockburn, Gordon Lightfoot, Jann Arden, Moist and Amanda Marshall.

C. MASTERING FACILITY

A&M Recording & Mastering Studios, *Hollywood*: A&M Mastering Studios engineers Dave Collins, Alan Yoshida, Patricia Sullivan and Andrew Garver have provided mastering for albums by artists such as Jone's Addiction, Soundgarden, Chick Corea, Sting, Ben Harper, Duran Duran, and Dog's Eye View; audiophile XRCD releases including Miles Davis, Ella Fitzgerald, John Coltrane, Tina Turner and Steve Miller; and soundtracks including *Titanic, Austin Powers, The Lost World* and *Seven Years In Tibet.*

Gateway Mastering, *Portland, ME*: Mastering credits for the eligibility year include Paula Cole *This Fire*, containing the single "Where Have All The Cowboys Gone," Shawn Colvin *A Few Small Repairs*, containing "Sonny Came Home," Sheryl Crow *Sheryl Crow*, containing "Everyday Is A Winding Road, Eric Clapton *Pilgrim*, John Fogerty *Blue Moon Swamp*, Counting Crows *Recovering the Satellites*, Mariah Carey *Butterfly*, Foo Fighters *The Colour & The Shape*, Tool *Anemia*, Meredith Brooks *Blurring the Edges.*

Masterdisk Corporation, *NYC*: Eligibility year credits include Smashing Pumpkins *Adore*, Marcy Playground *Marcy Playground*, Creed *My Own Prison*, Ben Folds Five *Whatever and Ever Amen*, Sarah McLachlan *Surfacing*, The Crystal Method *Vegas*, Patti Smith *Peace & Noise*, DMX *It's Dark and Hell Is Hot*, Fastball *All The Pain Money Can Buy*, Garbage *Version 2.0*, Billie Myers *Growing Pains*, Sylk-e. Fyne *Raw Sylk*, Charlie Hunter *Natty Dread*, Joe Lovano *Celebrating Sinatra*, the *Sling Blade* and *Anastasia* soundtracks, Limp Bizkit *Three Dollar Bill, Y'All*, N'Dea Davenport *N'Dea* and Sister Hazel *Somewhere More Familiar.*

Masterfonics, *Nashville*: Masterfonics' Glenn Meadows, Benny Quinn and Tommy Dorsey mastered album projects including Patty Loveless' *Long Stretch of Lonesome*, Shania Twain's *Come On Over* (both domestic and international releases), Clint Black's *Nathin' But The Taillights*, Delbert McClinton's *One Of The Fortunate Few*, LeAnn Rimes' *You Light Up My Life*, D.C.Talk's *Live In Concert...*, Fred Hammond's *Pages of Life* and soundtrack CDs for the movie *The Apostle* and the PBS special *Liberty*. Compilation and/or restoration work included Diamond Rio, Alabama and Connie Smith.

Sterling Sound, Inc., *NYC*: During the eligibility year Sterling Sound engineers George Marino, Ted Jensen, Tom Coyne, Joseph Palmaccio and Eugene "UE" Nastasi completed projects for James Taylor, Madonna, K-Ci & JoJo, Fleetwood Mac, Backstreet Boys, Jimi Hendrix catalog, Erykah Badu, Ray Davies and Pat Metheny Group.

D. AUDIO POST-PRODUCTION FACILITY

Howard Schwartz Recording, Inc., *NYC*: Eligibility year credits include the CBS 1998 Winter Olympic Games in Nagano, Japan, *Cosby, The Simpsons, Mulan* (Disney), *Yanni—No Borders, No Boundaries, Ted Williams: A Baseball Life* (ABC Sports) and Barbie "Sizzle." Commercial work includes spots for American Express, IBM, GTE, Dr Pepper, 7Up, Miller Genuine Draft, Heineken, Arrowhead, Duracell, Delta, ABS Canon and the United States Postal Service.

POP, *Santa Monica*: Eligibility year credits include Nike Running "Cross Country"; Pepsi "Aliens"; ESPN2 auto racing spot; Nissan "Chair"; Miller Lite "Cooler"; Taco Bell "The Shot"; Alanis Marisette *Jagged Little Pill: Live* (1998 Grammy Award winner for Best Long Form Music Video); 5.1 audio restoration for Paramount's *Urban Cowboy; One Flew Over the Cuckoo's Nest* , a documentary on the Oscar-winning film for Laser Disc; and *Channel Umptee 3* (Columbia TriStar Children's Television).

Skywalker Sound, *San Rafael, CA*: Eligibility year credits include *Titanic, Contact, Hercules, The Game, Mimic, Jurassic Park: The Lost World, Great Expectations, Wag The Dog, Sphere* and *The Newton Boys.*

Sony Pictures Studios, *Culver City, CA*: Major projects completed in the eligibility year include feature film dubbing for *Con Air* and *Air Force One*, bath films received an Oscar nomination. Also completed were *Starship Troopers* and *Godzilla*. Scoring work included *Amistad*, which received an Oscar nomination, as well as *Men in Black, My Best Friend's Wedding, As Good As It Gets* and *Anastasia*, all nominated for an Oscar. Television projects included *NYPD Blue, The Simpsons, King of the Hill, Dr. Quinn Medicine Woman, Chicago Hope* and *Baywatch.*

Todd-AO Studios, Hollywood: Eligibility year projects mixed at Todd-AO include *Amistad, As Good As It Gets, Father's Day, Hush, I Know What You Did Lost Summer, The Jackal, Kiss the Girls, A Thousand Acres* and *The Wedding Singer.*

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E. REMOTE RECORDING FACILITY

Effanel Music, *NYC*: Eligibility year credits include the 40th Annual Grammy Awards, MTV Video Music Awards, HBO's *Garth Brooks-Live From Central Park*, Capitol Records' Tibetan Freedom Concert, MTV's *Live From the 10 Spot* with the Rolling Stones, David Bowie, U2 Pop Mart-live from Mexico City, *VH-1's Storytellers* with Counting Crows and Paul Simon, Lincoln Center Jazz 1997-1998 season, and the Rock and Roll Hall of Fame induction ceremony.

Le Mobile, *Vista, CA*: During the eligibility year, Le Mobile recorded (film scoring): *A Thousand Acres, Warriors of Virtue, APT Pupil, Jungle Book II*; (music recording): Fleetwood Mac *The Dance*, U2 *PopMart* tour, BeeGees "One Night Only," John Fogerty, Garth Brooks, Rod Stewart, Jane's Addiction; (TV specials): Super Bowl halftime, MTV Movie Awards, Steve Allen PBS special, Keiko Matsui; and numerous live broadcast performances including Yes, Days of the New, Mighty, Mighty Basstones and George Thorogood for such clients as Album Network and Global Network.

Record Plant Remote, *Ringwood, NJ*: Eligibility year credits include Shawn Colvin, Johnny Lang, Radiohead, Megadeth, Luciana Pavarotti, Jon Bon Jovi, Alanis Marrisette, The Verve Pipe, Tonic, Taj Mahal, Rage Against the Machine, Jose Feliciana, Les Miserables, Kula Shaker, Rancid, Veruca Salt, Faith No More, 7 Mary 3, K's Choice, Mary Chapin Carpenter, Patti Smith, Tibetan Freedom Concert, Lyle Lovett, Bela Fleck & the Flecktones, Porno for Pyros, Pavement, Steven Curtis Chapman and Jars of Clay.

Remote Recording Services, *Lohaska, PA*: Eligibility year credits include The Academy Awards, The Count Basie Orchestra, David Bowie/GQ Awards, Gloria Estefon Live in Mexico City, The Heineken Red Star Concert, featuring Blues Traveler, Me'Shell NdegeOcello, and Medeski, Martin and Wood, The Indigo Girls Pay Per View, The Metropolitan Opera, The Thelonious Monk Foundation, *MTV Unplugged* including Babyface, Erykah Badu and The Wallflowers, The Rolling Stones Pay Per View, Westwood One Broadcast, and Live Record Project (worldwide).

Westwood One Entertainment, *Culver City, CA*: Westwood One credits include 1997 VH-1 Honors-Stevie Wonder, Steve Winwood, 1997 Playboy Jazz Festival for NPR, Academy of Country Music Awards, Gameworks MTV Premiere Party-Beck, Coolio, VH-1 *Storytellers*-Phil Collins, Benny Goodman, and numerous artists for Westwood One Rodio including Tonic, Widespread Panic, Matthew Sweet, Big Head Todd, Colin Raye and The Rollins Band.

F. RECORDING STUDIO

Ocean Way-Los Angeles has won the last three years and is ineligible this year.

Conway Recording Studios, *Los Angeles*: During the eligibility year Conway provided tracking, overdubs and mixing for Rickie Lee Jones, Lyle Lovett, Seal and Etta James; tracking and overdubs for Green Day and Hole; mixing for Kenny Loggins, Rolling Stones, Keith Sweat and Billy Joel; overdubs and mixing for Lionel Richie, Juan Gabrielle, Mana and Ozzy Osbourne; and overdubs and surround mixing for Fleetwood Mac.

Ocean Way, *Nashville*: During the eligibility period Ocean Way Nashville hosted projects for Trisha Yearwood (Grammy-winning "How Do I Live"), No Doubt, Wynonna Judd, The Chieftains, John Michael Montgomery, James Taylor, Michael Crawford, Faith Hill, Vince Gill, Deanna Carter, Mark Knopfler (*Wag The Dog*), Ronnie Milsap, Block Crowes, Olivia Newton-John, Jars of Clay, The Mavericks, Emmylou Harris, Keith Sweat, Gillian Welch, Kenny Wayne Shepherd, Rhett Akins, John Berry, Confederate Railroad, Lucinda Williams, LeAnn Rimes and Larry Carlton.

Right Track Recording, *NYC*: Eligibility year projects for Right Track included Dave Grusin, *West Side Story* (nominated for 1997 Grammy for Best Instrumental Arrangement, "America"), Charlie Haden and Pat Metheny, *Beyond the Missouri Sky* (1997 Grammy for Best Jazz Instrumental Album); Patti LaBelle, *Flame* (nominated for 1997 Grammy for Best R&B album); Will Smith's Platinum *Big Willie Style*; and James Taylor's Gold album *Hourglass*, winner of two Grammys for Best Pop Album and Best Engineered Album (non-classical).

Sony Music Studios, *NYC*: Eligibility year projects included work with Mariah Carey, Bruce Hornsby, Billie Meyers "Kiss The Rain" et al, Erykah Badu Live, Mini King, Faith Evans, Niehaus, "Tarzan" featuring Phil Collins, Rachid, Market, Wynton Marsalis and Columbia Jazz Project: "Blood on the Fields."

The Village Recorder, Los Angeles: Eligibility year credits include projects for Aerosmith, Hanson, Ringo Starr, Jane's Addiction, Daniel Lanois, Danny Elfman, Red Hot Chili Peppers, Rolling Stones, John Fogerty, Smashing Pumpkins, Barbra Streisand, Ray Charles, Green Day, Fleetwood Mac, Cowboy Junkies, Maxwell and Brian Setzer, as well as soundtracks for *The Man in the Iron Mask, Good Will Hunting, My Best Friend's Wedding, Anastasia, Oscar and Lucinda, Mad City, The Lion King* on Broadway and *Ally McBeal*.

II. OUTSTANDING CREATIVE ACHIEVEMENT

A. AUDIO POST-PRODUCTION ENGINEER

John Alberts: During the eligibility period, Alberts worked on *The Big One*, a documentary feature film starring Michael Moore; MTV "Unplugged"—mixing for music performance series; "Sessions From West 54th" (PBS)—mixing for music performance series; "LeAnn Rimes" (Disney)—mixing for music performance special; and DVD projects (editing and mixing for 5.1 surround releases): Michael Jackson *History on Film Volume 2*, Celine Dion *Colour of My Love*, Gloria Estefon *Evolution Tour, Tribute to Stevie Ray Vaughan* and Kenny Loggins *Outside in the Redwoods*.

Ken Hahn: Eligibility period credits for Ken Hahn include HBO's "Stomp Out Loud" in Dolby Surround; DVD remix of live concert of "3 Tenors at Dodgers Stadium"; Atlantic Records DVD sampler with songs from Jewel, Collective Soul and Matchbox 20; *Chicago* Broadway cast album (Grammy Award winner); HBO's *Garth Brooks Live In Central* Park recorded in Dolby Surround; PBS documentaries "America in the '40s" and "Truman"; *Real Sex* HBO Series; and *The Wubbulous World of Dr. Seuss* Nickelodeon TV series.

Chris Jenkins: During the eligibility period Chris Jenkins worked on *Dante's Peak, The Fifth Element, Buddy, The Jackal, As Good As It Gets* and *Sliding Doors*.

Gary Rydstrom, Gary Summers, Chris Boyes, Tom Johnson, Lora Hirschberg: During the eligibility period this team worked on *Titonic*. *Titontic* won Academy Awards for Best Sound and Best Sound Editing.

Randy Thom, Tom Johnson, Dennis Sands: During the eligibility period this team worked on *Contact*.

B. REMOTE/BROADCAST RECORDING ENGINEER

Biff Dawes: Eligibility year credits for Biff Dawes included VH-1 *Honors* (mixer), Playboy Jazz Festival, MTV Sports & Music Festival, Academy of Country Music Awards, VH-1 *Storytellers*: Phil Collins and Sarah McLachlan, Blockbuster Rock Festival at Texas Mator Speedway, Billboard Music Awards (music mixer), numerous shows for Westwood One Syndicated Concert Series including INXS, Sugar Ray, Yes, The Rollins Band and Big Head Todd, New Faces of Country Music, and PBS "Tribute to Benny Goodman."

Randy Ezratty: During the eligibility period Randy Ezratty worked on VH-1's *Storytellers* with James Taylor, Johnny Cash and Willie Nelson; VH-1's *Town Hall* with Garth Brooks; Juan Gabriel *Live From Mexico City*; and MTV's *Oddville* and *Live*.

Ed Greene: During the eligibility period Ed Greene worked on the 1997 Academy Awards, 1997 Tony Awards, National Memorial Day Concert, Capitol Fourth, 1997 Emmy Awards, *ER* live, Kennedy Center Honors, Christmas In Washington, 1998 People's Choice Awards and the 1998 Grammy Awards.

John Harris: During the eligibility period John Harris worked on the *40th Annual Grammy® Awards; MTV Video Music Awards;* HBO's *Garth Brooks-Live From Central Park;* Capitol Records' *Tibeton Freedom Concert;* MTV's *Live From the 10 Spot* with the Rolling Stones and David Bowie; U2's "Pop Mart-Live From Mexico City"; VH-1's *Hard Rock Live* '97 season with Blues Traveler, John Fogerty, Jamiroquai, Jewel, Lou Reed and kd lang; VH-1's *Storytellers* with Billy Joel, Paul Simon and Counting Crows; A&E's *Live By Request* with Michael Bolton and Kenny Loggins; and the Rock and Roll Hall of Fame induction.

David Hewitt: During the eligibility period David Hewitt worked on The Academy Awards, the Count Basie Orchestra, Grand Funk Railroad, The Heineken Red Star Concert, featuring Blues Traveler, Me'Shell NdegeOcello, and Medeski, Martin and Wood, The Indigo Girls Pay Per View, The Metropolitan Opera, The Modern Drummer Festival, The Thelonious Monk Institute, Ringo Starr and His All Starr Band, and the Rolling Stones.

C. SOUND REINFORCEMENT ENGINEER

Rob Colby: During the eligibility period Rob Colby mixed Bob Seger and Phil Collins.

Toby Francis: During the eligibility period Toby Francis worked on tours for Kiss and The Wallflowers and mixed select shows for Live and Alice in Chains.

Dave Kob: During the eligibility period Dave Kob mixed Fleetwood Mac, The Who and Page & Plant.

Robbie McGrath: During the eligibility period Robbie McGrath mixed the Rolling Stones and Pet Shop Boys.

Dave Natale: During the eligibility period Dave Natale mixed Tina Turner, the MTV Video Music Awards (mixer) and the Grammy Awards (mixer).

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D. MASTERING ENGINEER

Greg Calbi: During the eligibility period Greg Calbi mastered Marcy Playground's *Marcy Playground*, Sarah McLachlan's *Surfacing*, Harvey Danger's *Where Have All the Merry Makers Gone*, Patti Smith's *Peace & Noise*, Billie Myers' *Growing Pains*, Gary Barlow's *Open Road*, Holly Cole's *Dark, Dear Heart*, the *Sling Blade* soundtrack, Kurt Elling's *The Messenger*, Charlie Hunter's *Natty Dread*, Jimmie's Chicken Shack's *Pushing The Salmonella Envelope*, Joe Lovano's *Celebrating Sinatra*, Sister Hazel's *Somewhere Mare Familiar*, Bill Frisell's *Gone Just Like A Train*, Chocolate Genius' *Black Music* and Olu Dara's *From Natchez to New York*.

Bernie Grundman: During the eligibility period, Bernie Grundman mastered albums for Yo Yo Ma, Lisa Stansfield, Julian Lennon, John Hammond, Yumi Matsutoya, Lovemongers and Jagged Edge, plus Ry Cooder's *Buena Visto Social Club*, Kenny G's *Greatest Hits*, Primus' *Brown Album*, B.B. King's *Deuces Wild*, Michael Jackson's *History In The Mix*, 7-inch and 12-inch singles for U2 from *Pop Mart*, Geraldine Fibbers' *Butch*, and soundtrack albums for *My Best Friend's Wedding* and *The End of Violence*.

Ted Jensen: Eligibility year projects include Pat Metheny *Imaginary Day*, Helmet *Aftertaste*, DefTones *Around the Fur*, Third Eye Blind *Third Eye Blind*, Lisa Loeb *Firecracker*, David Byrne *Feelings*, Joe Jackson *Heaven & Hell*, Black Grape *Stupid, Stupid, Stupid*, James Taylor *Hourglass* (Grammy® Engineering winner) and Madonna *Ray of Light*.

Bob Ludwig: Eligibility year credits for Bob Ludwig included Paula Cole *This Fire*, containing the single "Where Have All The Cowboys Gone," Shawn Colvin *A Few Small Repairs*, containing "Sonny Came Home," Sheryl Crow *Sheryl Crow*, containing "Everyday Is A Winding Road, Loreena McKennit *The Book of Secrets*, John Fogerty *Blue Moon Swamp*, Counting Crows *Recovering the Satellites*, Mariah Carey *Butterfly*, Foo Fighters *The Colour & The Shape*, Tool *Anemia*, Meredith Brooks *Blurring the Edges*, The Mighty, Mighty Basstones *Lets' Face It*, John Mellencamp *Mr. Happy Go Lucky*, Michael Bolton *All That Matters* and Everclear *So Much For The Afterglow*.

Vlado Mellor: Eligibility year credits for Vlado Mellor included Celine Dion *Let's Talk About Love*, Oasis Be Here Now, Mariah Carey *Butterfly*, Savage Garden *Savage Garden*, Savage Garden "Truly, Madly, Deeply" single, Barbra Streisand *Higher Ground*, G Love *Yeah It's That Easy*, Ginuwine *Da Bachelor*, Julio Iglesias *Tango*, Harry Connick Jr. *To See You, Uncle Sam* and Ana Gabriel *Con Un Mismo Corazon*.

E. RECORD PRODUCER

Tony Brown: During the eligibility period Tony Brown produced Vince Gill "You and You Alone" a Top 10 hit and "A Little Mare Love," which reached No. 2 on the Billboard, R&R and Gavin charts, George Strait *Carrying Your Love With Me*, a multi-platinum, multi-award-winning album, Raybon Brothers "Butterfly Kisses," a Grammy-winning single and "Falling" with Olivia Newton-John, Trisha Yearwood "How Do I Live" from the motion picture *Con Air* and "Perfect Love," and Tracy Byrd *I'm From the Country*.

Kenneth "Babyface" Edmonds: During the eligibility period Edmonds produced "MTV Unplugged"; Bayz II Men "Song for Mama," "Never," "Just Hold On," "Girl in the Life Magazine"; Usher "Bedtime," "Slow Jam"; Dru Hill "We're Not Makin' Love No Mare"; En Vogue "Whatever," "You Are the Man"; Milestone "I Care About You"; Tony, Toni, Tone "Boys & Girls"; and Tenderoni "Baby I."

Daniel Lanois: During the eligibility period Daniel Lonois produced Bob Dylan's *Time Out of Mind*, a 1997 Grammy® Award winner for Album of the Year, Contemporary Folk Album of the Year, and Best Rock Male Vocal Performance.

Elliot Scheiner: During the eligibility period Elliot Scheiner produced Fleetwood Mac and Swamp Boogie Queen.

Don Was: During the eligibility period Don Was produced the Rolling Stones' *Bridges to Babylon* and Richie Sambara's *Undiscovered Souls*.

F. RECORDING/MIXING ENGINEER

Ed Cherney: Eligibility year credits for Ed Cherney included the Rolling Stones' *Bridges to Babylon*, Jann Arden's *Happy*, the "You Don't Know Me" track from *My Best Friend's Wedding*, Richie Sambora, Jackson Browne's *Greatest Hits*, Manhattan Transfer and the Lowell George Tribute (Bonnie Raitt and Little Feat).

Bob Clearmountain: During the eligibility period Bob Clearmountain mixed Jonathan Brooke's *Ten Cent Wings*, Lisa Loeb's *Firecracker*, John Fogerty's *Blue Moon Swamp*, Bryan Adams' *Unplugged* (recorded and mixed album and MTV special), Semisonic's *Feeling Strangley Fine* and the track "Already Over Me" from the Rolling Stones' *Bridges to Babylon* album.

Frank Filipetti: Eligibility year credits for Frank Filipetti included James Taylor's *Hourglass* (won Grammy® Awards for Best Engineered Album and Best Pop Album); Carly Simon's *Film Noir*; James Taylor's VH-1 *Storytellers* (live TV broadcast); Dave Grusin's *West Side Story* Big Band arrangements of the Broadway show; James Taylor's A&E *Live By Request* (two-hour live call-in broadcast); seven tracks on Barbra Streisand's *Higher Ground*; Michael Crawford's *On Eagle's Wings*; Jim Steinman/Roman Polanski's *Dance Of The Vampire* (new opera/musical); Charlie Mangold's *I Hate Myself*; and single remixes for Frank Sinatra and Kenny G.

Mick Guzauski: Eligibility year credits for Mick Guzauski included LeAnn Rimes' "How Do I Live," Mariah Carey's *Butterfly*, Monica's "Space Jam," Aaliyah's *Journey to the Past* and *The One I Gave My Heart To*, Dakota Moon's *Dakota*, Kay's Chaice's *Not An Addict*, Kenny G's *The Moment* and Babyface's *The Day*.

Elliot Scheiner: During the eligibility period Elliot Scheiner engineered projects for Mini King, Fleetwood Mac, Swamp Boogie Queen and Aerosmith.

III. OUTSTANDING TECHNICAL ACHIEVEMENT

A. ANCILLARY EQUIPMENT

Apogee AD-8000 8-Channel Analog to Digital Converter: The AD-8000 provides eight channels of true 24-bit A/D conversion, AES/EBU out, along with two channels of S/PDIF I/O and AES/EBU in. Options include 2- and 8-channel 24-bit D/A cards and ADAT/TDIF/Pro Tools/AES/EBU I/O. MDM cards include bit-splitting, enabling 20/24-bit recording on 16-bit machines. SaftLimit and UV22 word-length reduction system for capturing maximum detail on 16- and 20-bit masters are standard.

Audio Precision Portable One Dual Domain®: This digital audio measurement/analyzer system offers digital interface testing and monitoring functions, including jitter generation and measurement, audio bit error rate, sample rate measurement and other interface functions. It generates and measures analog and digital audio signals in their native domain using independent analog and digital generators and analyzers. Also included is high-performance analog hardware for analog measurements and digital hardware for digital domain and audio interface measurements, all in a rugged, self-contained package.

Benchmark ADA2008 Analog to Digital Converter: The ADA2008 is a 4-channel, 20-bit, bi-directional converter system. It bridges the high-cost, high-performance/low-cost, low-performance converter quality gap. The ADA2008 uses 4-channel A/D and D/A modules, which outperform all other 20-bit converters. Jitter reducing Phase-Lock-Loop circuitry helps achieve a -107 dB THD+N measured at -1 dBFS. BNC and XLR digital interface connectors are available.

dB Technologies AD122-96 24-Bit Stereophonic Analog-to-Digital Converter: The AD122-96 exceeds the new 96kHz and 88.2kHz standords with a true 24-bit digital audio stream and 122dB noise floor, providing optimum resolution with superior linearity, fast and accurate transient response, infinitesimal quantization steps and extremely low noise figures. The AD122-96 measures -122 dB THD+N, the most accurate measurement of performance. Full 24-bit operation resolves signals down to -160dB from full scale, emulating the smoothness of analog.

dCS 904 and 954 96/192kHz Digital Converters: Offering supreme accuracy, very high resolution and low noise with superb transporency and resolution suitable for demanding mastering applications, these reference-quality DACs and ADCs operate with full 24-bit word length from 32 ta 192 kHz and also support Sany/Philips' Direct Stream Digital® format. Both converters use dCS's potented Ring DAC® multibit oversampling discrete-component implementation far extremely low noise (-120dB typical with -20dBFS signals) and excellent linearity (to 29-bit precision).

Equi=Tech ET1R Balanced Power System: The Model ET1R is a scaled-down version of Equi=Tech's revolutionary rackmounted balanced power system. Having a 1,000-watt capacity, the ET1R can easily accommodate the power requirements of a digital editing suite, small project studio, effects or musician's rack, or a front-of-house console in live sound venues. With a suggested retail price of well under $900, the Model ET1R has sometimes been referred to as "balanced power for the masses."

B. AMPLIFIER TECHNOLOGY

BGW Millennium 3: Ideal for use in any type of permanent/mobile installation and THX-approved for cinemas, the Millennium 3 delivers 330 watts/ channel into 8 ohms or 500 watts at 4 ohms (or 70-volt load using optional autoformer). Also featured are modular construction, adjustable highposs filter, transient-free switching, LED indicators, balanced XLR and 1/4-inch inputs, forced-air cooling, detented gain controls, DC speaker protection and built-in clipping eliminator.

Carver PRO PX1450: The PX1450 was designed as a multi-use sound reinforcement instrument. The PX1450 provides 2,000 W/channel into 2 ohms, 775 W/channel into 4 ohms and 450 W/channel into 8 ohms. The

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amplifier has field-configurable gain controls, externally adjustable input sensitivity, external adjustment for parallel, stereo and bridged mode, and Carver Professional's exclusive Signal Smart Standby circuit.

Crown CE Series 1000/2000: Crown CE Series amplifiers raise the standard for power amplifier performance versus cost—an outcome of Crown's decades of high-performance amplifier design. Combining high power with the highest audio quality, the CE 1000 delivers 450 W/ch at 4 ohms and 560 W/ch into 2 ohms. The CE 2000 delivers 660 W/ch into 4 ohms and 975 W/ch into 2 ohms. New Crown SST modules (such as the Summed Bass Stereo Crossover) allow amplifier customization.

Hafler P4000: The P4000 is a 2-channel, 200 WPC (@8Ω), amplifier featuring Hafler's proprietary Trans•nova circuit topology and Diamond driver stage for unparalleled speed and accuracy. The Trans•nova (U.S. Patent 4,467,288) circuitry is a clever three-stage amplifier design that allows incredible musical transparency and detail. The Diamond (U.S. Patent 5,673,000) transconductance driver stage combines the linearity of Class A operation with the current headroom of a Class B system resulting in a significant advancement in the art of power amplifier design.

Hat House Model Four Hundred: Having created the dedicated studio reference amplifier market back in 1987 with its first S400, the new model Four Hundred High Resolution Control Room Amplifier continues the Hot House evolution of the professional audiophile nearfield amp. Little brother to the dual-mono block Two Thousand reference amp, the Four Hundred's three-dimensional imaging, fast, faithful transient response and transparent sound are a product of its split-dual power supply and simple but uniquely elegant straight wire design.

Yamaha P Series: Yamaha's P Series amplifiers use EEEngine technology to deliver high power output, cool running and low power draw—all from one small package. The P1600 delivers 150 watts/channel; the P3200, 350 watts, and the P4500, 500 watts (all into 8 ohms). In addition to the standard stereo/bridged mono selector, a parallel setting feature feeds a monaural signal from one input jack to both channels, while still maintaining independent L/R control of the amplifier's signal.

C. MIC PREAMPLIFIER TECHNOLOGY

Amek System 9098: The System 9098 Dual Microphone Amplifier has two independent microphone amplifier channels, and the Direct Inject inputs allow instruments to be inserted directly into the device. This single-rackspace box is self-powered. The DMA is designed by Rupert Neve; the System 9098 follows in the footsteps of the 9098 console, the System 9088 Equalizer and the System 9098 Remote Control Microphone Amplifier, and it shares many of the same features and impeccable clarity of sound quality.

Avalon VT737: This direct-to-tape signal processor puts a mono mic/line/DI preamp, opto-compressor, 4-band equalizer and output gain with high-quality VU metering into a 2-rackspace chassis. The VT737 features pure Class A tube/discrete circuitry, fully balanced I/O and a custom toroidal internal power supply.

Earthworks LAB102: Earthworks LAB Series Precision Preamps are not about whistles and bells. They are flat within ±0.1 dB from 2Hz to 100kHz. Transparency is assured by ruler-flat frequency response, lightning-fast rise time (0.25 µsec), a signal path with no electrolytic or mylar capacitors and carefully hand-selected components. All switch contacts are gold-plated.

Manley Voxbox: This high-end, multipurpose tube processor combines a microphone preamp with an innovative compressor, an extended Pultec equalizer and a unique passive de-esser/limiter. Reviewers and users have found much to covet and very little to fault. In this era of the resurgence of vacuum tubes, the Voxbox proves that it's possible to get the best aspects of the old and the new in one cool-looking package.

Martech MSS-10: The MSS-10 is the first microphone preamplifier created using Martech's Natural Sound Design™ methodology. Each and every component, then circuit, is evaluated against a straight wire for sonic integrity, using a double-blind test on a high-resolution audio system. The benefit is that the clarity, depth and nuance of the microphone is faithfully reproduced, allowing the natural beauty of the instrument to be recorded in a way never before attainable.

Tube-Tech MEC-1A: The MEC-1A is a single-channel, all-tube-based combination mic pre/EQ/compressor. The MEC-1A features 48-volt phantom power, phase reverse, LF roll-off filter, -20dB pad, and 1/4-inch unbalanced high-impedance input. A 3-band equalizer offers both high and low shelving at six frequencies, and a band filter at 12 frequencies (bell type). A separate in/out switch is provided for both the EQ and compressor, using a clickless relay.

D. COMPUTER SOFTWARE & PERIPHERALS

Arboretum MetaSynth: MetaSynth literally lets the user paint with sound and compose with color and light. MetaSynth is synthesis and sound design software that combines sampling, wavetable, additive, subtractive, granular and frequency modulation techniques with the most intuitive means for visualizing audio ever created. MetaSynth works with audio like a graphics program. Convert any picture into sound or turn any sound into a picture (an FFT sonogram) and use MetaSynth's paint tools to shape and alter the program.

BIAS Peak 1.63: This powerful professional 2-track digital audio editor for the Mac features completely non-destructive editing/processing, unlimited undo/redo, playlists, batch file processing, Adobe Premiere™ plug-in support, flexible looping tools, sampler suppart, advanced DSP processing and RealAudio™ file encoding. Compatible with third-party audio hardware from Digidesign, Lucid Technology, Korg and others, Peak is ideal for a wide range of audio professionals, including multimedia developers, sound designers, music producers and broadcast engineers.

JBL-Smaart Pro: Smaart Pro software turns any Windows 95 PC into a powerful audio/acoustic measurement and optimization system, using the standard sound hardware already present on most PCs. JBL-Smaart Pro provides tools to measure frequency and phase response of audio components/systems, find delays and analyze room acoustics—tools previously found only in extremely expensive measurement systems. Using JBL-Smaart Pro, engineers can set equalizers, crossovers, delays and amplifier gain settings quickly and accurately for optimum system performance.

Metric Halo SpectraFoo: The SpectraFoo audio analysis and metering system is fast enough to provide precise, musically significant information for use directly in the production process. SpectraFoo enables tracking, mixing, mastering and forensic audio engineers to streamline their work and maximize their results. SpectraFoo is an affordable multi-platform visual system providing both conventional and innovative tools that are optimized for professional audio production and analysis work.

Opcode Studio 64 XTC: This digital sync processor is a powerful cross-platform 4-in/6-out, 64-channel MIDI/SMPTE interface/patchbay with advanced multitrack and video sync features including: ADAT Sync with MIDI Machine Control, simultaneous Wordclock and Superclock Output, video and black burst in. Sync sources fed into its SMPTE input generate Wordclock and Superclock for precise synchronization of many digital recording systems. The XTC reads/writes all forms of SMPTE and routes MMC and MTC.

Steinberg Cubase VST 3.5: Combining MIDI sequencing and disk recording, VST (Virtual Studio Technology) records 32 audio tracks using the Power Mac's built-in sound (or sound cards from Lexicon, Event, Korg, Sonorus, etc.), providing pro quality with stereo or multiple analog/digital I/Os. VST features automated mixing with real time 4-band parametric EQ per channel and four effects sends to external FX racks. Its open architecture allows additional DSP and real time plug-ins from Steinberg and other developers.

E. MICROPHONE TECHNOLOGY

AKG SolidTube: The large-diaphragm condenser transducer makes the SolidTube ideal for studios and recording. The heart of the SolidTube is the ECC 83 (12AX7) vacuum tube. A switch on the side activates a -20dB pre-attenuation pad, enabling SolidTube to handle sound pressure levels up to 145dB SPL. SolidTube comes in a rugged carrying case with a complete set of accessories: elastic shock-mount suspension, windscreen, power supply and all connecting cables.

Audio-Technica AT4055: The new AT4055 cardioid capacitor handheld microphone is based on the same advanced technology used in the critically acclaimed AT4050. Its true capacitor, large-diaphragm design provides extremely smooth, warm natural audio reproduction for live sound reinforcement and recording. The AT4055 offers a flat, extended frequency response, high sound pressure level capability, linear off-axis response, excellent transient response and very low self-noise.

Earthworks Z30X: The Z30X directional mics maintain most of the "being there" quality of Earthworks omnis. Their exceptional clarity is ideal for broadcast and recording applications. The Z30X accurately picks up what arrives at the front while rejecting what comes from the rear with very little off-axis coloration. The mic also works well for live sound, and there are no peaks to encourage feedback.

Microtech Gefell UM900: The first vacuum tube mic with 48-volt phantom powering uses an internal switching power supply to generate the tube's plate and filament voltages as well as the capsule polarizing voltage—and requires no additional power supply. The famed large-diameter M7 condenser capsule is mounted in a large 75mm diameter head grille, an important design element in shaping the mic's sound. Designed for applications from vocal miking to orchestral recording, it offers five pickup patterns.

Neumann TLM103: Combining a capsule derived from the K67 (used in the U87Ai and U67) with transformerless electronics, Neumann has created a classic microphone that transcends

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its price range. The result: a single-pattern cardioid microphone with the lowest self-noise of any studio mic, stellar sound quality and precision German craftsmanship, at a price associated with "budget" products. Acclaimed for vocals, percussion, orchestral recording and acoustic guitar, the TLM103 is at home in any studio environment.

RØDE NT1: Designed and built in the tradition of its award-winning predecessors, the Classic and the NT2, the NT1 sets a new standard for low-cost, high-performance, large condenser microphones. Features include a 1-inch gold-sputtered membrane, internal shock-mount, built-in pop filter, precision-milled stainless steel body and ultra-low-noise transformerless circuitry. The NT1 was the winner of the 1998 *Electronic Musician* Editor's Choice Award.

F. SOUND REINFORCEMENT LOUDSPEAKER TECHNOLOGY

Electro-Voice X-Array: Debuting to rave reviews on the 1997 Rolling Stones "Bridges to Babylon" tour, X-Array touring systems exhibit consistent fidelity that's independent of level. EV's exclusive Ring Mode Decoupling technology offers substantially improved, high-level vocal and mid-band clarity. Designed as a "cellular" system, individual X-Array high-Q cells can be arrayed to maximize coverage uniformity. X-Array also features very high-density array capability and rapid load in/load out due to its unique rigging design.

JBL Professional Venue Series: Venue Series delivers uncompromised performance through the use of the latest component technology and advanced system design features. Designed to meet the challenges of large venues, Venue Series consists of five full-range, three mid-high and a high-efficiency LF system. SVG™ woofers represent the most advanced drivers available. Asymmetrical horns facilitate vertical arrayability with minimum splay. Component layouts provide mid-frequency coupling for extended pattern control, while rotatable waveguides provide installation flexibility.

Meyer MSL-6: The MSL-6 is Meyer's largest self-powered speaker. It is a modular, high-power (peak SPL 145dB at 1 meter) system yielding a frequency response of ±4dB at 65 Hz-16kHz. With a 25° vertical coverage angle, the MSL-6 permits long-throw arrays of up to three vertical rows with amazingly minimal overlap. The center and high-frequency horns utilize separate amplifier and control electronics, achieving 30° horizontal coverage for a single cabinet.

Meyer SB-1 Self-Powered Loudspeaker System: Meyer's SB-1 is the world's first working parabolic dish-based loudspeaker. This self-powered system was created to propagate sound over extremely long distances (more than 300 feet) in a consistent and tight 10° beamwidth. The unique, parabolic design enables sound reproduction with astonishing clarity, results that are impossible to achieve with traditional horn-loaded arrays and stacks. Used in Florida's Tampa Stadium, Japan's "Emperor's Trophy" soccer match and Colombia's Carlos Vives concert.

PAS Downfill Series DF 2.2: Designed specifically to provide high-definition vocal intelligibility to the audience near the stage, the DF 2.2 is the latest addition to the TOC™ Systems Group featuring concentric design and Time Offset Correction.™ In addition to the ideal phase response of this 15-inch LF with 2-inch exit HF system, the DF 2.2 provides multiple flying options to optimize downfill coverage. The DF 2.2 requires the TOC™ S2 signal processor for maximum performance.

Renkus-Heinz SR6: The SR6 represents a significant development in the evolution of three-way loudspeakers. The company's patented CDT-1 CoEntrant driver directs mid- and high-frequencies into a single, proprietory Complex Conic Horn. The results: compact size, greatly reduced horn distortion, superior definition and localization. The unique mid-high horn can also be rotated by 90°. Matching low-frequency performance is achieved with a powerful, high-definition 12-inch woofer.

G. STUDIO MONITOR TECHNOLOGY

Dynaudia Acoustics BM15A: Based on the 1996 TEC Award-nominated passive BM15, the BM15A is a two-way active system using a 9.5-inch bass unit and a 1-inch soft-dome tweeter. As with all Dynaudio systems, the drive units are designed and manufactured in-house. Features include a 4-inch voice coil on the woofer, increasing bass response, motor power and power handling, while reducing distortion over conventional systems.

JBL Professional LSR32: The LSR32 Linear Spatial Reference Studio Monitor combines JBL's latest transducer and system technology with breakthroughs in psychoacoustic research to provide a more accurate studio reference. Using patented Differential Drive Technology and advanced material sciences, each driver was specifically designed to accommodate a targeted set of response criteria for today's advanced production environments, such as multichannel production and broadcast, as well as critical stereo mastering and recording.

KRK Expose E-8: This advanced bi-amped studio reference monitor was designed for any application where impeccable sound reproduction and accuracy are required. The E-8 has two discrete, fully complementary symmetry power amplifiers (140 watts each @ 8 ohms), a discrete electronic crossover and double-layered Kevlar woofers/tweeters delivering SPLs of up to 123dB. Each speaker is matched within 0.1dB tolerance–ideal for mixing 5.1 and 7.1 surround sound.

Mackie HR824: One of the most accurate near-field reference monitors available, HR824 offers power response so flat that it serves as a neutral conductor for audio signals. This affordable active monitor offers better bass extension, more accurate midrange and wider "sweet spot" than other compact two-way loudspeakers. The servo-controlled woofer and alloy logarithmic-waveguide-loaded tweeter are driven by individual FR Series internal power amplifiers for accuracy in any situation where uncolored playback is required.

Meyer HM-1S: The HM-1S is a powerful, yet compact reference monitor. Its height and width are about the same dimensions as a piece of paper, yet the monitor affords a remarkable peak SPL of 116dB. The HM-1S employs a concentric tweeter mounting structure to achieve true point-source performance, which ensures that the frequency response (42-20k Hz) doesn't alter as the sound level changes. This, coupled with phase-corrected circuitry, provides exceptional imaging.

Tannoy AMS 8A: The AMS 8A is a bi-amplified, fully active, high-output studio reference monitor utilizing an 8-inch Dual Concentric, point-source drive unit. By adding extremely high-quality power amplifiers and active filter networks to the speaker system, the AMS 8A delivers unprecedented linear amplitude and phase response, both on and off axis. The result is dynamic, articulate sound with exceptional 3-D stereo imaging.

H. MUSICAL INSTRUMENT TECHNOLOGY

E-mu E-Synth: This 64-voice professional synthesizer/sampling instrument gives the user unprecedented expansion capabilities and a large palette of high-quality sounds. E-Synth's resident sounds use real-time controls and subtle nuances to provide astonishing results. At the heart of E-Synth is E-mu's Digital Modular Synthesis (DMS) technology. DMS features 64 digital pole filters, 32-voice layering capabilities, 128-part velocity switching and a virtual patch-cord feature that gives the user creative control.

Johnson Millennium 150: Utilizing an "integrated modeling" hybrid of analog and DSP technologies, this amp combines the warmth of tube circuitry with the power of digital processing to re-create popular vintage and modern amps. A digital effects processor offers four studio-quality effects in any combination with user storage of 100 customized amp/effects combinations. The output stage is a 150W stereo amplifier powering two Celestion Vintage 30 speakers, with two speaker-compensated XLRs providing balanced direct outs.

Korg Z1: This multi-oscillator (DSP) synthesizer features: 61-note keyboard; six-part multitimbral; 12-voice polyphony; 256 programs and 32 multi setups; PCMCIA Flash memory card storage of additional programs and multis; 13 types of oscillator algorithms; five types of filters; LFOs sync-able to MIDI clock; X/Y vector touchpad; dedicated filter and amp EG controllers; 15 types of insertion effects; two types of master effects plus 2-band EQ; and built-in polyphonic, sync-able arpeggiator.

Line 6 Flextone: With a stylized "retro" look and classic front panel configuration, the programmable Flextone Series guitar amp features 16 TubeTone amp models and an equal number of digital effects setups arranged on separate rotary selector knobs for ease of use. The Flextone's advanced cabinet and speaker emulation provide a true miked-up sound for direct recording capabilities.

Roland V-drums: The V-drums represent a completely new concept in electronic percussion: a percussion sound source that goes beyond PCM (sample-based) technology with Roland's proprietary Composite Object Sound Modeling (COSM) technology. This revolutionary sound modeling method, which provides almost unlimited sound creation possibilities, has been combined with lightning-fast drum trigger response and unique new "V-pads" to deliver an electronic percussion environment with unbelievable sounds and an amazingly expressive, natural feel.

Yamaha AN1x: The Yamaha AN1x Virtual Analogue Synthesizer captures the feel of an analog synthesizer through DSP-based modeling of analog circuitry. It features a familiar "analog-style" real-time interface with rotary knobs and all functions and edit parameters visible at one time. Ideal for live performance, the 61-key AN1x features 10-note polyphony, eight rotary knobs, Scene Memory, Arpeggiator, "analog-feel" Step Sequencer and Parameter Sequencer. The AN1x is capable of re-creating vintage "analog" effects like pulse width modulation, ring modulation and oscillator synchronization.

I. SIGNAL PROCESSING TECHNOLOGY (HARDWARE)

BSS FDS 355 OmniDrive Compact: This more-flexible, less expensive version of the successful FDS 388 OmniDrive offers two-band parametric EQs, up to 650 ms delays, mid-filter speaker-protecting limiters and recallable system memo-

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ry. A third input and fifth output offer flexibility in speaker setups, such as a stereo two-way system, a five-way mono system, aux sub channels, as well as functioning as a dual bi-amp crossover with delay, limiters and EQ for stage monitoring.

Crane Song HEDD: HEDD (Harmonically Enhanced Digital Device) is a technological breakthrough in signal processing. 24-bit A/D and D/A converters offer unrivaled transparency; a unique 24-bit DSP engine allows the creation of tube/analog sounds in the digital domain. Applications include CD preparation, workstation I/O and DAT machine converter replacement. From tracking to mastering, HEDD gives any user the ability to sound less digital and more analog.

GML 9550 Digital Noise Filter: The GML 9550 2-channel, all-digital system is intended for the selective, real-time removal of low- to medium-level noise artifacts. Developed jointly with the Walt Disney Company, the GML 9550 was originally designed for motion picture post-production, particularly the removal of noise from archival sources. Since then, it has found applications in many other areas of post-production, as well as in the restoration of deteriorated sources in music production and location sound.

Joemeek SC2 Stereo Compressor: The Joemeek SC2 is a stereo photo-optical device that is widely sought after for its extreme "attitude" and coloration. The SC2 is very quiet, smooth and warm, while retaining the sparkle of high-end program material. Used by professionals all over the world, the SC2 works equally well in both professional and project studios.

TC Electronic FireworX: An advanced multi-effects processor designed to complement the award-winning M2000, FireworX has high-powered reverb and delay effects for conventional applications, and features more than 30 specialized algorithms including Ring Modulator, Resonant Filter, Pitch Shifting, Synthesizer, Formant Filter, Noise and Distortion Generators, Vocoder and Reverse Delays. It can run multiple effects simultaneously through an advanced new and powerful digital signal processor, plus TC's proprietary new DARC® chip technology.

Weiss DS1 Digital De-esser: Combining the Weiss De-esser with features of its 102 Series Dynamics Processor, the Gambit DS1 digital dynamics processor offers unparalleled performance. In de-esser mode, the compression band is low/mid/high-frequency-selectable, extending the functionality beyond de-essing. The full-band dynamics processor with soft-knee compressor and hard limiter is ideal for program loudness control. Double Sampling Processing at 88.2/96kHz eliminates distortion for clean, transparent sound even when hard-limiting peaks.

J. SIGNAL PROCESSING TECHNOLOGY (SOFTWARE)

Digidesign D-Fi Bundle: D-Fi™ is a family of four TDM and AudioSuite Plug-Ins (Lo-Fi™, Sci-Fi™, Recti-Fi™ and Vari-Fi™) providing unusual-, grungy- and retro-sounding effects, including sample- and bit-rate reduction, ring and frequency modulation, variable frequency resonance, super- and sub-harmonic synthesis and rodical pitch and speed changes. D-Fi is perfect for hip hop, electronic, lo-fi or other projects requiring distinctive sonic effects, providing the creative sound design capabilities of many classic outboard processors that have become increasingly expensive and rare.

Dolby Surround Tools: Dolby Surround Tools are TDM plug-ins providing digital implementation of Dolby Surround encoding and Dolby Surround Pro Logic decoding. By eliminating the need for separate hardware surround units and attendant D-A and A-D conversions, Dolby Surround Tools make surround mixing and "4-2-4" monitoring for more efficient for the Pro Tools user. Among its many features are surround panners; encoder and positioner functions specifically for mixing video game audio; and stereo, mono and surround monitoring.

Focusrite d2/d3 Plug-In Bundle: The d2/d3 brings the sound quality of Focusrite's Red Range 2 Dual EQ (d2) and Red Range 3 Dual Compressor/Limiter (d3) to the Pro Tools environment. The d2 TDM plug-in provides 6-band, 4-band, dual/single-band, stereo or mono equalization modules. The d3 compressor/limiter plug-in, for TDM and AudioSuite environments, features two separate plug-in configurations (Compressor + Limiter and Compressor/Limiter), can be used multiple times in a session and provides multiple insert, dynamic automation and external sidechain control capabilities.

Lexicon LexiVerb™: This TDM-compatible plug-in combines Lexicon reverb, 24-bit DSP processing and a simple yet powerful user interface. This indispensable tool for Digidesign Pro Tools systems supports Pro Tools 4.0 automation and LexiVerb parameter groupings (macros) for complete control over individual parameters. Four Lexicon algorithms, Chamber, Plate, Inverse and Gate, are available with 100 presets. The plug-in can be used in either mono-to-stereo or stereo-to-stereo configurations.

TCWorks-TC Native Reverb: This TC-quality plug-in reverb for recording environments supporting DirectX offers an intuitive user interface re-creating a familiar hardware look and offering the advantages of software interfaces. Innovative parameters such as "Color," "Diffuse" and "Shape" integrate all aspects of reverb tail sound design into a highly graphical interface, making the product easy to understand and operate. Permanent ROM presets within the plug-in provide the important basic reverbs, all editable for saving into custom presets.

Waves MaxxBass™: The MaxxBass technology is capable of extending the apparent LF response of audio systems with limited bass response. Typically, the apparent response can be extended almost two octaves below the system's limitation. MaxxBass replaces the fundamental low-frequency signal with a series of higher harmonics. These harmonics are perceived by the ear as if the low frequency itself is present. MaxxBass can be used for mixing and mastering to enhance the bass response playback on any system.

K. RECORDING DEVICES/ STORAGE TECHNOLOGY

Akai DD8 v1.0: The DD8 is a modular 16/20/24-bit, 96kHz, 8-track recorder/player, using MO and/or removable hard disk, and is compatible with Akai DR8/16, Pro Tools, OMF, Tascam/TimeLine MMR8 and Fairlight. Interfaces include analog, AES/EBU, TDIF, ADAT, SMPTE, biphose, RS-422, parallel, MIDI, Ethernet, video sync/word clock. It plays audio in sync forward and reverse. Add the DL1500 remote for powerful editing features (waveform display, library management and EDL autoconform).

Alesis ADAT-XT20: The ADAT-XT20 offers a new standard in affordable professional recorders while remaining completely compatible with more than 110,000 ADATs in use worldwide. Using ADAT Type II, the only MDM recording format that writes 20 bits to tape, the XT20 raises the measure of sonic excellence that ADAT recorders have established since their introduction in 1991. The XT20 also includes the latest ultra-high-fidelity 20-bit oversampling digital converters, as well as built-in creative tools and much more.

Augan OMX24: The Augan OMX is a 24-track, 24 I/O, random access recording and editing system designed for the professional recording and audio post facility. The OMX24 records 24-bit audio via AES/EBU/TDIF or 24-bit A-to-D converters, onto magneto-optical disk or removable hard drive. The RC24 remote offers familiar multitrack transport controls and high-resolution TFT displays for sophisticated nondestructive waveform editing. A suite of advanced real-time DSP functions are available.

Otari PD-20 MO: The PD-20 is a 2-channel random access digital recorder providing comprehensive, nondestructive editing functions. The PD-20 is an excellent alternative to tape-based time-code DAT machines, providing 120 track-minutes of simultaneous record/playback time on a single 3.6-inch magneto-optical cartridge. PD-20 features reverse playback, event-based editing, auto cue locate, multiple sample rates, time-code chase and varispeed playback (+12%).

Tascam DA-98: Designed for the post-production environment, the DA-98 takes the advantages of the DTRS® format and adds significant enhancements. As the only MDM with confidence monitoring, the DA-98 provides switchable reference levels, dedicated function keys and a comprehensive, backlit LCD to make operation faster and more intuitive. With built-in synchronization capability supporting many industry-standard protocols and the available rackmount ears for use with the Accuride™ system, the DA-98 delivers the best in digital multitrack functionality.

Zaxcom Deva: Deva is the first practical high-quality location audio disk recorder for film and television production. Features include 24-bit recording, four channels of audio, four hours of uncompressed recording time, ten seconds of prerecord and dual-disk recording. Deva can export audio files in several file formats, allowing direct nonlinear access to field recordings without transfer time. Deva is a new class of location recording equipment.

L. WORKSTATION TECHNOLOGY

CreamWare TDAT16: This real-time 16-channel PCI DAW for Pentium-based PCs offers upward of 30/40-track throughput, complete record, editing, signal processing, mastering and fast/easy CD burning. Most edit functions (volume, pan, crossfades, FX) are true real-time. Options include real-time noise reduction/restoration plug-ins, 8 I/O or 16 I/O bi-directional I/O racks with ADAT Lightpipes, while superb ADCs/DACs make this the mastering system of choice by many pros.

Digidesign Pro Tools|24: Digidesign's flagship system, Pro Tools|24® is a 32-track digital audio workstation (expandable to 64 tracks) providing recording, editing and mixing with true 24-bit resolution for unparalleled performance and fidelity. The system consists of the d24™ card (provides track count); the Digidesign DSP Farm™ (for signal processing and mixing); Pro Tools 4.2 software and the 888 24 I/O Interface™ (supplies eight channels of 24-bit A/D conversion, eight channels of 20-bit D/A and eight channels of AES/EBU).

Ensoniq PARIS: PARIS (Professional Audio Recording Integrated System) is a totally integrated digital audio recording, editing, mixing and

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processing system that runs on the Mac or PC platform, complete with a hardware mixing control surface. PARIS can record 24-bit audio and offers 64 real-time parametric EQs, in addition to 24-bit effects. The PARIS Modular Expansion Chassis offers the option to add 24-bit D/A and A/D I/O modules, as well as an ADAT optical interface with sync.

Mackie H.U.I.: Aimed at video, film, multimedia and recording studio professionals, Mackie's H.U.I.® (Human User Interface) is a hands-on control surface (mixer) for Digidesign's popular Pro Tools digital audio workstation. H.U.I. enhances DAW user productivity with tactile controls and visual displays for mixing and editing functions that were previously controlled by conventional computer controls.

SADiE Octavia: The Octavia is designed for post-production and mastering situations requiring the ultimate amount of DSP power. Audio I/O is 8/8 or 8/24 of AES/EBU, optical stereo I/O or high-quality 20-bit analog. All four DSP processing chips utilize 32-bit floating-point arithmetic and act as a single common pool of DSP resource. Octavia is especially suited to high-end professional applications where encountering the physical limitations of a system cannot be tolerated.

Solid State Logic Altimix: Altimix is an integrated nonlinear sound and picture editing system providing 48 tracks of digital audio recording, editing and processing. The system's intuitive, assignable control surface features dedicated advanced audio editing with integrated video and audio mixing using 24 motorized faders in a unique channel/ group architecture with full dynamic automation of all processing and switching. A shared multidisk array gives instant access to stored video and audio, providing Altimix users with synchronous operation across bath domains.

M. SOUND REINFORCEMENT CONSOLE TECHNOLOGY

Allen & Heath GL3300: Both a fully featured 8-group FOH console and a dedicated 10-mix monitor desk, the GL3300 features direct outs and 2-track sends for live and recording tasks. The classic British EQ is a 4-band, 2-sweep topology. With vertically mounted circuit boards as well as Sys-Link™ expansion capability, it is bath durable and flexible. The front panel is packed with eight subgroups with inserts, four mute groups, eight auxes and extensive metering.

Crest X-Eight Series: The X Series is Crest's line of application-tailored mixing consoles with specific feature sets to address particular installation and tour sound market disciplines. The FOH 8-bus and 4-bus boards are available in three frame sizes up to 40 inputs; the line also includes stoge monitor and rack-mount mixers.

Midas XL250: Designed mainly for monitar use, the Midas XL250 can handle in-ear and traditional wedge monitors simultaneously. With 20 independent buses (16 configurable as mono or stereo mixes), the XL250 is the first large console designed specifically for in-ear monitaring. Equally well-equipped for front-of-house duty, Midas has designed the XL250's layout and feel with easy configurable buses for speed and response. Drawing on the success of the XL3 and XL4 consoles, the XL250 utilizes Midas' latest technology for pure audio quality.

Soundcraft Series FIVE: Available in sizes from 24 to 56 mono input channels (each with four additional mic/line stereo inputs), Series FIVE offers impressive EQ and audio quality, with eight groups, 12 aux buses, sweepable high/lowpass filters, true LCR panning and 256 MIDI snapshot memory. Ten VCA groups and an unusually large 16x10 matrix are available. Equally at home in touring and permanent installs, Series FIVE even found a home in a mobile for the Winter Olympics.

Spirit Manitor²: Available in 24-, 32- and 40-channel frame sizes, Spirit Manitor² offers a total of 12 monitor sends (eight mono and two stereo), each with 100mm faders and 12-segment tri-color LED meters for precise level adjustments. 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 also can serve as a front-of-house console if necessary.

N. SMALL FORMAT CONSOLE TECHNOLOGY

Alesis Studio 32: The Studio 32 offers true in-line monitoring and 16 hybrid/discrete mic preamps with excellent sonic quality, low noise and high headroom (< 60dB of gain), making it ideal for digital recording. By feeding these preamps from 16 XLR inputs, small-mixer routing nightmares become a thing of the past. The Studio 32 also includes a fully parametric midrange EQ, six aux sends, mute and solo switches, peak indicators and smooth 60mm logarithmic faders on every channel.

Allen & Heath MixWizard 16:2: With up to 20 inputs, individual circuit boards and nutted-down pots, the WZ16:2 makes the grade. MSP (Minimal Signal Path) ensures the signal path is transparent and clear. The connector block swings up or down for different applications. The WZ16:2 also offers inserts and direct outputs on every channel. Classic British EQ is accomplished with a 4-band (2-sweep) topology. The rugged chassis also has XLR and 1/4-inch connectors, as well as 100mm faders.

Spirit LX7: Offered in 16- and 24-channel versions, the LX7 live mixing console provides a maximum of 32 inputs (24-channel) with no less than seven separate bus outputs, including L/R mix, four groups and a dedicated mono bus. With direct outs on the first 16 mono inputs and six auxiliary buses, the output count rises to 29. Amenities include UltraMic preamps, 4-band "British" EQ with two sweepable mids, EQ in/out, 18dB/octave HP filters, 100mm faders and more.

Tascam TM-D8000: The TM-D8000 represents the pinnacle of leading-edge technology in digital consoles. With AES/EBU and S/PDIF digital main stereo outs in addition to XLR balanced and RCA unbalanced analog outputs, internal snapshot automation, dynamic automation via an external computer and an onboard transport controller, this console enables the user to work intuitively and quickly. With support for Tascam sync, Sony P2 and MIDI Machine Control protocols, the TM-D8000 will integrate into the most demanding production environments.

Yamaha 02R V2: Version 2.0 software for Yamaha's 02R Digital Recording Console offers powerful new features especially for the post-production market, including: 6-channel discrete sound capabilities on every input, digital aux sends available via digital I/O cards, input cross-patching, and the ability to process output buses through dynamics, EQ and routing matrixes. With Version 2.0 software, the 02R can control external devices including other mixers, tape and DAW transports, and outboard effects processors.

Yamaha 03D: The Yamaha 03D Digital Mixer is the perfect solution for the recording project studio or post facility wishing to interface with eight digital channels of linear or nonlinear digital recorders. The compact 03D offers 26 inputs, four buses plus stereo bus output, 16 direct outputs, six aux sends and two internal effects processors. Utilizing a Yamaha 32-bit DSP engine, the 03D features superb sonic performance, built-in automation and snapshot capabilities for all mix functions.

O. LARGE FORMAT CONSOLE TECHNOLOGY

AMS Neve VXS: The Neve VXS Multi-Format Mixing Console provides an optimized signal path together with full surround sound format flexibility. A unique direct-to-fader input allows the electronics of the channel strip to be bypassed when classic preamps are used. Surround functionality is aided by the addition of a scoring/surround panel providing format flexibility for 5.1 mixing for DVD, DTV and up to 8-channel discrete.

Euphanix CS3000: The CS3000 console features a totally redesigned look and feel over the earlier-generation CS2000 model. Motorized faders, a multimachine synchronization system, VU and phase meters, machined aluminum knobs, and a leather palm rest are all standard features for this new model. The debut of the CS3000 was accompanied by a significant software revision, MixView 3.0, which includes dynamic EQ and HyperSurround™ automation among a long list of creature comfort and system performance improvements.

Solid State Logic Avant: SSL's Avant is the only digital console with a dedicated control surface specifically designed for film mixing and multichannel video post-production. The console can be configured either for single-operator use or with up to three motion control and monitor panels and multiple joysticks for two- and three-operator installations. Avant is available in sizes ranging from 24 faders for the smallest post dubbing studio up to 96 fully configured channels for the largest film installations.

Sony OXF R3: Designed primarily for music production, the OXF R3 is based on a flexible, scalable digital signal processing system, with software-defined bus structure and processing capabilities. Internal processing is 32-bit, using 24-bit data highways between digital I/O ports. The console can be configured with up to 120 analog or digital inputs, with up to 48 multitrack outs (96 optional), 24 aux send buses and 16 independent submix stereo outputs.

Soundtracs DPC: Soundtracs' DPC II Digital Production Console features 160 fully digital channels, work surface sizes ranging from 16 to 96 faders, user-specified audio I/O, multiformat surround capabilities and full console automation. The DPC II consists of two components: a modular work surface and dedicated racks for analog/digital conversion. The console is designed for medium- to high-end broadcast post-production and music production facilities.

Studer D950: Using the latest scalable audio DSP technology, the D950 represents an innovative solution for broadcast, music, post and mix-to-picture facilities. The D950 can be configured on-site to meet the ever-changing daily needs of the audio professional. This, plus a vast digital router, "self-healing" technology, the unique Virtual Surround Panning™ system, and the Studer sonic quality and reliability, all combine to create a digital mixing system that stands alone.

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HAFLER TRM8 TRANS•NOVA

REFERENCE MONITORS

David Hafler began making power amplifiers in 1954 and founded the company that bears his name in the mid-'70s. In 1987 Hafler Professional was acquired by the Rockford Corporation—of Rockford Fosgate car audio fame—which had previously acquired a decades-old speaker manufacturing company, now called Rockford Acoustic Designs (RAD). Engineers from both Hafler and RAD collaborated on the new Hafler TRM8 Trans•nova Reference Monitors.

At first glance the TRM8s are rather conventional looking, but a closer examination reveals some interesting features. For example, in order to properly synchronize the delivery of high and low frequencies, the upper section of the cabinet is stepped, positioning the tweeter slightly behind the front plane of the woofer. Additionally, the tweeter is mounted

BY BARRY CLEVELAND

Lab Analysis: Hafler TRM8 Monitors

by Jack Hidley

PHYSICAL CHARACTERISTICS

The TRM8 has a fairly conventional cabinet design. The cabinet is a rectangular box with a ¾-inch step in the front baffle around the woofer, designed to put the woofer and tweeter acoustic centers into alignment. The cabinet has a ⅜-inch radius to soften the look. The panels are constructed of ¾-inch MDF, except the baffle around the woofer, which has a double layer of MDF. The rear panel in the cabinet is inset several inches to house the power amplifier, and there is a slot-shaped rear port near the top of the cabinet. The cabinet is rigid and inert. The exterior finish is a lightly textured black paint. There are no provisions for a grille. The woofer and tweeter are flush-mounted into the baffle. There are indicator LEDs for each amp and a power switch mounted in the tweeter faceplate on the baffle.

The woofer appears to be a polypropylene Vifa model. The cone has curved sides and attaches to the frame with an inverted rubber surround. The voice coil leads are dressed tangentially to the cone, allowing very high excursions before they strike the cone. The woofer has a bucking magnet but no magnetic shielding. The frame is cast aluminum, which, in addition to the bucking magnet, will reduce the stray magnetic field somewhat. The motor structure (pole piece) has a large 19mm vent, which should help keep the voice coil cool and reduce power compression. The voice coil overhangs the top plate by at least 6 mm, allowing high linear excursion.

The soft dome tweeter appears to be a Vifa model. The tweeter has a one-piece dome/suspension of a treated fabric. The voice coil former is aluminum, and the voice coil is underhung for low distortion. Ferrofluid is used to increase power handling and improve sound quality. The magnetic structure is not shielded. The dome is protected by a custom faceplate, which mounts on the tweeter with a fine wire mesh. The latter has a small dispersion-enhancing disc placed in its center.

The TRM8 has separate amplifiers for each driver. The two amplifiers share the same toroidial transformer and are built on the same PC board. Each amplifier has its own filter capacitors and rectifier circuitry to reduce the probability that one amp's output will modulate the other. Discrete circuitry is used for both amp output stages. The chassis and heatsinks are both part of one very large extrusion, similar to the construction technique used in high-end auto-sound amplifiers. The chassis is mounted to the cabinet with long screws and rubber grommets for vibration isolation. The rear panel has a single XLR/TRS combo balanced input, an RCA unbalanced input, a socket for an IEC power cord and a row of DIP switches. The DIP switches can be used to select inputs, adjust the sensitivity of the speaker, adjust the high/low-frequency shelving or mute either driver.

—CONTINUED ON PAGE 140

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on a large waveguide, or axis-symmetrical horn, which helps to focus high-frequency dispersion both on and off axis. The cabinet itself is made of low-resonance ¼-inch MDF, lined with damping material, and features a rear-firing bass "Exoport." It has a black semi-gloss finish and includes a rubber pad that can be attached to the underside of the cabinet to control unwanted vibrations.

The TRM8's power switch is conveniently located on the front of the cabinet, as are two LEDs, one for each amplifier. Audio connectors, the IEC power cord receptacle, and 16 DIP switches are located on the rear panel. According to the manual, unbalanced connections are to be made via an RCA jack, with the (DIP) input switch set to the RCA Unbalanced position, while balanced connections are to be made via a dual-function ¼-inch TRS/XLR jack, with the input switch set to the XLR or ¼-inch Balanced position. However, the manual then goes on to say that unbalanced ¼-inch TRS and unbalanced XLR connections may also be made via the dual-function jack, which is a little confusing. (However, that said, the manual is generally excellent and includes *lots* of information about every aspect of the TRM8s.) The remaining 15 DIP switches are used to select input sensitivity (+4 dB, +1 dB, -2 dB, -5 dB, -8 dB and -11 dB), to mute either or both of the amplifiers and to supply four levels of bass shelving (40 to 200 Hz), and four levels of treble shelving (3 to 20 kHz), ± 4 dB in 2dB intervals.

INSIDE

The TRM8s are bi-amped, with 150 and 75-watt amplifiers powering the woofer and tweeter, respectively. Both amps utilize the proprietary Trans•nova (TRANSconductance NOdal Voltage Amplifier) circuit—common to power amplifiers made by both Hafler and Rockford Fosgate—a design topology that uses just three stages instead of the usual five or more. The Trans•nova circuit significantly shortens the signal path through the amplifier, which allows audio to pass at low voltages and produces less coloration, extended bandwidth and higher linearity.

The input stage operates at ±17 V, functioning pretty much like a Class A preamp, while the secondary stage supplies about 20 dB of full voltage gain to the output stage. The output stage utilizes fully floating dual power supplies with MOSFET devices and is configured into a "transimpedance" stage, resulting in short loop negative feedback, and a slew rate of 100V/µs. DIAMOND (Dynamically Invariant AMplification Optimized Nodal Drive), another proprietary circuit, produces five times the current headroom of previous Trans•nova amps, greatly reducing high-frequency distortion.

A fixed, fourth-order Linkwitz-Riley active crossover with adjustable high and low frequency shelving operates at 2.5 kHz, and a subsonic filter eliminates all frequencies below 30 Hz with a 12dB/octave slope. Components in both the amplifier and crossover are surface-mounted on double-sided glass epoxy PC boards.

The TRM8's high frequencies are handled by a 1-inch hemispherical silk dome tweeter cooled with Ferrofluid. A "Phase Lens" and the previously mentioned wave guide improve off-axis response and phase coherence, resulting in a more open sound. Low frequencies are handled by a proprietary 8-inch diecast basket woofer with a 20

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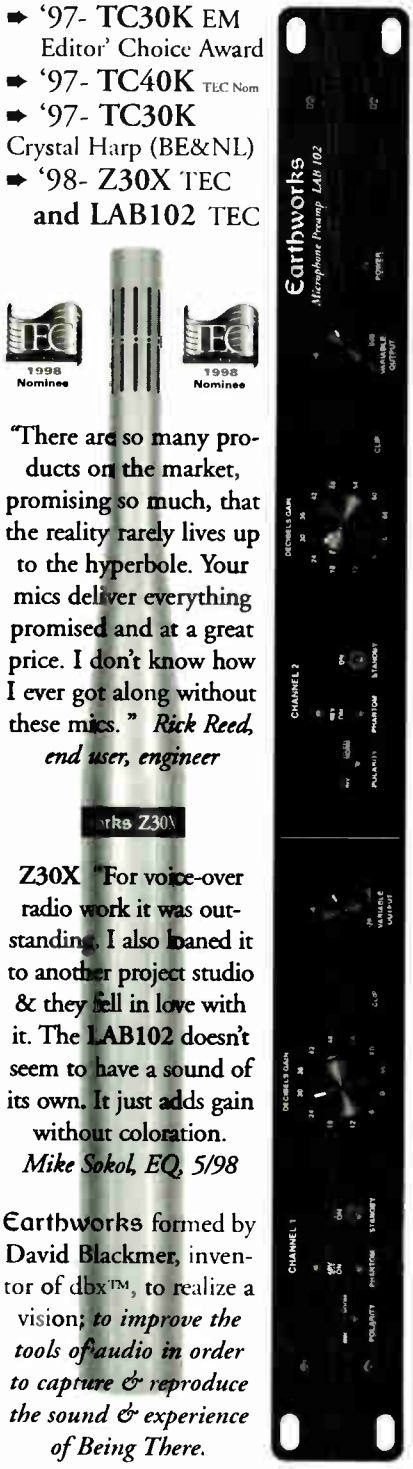
We Must Be Doing Something Right!

- 9/95- Began shipping mics...
- '96- TC30K TEC nomination
- '97- TC30K EM Editor' Choice Award
- '97- TC40K TEC Nom
- '97- TC30K Crystal Harp (BE&NL)
- '98- Z30X TEC and LAB102 TEC



1998 Nominee

1998 Nominee

"There are so many products on the market, promising so much, that the reality rarely lives up to the hyperbole. Your mics deliver everything promised and at a great price. I don't know how I ever got along without these mics." *Rick Reed, end user, engineer*

Z30X "For voice-over radio work it was outstanding. I also loaned it to another project studio & they fell in love with it. The LAB102 doesn't seem to have a sound of its own. It just adds gain without coloration. *Mike Sokol, EQ, 5/98*

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—FROM PAGE 138, LAB ANALYSIS: HAFLER MONITORS

ACOUSTIC CHARACTERISTICS

As shown in Fig. 1, the TRM8's on-axis frequency response is quite flat out to 4 kHz, with a slight roll-off above this to -4 dB at 20 kHz. There is a 3dB dip in the response at 5 kHz due to a reflection from the stepped baffle. Judging from the 30∞ off-axis response shown on the lower trace in Fig. 1, the speaker behaves like most 8-inch two-ways. The upper range of the woofer (800 to 2.5k Hz) starts to roll off mildly, the low range of the tweeter (2.5-4.5 kHz) has no attenuation, and the high range of the tweeter rolls off considerably. This indicates that the TRM8 will give its best performance in near-field applications with little acoustic absorption.

The impulse response is quite good, as evidenced by Fig. 2. There is very little energy after the first 0.5 ms. The speaker has a high degree of time alignment, due to the step in the baffle and choice of crossover design.

At 90 dB SPL and above 1,500 Hz, the THD+N is low, below 0.3% over most of the range. Between 50 and 1,500 Hz the THD+N is moderate, remaining below 1%. Distortion performance is shown in Fig. 3.

The spectral contamination levels (indicated in Fig. 4) are 40 to 45 dB down from the signal tones, which is an average performance. ■

Jack Hidley is a design/test engineer associated with Menlo Scientific, an independent acoustical analysis lab in Berkeley, Calif. For more on testing methodology, refer to the Feb. '98 issue of Mix *or visit www.mixonline.com.*

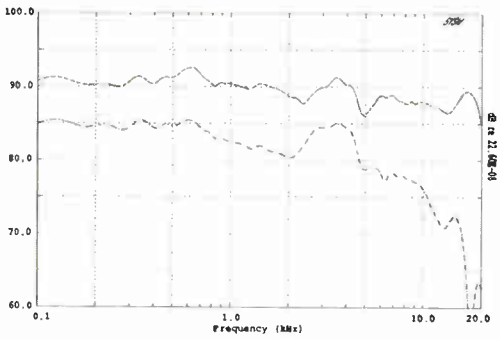

Figure 1: On- (top trace) and off-axis (bottom trace) frequency response

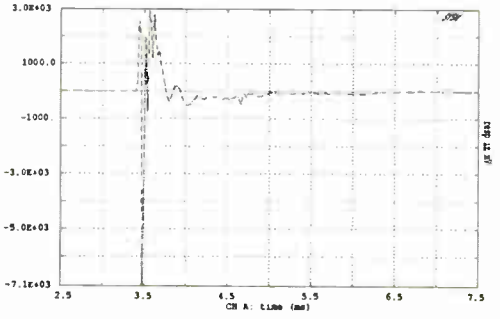

Figure 2: Impulse response

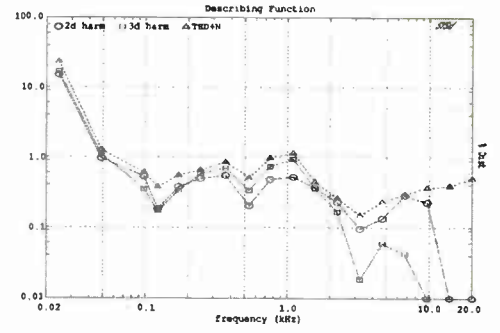

Figure 3: THD+N Δ; 2nd O and 3rd ❑ harmonic distortion

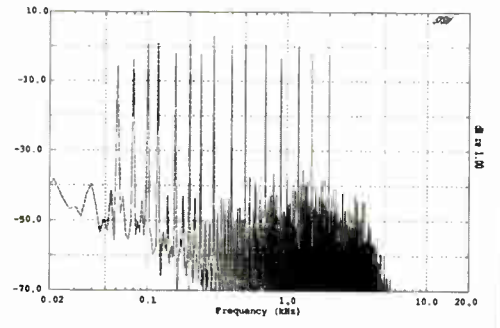

Figure 4: Spectral contamination measurement

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mil, mica-filled polypropylene cone, and a 38-ounce vented and shielded magnet assembly. An extended-collar flat spider is used to reduce harmonic distortion, and the woofer's 1.5-inch voice coil is wound on a black anodized aluminum former for maximum heat dissipation.

WHAT I HEARD

I evaluated the TRM8s by using them to mix some instrumental pieces, by listening back to mixes done on familiar monitors and by listening to a variety of CDs. The CDs ranged from orchestral works to electronic music to African pop, with the Mix Reference Disc CD tossed in for good measure. The TRM8s handled them all easily and even reproduced test tones up to 20 kHz (which I felt more than heard). Hafler claims an upper frequency response of ±2 dB at 21 kHz, and it's not hard to believe.

The lows were tight, solid and well-defined, while the highs were very focused and transparent, even while listening fairly far off-axis. In critical listening sessions, the Haflers revealed a slight unevenness in the lower mids on two of the CDs (*Feelings* by David Byrne and *Space Groove* by Projekct Two), though this was not as obvious on other speakers.

The speakers' internal Trans•nova bi-amplification provided a blend of gutsy punch with transparency. And with the TRM8's stated peak SPL output in the 123dB range (thankfully unverified by this writer), these monitors are loud enough to fill nearly any listening space (or at least provide a huge margin of headroom to reproduce transients cleanly, while packing a mighty wallop on the LF side).

Mixes done on the TRM8s translated well to other monitors and vice versa, with the midrange staying in proper balance, which is, after all, the most meaningful test. At $1,990/pair (or $995 each), I highly recommend that anyone looking for quality studio near-fields give the Hafler TRM8s an audition.

Hafler Professional, 546 South Rockford Drive, Tempe, AZ 85281; 888/HAFLER1 or 602/967-3565. Web site: www.hafler.com. ■

When he's not playing guitar, Barry Cleveland is the editor of the Recording Industry Sourcebook, *the* Mix Master Directory *and* Electronic Musician's Personal Studio Buyer's Guide.

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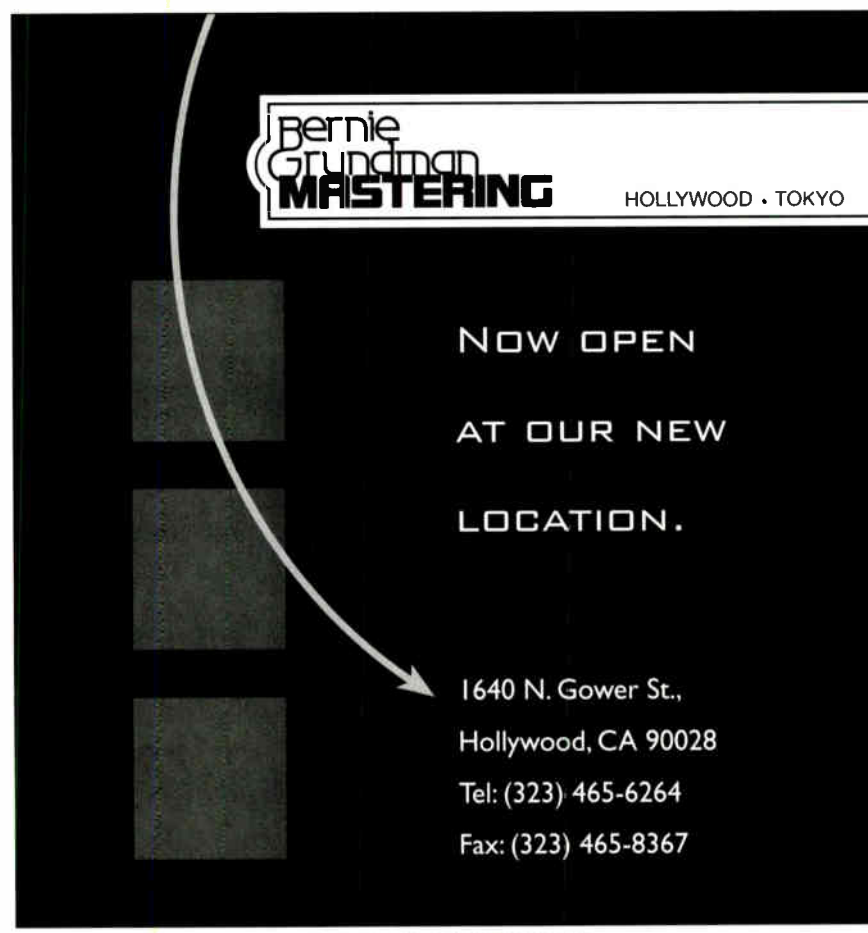

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ANTARES SYSTEMS AUTO-TUNE

PITCH CONTROL/TDM PLUG-IN FOR PRO TOOLS

At last there's a tool specifically designed to adjust the intonation of recorded solo instruments and vocals. AnTares Systems' Auto-Tune Plug-In for TDM systems gives Pro Tools users unprecedented control over pitch, with minimal undesirable artifacts.

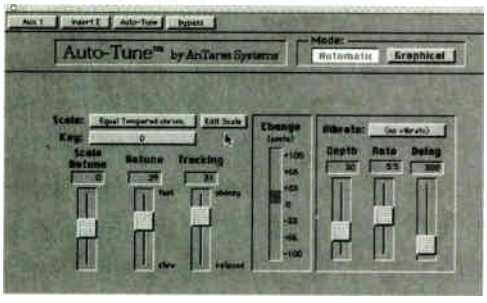

Figure 1: The Automatic mode compares input pitch to a set scale in real time.

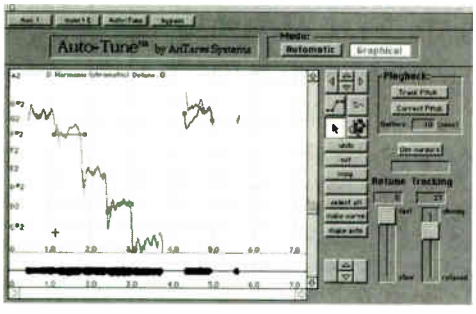

Figure 2: The Graphical mode offers a variety of tools for manipulating pitch by editing waveforms.

The Auto-Tune algorithm can detect pitch of any periodic waveform to an accuracy of .0001 samples per cycle at a pitch range from A0 (55 Hz) to C6. Above C6, the algorithm will interpret the waveform an octave lower. That's what I call accurate.

AUTOMATIC MODE

Auto-Tune is a mono plug-in and is typically used as an insert on a single track. It has two modes: Automatic and Graphical. Automatic mode (Fig. 1) works by continuously tracking the pitch of the input sound and comparing it to a scale in real time as the track is playing. You set up the scale and key to match that of your music. All major and minor keys are supported, as well as an equal-tempered chromatic and about two dozen other more obscure scales, such as Pythagorean and 53-tone (!). After you select your key and scale, you can edit the scale to remove selected notes; you can also instruct the software to ignore selected notes. When you remove selected notes, the pitch will correct to the nearest selected note in the scale. When you ignore selected notes, the algorithm will pass through the uncorrected signal in the range of that pitch—in effect, a pitch-dependent bypass.

Below the scale and key pop-up menus are Scale Detune, Retune and Tracking sliders. Scale Detune is self-explanatory; pitch range is ±100 cents (±1 semitone). The Retune slider controls how fast the pitch correction is applied to the incoming sound. The response range is from 0 to 400 milliseconds. A setting of 0 will cause instantaneous pitch correction from one tone to another and will completely suppress any vibrato in the incoming signal. Values from 10 to 50 are typically most useful for vocals. The Tracking slider controls how much variation in the incoming waveform is allowed. Typical values are around 25. Higher values work better for more difficult-to-track sounds, such as a breathy voice or an instrument recorded in a reverberant space. The pitch change meter shows variation of the source material from the target pitch in real time.

Finally, the vibrato section allows you to reintroduce vibrato to the signal. This is useful if, for example, you have set a fast Retune setting, with the result that all the natural vibrato has been sucked out. You can control the intensity, speed, waveform and delay of the reintroduced vibrato. I found this to be of limited use, because on many solo instruments and voices, periodic pitch change (vibrato) and volume change (tremolo) go hand in hand. Though Auto-Tune removes vibrato, the tremolo remains, and it's pretty tricky to reintroduce vibrato that matches the tremolo.

BY PAUL POTYEN

GRAPHICAL MODE

When Automatic mode did not achieve the desired results, Graphical mode did the trick. I found the best way to use this mode was to identify a short section (one to five seconds) where a pitch problem was uncorrectable in Automatic mode. Selecting Track Pitch in Graphical mode and playing the section resulted in a waveform similar to that shown in Fig. 2. At this point, several tools are available, depending on the nature of the pitch problem. By selecting the line tool, you can draw in one or more straight lines to lock down a specific pitch for a specific time, as done for the F-sharp. To the right of the line tool is the curve tool, which lets you draw a free-form line for any pitch/duration, as was done for D.

Finally, the zoom-select tool (below the curve tool) lets you select a specific area. You can then use either Make Curve or Make Auto and edit the resulting curve using the pointer tool (highlighted in this example). In the case of the signal at four seconds on the graph, the Make Curve tool was used to create a curve that traced the selected data. The left endpoint was then selected and dragged down in pitch to correct for the sharp intonation at the beginning of the note without losing the unique pitch inflections of the performance. All types of curves can be edited using the handles at either side, or by moving the whole curve up or down in pitch. The Retune and Tracking sliders have the same

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functionality as in Automatic mode.

Graphical mode is not intended for application to a whole track. Rather, it is best used for specific problem areas. It stores pitch information in a buffer, which is limited by the amount of RAM available in DAE. After achieving the desired correction for a particular phrase, it's recommended that the user simply record that corrected section to a new track, and then move on to the next problem area.

I found the Graphical mode controls a bit confusing and unwieldy at first. For example, drawing a curve and then pressing the standard Macintosh "command-z" to undo the curve doesn't work. Due to a constraint imposed by the Pro Tools software, you have to press the Undo button, or else press control-z. Also, the distinction between Make Curve and Make Auto is not intuitively obvious. A careful study of the manual does help, however. The Make Curve button allows you to create a curve that follows the tracked pitch(es) in Graphical mode, while the Make Auto button allows you to create a "corrected" curve of the tracked pitch(es) in Graphical mode according to the settings in Automatic mode. For example, in Fig. 2 the Make Curve tool was used to create the curve seen on the last note. After editing the endpoints and the pitch scale (accessed in Automatic mode), playback of this section in Graphical mode resulted in a satisfactory performance.

If on the other hand you wanted to edit the results of the Automatic mode output of a phrase, you would switch to Graphical Mode, use Track Pitch to create a curve, then press Make Auto. The resulting corrected curve would be editable in the Graphical mode. Special mention should be made of a potential "gotcha" in Graphical mode: Once you've tracked the pitch of a phrase, you must play back from the exact same point in the file as when you tracked it. Failure to do this can make for some pretty creative-sounding tracks. The limitation of one DSP Farm chip per instantiation was not significant given that multiple Auto-Tune instantiations are not typical in a single Pro Tools session, and that you can easily bounce corrected sections to new tracks.

I found that, given a clean, appropriate track and enough time, I could make it sound great using the Auto-Tune tools. Automatic mode worked well for tracks that needed a slight tune-up, so to speak. Other, more difficult tracks could be corrected and bounced to new tracks in Graphical mode. However, when I tried fixing an out-of-tune vocal with a lot of reverb in it, the reverb masked the periodic nature of the waveform, and Auto-Tune became hopelessly confused and gave up. I also had to do some serious wrestling with an out-of-tune female operatic voice with a wide vibrato, but in the end Auto-Tune won this round.

This is a great tool for anyone who has to deal with tracks that are out of tune (and who hasn't?). The TDM Plug-in SRP is $599. Auto-Tune is also available in several other flavors, including VST (Steinberg), MAS (MOTU) and stand-alone Mac versions ($399), as well as a rack-mount hardware version ($1,199, Auto mode only).

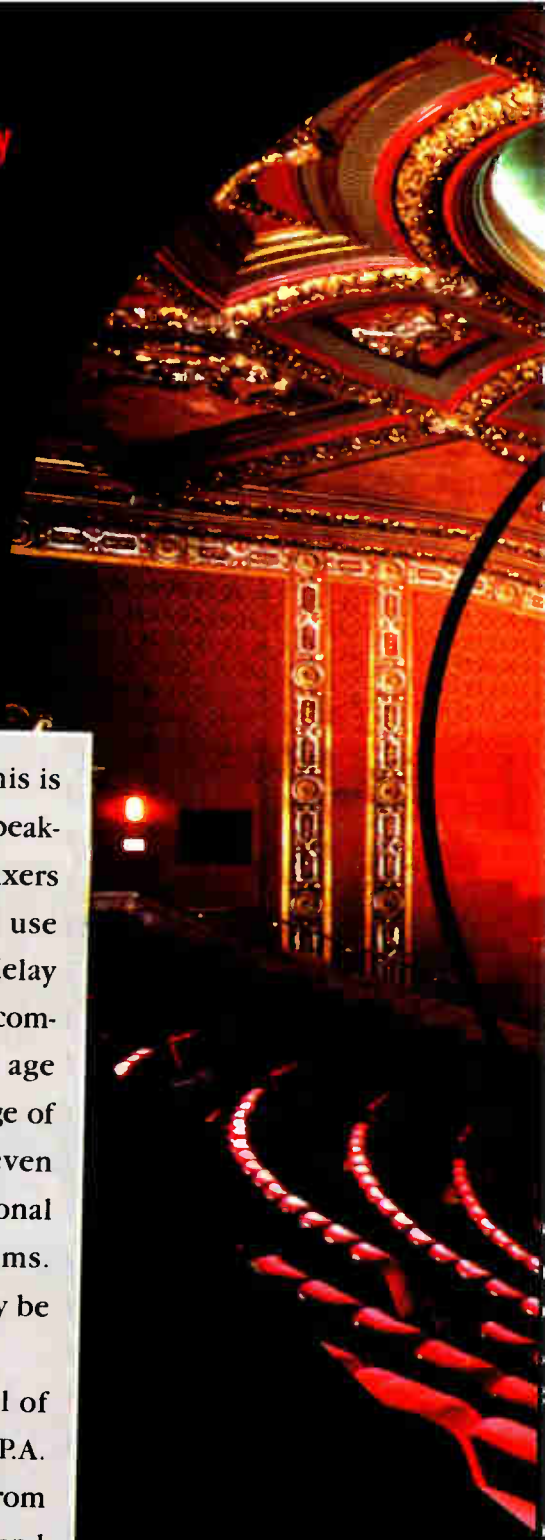
AnTares Systems, PO Box 697, Applegate, CA 95703; 530/878-4400; www.antares-systems.com. ■

Paul Potyen is an independent composer, producer and partner in Site4Sound (www.site4sound.com), a company that licenses original music to Web sites.

DELAY DILEMMAS

by Bob McCarthy

Synchronizing P.A. Sound Sources



One of the best things about delay devices (often referred to as "delay lines") is that they are so easy to set. Navigate a few menus, dial in the number of milliseconds you need and you are done. The hard part is figuring out what that number is, and you're not likely to find the answer in the owner's manual. In this article, we will explore the methods and tools that will lead us to the appropriate delay-time solution.

The primary purpose of delay lines in sound reinforcement is to synchronize sound sources that would otherwise interact negatively due to different arrival times at a particular location. The obvious example of this is the "underbalcony delay" speaker, so named because no mixers in their right mind would use such a speaker without a delay line. But the ever-declining component costs of the digital age have opened up a wide range of applications for delays in even moderately priced professional sound reinforcement systems. For example, delay lines may be used to:

- Synchronize the arrival of amplified sound (through a P.A. system) with the live sound from the stage (from the backline and monitors) to enhance imaging and increase intelligibility to the audience.
- Delay each vertical row of a

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Bruce Swedien

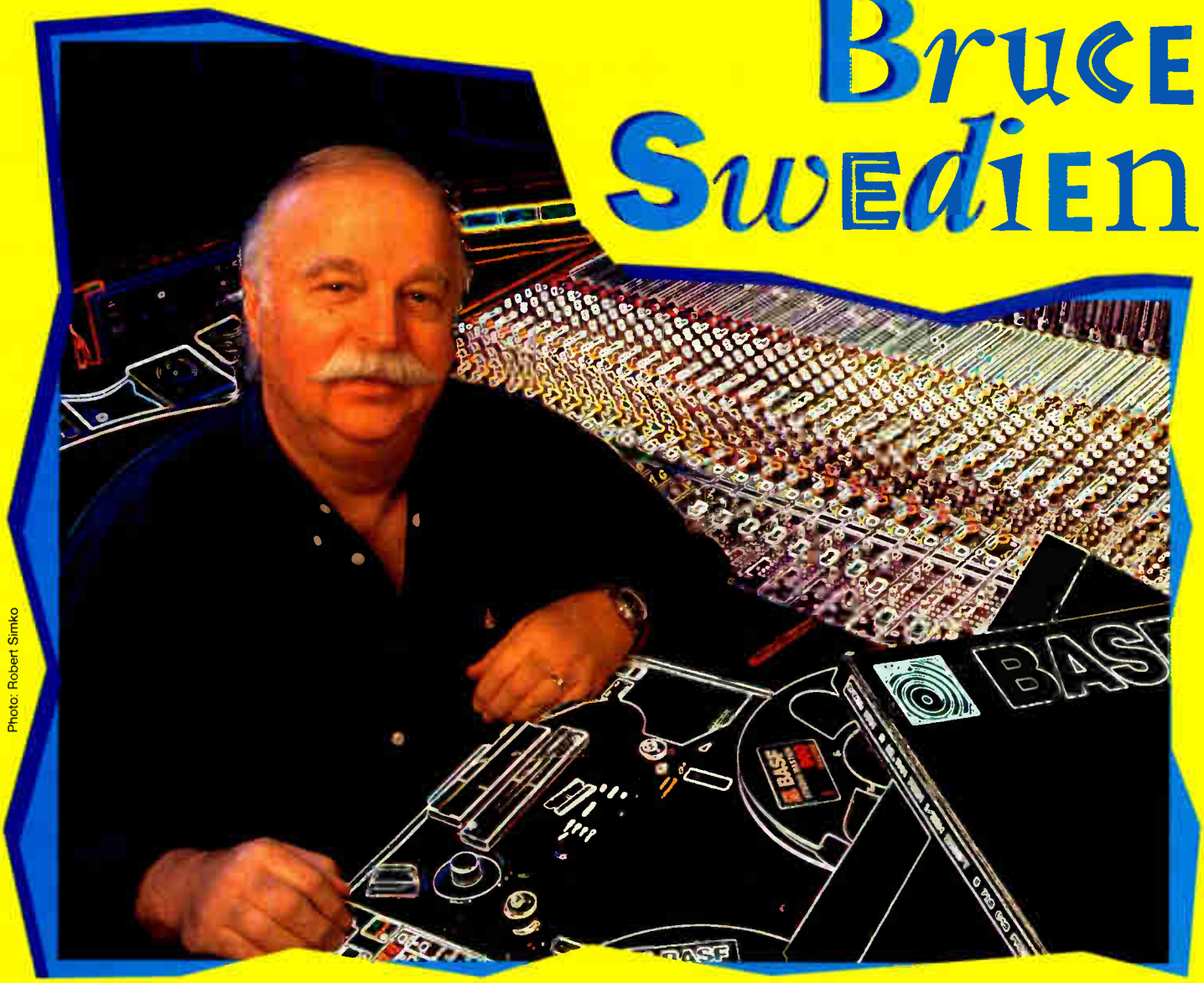

Photo: Robert Simko

on BASF tape

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speaker array to minimize the destructive interference from down lobes.

• Delay sidefill monitors to match the back lobe of the main P.A. in order to increase intelligibility onstage.

• Delay front-line wedge monitors to align them in time with the sidefills, increasing intelligibility for the musicians onstage.

These delay techniques are less straightforward than a simple delayed speaker setup, but when used properly can make a huge difference in the performance of a sound reinforcement system.

But first you need a method for accurately measuring time delay. A tape measure or a recording of a snare drum is not going to cut it; you need a time measurement tool accurate to at least 20 microseconds. For the really interesting stuff, you'll need an analyzer that can display phase response and signal-to-noise over frequency. Examples of this are dual-channel FFT-based analyzers (which, in case you haven't noticed, have become very affordable) and other computer-based tools.

Second, you'll need to have a thorough understanding of delay. Let's start with the basic underbalcony delay speaker and work our way up. When properly installed and calibrated, an underbalcony delay should be close to invisible, both visually and audibly. Properly set, an underbalcony delay will raise the signal-to-noise ratio in its local area to match that of the main listening space. (In this case, *signal* is direct sound and *noise* is reflected sound.)

Under a balcony, a poor S/N ratio is usually due to strong early reflections from the back wall and low ceiling. To overcome this problem, the underbalcony delay must be precisely synchronized to the direct sound arriving from the main system. If the delay time is set too early or too late, it will create an additional echo and exacerbate the problem. When set correctly, the delay speaker will reinforce the direct sound with only minimal additional reflections.

SETTING UNDERBALCONY DELAY

The underbalcony delay setting process is as follows. First, choose the speaker (or source) with which you want to synchronize, known as the "reference." Place a measurement mic at half the full depth of coverage of the delay speaker (such as equidistant between the underbalcony speaker and the back of the seating area). Measure the time offset from the mic to the delay speaker. Now turn off the delay speaker and turn on the reference speaker. Measure the time offset again. The difference between the two readings is the correct delay time.

Input the delay time in the underbalcony speaker system's delay line. DO NOT add 10 ms of extra delay "for imaging" or "because of Haas Effect," as that will remove all of the improvement of signal to noise we have just achieved. (See the June '97 issue of *Mix* for further explanation.) To ensure that the delay speaker remains "invisible," set its level to the minimum required to achieve acceptable intelligibility and gently roll off above 8 kHz.

"I want the sonic image to be onstage at every seat in the house," says the musical theater producer. A lofty goal. Are the actors willing to carry speakers on their chests? If not, we will have to resort to delay lines to help bring the image projected by the sound system back to the actors' posi-

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tions. The obvious method is to place a temporary sound source onstage and delay the various speaker subsystems so that they are synchronized to the stage source. If all of the systems are delayed to the stage, it seems only logical that the image would be destined to appear there. Unfortunately, this only works up to a point, after which things fall apart.

The reasons are as follows. Our perception of sonic image is governed by two factors: the time arrival of a source relative to our ears and the relative level of competing sources. This relationship between image, arrival and level is termed the "precedence effect." The dominant factor is time arrival, and a source that arrives first will be perceived as the only source, provided that other versions of the same sound source, such as reflections, arrive within 35 ms. However, this rule can be upset if later sources are a lot louder. If one source is more than 10 dB louder than the other, the image will shift to the louder one, even if it arrives later than the "primary" source.

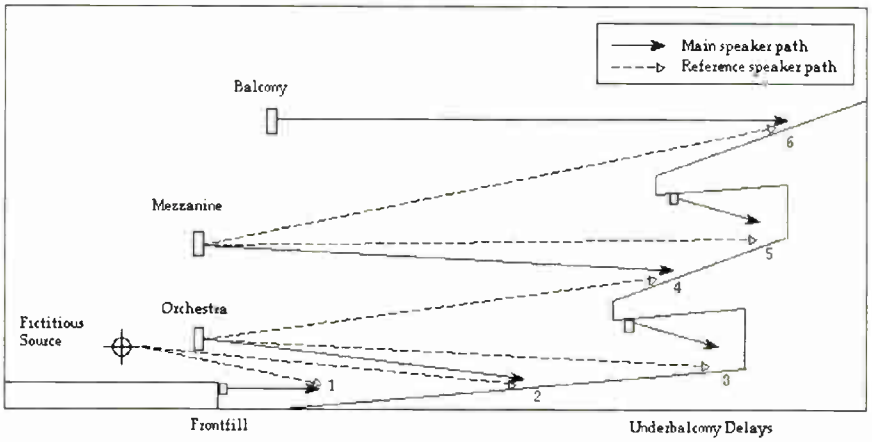

Figure 1: Choosing a reference speaker. Here is an example of the sequence of delay settings in a theatrical application. The sequence begins at the stage and moves up and out into the house.

1) The frontfill speakers are delayed to the onstage "fictitious source," bringing the sonic image away from the speakers and onto the performers.
2) The orchestra proscenium system (mains) is delayed to match the "fictitious source" reference.
3) The orchestra underbalcony speakers are synchronized to the orchestra mains.
4) The mezzanine speakers are synchronized to the uplobe from the orchestra mains. This "pulls" the image down and minimizes interference between the systems.
5) The mezzanine underbalcony speakers are synchronized to the mezzanine mains.
6) The balcony cluster is synchronized to the uplobe from the mezzanine system.

CHOOSING A REFERENCE

When choosing a reference speaker, to which a particular delayed speaker must be synchronized, you must answer the following questions: Where do I want the image to be? How can I get it there? What other sound sources does this system have to contend with? For example, the front fills and proscenium mains can usually be referenced to the stage source if the live acoustic source levels onstage are sufficiently high.

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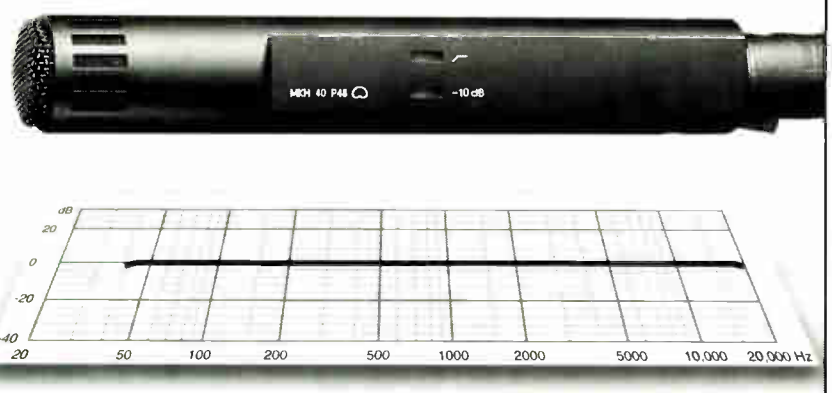

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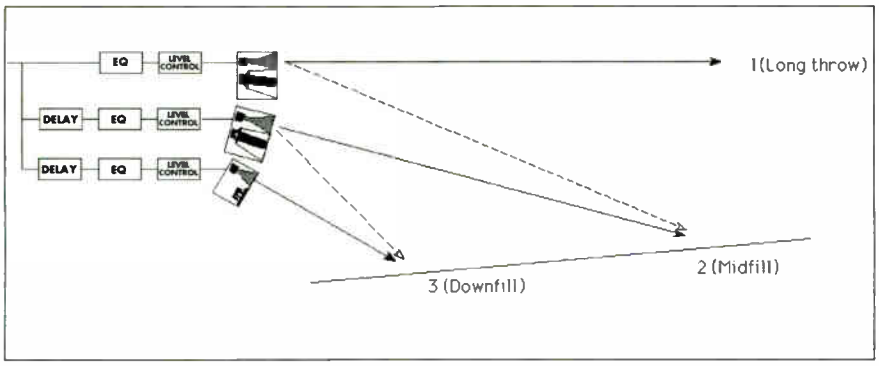

Figure 2: Living with cluster down lobes. The frequency response uniformity in the vertical domain of a cluster can be optimized by sequentially delaying each row.

1) The long-throw system has the longest distance to project. Its frequency response is aligned in its local coverage area.

2) The midfill system is delayed to synchronize it with the long-throw system down lobe.

3) The downfill system is synched to the downlobe from the midfill system.

Let's go back and apply the example of the underbalcony delay speaker as an application for the questions above. The desired position of the image is onstage, so it seems logical to choose the onstage source as the reference. How will we get the image there? Will the actors' voices project to the rear of the hall with sufficient level to bring the image in? Which will be louder at the back of the hall—the acoustic signal from the actors or the amplified signal from the proscenium main system? In 1950, I might have voted for the actors, but with today's whisper-level voices, you can forget about the acoustic source past the tenth row. Instead, we will need to synchronize the underbalcony delay to the dominant sound source: the proscenium speakers. If we do not sync up to the dominant source, the multiple time arrivals will simply add more echo under the balcony rather than increasing the direct sound. As we move up to the balcony, we have the same dilemma. Once again, the stage source seems desirable as a reference, but the area will be dominated by the up-lobe from the lower proscenium speakers. You must align to the dominant sound source, the proscenium system. Your choice is to "sync or swim"—in reverb, that is.

MAKING PEACE WITH DOWNFILLS AND SIDE LOBES

Now, let's take a look at some recent advances in the application of delays. In the world of make-believe, speakers treat their fellow speakers nicely and don't interfere with each other. The reality is something totally different. Even in a well-designed system with minimal redundancy and controlled overlap, the range below 500 Hz is a war zone. The limitations of low-frequency directional control create powerful side lobes and down lobes that spill into neighboring areas. For small subsystems such as downfills and sidefills, it is a futile battle to resist this onslaught.

There are two basic problems with untreated lobes. First, they will combine out of time, creating comb filtering and gross frequency-response variations. Second, they can simply spill so much low-frequency energy that no amount of cutting in the fill system can reduce it to manageable levels. As the old saying goes, "If you can't beat 'em, join 'em." How? Delay the fill systems so that they are in time with the lobes. Once you have synchronized the two systems, you have two choices. You can let the systems add together and produce maximum power and minimal comb filtering.

A second option is to reverse the polarity of the fill system and purposely reduce the lobe by phase cancellation. Don't venture into this unless you are very certain that you have the delay time correct and can create the cancellation where you want it and not in some unexpected location where it creates a new problem.

The above technique also works well when applied to arrays. Typically, the top row of speakers will throw the farthest. This creates a powerful down lobe in the nearer seats that are intended to be covered by the middle and lower sections of the array. Even if the speakers are aligned in a vertical column, the lower audience members are inevitably closer to the lower

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speaker rows than the uppers. On the floor, this creates a time offset between the sound arriving from each succeeding row. The time offsets are short but are sufficient to cause deep comb filtering in the mids and highs. It only takes .5 ms of offset to put an octave-wide hole in the response at 1 kHz. (For more on this, see the Jan. '97 *Mix* article on comb filters.)

Set the delay of each lower system to synchronize with the arrival from the system above, thus minimizing the interference between layers. The same technique can be used to set a delay for the sidefill monitors. In a large P.A., the main side lobes may be too strong to ignore onstage. If the sidefills are delayed to match the main side lobes, the perceived tightness of the low frequencies will increase dramatically onstage.

A further step can be taken by delaying the floor wedges to the arrival of the sidefills. If this is not done, signals common to the two systems will arrive out of time and comb badly. If synchronized at center stage, the net response will add coherently, resulting in a huge power addition. It's even theoretically possible that you will be asked to turn the monitors down!

The technique is the same. Measure the delay time from your local speaker. Measure the delay time from the reference speaker and input the difference into the delay. However, when dealing with off-axis lobes, it is very easy to arrive at incorrect results. This is due to a lack of high-frequency content, which impulse-type time measurements depend on for accuracy. In this situation, an analyzer with phase response at each frequency comes in handy since it allows you to see the arrival of each frequency independently.

This short article only scratches the surface of possible applications for today's cost-effective delay devices. Other applications include steerable subwoofers and the synchronization of live and direct feeds. But wherever multiple sources are combined out of time, the same principles and techniques apply. Now, without further delay, it's on with the show. ■

Bob McCarthy is an independent engineer specializing in sound reinforcement alignment and design. He teaches Meyer Sound's SIM course and has written four books related to sound system alignment and design. He can be reached at bobmcc@sirius.com.

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ARE YOU READY TO ROCK?

TOOLS AND TIPS THAT HELP YOU PREPARE FOR A SUCCESSFUL MIX

PHOTO ILLUSTRATION: MIKA CHISAKI

House lights down, fade out the intro music and we're off on the roller-coaster ride that is mixing live sound. Hours have been devoted to getting everything ready for pushing the right faders at the right moment for the next 90 minutes. What can be done to smooth the ride? There is no second pass, no "stop tape," no rewind, only go, go, go. Your mind, ears and hands need to have free rein to become totally engaged with mixing.

Mixing is like cooking in a fine restaurant. Most of the job is prep work, done long before the heat is applied to the vittles; everything must be seen to before the first egg is cracked. From the moment you walk into the *venue du jour*, it's all about getting ready for the downbeat of the first song. Getting ready to mix is the chore, and the performance is the reward. Let's get ready.

SHARPIES AND SOFTWARE

Many experienced mix engineers carry their own Sharpie and board tape supplies (have you seen the Super Sharpie yet?). Neatly labeling the board and color-coding sections with PVC tape are eyeball ergonomics that make it easier to look over a console and get around on it quickly. Everyone knows what "K S H R F O O" means. Large, bold letters that are the first character of each input's name help eyes and hands to quickly find a fader. Your ears follow your eyes. The more you can look at the stage, the better you'll hear all of the music. Is it my imagination, or is there a correlation between neatly labeled desks and neatly mixed shows?

Here's another console helper: Just swap the red caps on the master faders with those on the "money" inputs. Some engineers even carry a handful of different-colored fader-caps for their favorite brand of desk. If it's my desk, I'll sometimes swap each channel's pan knobs with the primary aux send so as to easily mark the first aux send. Of course, if you'll be using the same desk for a few months, you can have a lot of fun with a label-maker. It's not too late! There's still time to send the runner out to Office Depot.

Many touring engineers now carry a laptop computer for e-mail (or to read the latest news at

—CONTINUED ON PAGE 156

BY MARK FRINK

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SPICE GIRLS

Girl Power Live at Wembley Arena

It's not often that I travel to a concert surrounded by dozens of screaming, overexcited young kids. But such was the case one cold, windy evening last spring, when I traveled by underground train to London's 10,500-seat Wembley Arena. The kids were mostly girls between eight and 12 years old, many of them wearing Spice Girls-look-alike clothes, Spice Girls T-shirts and/or Spice Girls makeup. They were mostly accompanied by their mothers, many of whom had a look of long-suffering bemusement on their faces; their main job consisted of trying to calm the kids down and telling them at every stop that, no, this was not yet the stop for Wembley Arena and could they be patient for a little while longer. Once we arrived, the kids streamed out of the train and stormed toward Wembley, joining a surging crowd on their way to what seemed like one of the first dates with destiny in their young lives. Spice World had landed in North West London, that much was clear. And it was there for a lengthy eight-show stay.

PHOTO: BRIAN RASIC/© REX USA LTD.

PHOTOS: PAUL TINGEN

FOH engineer Mike Dolling

Monitor engineer Graham Blake

Much has happened since the Spice Girls burst on the international stage in July 1996. Initially bonding as a group of audition rejects, they had been working together for several years developing the now familiar image, music and dance routines. When their first hit, "Wannabe," hit the charts that July, the Spice Girls were already a fully formed act. Within the cliché world of commercial pop-pap, "Wannabe" was regarded as an infectious breath of fresh air, and it was no surprise that it went Number One in 31 countries, including the U.S., becoming the most successful debut single in history. The Spice Girls' brash and independent attitude also caught the imagination: "Girl Power" was born, whilst many boys were enamored by the considerable amounts of skin on display. Predictions of them being one-hit wonders proved unfounded, because after "Wannabe," they had two hugely successful albums (*Spice* and *Spice World*), and many more hit singles. Even a feature film (*Spice World*) ensued. The Girls were the UK music industry's top earners during 1997, clocking up a cool £43 million—a remarkable achievement for a new band.

After some shaky first shows in London, the Spice Girls gained enough confidence to attempt a world tour. During the first half of this year they've toured almost every country in Europe, and between June 15th and August 26th they'll be doing 40 U.S. shows. So Americans can finally compare the live video, "Girl Power! Live in Istanbul," that's been topping the Billboard Top Music Video chart for weeks, to the real thing.

The show at Wembley was com-

BY PAUL TINGEN

—CONTINUED ON PAGE 164

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BOYZ II MEN

Philly R&B in Four-Part Harmony

Nathan Morris, Michael McCary, Shawn Stockman and Wanya Morris met in 1988 at Philadelphia's Performing Arts High School, where they practiced harmonies in the bathroom and eventually named themselves for a New Edition song, "Boys To Men." Two months after they had snuck backstage at a Bell Biv Devoe concert to sing "Can You Stand the Rain" for Michael Bivens, Bivens offered to manage them. In 1990, the foursome signed with Motown Records and defined the term "Motownphilly" with their first hit.

Boyz II Men's "All Around the World" tour was the sleeper hit of 1995, tallying the second-highest gross for that year. This year they're out again, finally supporting last year's *Evolution*, their fifth album. *Mix* caught up with them at Portland's Rose Garden Arena a few weeks into an international tour that plans to be out through next year. Eighth Day Sound of Cleveland is once again providing sound services.

PHOTOS: STEVE JENNINGS

Front row (L to R): Sean Sullivan, system tech; Elliott Peters, FOH engineer; Michael Mule, monitor engineer. Back row (L to R): Jeff Sullivan, tech; Doug Short, monitor tech; Noel Dannemiller, system tech.

Elliott Peters, whose live mixing resume includes New Edition and Gladys Knight, mixes Boyz II Men on a Yamaha PM4000. By using a dozen stereo inputs for playback, keyboards and effects, Peters has configured the desk to accommodate inputs for the support act, female quartet Destiny's Child.

Summit MPC 200 tube preamp/compressors were initially used on all the vocals, a choice based on the group's studio experience, but Peters now has a Joemeek VC1 Studio Channel on McCary's warm bass voice and uses a VC2 Tube Channel on Morris' tenor. "Each voice is unique, so I use slightly different processing, as necessary," comments Peters. Each vocal input bypasses the console's mic pre and is returned to the 4k's insert.

ARENA WASH

For effects, Peters uses a Roland SDE 3000 delay on the lead vocals, a Lexicon PCM 80 for panned delays on the background vocals and a Lexicon 480L dual reverb for vocals and snare. The popular Ambience preset on the AMS RMX 16 reverb is always on the snare, plus there are two Yamaha SPX 900s, set on "gate" and "plate" reverbs, to alternate for ballads and up-tempo material. "In arenas, there's so much wash that sparse effects work best," Peters points out.

Other outboard processing includes dbx 160x compressors for snare, bass and guitar inserts, and Drawmer gates inserted on drum inputs. An Aphex Dominator is inserted across the mix bus as a system limiter to "brick wall" overenthusiastic openers. Tascam DAT and CD players are used

BY MARK FRINK

World Radio History

for playback, and Peters uses a pair of EAW JF 80s set up on the meter bridge and delayed with an SPX 990 for headphone-less cueing at FOH. The system drive rack has trios of LMS-700 Omnidrives and BSS 960 ⅓-octave EQs for the three stereo zones of Eighth Day's Turbosound speaker system.

Eighth Day crew chief Sean Sullivan, who has been with the company for five years, started out the tour mixing monitors but has moved to FOH system engineer—he and Peters had previously worked together in those roles for New Edition. Assisted by Jeff Sullivan and Noel Dannemiller, Sean Sullivan is responsible for a typical Turbosound arena array: 18 Flashlight cabinets per side, flown six wide and three deep, with a half-dozen Floodlights for the arena sides. The arrays also incorporate a half-dozen Turbosound under-hung cabinets on each side, each cabinet comprising half a Floodlight, with mids and highs alternated. The system is powered by ten Flashlight racks equipped with BSS amps. Turbo subbass cabinets are stacked three high by seven wide at the downstage corners, supplying a powerful low end down the middle of the arena and providing "ego wings" for the Boyz to stand on to address the side seats.

THE SOUND OF PLEXIGLAS

Production manager Mike "Huggy" Carter has put together a set that incorporates a modern look; a MIDI grand piano is made of Plexiglas (and filled with roses), and side-fills and the band's floor monitors are made of clear plastic. A dozen Eighth Day single-15 wedges were custom-made from ½-inch Plexiglas by Crystal Clear Sound of Bellflower, Calif. Fill cabinets holding four Aura 18s and two Turbo Floodlights stacked on each side of the stage are also made of Plexiglas. "The Plexiglas speakers look and sound great," Sullivan notes, "and the lighting guys love them."

Monitor engineer Michael Mule (pronounced mu-LAY) joined the tour at the last minute after Sullivan's move to FOH. Besides having mixed monitors for New Edition and Blondie, Mule's previous adventures include stints in the hot seat with Julio, Englebert and Anita Baker, so he's seen it all. He mixes Boyz II Men's stage monitors on a Yamaha PM4000M, using just four BSS ⅓-octave equalizers for the fills and front wedges, while the other mixes are EQ'd on the 4k's parametric outputs, which

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he calls the most under-utilized feature on the 4000M.

Floor monitors for the Boyz are a half-dozen Crown 3612-powered Firehouse single-12 wedges, which Mule really likes. Two Turbosound Flashlights per side are flown for additional vocal fill onstage. The drum fill is two more Firehouse wedges stacked on an Aura single-18 sub. A Clark Synthesis Tactile Sound Transducer integrated into the drum throne is used as a low-frequency "thumper" to supplement the drum mix, and Sullivan notes that it has more power and doesn't blow up as easily as other vibration transducers.

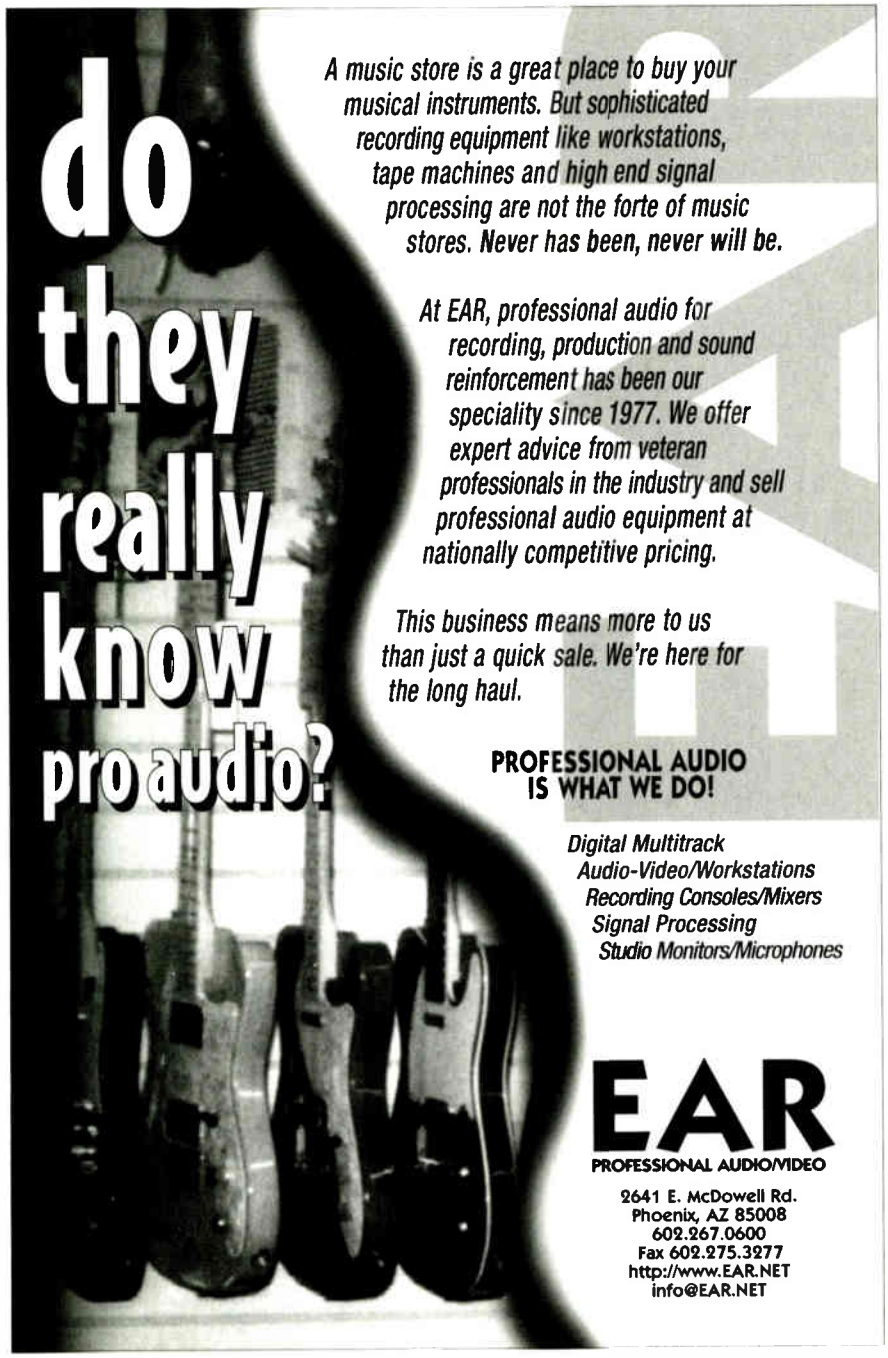
BOYZ IN-EAR

Vocal mics are Shure Beta 87 capsules on MARCAD wireless mics with grilles and transmitters custom-chromed to match the mic stands. The Boyz have been fitted with Sensaphonics 2X two-way custom ear-molds, and all have been listening to Shure PSM-600 in-ear receivers, except McCary, who relies on stage monitors. Outboard monitor processing includes four Aphex Expressors inserted on the vocals for holding back the "rap screams," plus Aphex gates on drums and Yamaha SPX 990 digital effects to sweeten the ear mixes.

Monitor tech Doug Short, the lone audio veteran from the previous tour, assists on the stage, wrangling monitors and microphones. On Freddy Holiday's kit, a Shure SM91 is in the kick drum, an SM57 is on snare, SM98s are on the toms and a pair of AKG 414s are used for overheads, mounted low and sideways, in figure-eight pattern. A Sennheiser 409 is used for miking Dave Foreman's guitar amp. All direct boxes are active, including a Countryman used on Ken Luck's bass, and BSS AR-416 4-channel rackmount DIs are used for the numerous Kurzweil and Roland keyboards played by Colt Young, Bryan Williams and musical director Jamie Hawkins. There are also seven channels of sequencer that come from a Yamaha 02R, carrying drum tracks and backing vocals for portions of the show.

Despite instrumental interludes that covered for numerous costume changes and a mix burdened with details too subtle for arena acoustics, the pyro and lighting combined with the audio crew's well-oiled efforts to provide an evening of Philly R&B entertainment, blending soulful harmony with slick choreography that the fans devoured. ■

Mark Frink is Mix*'s sound reinforcement editor.*



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—FROM PAGE 152, ARE YOU READY TO ROCK?

www.mixonline.com). Your system engineer may even have a laptop and a copy of SpectraFoo or Smaart Pro for aligning and EQ'ing the P.A. But a computer can also be a useful mixing assistant: a software tool like Buford Jones' Tour Stack for the Mac organizes the band's set into a series of cue cards, invaluable for guiding an operator through a set and triggering MIDI effects. Software editor/librarians like SoftMC, UniSys and Galaxy Effects can be used to prepare effects ahead of time. Then again, there's always the tried and true 3x5-cards-in-a-rubber-band-file method. Even a set list with handwritten vocal and solo notes is better than nothing. Asking for a set list can also open a dialog with the performers, so it's a good place to start.

LISTEN TO THE MUSIC

At soundcheck, get your ears down to the stage and around where the mics are. You have to do this anyway to check your mic positioning before soundcheck, and spending a couple of minutes around the risers will give you

World Radio History

a little perspective when you first start pushing up faders at line check. While you're looking for cables that can be tripped on and checking for loose boom arms, you can pick up on local disturbances. Buzzing backline, low overhead clearance and the dreaded hollow stage can all sabotage the sound, but if you don't know what's going into the mics, it's hard to know how to improve it. I once watched an artist's engineer audition new drum mics and exclaim how bad they sounded. A few pointed questions revealed that the kit was a rental and hadn't been tuned—a stagehand was sent off for a drum key.

If your FOH position is in the back of the room (and even if it isn't), take a stroll down the aisle as early in the set as possible. Chances are that it sounds different from what you hear behind the desk; you'll want to adjust your mix to compensate for those differences. You need to know when that first chance to get away from the console for four bars happens. Mark it into your cue list and force yourself to go for that walk early on.

Look at the faces on the way back to the desk. One great difference between live and studio mixing is the feedback that's immediately available from the listening audience. Whether it's from the guitar player's girlfriend or the fans that buy tickets, there's no shortage of opinions about the sound. Smiles and "head-bobs" are the human VU meter equivalent and measure how the show is going over.

During the show, musical changes are going to happen on the beats. To paraphrase Chevy Chase: "Don't mix

QUICKTIP

On a health note, why not carry your own communications handset? You know you don't have the time or patience to put on a headset, and besides there's a lot of germs in the world. If you bring your own handset, you know whose lips have been on it. You bring your artist's personal mic so only their lips touch it, right? You have a matched spare? You might think about carrying a third matched personal board mic to tune the system (or monitors) so your germs stay with you when you're sick. Hey, when you're sick you still have to work, but if your artist gets sick there could be lot of people out of a show (or out of work). ■

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the music, BE the music...na, na, na, na, na." Counting silently, foot-tapping and hip-shaking are all helpful to being one with the music—relax, enjoy and feel where it's all going. It's said that drummers make good sound operators, not so much because they're used to playing as a member of an ensemble, but because they have spent a musical adolescence getting ready for One, feeling the structure of a song's parts, getting ready for the fill in the eighth bar and asking "what happens next?" For mix engineers, the vast majority of moves take place on the upbeat.

RELAX

Setting up the P.A., you spend all day on the left side of your brain with all the techie mumbo-jumbo of frequencies and dBs, so just before the show starts, take a deep breath, count to ten and crossover to right-brain mode. Feel the force, Luke. All the best engineers have a routine to collect their focus before mixing. Many give themselves a quiet moment to become one with the show they're about to mix—no talking, just focus. Others have an active routine of touching everything around them or

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NEWSFLASHES

JBL plans to open a new custom speaker manufacturing center at its campus in Northridge, CA. The center, scheduled to open this summer, will require a $1 million investment, and will have all of the same equipment and technologies and operate the same way as the company's Kearney, NB, facility...JBL also reports that 60 of its EON 10 speakers have been installed in the **Berklee College of Music**'s new Genko Uchida Building. The new complex features 27 ensemble rooms and music lab facilities to be used for classes and student rehearsals...**Bjork**'s monitors at festival appearances this summer will be mixed on a Midas XL250 console—specified by monitor engineer John Cooper—that sound company **Wigwam Acoustics** purchased from LMC Audio of Birmingham, UK. **Scorpio Sound Systems** (Bridgewater, MA) also took delivery of a Midas XL250 board...ART reports that the production of this year's **Ozzfest** tour will include four ART signal processing devices: the Pro MPA mic preamp, Pro VLA tube compressor, Effects Network DSP and a Pro Gate programmable noise gate. Front-of-house engineer for the tour is Wedge Brannon...Chips Davis recently designed a new sound system for the **Greek Orthodox Cathedral of Ascension** in Oakland, CA. Included are four of Xwire's X905e digital wireless systems, three lavalier and one handheld...QSC's RAVE (Routing Audio Via Ethernet) system was recently installed as part of renovations to the **Edison International Field** in Anaheim, CA...The current production of The Sound of Music that opened on Broadway in the **Martin Beck Theatre** this past March features an 80-input Cadac J-Type console supplied by Sound Associates. Sound designer Tony Meola recorded church bells to DAT in Salzburg to use in the opening of the show. **Showboat** premiered at Sydney, Australia's Lyric Theatre in April, also using a Cadac J-Type board...In Pittsburgh, PA, the 2,800-seat **Benedum Center**, where performances of the Pittsburgh Opera, Ballet Theater and Civic Light Opera take place, took delivery of a Crest Audio NexSys sys-

—CONTINUED ON PAGE 161

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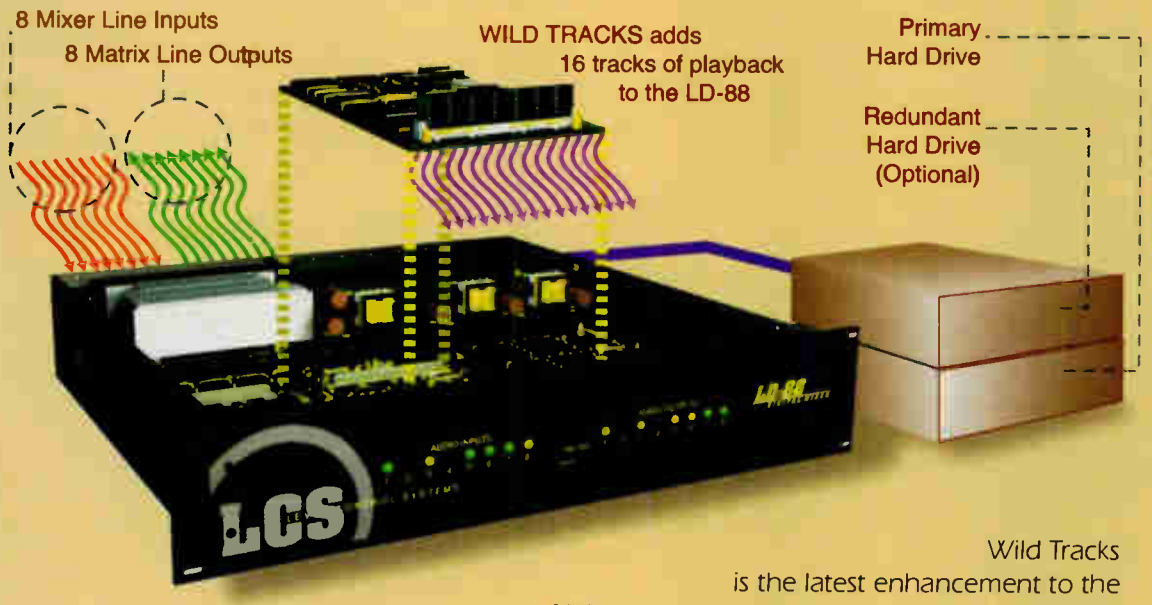

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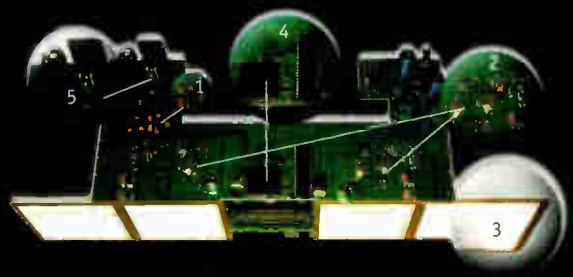

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small talk on the radio or intercom, like a baseball batter in the on-deck circle.

Try not to get distracted. Avoid conversations with the local sound experts or the local TV station guys that come up to the mix position just before the show starts. Even if you don't have security at the mix position, your system engineer should be able to deal with intruders with tact and diplomacy.

Once you're mixing, forget about system EQ, recording board tapes and effects programming. These should already be taking care of themselves (with the aid of your trusty system tech) by the time the show starts. If not, put these items in your pre-show preparation notes so that you can address them and forget them. If you're spending time fiddling with graphics, tape decks

—FROM PAGE 158, NEWSFLASHES

tem and Crest CKS Series amps as part of some recent sound system improvements...**M&L Sound** (Knoxville, TN) ordered 48 Bag End ELF EL-18A subwoofer drivers, housed in 12 Bag End Onyx enclosures. Onyx enclosures are a custom version of the company's Quartz subwoofer system that contains four EL-18A ELF drivers...Drawmer reports that **Tony Bennett**'s tour is using the company's 1960 mic preamp/vacuum tube compressor...The acoustical consulting/sound design firm of David L. Adams Assoc. Inc. was among the consultants to share an Award of Merit from the U.S. Institute of Theatre and Technology for the renovation of **Peery's Egyptian Theatre** in Ogden, UT...**Dispatch**, a Paris-based sound reinforcement company, is the first sound company to offer Soundcraft's Series Five front-of-house and monitor desks...Distributor Pro Mix Inc. (Mt. Vernon, NY) supplied eight Apogee ALA-5s to the **Manhattan City Center Theatre**. The City Center is home to the annual "Encores! Great American Musicals in Concert"; this year's productions include *Strike Up the Band*, *Li'l Abner* and *St. Louis Women*. **Tapestry Sound**, also of NY, is the first rental company in the U.S. to purchase Apogee's new ALA-5 Linear Array System...**Showtime Productions**, an international touring company featuring students of Ricks College of Idaho, purchased nine Sennheiser SET 1083 UHF wireless mics. ■

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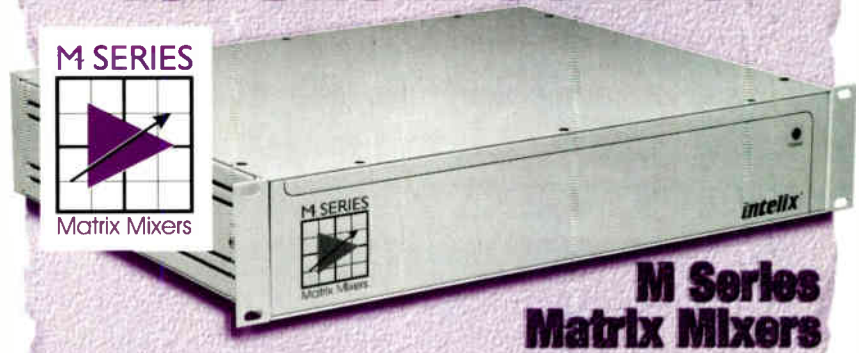

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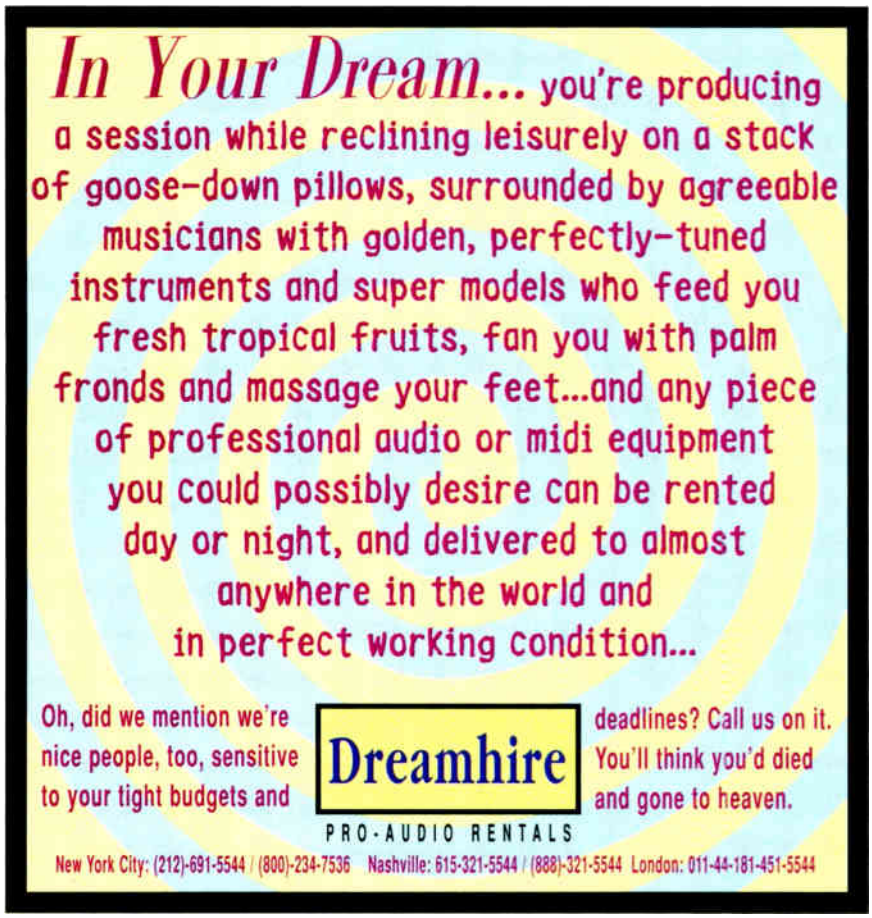

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or reverbs after the first couple of songs, your head and hands are in the wrong place.

SOLICIT OPINIONS

Is it too loud? If you're not sure, the answer is probably yes. Oh, I can hear your answer already: "If they want to hear music at conversation levels they should stay home." Well, check the box office reports. They *have* been staying home and listening to music on their new 5.1-channel entertainment centers with the remote control in their hand. I dare you to ask a few random strangers in the audience what they think each night. Ask the hard questions. Compliments received at the mix position after the show don't count. Can you understand the words? I'm constantly surprised at how many live mixes have incoherent vocals buried in compression, distorted by effects and smothered by the other instruments ripping along on top. Have you listened to the album that your band is out supporting?

What goes up must come down. You only get about 20 dB of mix dynamics in live sound, so restoring faders should be as natural as pushing them up in the first place. If you bump it up, you gotta ride it back down, otherwise everything else is going to follow it up. Leave yourself somewhere to go SPL-wise, and then build the set. Most musical shows can benefit from a couple of master fader moves that take the overall volume to where it needs to be for each portion of the show. Knowing these and writing them into the cue list will make mixing the other faders that much easier.

Last but not least, a good relationship with the system engineer is essential. It takes a team to do sound, and communication is the grease that makes it all work. A few crews are lucky to have reached a level of silent cooperation where everyone can simply do the job, but for many, an open dialog and two-way exchange of ideas goes a long way toward getting the most out of the equipment. The system tech must arrange everything from physical location of the system's elements to the final arrangement of the EQ filters as the show starts. Every mix engineer needs some ears down in front, at the sides and up in the balcony. There's no substitute for an audio partner whose point of view can be trusted. ■

Mark Frink is Mix*'s sound reinforcement editor.*

World Radio History

Does anyone else see a pattern here?

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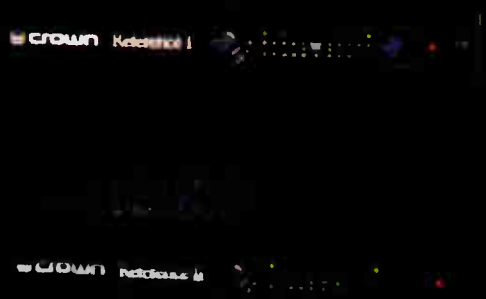
1985 Tec Award Winner: TEF 10
1990 Tec Award Nominee: SASS Microphone
1990 Tec Award Nominee: IQ System
1991 Tec Award Nominee: Macro-Reference
1992 Tec Award Nominee: Macro-Tech 3600VZ
1993 Tec Award Nominee: Macro-Tech 5000VZ
1993 Tec Award Nominee: CM-310 Microphone
1994 Tec Award Nominee: Macro-Tech 36x12
1996 Tec Award Winner: Studio Reference I/II
1997 Tec Award Winner: K2
1998 Tec Award Nominee: CE 1000/2000



1996 Tec Award
Crown
Studio Reference

1997 Tec Award
Crown K2

1998 Tec Award
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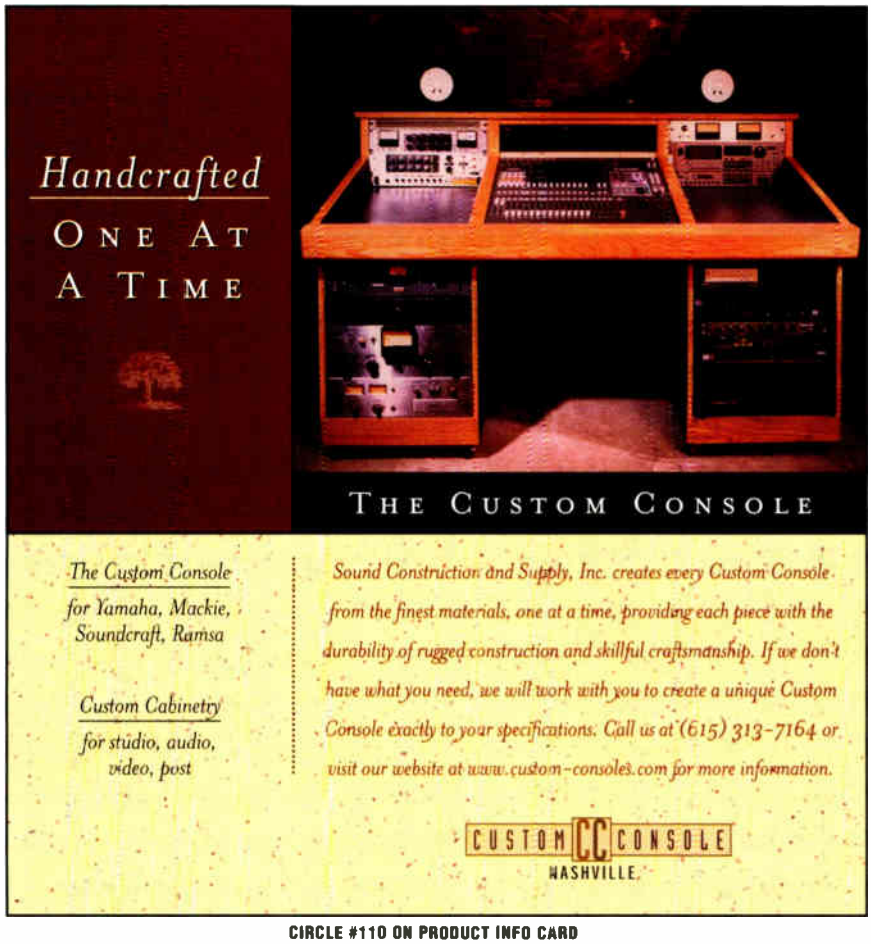

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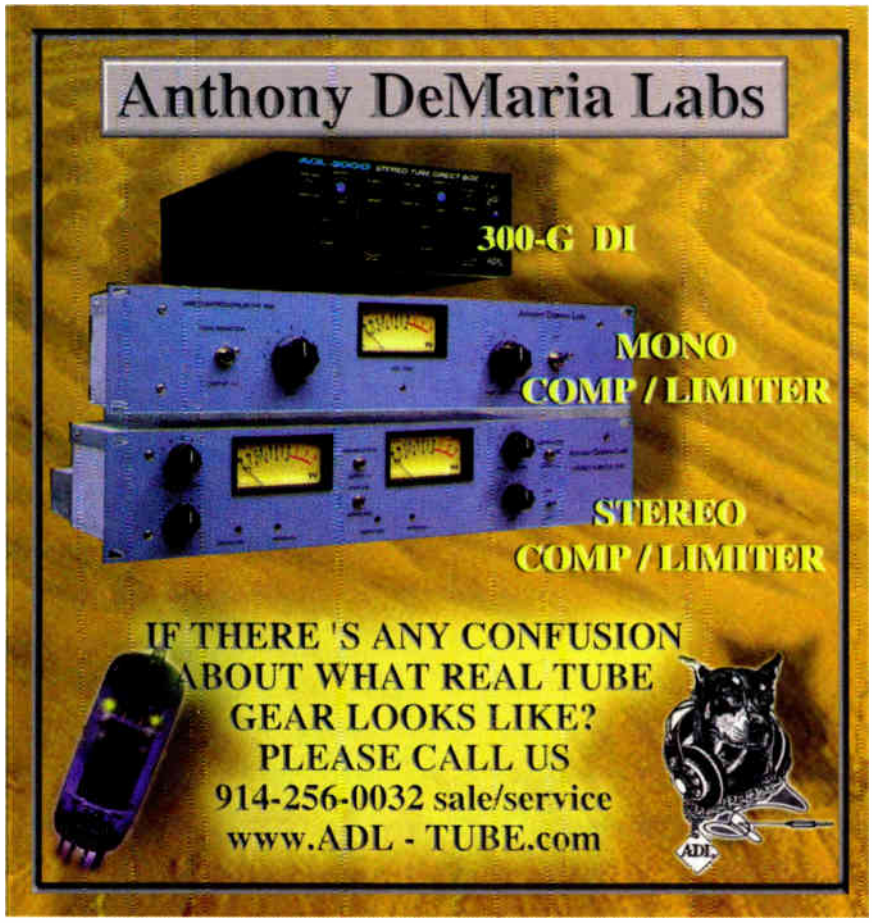

CIRCLE #130 ON PRODUCT INFO CARD

—FROM PAGE 153, SPICE GIRLS

petent enough, with the most impressive aspect being the stage and lighting. Four huge screens on each side provided additional visual information, with an interesting and thoughtful little detail being the screen corners that were reserved for a display of sign language for the hard of hearing. The stage itself was set up in the tradition of Broadway musicals and theater, with many different levels, a huge staircase in the middle and even a fake, old-fashioned, red theater curtain before and after the show. The sci-fi opening visuals were impressive, the dance routines of the five girls and the six extra male dancers were entertaining enough, and the singing, though bland, was in tune. The music was also rather bland and samey, with the only real standout tracks being a cover of the Eurythmics' "Sisters Are Doing It for Themselves," and the indestructible "Wannabe." All in all, nothing that a ten-year-old couldn't handle. Although the most asked question after the evening was probably, 'Were the girls really naked when they sat behind those chairs?'

IT'S NOT AC/DC

The two engineers I spoke with had other things on their minds than what the Spice Girls were wearing, or not wearing. FOH engineer Mike Dolling and monitor engineer Graham Blake are both freelancers who have been hired for the whole world tour by the Spice Girls and top UK sound reinforcement company Wigwam.

Dolling was in a bit of a state when I arrived, because someone had accidentally poured a can of Coke on his 56-input Amek Recall mixing desk the night before. Several modules had just been replaced, and he was frantically retesting and resetting all the affected channels. So after a brief chat, I caught up with him a few weeks later on the phone, when he was recovering from an after-gig Spice party.

Dolling has been a live sound engineer for 16 years, and has worked with the likes of Belinda Carlisle and East 17. Despite his wealth of experience, he revealed that working with the Spice Girls poses some interesting challenges. One of those was particular to Wembley Arena, and he had a unique solution: "Wembley Arena is notorious for the bad definition in the bass response. Many people don't realize this, but the reason is the old Olympic swimming pool un-

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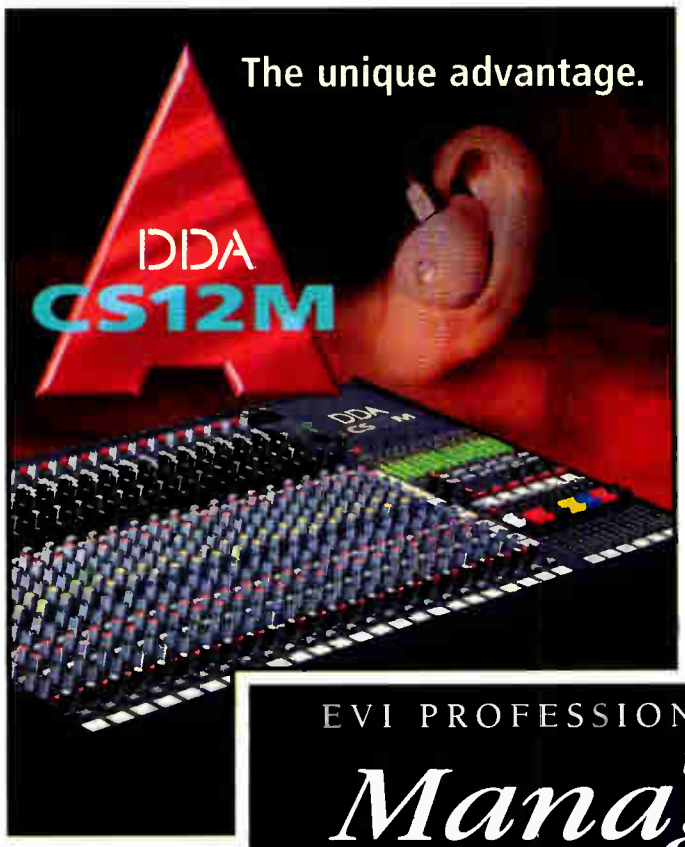
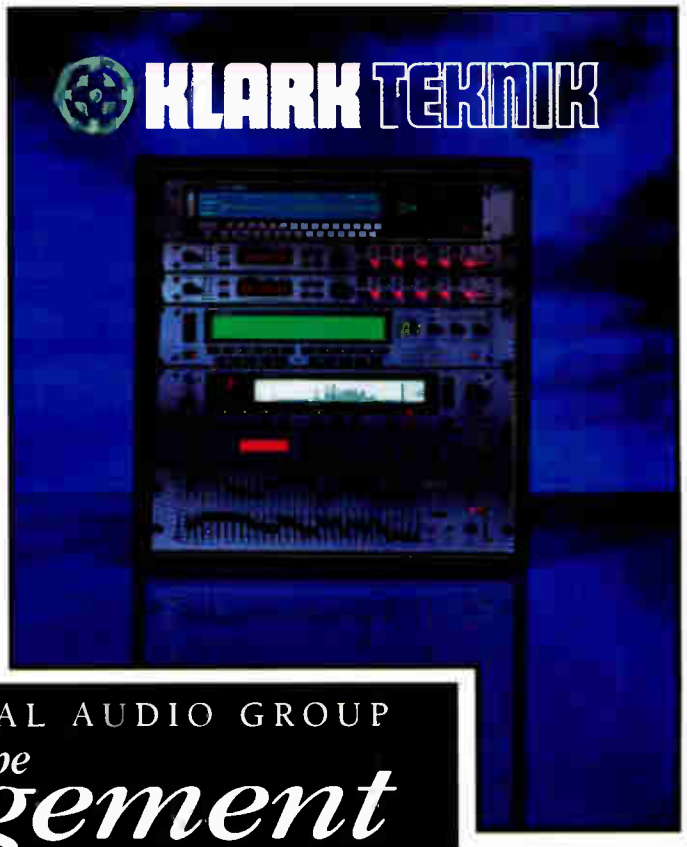
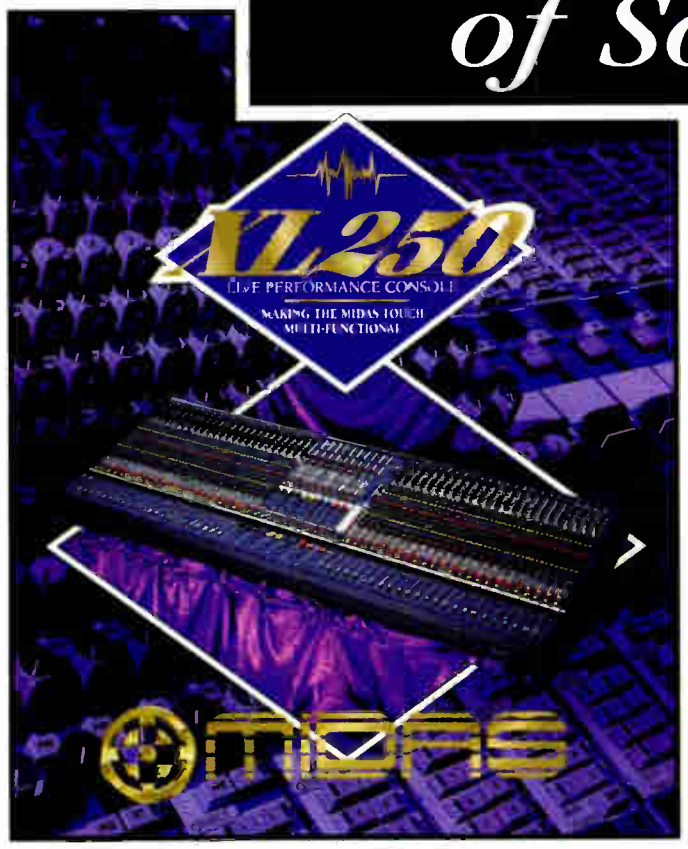
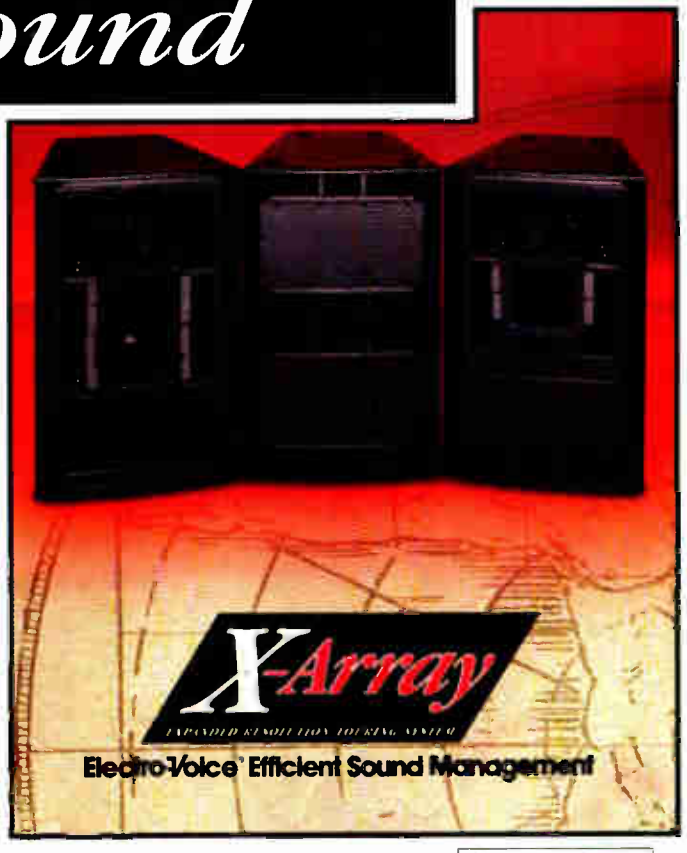




EVI PROFESSIONAL AUDIO GROUP

the Management of Sound





1998 Nominee

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Tel: (616) 695 4750. Fax: (616) 695 0470.

derneath the venue, which causes all sorts of awkward peak resonances. So when I work in Wembley I have the pool filled up with lots of huge, very heavy curtains to dampen these resonances. Apart from that, the main challenge in working with the Spice Girls is that I'm dealing with five singers, who continuously switch between lead, harmony and backing vocals."

Wigwam has provided a system based around technology developed by German company D&B Audio Technik. The system was flown in left and right clusters and supplemented by a delay cluster above the mixing console. Two ground stacks of db402 top/402 sub/B2 subs were positioned left/right and further db902 cabinets were used to fill in the center front rows of seats. All the cabinets are powered by db p1200/db a1 amplifiers and are controlled remotely from FOH by the db computerized RIB Q system, which is making its debut on the touring scene.

Dolling's Amek Recall FOH mixing desk was complemented by two Yamaha 03D consoles. "The Recall ShowTime software handles all the automation and drives the Yamaha 03D desks and all the effects via MIDI," Dolling explains. "Each song has a scene in which all the settings for the band are preset. One of the 03D desks submixes the keyboards from musical director Simon Ellis, the other the very large percussion set. ShowTime also switches microphones off and on, and controls the microphones for the percussion via the 03D. Since it's such a large percussion set with many close-up microphones, closing down unused mics is vital to prevent feedback.

"The effects are two Yamaha SPX1000 units for the drum kit, one SPX1000 for the guitar. The keyboard effects are done in the 03D. I also use a TC 5000 as my generic long reverb; it's on a Lexicon 480 hall setting that never changes. Very nice for ballads and soft songs. The PCM60 is my short plate reverb, for the uptempo pop songs.

"I use the TC 2290 as the generic fattening delay for the girls' voices," Dolling continues, "and I use a rack of [Amek] Rupert Neve 9098 compressor/ limiter modules on them. The Amek Recall has five 9098 mic preamps built-in, which I use on the girls' vocals. The Amek really is a great desk. I use the onboard compressors and noise gates a lot, as well. And the great thing about the Recall is that it leaves me free to concentrate on mixing the girls' voices. Since they constantly swap between lead and harmony, I have to pick out lines and am constantly re-adjusting things."

As has been the case with many trendy young groups, there's been a lot of speculation as to whether the singers' voices are live or Memorex, but contrary to rumor, "No taped vocals are used," says Chris Hill of sound company Wigwam. "There are video playback inserts and music samples throughout the show, but the vocals are definitely live!"

"The tour is sponsored by Shure," Dolling says, "so we use many Shure mics, with hypercardioid SM58 radio mics for the girls, which helps to get more level and less feedback. But still, with five open microphones on a fairly loud stage, I have to be very alert. All the Recall settings were programmed during a month of rehearsals in Ireland in January, but I didn't want to automate the girl's voices—partly to be able to manually adjust for feedback; partly because the acoustics vary from hall to hall, and so the vocals cut through differently; and partly because the audience noise levels are so high.

CIRCLE #112 ON PRODUCT INFO CARD

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The SLS Loudspeaker product line is the result of over 100 years experience in the professional sound and hi-fidelity industries. The owners and engineers of SLS have been designers, manufacturers, installers and touring engineers since the early 1970's. These professionals have teamed up to produce the highest quality loudspeaker line available to the pro sound and contracting industries to date.

T3R SYSTEM TOURS THE COUNTRY

Roar Productions has teamed up with Smoke and Mirrors in St Louis Missouri. The new all hi-tech sound and lighting production company is currently touring with some of the countries top entertainers.

The ribbon loaded SLS speaker system is getting incredible acclaim from the entertainers and engineers.

The high SPL without distortion of the SLS Loudspeakers are allowing entertainers to perform with less ear fatigue to themselves and their audiences. The extended frequency response and the high transient response of the SLS Loudspeakers reproduce music with the characteristics of a recording studio monitor rather than a typical PA system.

112RT SYSTEMS PRODUCE CLARITY FOR THE CLERGY

Numerous Churches have been installing the new SLS Loudspeaker 112RT speaker systems in their sanctuaries. The natural clarity and the extremely high gain before feedback seems to take care of most of the usual problems that have plagued designers, installers and operators for years. Seamless arrays which can be achieved with the 112RT produce even coverage with absolute natural clarity. The end result in most cases, has been the illusion of the invisible sound system."It sounds so real that you can't believe there is a sound system at all."

RIBBON DRIVER TECHNOLOGY

Ribbon driver technology is setting new standards in the professional loudspeaker industry. While ribbon drivers have been available for several years in the esoteric hi-fidelity industry, those hi-fi drivers typically can't produce the high SPL necessary for the pro sound and contracting markets.

The ribbon drivers utilized in the SLS loudspeaker line are the result of many years of research and development. With the use of neodymium magnet material and new proprietary elements these drivers are capable of producing SPL's in excess of 130db with less than 2% distortion. Their frequency response is extremely flat from 1000hz to 20,000hz with a peak power handling capability up to 2000 watts.

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"It's a tricky combination, because this show is family entertainment. It's not AC/DC. I have to be very conscious of the fact that there are loads of kids in the audience, and so none of the ground-standing speakers can be very loud at all. You don't want kids going near the speakers and getting hearing damage."

At the stage end, Graham Blake was busy making sure that the Spice Girls and the six musicians (drums, percussion, guitar, bass, two keyboard players) could also hear themselves and each other above the din. He uses Shure UHF in-ear monitors for the five singers. Side-fills consisted of eight db402 top and eight db402 subs flown from db 2 wide frames. The percussion player uses a Garwood prs 2 in-ear system, and the rest of the band are using the Firehouse wedge systems powered by Lab Grubben amps. Each of the keyboard players is provided with two Nexo Ps-10 cabinets mounted on custom-built stands and supplemented with two Nexo Ls-500 sub bass cabinets. Blake's monitor desk is a 40-input Midas XL-3, which he uses to mix the band.

The girls' voices require special attention. Apparently, some of the Spice Girls' dubious early performances were caused by inadequate monitoring, so during the rehearsals a lot of care was taken over getting the monitor levels right for each singer. Using the in-ears, Blake's job wasn't affected so much by variables as hall acoustics and crowd noise, so he automates all the settings for the girls' five voices in a Yamaha 02R. The push of a button moves him into the next scene, whether a chorus or as bridge or a verse or any other change. Everything is programmed in Project Manager 2 software from the Canadian company Zeep. Backup is provided by an Apple Mac laptop.

Wigwam is shipping all of the sound equipment over for the U.S. tour. Blake's equipment remains identical, but Dolling's setup will be supplemented by extra gear and one crew member from sound reinforcement company Eighth Day Sound (Cleveland). "Wigwam have a very good relationship with Eighth Day," explains Dolling. "They're supplying us with a few extra speakers and a delay system. We'll be playing mainly sheds in the U.S.—20 to 24,000-seat amphitheaters—and we'll need a little extra power." ■

Paul Tingen is a freelance writer based in the UK. This was not his favorite assignment.

FUTURE SONICS
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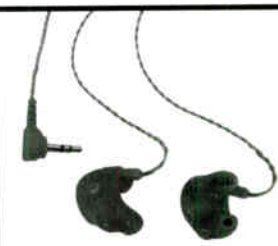

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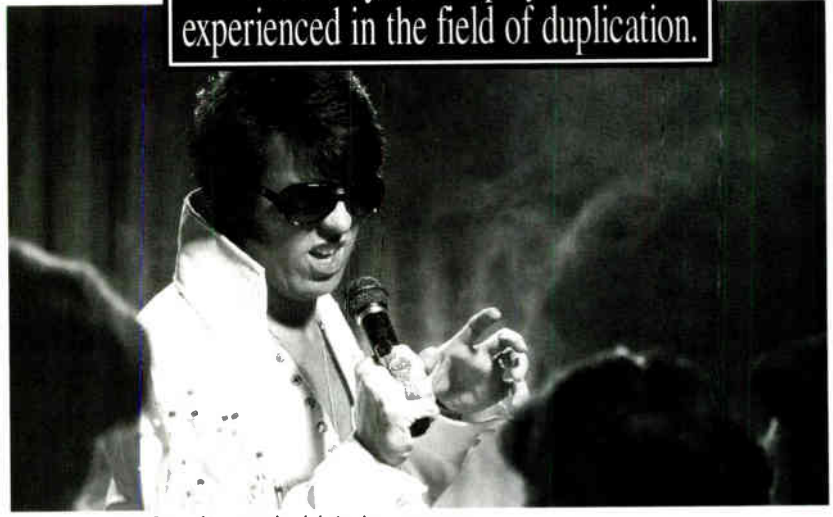

Dan Weber, ASVC employee and celebrity impersonator.

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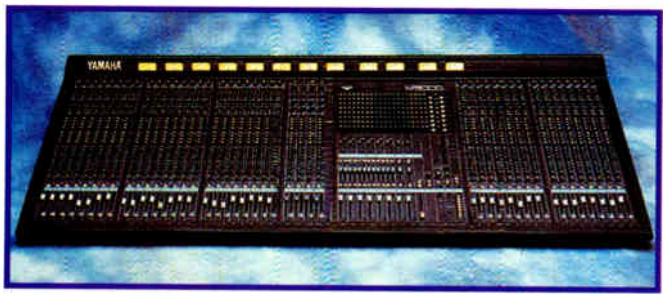


YAMAHA M3000 SR MIXER

Yamaha Pro Audio Group (Buena Park, CA) introduces the M3000 Sound Reinforcement Mixing Console. Featuring 40 mono and four stereo inputs, eight VCA groups and eight mute groups, the M3000 includes a 16-bus GADiversity feature allowing users access to up to eight of the aux buses as subgroup mixing buses. Inputs feature independently switchable 48V phantom power and 4-band EQ (two bands sweepable with modifiable Q). Flexible output architecture allows for 16 mix outputs, switchable pre/post in groups of four. A Scene Memory function allows up to 128 Scenes to be stored and recalled, either directly via eight direct recall switches or a ten-key pad, or through MIDI program change messages. Additional features include 20x8 output matrix, 12 VU meters and a comprehensive talkback system and test oscillator. Retail price, including PW3000M power supply, is $12,995.

Circle 314 on Product Info Card

A-T MULTICHANNEL UHF WIRELESS

Audio-Technica (Stow, OH) has introduced the 7000 Series multichannel UHF wireless microphone system. Featuring up to 100 switch-selectable PLL-synthesized channels and a 700MHz operating frequency band, the 7000 Series system may be configured for handheld or body-pack applications: The ATW-7376 handheld dynamic microphone/transmitter system includes the ATW-R73 receiver and the ATW-T76 microphone; the ATW-7375 UniPak™ Transmitter System consists of the ATW-R73 receiver and ATW-T75 body-pack transmitter, which includes an instrument input and will also interface with a variety of lavalier and headworn mics. The half-rack-size ATW-R73 receiver includes dual independent receivers to reduce dropouts and multipath distortion. Features include balanced XLR and unbalanced TRS output jacks, ground-lift, adjustable volume and squelch controls and RF/AF/A-B front panel indicators. The ATW-7376 handheld system is priced at $995; the ATW-7375 beltpack system is $975.

Circle 315 on Product Info Card

APOGEE ADDS LINEAR ARRAY SPEAKERS

Apogee Sound (Petaluma, CA) added two new loudspeakers to its Linear Array Series. The ALA-3 is intended primarily for vocal-range reproduction, though it may be supplemented with subwoofers for full-frequency applications. The two-way unit contains dual 10-inch woofers and dual 1-inch compression drivers coupled to rectangular waveguides. Dimensions are 35x14.5x13 inches. The three-way ALA-9 contains dual 15-inch woofers, dual 10-inch horn-loaded midrange drivers, and dual 2-inch compression drivers coupled to rectangular waveguides. Dimensions are 60x20x22 inches.

Circle 316 on Product Info Card

RANE SPLITTER/ROUTER/MIXER

The SRM 66 splitter/router/mixer from Rane Corporation (Mukilteo, WA) is a rackmount unit that accepts six balanced inputs and can route and mix them to any or all of six balanced outputs, in any combination. Four front panel buttons allow the user to select an input or output, and a rotary knob adjusts levels. Presets may be stored and recalled. Outputs include limiters. Up to six assignable SR 1 digital remote level controls may be connected for remote control of specified inputs and outputs. Price of the SRM 66 is $999; each optional SR 1 is $169.

Circle 317 on Product Info Card

MARTIN AUDIO WAVEFRONT 8C

Martin Audio (distributed by TGI, Kitchener, Ontario) offers the Wavefront 8C three-way horn-loaded compact touring loudspeaker. Featuring a single 12-inch woofer, a 6.5-inch midrange driver on a 55° horn and a 1-inch compression driver on a constant-Q horn, the system may be bi-amped with an internal 3.5kHz passive crossover handling the mids/highs. Constructed from multilaminate birch plywood, the cabinet is equipped with casters, a grille, and both flip and pocket handles. Load-certified MAN flying points ease system flying. Dimensions are 22.1x31.5x36.4-inches; weight is 156.5 lbs. Price is $3,899.

Circle 318 on Product Info Card

SENNHEISER UHF RECEIVER

Sennheiser (Old Lyme, CT) announces the EM3532 UHF true-diversity, 2-channel wireless microphone receiver. Featuring menu-assisted operation, the unit can store and display up to 32 UHF channels for each receiver and offers more than 4,800 selectable frequencies in the 434-960MHz range. Additional features include PLL synthesis, HiDyn plus noise reduction, a maximum switching bandwidth of 24 MHz and a scan function that automatically locks to a found frequency in a 25kHz grid. The EM3532 is remotely controllable, compatible with all Sennheiser UHF transmitters and provides a low transmitter battery indicator for selected models.

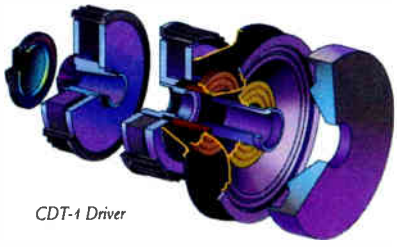
Circle 319 on Product Info Card

World Radio History

YOU'VE NEVER SEEN 3-WAY LIKE THIS BEFORE!

Your first thought might be: Where is the second horn?
The answer: Our patented new CoEntrant driver allows us to use a single horn for the mids and highs, providing point source performance from 500 Hz to 17 kHz. The result is unmatched mid/high control and clarity. And there is more. This cabinet is loaded with so many unique new features, we decided to open one up for you to see:

Patented CDT-1 CoEntrant Driver
The CDT-1 combines the output of an 8" mid range and a 1" high frequency driver in a single device. Mounted to a 2" Complex Conic horn, the result is true point source performance from 500 Hz to 17 kHz.



CDT-1 Driver

Rugged, Compact Cabinet
As the CoEntrant design allows one horn to reproduce both the mid and high frequency bands, the SR6 & SR7 cabinets are smaller than conventional 3-way systems in their performance class. Only the finest 13 ply Finnish birch is used to build the cabinet. Rigid internal bracing makes for improved low frequency performance, and excellent durability.

Integrated Flying Hardware
You can chose between Aeroquip fly-tracks or our cost-effective UMH-12 Universal Mounting Hardware.

Exclusive Horn Design
Complex Conic WaveGuide Technology™ smooths out the rough edges of traditional horn designs and provides excellent transparency, low distortion, and consistent coverage. You have a choice of coverage angles, and you can easily rotate the horn (i.e. the entire mid/high section!) in the cabinet. This is a first for a 3-way loudspeaker!

High Power Woofers
Heavy-duty 12 & 15 inch woofers for the low frequency sections feature 4 inch voice coils and proprietary cone treatment for maximum power handling and low distortion.

Matched Electronics
A built-in crossover network for the mid/high sections makes this a 3-way, bi-amped cabinet. We also offer controllers and amplifiers that are carefully designed and matched to the SR6 & SR7 for optimal performance and reliability, and to make the installation as fast and trouble-free as possible.

Amplifier with plug-in Controller

Now that you've seen what's in the SR6 & SR7, we challenge you to put them through critical listening tests. Few three-way systems can approach the price/performance and sound quality of these new cabinets. Call us or your local Renkus-Heinz representative for a demonstration.

We think you will agree. 3-way never looked or sounded this good!

RENKUS-HEINZ

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World Radio History

BY BLAIR JACKSON

RECORDING NOTES

JAZZ &

PHOTO: KEVIN ELLSWORTH

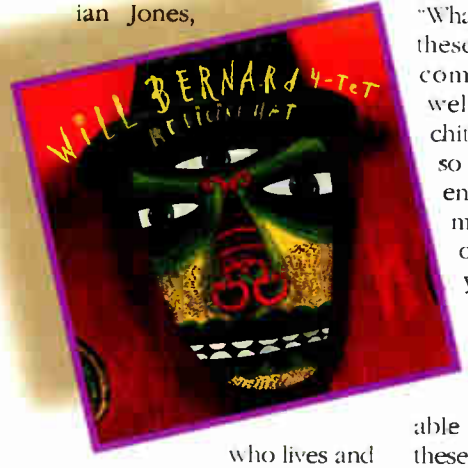
Bill Frisell

FRESH GUITARS

BILL FRISELL, JOHN SCOFIELD AND WILL BERNARD

by Blair Jackson

Over the past several years, producer Lee Townsend has worked on some of the most interesting and involving guitar-based jazz and new music to come out of this country. His records are notable both for their sonic clarity and the consistent imagination in the performances he captures; let's just say he knows how to pick winners. Townsend has a coterie of three sympathetic engineers he works with consistently: the great New York-based, TEC-nominated Joe Ferla; L.A.-based Judy Clapp; and Christian Jones,



who lives and works in Townsend's home region, the San Francisco Bay Area.

"They have minor differences in how they work," Townsend comments, "but they have similarities in sensibility and a shared sonic and musical value system with me. There are more commonalities than differences, though they have their own distinctive approaches from a purely technical standpoint."

These albums from the spring of '98 are fine showcases for Townsend and each of the three engineers, as well as for the artists themselves, of course. Townsend notes, "What I think all three of these records have in common is a very well-thought-out architecture for the material, so they're able to go different places within a certain mutually recognized set of parameters. Therefore, you find liberation within those limitations, and I feel like Bill [Frisell], Will [Bernard] and John [Scofield] all were able to find that balance on these records."

John Scofield: *A Go Go* (Verve). Here's an interesting match—Scofield, a master improviser who has played guitar with everyone from Mingus to Miles and has had a long, distinguished career as a leader, teamed up with the young, hip, genre-bending organ-bass-drums trio Medeski, Martin & Wood for three days of live tracking at

Avatar Studios in Manhattan, on a series of compositions Scofield wrote specifically for this grouping.

"I had seen Medeski, Martin & Wood play a few times and found them really convincing," Townsend says. "In fact, one time a few years ago they played Bimbo's [in S.F.], and they came out and started this terrifying, ferocious groove and it just never stopped. It went different places, of course, but in

—CONTINUED ON PAGE 177

World Radio History

BEYOND

4-SIGHT

NEW FACES MOVE THE TRADITION FORWARD

by Blair Jackson

One of the first signings on Phil Ramone's N2K label, 4-Sight consists of four up-and-coming musicians who have a wealth of experience between them—stints and sessions with the likes of Nancy Wilson, Art Farmer, Joshua Redman, Branford Marsalis, Dianne Reeves, Betty Carter, Wynton Marsalis, Roy Hargrove and Stanley Turrentine—and an undeniable chemistry that comes from compatible players honing their chops both separately and together. The New York-based group consists of saxophonist Ron Blake, pianist Peter Martin, drummer Gregory Hutchinson and bassist Rodney Whittaker—all stellar players and solid writers, whose eponymous debut CD

—CONTINUED ON PAGE 184

PHOTO JOE ROSEM

Rodney Whittaker, Peter Martin, Gregory Hutchinson and Ron Blake

BILL LASWELL REVISITS ELECTRIC MILES DAVIS

by Blair Jackson

Talk about setting yourself up for a barrage of criticism: Bill Laswell—the talented and creative bassist, bandleader (the super-eclectic Material) and producer known for his forays into all sorts of music styles, from ambient to hip hop to funk and various exotic world forms—has created an intriguing melange of late '60s and early '70s Miles Davis tracks, editing and remixing songs and adding his own sonic touches. The resulting album, called *Panthalassa: The Music of Miles Davis, 1969-1974*, offers a seamless 60 minutes of tracks from *In a Silent Way*, the airy, hypnotic, proto-ambient 1969 album where several of Miles' bandmates first plugged in and began exploring electric tonalities; from 1972's underrated funk-fest, *On the Corner*, from the similarly neglected 1974 gem *Get Up With It*; and from some previously released *On the Corner*-era outtakes. As usual, it's not just Miles' show, either: His bandmates included such luminaries as Wayne Shorter, Herbie Hancock, Joe Zawinul, Dave Holland, John McLaughlin, Colin Walcott, Jack DeJohnette, Al Foster, Tony Williams, Don Alias, Dave Liebman and others; not a weak riffer in the bunch.

By the time Miles had released the follow-up to *In a*

—CONTINUED ON PAGE 185

PHOTO THI LINH LE

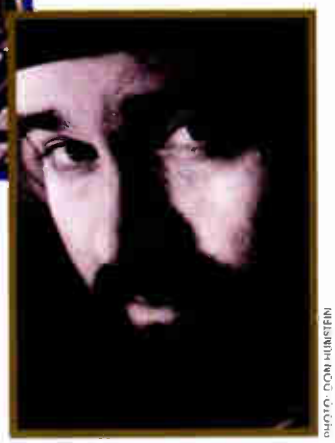
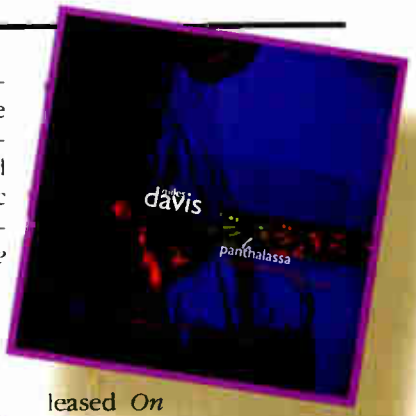


PHOTO DON HUNSTEIN



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JETHRO TULL'S "THICK AS A BRICK"

by Tim Morse

Jethro Tull was one of the most unorthodox yet successful bands of the '70s. Their leader, Ian Anderson, was a flute-wielding madman onstage, and the band themselves seemed possessed as they performed their unique brand of extremely intricate rock music. Their sound crystallized in 1972 with the release of the album *Thick as a Brick*, which featured one continuous 45-minute song broken into different sections and themes. However, unlike other long-form songs of the day, "Thick as a Brick" did not feature endless jamming over a monotonous ostinato (like Iron Butterfly's "In-a-Gadda-Da-Vida") but was instead an exquisitely crafted musical suite filled with different styles and textures all seamlessly woven together. It had the additional benefit of Anderson's thought-provoking lyrics, which were mostly based on his perceptions of the world when he was an adolescent (the meaning of which are still being analyzed and debated by Tull's devout following).

Jethro Tull's origins begin with the formation in 1963 of an R&B-influenced Blackpool school band named The Blades. The group featured future Tull members Ian Anderson (vocals), Barriemore Barlow (drums), John Evans (keyboards) and Jeffrey Hammond-Hammond (bass). The Blades renamed themselves several times and played for years without much success until everyone except Anderson gave up on the venture. Anderson continued the band with new members Glenn Cornick (bass), Clive Bunker (drums) and Mick Abrahams (guitar) and changed their name frequently to ensure repeat bookings. They found that they were sufficiently popular under the moniker of Jethro Tull, so they kept it. The group's sound had shifted, along with many other bands in England at the time, to the blues. They started to attract attention at gigs for their powerful performances and Anderson's memorable stage antics. They took the Sunbury Jazz and Blues Festival by storm and capitalized on this reputation with the release of their first album in 1969, *This Was*.

PHOTO MICHAEL OCHS ARCHIVES/VENICE CA

L to R: Clive Bunker, Martin Barre, Jeffrey Hammond-Hammond, Ian Anderson and John Evans

There was disagreement between Abrahams and Anderson over the musical direction of Tull, and Abrahams left to be replaced by Martin Barre, whose wonderfully melodic and bluesy guitar playing has since become a band signature. Their second album, *Stand-Up*, is widely considered a classic, with its striking blend of English-folk, jazz and rock styles. The single "Living in the Past" was a major hit, and it is notable for being a rare Top 10 single in 5/4 time. John Evans temporarily rejoined the group to add his classically tinged piano and growling organ sound to the more rock-oriented *Benefit* album (and he ended up staying for ten years!). On the American tour to support the record, Cornick found that he'd been fired and replaced with Anderson's school chum Hammond-Hammond, who at the time could barely play bass guitar.

Despite some problems in the studio and Hammond-Hammond's deficiencies as a player, Tull rose to even loftier heights with their next record, *Aqualung*, which contained several songs—"Locomotive Breath," "Cross-Eyed Mary" and "Aqualung"—that became staples on radio in both England and America. And the group cemented its following by touring constantly, in what many agreed was one of the most dynamic shows in rock music. Unfortunately, the grueling schedule took its toll on Bunker, who relinquished the drum stool to Barriemore Barlow in 1971. As they prepared to go into the studio to make their fifth album, Jethro Tull comprised ex-Blades members (with the exception of Martin Barre).

Thick as a Brick actually began its life as a reaction to the critical response to *Aqualung*. A number of journalists in the British music papers hailed *Aqualung* as a breakthrough concept album about man and religion, when in fact there were many songs that didn't fit the theme. Anderson remembers, "*Thick as a Brick* came as a response to the over-intellectualizing of the pop and rock music at the time [and the pressure] to come up with—as Saddam Hussein would have said, 'the mother of all concept albums.' It was a humorous and sometimes cynical parody of what progressive rock and concept albums were about. To me, there was a good idea behind that—it was to try and have an element of seriousness about it lyrically and

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musically, but at the same time it had this get-off-the-hook motif of being a spoof, being a send-up. In some ways it was a bit of a cop-out to do that, but the mood of the time was the re-emergence of British humor from the radio days of BBC to television—*Monty Python's Flying Circus*."

Only the opening section of the "Thick as a Brick" suite had been written when the band entered the studio to begin recording. This was quite unusual for Jethro Tull, because in the past Anderson generally wrote the songs on the road and then the band would quickly lay the music down in the studio. But they had more time to rehearse and record "Thick as a Brick," and they used it to their advantage. In the morning before lunchtime rehearsal, Anderson would write the next piece of music. Then he would meet with the group, and they would rehearse the new section and then tack it to the previous day's work. Tull did this for about two weeks before they entered North London's Morgan Studios with engineer Robin Black to begin recording the project.

At the time, Morgan was considered one of the most advanced studios in England. In the early '70s you might have found Jethro Tull, Rod Stewart and Yes all working there at the same time. The control room at Morgan was equipped with a Cadac desk, Studer multitrack and Tannoy monitors. The 2-track mastering deck was also a Studer. For *Thick as a Brick*, all of the backing rhythm tracks were recorded live, with the overdubs mostly being vocals, Anderson's flute and guitar solos. Although the instruments were captured live, great care was taken to give them separation and their own distinct place in the final mix.

A major difference between *Thick as a Brick* and its predecessors is the shift in musical focus from Barre's electric guitar playing to Anderson's acoustic guitar and flute and the Hammond organ playing of John Evans. Anderson recalls, "It was evening things up a bit. With 'Thick as a Brick' it was a more orchestral approach to the ensemble playing, in the sense that we did try to divide up things to create a more even band performance, more opportunity for people to put their own stamp on things and come up with their own ideas."

To achieve the natural sound of Anderson's Martin 0-16NY acoustic guitar, Black used a Neumann 67 placed at the bottom of the guitar and a Neumann 84 aimed at the top three strings, near the sound hole. Neumanns were also used for recording Anderson's voice and flutes (the 67 being the real workhorse of the sessions). For Evans' organ sound, two mics were aimed at the top of the Leslie and one at the bottom. At times, they also employed room mics to pick up ambience, which was frequently quite loud because of the growly sound of the organ.

Barre played a 1959 Gibson Les Paul Sunburst through a HiWatt amplifier. He didn't use any effects except for echo; for his distorted sound, he simply cranked up the volume. Barre wanted to use a lute for a particular passage, but "it took forever to record it, because tuning the thing up took almost a day!" he recalls. "It was really a nightmare."

Thick as a Brick came as a response to the over-intellectualizing of pop and rock music at the time. It was a parody of what progressive rock and concept albums were about.

—Ian Anderson

Hammond-Hammond used a Fender Jazz Bass played through an Acoustic Bass amplifier. The bass sound was a combination of a mic and a DI. Barlow's drum kit was fully miked, and they also used ambient room mics—a minimum of ten mics went into creating his sound.

Tull spent about six weeks, practically nonstop, recording the "Thick as a Brick" suite, and then another week to ten days to mix it down to stereo. Things generally went quite smoothly, until the end of the mixing sessions, as Robin Black remembers: "After several days of mixing it, we got to the end of the second side, and you mop your brow and think, 'Great, we've done it!' But Ian spotted a pitch change at the end of the album from the beginning of the album. We then discovered that there had been a problem with the 2-track that we were mixing onto. The speed had slightly slowed down. Ian said, 'This is totally unacceptable, we are going to have to mix it again.' I remember being crestfallen, but he was absolutely right. I was ready to run away and go back to my mother!"

Despite the setback, everyone involved with the recording remembers it as being a fun album to create and agrees that the group's morale and camaraderie were at an all-time high. This was certainly in evidence in the practical jokes that people played on each other. Anderson recalls, "I was trying to learn to play a few lines on the violin for part of the 'Thick as a Brick' recording; obviously, it was pretty ropy. I thought, 'Well, I'll get the hang of it,' like 'I should be able to learn a few lines on trumpet, given a bit of time to do it.' When you've never played an instrument before, you're never going to sound that great on it the first day. I'm sawing away on this violin, causing some consternation to some bandmembers. We went off to lunch and came back and I picked up the violin to play this particular line, only to find that the hairs on the bow had been cut! As everyone was laughing, I went absolutely nuts, I went mental. Barriemore Barlow was clearly the culprit; he was rolling with sidesplitting laughter and I was so pissed off. Everybody else was laughing as well, and I was really humiliated and really angry about it. And then they produced my violin bow, intact. They had cut another violin bow, and I hadn't realized that it was a fake!"

Another victim of practical jokes was Hammond-Hammond, who enjoyed reading newspapers while the band was working. Of course the bandmembers took delight in doing things like setting the bottom of the paper on fire and hitting the lights at the same time to create quite the pyrotechnic effect. But it was Hammond-Hammond's love of newspapers that influenced the distinctive cover for the album: an English newspaper that opened up as a gatefold and contained humorous stories and pictures that tied into the album's concept. Anderson came up with the headline story that said an 8-year-old boy was responsible for the poem that became the lyrics for "Thick as a Brick"—and much to his surprise found many gullible journalists and fans falling for the hoax.

The *Thick as a Brick* album was a huge success when it was released, and parts of the suite are still staples of FM rock radio. It shot up the charts to become Tull's first Number One album in the U.S. (it was Number 5 in

World Radio History

Britain), and it represents the peak of worldwide popularity for the group. The suite continues to be a centerpiece of the band's live show (indeed there have been very few times when it hasn't been played since 1972). Anderson and Barre have remained the cornerstone of the band, with other members departing and being replaced over the years. But the group still regularly releases albums and tours the world—in fact, the band will be celebrating the 30th anniversary of Jethro Tull this fall. ■

—FROM PAGE 172, FRESH GUITARS

terms of the musical empathy and interaction and being on the same wavelength, it was just astonishing. Well, John [Scofield] was a fan, too. He had been listening to *Shackman* [MMW's 1997 release, profiled in *Mix* in February 1997], and we were talking about what he should do after his last record [*Quiet*], which was kind of quiet and acoustic. We wanted to do something more slamming, and we both had the idea of doing something with Medeski, Martin & Wood. It turns out that they were fans of John, and so getting them together was easy. There was nothing forced about it, and from the first day of rehearsals it just felt really good. Everyone subsumed themselves for what was needed. It was going to be a funk record, and it turned out to be this unstoppable funky groove."

Engineer Ferla describes the album as a "sort of retro-ish record. By that I mean it's not some clear, clean audiophile sound that we were going for. Look at the instrumentation: Medeski, Martin & Wood definitely have a vintage vibe going on between the Hoffner bass that Chris [Wood] plays, Medeski's Hammond, clav and Wurlitzer, and Billy Martin played this old set of drums from the '60s that had a real distinctive sound. Nothin' new about that stuff."

The trio and Scofield were set up in and around Avatar A—the big, high-ceilinged "live" room: "The drums were in an isolation room in the back," Ferla recalls. "John Medeski was set up in the big open room with all of his keyboards and his Leslie and his amps for the clav and Wurlitzer. Scofield's amp [a Matchless that Ferla describes as 'phenomenal-sounding'] was set up in a small isolation booth, and he was in the room with Medeski, except when he played acoustic guitar; then he was in a booth. Chris was set up in another iso room with an amp, and he played upright bass on some stuff. But everyone could see each other fine, and even though this room is big, we managed to have them be fairly close together; that's one of the nice things about that studio—you can get people to feel like they're intimate yet still have isolation, but in rooms that have their own sound to them."

Ferla says his miking choices were fairly standard, with a nice complement of tube models. For Scofield's guitar, he used a combination of a direct and a tube mic on the Matchless, "and then I pumped that through a Fairchild limiter," he notes. Somewhat unusual was devoting four mics to Medeski's Leslie, instead of the usual two.

"I was into capturing what they were doing," Ferla says. "We didn't fuss over things to make them sound perfect. When Medeski wanted to overdrive the Hammond, we captured that rather than trying to make it sound clean. What you hear on the CD is very close to what those guys really sounded like in the room." He adds that there was no editing on the album, and "99 percent of the solos on the record were blown live."

The album was mixed in four marathon sessions at Donald Fagen's River Sound studio, "which has this fantastic old Neve 8078 with Flying Faders and some really good plates," Ferla says. "Avatar has a Neve, too, but it doesn't have automation, and I'm spoiled. Whenever I can, I like to mix on old Neve or Focusrite boards." Processing was simple and minimally applied—mostly Lexicon 480, two EMT 140 plates and perhaps the most unusual touch, the reverb from a Fender Twin Reverb amp.

Ferla has worked with Townsend often the past few years and has nothing but praise for the producer: "He's a very mellow guy, but he's a very creative producer. Lee gets into every aspect of making the record, from the rehearsal/arrangement aspect down through to the mix—he's into equipment and gear, and he has a definitive taste sonically. He knows what he wants and what he likes. We've become really good friends through the years, and we're both always looking for something we've never done before. We're both always looking to grow. That's what keeps it fun."

Will Bernard 4-Tet: *Medicine Hat* (Antilles). Bernard is one of the hottest young players in the Bay Area, a versatile guitar slinger whose best-known credit is his work in occasional band TJ Kirk, a group that exclusively played

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songs by Thelonious Monk, Rahsaan Roland Kirk and James Brown. (That band also featured the higher-profile guitarist Charlie Hunter, who is also produced by Townsend.) Now Bernard is spearheading a dynamite quartet that includes the superb Hammond B-3 player and accordionist Rob Burger, bassist John Shifflets and drummer Scott Amendola (another veteran of TJ Kirk and the Charlie Hunter Quartet). It's the funky interplay between Burger and Bernard that drives most of the tunes (all of them written by Bernard) on *Medicine Hat*. Bernard is adept at all sorts of styles, from Hendrixy wah-wah and fuzzed leads, to more pristine textures. Most of the music is difficult to

ONE WORLD ENSEMBLE

FREE AND CLEAR

by Blair Jackson

From Satchmo to Sun Ra, jazz has always been an improviser's medium, though of course the degree of improvisation varies greatly from one musician or group to the next. Some bands improvise only within already fixed musical structures. And then there are groups like New York's One World Ensemble, who had the confidence and courage to record their *Breathing Together* CD live-to-2-track without any preconceived idea of what any of the five players were going to play. This is truly "free" jazz, composed (as it were) on the spot according to the instincts, whims and feelings of the quintet: reeds player Sabir Mateen, reeds and trumpet player Daniel Carter, pianist Yuko Fujiyama, bassist (and co-producer) Wilber Morris and drummer/percussionist Susie Ibarra. But far from being just some chaotic, cacophonous din, much of the music on *Breathing Together* has a calmer, more meditative quality. Yes, there are dissonant bleatings and clashing lines to be found, and roads briefly traveled and then abandoned, but there is also the confluence of minds working toward a common, if never articulated, goal. There are points when you can almost hear the musicians thinking through their instruments.

PHOTO: ALEXANDER MILHAILOVICH

L to R: Sabir Mateen, Yuko Fujiyama, Wilber Morris, Susie Ibarra and Daniel Carter

The disc, which came out last fall, is the first release on co-producer Samuel Rivers' Freedom Jazz label, and it reflects both Rivers' musical and sonic aesthetic. Rivers is a devotee of British equipment designer and analog guru Tim de Paravicini, and for this debut outing, he hired an engineer who already

—CONTINUED ON PAGE 180

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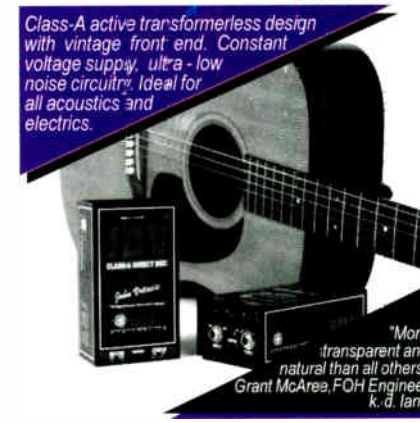

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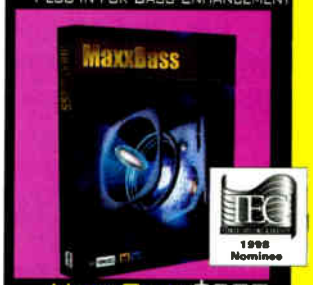

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categorize, falling into a challenging netherworld between jazz, rock and vaguely avant-garde approaches.

According to Townsend, who worked with Bernard on the two TJ Kirk albums, as well as three by Rinde Eckart, "It was obvious that Will was ready to step out and make his own record. I think his writing is strong, and this group has come together really well. We did a lot of rehearsals, and by the time we went into Mobius [Recording, in San Francisco] the group was a well-oiled machine. The core of the playing on the record is live. There were a few overdubs and repairs here and there, and some editing between takes, but not a whole lot."

"The sessions went really well," says engineer Christian Jones, who also tracked the TJ Kirk albums. "It was very straightforward. We would do the track

—FROM PAGE 179, ONE WORLD ENSEMBLE
owned some of de Paravicini's equipment to cut the album at Waterfront Studios in Hoboken, N.J. Chris Rice, an Englishman who had recently moved to Connecticut, had extensive classical recording experience in Britain and, as he explains, "then people discovered that my techniques worked well for jazz as well, and since I've moved to America, I've gotten into all sorts of music. I learned some time ago that minimalist miking techniques made for a more natural sound, and that's true with jazz ensembles and other kinds of groups."

Rice had known de Paravicini from England: "Tim and I had conversations in which the idea of a 1-inch stereo tape recorder came up, and he built two at the same time—one went to me and the other went to Kavi Alexander [of the audiophile label Water Lily Acoustics; see *Mix*, October 1996]. I've done some mastering work for Kavi." The recorder is a custom-modified, 1-inch vacuum tube Studer C-37.

That recorder was then matched with a de Paravicini-designed 8-into-2 mixer "which is really eight of Tim's line amplifiers buffered together," Rice says. "There's no EQ, no nothing. It's just level on each channel and pan and that's it, end of story. It sounds completely natural."

In keeping with the minimal miking philosophy on the project, Rice set up a pair of de Paravicini's custom mics (with Milab capsules) in a crossed Blumlein figure-8, in a position to pick up all the instruments in the room. He then augmented those with three spot B&K 4003 omnis—one near the bass and two inside the piano. "The sonic connection between Tim's mics and the B&Ks is that the B&Ks are very neutral and capable of withstanding pretty much anything you throw at them without overloading and turning nasty and grungy. I've found the B&Ks to be very useful as spot microphones. They don't have a character of their own, so you get the character you want. They will not add some jarring element to the sound."

With the purity of his signal path assured, Rice's biggest challenge was balancing the band on-the-fly as they went through their improvisations—after all, live-to-2-track is, by definition, an unforgiving medium. "The main thing was for the band to feel comfortable in the room, which was a nice, live space with a fairly high ceiling," he says. "We didn't use any isolation booths. We just set them up so they could see each other and interact; that's so important with this kind of music. Then it was mostly a matter of getting a balance that was both natural and that allowed detail to be heard. I had to ride the spot mics to make sure nothing disappeared, because in a group like this, where you have two powerful-lunged guys getting excited with saxophones, you tend to lose some detail with some of the other instruments. The drums and saxes were picked up beautifully by the main pair, but the bass and piano benefited from the spot mics."

Indie label economics being what they are, Rivers has yet to follow up this first release with another CD, but he promises that his next outing as producer will be equally compelling musically and will once again aspire to the audiophile standard of this initial voyage. Meanwhile, the members of One World Ensemble continue to make challenging and inspiring music in the New York area, both as a group and in other situations. Yes, free jazz lives! ■

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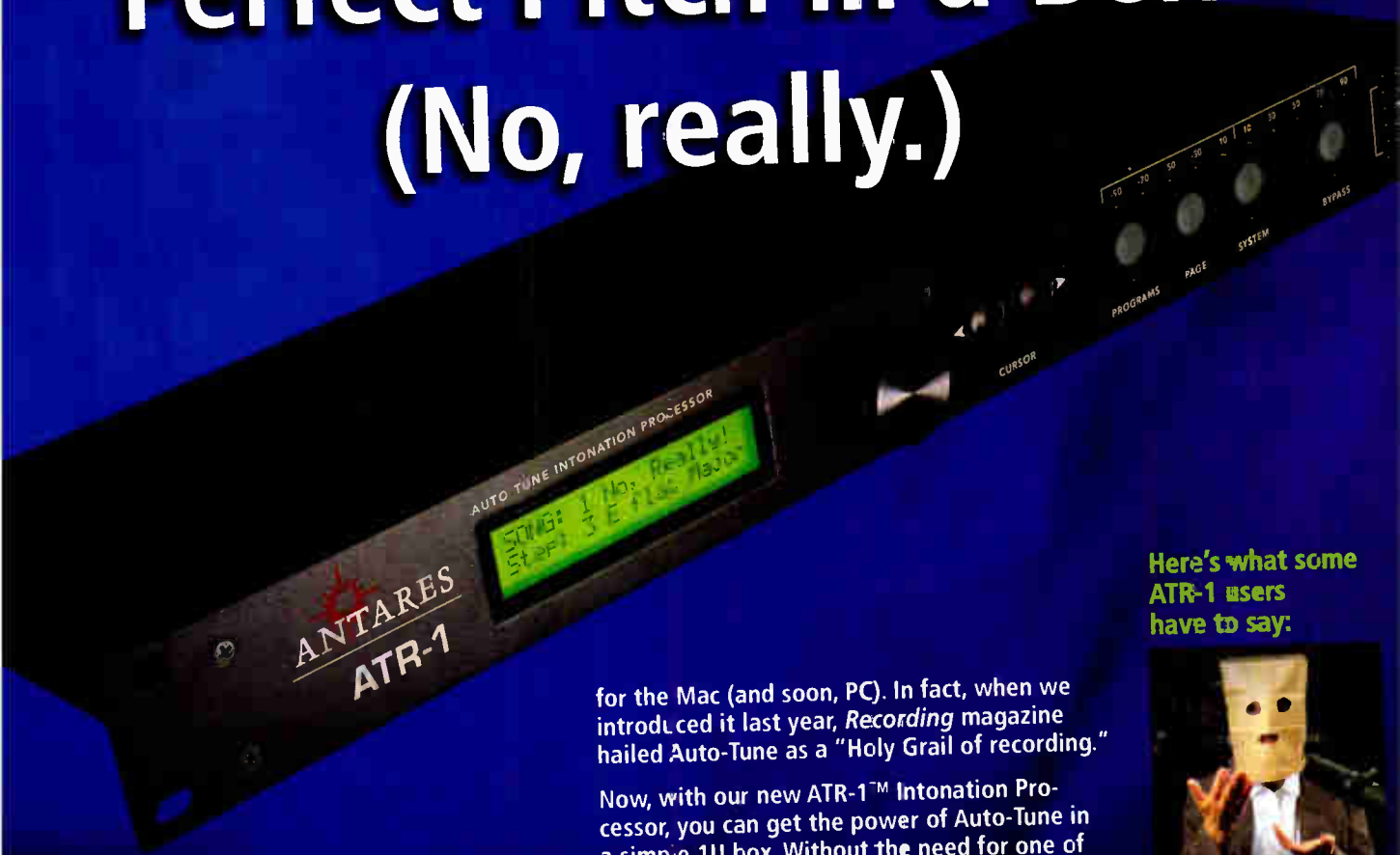

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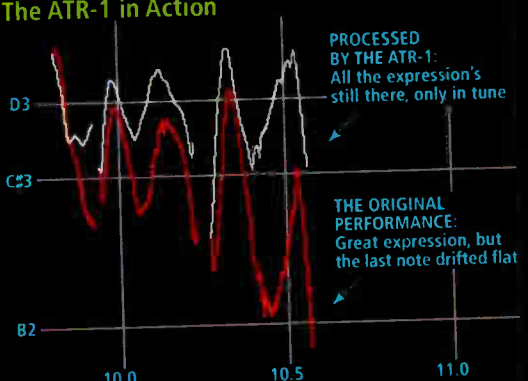

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with everyone playing together in the main room, which is probably 30 by 18 by 18. Will's amp was isolated—I think I used a [Shure] 57 and [Neumann] 87 summed to mono. John's bass was isolated, too—I used a DI and [Neumann] U47 on that. We isolated Rob [Burger] as well, but we took his Leslie and put it in the basement. I had two mics on that—a [Neumann] KM84 on top and an 87 on the bottom." Much of the drum sound came from a pair of KM54s placed about 10 or 11 feet high, about eight feet back from the kit, as well as two B&K 4006s used as overheads.

Typically, the group tried three or four takes of each tune. "Atmospheric guitars and percussion were added later," Jones says, "as were the clarinet and trombone parts on a couple of tracks. We didn't do any solo fixes."

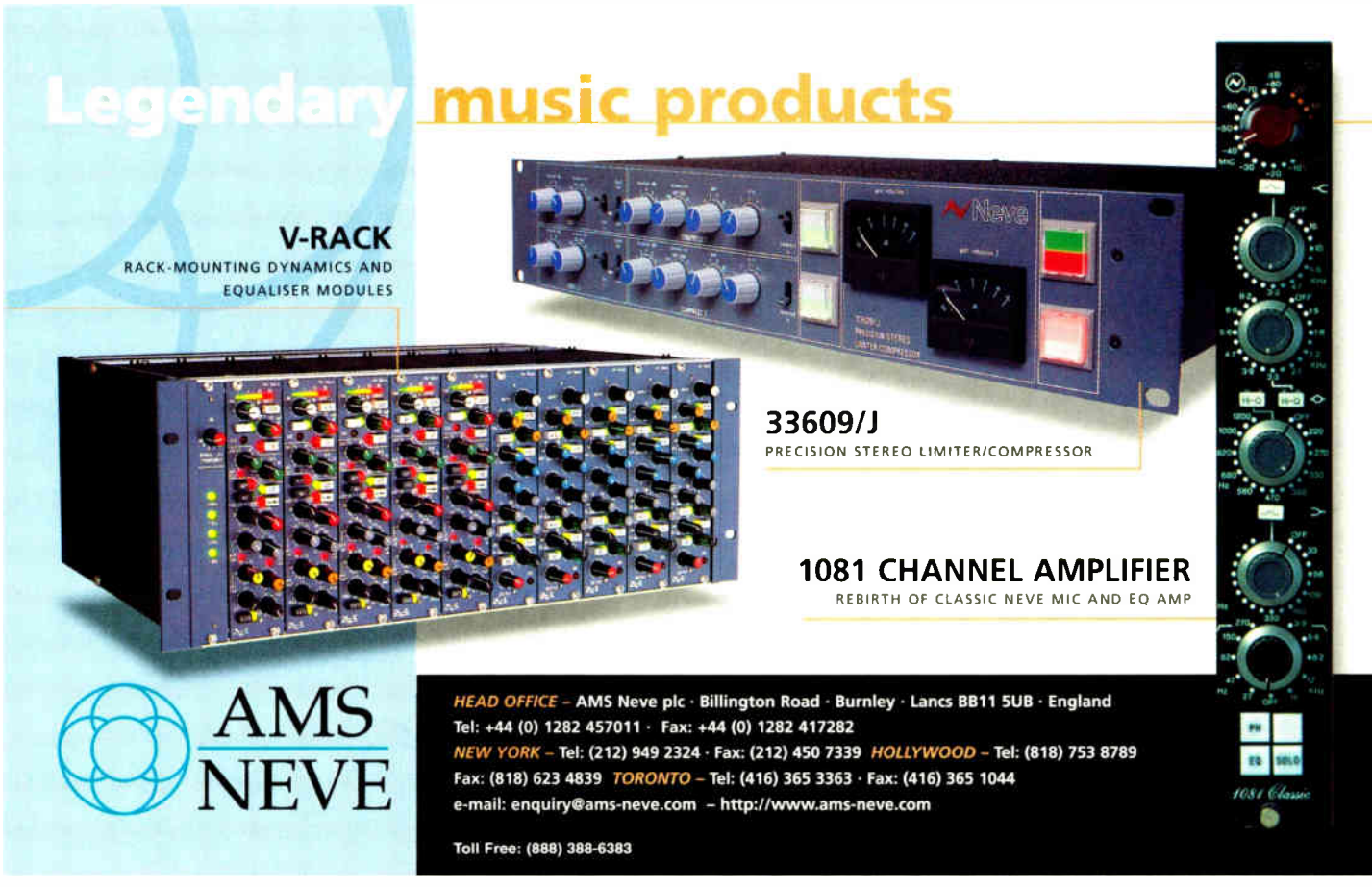
Townsend brought Judy Clapp up from L.A. to mix the record at Different Fur in San Francisco. "She did a great job," Jones comments. "I try to get it on tape the way I want it to sound at the end, so when I or somebody goes to mix it, it's 75 percent there as far as tones go. Just some minor tweaking and effects." And Clapp says, "Christian always gives me great tracks to work with. He also gives me a rough mix [on DAT], and usually I just refine it a little bit and do the things you don't have time to do when you do a rough mix."

Bill Frisell: *Gone Like a Train* (Blue Note). Through years of solo albums and work on scores of records by both famous and obscure musicians, Bill Frisell has amassed a devoted following in the jazz, avant-garde and rock worlds for his adventurous approach to guitar and his exquisite and unerring melodic sense. His last few records have been among his most accessible, so it's no surprise that at the same time he's winning over new converts (like me), others are worried that he's (shudder!) "going commercial."

Frisell's was a fun record to do, not only because of the song selection, but because Bill was playing a lot of different guitars. There was a big sonic palette to work with.
—Lee Townsend

Gone Like a Train continues in a similar vein as his previous album, *Nashville* (also produced by Townsend), which means there is an emphasis on melodies and structures and a certain warmth that is derived from toiling on the edges of various folk/roots idioms. "It's a record that's particularly close to my heart," Townsend comments. "The clarity of what Bill has been working up to is realized on that record compositionally and in terms of the playing and having the right chemistry between the musicians. It was a really fun record to do, not only because of the song selection, but because Bill was playing a lot of different guitars. There was a big sonic palette to work with."

This time out, Frisell played in a trio setting, with the always sympathetic bassist Victor Krauss and rock titan Jim Keltner on drums. Townsend produced the sessions at O'Henry in Los Angeles,



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with Judy Clapp handling the engineering. Frisell demoed the tunes for the rhythm section in advance of the sessions, and charts were prepared for Krauss, but there was still much improvisation and interplay once recording began. "Both Victor and Jim are so inventive and such great listeners, they worked really well with Bill," Townsend comments.

"It was a very cool session to work on," says Clapp. "We had Bill and Jim Keltner in the same room, which is a good-sized room, and then we had a whole separate room for Victor, but he had good eye contact with the other players and with the control room.

"They have a lot of nice gear there in terms of microphones and outboard equipment, and that allowed me to pretty much bypass the console and go through outboard gear like Avalons and API and Neve mic pre's. They have all these great Coles mics, as well as the more regular mics you'd want, and all in really great condition."

The sessions were spread out over five days and were recorded live with very limited overdubbing and fixes. All the tunes on the album are complete takes. Clapp mixed the album at Different Fur in San Francisco. "We didn't do anything fancy in terms of miking or processing," Clapp says. "I tend to go for pretty straightforward, natural sounds, so we used the 480 and some EMT plates [in the mix], but a lot of the sound on that record is the room at O'Henry. It's a nice-sounding space. I think I used [Neumann] M50 room mics and maybe a stereo mic, like a [AKG] C-24.

"This project was particularly fun for me because it's the first one I've done with Lee where I've done both the tracking and the mixing," she continues. "Of course, I really like working with Lee. On the one hand, he knows what he wants and he does his homework *with the artist,* so any problems about what the vision for the project might be have already been worked out by the time I get there. It's a nice balance between someone who's really done his work but at the same time is going to let things flow and try to accommodate everyone and not impose a vision on it. And I think you can hear that in the music, too." ■

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—FROM PAGE 173, 4-SIGHT

shows a respect for the mainstream jazz tradition and the emergence of some bright new instrumental voices.

4-Sight recorded their CD at Kingsway Studio in Peter Martin's hometown of New Orleans. Carl Griffin, noted for his production work with GRP Records, ran the sessions; engineering was Gregg Rubin, who has recorded the last six Harry Connick Jr. records and acts as Connick's FOH engineer. "I did mostly live work up until about ten years ago," Rubin says, "so I've always been interested in reproducing the true sound of instruments. I go for realistic-sounding records, and with this group I really wanted to capture the quality of each player and the way they blend together. They're young, but they're all pros. As soon as I heard them play, I had a lot of confidence that we were going to get something really good from them."

The band, Griffin and Rubin moved into Kingsway, which is located in an old (and some say, haunted) French Quarter house, for five days of tracking sessions, making for a homey and familial atmosphere light years away from the sometimes high-pressure world of New York studio work. "Kingsway definitely has its own vibe, which is what Peter [Martin] was after," Rubin says. "They didn't want the record to sound too sterile, but from the producer's point of

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view, Carl didn't want it to sound too ambient, either. The piano, the sax and the bass were all in the same room, so there's only so much you can do about not hearing ambient sax in the bass mic and so on. But we tried to keep the leakage to a minimum."

To cut down on bleed, Rubin constructed walls out of foam rubber cubes to isolate the players a bit. Kingsway's vintage API console (which was originally in the Record Plant in New York) was in the same room with the players; there's no independent control room. Much of the ambience on the record comes from Rubin's careful miking of the main recording room and the second, smaller room where Hutchinson's drums sat. In the main room, he had a C-24 stereo mic picking up the overall vibe; in the drum room it was a Neumann 69. However, that was augmented with some standard close-miking strategies—for instance, on Martin's piano he used two AKG 414s close to the hammers, and another pair of mics, M49s, pulled back a little farther, about ten inches apart.

"I believe the fewer mics you use, the more it sounds like the real sound of the instrument," Rubin comments. "But I'm afraid if I use just one mic on the sax and one mic on the piano, it's going to sound like an old record, so I like to record with lots of mics and lots of channels. It gives me more flexibility. But obviously the key is having a good acoustical space, good players, good instruments and good mics."

Rubin was particularly impressed with drummer Hutchinson, whom he describes as "an amazing player," and certainly the CD bears out that view—check out the fluidity of his stick work on the opening track, a Martin tune called "Parabola," and his solid attack on the funkified "In the Flow," another Martin composition.

"I like to think of a jazz kit as every drum being its own entity," Rubin says. "I think of each piece of the kit as a separate note. And the hi-hat is like the lead instrument. On the more groove-oriented tunes, we padded up the room as much as we could, but there are only two tunes where Greg put any padding on the kick drum, and everything else is just the way it sounded in there."

Following the five days of sessions at Kingsway, Rubin took the project across the French Quarter to American Sector Recording Studios, which has an SSL 4064 G Plus with Ultimation, Dynaudio Acoustics M3 monitors and a wide selection of outboard gear. Though much of the ambience on the CD is the natural sound of the Kingsway rooms, Rubin judiciously added some Lexicon 480 and TC Electronic M5000, mostly on the slower tunes. "I don't really like to hear reverb," he notes, "and after working with Harry for so many years—well, he hates it. So I find whenever I use it, I kind of use it so it's more like a settling of the sound, instead of some new texture."

Rubin believes that some tunes on the record could be remixed to give the music a more commercial "pop" sizzle, "but then you'd have the jazz police complaining," he says with a laugh. Whether the band goes that route or not, it's clear that 4-Sight has the goods to make a splash in the jazz world. And they're only going to get better with time. ■

—FROM PAGE 173, BILL LASWELL

Silent Way—1970's *Bitches Brew*—he had already alienated much of his original jazz audience. They wanted the cool Miles, the hard boppin' Miles, the fearless and confident bandleader; not this strange man who was suddenly fusing Hendrix and Sly and Indian in-

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struments and playing electrified wah-wah horn and nearly getting lost within the dense sonic squall he directed his musicians to create. Ironically, *Bitches Brew* became Miles' best-selling record since *Kind of Blue* (one more reason for the jazz purists to flay him), but even most rock fans didn't follow him into his noisiest explorations in the mid-'70s. *Panthalassa* beautifully captures some of the best Miles had to offer in that era and reaffirms the power of Miles' vision. Still, when I first heard about this project, I wondered: "Messin' with Miles? Is nothing sacred?"

"Not really," Laswell replies. "Even *In A Silent Way* was a manipulation from the beginning. Up to that point, the way Miles operated in the studio with musicians was pretty much in a regular jazz context—play a head, play a solo, go out on a vamp—and things were pretty rehearsed and worked out, down to the quality of the performance being captured and then intuitively picking the right performance to create the record. But starting with *In a Silent Way*, the group configuration of musicians changed pretty drastically. You had three keyboards, electric guitar. He was recording a lot, and those tapes were being manipulated and edited heavily. That record that we all love so much has large pieces of tape that are repeated and spliced back in; it's a creation as much as it is a performance. From what I understand, Miles didn't even have much of a say in the finished record, and I'm not sure Teo Macero [Miles' producer at Columbia] really knew what to do with this new kind of music Miles started making."

On *Panthalassa*, Laswell took the original compositions that made up *In a Silent Way*— "Shhh/Peaceful," the title track and "It's About That Time"—and re-edited them to make one flowing piece. It's about half the length of the original album but, remarkably, it fully retains the music's mystery and coherence at the same time as it offers new snippets unearthed from the 8-track master recorded at CBS Studios in New York in February 1969. Laswell cleaned up the tracks, eliminated some annoying noise problems (including some audible conversation between Miles and Shorter, and the sound of a bottle falling off a piano and breaking, which appears twice on the original) and added some appropriately ambient signal processing of his own.

This isn't Miles Davis the "jazz musician." By the late '60s, he had no use for the term "jazz."
—Bill Laswell

"The tapes were certainly well-recorded," Laswell says, "and I was fortunate that each of the eight musicians had his own track on the master, so I had a lot of flexibility. But my purpose wasn't to go in and radically change things around. I was still limited by what was there. There wasn't a lot more that was usable. In the longer piece ["Shhh/Peaceful"], there's a melody and a theme no one has ever heard, and it didn't quite come together in the recording, so what you hear on the original and on this record are Miles and Wayne sort of playing around a theme that you never actually hear, and that's because the theme wasn't together; it's a very different melody from everything else in that piece."

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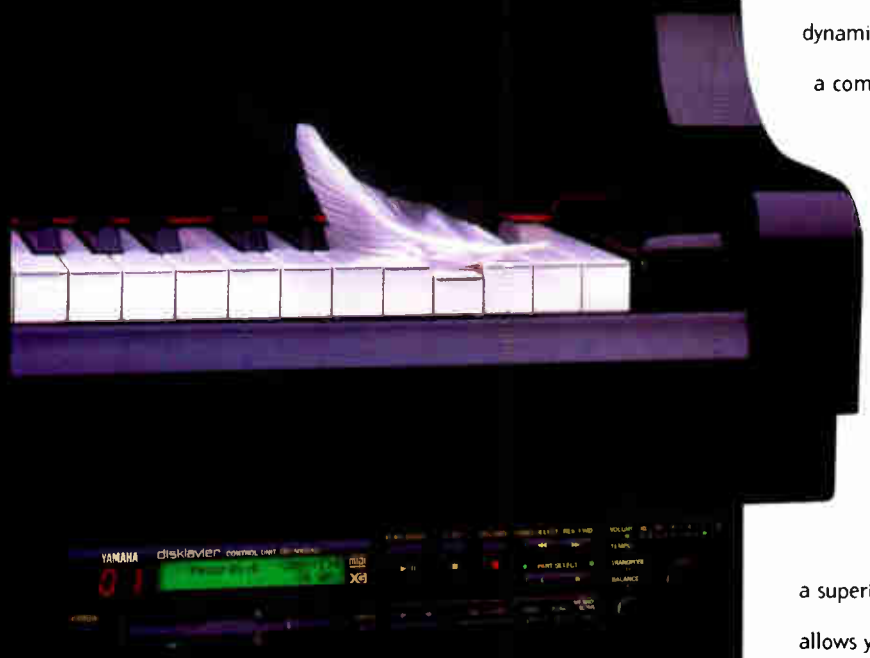

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ner and *Get Up With It*, were originally recorded on 16-track. For his "reconstruction and mix translation" work, Laswell obtained copies of the original tapes transferred onto 24-track and then went to work at his own Greenpoint Studios space in Brooklyn. (Laswell has since moved his studio operation to Orange, N.J.) "Then, from that point I chose the sections I thought I wanted to use, and we transferred the information to an Akai A-DAM 12-track, which is a very bulky, older [digital] machine I like a lot. They're warm and full-sounding and respond well to bottom, and they're not scratchy and hard-edged like ADATs. I'd done a lot of field recordings with them, and I always liked the way the sound came back, especially if I was mixing from that to analog half-inch."

The reconstruction involved isolating and emphasizing some parts, eliminating others, and occasionally flying in elements from one section or layer of a piece to another (sampling them first on an Akai S1000), such as the electric sitar drone that he lifted from the master of *On the Corner* and put into "He Loved Him Madly," from *Get Up With It*. From the A-DAM Laswell mixed down to a Studer A80 2-track. "I didn't add any sounds or instruments that weren't on the original tapes," Laswell says, "but I did process them and reposition them, and I used some things that had never been released before. All of the editing was done manually, with razor blades, just like when the original records were made.

"I did quite a bit of enhancement of the low end, and there's a lot of processing, but in most cases it's nothing really. I used a lot of EQ in the area of the drums and bass, trying to create more impact with the drums, and also trying to create a bigger space. In a piece like 'Rated X' [from *On the Corner*], where the original record is so dense you can't really tell what's going on or sort out the detail, my goal was to create a little more clarity. In that case, I didn't actually take out any parts, but I EQ'd them so they fit together better, and then processed them as necessary."

Some will no doubt quarrel with a few of Laswell's choices and truncations, but taken as a whole, the CD works remarkably well, gliding from one musical landscape to another on beats and beds of signal processing with surprising ease and, more importantly, impeccable taste. *Panthalassa* shows two magicians at work: Miles, who always managed to bring out the best in every musician he worked with, and Laswell, who found the threads running through these seemingly disparate worlds and pulled them together into a fascinating whole. "This isn't Miles Davis the 'jazz musician,'" Laswell comments. "By the late '60s, he had no use for the term 'jazz.' That's why beginning on *In a Silent Way* his records started saying 'New Directions.' Jazz was too limiting, too confining. And it still is."

Laswell, whose previous deconstruction/reconstruction of Bob Marley on *Dreams of Freedom* was also controversial, hopes to work on other "recombinant projects," as he calls them, at his new Orange Music Studios, which is equipped with two vintage Neve consoles, Studer recorders and stacks and racks of outboard gear befitting such a skilled sonic manipulator. He mentions the Tony Williams-lead Lifetime's second album—*Turn It Over*—as another candidate for his handiwork, and, even more enticing, the transcendentally beautiful Carlos Santana-Alice Coltrane record, *Illuminations*. Whatever he tackles next, it's bound to be interesting, as well as respectful. ■

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The Basics of MIXING

BY DAVID GIBSON

It is easy to learn the function of each piece of equipment in the studio. You can read user's manuals or the plethora of books available that explain the equipment. The difficulty lies in knowing how to use the equipment and in learning what combinations of equipment are used to create great-sounding mixes. Once you know what the knobs do, which way do you turn them? And what makes a great mix?

This article is excerpted from David Gibson's The Art of Mixing, *published by MixBooks. In the book, Gibson proposes a visually oriented approach to compiling a mix and offers a number of tips on creating solid mixes across various genres, with an emphasis on music and arrangements. For this month's audio education issue, we've chosen sections dealing with the basics of mixing.*

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MIXER PHOTO COURTESY EUPHONIX

Mixes can be made to fit the song so that the mix becomes transparent, or invisible. Or, the mix can be used to create musical dynamics of its own. It can be used as a tool to enhance and highlight, or it can be used to create tension or chaos. It could be said that a great engineer uses the mix to push the limits of what has already been done.

If the band is trying to create as full a mix as possible, you might make some suggestions to help. Adding more sounds or notes is the most obvious way to fill out a mix. Therefore, you might suggest double-tracking (recording the same part twice), or even triple-tracking. You could also recommend doubling a part with a different instrument. However, a more common problem is arrangements that are too full and need weeding out. There are some bands that would record 48 tracks if available—just because they are there, and just because they can! Then, even worse, they want all 48 tracks in the mix just because they have become attached to their parts.

Therefore, it often becomes the engineer's duty to try to weed out the arrangement—for clarity's sake. An engineer will often suggest turning off (muting) certain tracks in particular sections of the song. Dropping out parts like this can make certain sections of the song seem more personal and can contribute to

It could be said that a great engineer uses the mix to push the limits of what has already been done.

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the overall clarity of the song. On a more detailed level, the engineer might point out when too much is going on in a specific frequency range. You might suggest playing a part at a different octave, or in a different inversion.

But sometimes the intent is to be sparse, and other times the intent is to create the proverbial "wall of sound"—it all depends on the music. Still, you have to begin a mix somewhere, so let's look at the most common effects-based processes.

EQUALIZATION

When you go to mixdown a song, the first step is usually to EQ each of the sounds individually. The most common mistake made by an inexperienced engineer is to begin turning EQ knobs before listening. Don't touch the knobs until you know what you want to do. Listen to figure out if anything is wrong with the sound first. And if it ain't broke, don't break it.

Cut Muddiness (100 to 800 Hz): Listen to each instrument to check if it sounds muddy. Kick drums almost always need to have the muddiness cut (unless it is a rap or hip hop kick). Other potentially muddy instruments include toms, bass guitar, piano, acoustic guitar and harp. Muddiness normally occurs around 300 Hz (although, it varies between 100 and 800 Hz). Be judicious: If you cut the muddiness too much, the instrument will sound thin because this mud also contributes to the "body" of most sounds. When cutting muddy frequencies, always check to make sure that you haven't lost your bottom—the low lows. Sometimes you might compensate by boosting the lows around 40 to 60 Hz.

Cut Irritation (1,000 to 5,000 Hz): Cut any excessively irritating, or "honky," frequencies occurring in the midrange from 1,000 to 5,000 Hz. Vocals, electric guitars and cymbals (including hi-hat) often need frequencies cut in the midrange.

When getting rid of irritating frequencies, set the bandwidth as narrow as possible. If you were to use a wide bandwidth to take out an irritating edge on a vocal, guitar or cymbal, you would lose the entire body of the sound in the midrange—and the sound would appear dull and not present. By using a narrow bandwidth you preserve your

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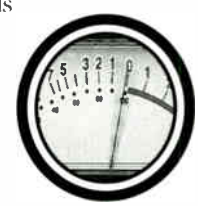
body.

Then boost the highs on instruments that sound dull—especially snare. The amount of boost is largely dependent on the style of music. R&B, dance and certain types of rock typically require more crispness than other styles. Country, middle-of-the-road and folk often do not need as much boost.

If ever in doubt as to how to set the bandwidth, start with the narrowest bandwidth possible. Then try widening it out bit by bit to see if it sounds better. By doing this, you end up with the center frequency where it should be.

Kick EQ: Engineers often seem to go for one of three general types of drum sounds: 1) The dead "thud" you get with one head on the drum, with some type of weight (sandbag, mic stand bottom or brick) on top of the pillows or padding in the drum. 2) The resonant "ring" you get with two heads on the drum, with a small hole in the front head of the drum. 3) The dull "boom" you get with both heads on the drum with no hole (commonly sought in rap, hip hop or techno).



The first and second types normally have a huge amount of the muddiness taken out in the EQ range around 300 Hz—as much as 10 dB. They also sometimes have a high-frequency boost of a few dB around 5,000 to 6,000 Hz.

The third type often has a bit of a boost in the muddy range around 300 Hz. Also, there is commonly a boost around 40 to 100 Hz for the low end. The high end, around 6,000 Hz, might actually be rolled off to get rid of the attack of the sound.

Snare EQ: The snare drum is often only boosted in the highs around 5,000 to 6000 Hz. Sometimes a little bit of low end is added around 60 to 100 Hz to make a thin drum sound fatter. And occasionally, it is necessary to take out some of the muddiness around 300 Hz. Snare drum sounds sometimes have a midrange "flap" or "edginess" around 800 to 1,000 Hz that needs to be taken out to smooth out the sound.

Hi-hat EQ: First, it is often necessary to take out just about all of the low end to get rid of the bleed from the kick drum. If you have a highpass filter, you can roll off the entire low end up to around 300 to 700 Hz. It is also quite common to roll off the muddiness in the bleed from the rest of the drum kit. Occasionally, it is nice to add a bit of super-high frequencies around 10,000 Hz for a nice bright "sizzle" up top. Also, every so often, it is necessary to take out irritating frequencies in the midrange between 1,000 to 4,000 Hz. However, if taken out too much, the hi-hat will sound too dull. (A narrow bandwidth is helpful in this situation.)

Bass EQ: On some bass guitars, it is necessary to take out some of the muddiness around 300 Hz. However, if too much is taken out, the bass will sound too thin and wimpy. It is also often necessary to boost the highs (much more than you would think when in solo) around 2,000 Hz. Occasionally, it is fun to boost the low end of the bass around 40 Hz to add a solid bottom.

Guitar EQ: Most commonly, guitars only need to be brightened up around 3,000 to 6,000 Hz. Sometimes it is necessary to take out some of the muddiness around 300 Hz.

Vocal EQ: Vocals vary tremendously. It is quite common to not EQ vocals while recording for the simple reason that it can be difficult to find the exact same EQ in future overdub sessions. This is fine because vocals are normally not EQ'd much anyway: Not only are we hypersensitive to midrange frequencies (where vocals hang out), we are also extra sensitive to the natural sound of vocals. We know what a voice should sound like better than any other sound in the world. Therefore, it is critical to be extremely sparing with any vocal EQ.

Vocals are often boosted just a couple of decibels around 5,000 to 6,000 Hz. Occasionally, it is necessary to take

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out a bit of muddiness around 300 Hz, and a bit of irritation around 3,000 or 4,000 Hz. The irritation sometimes comes from the harmonic structure inherent in the sound; but, it can also come from a cheap or bad microphone. It is also often helpful to use a highpass filter to roll off all low frequencies below 60 Hz in order to get rid of any rumbly-type noises or bleed from any bassy instruments.

DELAY

A simple way to set delay time is to put the delay on the snare drum—or some other instrument playing a continuous pattern—so that it's easy to hear when the delay is in time with the tempo of the song. Once you have found a delay time that works, any multiple or fraction of that time might also work.

A delay time of more than 100 milliseconds creates a dreamy effect and is most commonly placed in songs with slower tempos, where there is room for the effect. The delays take up so much space in a mix that they are often only turned up on the end of a line—where there is enough space to hear the echoes by themselves.

You can often hear a delay time of 60 to 100 ms, commonly referred to as "slap," on the vocals of many artists, including Elvis Presley. This effect can be quite helpful in making a thin sound (especially a voice) appear fuller. It can also help to obscure bad singing technique or pitch problems. In fact, a slap can be used to bury bad intonation of almost every instrument. On the other hand, a slap can also make a vocal seem less personal. If you have an incredible singer, you might forego using any delays. Just put it out there with a little reverb and let it shine.

Delay in the 30- to 60ms range is commonly referred to as "doubling" because it makes a sound seem like it was played twice, or double-tracked. The Beatles used this effect extensively to simulate more vocals and instruments.

A 1- to 30ms delay is commonly used for "fattening." At a delay time less than 30 milliseconds, the brain and ear

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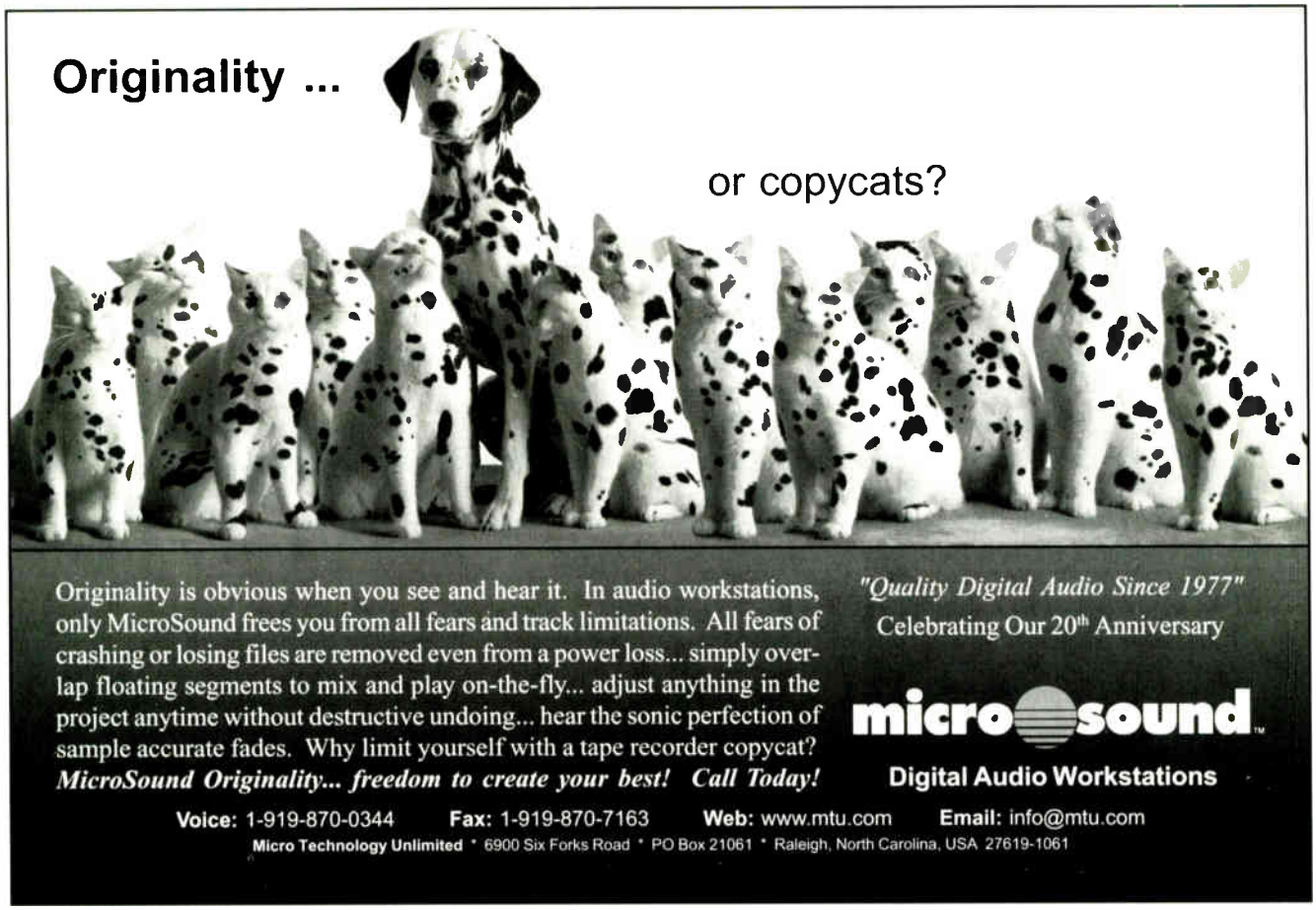

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are not quick enough to hear two sounds. We only hear one "fatter" sound.

Besides reverb, fattening is the most-used effect in the studio, perhaps because it doesn't sound much like an effect. When you put the original "dry" instrument sound in one speaker and put a delay less than 30 milliseconds in the other speaker, it "stretches" the sound in stereo between the speakers.

REVERB

Reverb is essentially multiple delays. When a sound first occurs, it travels throughout the room at the snail's pace of around 770 miles per hour. It bounces off the walls, ceiling and floor and comes back to us as hundreds of different delay times. All of these delay times wash together to make the sound we know as reverb.

One common rule in dealing with reverb, for example, would be to set the reverb time on a snare drum so that it ends before the next kick attack. This is so that the snare reverb does not obscure the attack of the next kick note—keeping the kick drum sounding clean, punchy and tight. This means the faster the tempo of a piece, the shorter the reverb time. Again, though, rules can be broken.

COMPRESSOR/LIMITERS

Sounds are often compressed more or less based on the dynamic range of the sound itself. For example, most acoustic instrument sounds are commonly compressed; vocals and bass guitar are almost always compressed. Many engineers will commonly compress the kick drum, but if the drummer is really good and has fine control of the volume of each kick hit, then compression may not be necessary.

Many instruments are only compressed when they are placed in a mix (as opposed to be being solo). For example, it is rare for anyone to compress a solo piano. However, pianos are commonly compressed when placed in a mix (especially a busy mix). This is also the case with an acoustic guitar. In fact, as mentioned before, the "busier" the mix—that is, the more sounds and the more notes—the more the individual sounds are compressed.

The overall amount of compression on a mix is obviously more noticeable

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than any individual setting. But, regardless of the way that overall compression is applied (or calculated), certain styles of music have developed quite strong traditions as to how much they are compressed. For example, a lot of pop music has much more overall compression than most country or punk. This can be heard as a sort of "polish" (which some people complain of as part of being over-produced). You can sometimes "see" the amount of overall compression on VU meters of a cassette deck. The meters barely move on highly compressed material.

The trick is to pay attention to the overall amount of compression that seems to be going on in each song you hear, and develop your own values for how much compression you like.

LEVELS

When bands complain that the mix doesn't sound right (but they don't know why), often it is as simple as an instrument being placed at the wrong volume. It seems that most engineers will start changing EQ and effects to try pleasing the band. It might actually be that the rhythm guitar is too loud compared to the vocals, or the kick drum is at the wrong volume compared to the bass guitar.

Sometimes, of course, the volume of the entire mix can be raised or lowered. The master stereo fader volumes are not commonly changed except at the beginning or end of the song. Fading in the entire mix at the beginning of a song creates a very nice and smooth dynamic—The Beatles used this on "Eight Days a Week." I've also heard songs where the entire mix is faded out, then faded back in, faded out again, and faded in one more time. Meanwhile, a very cool effect is to cut or boost the overall volume in the middle of a song. Such dynamics can be quite effective.

You also can create much more subtle (and often more effective) dynamics by making minor volume changes in various sections of a song. For example, you might boost the volume of the guitars (ever so slightly) in the chorus and raise the snare and snare reverb ever so slightly in the lead break. Then, in the vamp at the end of the song, bring up the bass guitar and kick drum (again, just a touch). These subtle volume changes can add serious magic to your mix.

PANNING

If you follow panning traditions, you can create a dynamic that is transparent and lets the music punch through. But if you don't follow tradition, you might then be considered "creative." Unusual panning can actually create tension in a mix—when used appropriately.

Let's look at typical panning placement for some common instruments and sounds. But remember, let the music dictate the panning!

It is rare that the kick drum is ever placed anywhere except in the middle, exactly between the speakers. When a sound is in the middle, you have two speakers carrying the sound instead of one, so they don't have to work as hard (especially with big sounds like kick drums and bass guitars). Also, it makes sense to be in the center simply because the kick drum is normally in the center of most kits.

Two kick drums, or a double kick, present an interesting dilemma when it comes to panning. Depending on how often the second kick drum is played, some will pan them slightly left and

—CONTINUED ON PAGE 246

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The Mix Directory of Audio EDUCATION Programs

Choosing the Right School

Welcome back, prospective students. It's been four years since *Mix* last published a directory of audio education programs. In 1994, we stopped including directories in the magazine (with the exception of our annual AES New Products Guide). For the most part, that change has been a positive one, giving us more room in *Mix* for instructive articles, product reviews, etc. But since '94, we have received numerous requests to re-establish the audio education directory as one of our annual features. Every month, the editors receive hundreds of phone calls from prospective students (and their parents) asking how to find a suitable program.

As we've told many of you on the telephone, *Mix* can not recommend specific education programs. This is partly because in order to choose a school, the applicant must research the programs in depth. That means visiting schools, checking out their facilities and finding out all you can about what the program offers. And the main reason we can't tell you where to apply is simply that we're not you. The school that's right for you will be the one that fulfills your needs, teaches what you want to learn, costs what you can pay, etc.

What we've tried to do by re-creating our audio education directory is to provide a starting point for doing that research, so that you can find the school that suits you. To produce this latest directory, we've consulted a number of sources and made all participation in it free. As a result, this is the most comprehensive listing of programs that *Mix* has offered to date.

(But if you are affiliated with a program we have not included, please let us know who you are so we won't leave you out next year!)

The first step to choosing a suitable audio education program is to review the directory. We strongly suggest that you then request brochures and course catalogs from the schools that interest you, and visit the ones you're seriously considering. Schools may also be able to get you in touch with former students who can give you a first-hand account of their experience.

As you wade through all of this material, keep in mind the following 15 points; these have appeared in *Mix* before but we find that, like our directory, they warrant repeating. Good luck! —*The Editors*

1. Length and purpose of program. Will you be in school for seven weeks, three months or four years? Are you committed to earning a degree, or will a certificate do?

2. Accreditation. You most likely can trust a school that's accredited by a reputable body—a state or federal Department of Education, the National Association of Schools of Music (NASM), the National Association of Trade & Technical Schools (NATTS) or the National Trade School Congress (NATC). But just because a school isn't accredited doesn't mean it's a "fly-by-night" operation.

3. Prerequisites. Entry to an in-depth electronics course often requires a solid, formal background in math and physics. A short program may require some recording experience.

4. Program philosophy. Does the educator first teach the academic, theoretical side of recording, or head right for the faders? Does the school offer a balance of book/lecture teaching and hands-on training? What's the ratio of studio time to class time, and how often does the school let you use the equipment ? Does the school expose students to audio's past, present and future? Does the school teach equipment maintenance and troubleshooting techniques?

5. Interdisciplinary opportunities. Does the school delve more into music composition and production, or music recording? Audio for video? Radio production? Soundtracks for film? Multimedia? Live sound and location recording? Corporate and industrial uses of audio? How much time devoted to each area? The more facets of audio covered, the better your chance of finding a job in this age of studio diversification.

6. Job placement opportunities. Does the school assist the student in the agonizing weeks following graduation—offering help with resume writing or providing real job leads or the names of facilities that have hired other graduates?

7. Track record. What percentage of graduates have found work in recording, production or a related field? Will the school provide names so you can call them to discuss the program?

8. Real-world exposure. Does the school provide students with the chance to record live sessions, for instance, where you meet with local musicians, set up in the studio, record basics, do overdubs, mix and premaster?

9. Teaching devices. Do educators use "the real thing," textbooks, technical audio journals and/or audio-visual aids? Do they teach theory using a book or using a book and equipment? Does the school have its own multitrack studio, or do students travel to professional facilities where the school buys session time?

10. Internship program. Does the school require students to work in a studio as an intern (great experience, no pay)? Few studio managers will hire graduates who haven't enjoyed the real-life experiences offered by an internship. If the school requires an internship, must you find your own internship—which gives you job-hunting chops—or does the school set it up?

11. Financial considerations. Will paying for your education leave you bankrupt? Does the school grant scholarships, offer loans or otherwise help students secure financial aid?

12. Business and management courses. Does the school expose students to the business of recording or economics of studio management?

13. Private or public institution? State-owned schools are sometimes better funded than private ones, but it takes longer for them to acquire new equipment: Red tape and magnetic tape don't always mix very well.

14. Location. If the school or program is close to a thriving audio/music or video/film production marketplace, the employment potential will be relatively high if you choose to stay in the area.

15. Reputation. A well-known, well-connected school tends to attract the attention of equipment manufacturers who are willing to set up mutually beneficial relationships with the school, thereby allowing students to learn the ropes on specific and (usually popular) types of systems and gear.

World Radio History

The SCHOOLS

When using this directory, please note that only North American programs have been included. In addition, all of the information presented here was supplied by the schools. Specific programs may change, so be sure to contact the school/program for up-to-date information.

EASTERN SCHOOLS

AMERICAN UNIVERSITY

Address: 4400 Massachusetts Ave., N.W. Washington, DC 20016-8058 Phone: 202/885-2746 Fax: 202/885-2723 E-mail: dwinter@american.edu Web: www.kotzebue.physics.american.edu Degrees/Certificates Offered: BS in Audio Technology Program and Facilities Description: Unique in that it is housed in the Department of Physics, the Audio Technology program concentrates on the technology of electronic recording and reproduction of sound, using both the technical expertise of our faculty and the hands-on professional experience of adjunct professors. The main control room features a 24-track analog studio with hard disk recording capabilities. Mixdown is to DAT with the ability to burn CDs on-site. Our electronic music lab has various analog and digital synthesizers, samplers and MIDI controllers.

ART INSTITUTE OF PHILADELPHIA

Address: 1622 Chestnut St., Philadelphia, PA 19103 Phone: 215/567-7080 Fax: 215/246-3339

BARTON COLLEGE

Address: Barton College Station Wilson, NC 27893 Phone: 919/399-6487 Fax: 919/237-4957 E-mail: grose@barton.edu Web: www.barton.edu Degrees/Certificates Offered: Bachelor of Science in Recording Technology. Program and Facilities Description: Extensive hands-on training in a 32-track digital recording studio and 12-workstation computer music lab. Curriculum includes acoustics, electronic music, sound synthesis, music business management, sound reinforcement, live and studio recording. The studio has a Soundcraft Sapphyre LC console with Optifile Tetra automation; four Tascam DA-88; Mac computer with Pro Tools, Sound Designer, Master Tracks Pro 5 and Finale; Kurzweil K2000S with VAST system; Yamaha SY-88 and Roland JV-80. The computer lab has 12 workstations; each has a Mac computer with Master Tracks Pro 5 and Finale and Yamaha SY-35 synth. There is also a Yamaha Disklavier in the lab.

BELMONT UNIVERSITY

Address: 1900 Belmont Blvd., Nashville, TN 37212 Phone: 615/460-6000 Fax: 615/386-4516 E-mail: schlofmus@belmont.edu Web: www.belmont.edu Degrees/Certificates Offered: Bachelor of Music with a major in Commercial Music (emphasis in Performance, Music Technology, Music Business or Composition and Arranging) Program and Facilities Description: Music students at Belmont are trained in the fundamentals of music and given opportunities to explore and expand their musical interests and talents. The individual artist is the focal point of instruction. Integrated understanding is emphasized through numerous opportunities that put classroom learning into application in performing ensembles. Practical, real-life opportunities abound through interaction with the faculty and master classes by noted musicians in all genres. Demonstrations of Belmont's uniqueness include one of the first commercial music programs in the country, a tradition of strong choral and church music study and diverse instrumental ensembles.

BERKLEE COLLEGE OF MUSIC

Address: 1140 Boylston St., Boston, MA 02215 Phone: 617/266-1400, ext. 2360 Fax: 617/747-2009 E-mail: admissions@berklee.edu Web: www.berklee.edu Degrees/Certificates Offered: Diploma or Bachelor of Music degree. Majors include Performance, Professional Music, Music Theory, Music Business/Management, Music Education, Music Production and Engineering, Contemporary Writing and Production, Film Scoring, Songwriting, Music Synthesis, Jazz Composition, Composition Program and Facilities Description: Founded in 1945, Berklee College of Music is the world's largest independent music college and the premier institution for the study of contemporary music. The college's nearly 3,000 students and over 300 faculty members function in an environment designed to provide the most complete learning experience possible, including all of the opportunities and challenges presented by a career in the contemporary music industry. Alumni include jazz vibist and Berklee executive vice president Gary Burton, rock singer/guitarist Melissa Etheridge, Steely Dan leader Donald Fagen, pop singer/keyboardist Bruce Hornsby, producer/arranger Quincy Jones, Living Colour drummer Will Calhoun, and jazz saxophonist/composer and bandleader Branford Marsalis.

CAYUGA COMMUNITY COLLEGE

Address: 197 Franklin St., Auburn, NY 13021 Phone: 315/255-1743 Fax: 315/255-2117 Web: www.cayuga-cc.edu Degrees/Certificates Offered: 2-yr A.A.S. in Audio Production, 2-yr A.A.S. in Telecommunications Technology, 2-yr A.A.S. in Radio/TV Broadcasting. Program and Facilities Description: Cayuga is a unit of the State University of New York. The college's facilities include a 32-track audio recording studio, FM radio station, television studio and remote truck. Industry internships are required.

FINGERLAKES COMMUNITY COLLEGE

Address: 4355 Lakeshore Dr., Canandaigua, NY 14424 Degrees/Certificates Offered: A.S. Music Recording Technology Degree (2 years) Program and Facilities Description: The program is supported by a Soundworkshop Series 34 automated console, a combination of analog and digital equipment providing 23-track recording along with sampling, sequencing and SMPTE interlock technology and various pieces of outboard signal processing equipment, which are housed in a state-of-the-art music recording studio.

FIVE TOWNS COLLEGE

Address: 305 N. Service Rd., Dix Hills, NY 11746 Phone: 516/424-7000 Fax: 416/ 424-7006 Web: www.fivetowns.edu Degrees/Certificates Offered: AA degrees in Liberal Arts, Jazz/Commercial Music, Business Management. BA in Jazz/Commercial Music, Music Education or Business Management. Masters in Jazz/Commercial Music and Music Education (K-12). Program and Facilities Description: Five Towns College is the NYC/Metro region's premier institution of higher learning for students serious about careers in music and the performing arts. Areas of study include music performance, music business, music education, audio recording and video production. Students enjoy small classes, hands-on training and internships with major labels, recording studies and production companies. College facilities feature audio studio complex with 8-track, 24-track/MIDI/ audio/video post, a world-class 48-track SSL control room and studio TV production lab includes Sony 3/4-inch, Beta and Hi8 formats and nonlinear editing suites.

FULL SAIL REAL WORLD EDUCATION

Address: 3300 University Blvd., Winter Park, FL 32792 Phone: 800/226-7625 Fax: 407/678-0070 E-mail: admissions@fullsail.com Web: www.fullsail com Degrees/Certificates Offered: Recording Arts Associate Degree, Show Production and Touring Associate Degree, Film and Video Production Associate Degree, Digital Media Associate Degree, Game Design Associate Degree. Program and Facilities Description: Full Sail is one of the most extraordinary educational experiences in the world, offering hands-on training in a world-class 33-studio multimedia complex. This complex is comprised of super consoles such as the Neve VR with Flying Faders automation and Recall, an 80-channel and 160-input Solid State Logic 9000J with Total Recall and Ultimation and the Neve Capricorn digital console. The curriculum includes courses in Sound for Motion Pictures and Television, Recording Engineering, Audio for Post Production, Sound Design, Sound Reinforcement and Concert Lighting, MIDI, Digital Audio Workstations and Advanced Recording. Career Placement assistance is provided, and financial aid is available to those who qualify.

FUTURE MEDIA CONCEPTS

Address: 305 E. 47th St., New York, NY 10017 Phone: 212/888-6314 E-mail: info@fmctraining.com Web: www.fmctraining.com Degrees/Certificates Offered: Manufacturer's certificate, 1-6 days, depending on individual class Program and Facilities Description: N.Y.'s premier digital media training center. FMC provides a complete range of manufacturer-authorized training in all areas of digital media from nonlinear audio and video editing through 2D compositing, 3D animation, desktop publishing and Web page design. At FMC, quality is monitored by the software manufacturer to ensure the highest level of training. All trainers are carefully selected and certified. FMC is the authorized training center for Avid, Digidesign, Adobe, Softimage, Kinetix, NewTek and Macromedia.

HAMPTON UNIVERSITY

Address: Department of Music, Hampton, VA 23668 Phone: 757/727-5237 Fax: 757/727-5084

World Radio History

Audio EDUCATION Programs

Eastern Schools

HARRIS INSTITUTE FOR THE ARTS

Address: 118 Sherbourne St., Toronto, Ontario Canada M5A 2R2 Phone: 416/367-0178 Fax: 416/367-5534 E-mail: harrisi@interlog.com Web: www.ampsc.com/harris Degrees/Certificates Offered: 1-yr (12 months) Producing Engineering Diploma, 1-yr (12 months) Recording Arts Management Diploma. Program and Facilities Description: Harris Institute offers 76 courses on the business, technical and creative aspects of the music industry. The Diploma Programs, Recording Arts Management (RAM) and Producing Engineering Program (PEP) are taught by a faculty of 54 active industry professionals, who are complemented by a wide range of guest lecturers. The 2,500-sq.-ft. facilities include Pro Tools in the audio post-production suite, Apple and PC computers in a MIDI/multitrack suite and 24-track digital multitrack in a music recording control room. Full-time programs are 12 months in duration and culminate in the formation of production and management companies as well as internship placements at studios and companies throughout the music industry. For more information, please call 416/367-0178.

INSTITUTE OF AUDIO RESEARCH

Address: 64 University Place New York, NY 10003 Phone: 212/677-7580 Fax: 212/677-6549 E-mail: larny@aol.com Degrees/Certificates Offered: Diploma in Recording Engineering and Production. Licensed by NYS Education Department, accredited by ACCSCT. Program transfers as approximately one year toward Bachelor Degree. Program and Facilities Description: Intensive six-month program exposes students to every facet of today's state-of-the-art audio and recording technology. Coursework includes acoustics and sound, editing techniques, music business, sound reinforcement, loudspeakers and microphones, audio signal processing, analog and digital tape storage, digital processing technologies, recording workshops, mixing techniques, post-production, MIDI and music synthesis. 20,000-sq.-ft. Greenwich Village facility in the heart of NYC's most exciting music scene. Financial aid for eligible students.

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Address: 101 College Ave., Annville, PA 17003 Phone: 717/867-6275 Fax: 717/867-6390 E-mail: hill@lvc.edu Web: csunix1.lvc.edu/~hill/MusicTechnology3/MusicTechnology.html Degrees/Certificates Offered: Bachelor of Music with Emphasis in Music Recording Technology. Program and Facilities Description: LVC combines a strong traditional music curriculum with industry-related courses and experiences. Studies include traditional and jazz theory, history, performance, studio production techniques, digital audio recording and editing, MIDI and multimedia. NASM accredited. Facilities include a 24-track analog studio, a new multitrack digital studio/classroom, and a dedicated computer lab (Macintosh & Windows NT) featuring digital audio recording and editing, CD mastering, QuickTime video and VR production, Web page design, CD-ROM development and MIDI.

MIAMI-DADE COMMUNITY COLLEGE, SCHOOL OF FILM AND VIDEO

Address: 11380 N.W. 27th Ave., Miami, FL 33167 Phone: 305/237-1159 Fax: 305/237-1589

MCGILL UNIVERSITY, FACULTY OF MUSIC GRADUATE PROGRAM IN SOUND RECORDING

Address: 555 Sherbrooke St., West Montreal, Quebec, Canada H3A 1E3 Phone: 514/398-4535 Fax: 514/398-8061 E-mail: wieslaw@music.mcgill.ca Degrees/Certificates Offered: 2-yr M. Mus. degree in sound recording Program and Facilities Description: The graduate sound recording program combines practical and theoretical training in studio techniques, microphone selection and placement, digital sound processing and related subjects with technical ear training to improve auditory perception and hands-on experience working with live musicians in groups ranging form solo to full symphony orchestra. Three fully equipped control rooms, four performance venues, two post-production editing studios, a separate four-studio suite for electro-acoustic music, and two computer labs comprise the facilites available to students.

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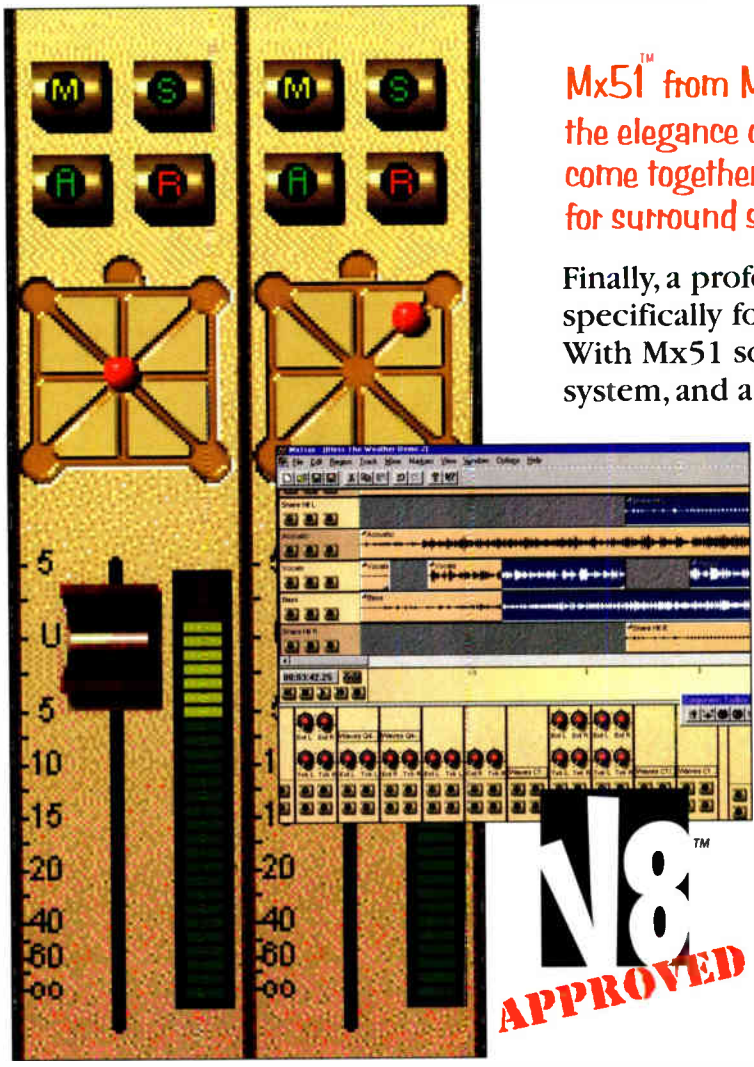


Mx51™ from Minnetonka Software; the elegance of MxTrax and the power of V8™ come together to deliver a revolutionary new tool for surround sound production.

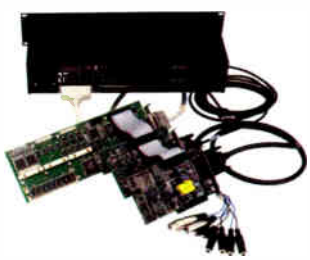
Finally, a professional audio workstation designed specifically for true multichannel format mixdown. With Mx51 software, a Digital Audio Labs V8 system, and a PC, surround mixes are a breeze:

- Individually pan each channel with Mx51's five way pan controls.
- View surround panning on all channels simultaneously.
- Dynamically automate all surround panning in real time.
- Automatic 5.1 bussing on V8's mixer.
- Easy-to-use adjustable subwoofer crossover

Plus get all the power of the standard MxTrax/V8 combination, including:

- 16 *true* hard disk tracks
- Drag and drop automated digital mixer
- True ADAT & DA88 integration*
- LTC and VITC video sync*
- Optional realtime 3rd party effects from the V8 audio gearhead partners

Breakthrough tactile interface lets you ***feel*** surround panning as you ***hear*** it.



Why the V8?

The V8 from Digital Audio Labs is a modular audio workstation platform for the PC. Systems can be configured with a choice of analog and digital I/O, MDM interfaces for ADAT and DA88, and realtime DSP options Contact Digital Audio Labs for information:

(612) 559-9098 www.digital audio.com

Minnetonka AUDIO SOFTWARE, INC.

17113 Minnetonka Blvd. • Suite 300
Minnetonka, MN 55345 • (612) 449-6481
www.minnetonkasoftware.com

*Some options require additional hardware.

Prices and specifications subject to change without notice.

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World Radio History

Audio EDUCATION Programs

Eastern Schools

MIDDLE TENNESSEE STATE UNIVERSITY

Address: P.O. Box 21 Murfreesboro, TN 37132-0001 Phone: 615/898-2578 Fax: 615/898-5682 E-mail: record@mtsu.edu Web: www.mtsu.edu/~record Degrees/Certificates Offered: Bachelor of Science in Recording Industry with two emphasis choices: Production and Technology or Music Business. Program and Facilities Description: The curriculum includes 36 courses covering all aspects of the industry and a required minor in Mass Communication. A second minor is also required with options in Music, Electronics, Business Administration, Entrepreneurship, Marketing, Film Studies and Entertainment Technology. Facilities include three studios all with automated consoles and 24-track digital and analog recorders. One studio is equipped with 5.1 and surround sound mixing. Facilities also include a hard disk/post-production studio and a nine-station MIDI laboratory, a maintenance laboratory and a 5.1-channel screening room. Eight TEC Award nominations, NARAS student award, AES and SMPTE chapters.

MUSITECHNIC EDUCATIONAL SERVICES INC.

Address: 1717 Rene-Levesque East, Ste. 440, Montreal, Quebec, Canada H2L 4T3 Phone: 514/521-2060 Fax: 514/521-5153 E-mail: info@musitechnic.com info@musitechnic.com Web: http:www.musitechnic.com Degrees/Certificates Offered: Computer Assisted Sound Design one year, Attestation of Collegial studies. Program and Facilities Description: The program is designed to familiarize students with computer-assisted music technology. A thorough exploration of the technical and artistic facets of current hardware and software will permit students to create, perform and record artistic projects using the latest technological tools. Moreover, the program seeks to provide a knowledge of data processing principles, MIDI synthesis, digital sound reproduction and computer-assisted sound design, enabling students to work contemporary studios and MIDI workshops.

NASSAU COMMUNITY COLLEGE

Address: One Education Dr., Garden City, NY 11530 Phone: 516/572-7446 Fax: 516/572-9791

NY INSTITUTE OF FORENSIC AUDIO

Address: 500 5th Ave., Suite 2300 New York, NY 10110 Phone: 212/730-6787 E-mail: owlmax@aol.com Web: www.205.216.138.50/biz/owl Degrees/Certificates Offered: Video Authenticity Certification, Audio Authenticity Certification, Certificate of Attendance—four CEU units. Program and Facilities Description: Fully-equipped lab that enables hands-on experience for all participants. Audio Enhancement and Authenticity, Video Enhancement and Authenticity, Voice Identifications are all offered. Evidence procedures, legal questions and courtroom testimony related to the above specialties will also be discussed.

THE OMEGA RECORDING STUDIOS' SCHOOL OF APPLIED RECORDING ARTS AND SCIENCES

Address: 5609 Fishers Lane Rockville, MD 20852 Phone: 301/230-9100 Fax: 301/230-9103 E-mail: omega@omegastudios.com Web: www.omegastudios.com Degrees/Certificates Offered: Certificate programs approved by the Maryland Higher Education Commission Program and Facilities Description: The Omega Studios' school functions within the facilites of Omega Recording Studios (a four-studio complex). Omega offers five separate and innovative programs, including Recording Engineering and Studio Techniques; Electronic Synthesizers and MIDI; Sound Reinforcement for Live Performance; Audio Production Techniques for Advertising; and Essentials of Music Business and Artist Management. A free brochure is available upon request at 800/93-OMEGA.

ONTARIO INSTITUTE OF AUDIO RECORDING TECHNOLOGY

Address: 502 Newbold St., London, Ontario Canada N6E 1K6 Phone: 519/686-5010 Fax: 519/686-0162 E-mail: inquiry@oiart.org Web: www.oiart.org Degrees/Certificates Offered: 1-year, college-level diploma in Audio Recording Technology. Program and Facilities Description: An outstanding, competitively priced private school offering highly personalized quality instruction for 15 years to an international student body. In a rigorous program, both practically and academically, students accomplish in 11 months what usually takes two or three years in a college setting. First in Canada to achieve certification from both Avid and Digidesign as an Avid Authorized Education Centre for instruction in Pro Tools. More hands-on training than any other recording engineering program in Canada. No hidden fees.

PEABODY INSTITUTE OF THE JOHNS HOPKINS UNIVERSITY

Address: 1 East Mount Vernon Place Baltimore, MD 21202 Phone: 410/659-8110 Fax: 410/659-8102 E-mail: apk@peabody.jhu.edu Web: www.peabody.jhu.edu/-recording-arts Degrees/Certificates Offered: 5-year Bachelor in Recording Arts, 2-year Master in Audio Recording and Acoustics Program and Facilities Description: Comprehensive math/science/music-based degrees in recording arts. Fully automated digital facilities—see Web site for additional information.

RECORDING ARTS CANADA, ONTARIO

Address: PO Box 11025, 984 Hwy. #8 Stoney Creek, Ontario, Canada L8E 5P9 Phone: 888/662-2664 Fax: 905/643-7520 E-mail: admissions@recordingarts.com Web: www.recordingarts.com Degrees/Certificates

—LISTING CONTINUED ON NEXT PAGE

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Audio EDUCATION Programs
Eastern Schools

—LISTING CONTINUED FROM PREVIOUS PAGE

Offered: 1-year Diploma in audio engineering and multimedia production. Program and Facilities Description: Recording Arts Canada is a unique school that offers students an opportunity to learn and work in a creative and progressive environment. By studying in one of the best-equipped audio schools you will learn the skills and techniques audio, music and multimedia professionals use every day. At Recording Arts Canada we provide sophisticated technology, quality theoretical instruction and extensive practical activity within a small group format so that our students graduate as skilled and employable professionals.

RECORDING ARTS CANADA, QUEBEC

Address: 34 Chemin des Ormes, Ste-Anne-des-Lacs, Quebec, Canada J0R 1B0 Phone: 514/224-8363 Fax: 514/224-8064 Web: www3.sympatico.ca/inst.enreg Degrees/Certificates Offered: 1-year diploma programs in Audio Production, Computer Assisted Sound Design. Program and Facilities Description: A private college, offering two collegiate programs of study in audio production and sound design. School-owned world-class facilities with three classic Neve consoles, and all the latest digital and multimedia tools from Digidesign, Avid, Focusrite, Adobe, Director etc. Located in the beautiful Laudentian Mountains, 40 minutes north of Montreal.

SELECT SOUND STUDIOS

Address: 2315 Elmwood Ave., Kenmore, NY 14217 Phone: 716/873-2717 Fax: 716/873-2719 E-mail: selectsound@cmp-express.com Web: www.selectsound.com Degrees/Certificates Offered: Recording Technologies One: 12 weeks, 3 credits; Recording Technologies Two: 10 weeks, 3 credits; Recording Technologies Three: 10 weeks, 3 credits; MIDI Production: 10 weeks, 3 credits; Digital Editing and Mastering: 10 weeks, new for 1998. Program and Facilities Description: Select Sound Studios is a full-service recording facility specializing in education. Four production rooms offer students the opportunity to work in 24-track analog studios, 32-track digital studios, a digital mastering suite and a real-time duplication room. Topics include the history of recording, physics of sound, studio acoustics, the recording chain, microphone techniques and theory and operation of tape recorders and mixing consoles. The programs are designed to give students hands-on experience.

SHEFFIELD INSTITUTE FOR THE RECORDING ARTS

Address: 13816 Sunnybrook Rd., Phoenix, MD 21131 Phone: 410/628-6280 Fax: 410/ 628-1977 E-mail: bill@sheffieldav.com Web: www.sheffieldav.com Degrees/ Certificates Offered: Certificate approved by Maryland Higher Education Commission. AudioWorks: 290 hrs/six-month full-time audio engineering program. VideoWorks: 232 hrs/five-month full-time video production program. Program and Facilities Description: Solid State Logic facilities and instructors with Grammy, Emmy, TEC and Monitor award nominations and a huge list of recording credits. AudioWorks: Basic audio engineering, advanced audio engineering, advanced audio lab, MIDI, nonlinear digital audio editing and live sound/remote recording. VideoWorks: basic video technology, lighting, camera, paintbox, Scribe and Avid. Equipment: SSL 4000 EG consoles, Sony 3324 digital, Otari MTR 90 MkII analog multitracks, Ampex switchers, Sony Betacam, Quantel Paintbox, Cyron Scribe, Avid 1000.

STATE UNIVERSITY OF NEW YORK AT FREDONIA

Address: 1146 Mason Hall Fredonia, NY 14063 Phone: 716/673-3221 Fax: 716/673-3154 E-mail: kerzner@ait.fredonia.edu Degrees/Certificates Offered: BS in Sound Recording Technology, BFA in Media Arts, BS in Communications. Program and Facilities Description: The highly respected and comprehensive Fredonia SRT program is based within the National Association of Schools of Music-accredited Fredonia School of Music. A musical audition is required in addition to mathematical skills. A wide variety of internships at leading facilities are regularly available. Students learn on analog 2- and 24-track systems as well as Pro Tools and Sound Tools workstations. MDMs, MIDI/sampling labs; students receive a minimum of 650 hours of hands-on studio lab.

TREBAS INSTITUTE, ONTARIO

Address: 410 Dundas St. East, Toronto, Ontario, Canada M5A 2A8 Phone: 416/966-3066 Fax: 416/966-0030 E-mail: trebasto@total.net Web: www.trebas.com Degrees/Certificates Offered: Audio Engineering Diploma, Recorded Music Production Diploma, Music Business Administration Diploma, Digital Media Diploma with Specialization in Multimedia or 3D Animation, Film/Television Production Diploma (all less than one year). Program and Facilities Description: Established in 1979, to help students acquire knowledge, develop skills and professionalism for entry into fields of music business, audio, record production, interactive multimedia, computer animation and film/TV production. Outstanding instructors. High-tech studios. Focus on preparing grads for real-world careers. Government loans. Internships. National job placement. Grads with major companies, studios, entertainers worldwide. Resource center, authorized training center for Macromedia and Cubase. TEC Award nominee: Recording School of the Year, 1989 and 1990.

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World Radio History

TREBAS INSTITUTE, QUEBEC

Address: 451 Saint Jean St., Montreal, Quebec, Canada H2Y 2R5 Phone: 514/845-4141 E-mail: trebasmtl.-total.net Web: www.trebas.com Degrees/Certificates Offered: Audio Engineering Diploma, Recorded Music Production Diploma, Music Business Administration Diploma, Digital Media Diploma with Specialization in Multimedia or 3D Animation, Film/Television Production Diploma (all less than one year). Program and Facilities Description: Established in 1979, to help students acquire knowledge, develop skills and professionalism for entry into fields of music business, audio, record production, interactive multimedia, computer animation and film/TV production. Outstanding instructors. High-tech studios. Focus on preparing grads for real-world careers. Government loans. Internships. National job placement. Grads with major companies, studios, entertainers worldwide. Resource center, authorized training center for Macromedia and Cubase. TEC Award nominee: Recording School of the Year, 1989 and 1990.

UNITY GAIN RECORDING INSTITUTE

Address: 1953 Ricardo Ave., Fort Myers, FL 33901 Phone: 941/332-4246 Fax: 941/332-4246 E-mail: Aiannucci@aol.com Web: www.unitygain.com Degrees/Certificates Offered: Certificate of Graduation upon completion of the 48-week Audio Recording Comprehensive Program Program and Facilities Description: Whether your desire is to become an engineer, a studio manager/owner, a producer or simply an educated audio enthusiast, Unity Gain offers a four-level program designed to prepare you to excel in the area of your choice. The Institute's multitrack recording facilities enable the student to learn on state-of-the-art audio equipment, with an emphasis on hands-on instruction in recording, production, audio-for-film/video, sound reinforcement and MIDI.

UNIVERSITY OF MAINE AT AUGUSTA

Address: 46 University Dr., Augusta, ME 04330 Phone: 207/621-3267 E-mail: richardn@mail.caps.maine.edu Web: www.uma.maine.edu/academics/ucadjazz&contemporarymusic.html Degrees/Certificates Offered: Bachelor of Music in Jazz and Contemporary Music (audio concentration). Program and Facilities Description: UMA has the only music program in Maine with a state-of-the-art recording studio. Recording commercial music and advertisements is a significant part of the music industry in Maine. Our internships are a student's best link to employment. This concentration integrates the studio into other music concentrations.

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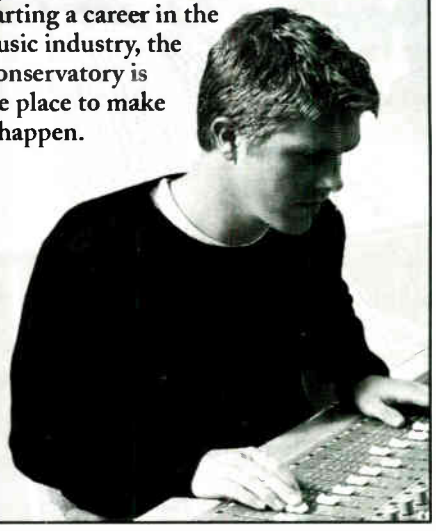

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UNIVERSITY OF MASSACHUSETTS-LOWELL

Address: Sound Recording Technology, One University Ave., Lowell, MA 01854 Phone: 978/934-3850 Fax: 978/934-3034 E-mail: William_Moylan@uml.edu Web: http:willow.uml.edu/www/srt Degrees/Certificates Offered: Bachelor of Music in Sound Recording Technology Program and Facilities Description: The primary program, the BM in SRT, prepares students for production-related careers in the recording industry, through studies in music, EE, computer science, math and physics and a minimum of nine courses in the art and technology of recording. SRT minors prepare students for technology-development career paths. Supported by 8 control rooms: 24-track, MIDI/synthesis, 8-track, video post, maintenance/repair, critical listening, hard disk recording, entry-level room. TEC Award nominee.

UNIVERSITY OF MEMPHIS, COMMERCIAL MUSIC PROGRAM

Address: 232 CFA Building, Campus Box 526546, Memphis, TN 38152-6546 Phone: 901/678-2559 Fax: 901/678-5118 E-mail: cmusinfo@memphis.edu Web: www.people.memphis.edu/~cmusweb Degrees/Certificates Offered: Bachelor of Music in Commercial Music, Concentrations in: Recording Technology, Music Business Program and Facilities Description: Programs stress thorough understanding of fundamental concepts, yet place equal emphasis upon developing student's ability to quickly adapt to new practices, technologies and creative directions. Instructors actively involved in industry. Studio B extensively renovated and now features an AMS Neve Libra digital console and improved acoustics. Students enjoy generous lab access where "hands-on" training is stressed. Memphis community offers diverse cultural opportunities, rich internship possibilities. A commitment to personal attention and quality instruction requires enrollment be limited based on selective procedures. NASM accredited.

You spend countless hours working in the recording studio. If you can get it just right, the project could go "gold" and your career is on its way.

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UNIVERSITY OF HARTFORD, COLLEGE OF ENGINEERING

Address: 200 Bloomfield Ave., West Hartford, CT 06117 Phone: 860/768-4792 Fax: 860/768-5073 E-mail: celmer@mail.hartford.edu Web: uhavax.hartford.edu/~acoustics Degrees/Certificates Offered: BS Engineering (BSE), BS Mechanical Engineering, Optional EE minor Program and Facilities Description: There are two ways to incorporate Acoustics into an undergraduate Engineering degree at UH: 1) Acoustics and Music B.S.E. program, which combines an engineering degree program emphasizing acoustics and vibrations with course work at the Hartt School of Music. (2) The Mechanical Engineering B.S.M.E. with Acoustics Concentration program. Graduates from these programs have been employed at Bose Loudspeakers, QSC Amplifiers, Steinway & Sons, LucasFilm-THX Sound, Pratt & Whitney Aircraft, and numerous acoustical consulting firms or graduate schools in acoustics. Facilities: Anechoic chamber, B&K dual-channel FFT/RTAs, Modal Analysis/CADP2 software, DAT, portable SLMs, three studios with 4-, 8-, and 16-track analog/digital recording, Pro Tools software.

UNIVERSITY OF MIAMI, COLLEGE OF MUSIC

Address: P.O. Box 248165 Coral Gables, FL 33124 Phone: 305/284-5995; 284-2241 Fax: 305/284-6475 E-mail: kmoses@miami.edu Web: www.music.miami.edu Degrees/Certificates Offered: Bachelor of Music in Music Engineering with minors in Electrical Engineering or Computer Science, Master of Science in Music Engineering. Program and Facilities Description: The Music Engineering program accepts undergraduate musicians who desire careers in music recording, audio engineering, audio equipment hardware and software design, sound reinforcement and broadcasting. By combining music and music engineering studies with a minor in electrical engineering or computer science, students enjoy diverse professional opportunities. Graduate students have completed their electrical engineering degree, and engage in research in DSP programming, psychoacoutics and synthesis. Our facilities and faculty members (including Ken Pohlman and Will Pirkle) are known for their excellence.

UNIVERSITY OF NEW HAVEN

Address: 300 Orange Ave., West Haven, CT 06516 Phone: 203/932-7101 E-mail: menelaos@charger.newhaven.edu Web: www.newhaven.edu Degrees/Certificates Offered: 4-year BA in Music & Sound Recording, 4-year BA in Music Industry, 4-year BS in Music & Sound Recording, 4-year BA in Music. Program and Facilities Description: The Music & Sound recording Programs instruct students in three interrelated areas: 1) music history, theory and aesthetics; 2) musicianship; and 3) sound recording methodology and technique. Music Industry adds courses in copyright law, contracts, ac-

World Radio History

counting, marketing and management. The new professional recording facility features a Tascam ATR80 24-track recorder, DA-88 digital recorders and model 600 console, UREI and JBL monitors, Apple Macintosh computers, digital editing and mixdown, and extensive outboard and MIDI gear. Facilities also include 16-, 8- and 4-track studios and workstations.

UNIVERSITY OF NORTH CAROLINA AT ASHEVILLE

Address: One University Heights Asheville, NC 28804-8510 Phone: 704/251-6432 Fax: 704/254-7160 E-mail: cmcknight@unca.edu Web: www.unca.edu Degrees/Certificates Offered: BS in Music with Recording Arts, BA in Music with a Concentration in Jazz Studies, BA in Music (general music studies). Program and Facilities Description: The BS in Music with Recording Arts was established in 1982. It is a small and highly selective program taught in UNCA's recording studio featuring 24-track analog and 16-track digital capabilities. Our MIDI production facilities and computer labs give students hands-on experience with the latest audio technology.

UNIVERSITY OF SOUTH CAROLINA SCHOOL OF MUSIC

Address: Columbia, SC 29208 Phone: 803/777-4371 Fax: 803/777-6508

Z DOMAIN TECHNOLOGIES

Address: 325 Pine Isle Court Alpharetta, GA 30202 Phone: 770/587-4812 Fax: 770/518-8368 E-mail: dsp@mindspring.com

CENTRAL SCHOOLS

ASPEN MUSIC FESTIVAL AND SCHOOL

Address: 2 Music School Rd. Aspen, CO 81611 Phone: 970/925-3254 x122 Fax: 970/925-3802 E-mail: school@aspenmusic.org Web: www.aspen.com/musicfestival Program and Facilities Description: The Edgar Stanton Audio Recording Institute is an intensive 4-week full-time seminar/workshop. The goal is to provide a background in the basics of audio production and prepare students for a career as a recording engineer. A wide range of recording experience is offered utilizing state-of-the-art equipment. Faculty and guest lecturers are noted representatives of the recording and broadcasting industries. The session is limited to ten students to ensure maximum individual attention.

AUDIO ENGINEERING INSTITUTE

Address: 2815 Swandale, San Antonio, TX 78230 Phone: 210/525-0719 Fax: 210/344-3299 Degrees/Certificates Offered: Basic and Advanced Audio Engineering classes, each lasting ten weeks. Program and Facilities Description: Courses meet on Monday nights, 6:30 to 9:30 pm. Classes are taught by Gold and Platinum Record winner Marius Perron III. Students are trained part hands-on equipment, part lecture. Basic class covers: theory, microphones, consoles, tape recorders, live band recording and mixing. Advanced class covers: signal processors, hard disk recording, MIDI, synthesizers and samplers, drum machines and sequencers, audio-for-video, computer assisted mixing, real-time analysis and studio equipment maintenance. The advanced course is structured around an apprentice engineering program for students who are interested in working as second engineers at recording studios in San Antonio.

SOUTHERN METHODIST UNIVERSITY

Address: Electronic Music Studios, Division of Music, PO Box 750356, Dallas, TX 75275-0356 Phone: 214/768-2643 Fax: 214/768-4669 E-mail: msweidel@mail.smu.edu

BROWN INSTITUTE

Address: 1440 Northland Dr., Mendota Heights, MN 55120 Phone: (612) 905-3400 Fax: (612) 905-3550

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Audio EDUCATION Programs

Central Schools

THE CLEVELAND INSTITUTE OF MUSIC

Address: 11021 East Blvd., Cleveland, OH 44106-1705 **Phone:** 216/791-5000 **Fax:** 216/791-3063 **E-mail:** tjk11@po.curv.edu **Web:** www.cim.edu **Degrees/Certificates Offered:** Bachelor of Music (BM) in Audio Recording as a four year degree, or a double major (along with an instrument or Composition major) in five years. **Program and Facilities Description:** Courses cover digital audio, DSP/editing systems; audio-for-video post-production, surround-sound, CD-ROM and Web-based multimedia; microphone techniques, synthesis/sampling; and acoustics. Tascam DA-98, Pro Tools, Sonic Solutions and Yamaha 02R digital multitrack recording/mixing; Lexicon, TC Electronic, Yamaha, etc. DSP; Macintosh and Sony computers. Audio-Technica, Neumann, Sennheiser, Schoeps microphones, Millennia Media preamps. Professional faculty features multiple Grammy winner Jack Renner (Telarc International), Dr. Peter D'Antonio (RPG Diffusor Systems), Thomas Knab and Mark Tessi (CIM and Telarc), and Timothy Callahan, sound with picture. Program emphasizes hands-on experience, music and digital media production.

COLUMBIA COLLEGE CHICAGO

Address: 400 South Michigan Ave., Chicago, IL 60605-1996 **Phone:** 312/482-9068 **Fax:** 312/482-9083 **E-mail:** bkanters@popmail.colum.edu **Web:** www.colum.edu **Degrees/Certificates Offered:** 4-yr accredited Bachelor of Arts degree with a major in Sound Technology. **Program and Facilities Description:** The Columbia College Chicago Sound Program includes extensive course offerings in the fields of music recording, concert sound reinforcement, sound design for video and film, sound contracting and acoustics. Columbia's Audio Technology Center includes: multitrack music and voice-over recording and mix studios, film/video post-production suites, digital audio production suites, and classroom laboratories for analog/linear and digital/nonlinear production, audio system analysis, and acoustical design and analysis.

DEPAUL UNIVERSITY SCHOOL OF MUSIC

Address: 804 W. Belden Ave., Chicago, IL 60614 **Phone:** 773/325-7260 **Fax:** 773/325-7264 **E-mail:** rbeacraf@wppost.depaul.edu **Web:** music.depaul.edu **Degrees/Certificates Offered:** 4-yr Bachelor of Science in Music **Program and Facilities Description:** The DePaul Sound Recording Technology Program is a 4-year program designed to prepare students for a career in the recording field. DePaul SRT students take the standard music core classes in addition to specialization in electronics and computer science. Recording classes and practicums take place at Streeterville Recording, a facility featuring state-of-the-art consoles and equipment. Students also refine their skills at Studio DePaul, the on-campus recording facility.

ELMHURST COLLEGE

Address: 190 Prospect Elmhurst, IL 60126 **Phone:** 630/617-3500 **Fax:** 630/617-3738 **E-mail:** kevino@elmhurst.edu **Degrees/Certificates Offered:** BM in Music Business, BS in Music Business, BM in Music Education, BA in Music. **Program and Facilities Description:** Located in the Chicago metropolitan area, Elmhurst College is a nationally accredited institution that offers both a BS and a BM in Music Business. In addition to classwork in music, business and business of music, students get hands-on industry experience through internships, industry speakers and course tours. Resources include a state-of-the art 24-track digital studio, courses ranging from music theory to MIDI, recently expanded practice and recital facilities, and an artist faculty of over 50. Industry support is provided in the form of scholarships from trade organizations such as NAMM and NARAS, corporate sponsorship, a student chapter of MEIEA and an intern/job bank. Offering students individualized instruction in music business for over 20 years, Elmhurst provides a specialized career track integrated within a four-year degree.

GRAND VALLEY STATE UNIVERSITY

Address: 301 West Fulton St., Grand Rapids, MI 49504 **Phone:** 616/771-6754 **Fax:** 616/336-7215 **Degrees/Certificates Offered:** Electrical Engineering with Music minor.

HOUSTON COMMUNITY COLLEGE

Address: 901 Yorkchester, Houston, TX 77079 **Phone:** 713/468-0955, ext. 36 **E-mail:** gehman_s@hccs.cc.tx.us **Web:** www.hccs.cc.tx.us/nwcollege/dept/audio/main.htm **Degrees/Certificates Offered:** 1-year Certificate in Audio Engineering, 1-year Certificate in MIDI/Electronic Music, 1-year Certificate in Video Production, 2-year AAS Degree in Audio Engineering, 1-semester Enhanced Skills Certificate in MIDI/Electronic Music or Video Production. **Program and Facilities Description:** Receive unlimited hands-on experience via eight fully equipped studios. Studio A: 48-track DA-88/2-inch MCI; Sony 3036 console; outboard gear: Digidesign, UREI, Lexicon, Eventide, ADR, Aphex, microphones by Telefunken, Neumann, AKG, Sennheiser, Audio-Technica. Studios B, C and D: Alesis X2 consoles, ADAT XT20 recorders. Studio M: Alesis X2 consoles, synthesizers by Korg, Roland, Oberheim, MOTU, E-mu, Peavey, Alesis. Studios E102 & 115: 30 PowerMac/Korg XS workstations. Studio V: A/B Rolling editors.

INDIANA UNIVERSITY SCHOOL OF MUSIC

Address: Bloomington, IN 47405 **Phone:** 812/855-1087 **E-mail:** bejrober@indiana.edu **Web:** www.music.indiana.edu/som/audio **Degrees/Certificates Offered:** AS in Audio Technology, BS in Audio Recording. **Program and Facilities Description:** Training in audio recording, reinforcement and media production, multitrack studio techniques emphasized (AS), classical music engineering and producing emphasized (BS). DAT, SC-88, hard disk editing and 16-track analog, full range of professional microphones. Students record CD projects and performances ranging from solo and chamber music through symphonies, jazz ensembles and opera, 1,200 performances produced annually in four concert halls. University financial aid and some work scholarships available. Departmental assistance offered in job placement.

INTERNATIONAL COLLEGE OF BROADCASTING

Address: 6 So. Smithville Rd. Dayton, OH 45431 **Phone:** 937/258-8251 **Fax:** 937/258-8714 **Web:** www.icbroadcasting.com **Degrees/Certificates Offered:** Associate Degree program in Applied Science of Communication Arts in Television and Radio, Associate Degree program of Applied Science in Video Production/Recording, Audio Engineer Diploma Program in Recording Audio Engineering, Diploma Program Broadcasting I. **Program and Facilities Description:** ICB is a small, private college located in Dayton, OH. Enrollment invitations are based on prospective students touring the facility

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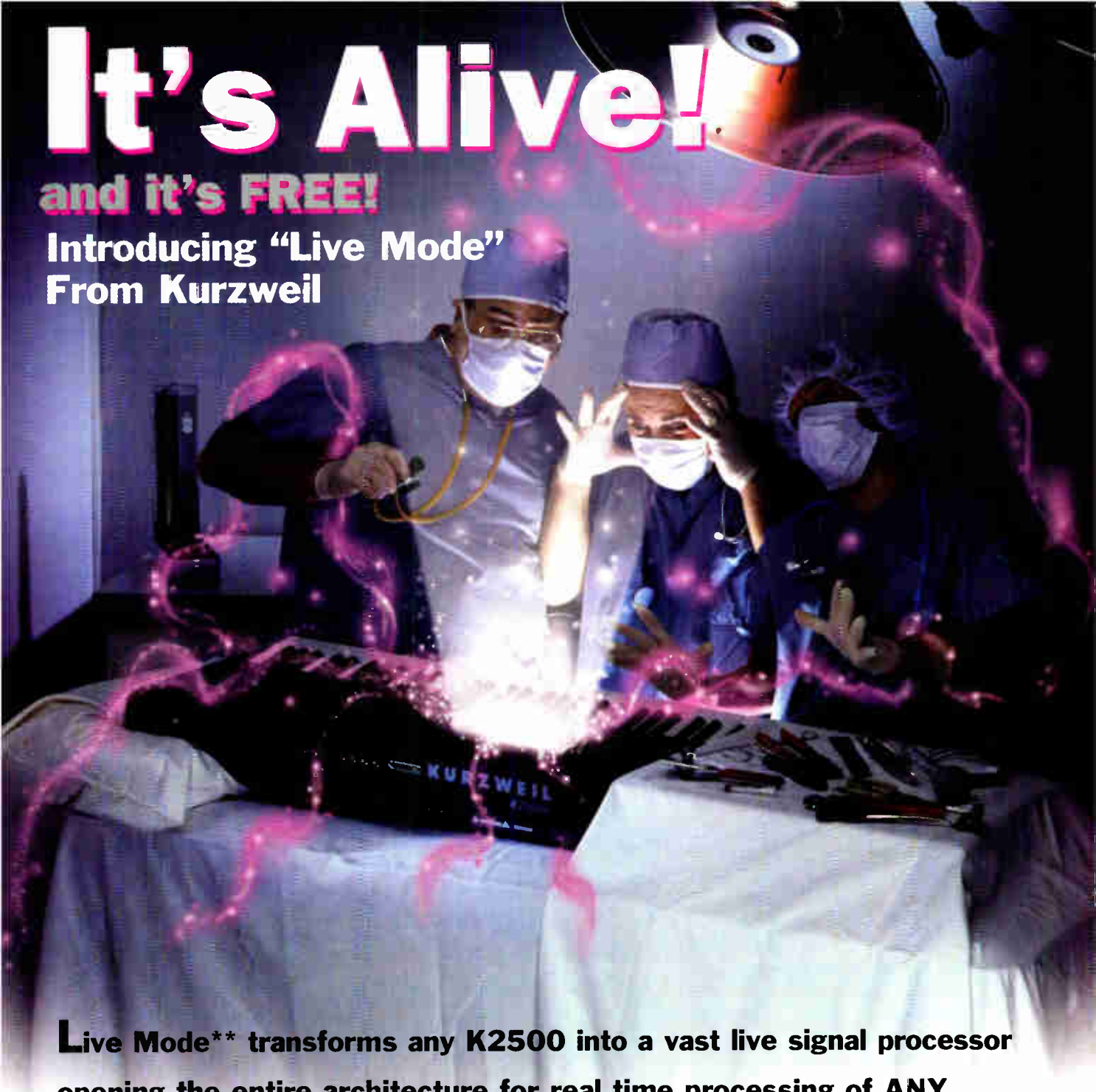
World Radio History



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Audio EDUCATION Programs
Central Schools

—LISTING CONTINUED FROM PREVIOUS PAGE

and demonstrating commitment and desire to be part of the broadcasting and recording fields. Smaller class sizes ensure more individualized attention. Programs offered combine theory and hands-on training.

MADISON MEDIA INSTITUTE

Address: One Point Pl., Ste. 1 Madison, WI 53719 Phone: 608/829-2728 Fax: 608/829-2661 E-mail: mmi@midplains.net Web: www.madisonmedia.com Degrees/Certificates Offered: Recording and Music Technologies/diploma program, 30 week, 7½ months. Program and Facilities Description: Music and MIDI, Recording Techniques, Music Business, 48-track digital/analog.

MILLIKIN UNIVERSITY

Address: 1184 W. Main St., Dacatur, IL 62522-2084 Phone: 217/424-6254 Fax: 217/424-3993 E-mail: swidenhofer@mail.millikin.edu Web: www.millikin.edu

OBERLIN CONSERVATORY OF MUSIC, TIMARA DEPT.

Address: Oberlin, OH 44074 Phone: E-mail: Richard.Povall@oberlin.edu Web: www.timara.oberlin. edu/ Degrees/Certificates Offered: 4-yr Bachelor of Music (major in Technology in Music & Related Arts). Oberlin also offers a 4-yr Bachelor of Arts in Visual Arts with an emphasis in Digital Media. Program and Facilities Description: Based at one of the nation's top-ranked conservatories of music, the TIMARA Department has excellent facilities for computer music, performance technology and new media. There are seven studios, including a recording studio (16-track digital tape, 16-track Pro Tools); two computer music studios; a digital media room with a Media 100 system; and a computer music lab with multiple Macintosh-based workstations/samplers. The program is highly competitive and admits fewer than 10 students per year.

OHIO UNIVERSITY, SCHOOL OF TELECOMMUNICATIONS

Address: 9 South College St., Athens, OH 45701 Phone: 740/593-4870 E-mail: redefer@ouvaxa.cats.ohiou.edu Web: www.tcomschool.ohio.edu Degrees/Certificates Offered: Bachelor of Science in Communications. Program and Facilities Description: The Audio Production Sequence incorporates coursework in multitrack recording, music production, theater, music, electronics, film, business among others. Facilities include an AMEK Big 28x24 console with SuperTrue Automation, 24 tracks of ADAT, several Digidesign Pro Tools digital audio workstations, a wide assortment of mics and processing gear. The school is also equipped with both Avid and Media 100 video workstations as well as a 13-station Macintosh MIDI/digital audio lab.

PARKLAND COLLEGE

Address: 2400 West Bradley Ave., Champaign, IL 61821 Phone: 217/351-2200

RECORDING INSTITUTE OF DETROIT

Address: 14611 9-Mile Rd. Eastpointe, MI 48021 Phone: 800/683-1743 Fax: 810/772-4320 E-mail: recordingi-@aol.com Web: recordingeq.com Degrees/Certificates Offered: Recording Engineering & Production Certificate—39 weeks/447 clock hours; Second Recording Engineer Certificate—36 weeks/313 clock hours; Recording Technician Certificate-7-19 weeks/83 clock hours. Program and Facilities Description: Operating since 1975, with extensive training in recording, music composition and production. Students attend 12 hours per week for 39 weeks completing two recording courses, two music courses and an internship, with lab, video viewing and in-school study as needed. We have three major studios, dedicated student control room and four student workstations. Equipment includes SSL and 02R consoles, PC/Mac hard disk recording, DA-88, ADAT and 48-track analog recorders. Small classes, relaxed and comprehensive.

RECORDING INSTITUTE OF DETROIT SAGINAW ANNEX

Address: 707 Federal Ave., Saginaw, MI 48607 Phone: 888/683-1743 E-mail: recordeq@aol.com Web: www.wagnermusic.com/rid.html Degrees/Certificates Offered: Recording Technician Certificate—7-19 weeks/83 clock hours. Program and Facilities Description: Open since 1997, the Annex offers initial training in recording and music. Students can complete RID full programs by transfering to the main campus for complete advanced training. Facilities include a complete 40-track, all-digital control room with DA-88 format and cascaded 02R consoles and large studio room. A student lab station and video viewing facilites round out the facilities.

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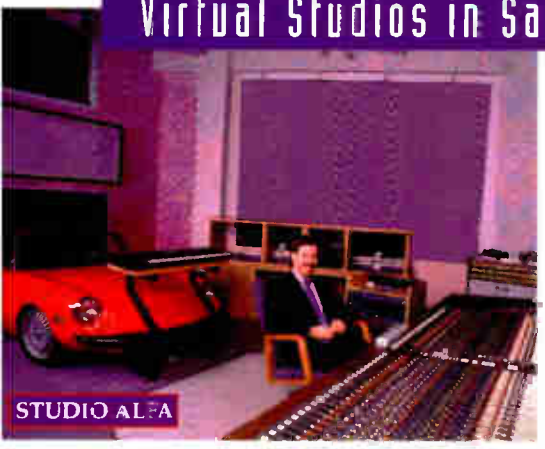

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- Electronic Maintenance • Live Sound
- Music Business • Video Production
- Audio for Video • Multimedia

Extension Classes

Six Week - RECORDING/MIXING CLASS - $285
An overview of what it takes to be a Recording Engineer.
Five Week - PRO TOOLS 4 CLASS - $285
Hands-on Intensive Class on Pro Tools 4 including Audio for Video.
Four Week - LIVE SOUND CLASS - $185
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- Music Business • How to Produce a Project • Advanced Mixing
- Electronic Maintenance

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- Thomas Dolby

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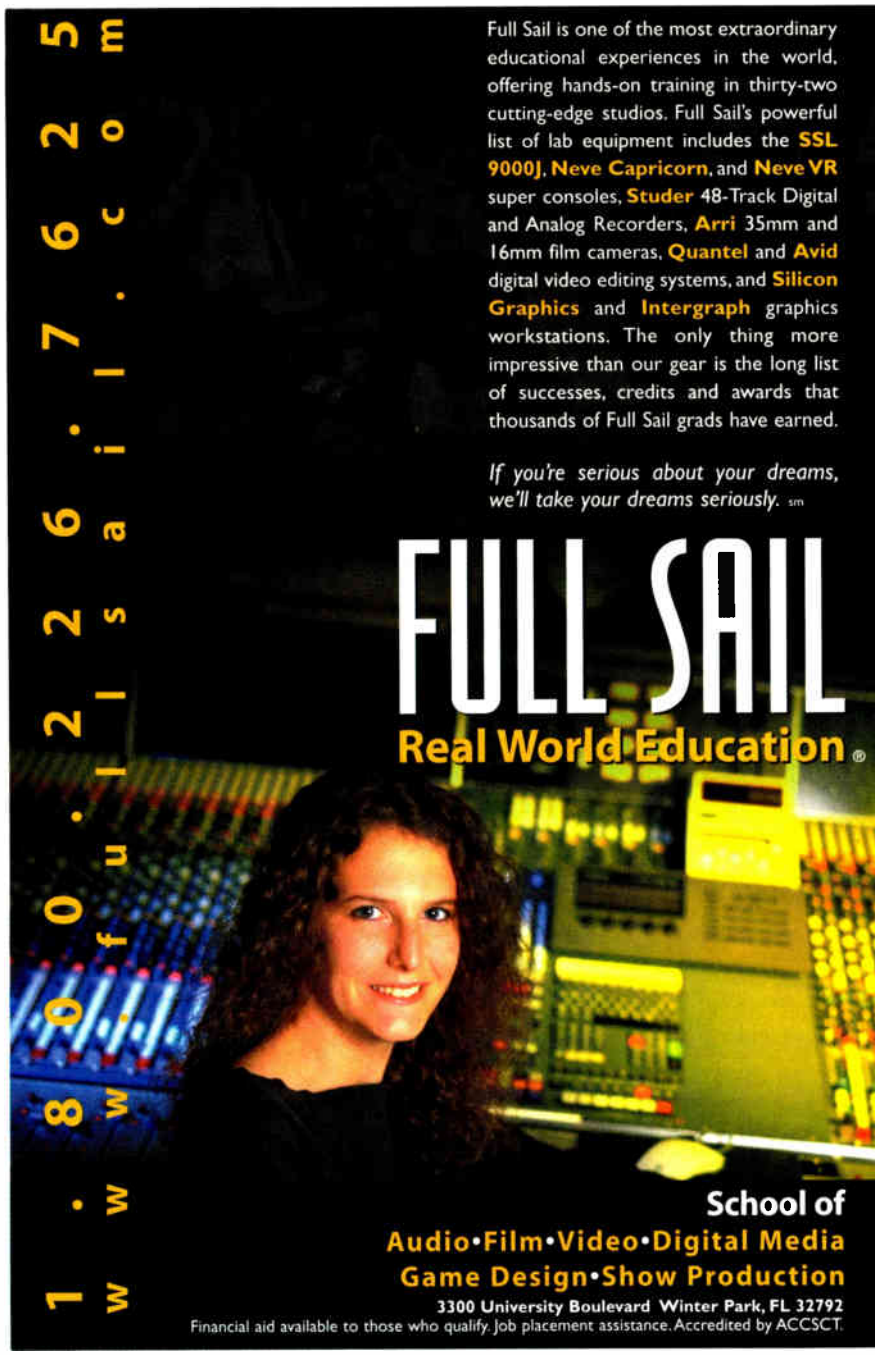
Audio EDUCATION Programs

Central Schools

THE RECORDING WORKSHOP

Address: 455 Massieville Rd. Chillicothe, OH 45601 Phone: Tel: 800/848-9900 Fax: 740/663-2427 E-mail: info@recordingworkshop.com Web: www.recordingworkshop.com Degrees/Certificates Offered: Certificate, 5 weeks, Recording Engineering and Music Production Program. Certificate, 1 week, Studio Maintenance and Troubleshooting Program. Certificate, 1 week, Advanced Recording Engineering and Music Production Program. Certificate, 1 week, NewTech Computer-based Audio Production Program. Program and Facilities Description: The Recording Workshop offers programs that are effective, affordable and time efficient. Since 1971, thousands of students have participated in this intensive "hands-on" training. Many have gone on to very successful careers with the Recording Workshop as their only formal audio education, continuing their growth through on-the-job experience. A well-equipped, 8-studio facility features rooms specialized for music recording and others designed for commercial production. Affordable on-campus housing is available within a one-minute walk of the studios.



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RED WING/WINONA TECHNICAL COLLEGE

Address: 308 Pioneer Rd. Red Wing, MN 55066 Phone: 612/385-6300 Fax: 612/385-6368

RIDGEWATER COLLEGE, AUDIO TECHNOLOGY PROGRAM

Address: 2 Century Ave., Hutchinson, MN 55350 Phone: 800/222-4424 Fax: 320/587-9019 Web: www.ridgewater.mnscu.edu/index.htm Degrees/Certificates Offered: 2-year Diploma in Audio Technology, 2-year A.A.S. Degree in Audio Technology. Program and Facilities Description: The Audio Technology department offers a diverse program in audio ranging from studio recording to live sound, system design and installation. Students also achieve a strong electronics and computer applications background, which makes our graduates extremely valuable to future employers. Students will learn Yamaha 02R, DAL V8 digital audio workstation, Renkus-Heinz Audio Ease and Ears, and many other specializations.

SOUTHERN ILLINOIS UNIVERSITY

Address: Box 1771 Edwardsville, IL 62026-1711 Phone: 618/650-3900 Fax: 618/692-5988 E-mail: rhaydon@siue.edu

SOUTH PLAINS COLLEGE

Address: 1401 College Ave., Levelland, TX 79336 Phone: 806/894-9611 Fax: 806/894-5274 E-mail: jstoddar@spc.cc.tx.us Web: www.spc.cc.tx.us Degrees/Certificates Offered: Associate Degree in Sound Technology Program and Facilities Description: Two 24-track recording studios, one 8-track demo studio. Consoles include Sony 36-channel, Amek Mozart 36-channel, Mackie 32-channel, fully equipped MIDI lab, video production facility. South Plains College's Sound Technology Program was founded in 1980 and modeled after the program at Belmont University in Nashville. Because it is a junior college, it offers professional audio education at extremely affordable prices.

SOUTHWEST TEXAS STATE UNIVERSITY

Address: 601 University Dr., San Marcos, TX 78666 Phone: 512/245-8451 Fax: 512/396-1169 Web: www.swt.edu/music

SYNERGETIC AUDIO CONCEPTS

Address: 8780 Rufing Rd. Greenville, IN 47124 Phone: 812/923-0174 Fax: 812/923-3610 E-mail: brenda@synaudcon.com Web: www.synaudcon.com Degrees/Certificates Offered: "Week of Audio Training" week includes system setup, system design, and test and measurement. "Hands-on" seminar 2-day seminar allows you to apply the principles taught in system setup. 40 CEUs given with the week-long seminar. Program and Facilities Description: "System Set-Up" allows you to learn how to properly interface and calibrate audio equipment. "System Design" allows you to achieve optimum sound system performance before installation. "Test & Measurement" focuses on how they work and how to apply them in a real world and practical manner. "Hands-On" allows you to apply the principles taught in the "System Set-Up" seminar.

FRED N. THOMAS CAREER EDUCATION CENTER

Address: 2650 Eliot St., Denver, CO 80211 Phone: 303/964-3075 Fax: 303/964-3004

UNIVERSITY OF CINCINNATI CONSERVATORY OF MUSIC (CCM)

Address: PO Box 210096 Cincinnati, OH 45221-0096 Phone: 513/556-5462 Fax: 513/556-3399 E-mail: Michael.Hooker@uc.edu Web: www.uc.edu/www/ccm/tdp Degrees/Certificates Offered: BFA in Theatre Design and Production, emphasis in theatre sound; MFA in Theatre Sound Design Program and Facilities De-

World Radio History

scription: CCM's sound design programs encompass a broad array of areas within the performing arts. Coursework includes sound technology and production, theatre aesthetics, critical listening, music, digital audio, recording, reinforcement and sound design. CCM offers a diverse season of shows including large musicals, operas, dance and dramas. Facilities include three well-equipped theatres, a sound design studio and extensive reinforcement and playback equipment. Entrance is by on-site portfolio review. Please contact the CCM Office of Admissions for information: 513-556-5463

UNIVERSITY OF COLORADO-DENVER

Address: College of Arts and Media, Campus Box 162, P.O. Box 173364 Denver, CO 80217-3364 Phone: 303/556-2795 Fax: 303/556-2335 E-mail: roypritts-@aol.com Web: www.cudenver.edu/public/cam Degrees/Certificates Offered: 4-yr BS in Music: Music Engineering or Music Industry Studies; 6th yr, Master of Humanities or Engineering or Learning Technologies; 7th yr, PhD in Information and Learning Technologies. Program and Facilities Description: Music technology, engineering, business, music with general university core studies, four control rooms, five studios with music recording, audio sweetening (surround), electronic music (MIDI) production, student section of the Audio Engineering Society (AES), SPARS, MEIESA chapter, national internship program, 16-track analog and digital control rooms, signal processing, maintenance and calibration.

UNIVERSITY OF MICHIGAN

Address: 1100 Baits Dr., Ann Arbor, MI 48109-2085 Phone: 313/936-0425 Fax: 313/763-5097 E-mail: msimoni@umich.edu Web: www.music.umich.edu Degrees/Certificates Offered: Bachelor of Music in Music Technology, Bachelor of Fine Arts in Music Technology, Bachelor of Fine Arts in Media Arts.

UNIVERSITY OF MISSOURI & KANSAS CITY, DEPT. OF THEATRE

Address: 4949 Cherry St., Kansas City, MS 64110 Phone: 816/235-2948 Fax: 816/235-5265

UNIVERSITY OF NEBRASKA-LINCOLN

Address: 206 Avery Hall, Lincoln, NE 68588-0131 Phone: 402/472-2258 Fax: 402/472-4732 E-mail: krnu@unlinfo.unl.edu Web: www.jet.unl.edu Degrees/Certificates Offered: 4-year Bachelor of Journalism degree in Broadcasting Program and Facilities Description: The College of Journalism & Mass Communications houses the Broadcasting Department with audio and video production facilities and the University's FM radio station, KRNU. Courses are devoted to audio field and studio production as it relates to broadcast/cable operations and audio/video production careers. Extensive digital audio and video gear; and the college is moving to its own dedicated building in 2001.

UNIVERSITY OF TEXAS

Address: CMA 6.118, Austin, TX 78712 Phone: 512-471-6695 E-mail: vmh@mail.utexas.edu

UNIVERSITY OF WISCONSIN-OSHKOSH

Address: Music Department-Recording Technology Program Oshkosh, WI 54901 Phone: 920/424-4224 Fax: 920/424-1226 E-mail: messner@uwosh.edu Web: www.uwosh.edu Degrees/Certificates Offered: Bachelor of Music with Emphasis in Recording Technology. Program and Facilities Description: Students are trained in a 32-track digital, 16-track analog studio, using a 62-channel Total Audio Concepts console with automation, a wide array of signal processing gear, full video lock and multitrack hard disk recording and editing. The studio is also tied to its own MIDI lab. Students entering program must audition on primary instrument for entrance acceptance. The final semester of en-

—LISTING CONTINUED ON NEXT PAGE

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Audio EDUCATION Programs

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rollment is spent as an intern at a professional audio facility, with placement throughout the U.S. and Europe available.

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Address: Box 1020, Stn., 28, Banff, Alberta, Canada T0L 0C0 Phone: 403/762-6180 Fax: 403/762-6345 E-mail: arts_info@banffcentre.ab.ca Web: www.banffcentre.ab.ca/Music Degrees/Certificates Offered: Audio Assistant and Associate Work/Study programs. One to three terms. Program and Facilities Description: Financial assistance and weekly stipend available. Audio engineers refine their skills in an international, multidisciplinary environment. The audio program runs alongside internationally renowned music programs with prominent faculty and musicians. Guest audio faculty have included John Eargle, Bob Ludwig, George Massenburg and Dr. Wieslaw Woszczyk. Activities include: learning equipment, software and advanced recording techniques, involvement in CD, concert and studio recording, individual research and experimentation, and audio-for-video. Facilities include: recital hall with adjoining control room, digital multitrack recording studio, Pro Tools audio-for-video post-production suite, Sonic Solutions editing suite.

CALIFORNIA RECORDING INSTITUTE

Address: 1137 Howard St., San Francisco, CA 94103 Phone: 415/324-0464 Fax: 415/321-4772 E-mail: virtmixr@hooked.net Web: www.CaliforniaRecording.com Degrees/Certificates Offered: 2-year Audio Producer Associate Degree Program; 3- or 9-month Recording Arts and Technology Certificate Program. Program and Facilities Description: Hands-on intensive program with a wide array of complementary classes. Four studios (24-track 2-inch, ADAT, MIDI, Pro Tools 4, Digital Video Editing Suite, and The Virtual Mixer) per 18 students. The program also utilizes "The Virtual Mixer," which uses 3D visuals of the mix to teach "Mixing Theory." Gibson's book *The Art of Mixing* is used as the primary text. Serious internship program and placement assistance. Classes in The Art and Technology of Production, Equipment Maintenance, Music Theory for Engineers, MIDI, Computers and Hard Disk Recording, The Music Business, Live Sound Reinforcement, Audio-for-Video, Audio for the Internet, Video Production, and Multimedia. Call, write or e-mail for free brochure.

CALIFORNIA STATE UNIVERSITY, CHICO

Address: Department of Music, Chico, CA 95929-0805 Phone: 530/898-5500 Fax: 530/898-4082 E-mail: ksep-panen@oavax.csuchico.edu Web: www.csuchico.edu/mus/rcrd Degrees/Certificates Offered: 4-yr BA in Music with an option in Recording Arts 4-yr BA in Music with an option in Music Industry Program and Facilities Description: The Option in Recording Arts provides a curriculum for students who wish to seek employment in fields combining music and technology. A music major in the Recording Arts Option will take courses in composition with electronic media, audio recording and basic electronics with electives in audio-for-video and the music industry. The Option in Music Industry provides a curriculum for students who wish to seek employment in fields combining music and business.

CALIFORNIA STATE UNIVERSITY AT DOMINQUEZ HILLS

Address: College of Arts & Sciences, Carson, CA 90747 Phone: 310/243-3543

COLLEGE OF SANTA FE

Address: 1600 St., Michael's Dr., Santa Fe, NM 87505 Phone: 800-456-2673 Fax: 505-473-6133

CONSERVATORY OF RECORDING ARTS & SCIENCES

Address: 2300 East Broadway Rd., Tempe, AZ 85282 Phone: 800/562-6383 (toll-free) Fax: 602/829-1332 E-mail: cras@cras.org Web: www.cras.org Degrees/Certificates Offered: 6-month Master Recording diploma. Program and Facilities Description: The Master Recording program is a 22-week-long comprehensive audio engineering and music business program. Classes are limited to 12 students. It is the only accredited school authorized by Avid to teach Digidesign course 135, which certifies Pro Tools engineers, and the only program that requires an internship for graduation. The program exposes students to state-of-the-art gear, including Neotek, Neve, Otari, Lexicon, TC Electronic and Neumann. Financial aid available to those who qualify.

FULLERTON COLLEGE, MUSIC DEPARTMENT

Address: 321 East Chapman Ave., Fullerton, CA 92832-2095 Phone: 714/992-7296 Fax: 714/447-4097

LONG BEACH CITY COLLEGE

Address: 4901 East Carson St., Long Beach, CA 90808 Phone: 562/938-4309 Fax: 562/938-4118 Web: www.lbcc.cc.ca.us Degrees/Certificates Offered: AA with emphasis in Commercial Music, ten certificates in Music, Radio or Television—each requires 3-5 semesters. Program and Facilities Description: LBCC offers job placement, as well as intern positions. Most instructors are active in the professional field. Facilities include seven studios equipped with digital audio and/or analog multitrack, 42 individual MIDI workstations, three camera online video facilities as well as three offline editing rooms. Studio use is available first semester; all students get hands-on experience during their first semester. Equipment includes ADAT, Fostex DMT, MCI 24-track, Soundcraft, CAD, Sound Workshop, Pro Tools, Music Shop, Vision.

LOS ANGELES CITY COLLEGE CINEMA/TELEVISION DEPT.

Address: 855 N. Vermont Ave., Los Angeles, CA 90029 Phone: 213/953-4545 Fax: 213/953-4545

LOS ANGELES RECORDING WORKSHOP

Address: 5278 Lankershim Blvd., North Hollywood, CA 91601 Phone: 818/763-7400 Fax: 818/763-7447 E-mail:

World Radio History

larw@idt.net Web: idt.net/~larw Degrees/Certificates Offered: 7-mo. Recording Engineer Certificate, 7-mo. Audio-Video Production Certificate, 7-mo. Film Production Certificate. Program and Facilities Description: Located in North Hollywood, close to more than 1,300 studios, we offer hands-on training in our 17,000-sq.-ft., 16-studio facility featuring: Solid State Logic 4000 G+ with Ultimation, 4-station Pro Tools Lab, 4-station Avid 1000 Lab, and 4-station Silicon Graphics Lab. Students learn audio, video and film techniques in small group hands-on workshops. Internships and job placement assistance for life. Financial aid and dorm-style housing are available. Tours available Mon.-Fri. 11 am-4 pm.

LOS MEDANOS COLLEGE

Address: 2700 East Leland, Pittsburg, CA 94565 Phone: 510/439-0200 Web: www.losmedanos.net Degrees/Certificates Offered: 2-year Recording Arts Certificate or Associate Degree Program and Facilities Description: The most comprehensive community college recording program in the country. Courses in digital and analog multitrack formats, sound reinforcement, jingle production, music business, session producing, employment strategies, MIDI, Audio-for-video, digital editing and related subjects. Two fully equipped multitrack studios, ten MIDI stations.

MIRACOSTA COLLEGE

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Address: 1600 Holloway Ave., San Francisco, CA 94132 Phone: 415/338-1111 Web site: www.sfsu.edu Degrees/Certificates Offered: 1) Broadcast & Electronic Communication Arts Dept.: B.A and M.A. 4-year degree program. 2) Music Recording Industry program, College of Extended Learning: Certificate Program. Program and Facilities Description: Facility is a fully equipped studio with 2-inch analog multitrack, automated console, misc. signal processing equipment and digital audio workstations; B.A. program includes multitrack recording for music, audio-for-visual media, and sound design components.

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Address: School of Music, MUS 416 Los Angeles, CA 90089-0851 Phone: 213/740-3224 Fax: 213/740-3217 Web: www.usc.edu Degrees/Certificates Offered: 4-yr Bachelor of Science in Music Recording 4-yr Bachelor of Science in Music Industry 4-yr Bachelor of Music in Music Industry Program and Facilities Description: All courses taught by local L.A. industry professionals in SSL/Studer-equipped recording studio. Music Industry class guest speakers include Jay Cooper, Mark Goldstein, Jeff and Todd Brabec, Don Passman, Mark Isham, Kevin Koloff. Recording Arts speakers/lecturers include Ed Cherney, Steve Krause, Tim Boyce, E.T. Thomgren, George Massenburg.

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COAST TO

L.A. GRAPEVINE

by Maureen Droney

Advanced Audio in North Hollywood has been gearing up for the impending digital dubber revolution in post-production; recent purchases have increased the rental company's inventory in that area to around 500 channels of Akai, Fairlight and Tascam, along with an increased stock of hard drives, MO drives and peripherals. "Digital dubbers are definitely the future," says Advanced's Mark Gregory. "New York is running around 200 Akai DD8s on a daily basis, and we expect the Hollywood community to follow suit. The stumbling block so far has been the lack of a file format interchange standard; a plethora of proprietary, incompatible formats floating around on a dubbing stage is just not acceptable. A few facilities such as Monterey Post and Vine Street Studios have been using digital dubbers extensively for a while now, but most of the studios are still sitting on the fence.

"We've become involved with H-TAC (Hollywood Technical Audio Committee)," continues Gregory, "and have high hopes that they'll resolve some of the stickier file format interchange issues. This should open the door to widespread acceptance—and widespread rentals too!"

Advanced Audio has also been busy dealing with the extra service and support required by a technology that is relatively new to many of their customers. "In addition to the hours spent giving support on the phone and on-site," Gregory explains, "we've been

—CONTINUED ON PAGE 226

At Front Page Studios in Glendale, Calif., producer Stephen Stewart-Short (rear) worked on the next Geffen release for The Tomorrow People with bandmembers Trey Schultz (L) and Michael Gibson. Front Page recently relocated and upgraded to a Euphonix CS3000, installed in a room designed for 5.1 surround mixing.

Advanced Audio crew (L to R): Mark Gregory, Eric Sorenson-Livingstone, Paul Levy and David Parla

NY METRO REPORT

by Gary Eskow

Over the next several months, we'll be spending some ink visiting with established artists who make their homes in the New York area. What does it take to sustain a career over the long haul in New York?

Jon Pousette-Dart was a step quicker than the other kids plunking out Henry Mancini's *Peter Gunn* theme in Rockland County, N.Y., back in 1962. Tall, blessed with Prince Valiant good looks, a natural feel for the guitar and a glistening tenor voice, Pousette-Dart moved into the area's artsy scene early on. National exposure came when he teamed up with the sons of comedian Soupy Sales and actor Burgess Meredith to form Tony & The Tigers. He was still in junior high when the band performed "Day Tripper" on national television.

Although his father, the widely respected painter Richard Pousette-Dart, and his mother hoped Jon would attend college, he bagged the idea and traveled to Boston, where he began gigging instead. He formed the Pousette-Dart Band, and in 1976 the group released the first of four albums. Norbert Putnam, a widely respected Nash-

—CONTINUED ON PAGE 230

World Radio History

COAST

NASHVILLE SKYLINE

by Dan Daley

In the Nashville recording business, technology tends to move in waves. Change tends to be resisted until it is irresistible, then it is embraced with a vengeance. Digital recording in the mid-'80s is a perfect example, as was the switch from the Trident console base to SSLs several years later. Technological innovation is not a way of life in a studio culture that for years has been based on an assembly line mode.

But Nashville is catching up to the fractured forward movement of tech, as illustrated by the first annual **Music Industry & New Technologies** conference held here in May, co-hosted by BellSouth and the Country Music Association. While a number of new technologies were displayed and discussed (such as the Aris/Musicode digital watermarking system now being implemented by performing rights organization SESAC), the nearly 800 registrants and attendees focused intently on the Internet panels, of which "Impact of the Internet on the Music Business" was the most widely attended. At that discussion, Lisa Crane, VP of marketing and sales for Universal Studios Online, made clear some statistics that made Music Row, now in flux due to slacking sales and management upheavals at several labels, take notice. Crane estimated that online music sales will grow to $2.8 billion by 2002, up from $71 million last year. At the same time, other speakers noted the pitfalls that accompany online music delivery, such as bootlegging and underground music libraries.

Other exhibitors and sponsors included ASCAP, BMI, BMG, EdgeNet Media, Liquid Audio, NARAS and Henninger Elite Post. More information on the specifics of the conference can be obtained—where else?—on the Net at www.cmamint.com.

—CONTINUED ON PAGE 231

Little Feat guitarist Paul Barrere is pictured at the Panasonic DA7 digital 8-bus console in his home studio. Little Feat recorded their latest album, Under the Radar, in Barrere's studio, with engineer Gil Morales.

ENGINEER SPOTLIGHT

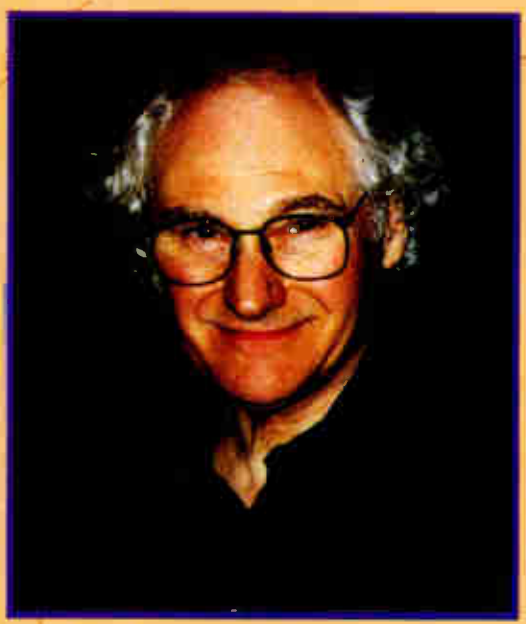
MALCOLM ADDEY: NEW YORK'S FIRST FREELANCE ENGINEER

by Dan Daley

In an entertainment culture that prizes youth, Malcolm Addey is living proof that the gigs can keep coming, as long as you stay young in spirit. I first met Addey when I was making my first record on Buddah Records, at Manhattan's Bell Sound Studios, in 1972. He was one of four staff engineers there at the time, and within a year he'd be out working as what some regard as New York's first full-time freelance engineer. (He says he beat Elliot Scheiner to the title.) But while Addey was about to make history, he'd already brought a considerable amount of it with him to New York.

Addey, an Englishman, had gone to work for EMI's Abbey Road Studios in London in the mid-1950s. "I got a job there and learned from Stuart Eltham and [the late] Peter Bown, who were the only real pop engineers there," he recalls. "Everyone else was classical. I started right away as an assistant engineer, and within three months they had promoted me to my own sessions, the first of which was Cliff Richards' first hit re-

—CONTINUED ON PAGE 232



Malcolm Addey

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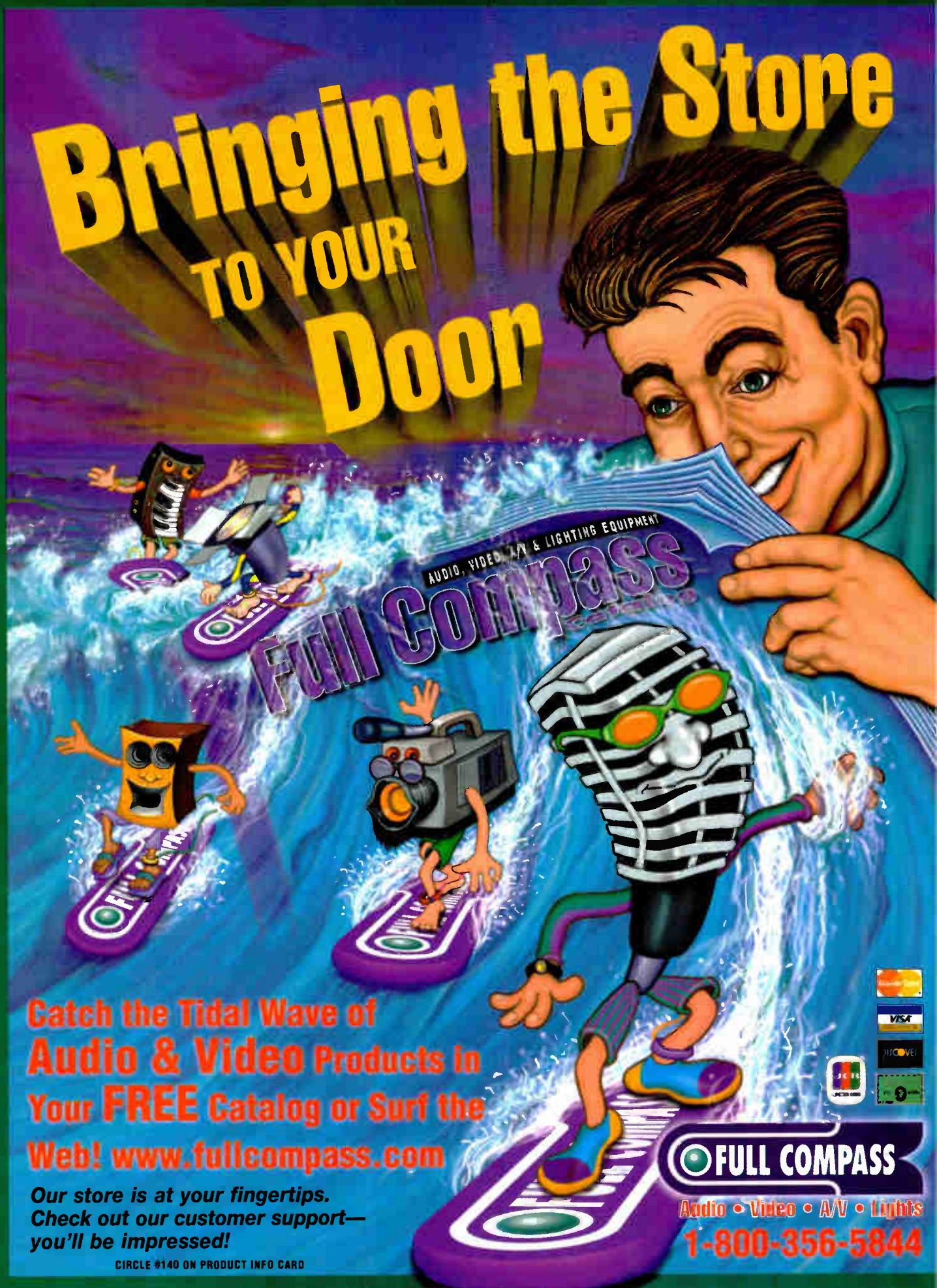

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SESSION SPOTLIGHT

BACK TO SCHOOL WITH EDDIE KRAMER

by Toni Ballard

PHOTO: BOB KRAMER

If there was a sound of late '60s and '70s rock, a man who had a huge role in creating it was Eddie Kramer. In a production and engineering career that has spanned 30 years, the South African-born Kramer has been behind the board for the biggest names in music, including The Beatles, the Rolling Stones, David Bowie, Traffic, Peter Frampton, Carly Simon, Joe Cocker and Bad Company. He's perhaps best known for three long-term associations—Jimi Hendrix, Led Zeppelin and Kiss—that continue to influence rock musicians and producers today.

Kramer's recent projects include remastering all of Hendrix's albums for the Hendrix family, whose recent court victory in obtaining the rights to his tapes could mean the release of a new album every year for the next ten years. About 105 minutes of music and interviews, including 12 never-released tracks, were released earlier this summer on a BBC Sessions double CD. And Kramer also worked on the recently completed *Band of Gypsys* movie, produced by Arweld Ltd.'s Neil Aspinall and Chips Chipperfield and directed by Bob Smeaton, the team that made *The Beatles Anthology* documentary. The film, shot in New York, London and Los Angeles, includes 20 minutes of never-before-seen footage, plus interviews with Kramer, Buddy Miles, Billy Cox and others. The film and the CD version, *Band of Gypsys II*, are due out this month.

For the past five years, Kramer has been lecturing at American colleges, to "give something back" and "raise the bar of excellence." This past March, he was in Boston for a Major Residency in Music Production and Engineering at Berklee College of Music. Kramer's four days at Berklee began with a first-day lecture, where he warned students about long introductions to songs. "The most important thing is to make a connection emotionally, lyrically, rhythmically in that first 30 seconds," he says. "You have to connect with the audience right away, and if you don't, you've lost them."

The next three days were spent recording, mixing and mastering a Berklee student's original song. From 60 tapes submitted, Kramer chose "This Ride" by Meghan Toohey, a 21-year-old senior Songwriting major from Chelmsford, Mass. Of the ten runners-up and five finalists, half were women, which, according to Kramer, reflects the music industry today: "Women are at the cutting edge of rock. I didn't realize until I met Meghan that *she* was the guitar player on the demo. She's gonna be big! She's got the potential to be a prominent artist."

Since Kramer's days in music school (he studied classical piano at the University of Cape Town, South Africa), there have been radical changes in technology. Kramer thinks of the computer as a working tool for mixing. "I love music," he says. "Everything I do is based on music, not on technology. I know what technology will do for me because of the experience I've gotten over the last 30-odd years, and I know how to get the sounds, but I don't let the technology rule what I do. I go by instinct—by feel—and I want musicians to play from the heart. Music is the god that we worship. We strive for excellence in music, and the technology helps us get there."

While at Berklee, Kramer had a lot of other advice to offer the next generation of recording engineers and producers: "The industry is growing. We've got film; we've got television, radio, record production. The thing is not to restrict yourself to any one area. Maybe you have to go into film or TV, and maybe you won't like it immediately, but maybe it's a springboard to get you into the area that you want. Know the technology—know your computers. Be dedicated. Be passionate. And be prepared to take a lot of hard knocks! And it's a lot about attitude. It's about anticipating what the producer and the engineer want ahead of time. You've got to be two beats ahead." ■

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SESSIONS & STUDIO NEWS

NORTHEAST

Clinton Recording (NYC) had in a string overdub session on Aretha Franklin's latest album. Elliot Scheiner engineered, with Ken Ross assisting...Mario Rodriguez mixed the Public Enemy tracks that were used in Spike Lee's latest film, *He Got Game* at New York City's Right Track Recording. Hank Shocklee produced...The production team of Pat Dillett and Tom Durack were in Kampo Audio/Video (NYC) recently working on the latest release from The B-52's. The songs "Debbie" (an homage to Debbie Harry) and "Hallucinating Pluto" were mixed in Studio C on the SSL 4056G console...Brits Death In Vegas recorded with Iggy Pop at Electric Lady (NYC). Staff engineer Anday Salas and assistant Tim Butler handled the session, using the A room's Focusrite Forte console...New Sony band Honky Toast tracked for their debut at Bear Tracks Recording (Suffern, NY) with producer/engineer Andy Johns and assistant Steve Regina...The Brooklyn Tabernacle Choir recorded for a new CD at Tiki Recording in Glen Cove, NY. Neal Joseph produced, Brent King engineered and Glen Spinner and Kieran Pardias assisted...A&M artists Son of Eve mixed for their debut with co-producer Matt Noble at Audiomaster (NYC)...Dar Williams, Richard Schindell and Lucy Kaplansky collaborated on a new CD for the Razor & Tie label, produced and engineered by Darlene Wilson and Alan Williams. Overdubs and mixing on the album were completed earlier this summer in the A room at Soundworks Studios (Watertown, MA)...At New York City's M.A.W. Studios, Herbie Hancock tracked for a PolyGram project titled *Gershwin's World* with producer Bob Sadin, engineer Dave Darlington and assistant Kayo Teramoto...Money Boss Players (featuring Lord Tariq) put the finishing touches on their new album at Troposphere Studios in Livingston, NJ, with producers Minnesota and Father Time, engineer Rick Deardorff and assistant Frank Merchand...

SOUTHERN CALIFORNIA

Reinhold Mack produced new material for Tito & Tarantula at Ocean Studios, Burbank, with assistant Robert Breen...Almo Sounds artist Gus recorded at Sony Music Studios in Santa Monica with producer/engineer Mark Endert. Also in was Gillian Welch, putting the final touches on her Almo Sounds release with producer T-Bone Burnett and engineer Mike Piersante. Troy Gonzalez assisted on both sessions...At Skip Saylor Recording (L.A.): Alien Crime Syndicate mixed their next Warner Bros. release with producer Gil Norton, engineer Ben Hiler and assistant Ian Blanch. Dr. Dre mixed for his new album with engineer Richard "Segal" Huredia and assistant Daniel Romero...

NORTHWEST

Begorra! During their recent San Francisco run, the musicians for Irish dance troupe Riverdance ducked into local studio Coast Recorders to record music for German television. Producer/arranger Bill Whelan oversaw the sessions, while Willie Manning handled the knobs, assisted by Justin Phelps...

NORTH CENTRAL

Flogging Molly recorded their next 26F Records release with engineer Steve Albini at his Electrical Audio Studio in Chicago...

SOUTHEAST

Atlantic recording artists Mars Electric worked on their debut at Criteria Recording (Miami), with producer/engineer Greg Archilla manning the API Legacy in the studio's newly opened George Augspurger room. Kieran Wagner assisted...Archilla was also in at the House of Blues Studios in Memphis, producing and engineering tracking and overdubbing sessions for new RCA artists Trinket, with assistant Kevin Page. HOB recently appointed Richard Ealey as general manager and Ruth Hendrix as studio manager...Recent sessions at Bates Brothers Recording (Birmingham, AL) included Verbena tracking for Capitol with producer/engineer John Agnello...Classic Recording (Franklin, TN) had Essential Records artists Jars of Clay in working on their next one...DC Talk mixed with producers Mark Heimermann and Toby McKeehan for Virgin/Forefront at The Castle (Franklin, TN). Steve MacMillan engineered, assisted by Joe Costa...At Bias Recording (Springfield, VA), Mary Chapin Carpenter tracked five new songs, co-producing the sessions with John Jennings. Bob Dawson engineered...Tami Jones overdubbed for Sony at Masterfonics in Nashville, with producer Paul Worley and engineer Mark Hagen...Ultrasonic Studios (New Orleans) was busy with sessions for renowned local singer Johnny Adams for Rounder Records. Scott Billington produced, and David Farrell engineered...Lee Anne Womack mixed

World Radio History

Gear Talk DIGITAL AUDIO SEQUENCERS

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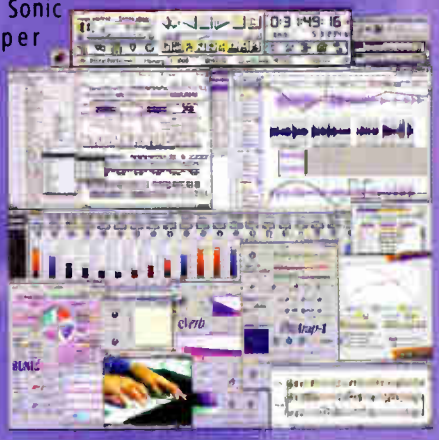

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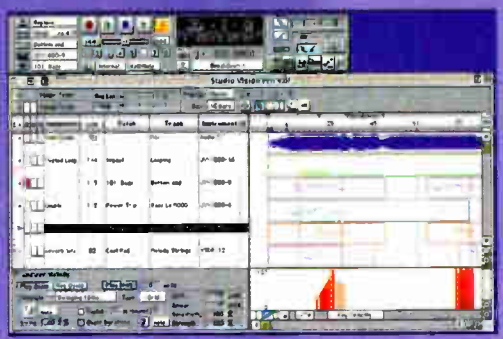

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for Decca with producer Mark Wright, engineer Greg Droman and second Tim Coyle at The Sound Kitchen (Franklin, TN)...At Sound Emporium (Nashville), Jenny Simpson overdubbed for Mercury with producers Garth Fundis and Ray Methvin. Dave Sinko engineered...At Catalyst Recording (Charlotte, NC), Morning Wood recorded new material with producer/engineer Rob Tavaglione and assistant Leah Redwine...Former Gin Blossom Robin Wilson mixed the A&M debut of his new band, Pharoahs, with producer/engineer John Hampton in Studio B at Ardent Studios, (Memphis). Jason Latshaw assisted...

SOUTHWEST

At The Congess House in Austin, TX, English producer John Wood recorded the band Plainsong. Ani DiFranco was also in with her band, cutting new tracks...Walter Becker and Donald Fagen overdubbed for a new Steely Dan release for Revolution Records with engineer Dave Russell at Becker's Hyperbolic Sound facility in Kula, HI...

STUDIO NEWS

Georgetown Masters (Nashville) added a dual-spigot I/O SADiE 24/96 workstation for mastering; it's also capable of working in the 88.2kHz domain... Robert De La Garza was promoted to the position of vice president at Starstruck Studios, Nashville...Sy Klopps Studios (San Francisco) added a 40-channel Otari Status console...Also installing a 40-channel Otari Status was Batgirl Studios in Henderson, NV... Nashville's Curb Records recently upgraded to a 104-fader Euphonix CS3000...Atlanta studio Tree Sound acquired a Sony PCM 3348HR 48-track, 24-bit recorder...Remote Recording Services added a Studer D827 digital 48-track recorder to its rolling facility. ■

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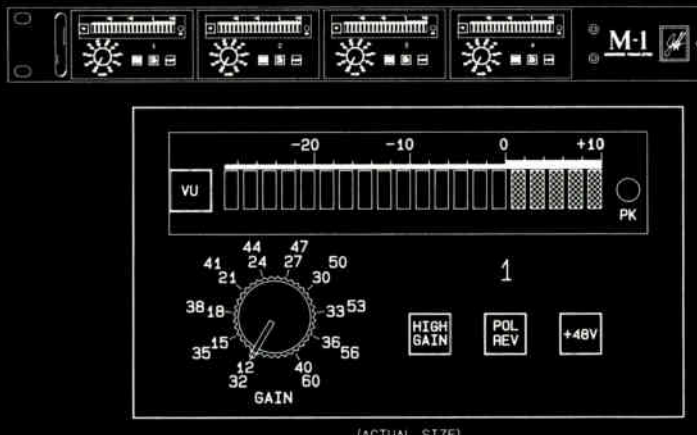

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CIRCLE #168 ON PRODUCT INFO CARD

—FROM PAGE 220, L.A. GRAPEVINE

posting related information on the reference pages section of our Web site—things like setup charts, potential pitfalls and SCSI specs."

On Wednesday, August 12, the company is hosting a "Digital Dubber Day." There will be a shootout event consisting of A/B tests in their demo room, and a brief presentation by the manufacturers in a separate area. The A/B tests will be unsupervised—no manufacturers or Advanced Audio personnel will be in the room unless requested! The event is running from noon to 8:00 p.m. All are invited, but reservations are requested. Call 818/985-6882.

While staying in the forefront of digital developments, Advanced is finding that analog rentals continue strong. In a recent week, one client alone had nine of Advanced's Otari MTR90s rented out. Rentals of Studer 24-track analog machines also remain popular. "Many engineers and producers strongly prefer the sound of an A800 over any digital format," comments owner Paul Levy. "Analog tape machines are still our biggest rental item."

Besides recording equipment, Advanced Audio also has a large inventory of outboard gear, including EQs, compressors, converters, noise reduction units, speakers, amps and consoles large and small. To keep up with increasing business, the company has added staff, bringing on board Eric Sorenson-Livingstone, formerly with Audio Intervisual Design, and Dave Parla, formerly of The Toy Specialists.

Needing someplace to store all those recent acquisitions when they are not rented out, Advanced is moving to a new, 5,000-square-foot facility located in the same complex they have occupied for the last five years. "We'll have a demo room, a larger traffic office and tech shop, and a lot more space for gear," says Levy,

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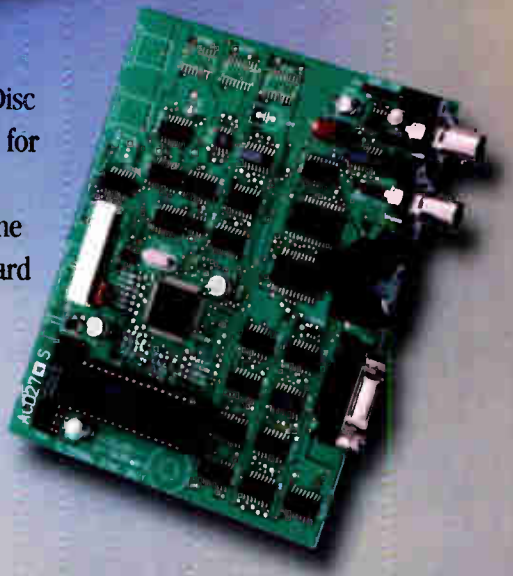

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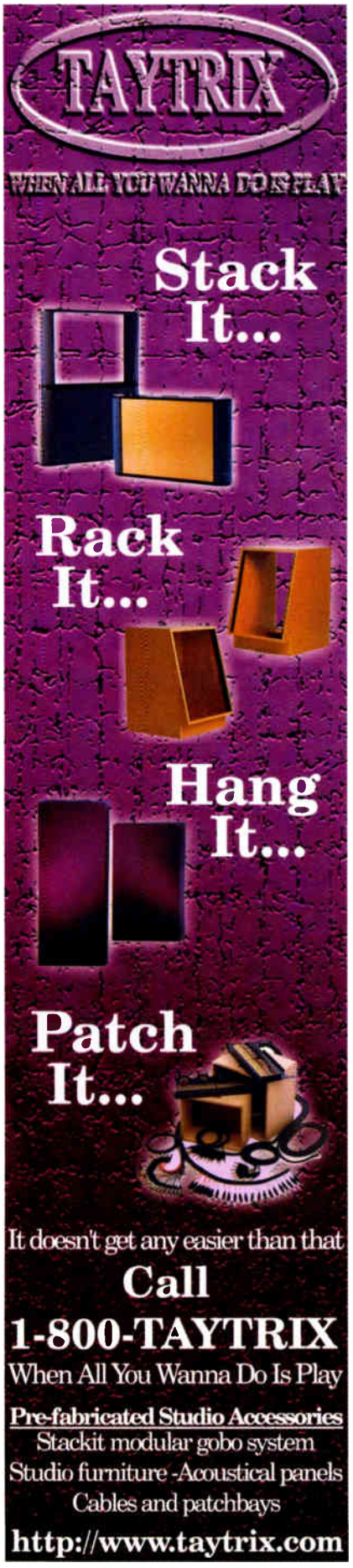

CIRCLE #170 ON PRODUCT INFO CARD

Engineer Larold Rebhun (R) with assistant engineer Christine Sirois at The Village Recorder

"and, of course, a lot more cool nooks and crannies for Sam, the company cat!"

Over at The Village's Studio D, hot soundtrack music composer Mark Snow (*X-Files, Millennium, Hart to Hart*) and his engineer Larold Rebhun were in mixing the music for the feature *The X-Files: Fight the Future*. Snow garners "Most Performed Music" awards every year from ASCAP (for his prolific work on series television) and does most of his composing and mixing at his home studio on a Synclavier. The addition of an 85-piece orchestra to the *X-Files* score, however, made working at a larger facility a necessity.

"I recorded the Synclavier sounds to DA-88s at Mark's home studio," explains Rebhun, whose 28 years of music engineering experience includes projects for Billy and the Beaters, John Mellencamp and *Pee Wee's Playhouse*. "Normally, for television, I mix all the synth sounds to a stereo pair of tracks, but because for the film we were mixing for surround I kept everything separate, and instead of using my usual reverbs in the stereo mix, I kept things dry. We transferred our original tracks from DA-88 to Sony 3348 for the orchestra recording at the Newman Stage at Fox, synching everything up. The orchestra was done to a Sony 3348. Then we went over to Village Studio D and stayed on 3348 for mixing."

Rebhun checked out a new Dynaudio speaker system for the mix, the only one of its kind currently in the U.S., comprising five self-powered BM15As, along with a subwoofer containing two 12-inch speakers. He also made interesting use of Studio D's live chamber to enhance his surround mixes." I set up four mics in the chamber," he explains, "added a 40-millisecond delay to the back ones and used that delayed signal in the rear surround speakers." He says that the natural ambience was particularly useful on the Synclavier material. "It gave it a real, adjustable acoustic room ambience that blended beautifully with the live orchestra—it was a great combination for the surround sound."

Fans of the television series will be interested to note that although the catchy *X-Files* theme melody is never used as underscore for scenes on the television show, composer Snow decided to use orchestral versions of the melody as the unifying element for the film score. Other differences between composing for TV and film? "The movie sound does things the TV show can't in terms of scope," Snow says. "It's a really big sound when it has to be, and there are some huge moments with great visual effects. I think we got a very interesting blend between using what is almost tongue-in-cheek, traditional music and using sound design—the mixers did a great job, and there are scenes where you don't know if what you're hearing is music or sound design."

Committed to showing its support for 5.1 DVD-Audio in the music industry, Dolby Laboratories continued its series of Dolby Digital seminars in L.A., offering two days of VIP presentation and listening sessions at its office on Barham Blvd. in June, with Dolby general manager John Kellogg at the helm.

Attendees were treated to food, drink and a chance to A/B 5.1 mixes from their master 6-track formats and through

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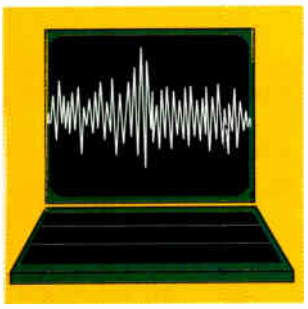

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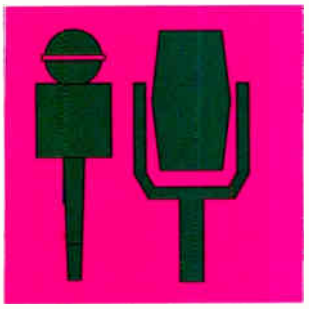

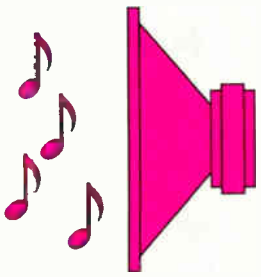

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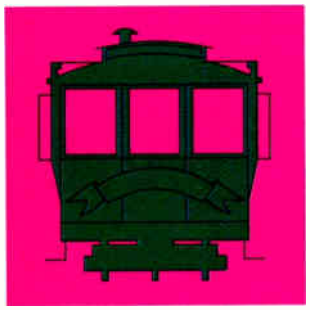

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CIRCLE #171 ON PRODUCT INFO CARD

World Radio History

a Dolby Digital decoder; all of the engineer-types in attendance were seemingly in agreement that the Dolby Digital program material sounded excellent.

With statistics showing over 1 million households worldwide already equipped with DVD players that cannot play multichannel PCM digital audio, and with an eye to DVD-A discs being released in quantity some time next year, one of Dolby's stated goals is to play an important role in the development of DVD-A discs that also work in currently available video players.

"With the high data delivery and storage bandwidths available from modern digital formats, one might expect there is little reason for data reduction, but so far this has not proved to be the case," explains Kellogg. "Dolby Digital allows high-quality audio to be delivered using less than 10 percent of the space needed for conventional PCM digital audio, and less than 5 percent of the space needed for the new DVD-Audio bitstreams. That opens interesting opportunities for music companies who want to reach the greatest number of consumers possible with their product. I call us 'the small pipe guys,' meaning that we at Dolby excel in delivering high-quality, multichannel digital audio in places that no other digital audio format can go. Dolby is already an audio standard worldwide on DVD and laserdisc, as well as being the U.S. HDTV standard, because it can deliver high-quality and near transparent 5.1-channel audio with a low impact on bandwidth. Now we want the music community to know that we are also committed to them—to giving them the tools they need and the support that goes with them." ■

Fax your L.A. news to 818/346-3062 or e-mail to msmdk@aol.com.

—FROM PAGE 220, NY METRO REPORT

ville producer, worked with the group, and their first single, "What Can I Say," became a national hit. Country rock was popular, and the Pousette-Dart Band was riding the wave.

Pousette-Dart believes that a single decision by Capitol Records changed the course of his career. "Our second album, *Amnesia*, had an up-tempo single of the same name on it," he says. "Everyone in and around the band felt very strongly that this cut should be released as the first single, but the label had another act who was releasing an up-tempo single at the time and didn't want a conflict. Instead, they put out 'Fall On Me,' a mid-tempo song. I believe that 'Amnesia' probably would have been a national hit for us, which would have changed our stature on radio. Instead, we became a cult band. Bitterness? For what! You can't change the past. Besides, it was their money, and they had the right to make any decision they cared to."

In 1980 the band recorded their last album, ironically titled *Never Enough*. His marriage was dissolving, and the strain of keeping a band together was wearing on him, so Pousette-Dart took a break. A long break in fact, of almost five years. "I was spent!" he recalls. "Capitol pulled tour support from us during our last tour, and I took out a $30,000 loan so that we could keep going. We did three-and-a-half months of one-nighters and came back half-dead and broke! You've got to love this business!"

Pousette-Dart kept gigging in the early '80s but wasn't recording. He eventually became a staff writer/singer in the late Tony Smythe's hugely successful jingle company in New York

PHOTO: ANNAMARIA DISANTO

Korn recorded their new release, Follow the Leader, in Studio B at NRG Recording Services (North Hollywood, CA) with producer/engineer Toby Wright (second from left) and second engineer John Ewing Jr. (third from right).

World Radio History

City. A late '80s attempt at putting the original group back together failed, and so Pousette-Dart headed to Nashville. Asylum Records' A&R man John Condon set him up with the top songwriters in town, including Fred Knobloch, Costas, Gary Burr and Lynn Langham, a Texas writer and singer.

The circle is closing for Pousette-Dart, but this time he'll be making records his way. "I'm starting a new company, and we'll have a different approach to the way we do things," he says. "For the rest of my life, I'll make the records that I want to make, for people who want to hear my work. I guess you could call this phase the return of the dinosaur Jon Pousette-Dart!"

Pousette-Dart, who lives in a New York apartment with his wife, the actress and model Dawn Young, records live tracks at outside facilities. He lays down guitar and vocal overdubs at home on a Roland VS880 digital recorder. "I record my vocals with an Audio Technica 4050 run through a Giltronics 356 mic pre, which I love, into the VS880. We then transfer these tracks, and any guitar work I do, into a Pro Tools system and master."

The New York Media Group, which currently owns seven audio and video post-production facilities in Manhattan, is about to add its eighth facility. It has chosen two Soundtracs DPC-II Digital Production Consoles as the primary technology platforms for the first two rooms (slated to open later this year) of what will eventually become a three-room facility by 1999. The new facility was designed by the Walters-Storyk Design Group, which also designed the new 5.1 surround mixing room at sister facility Superdupe. ■

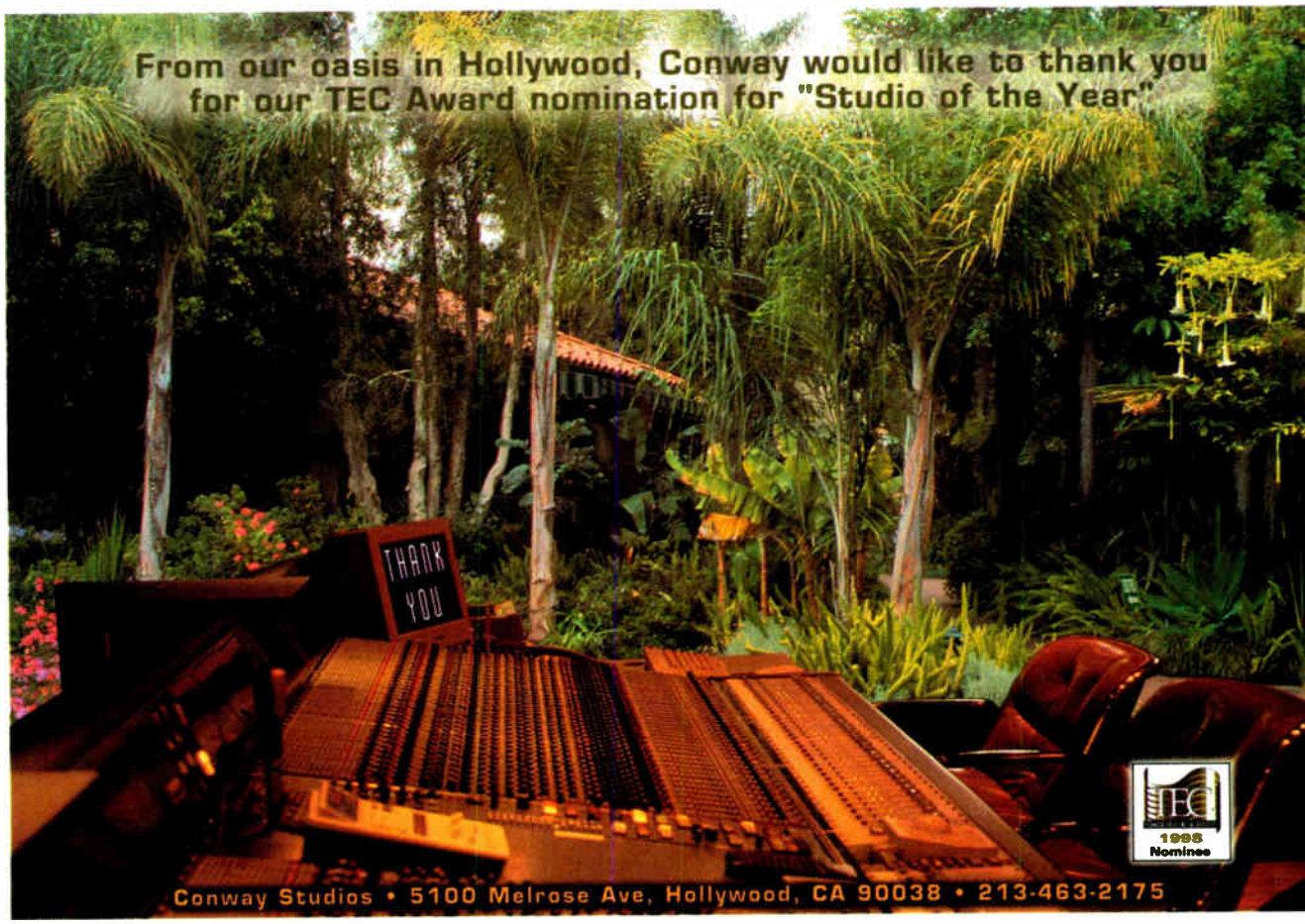
E-mail your New York news to New York editor Gary Eskow at scribeny@aol.com.

—FROM PAGE 221, NASHVILLE SKYLINE

Sound Wars: Around the same time, **Dolby** came to town to do two days of 5.1 demonstrations at Masterfonics' The Tracking Room. Total attendance was 77 producers and engineers, mixed in with a few curious artists and label people. DTS visited for the same purpose last year and used the same facility. The surround wars are heating up, and Nashville is as much a player as New York, L.A. and London.

Live & Lovin' It: Though the downtown Nashville live music venue scene has been peppered with trendy imports like Hard Rock Cafe, Planet Hollywood and NASCAR Cafe, its homegrown variety is multiplying. The Wildhorse Saloon, opened in June 1994 as a joint venture between Opryland owner Gaylord Entertainment and a restaurant industry management partner, opened its first satellite club, located on the grounds of the Disney World Resort in Orlando, Fla., in May. According to production manager Jack Funk, the main P.A. was designed by Audiotek of Burbank, Calif., and uses a Soundcraft Series 5 console and Soundcraft SM 20 monitor board. The Nashville club has taken a ribbing from local cognoscenti over the years as a tourist trap, but the truth is it's spacious, has good sightlines and good sound, and the record labels love to break hat acts there.

Caffe Milano, which opened in 1996 and quickly established a reputation as having the hippest booking policy in town under co-owner/man-



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ager Pino Squillace (the club was profiled last year in *Mix*), was bought by Gibson Guitars in June. Gibson, which relocated its headquarters to Nashville last year and which already owns and operates the Gibson Guitar Cafe & Gallery on Broadway, announced plans to open as many as 50 new clubs, supervised by Squillace, who had joined Gibson earlier this year after being forced out of Caffe Milano in a dispute with partners. One new club is already under construction on Beale Street in Memphis.

On September 1, Sound Kitchen will officially open its four new rooms, making the Cool Springs/Franklin studio a six-room complex. The four rooms—several of which were in operation over the summer in a rolling opening—include a 5,000-square-foot tracking room with a 22-foot ceiling and a 60-foot brick wall that can be muted via motorized curtains; and tracking/OD studios measuring 2,700 square feet and 1,200 square feet, respectively. Consoles include a 64-input SSL G Plus, a 96-input Otari Elite with a 5.1 surround mixing package, a refurbished Neve 8108 with Flying Faders automation and a VR 60 Legend. The design is by Chris Huston, who also designed The Enterprise in Los Angeles.

Dino Elefante, who co-owns the facility with his brother, Christian recording artist Jon Elefante, says that demand has driven the expansions. Though a sizable chunk of Sound Kitchen's revenues still come from CCM projects produced and/or supervised by the Elefantes, more pop and country—a third each—increasingly account for the studio's annual turnover. "We had to do this—we couldn't get into our own studio," says Dino.

Sources peg the new facility's cost at about $5 million, most of which is self-financed, a hallmark of the Elefantes' original studio plan. Dino says he expects the main tracking room to go for $1,500 per day, which, if it does, could affect rate thinking at some of the newer large rooms nearer to Music Row. "Our philosophy has always been to self-finance as much as possible, to keep our client base diversified and to always have projects that generate revenue in-house," observes Dino. "That lets you have affordable rates. You can't build a $3-million single-room facility and expect to make money at it." ■

Send Nashville news to Dan Daley at danwriter@aol.com or fax 615/646-0102.

—FROM PAGE 221, MALCOLM ADDEY

cord, 'Move It.' So that was a pretty good start."

In 1968, Bell Sound had lost its main staff engineers and was seeking someone who could walk in and take over. Addey had been less satisfied with work at Abbey Road in the post-Beatles era, and Bell made Addey an offer that he quickly responded to, arriving in New York that same year. He found Bell's three studios running homemade 12-track decks (a proprietary 2-inch transport that used Scully electronics, quickly superseded by other, more conventional formats) through custom consoles designed by Dan Kronin, the first solid-state consoles in use. "The more EQ you put on them, the better they sounded, and you couldn't distort them if you tried," Addey says.

Addey's first session was a Joe Newman jazz record with Sonny Lester of Solid State Records producing. It was the start of a very long engineering career that would produce hundreds of records, including the first four Kool & The Gang LPs, the megahit "You Light Up My Life" by Debby Boone, and Bill Evans' last live record, which was released only two years ago as the definitive Evans retrospective set. At 64, Addey continues to do classical and jazz recording and mastering sessions.

The business is starkly different today than 30 years ago, Addey observes. Upon going freelance in 1970, Addey was able to cut a very good deal with Bell in which he would give the studio right of first refusal on all of his clients' projects, and they would reward him with a double-digit percentage of the total billing. "Including materials," he adds with a laugh. "It was a good deal, and you won't see any more of that around." Addey cut similar deals with other studios, including Gotham and A&R Studios. In the meantime, he used other rooms, though there were fewer to choose from in those days. "There was Media, Dimensional Sound and Nola," he says, "and a lot of places that just came and went," he says.

But for all the changes he's seen, Addey says that assistant engineers today are as eager and enthusiastic about coming into the business as when he was at that stage. "They're just as good in many ways," he says. "The main difference is that today's assistants are hungrier—it's so much more competitive out there." ■

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http://www.loborecording.com

Located 35 minutes east of NYC, Lobo Recording is the place to achieve your creative goals. Recent acquisitions include an SSL 9096J, Neve VR 72, Studer D827 and Yamaha C7 Grand Piano. Other equipment includes Amek Angela IIs, Studer A827s, A80s, ADAT XTs 64 tracks and an extensive list of microphones and outboard gear. Please call for more info.

Sheffield AUDIO-VIDEO PRODUCTIONS

SSL / DIGITAL / ANALOG

Sheffield Remote Recordings

13816 Sunnybrook Rd.
Phoenix, MD 21131
(800) 672-3220 or (410) 328-7260
e-mail: sheffield@sheffieldav.com
http://www.sheffield@sheffieldav.com

Sheffield is America's largest SSL recording truck. This is not just a remote truck, it is a complete audio facility. Add to this the best crew in the remote business. Partial credits include The Grammy Awards, MTV Music Awards, Live from the House of Blues and Aerosmith.

Showplace Studios

347 South Salem St.
Dover, NJ 07801
(973) 328-4400; Fax (973) 328-4933
http://www.showplacestudios.com

48-track analog recording, featuring Studer A800. One of the largest collections of awesome vintage gear anywhere. Mixdown Studer A820 ½-inch 2-track and automated Amek console featuring all Neve modules. Top-quality sound and staff at reasonable rates. Large live room, stone area and iso booths. Great vibe, gear and experience brings your music to its full potential. Showplace Studios—where the past meets the future. Neve, Pultec, RCA, Teletronix, UREI, Neumann, Helios, EMT, Lexicon, Tubetech, Langevin, etc.

Troposphere Studios

One Naylon Place
Livingston, NJ 07039
(973) 994-2990; Fax (973)994-2965
e-mail: troposphere@garden.net
http://www.garden.net/users/troposphere

Conveniently located in northeast N.J., 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+ Series console with Total Recall, an Otari MTR 90II 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.

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DIGITAL MIXERS

MACKIE

Digital 8 Bus Mixing Console

New

Well, it's finally here and just like the analog 8 bus a few years back, it's everything you've anticipated! Great sound quality, full recording and mixdown capabilities, motorized faders and an array of digital features geared to take you flying into the next century.

FEATURES-
- 48 channels of automated compression, gating, EQ and delay
- Built in 3-way meter display keeps you on top of your mix.
- Built-in meter bridge.
- Ultramix II automation for complete control, hook up an S-VGA monitor and you'll feel like you spent a lot more money.
- All functions can be automated, not just levels and mutes. Store EQ, reverb, compression, gating and even Aux send information.
- Fast SCENE automation allows you to change parameter snapshots on every beat.
- Reads Standard MIDI tempo maps, displaying clock info on the built-in position counter.
- Truly the cutting edge of mixing technology.

Panasonic

WR-DA7 Digital Mixing Console

New

Stop dreaming about your digital future, it's here! The Panasonic WR-DA7 digital mixer features 32-bit internal processing combined with 24-bit A/D and D/A converters as well as moving faders, instant recall, surround sound capabilities, and much more. Best of all, it's from Panasonic.

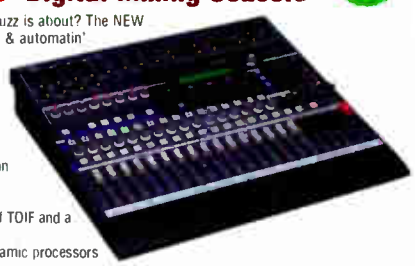
FEATURES-
- 32 Inputs/6 AUX send/returns
- 24-bit converters
- Large backlit LCD screen displays EQ, bus and aux assignments, and dynamic/delay settings.
- 4-band parametric EQ
- Choice of Gate/Compressor/Limiter or Expander on each channel
- 5.1 channel surround sound in three modes on the bus outputs
- Output MMC
- Optional MIDI joystick

TASCAM

TMD1000 Digital Mixing Console

New

You want to see what all the digital mixing buzz is about? The NEW TMD100 from Tascam will have you smilin' & automatin' in no time. It features fully automated EQ, levels, muting, panning and more in an attractive digital board with an analog 'feel'. Your digital future never looked, or sounded, so clear.



FEATURES-
- 4 XLR mic inputs, 8 1/4" balanced TRS inputs.
- 20-bit A/D D/A conversion, 64x oversampling on input, 128x on output.
- Store all settings, fully MIDI compatible.
- Optional **IF-TD1000** adds another 8 channels of TDIF and a 2-channel sample rate converter.
- Optional **FX-1000** Fx board adds another 4 dynamic processors and another pair of stereo effects.

MIC PREAMPS

Focusrite

Green 3 "Voicebox MKII"

New

The Voicebox MKII provides a signal path of exceptional clarity and smoothness for mic recording, combining an ultra-high quality mic amp, an all new Focusrite EQ section optimized for voice and full Focusrite dynamics. The new MKII now includes a line input for recording and mixdown applications

FEATURES-
- Same mic pre section as found on the Green Dual Mic Pre includes +48V phantom power, phase reverse, and a 75Hz high-pass filter. Mute control and a true-VU response LED bargraph are also provided
- EQ section includes a mid parametric band with frequency and gain control as well as a gentle bell shape to bring out the character of the voice.
- Dynamics section offers important voice processing functions of compression and de-essing combined with a noise reducing expander
- Single balanced Class A VCA delivers low distortion and a S/N ratio as low as -96dBu

EFFECTS PROCESSING

t.c. electronic
ULTIMATE SOUND MACHINES

Finalizer Plus

New

Improving on the multi-award winning Finalizer platform, The Finalizer Plus delivers an unprecedented level of clarity, warmth and punch to your mix. Inserted between the stereo output of your mixer or workstation and your master recording media, the Finalizer Plus dramatically rounds out your material, creating that "radio ready" sound.

FEATURES-
- Balanced Analog as well as Digital outputs including AES/EBU, S/PDIF, & TOS.
- 24-bit precision A/d & D/A Converters
- 5-band 24-bit stereo EQ
- Enhance - De-essing, stereo adjust or digital radiance
- Real-time gain maximizer
- Variable slope multi-band expander
- Multi-band compressor
- Word Clock Sync
- MIDI section useful for controlling sequencer fades or any of the Finalizer's parameters from a remote MIDI controller.

lexicon

PCM81 Multi-Effects Processor

New

The PCM-81 has everything that made the PCM80 the top choice among studio effects processors, and more. More effects, more algorithms, longer delay and full AES/EBU I/O.

FEATURES-
- 300 Presets include pitch, reverb, ambience, sophisticated modulators, 20 secondstereo delays, and dynamic spatialization effects for 2-channel or surround sound applications
- 2 digital processors including Lexicon's Lexchip for the reverb and a second DSP engine for the other effects.
- 24-bit internal processing
- Dynamic patching matrix for maximum effects control.
- PCM card slot

EQUALIZERS

Focusrite

Green 2 "Focus EQ"

New

The Green 2 Focus EQ is suitable for a variety of applications combining a Focusrite equalizer section with a multi-source input section. Use it as a high-quality front end for recording applications or patch it into the send/return loop to upgrade a single channel of console eq, either way, it sounds great.

FEATURES-
- XLR & 1/4" inputs are similar to the Dual Mic Pre but have been adapted to cope with a wider range of levels.
- VU metering via a 10-LED bargraph
- EQ section derived from the Red and Blue range processors for superb audio quality.

COMPRESSORS

JOE MEEK

VC1 Studio Channel

got meek?

The Joe Meek Studio Channel offers three pieces of studio gear in one. It features an excellent transformer coupled mic preamp, a great compressor and an enhancer unit all in a 2U rackmount design. Find out why more and more studio owners can live without one.

FEATURES-
- 48V phantom power, Fully balanced operation
- Mic/Line input switch
- Mono photo-optical compressor
- High pass filter for large diaphragm mics
- Extra XLR input on front makes for easy patching
- Compression In/Out and VU/compression meter switches
- Twin balanced XLR outputs with one DI XLR output for stage use
- Enhancer In/Out switch and enhance indicator
- Internal power supply 115/230V AC

dbx

Blue Series 160S Stereo Compressor

The dbx 160S combines the best features of all the great dbx compressors in a well-built unit where the craftsmanship is as stunning as the engineering is innovative. This is truly a desirable compressor.

FEATURES-
- 127dB dynamic range • Program dependent "Auto", or fully variable attack and release
- Hard knee/OverEasy switchable.

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HARD DISK RECORDERS

Roland VS1680 Digital Production Studio

New

The new VS-1680 Digital Studio Workstation is a complete 16 track, 24-bit recording, editing, mixing and effects processing system in a compact tabletop workstation. With its advanced features, amazing sound quality and intuitive new user interface, the VS-1680 can satisfy your *wanderlust*.

FEATURES–

- 16 tracks of hard disk recording, 256 virtual tracks.
- 24-bit MT Pro Recording Mode for massive headroom and dynamic range.
- Large 320 x 240 dot graphic LCD provides simultaneous level meters, playlist, EQ curves, EFX settings, waveforms and more.
- 20-bit A/D D/A converters
- 2 optional 24-bit stereo effects processors (VS8F-2) provide up to 8 channels of independent effects processing.
- 12 audio outs: 8x RCA, 2x stereo digital & phones.
- New EZ routing function allows users to create and save various recording, mixing, track bouncing, and other comprehensive mixer templates for instant recall.
- 10 audio inputs: 2 balanced XLR-type inputs w/ phantom power, 6 balanced 1/4" inputs, and 1 stereo digital input (optical/coaxial)
- Direct audio CD recording and data backup using optional VS-CDR-16 CD recorder.

KORG D8 Digital Recording Studio

New

The new D8 Digital Recording Studio features an 8-track recorder, a 12-channel mixer, onboard effects, and basically everything else you'll need to record and mix your music, you supply the talent.

FEATURES–

- 8-track recorder, 12-channel mixer.
- 1.4GB hard disk for up to 4.5 hours of recording on a single track.
- High and low EQ on each channel.
- 130 high-quality stereo digital effects for complete recording in the digital domain.
- MIDI clock sync, SCSI port and S/PDIF digital interfaces all standard.

DIGITAL MULTI-TRACK RECORDERS

TASCAM DA-98 Digital Audio Recorder

The DA-98 takes all the advantages offered by the DTRS format and significantly ups the ante for the professional and post-production professional alike. With enhanced A/D and D/A convertors, a comprehensive LCD display and full compatibility with the DA-88 and DA-38, the DA-98 delivers the absolute best in digital multitrack functionality.

FEATURES–

- Confidence monitoring for playback and metering
- Individual input monitor select switch facilitates easier checking of Source/Tape levels
- Switchable reference levels for integration into a variety of recording environments with internal tone generator
- Digital track copy/electronic patch bay functionality
- Comprehensive LCD display for easy system navigation
- Dedicated function/numeric keys make operation easier
- Built-in sync with support for MMC and Sony P2
- D-sub connector (37-pin) for parallel interface with external controller
- Optional RM-98 rack-mount ear for use with Accuride 200 system

DA-88 A standard digital multitrack for post-production and winner of the Emmy award for technical excellence, the DA-88 delivers the best of Tascam's Hi-8 digital format. Its Shuttle/Jog wheel and track delay function allow for precise cueing and synchronization and the modular design allows for easy servicing and performance enhancements with third-party options.

DA-38 The DA-38 was designed for musicians. Using the same Hi-8 format as the highly acclaimed DA-88, the DA-38 is an 8 track modular design that sounds great. It features an extremely fast transport, compatibility with Hi-8 tapes recorded on other machines, rugged construction, ergonomic design and sync compatibility with DA-88s.

ALESIS ADAT XT20 Digital Audio Recorder

New

The New ADAT-XT20 provides a new standard in audio quality for affordable professional recorders while remaining completely compatible with over 100,000 ADATs in use worldwide. The XT20 uses the latest ultra-high fidelity 20-bit oversampling digital converters for sonic excellence, it could change the world.

FEATURES–

- 10-point autolocate system
- Dynamic Braking software lets the transport quickly wind to locate points while gently treating the tape.
- Remote control
- Servo-balanced 56-pin ELCO connector
- Built-in electronic patchbay
- Copy/paste digital edits between machines or even within a single unit. Track Copy feature makes a digital clone of any track (or group of tracks) and copies it to any other track (or group) on the same recorder.

CD RECORDERS

HHB CDR-800 Compact Disc Recorder

The new CDR-800 Compact Disc Recorder from HHB is built rock-steady for the best recording on this widely accepted format. You can record direct from either analog or digital source and it comes loaded with features, making it ideal for professional studios looking to output quality CDs.

FEATURES–

- Built-in Sample rate converter
- Analog and digital inputs and outputs
- 1-bit A/D converters for lowest possible distortion
- Synchronized recording and editing
- Digital fader for natural fade-in and fade-out.

STUDIO DAT-RECORDERS

Panasonic SV-3800 & SV-4100

The SV-3800 & SV-4100 feature highly accurate and reliable transport mechanisms with search speeds of up to 400X normal. Both use 20-bit D/A converters to satisfy even the highest professional expectations. The **SV-4100** adds features such as instant start, program & cue assignment, enhanced system diagnostics, multiple digital interfaces and more. Panasonic DATs are found in studios throughout the world and are widely recognized as the most reliable DAT machines available on the market today.

FEATURES–

- 64x Oversampling A/D converter for outstanding phase characteristics
- Search by start ID or program number
- Single program play, handy for post.
- Adjustable analog input attenuation, +4/-10dBu
- L/R independent record levels
- Front panel hour meter display
- 8-pin parallel remote terminal
- 250x normal speed search

TASCAM DA-30MKII

A great sounding DAT, the DA-30MKII is a standard mastering deck used in post-production houses around the world. Among many other pro features, its DATA/SHUTTLE wheel allows for high-speed cueing, quick program entry and fast locating.

FEATURES–

- Multiple sampling rates (48, 44.1, and 32kHz).
- Extended (4-hour) play at 32kHz.
- Digital I/O featuring both AES/EBU and S/PDIF.
- XLR balanced and RCA unbalanced connections.
- Full function wireless remote.
- Variable speed shuttle wheel
- SCMS-free recording with selectable ID.
- Parallel port for control I/O from external equipment.

Fostex D-15

The new Fostex D-15 features built in 8Mbit of RAM for instant start and scrubbing as well as a host of new features aimed at audio post production and recording studio environments. Optional expansion boards can be added to include SMPTE and RS-422 compatibility, allowing the D-15 to grow as you do.

FEATURES–

- Hold the peak reading on the digital bargraphs with a choice of 5 different settings
- Set cue levels and cue times
- Supports all frame rates including 30df
- Newly designed 4-motor transport is faster and more efficient (120 minute tape shuttles in about 60 sec.)
- Parallel interface • Front panel trim pots in addition to the level inputs

D-15TC & D-15TCR

The D-15TC comes with the addition of optional chase and sync capability installed. It also includes timecode reading and output. The D-15TCR comes with the further addition of an optional RS-422 port installed, adding timecode and serial control (Sony protocol except vari-speed)

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
- SBM recording for improved S/N *(Sounds like 20bit)*
- Independent L/R recording levels
- Equipped with auto head cleaning for improved sound quality

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MIDI HARDWARE

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, word clock sync, and even Digidesign superclock!

FEATURES–
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.

Digital Time Piece™
Digital Interface

Think of it as the digital synchronization hub for your recording studio. The Digital Timepiece provides stable, centralized sync for most analog, digital audio, and video equipment. Lock together ADATs, DA-88's, ProTools, word clock, S/PDIF, video, SMPTE, and MMC computers and devices flawlessly. It ships with Clockworks™ software which gives you access to its many advanced features and remote control of some equipment settings such as record arm.

OPCODE

Studio 64XTC
Mac/PC MIDI Interface

The Studio 64XTC takes the assorted, individual pieces of your studio-your computer, MIDI devices, digital and analog multitracks and even pro video decks, and puts them all in sync.

FEATURES–
4 In / 4 Out, 64 channel MIDI/SMPTE interface/patchbay with powerful multitrack & video sync features
ADAT sync with MIDI machine control
Simultaneous wordclock and Superclock output, 44.1kHz or 48kHz for perfect sync with ADAT, DA-88 and ProTools
Video and Blackburst in (NTSC and PAL)
Cross-platform Mac and Windows compatibility

SAMPLING

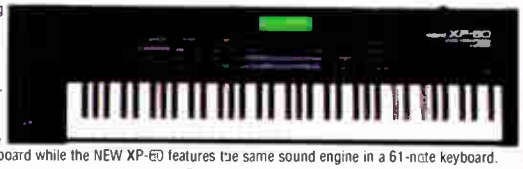
AKAI
S-Series
Rack Mount Samplers

Starting with 64X oversampling, Akai's S-Series Samplers use 28-bit internal processing to preserve every nuance of your sound and the outputs are 18- and 20-bit to ensure reproduction of your sounds entire dynamic range. These three new samplers add powerful capabilities, ease-of-use, expandability and affordability to set the standard for professional samplers.

KEYBOARDS & SOUND MODULES

Roland

XP60 & XP80 Music Workstations



The XP-80 delivers everything you've ever wanted in a music workstation. An unprecedented collection of carefully integrated features provide instant response, maximum realtime control and incredible user expandability. The XP-80 features a pro-quality 76-note weighted action keyboard while the NEW XP-60 features the same sound engine in a 61-note keyboard.

XP80 FEATURES–
- 64-voice polyphony and 16-part multitimbral capability
- 16 Mbytes of internal waveform memory; 80Mbytes when fully expanded (16-bit linear format)
- 16-track MRC-pro sequencer with direct from disk playback. Sequencer holds approx. 60,000 notes
- New sequencer functions like "non-stop" loop recording and refined Groove Quantize template
- Enhanced realtime performance capability with advanced Arpeggiator including MIDI sync and guitar strum mode and Realtime Phrase Sequence (RPS) for on-the-fly triggering of patterns
- 40 insert effects in addition to reverb and chorus
- 2 pairs of independent stereo outputs; click output jack with volume knob
- Large backlit LCD display

SR-JV80 Series Expansion Boards

New

Roland's SR-JV80-Series wave expansion boards provide JV and XP instrument owners a great-sounding, cost-effective way to customize their instruments. Each board holds approx. 8Mb of entirely new waveforms, ready to be played or programmed as you desire.

Boards Include–
Pop, Orchestral, Piano, Vintage Synths, World, Super Sound Set, Keys of the 60's & 70's, Session, Bass & Drums, Techno & Hip-Hop Collection.

KURZWEIL

K2500 Series Music Workstations

The K2500 series from Kurzweil utilizes the acclaimed V.A.S.T. technology for top-quality professional sound. Available in Rack mount, 76-key, and 88 weighted key keyboard configurations, these keyboards combine ROM based samples, on-board effects, V.A.S.T. synthesis technology and full sampling capabilities on some units.

FEATURES–
- True 48-voice polyphony
- Fluorescent 64 x 240 backlit display
- Up to 128MB sample memory
- Full MIDI controller capabilities
- 32-track sequencer
- Sampling option available
- Dual SCSI ports
- DMTi Digital Multitrack interface option for data format and sample rate conversion (Interfaces with ADATs or DA-88s)

KORG

Trinity Series Music Workstations DRS

Korg's Trinity Series represents a breakthrough in sound synthesis and an incredible user interface. It's touch-screen display is like nothing else in the industry, allowing you to select and program patches with the touch of a finger. The 24MB of internal ROM are sampled using ACCESS which fully digitizes sound production from source to filter to effects. Korg's DSP based Multi Oscillator Synthesis System (MOSS) is capable of reproducing 5 different synthesis methods like Analog synthesis, Physical Modeling, and variable Phase Modulation (VPM).

FEATURES–
- 16 track, 80,00 note MIDI sequencer
- Flexible, assignable controllers
- **DRS (Digital Recording System)** features a hard disk recorder and various digital interfaces for networking a digital recording system configured with ADAT, DAT recorder and hard disk.
- 256 programs, 256 combinations
- Reads KORG sample DATA library and AKAI sample library using optional 8MB Flash ROM board

TRINITY — ***88 Weighted-key/Solo Synth***
TRINITY — ***76-key/Solo Synth***
TRINITY — ***61-key/Solo Synth***
TRINITY — ***61-key***

(Digital IF, SCSI, Hard Disk Recorder, and sample Playback/Flash ROM functions are supplied by optional upgrade boards)

MONITORS

Hafler

TRM-8

Winner of Pro Audio Review's PAR Excellence Award in 1997, Hafler's TRM8s provide sonic clarity previously found only in much more expensive speakers. They feature built-in power, an active crossover, and Hafler's patented Trans•nova power amp circuitry.
- 45Hz - 21kHz, ±2dB
- 75W HF, 150W LF
- Electronically & Acoustically matched

MACKIE.

HR824

These new close-field monitors from Mackie have made a big stir. They sound great, they're affordable, they're internally bi-amped. "What's the catch?" Let us know if you find one.

FEATURES–
- 150W Bass amp, 100W Treble amp
- Full space, half space and quarter space placement compensation
- Frequency Response 39Hz to 22kHz, ±1.5dB

TANNOY

Reveal

New

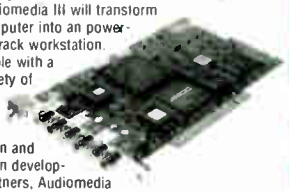
The latest playback monitor from Tannoy, the Reveal has an extremely detailed, dynamic sound with a wide, flat frequency response.

FEATURES–
- 1" soft dome high frequency unit
- Long throw 6.5" bass driver
- Magnetic shielding for close use to video monitors
- Hard-wired, low-loss crossover
- Wide, flat frequency response
- Gold plated 5-way binding post connectors

SOUND CARDS

digidesign

Audiomedia III
Digital Audio Card



Working on both Mac and Windows OS systems, Audiomedia III will transform your computer into an powerful multitrack workstation. Compatible with a wide variety of software options from Digidesign and Digidesign development partners, Audiomedia III features 8 tracks of playback, up to 4 tracks of recording, 24-bit DSP processing, multiple sample rate support and easy integration with leading MIDI sequencer/DAW software programs.

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60	035	Francis Manzella Design Ltd.
222	140	Full Compass
214	156	Full Sail
36	018	Furman Sound
230	*	Future Disc Systems
217	161	Future Media Concepts
169	115	Future Sonics
243	179	Gene Michael Productions
184	126	George L's
206	146	Glyph Technologies
162	107	Graham-Patten
207	148	Guitar Center's Rhythm City
123	080	Hafler
74	043	Harrison/GLW
149	093	Hermes Music
83	049	HHB Communications (CDR800)
119	078	HHB Communications (Genex)
75	044	The Hollywood Edge
212	183	Hot House Professional Audio
216	159	Institute of Audio Research
161	106	Intelix
BC	182	JBL Professional
72	041	Joemeek/PMI
226	168	The John Hardy Company
242	178	JRF Magnetic Sciences
86	052	Killer Tracks
87	060	KRK Monitoring Systems
211	154	Kurzweil Music Systems
232	174	L&M Music
90	057	Lawson Microphones
159	103	Level Control Systems
56	032	Lexicon
198	*	Los Angeles Recording Workshop
61	036	Lucid Technology
IBC	181	Mackie (D8•B)
6-7	004	Mackie (HR824)
90	058	Manhattan Production Music
188	131	Manley Laboratories
117	076	MartinSound
73	042	Meyer Sound
194	135	Micro Technology Unlimited (MTU)
66	037	Microboards Technology
186	128	Microtech Gefell
203	143	Minnetonka Software
233	175	Mix en Español
197	134	Musician's Friend
105	068	Mytek
13	007	Neumann/USA
168	114	NXNW
139	086	Ocean Way Nashville
21	010	Otari (Digital Recorders)
137	085	Otari (RADAR II)
65	*	Panasonic (DA7)
189	*	Panasonic (SV3800)
71	040	Peavey (FLS)
183	125	Peavey (CS 800S)
127	079	Pelonis Sound & Acoustics
178	120	Peterson/La Touf
177	119	Pro Sound & Stage Lighting
80	046	Promusic
30-31	015	QSC Audio Products
9	005	Quantegy
179	121	RADIAL
232	173	Record Plant Remote
202	142	The Recording Workshop
171	117	Renkus-Heinz
210	152	Rich Music
150	094	Rocket Lab
26-27	013	Roland
38	020	Sabine
210	153	San Francisco State University
205	145	School of Audio Engineering (SAE)
53	029	SEK'D
148	092	Sennheiser (MKH)
209	150	Sheffield
47	025	Shure
88	054	615 Music
1	*	Solid State Logic (SSL)
79	*	Solid State Logic (SSL) #2
175	118	Sonic Foundry
18-19	*	Sony
147	*	Sony Pictures Studios
167	113	Sound & Lighting Specialists (SLS)
164	110	Sound Construction & Supply
84	050	Sound Ideas
113	072	Soundcraft
89	056	Soundscape Digital
85	051	Soundtracs
185	127	Speck Electronics
155	098	Speir Music
2	002	Studer Professional Audio Equipment
99	062	studio bau:ton
192	132	Studio Consultants
35	017	Sweetwater Sound
225	167	Sweetwater Sound #2
3	003	Tannoy
22-23	011	Tascam
228	170	Taytrix
49	027	TC Electronic (Fireworx)
70	039	TC Electronic (True Tubes)
150	095	Thoroughbred Music
98	061	TLAudio/Sascom Marketing
88	055	TRF Production Music Libraries
223	165	University of Colorado at Denver
215	157	University of Memphis
242	177	Vertigo Recording Services
215	158	Video Helper
51	034	Village Recorders
124	082	Walters-Storyk Design Group
192	133	Waterland
180	122	Waves
209	151	West L.A. Music
48	026	Westlake Audio
111	071	Whirlwind
243	180	Whisper Room
160	104	Xwire
69	038	Yamaha (OV1)
151	096	Yamaha (M3000)
187	129	Yamaha (Disklavier)

World Radio History

—FROM PAGE 20, LOST IN SPACE

I *told* you it was 2,000 years ago!

Anyway, as I said, I wrote the MTM book on this machine. There was a lot of anecdotal application information and empirical data and tips in this book. After five weeks of writing, some business accounts collection jerk showed up to tell me that he thought I should make my payments on this very computer on time (limited minds often have this kind of trouble dealing with the true flexible nature of the space-time continuum). I was literally typing the closing page of the manual as he stood there badgering me, and I responded in the all-time classic way: "What computer?" He responded by shuffling across a room of plush pile carpet, leaning down and touching it. I don't know which was louder, his meaningless statement, "This computer," or the crisp snap of the quarter-inch bolt of lightning that jumped from his pudgy little bean-counting finger to the chassis of my universe.

But I know which one had more impact on both our lives. Of course the system went down, the hard drive crashed and actually destroyed itself, and the power supply smoked. And since I was minutes away from finishing the book, I had already inserted the 8-inch floppy to back it all up. You know, the one with all the other backups on it. It went south as well.

Now, I used to have a bit of a problem controlling my temper back then, and I tore the collector apart so violently that he never even came back for the money or the machine and, luckily for me, was apparently too scared to even press charges. Suffice it to say I changed his life forever, as he did mine.

When the ambulance was finally gone, I sat down to that gut-wrenching, physically sickening, hot-faced, ears-ringing job of grasping for any tiny straws of a chance of recovering my data. And as is usually the case, I found myself staring through tears of anger and frustration at a screen of...*nothing*. I lost work and ideas beyond anything I could even hope of re-creating. My mind became a sort of demented alternative movie theater, showing a marathon of great, forever-lost masterpieces. One after another, I would remember sections of pure, unrepeatable genius. Passages that I was once totally happy with, proud of and even excited about were now hot memories, relentlessly mocking me.

Replace the lost data in my story with a lost master of the best live vocal take you've ever printed in your life, or the automation data for the most inspired four-month two-person mix of your career, and see the truth. Computers don't mean squat. Software doesn't mean Jack. Gear is just gear. It can all be replaced, and probably improved.

We are entering a time when we will all be so dependent on live data that any evil power with a few bucks and a used laser guidance system will be able to bring any first world country to its knees.

The only thing that matters is your data—the result of your creative work.

By the way, I never was able to recover or re-create the lost data. I had to rewrite the entire book, and it was not the same. It was shorter, less entertaining, less spontaneous, less creative. It was lost. Not to mention the five-week delay in shipping (had to buy another system, learn it and then do the rewrite).

BUT OFFICER, I DID LOOK BEFORE BACKING UP...

I thought I had backed up. But backing is not a "do or don't" proposition. Only one end of the spectrum is guaranteed. If you don't back up, you will lose your ass. The other end is unobtainable. You can increase your odds of survival, but you can't avoid loss. There are as many "safe" and "safer" backup schemes as there are microphones. Personally, I run three redundant backup Jaz sets in rotation for applications, and another three for data. Every month these data sets are burned onto two more redundant CDR sets, and one of these sets goes to a bank safe deposit box. In addition, I make a Zip backup of every project at the end of every day, and I do intermediate incremental saves of any project every single time I stop long enough to stretch. When I write, I do an overwrite save every time I read a section, and at the end of each paragraph.

So I shouldn't ever lose more than a few minutes, and in reality, any crash usually takes out between a couple of minutes to about an hour or so. There *have* been times that take out days, but I don't want to fill the magazine with how that can be done with all these levels of safety—but trust me, it *can*.

The bottom line is that each of us decides just how paranoid to be and how much he or she is willing to lose. And then we lose a little more than we thought.

DANGER, WILL ROBINSON!

But now even all of this won't save you. Backing up no longer covers you like it used to. We now *have live interactive data*, something you *can't* back up! And *that* is what happened when the satellite got psychotic. In fact, we are entering a time when we will all be so dependent on this live data that any evil power with a few bucks and a used laser guidance system will be able to bring any first world country to its knees by just popping its birds—truly the ultimate poach.

Satellites for phones and pagers, for military security and recon, for DSS and C Band, for GPS and other navigation tricks. Ground-based microwave for everything from police communication to all the same things as the birds, and local phone cells. It's all the same stuff, and any one of a hundred problems can bring it all to a grinding halt. It's simply too late. We already depend on all this gratuitous technology for our daily lives. I mean, I'm totally happy getting on the Harley and purposely heading aimlessly into the deep woods for a ten-hour ride. I try to get lost immediately, because then the roads are all new, and the game is to figure out how to get back. Great fun as long as I have my GPS to get me home if I can't figure it out, and my cell phone to call for help if I get in trouble. Yeah, that's me—Big Brave Biker.

SILENCE IS COLD IN (SPACE)

So it's too late. There's no going back now. We rely on this live data every minute of every day. We Have Arrived. We are finally a technical society that will no longer be able to function if our technology fails—just like in the pulp sci-fi books of the '60s and '70s, any crazed fanatic can kill us all with silence.

And it *will* happen...

Stephen St.Croix knows that the answer is t kee h bes f t on line t by h s o r @(.

World Radio History

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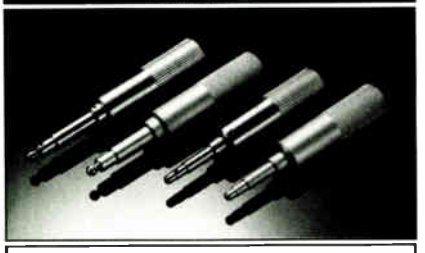

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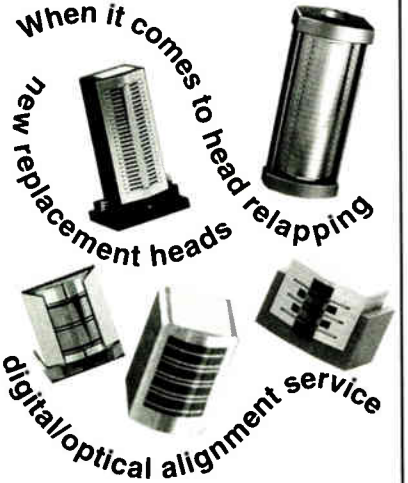

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—FROM PAGE 28, FUTURE DOCS, PART 1

sense we now have with books with some kind of onscreen display. First, we've had hundreds of years to get used to how books work, but because presentation technology changes so quickly, it's going to be the rare individual who has time to acclimate to one way of dealing with documents before a whole new delivery system takes over. Just in the past 15 years, straight text on a screen was replaced with formatted text, then multiple windows, then color and 3-D, then interactive diagrams, then hypertext, and now video vignettes that can be pulled out of the context and pored over at any time and in any sequence. Are any of us masters at dealing with these media? Our children, nursed on hyperactive video games and the World Wide Web, are probably better equipped to work with them than we are, but by the time they reach adulthood, how much of what they know now will be out of date?

Delivering documentation in new formats demands an extra level of adjustment— we must also learn new ways to *learn*.

As multimedia manuals require more and more horsepower just to view, we also have to ask ourselves whether we really want to be forced to run our computers constantly, just so we can read the docs for a new toy. Computers can't go to the beach or the bathroom...at least not yet. We have the technology now to revive erstwhile Apple visionary Alan Kay's concept of the "dynabook," a fully portable unit the size of a paperback that can display anything you can think of on its high-resolution, full-color screen. But in a world where we can't even agree on an audio format for DVD, and Apple can't even keep its line of palm tops alive for more than two generations of hardware, I somehow don't see standardization of such a medium coming soon. And without a standard platform the idea is doomed. Of course, if your computer is on all the time anyway, as more studio tools take the form of software plug-ins, online documentation makes a little more sense.

Finally, marketers have to determine how people respond to digital media, as opposed to paper-based documentation. Do customers need to lift those hefty books when they open the box in order to feel that they've bought into something substantial, or would they be just as happy with a CD-ROM? If you supply one and not the other, but offer a postcard to be sent in that will result in the delivery of the other at no cost, will that satisfy everyone? And how do you choose which one to include and which one to make users ask for? The CD-ROM is cheaper from a manufacturing standpoint, so there's an obvious point in its favor, but how many non-computer users will you piss off by doing that? And if it turns out the demand for the send-away format is much greater than you thought, can you come up with extra copies fast enough to make all of the users happy, or will they start returning units in disgust? No one to my knowledge has done any research on these issues, at least not in our field, and so any manufacturer that tries to implement this kind of policy is going to find itself out on a long, untested limb.

But someone's got to do it, and no doubt someone will. And perhaps that will help answer a larger question, which is to what degree must manufacturers follow user preferences, and to what degree can they attempt to lead users in new directions? These issues need to be ironed out, and they will be, although it may be slow and painful.

And what about the Internet? For manufacturers, this is a potentially ideal way to produce documentation: No manufacturing costs, no mailing costs, instant upgradeability, and the capacity to give users access to entire rooms full of tutorials, references, presentations, troubleshooting procedures, etc., on an as-needed, essentially cost-free basis. But this presents some real problems, too—some practical, some theoretical. I'll talk about them more next month. ■

Paul D. Lehrman still uses paper, despite the fact that he is editorial director of the Mix Online Web site, www.mixonline.com. Members of the site can join an online discussion of this and other issues in the Talkback section.

World Radio History

—FROM PAGE 38, ALAN DOUGLAS

into a Genex GX8000 MO recorder and a Nagra D. Why that choice?

It sounds great! Yes, that's what we used, but it's expensive. Since that 24-bit/96k experience, I've gone back to half-inch, 30 ips at +6, no noise reduction as my first choice instead of DAT. When we compared mixes made onto the Genex with analog half-inch and DATs, the DAT just sounded [lousy]—I couldn't believe how [bad] it sounded. The sound of the DAT was really not so much shredded as "smeared." And then, of course, 16-bit is not good enough for a mix—it's barely adequate for tracking. With 24/96, you hear all your reverbs, sustains and delays all the way down. It's really difficult to go back to 16-bit after that!

You plug Eric's guitar straight into the board, put some delay and reverb on it, and it sounds exactly like Eric Clapton. It's all in the fingers.

What do you normally track to, analog or digital?

I really like the [Sony] PCM-3348 because it is such a functional machine; it's bulletproof! The digital I/O is great—I just wish it was 24-bit/96k. I use 2-inch [analog] a lot, but synchronizers need to be better. I'm just not seeing mastering to anything less than 96k/24-bit, or half-inch analog.

The most annoying thing about digital is that we threw analog out too fast. You know, the baby, the bath mat, the soap and everything went out with the bath water. For years, new analog equipment either sounded better than what you were already using, or it didn't. Or it added something else. But what can we say about DAT other than it's easy to find songs [laughs]?

I know from your experiences at Olympic that you are a huge fan of SSL J Series consoles. Have you had any experience with digital boards?

No, none at all. If they sound as good as the J Series, then I'm looking forward to digital boards. That's the benchmark. The reset-ability of digital really appeals, but I'm not convinced about digitally controlled analog.

I have no idea what the J Series' spec is, but it sounds incredibly clean and quiet. It's sonically transparent; the bottom end goes on forever and is really detailed. I just love the automation—the switch automation is so simple to use. You can also group aux switches; if you want to put a different reverb tail on the end of a string sustain or something, you just bash one button and eight aux sends come on. And it's automated! The J is so complete for me. It has brought a lot of joy back into mixing because it's making it so much less hard work. You can spend more time listening to the song, and making sure that it's working musically, rather than getting tied in knots.

Do you ever think about owning your own studio?

Absolutely. Lack of cash has stopped me. I'd put in a J Series, and I'd have Sam Toyoshima design it. I've always wanted the ultimate home studio, but built in a setting like Olympic Studio 1—put that in my 100-acre garden when someone gives me all this cash. Yes, that's exactly what I would want.

What does the future hold for you? Who would you most like to work with?

Jeff Buckley, sadly no longer a possibility. Emotionally and musically, *Grace* is such a fantastic album. His voice was fantastic. I would really like to record Counting Crows; they're one of my favorites. I love Peter Buck, R.E.M.'s guitar player. I'd really like to work with Sheryl Crow; she's one of the nicest people I've ever met, and a great songwriter, too. Radiohead are another band I'd love to work with.

Listening to Steely Dan records was what made me want to be an engineer. Later on, when I'd started to understand the recording process, I realized that the arrangement is the most important thing. I used to think that it was because the sounds were immaculate, which of course they were. But arrangement is the key! ■

Mel Lambert currently serves as International Marketing Director for Otari Corporation.

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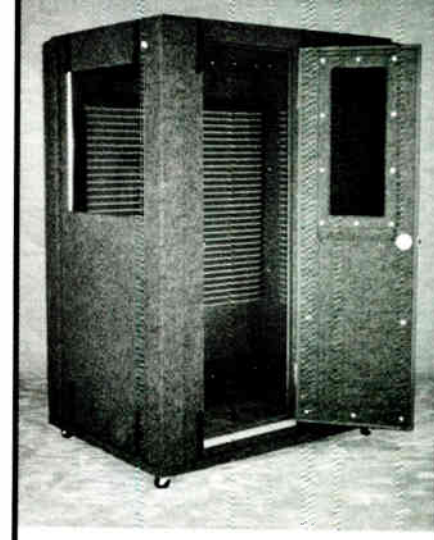

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—FROM PAGE 66, MUSIC RECORDING IN THE UK

'Spike' Stent; we will build and operate the studio for him and maintain the hardware.

"Spike is such a great fan of Studio 3—he's been coming here for ten years [including remix sessions for two Spice Girls albums] and is buying the console from us! We will replace that with a new 80-frame/72-input SSL 4000 with G Plus automation."

Davidson says that his philosophy in running Olympic and the Town House is simple. "When we build studios, they are always designed and equipped to the highest possible standards. No compromise! Client service and good staff are the key. We are 100 percent dedicated to providing the highest possible service to our clients, including in-house catering, secure parking and 24-hour security.

"Our biggest challenge," Davidson concludes, "is to maintain the service level that clients expect. Recently, [the UK trade magazine] *Music Week* voted The Town House runner-up to Olympic as the Top Studio in England, according to a poll from A&R executives at the record labels. As you can imagine, we are particularly proud of that Number 1, Number 2 honor."

Founded in 1976 by famed session producer Mickie Most, **RAK Studios** currently comprises three rooms in the fashionable North London suburb of St. John's Wood. According to technical director Hugh Tennent, "We specialize primarily in live recordings for album release." Studio 1 houses a 48-in, 48-out vintage API console, linked to a "large tracking area that has a great reputation for its live drum sound," Tennent says.

Studio 2's control room, which features a vintage 24x24 API, is located above and looks down into a slightly smaller tracking area than Studio 1. Studio 3, with a 56-channel SSL 4000 E Series console installed in 1985, specializes in remixing but also features a live tracking area.

Recent clients have included producer Steve Hague working with The Pretenders, James and New Order. "Producers and engineers like the fact that we have two vintage API consoles," Tennent says, "together with a modern SSL. All of our rooms have natural daylight, and we have a great cook! After all, we are a service industry," he stresses. "Apart from the client services, all studios are the same."

Rates at RAK are in keeping with its location and hardware: between £900 and £1,000 per day ($1,500-$1,700) for 48-track analog in Studio 3; £750/day ($1,300) for Studio 1; and £550/day ($925) for the smaller Studio 2. (These rates include an assistant; session engineers normally cost £100-£150/day.) Analog machines include Studer A800 MkIIIs; digital transports are rented as required.

"We have targeted major producers from both the UK and overseas, particularly Japan and the States," Tennent continues. "We recently had the American band Remy Zero mixing their latest album here for Geffen, primarily because their engineers, Alan Moulder and Clive Morton, are British and were familiar with RAK. We have a strong return business with clients.

"But for U.S.-based independent, R&B and rap labels, we might be too expensive, if you factor in the air fare, plus the high cost of hotels and eating out in London. We do have a separate flat above the studio that will accommodate four people, as well as three other bedrooms within the studio complex. So we can help make the process more cost-effective for a band and their producer."

In terms of the future, Tennent concedes that his vintage hardware might be in line for replacement. "But the API name on the console is one of the main reasons people come to RAK," he emphasizes. "What do we buy? Our 4k has been ultra-reliable; it's been overhauled regularly. So we might look at an SSL J Series, which is definitely a plus for selling studio time in London, but the high cost would mean that we'd need to raise our rates significantly."

Opened in 1986 as a project studio for Peter Gabriel, **Real World Studios** is a four-room complex with an additional multimedia authoring division within the spacious grounds in the village of Box, close to Bath, some 90 freeway minutes west of London. Recent clients have included Placedo, James, the Beautiful South, Stereophonics, Electric, Sister Soleil and Donal Lunny.

The Big Room—aptly named because of its gigantic control room and flexible tracking areas—houses a 72-input SSL 4000 G Series console with AMS Neve Prism alternate mic inputs. The main monitors are located either side of picture windows that look out onto the studio's grounds, at eye level with the surface of a mill pond. They comprise a Neil Grant-designed Boxer system, with companion NS10, ATC50, AR18LS and AR18BX near-fields.

The Production Room houses a 48-channel 4000 G Series, while The Work Room features a 48-channel 4000 G Series with eight additional stereo modules. Multitrack machines available

UK BITS & PIECES

Soho post facility **Saunders & Gordon** purchased a Soundtracs Virtua console and expander unit as part of the refurbishment of its Studio Five...**SSE Hire** (Birmingham) is out this summer with **Garbage**. The tour is the first to use Soundcraft's new front-of-house Series Five console. FOH engineer on the tour is Tom Abraham, whose credits include Metallica, Queensryche and Suicidal Tendencies...The London production of ***Showboat*** is being mixed on a 79-input Cadac J-Type console with a 14x28 matrix. Sound design is by Martin Levan, and equipment is being provided by London's **Autograph Sound Recording**...Sting's **Steerpike Portable Studio** has been fitted with three new Furman AR Pro power conditioners provided by **Cue Pro Audio Services**...Sound Reinforcement Co. **Tiger Hire** is providing equipment for the UK leg of **Radiohead's** world tour. Front-of-house engineer Jim Warren is using a Midas XL200 console. The monitor rig is a Midas XL250...**Videolondon's** Studio 4 has been redesigned by Munro Associates. An SSL 64-channel Avant digital film console was installed as part of the improvements. SSL also reports that it has won its fourth Queen's Award for Export Achievement since 1981...A TiMax PC-based surround sound processor has been added to the equipment being used in London's West End production of ***Les Miserables***. The processor is being used on input channels for the show's eight principal players to control upstage and downstage delays...London-based recordist **Tim Fraser** purchased four channels of Audio Ltd.'s RMS2020 radio mic system. Fraser works mainly on film and TV drama productions. ■

World Radio History

throughout the complex include a pair of Sony PCM-3348HR 24-bit multitracks, two Mitsubishi X-850s, Studer A820 and Otari MTR-90 analogs, Ampex ATR-100, Studer A820 and A807 mastering decks, plus Sony PCM-7030 and Panasonic SV Series DATs.

According to studio manager Owen Leech, in the fall of last year Gabriel's personal-use Writing Room (in reality, a self-contained shack away from the main buildings) was expanded and outfitted with a Sony OXF-R3 Oxford digital console. "It's a major deal for us," Leech says. "We wanted to turn the Writing Room into a full-blown studio—rather than a small-scale writing/pre-production environment.

"Real World broke the mold for residential studios," Leech continues. "In contrast to dark, subterranean facilities, we have lots of natural daylight in all our rooms and large, spacious tracking areas. Also, each studio is totally self-contained so that the artist, producer and engineer can develop their own creative environment."

The Big Room has a book rate of £1,400/day ($2,480), including two A820 analog decks; the Production Room costs £1,200 ($2,000) with a single A820, while the Work Room rents for £950/day ($1,600). In addition, the complex is the headquarters of WOMAD and Real World's various record labels, publishing, artwork design and multimedia divisions. "Of the 75 to 80 people who work on-site," Leech estimates, "around 30 are employed by the studio."

Strongroom was set up in 1995 by former manager Richard Boote. This highly unusual facility offers 14 rooms within an old furniture factory in the Shoreditch suburb of East London. "I hated boring studios," Boote stresses, "and didn't want to repeat that sterile, clinical atmosphere, with gray bricks and fish tanks!" Boote used to manage a number of bands, including The Yachts and OK Jive, and originally opened the facility with a small Amek Angela console to record demos. "We soon realized, however, that if the facility was going to pay for itself, we would need to rent it to outside clients."

Over the years, the complex has expanded to its current complement of five recording areas, plus nine programming rooms that are leased year-to-year to a number of artists and producers, including Gareth James (Depeche Mode), Phil Harding and Ian Curnow (Boy's Own and 911). Studio 1 houses a 60-channel AMS Neve VR Legend; Studio 2 a 96-fader Euphonix CS3000; Studio 3 a 56-channel SSL 4000 G Series; Studio 4 a 56-channel Mackie 8-Bus; and Studio 5 an Octavia editor linked to a Dolby AC-3 encoding system for DVD mastering.

Each control room features natural daylight and is equipped with an Otari MTR-90 analog 24-track, plus a RADAR 24-track disk-based recorder. "The RADARs are being used on more and more sessions," offers managing director Rob Buckler. "Now, as much as 50 percent of tracking dates are to hard disk. The system is extremely fast, easy to use and offers a great sound quality."

"By the late '80s, I decided that it was time for a change at The Strongroom," Boote recalls. "We needed a look that would set us apart from the competition. So I brought in designer Jamie Reid [responsible for the Sex Pistols' album artwork and posters] to add a different look. I gave Jamie free reign, and I love what he has done here."

The results are nothing short of spectacular. The walls and ceilings of each room feature paintings and symbolic images on silk-screened fabrics and canvases generated by Reid. Studio 1, for example, has an etched bronze Celtic logo on the effects rack, while Studio 2 was favored with an astrological theme, and others received a Druidic design approach. In a recent interview, Keith Flint from Prodigy is quoted as saying that Studio 1 is "totally inspirational to the brain. The colors and lighting in the room can wake you up, but they can totally chill you out; it's quite strange."

Turning to the future, Boote feels that equipment is not the sole ingredient for a successful studio. "The environment is critically important," he stresses. "However, we are looking to DVD and 5.1-channel mixing as a wave of the future. Last year, we replaced a CS2000 in Studio 2 with our new CS3000, which offers more powerful surround-sound panning and monitoring.

"Currently we offer to make a 5.1-channel mix at the end of a session for our clients so that we can all gain invaluable experience of the emergent surround-sound format. I would expect that, within three years, Strongroom will offer a fully-digital, DVD-compatible studio, with companion authoring suites and a dedicated remastering room." ■

Mel Lambert now serves as international marketing director for Otari Corporation.

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—FROM PAGE 199, THE BASICS OF MIXING

right. However, some engineers will place the main kick in the center and only pan the second kick slightly. To pan the two kick drums completely left and right is unusual (or creative) but has been done.

The snare drum is also most commonly placed in the middle, although some engineers do place it a bit off to the side (especially in jazz). It seems to be the case that if the snare drum sound is huge (bigger sound and/or more reverb), it is more commonly placed in the center.

The hi-hat is often placed about halfway between one side and the middle, its natural placement in the kit. However, when the mix is busier, or when a "spatial" effect is desired, the hi-hat is often panned all the way to one side. In house music and hip hop, not only is the hi-hat often panned anywhere, it is commonly moved during the mix, and is sometimes panned far left with a delay panned to the far right. In order to provide maximum fun, tom toms are commonly spread completely left to right (or right to left). However, for natural panning, the toms are sometimes placed between the speakers exactly as they are on the actual drum set.

A floor tom is normally placed on the far side. However, occasionally the floor tom will get placed in the center, for the same reason we normally put a kick drum and a bass guitar in the middle—because it is so powerful and commands so much attention.

Bass guitar is most commonly placed in the middle because it is so large and commands so much attention, like the kick drum. In jazz and other types of music, the bass is often placed to one side.

It is almost against the law to place a lead vocal anywhere except smack dab in the middle. Pan a lead vocal to one side, go to jail.

If a vocal is recorded in stereo with two mics, double-tracked (sung twice, or made into stereo with a time-based effect), the two sounds are normally spread evenly left to right. Sometimes they are placed at 11:00 and 1:00. The panning of background vocals often depends on the vocal arrangement. When there is only one background vocal, it can't be panned in the center because it gets in the way of the lead vocal. You could put it off to one side or the other, but this makes the mix unbalanced.

A solo piano is almost always panned completely left and right in stereo. The bass strings are panned to the left and the high strings are panned to the right, because this is the way a keyboard is laid out. This is probably the strictest rule of all when it comes to panning. You'd better shoot the piano player before you pan the high end to the left. Even in a live show with a stereo P.A., the piano is panned with the lows on the left.

Panning of guitars is based on concerns similar to those for piano and keyboards. Often, the guitar is panned based on the placement of everything else—"crowd control." If you want the guitar to be more interesting-sounding or present, you might try fattening to spread it in stereo.

Horns and strings are almost always spread in stereo completely left and right. This stereo effect can be created in a few ways. The horns or strings can be recorded with more than one mic. The horns or string part can be played twice. Or, a time-based effect can be used to make the instrument be stereo. The horns or strings might not be spread completely in stereo (partial stereo or mono), if there isn't enough room in the mix. Effects like delay, flanging, chorusing, phasing, harmonizers and reverb can be panned separately from the instrument sound they came from.

PUTTING IT ALL IN PERSPECTIVE

All the mixes in the world are created with just these four tools: volume, EQ, panning and effects. It's what you do with them that counts.

The trick is to use the dynamics created by the equipment to enhance, accentuate, highlight, support, create tension or just let the music itself simply shine through (whichever is appropriate for the song and style of music). The way in which these dynamics interface with the music is the art of mixing.

Just as a musician learns techniques to make magical or great music, so must the recording engineer learn the technical equipment in order to create magical or artistic recordings. Different people have different ideas as to what art is. However, the point is that you develop your own values as to what you think is great art.

Then, make it! ■

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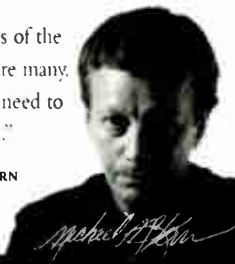

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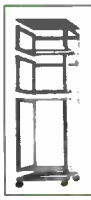

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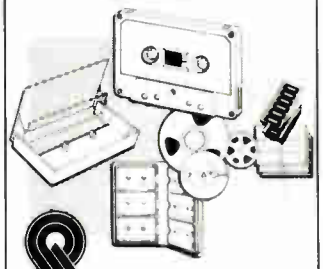

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World Radio History

SSL MIXING TIPS

With more than 1,500 Solid State Logic consoles in use worldwide, a lot of engineers have developed tricks for using the boards' built-in automation, dynamics and EQ in creative ways. Here are a few of my favorites:

AUTOMATED DE-ESSER

Mult the vocal track into a channel adjacent to the current lead vocal channel. Be sure the channel you choose isn't numbered the same as

any group send (multitrack bus) you're using for effects or whatever, because you'll be using the channel's direct output.

Put the equalizer into the channel (the CH button). Boost 15 dB at 6 kHz (shelf), cut 15 dB at 1 kHz (green knobs) and cut 15 dB at 300 Hz (blue knobs)—both set to full wide Q—cut 15 dB at 450 Hz (shelf) and filter all the remaining low end out at 350 Hz.

Put the dynamics section into the monitor (the MON button). On the compressor, pull up the release knob for fast attack, leaving it set to .1 (full left) release time. Set the ratio to ∞ and the threshold to about -5. Leave the green expander controls fully counter-clockwise.

Press the Float, Direct and Ready Group buttons, and if it's a G or J Series, pull up the Group knob to solo-isolate the channel. On the main vocal channel, put the dynamics section in the channel but leave all the knobs turned fully counter-clockwise (no effect).

Link the dynamics sections of the two channels: press the link button for whichever of the two channels is to the left of the other one—*it doesn't matter which one is on the left.*

Play the vocal and push up the fader on your de-esser channel. You'll notice that the fader now acts as a threshold control for a very efficient de-esser. Set it so the yellow compressor LEDs only come on for sibilance. You can now automate the threshold and hit the quiet esses harder and the loud ones softer.

MUTING THE COUNT-OFF (G SERIES ONLY)

Enter the command "Cue Z Here-.10" but don't press Execute. You don't have to use "Z"—you can call it anything you want, but I'll call it Z for this example. Play the tape (or whatever) from before the music starts and press Execute when you first hear music.

Pull the master fader down, turn on the computer and "Goto Title," which should be about eight seconds before music starts. Press Execute, and after you get past cue Z, push the master fader up.

Rewind to before Z, enter the command "At Cue Join Execute" and play the tape past Z. The master fader should come up just before the music starts. If it's off a bit, nudge the cue by entering "Cue -.1" or "Cue +.1" and re-do this last step until it sounds right. If it was too early, you'll have to rewrite the master fader with it down, past Z before re-doing the "At Cue Join" pass.

DRUM SAMPLE DYNAMICS

This neat trick lets your sample follow the original performance dynamics. It works best on short samples with no printed ambience or reverb. For this example we're replacing a bass drum.

Create an advanced bass drum trigger track. You can do this by copying the bass drum to any timecode-slaveable recording medium, like a timecode DAT, a digital workstation, or an analog or digital multitrack with a synchronizer, then bounce it back to an open track on your master, offset ahead by ten or 15 milliseconds (half a frame). *Note: If you're using an analog multitrack and you have no open tracks, come off the sync head and delay it by about 15 ms less than the sync/playback head gap of your machine.*

Patch your new advance track into the tape monitor input of the channel your bass drum sample is routed to. (Incidentally, you can use this same advance track in conjunction with a short digital delay to trigger the sample itself, so you can get it exactly in time with the original drum.)

On the dynamics section of the channel, press both the CH and the MON buttons. This makes the monitor input the "side chain" for the dynamics that are affecting the sample. On the expander, pull the release knob up for Fast Attack and set it to 3 (about 4 o'clock) and set the Range to 40.

Set the threshold so the sample dynamics match that of the original kick. You can do this by soloing both the original kick and the sample, panning them left and right and watching the stereo bus meter and listening. If you get it up to 40 and the expander is still opening all the way, even on lightly hit beats, you may have to reduce the level of the trigger into the tape monitor input by using a piece of outboard gear with a level control, like a limiter (without limiting!) or something. ■

BY BOB CLEARMOUNTAIN

Producer Bob Clearmountain's recent credits include mixing for Soul Asylum, Paul Westerberg, Semisonic and Dada. He started his musical career as a bassist in Connecticut in the late '60s. He now makes his home in Los Angeles, where his mix room is called "Mix This!"

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