

Back to Basics with Dave Edmunds · Wireless Mics for Concert Sound

U.S. \$4.95 CANADA \$5.95 JUNE 1990

MIX

**12 Engineers Discuss
The Location Monitoring
Environment**

George Benson in Brazil

THE RECORDING INDUSTRY MAGAZINE

**EDICIÓN
MEXICANA**

**Interview:
Was (Not Was)**



**Buyer's Guide to
House Mixing,
Consoles**

**Directory:
Remote Recording
& Sound Reinforcement
Companies**



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Neve VR 72-Input Console

Flying Faders Automation

Mitsubishi X-850

The Chicago Recording Company
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Tel: (312) 822-9333
Contact: Hank Neuberger

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World Radio History

MIX

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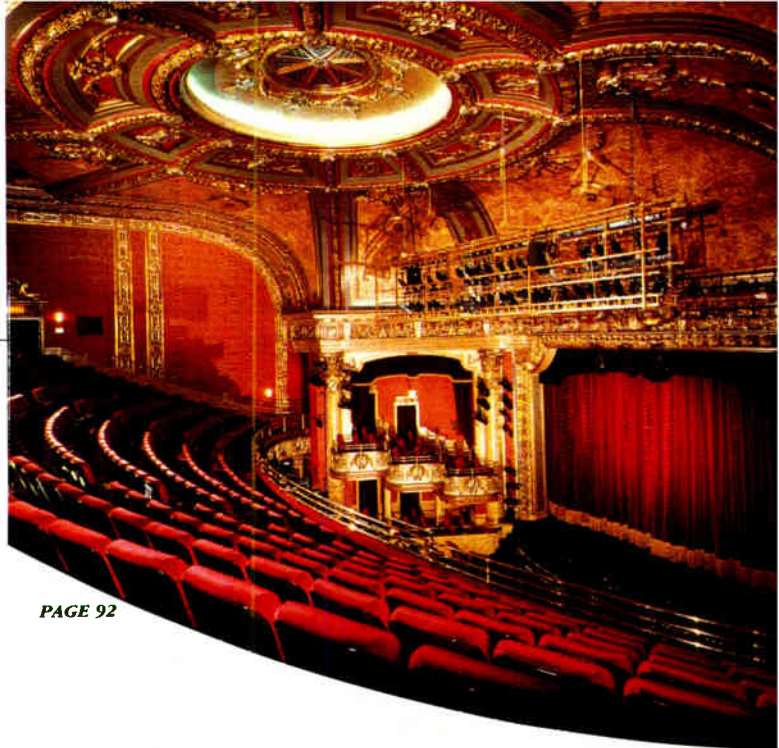
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Remote Recording & Sound Reinforcement Companies

June Cover: The sound for this year's Grammy Awards show at the Shrine Auditorium in Los Angeles was handled by Burns Audio (Sun Valley, Calif.), whose clients also include the Academy Awards and Country Music Awards. Pictured is the Ramsa WR-S840 monitoring console, part of a state-of-the-art configuration using Apogee speakers and a proprietary, computerized EQ system. Photo: Elizabeth Annas.

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DON'T SETTLE FOR LESS:

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THE STUDER A827-24
MULTICHANNEL RECORDER.

'NOW YOU CAN AFFORD STUDER QUALITY AND PERFORMANCE'

Studer quality and performance has just entered your price range with the affordable A827 studio recorder, the first new multi-channel from Studer since its standard setting A820-24.

Superior sound for music recording.

The A827 is clearly ahead of the competition. And why shouldn't it be? With the same transport and head assembly, the same audio quality as its big brother—the A820-24—this new machine is without a doubt a true Studer, all the way.

Featured for post production.

For video and film sound post production work, the A827 offers the fastest transport in the business—0 to 600 ips in less than four seconds—and with 14" reel capacity. The optional chase lock synchronizer guarantees nobody'll be waiting around on *this* machine.

Post features like Reverse Play with varispeed, parallel control ports and serial RS232/422 control ports make for easy integration into post production facilities.

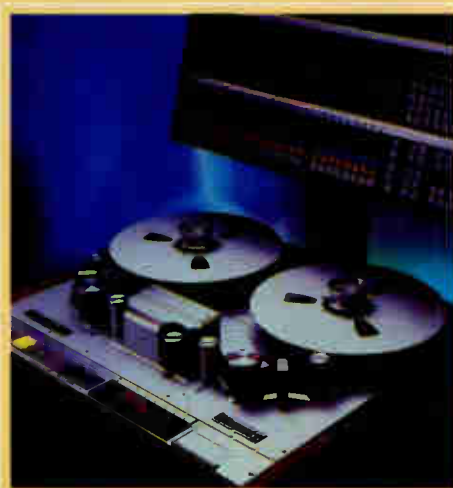
Available in 24, 16 and 8-track versions, the A827 features a computer controlled transport with 3 tape speeds, varispeed, microprocessor assisted alignment, switchable Dolby HX[®] Pro and phase compensated audio electronics.

There's never been a better time to part ways with those "other"

machines... and move up to the famous Studer sound and quality.

Call us at **800-366-4900** to receive the A820/A827 color booklet. For more detailed information, call your regional Studer office.

Experience the new A827-24 with the best price/performance ratio available.



Studer A820-24 Multichannel Recorder

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FROM THE EDITOR

It was a very special kind of class reunion a couple of weeks ago at the Baked Potato, a small jazz club in North Hollywood. Gathered to celebrate the release of studio great Hal Blaine's autobiography were many of the legendary Wrecking Crew session players from the "golden years" of L.A. rock 'n' roll, and quite a few artists dropped by to pay tribute to the musicians who helped build their sounds.

While the dream jam of a lifetime may not have materialized, the nostalgia was in high gear and there was magic everywhere in the room. Phil Spector shared memories with the musicians who constructed his Wall of Sound. Bones Howe visited with members of The Association, Fifth Dimension, and The Mamas & the Papas. Brian Wilson, Jan and Dean, and Jack Nitsche paid their mutual respects. Beach Boys Al Jardine and Bruce Johnston joined Hal and Don Randi's super house band in a rousing version of "Help Me Rhonda."

Perhaps Bruce touched the nerve of the evening when he credited The Wrecking Crew with turning so many bands of the era into hit recording artists. He also pointed out that for all of the benefits of sampling and electronics, there is still nothing that can replace great live musicians. Amen.

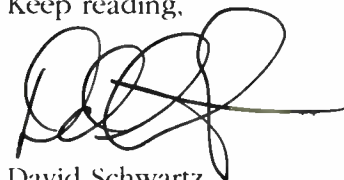
♦ ♦ ♦

This month we kick off our summer series once again with a look at concert sound and remote recording. Much of our discussion centers around the monitoring environment. Sounding good is what it's all about, and lucky for us, recording and reinforcement systems have never sounded better.

♦ ♦ ♦

And finally, you may have noticed a different look to our Contents page this month. Our ace art director, Tim Gleason, has come up with a new look to give you a better preview of what you'll find in the issue. We hope you like it. And look for some more changes next month.

Keep reading,



David Schwartz
Editor-in-Chief



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Artists' expectations, engineering limitations, and other myths of digital recording.

Digital. The word itself conjures up visions of a totally perfect recording process where anything is possible.

Nothing could be further from the truth.

For example, if you treat your digital tape as we've shown below you'll likely end up with exactly what you'd expect. Useless tape.

And how about *sound*; that nebulous, very subjective quality that is, for each one of us, the *raison d'être*?

After all, even though we build what we believe to be the world's finest digital machine, the 32-track DTR-900B, some audio engineers would stack our analog multi-track machines up against it in terms of sound quality any day.

So why did we build the digital DTR-900, and then follow it up with significant new features and improvements in the second generation DTR-900B? And why do we believe it

may be the single most important purchase you will ever make in your business? Simple. It will solve problems for you that no other system can solve. It can cut hours from session times. And it can make your life as a professional magnitudes easier and more rewarding. Here's how.



The DTR-900B's new Locator/Remote features improved hardware and software that make the machine faster and easier to operate.

Just imagine a session where after only a few takes you can send the talent home. You got their best when they were fresh, and now you can do *your* best when you're fresh, and creative. You use the DTR-900B's session controller to *electronically* assemble the final master from the tracks with no—that's *zero*—sound degradation. (As one studio owner put it, "Often a record becomes what analog makes it—not so with digital.") And no matter how intense the mix-down, the PD format with its powerful Reed-Solomon error correction scheme means you could lose up

to 8 tracks of data and still record and play all 32 channels! So, if you were to lay a cigarette down . . . no, no, just kidding!

But there's a down side to digital, too. For one thing, there's no friendly tape noise to cover up mistakes, or to add that mysterious "something" to the mix. And the initial cost for a digital machine can be *scary*.

So what's the final mix, or the bottom line, if you prefer? The cost is high, and even though the Otari DTR-900B is a powerful client draw, it's important to consider your return on investment.

But then, a great sounding record is hard to put a price on, isn't it?

It's your decision, but we can help. After all, Otari can offer you the best in digital, *and* the best in analog. Call Otari at (415) 341-5900, for more information. (And if you own a DTR-900, ask us about how the new features on the "B" can be added to your machine.)

OTARI

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pd The world standard Professional Digital (PD) format employs Reed-Solomon coding, mechanical dispersion, and cyclical redundancy in a virtually foolproof error correction scheme for data loss recovery.



THERE'S A BIG IDEA BEHIND OUR NEW PCM-3324A



It's the PCM-3348, Sony's 48-channel digital breakthrough. The technology behind our new PCM-3324A.

The PCM-3324A is Sony's second generation DASH 24-channel multitrack recorder, incorporating key technologies developed for the PCM-3348. Like 2X oversampling with digital filters for enhanced sonic performance. Reduced power consumption. And upward compatibility with the PCM-3348.

But as remarkable as the technology of the PCM-3324A and PCM-3348 is, the true beauty of the family of DASH products is that they complement the way music is made. Tracks laid down on the PCM-3324A play back flawlessly on the PCM-3348. And are undisturbed as the

PCM-3348 adds up to 24 more channels of digital audio to the original recording.

Clearly, the creative possibilities are limitless. To explore them, call your regional Sony Professional Audio office: East: (201) 368-5185. West: (818) 841-8711. South: (615) 883-8140. Central: (312) 773-6001.

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PROFESSIONAL AUDIO

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CURRENT

TEC Hall of Fame Announces Inductees

Quincy Jones, George Massenburg and the late Deane Jensen, pioneers and innovators on both the technical and creative sides of the audio industry, have been selected as this year's inductees into the TEC Awards Hall of Fame, according to TEC Awards executive producer Hillel Resner.

Jones has played nearly every role in music, from musician and composer to film producer and record company executive. He is perhaps best known to the general public for producing Michael Jackson and *We Are the World*. Massenburg received two TEC Awards in 1989 for producing and engineering, though audiophiles may know more about his company, GML, which manufactures automation systems, equalizers and compressors. Jensen passed away last year, after a lifetime devoted to audio. He developed the industry-standard Jensen transformers.

Jones, Massenburg and Jensen will be formally inducted into the Hall of Fame during the TEC Awards ceremony on September 23 in Los Angeles. They join previous inductees Les Paul, George Martin, Rupert Neve, Wally Heider and Bob Lifting. For more information on the TEC Awards, including information on tickets, call Karen Dunn, executive director, at (415) 420-0144.

Young Chang Buys Kurzweil

In a move that had been through the industry rumor mill for months, Young Chang Akki, Co. Ltd., the Korean acoustic piano maker, announced an agreement to purchase distribution rights

and other business operations of Kurzweil Music Systems, including the right to manufacture and market musical instruments using the Kurzweil technology and under the Kurzweil name. KMS retains its accounts receivable, certain inventory and other, undisclosed assets.

At press time, Kurzweil had filed a Chapter 11 petition in federal court to obtain approval for the agreement. Upon court approval, Young Chang will pay \$3 million up front followed by a stream of royalties to be paid over the next six years based on sales of Young Chang equipment incorporating the Kurzweil technology. The agreement provides for minimum royalties of \$2.75 million for the period 1991 to 1992.

Young Chang will provide warranty service and customer support for Kurzweil products in the field. David Cho, president of Young Chang America, says the company plans to continue all current Kurzweil product lines and maintain the facilities in Waltham, Mass. He expects the transaction to be final sometime in mid-May.

DOD/Digitech Purchased by Harman

You can add DOD/Digitech to the Harman International stable of pro audio companies, which includes JBL, UREI, Soundcraft and Seck. DOD/Digitech will operate as its own division within the corporate structure, adding a presence in the musical instrument and effects markets.

"It's exciting to be a part of a larger organization that has the same commitment to U.S. manufacturing as we do," says John Johnson, president of DOD/Digi-

tech. "By combining DOD's flexibility with Harman's financial strength, the possibilities are endless."

Distribution, service and support of existing DOD products will remain intact. Offices will remain in Salt Lake City.

Neve to Distribute Wheatstone in Canada

Neve has entered an agreement with Wheatstone Corp. of Syracuse, N.Y., to distribute that company's line of broadcast on-air and production consoles in Canada, as announced at the National Association of Broadcasters show in Atlanta.

The move fits in with Neve's increasing presence in the North American market and the recent opening of a Toronto sales office. For more information, contact Charles Conte at (203) 744-6230.

HARP, Homeworkers and the L.A. Planning Commission

The Los Angeles Planning Commission held its first hearing on the controversial Home Occupations Ordinance (see April *Mix*) April 5 at City Hall. Members of both the Hollywood Association of Recording Professionals and Homeworkers were on hand to present testimony in support of the ordinance. Also in attendance were representatives of local homeowners associations, the Ladies Garment Workers Union, the Independent Writers Association and various home-based professionals concerned about the future of their businesses. All agreed that present zoning laws are outdated and inadequate.

Terry Williams, president of HARP, and Chas Sandford, owner

of a home studio shut down last year for zoning violations, both encouraged the allowance of personal-use home recording studios and supported an amended ordinance.

After an hour of public comment, William G. Luddy, president of the City Planning Commission, said, "This ordinance is not only about the fate of home studios. There are many other cases that need to be reviewed. Our goal is to design an ordinance that makes use of the technology and does not inhibit home businesses."

The planning commission will hold the record open for 90 days to allow further written comment from the Zoning Office and the public. A supplemental report will be issued in July, at which time further public comment will be heard, and the ordinance will proceed at the discretion of the commission. For more information, contact the Los Angeles City Planning Commission at (213) 237-0117.

Convention News

The Association of Professional Recording Studios will hold its 23rd annual exhibition of equipment and services in the Olympia Theatre, London, June 6-8, 1990. Exhibit space is fully booked, as organizers say there has been an increased interest from outside the UK this year. There will be no seminar program. Call the APRS for more info: (011) 44-923-772907.

The fourth annual CD-ROM Expo will be held October 1-5, 1990, in Boston. For information on exhibiting contact Jeff Arcuri at (617) 361-0817; for attendance, contact Dorothy Ferriter at (800) 225-4698.

Mix-Ups

The phone number for Sound on Sound Recording in our April Video/Post-Production directory should be (212) 757-5300. ■

INDUSTRY NOTES

Jean-Louis Gassée is leaving his post as president of **Apple Products** (Apple Computers, Inc.) in Cupertino, CA...**Sony Corp.** (Park Ridge, NJ) announced the following promotions: **Richard K. Wheeler** to president, Sony Operations and Technical Services, and **Dr. Harry Taxin** to Sony Systems and Technology (both in San Jose, CA); and **Mark Gray** to president, Sony Communications Products Company...**Solid State Logic** brought aboard former Konk studio manager **Dave Powell** to be its Eastern regional sales engineer in New York City...**Parsons Audio** (Wellesley, MA) and **Audio Video Research** (Watertown, MA) are new dealers for **Time-Line** products in the New England area...**Powerhouse Entertainment**, which owns Powerhouse Studios, recently purchased post-production company **Groupe Andre Perry** in Washington, DC...In Northridge, CA, **Lance Korthals** joined **JBL Professional** as VP of market development...**Kris Jackson** was promoted to technical manager/technical sales at **Trident USA** (Torrance, CA)...Students at Napa Valley College in Napa, CA, formed a **SMPTA** chapter; many in the chapter are enrolled in the school's Telecommunications Technology program. In White Plains, NY, SMPTA has called for papers to be presented at the 132nd conference to be held this October in New York City. For info call Nancy Engel, (914) 761-1100...**Rank Cintel** of North Hollywood, CA, added MK3 Turbo to its telecine line (**Unimedia, Inc.**, developed the product, and is now a division of Rank Cintel)...**Agfa** of Ridgefield Park, NJ, selected **Pro Tape Northwest** as a rep in the Seattle area...**Body Electric Studios** (Bolingbrook, IL) has renamed itself **Sound Decisions, Inc.**, and will now do corporate audio production work...Acoustical consultants **Peter George Associates** has moved to 40 Prince Street in NYC...**Douglas Ordon and Company** of Chicago will represent

Soundmaster Integrated Audio Editing System in the North Central region...Signal processor and power amp manufacturer **ARX Systems** of Victoria, Australia, appointed numerous U.S. reps. Phone (714) 649-2346 for details...**Target Productions** won a silver medal at the 32nd annual International & TV Festival, held in Manhattan in January...In Los Angeles, **Westlake Audio** hired **Carl Marinoff** for pro audio sales...**Susan Radice** is the new graphics production manager at **VSC Post** in NYC...In Manhattan, **John Ceglia** joined audio production studio **ServiSound's** engineering staff...**BBE** appointed **Rob Rizzuto** as assistant sales manager in Huntington Beach, CA...In NYC, **Todd-AO** announced the following staff changes: Academy Award-winner **Richard Portman** as sound mixer and director of technical standards, and **Paul Zydel** as ADR mixer...**Jim Goodwin**, member of The Call, became a partner in **B5 Studios** in Los Angeles...**Karl Lahm**, **William Suffa** and **Garrison Cavell** formed a consulting firm (**Lahm, Suffa & Cavell, Inc.**) out of Fairfax, VA, to provide advice to studio owners and operators...**Gail Nord** is leaving **Russian Hill Recording** in San Francisco to be **Fleet Street Pictures'** general manager; **Cynthia McSherry** will take over Nord's position at Russian Hill as manager...**Sheldon Pines** joined **Lyon Lamb Video Animation Systems** as VP, sales and marketing, in Burbank, CA...**Aurora Systems** brought aboard **Fred McCoy** as Southeast regional sales manager in Redwood City, CA...**HSN Telemation** (Chicago, IL) hired **Jill Royce** as sales manager out of its Dallas office...**Videotape Distributors** has a new national sales and marketing manager: **Eric (Ric) Sherman** in Northvale, NJ...**Novell, Inc.**, gave permission to **Solidstate Controls, Inc.**, (Columbus, OH) to manufacture its Uninterruptible Power Supply monitoring card. ■

ScreenSound. A fully integrated audio for video editing suite



Post production facilities need to take advantage of the efficiency offered by today's technology. Speed and creative flexibility are essential to commercial success. Digital sound quality is no longer a luxury.

ScreenSound is a fully integrated audio for video editing suite. It combines digital audio storage and editing with machine control of multiple VTRs, Laserdisc or film reproducers. It also interfaces with Quantel's digital video editor, Harry.

Simple to learn and fast to use, a cordless pen, tablet and RGB monitor provide control of all ScreenSound functions.

Multiple sound reels enable music,

dialogue and effects to be laid back to picture and synchronised to the exact video frame.

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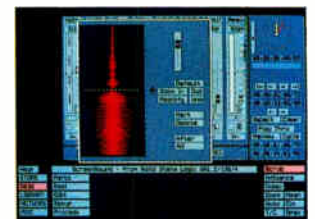
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World Radio History



SESSIONS AND STUDIO NEWS

NORTH CENTRAL

Singer/songwriter **Hobert Morgan** completed a four-song cassette release for WENCO Records in the newly remodeled Studio A at **Best Little Recording** in LaPorte, IN. The project was engineered by **Brian L. Roseman** and produced by **Chuck Galloway**... At **Seagrape Recording Studios** in Chicago, IL, final mixes were completed for Sub-Sonic artists **Transient** on their song "Higher." Producers **Todd Johnson** and **Mike Foley** split the tracking and mixing... **Ajax Recording Team** of Fort Wayne, IN, reported that **Red Belly Boys** finished recording and mastering their third album, *Pioneer Days*. **Craig Harding** did the engineering... At **United Sound Systems** in Detroit, the production team of **Moore/Newz** cut tracks for an upcoming release for J.M.C. recording artists **Mack & Nina**. **Lenny Price** mixed his self-produced debut album entitled *Double Take*. **Mike Moore** engineered both projects... Also in Detroit, at the **Disc Ltd.**: **Al Hudson** was working on a solo album; **The Dramatics** laid tracks for their next album with **Dave Robertson** and **Greg Reilly** engineering; **Kidd Rock** was working with engineer **Mike Clark**...

NORTHWEST

At **Different Fur Recording** (San Francisco, CA), thrash-funk heroes **Primus** recorded and mixed their second album with **Matt Winegar** producing and **Ron Rigler** engineering with the assistance of **Matthew Murman**. Former Tower of Power member **Lenny Williams** tracked and mixed his first solo album for KTEL/Crush Records. **Larry White** produced and **Howard Johnston** engineered with the help of **Joel Jaffe** and **Mark Slagle**. The **Clubfoot Orchestra**, known for playing to the silent showings of *The Cabinet of Dr. Caligari* in Bay Area theaters, recorded their latest soundtrack to the 1920 silent film classic *Nosferatu*. **Mike Marshall** of the Montreux Band pro-

duced. **Howard Johnston** engineered with **Mark Slagle** assisting... At **Mobius Music**, also in San Francisco, an eclectic reunion took place **John French**, **Fred Frith**, **Henry Kaiser** and **Richard Thompson** reunited in the studio to work on their second album. All singular luminaries, they are collectively known as **French, Frith, Kaiser and Thompson**, and their original compositions will be released by Windham Hill Records. The project was produced by Kaiser, engineered by **Oliver DiCicco** and assisted by **Jane Scolieri**... Remaining in the City by the Bay, well-known keyboardist **Merl Saunders** went to work in the recording facility of his San Francisco home, **Aunt Monk Studio**. Joined by **Jerry Garcia** and percussionists **Muruga** and **Eddie Moore**, *Blues from the Rainforest* is an "environmental musical suite," recently released on Summertone Records. It was engineered by **Bill Thompson** and **Greg Gordon**... At **Ironwood Studio** in Seattle, WA,

engineer **Jay Follette** worked with Elektra recording artist **Wayne Horvitz**; engineer **Paul Scoles** tracked the Prestige/BBC group the **Jazz Police**; engineer **Myron Partman** worked with rappers **Unknown MC**, **Wild J** and **Def 2 the Flesh**... The **Movie Stars** brought their eclectic alternative style music to **Prairie Sun Recording** in Cotati, CA, to be recorded. **Karl Derfler** engineered, **Joe Marquez** assisted and **Norm Kerner** produced the project... Recent activity at **Crow Recording**, Seattle, WA, included Gef-fen artists **The Posies** recording their major label release with **John Leckie** at the controls...

SOUTHERN CALIFORNIA

At **Galaxy Sound Studios** of Hollywood, the sensual Lambada dance is not forbidden. **Vanity**, **Sweet Obsession**, **Brenda K. Starr**, **Carrie Lucas**, **Shalamar**, **Kathy Sledge** and others cut tracks for the movie *Lambada*, *Set the Night on Fire* and its soundtrack



Buckwheat Zydeco was in at **Sunset Sound Factory** (Hollywood, CA) doing vocal tracks with **Dwight Yoakam** and producer **David Hidalgo** (Los Lobos). Pictured (L to R): **Hidalgo**, **Yoakam** and **Stanley "Buckwheat" Dural, Jr.**

album. **Knight Crew**, **Sidney Justin** and **Greg Scott** produced, with engineering by **Mark Wolfson** and **Greg Scott**...**Dodge City Sound Recording Studio** in Glendale, CA, recently had **Dweezil Zappa** in doing music for *The Pee Wee Herman Show*. **Bob Stone** engineered and **Stoli** assisted...Ex-Motown veteran producers **Bob Bateman** and **Eddie Holland** were in at **Paramount Recording Studios** of Los Angeles tracking the '60s hit "Heat-wave" for **Hoke Sloan** of ROHO Records. **Martha Reeves** joined him, making it a duet. The project was engineered by **Tony Pizarro**...At **Mad Hatter**, L.A., Prince commissioned **Claire Fischer** to work on music for his upcoming movie, *Graffiti Bridge*. Fischer and his engineer, **Arne Frager**, worked with a 28-piece string section in a spacious 38 x 26 room. Some of L.A.'s finest keyboardists stopped in at Mad Hatter to work with **David Garfield** and **Alan Hirshberg** on their Creatchy Productions project. Taking command of Mad Hatter's 9-foot grands were **Terry Trotter**, **David Witham**, **Russ Ferrante**, **David**

Paich and **Steve Porcaro**. Hirshberg engineered the project with the assistance of **Robert Read**...Live recordings of the Hawaii Jazz Festival were mixed at **Audio Resource Honolulu** for television broadcast and video release in Japan. **Baus Engineering** recorded the live tracks of **Herbie Hancock**, **Sadao Watanabe**, **Lee Ritenour** and Hawaii's own **Michael Paulo**. Also at Audio Resource, Windham Hill artist **George Winston** continued his work recording some of Hawaii's slack key guitar greats, including **Raymond Kane**, **Sonny Chillingsworth** and **Leonard Kwan**...At **Westlake Audio**, L.A., **Burt** and **Carol Bacharach** did an overdub session, producing **Michael McDonald** and **Jeffrey Osborne** for Aretha Franklin's next album on Arista. **Mick Guzowski** engineered with **Steve Harrison** assisting...At **Lion Share** of L.A., **Benny Medina** produced a cut for the ABC special *Earth Day* featuring **Rap Posse**. The posse, led by **Quincy Jones**, did a "Save the Environment Rap." Posse members included **Tone Loc**, **Heavy D** and **Fresh Prince**. **Steve MacMillan** engineered with the help of **Guy DeFazio**. Also at Lion

Share was ex-Monkee **Michael Nesmith** doing Synclavier overdubs and mixing for his next album with engineer **Jesse Kanner**...

SOUTHWEST

The "world's most recorded musician," **Hal Blaine**, was found recording at **Cereus Recording**, Tempe, AZ. Blaine was putting down drum tracks on two live tracks for local band **1960 Something**. Also appearing was bassist **Mark Prentice**...In Dallas, **Funkenstein Recording Studios** reported that **Steve Peacock** (Sincere Records) started a funk-gospel album project featuring **Nicole Bruce**, with keyboardist **Stanley Glen** of **Dallas Brass & Electric** composing. Also at Funkenstein was **Stranger Than Fiction**, a dance group with members from Lubbock, TX, and Manchester, UK, recording their new album, *Moving*, for Hub City Records...At **Goodnight Dallas** (Dallas, TX), Nashville-based **Hummingbird Productions** produced sessions for **Pepsi**, which featured **Steve Ray Vaughn & Double Trouble**. **Terry Manning** engineered with assistance from **Ruben Ayala**...

NORTHEAST

At **Prime Cuts** (NYC), producer **Tuta Aquino** was in Studio A and B remixing his production of **2 Deep's** "I Didn't Do My Homework" for Reprise. Aquino handled the engineering chores, and **Joey Moskowitz** did keyboard overdubs. Aquino also remixed three album cuts for EMI Brazilian artist **Fernanda Abreu** and shared the programming on the project with Moskowitz...**Effanel Music** of New York City reported a busy schedule of remote recording. They did a stereo digital recording and live satellite to Japan of the **Boston Symphony Orchestra** with **Tom Frost** producing and **Tom Laszerus** engineering. They recorded the **Dave Edmunds Revue** at the Ritz nightclub (NYC) for Capitol Records and **WNEW-FM**; **Carly Simon's My Romance** special for HBO; **Rolling Stones'** upcoming Fox television special; and **Suzanne Vega's** new album...At **Media Recording** of West Babylon, NY, Def Jam artist **The Don** was in to mix, with **Mark Elliot** producing and **Pat Gordon** engineering...At **Sheffield Audio-Video Productions** of Wheaton, MD, Elektra recording act **Screaming Blue Messiahs** finished their latest album. **Rob Stevens** and

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Howard Grey produced, and **Marty Wachter** engineered. Sheffield's remote truck completed several nights at Sweet Basil's in New York City to record **Ron Carter** and his band, with engineer **Jim Anderson**. From there the remote went to the Village Vanguard to record **Wynton Marsalis**, with engineer **Tim Gleeland**...**Alpha International Record Co.** of Philadelphia, PA, had Alpha recording artist **SUNNI** putting the finishing touches on her debut album, with producers **Chris Barbosa** and **Mark Liggett**... The soundtrack of the "Postcards" video for the Berlin Film Festival was produced at New York's **Videomix**. Chief engineer **Noel Smith** mixed in Dolby surround to time-coded R-DAT for producer **Colleen Fitzgibbons** and writer/director **Mark Rappaport**...In Manhattan at **39th Street Productions**: **The Roches** recorded with producer/engineer **Jeff Lesser**, assisted by **Mike Fossenkemper**; **Freddie Jackson** recorded with producer **Gene McFadden** and engineers **Edward Douglas** and **Steve Goldman**...At **Soundtrack** of NYC, **John Hendricks & Co.** recorded selections from their March Carnegie Hall performance. Featured with the bebop vocalist were **Wynton Marsalis**, **Stanley Turrentine**, **Al Jarreau** and **George Benson**. Engineer **Brian Lee** was assisted by **Mike Fossenkemper** and **Scott Canto**...

SOUTHEAST

At **Transmedia Sound Studios** of Lithia Springs, GA, rapper **Lady B** worked with producer/engineer **David Norman** on two tracks. Funk-rocker **Derek** was also working with Norman. Heavy metal group **Blue Max** recorded ten cuts for their first album with **Michael G. Miller** engineering and mixing...Following the success of *Yellow Moon*, the **Neville Brothers** started work on their next album at Daniel Lanois' home studio in New Orleans, LA, with guitar tracks from Meters' guitarist **Leo Nocentelli**...At **Digital Recorders** of Nashville, TN, **Tanya Tucker** recorded, with **Jerry Crutchfield** producing and **Scott Hendricks** engineering. The **Oak Ridge Boys** were in working with producer **Ron Chancey** and engineer **Pete Greene**. **The Gatlins** tracked and mixed a new single, with **Jimmy Bowen** co-producing with the brothers and **John**



Audio engineer Richard Bock at a DDA AMR 24 console, in operation at Boston's WGBH.

Guess at the board...The hard rock band **Never Never** recorded four songs at **Master Sound Studios** in Atlanta, GA. **Jeff Tomei** engineered and **Warren Tuttle** produced. The tape was subsequently mixed at **Kiva Studios** in Memphis, TN, with **Greg Archilla** engineering and **Freddie Salem** producing...At **Reflection Sound Studios** of Charlotte, NC, **Aleka's Attic**, the folk-rock band led by musician/actor **River Phoenix**, came in to record a song for the animal rights benefit LP *Tame Yourself*. The album features tracks from **k.d. lang**, the **Indigo Girls**, **Howard Jones** and more. The artists' royalties will go to the Washington, DC-based group, People for the Ethical Treatment of Animals. The track was produced and engineered by **Steve Haigler**...At **Criteria Recording Studios** of Miami, FL, **M.J.I. Broadcasting** produced two radio specials with **Gloria Estefan** and **Phillip Bailey**. Engineer **Ted Stein** worked with staff assistant **Roger Hughes**. Also at Criteria, the re-formed **Allman Brothers Band** started tracking for their first release in years. The project is being produced by **Tom Dowd** and engineered by **Jay Marks**, assisted by **Andrew Roshberg**...

STUDIO NEWS

Turner Broadcasting Systems of Atlanta, GA, recently purchased a Bullet, TAC's new compact mixing console, for its Cable News Network...**Blank Productions** of Stamford, CT, has purchased two Macintosh IICXi computers to handle CD production mastering and music production...Boston's **WGBH** recently built a new audio room centered around a DDA AMR 24 30-input console...Studio designer **Jimmy Maher** announced the formation of **Sound House Design**, an audio/video facility in Boyertown, PA

...**Electric Lady Studios** of NYC hired **Janice Rothman** as studio manager. Rothman left her post as manager of **Right Track Studios** (also of NYC) to take the position...At **Paisley Park Studios**, **Tom Tucker** started as chief recording engineer at the Minneapolis-based production facility...**RPL, Inc.**, promoted **John Miller** to operations manager of their corporate facility in Camden, NJ...**Summa Recording** in West Hollywood, CA, promoted **Karen Lichtman** to studio manager...**Novastar**, a new audio post-production facility in Hollywood, CA, opened its doors for business within the technical operations center of **Keystone Communications**, which provides domestic and international uplink/downlink services. Novastar is owned and operated by **Greg Geddes** and **Bob Sky**...**Music Annex Audio Post Production** announced that **Sound Recording Organization** joined them at their 69 Green Street facility in San Francisco. The new mix suite, Studio IV, is equipped with a fully automated Amek 2520 console...**Thumper Sound Studios** (Oakland, CA) opened its doors for business in the first quarter of 1990, offering reasonably priced 16-track recording with automation to musicians of the Bay Area...**Catamount Recording** (Cedar Falls, IA) recently installed an Otari MX-80 24-track recorder, a Neotek Series IIC console, a Panasonic SV-3500 R-DAT and Dolby 363 SR...**Alpha & Omega Studios** of San Francisco, CA, appointed **Laura Clark** to studio manager...**Warren R. Wilson**, president of **Forge Recording Studios** of Valley Forge, PA, announced the construction of new studios and cassette manufacturing and duplication facilities. The move will allow Forge to triple its manufacturing space and add a second 24-track studio. ■

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Left to right: Don Was-Producer Bonnie Raitt-Artist Ed Cherney-Engineer

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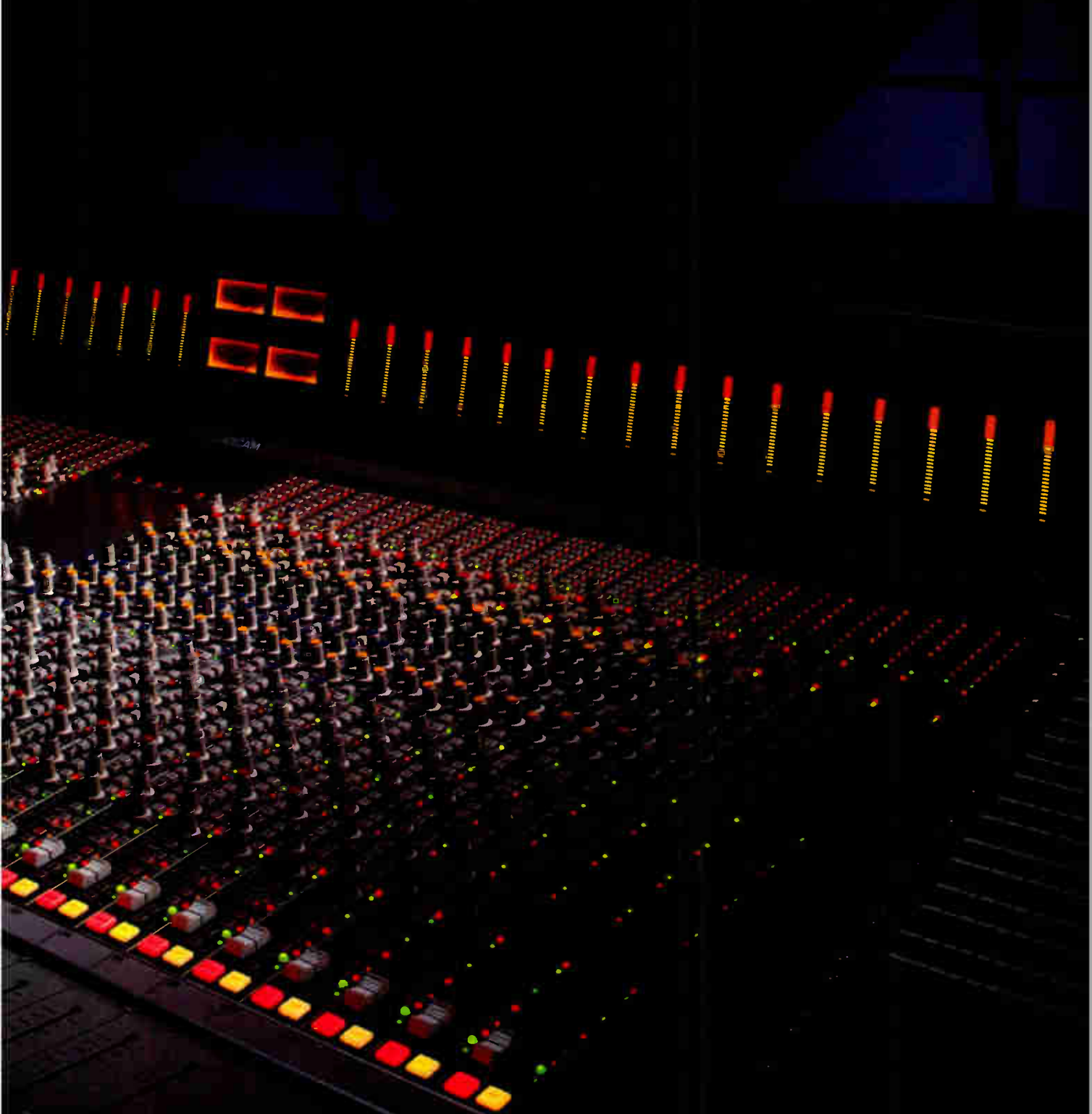
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by Ken C. Pohlmann

THE CD MAKER

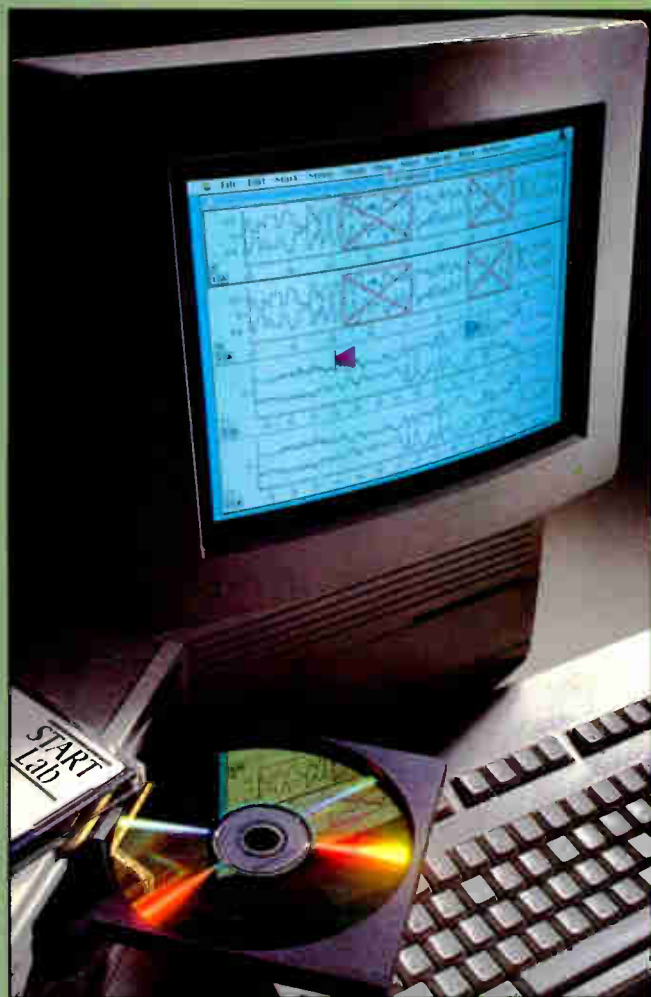
Some of us were getting blue in the face predicting the imminent availability of low-cost, one-off CD-R recording systems. Now it is entirely gratifying to see that not one, but two systems are available. The latest debut comes from Sonic Solutions, the Los Angeles group whose NoNOISE software and editing workstation has won staunch advocates throughout the industry. Its CD Maker takes editing to the next logical step: the ability to produce a finished compact disc at the end of the editing or mastering session, meaning the CD could be used as the source medium in CD replication. In other words, a recording/editing workstation fitted with CD Maker would form a compact disc produc-

tion chain entirely free of tape.

Let's begin at the beginning. Sonic Solutions has developed the Sonic System, a Macintosh-driven system used for digital editing, mixing and CD mastering. This system can be interfaced to the CD maker; it is an encoding and disc recording unit that uses write-once technology to produce CD-Audio and CD-ROM (including CD-ROM XA and CD-I) discs. CD Maker has been developed by START Lab, a joint venture of Sony and Taiyo Yuden (known in America for That's tape products).

The Sonic System-CD Maker duo is designed for short-run CD manufacturing jobs for which conventional CD mastering and replication is either too time-consuming or too expensive. The system is ideally suited to create reference copies for producers and artists. Although DAT provides a digital reference, many will feel more comfortable with a compact disc because it will have the exact look and feel of the finished product. And, of course, CD players are more widely available in home, car and portable environments where material will be auditioned. Other applications might include archiving, radio and television broadcast, and film and television sound post-production.

The hardware system itself is quite simple. A CD Maker encoder connects to a Sonic System as a peripheral device, via a SCSI interface. It is a Sony CDW-E1 encoding unit, generating in real time all sync, header, EDC, ECC, CIRC and scrambling required by the CD standard. The rack-mount unit outputs EFM data for CD writing. The system can transfer data from either tape or hard disk to the encoder. The CD recorder connects to the encoder; a Sony CDW-W1 disc recorder is used. The rack-mount recorder automatically compensates for disc variations for optimum recording. It has an absolute address verify function to assure continuity and accepts either 8 cm or 12 cm CDs. Laser writing power





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is 9 mW maximum. Up to 32 recorders may be connected via a fiber optic of 32 discs. Blank media are manufactured by Taiyo Yuden. Sonic Solutions is the exclusive distributor of CD Maker for SCSI-interfaced audio applications in the U.S. The cost of a basic Sonic System editing system is \$23,000 (Mac not included), and CD Maker costs

the playing surface. Current-generation software demands that recordings be made continuously across the disc; future revisions reportedly will permit stop/start recordings with accurate subcode.

Taiyo Yuden's CD-R63/CD-R74 discs are used for recording. The manufacturing process for this write-once media is similar to that for conventional playback-only discs. Fig. 1

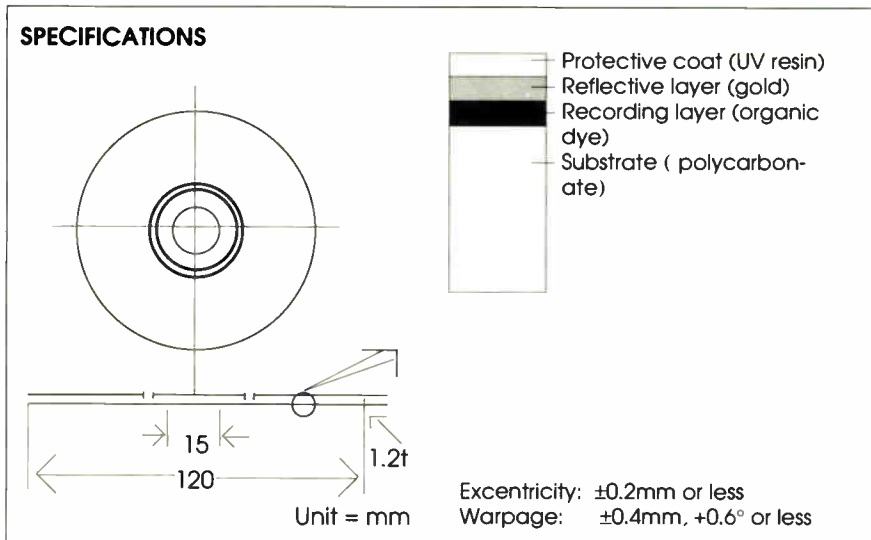


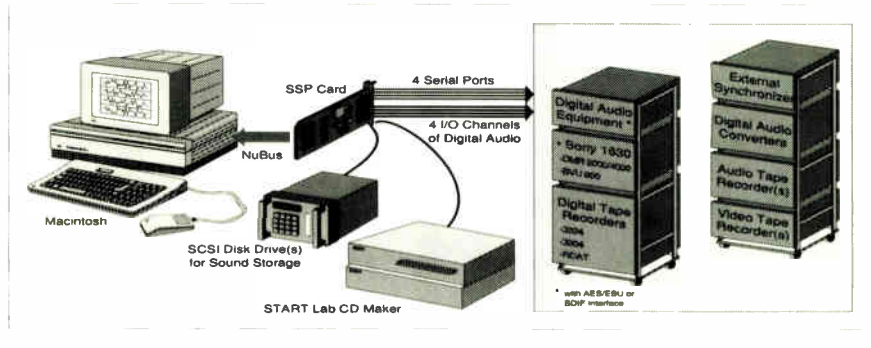
Figure 1: Specifications for Taiyo Yuden's CD-R Discs

\$25,000 for encoder and recorder. Additional recorders sell for \$15,000. Blank media sell for \$40.

The key to CD Maker is its ability to produce a CD that adheres to the Red Book, that is, it follows the worldwide standard developed by Philips and Sony. The disc will thus play on any CD player built to Red Book standards. However, not all hardware manufacturers follow the standard exactly, so compatibility problems may exist, as they do with some mass-replicated CDs in some players. Discs with up to 74 minutes of playing time may be produced. A complete subcode table is written in the disc table of contents, and appropriate flags are placed across

shows the disc construction. As with regular CDs, there is a polycarbonate substrate, a reflective layer and a protective top layer. Sandwiched between the substrate and reflective layer is a recording layer comprised of an organic dye. Together with the reflective layer it provides a typical in-groove reflectivity of 72.3% and CNR of 47 dB. Unlike regular CDs, a pre-grooved spiral track is used to guide the recording laser along the spiral track; this greatly simplifies recorder hardware design and ensures disc compatibility. Shelf life of the media is said to be ten years or more at 25° Celsius and 65% RH. BLER error rate is less than 20 per second—well below

Sonic System-CD Maker Configuration



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the Red Book CIRC tolerance of 220.

The recording mechanism itself may be described as heat-mode memory. The recording layer is actually a photo-absorption surface in that it absorbs energy from the recording laser as heat. Temperature at the focused spot rises above 250° Celsius. This causes the substrate layer to expand into the absorption layer and mix with the dye materials. Together, the polymer mixed with decomposed (from heat) dye acts to form a pit in the substrate. These pits create the change in reflectivity required by standard CD player pickups. The result is an eye pattern and modulation amplitude essentially identical to that of conventional CDs. This is the case with either one- or three-beam pickup designs. In other words, a CD player doesn't know the difference between a mass-replicated CD and a CD-R. Theoretically, a problem would occur only if the CD player failed to meet the CD standard for minimum reflectivity of 70%.

To evaluate life expectancy, engineers subjected discs to a variety of tests. For example, read cycle durability showed no change in reflectivity or CNR over 20,000 playback cycles with a read power of 2.1 mW. However, read power greater than 2.1 mW may cause spontaneous recording on the disc. Discs were subjected to bending tests, bending discs 10,000 times at an amplitude of 20 mm; there was no increase in BLER until, eventually, the discs broke in half. Scratch tests using a ball-point pen showed no increase in BLER up to a load of 375 grams—the same as with regular CDs. Heat tests revealed no change in performance after 1,000 hours at 70° Celsius.

In short, CD recording is for real, and it is here now. Relatively low-cost hardware and blank media mean that any user who requires a CD can have one—in the time it takes to record it in real time. This kind of optical recording, coupled with upstream disc recording and editing, is the beginning of a new era in music production, and another link in a tapeless chain stretching from studio to home. ■

Ken Pohlmann is author of The Compact Disc, A Handbook of Theory and Use. The book is available from the Mix Books shelf and in the lawn and garden department of Ace Hardware stores everywhere.

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by Stephen St. Croix

AND NOW FOR SOMETHING COMPLETELY DIFFERENT

First of all, I want you to realize that I realize what a dangerous thing I am doing in writing this month's column. I have chosen to deviate from my normal, dry, technically dense, information-packed tutorial column format to try something completely different.

Let us say for a moment that you are a writer, and you wish to get into the maximum amount of trouble in the minimum amount of time, with the largest number of people. The way I see it, there are three surefire ways to do this: 1) evaluate, compare and critique the spouses of all your friends and associates; 2) do the same for microphones; 3) do it for speakers.

These are all pretty much guaranteed to shake it up, for the simple reason that *taste* is involved. Whatever you say, a significant percentage of your readers will disagree. You simply can't win.

With all this in mind, I choose... let's see now, the wheel is still spinning...it's, it's...speakers! Oh, nooooo. Well, at least I'll still be able to go out to dinner with my married friends (but probably not the ones with speakers).

The Setup

I will not be covering 7-foot-tall electrostatics, nor will I use valuable ink on Auratones or NS-10Ms, though we have (in our distant, secret pasts) all used valuable dollars on at least one of these systems. I will not discuss conventional studio monitors. I will not even be presenting an organized comparison, nor review at all, actually. But you regular readers sort of *knew* that, didn't you?

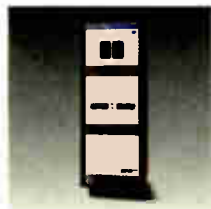


I *will*, however, share some observations with you. About three weeks ago, a project brought me back to the film-mixing world. I found that I needed updated monitoring for a new

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Denon Dolby Pro Logic surround system that had been installed recently.

This project included large space-ships, which I felt would require very large engines if they were to be able to get out of their own way. I figured that large engines like this would generate some pretty serious low-frequency stuff. This extended low-frequency information should be felt.

Keeping in mind that the end user is more and more likely to hear today's film tracks not only in the movie theater, but at home sometime later on a monster system, contemporary low-frequency special effects not only have to be loud, but they must also be tight, clean and solid. No more boom box and one-note bass. The paying customer is beginning to expect to hear the difference in the gut-shaking sound of the engine in our space cruiser, the bad guy's cruiser, an earthquake and low E on an electric bass. Picky, picky, picky.

While our main studio is well-equipped for this (built-in, flush-mounted Meyer 833s crossed out at 70 Hz, with the very bottom handled by 32 subwoofers fed with over 2 kilowatts, in a full-wave 20 Hz room), the auditioning theater was not. I wanted this room to be a comfortable environment that represented the potential of the new consumer Pro Logic Dolby surround sound technologies. Along with all of the assumed speaker attributes, I wanted a well-defined, solid, extended bottom for those *special* times (when those 70 teraton interstellar cruisers fly over at 60 feet).

I did *not* want to re-create my studio environment, and I wanted to limit to non-built-in systems. Further, I wanted to use speakers of realistic size and cost—speakers that might actually be placed on either side of a \$3,000 to \$4,000 consumer large screen. Refrigerators were inappropriate for this room. After some looking, I chose the new tower format. This, I thought, would get the mid- and high-frequency drivers up high enough to clear low-lying interfering objects such as furniture, cats and people.

I was now forced to do something I truly dislike: shop. Comparison shop for floor-standing theater towers with *salespeople*. I never said this would be a *pretty* column.

I went shopping every evening for

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16 days. Not a single speaker could do the job. It was dismal, depressing and fatiguing.

As my quest continued, I found my initial open-mindedness turning to dogged pursuit of the one thing that none of the new, hot, small footprint towers were delivering—bottom. My bag-o'-CDs was staying in the car, and I began to walk into each store armed solely with my Prosonus Studio Reference Disc. I would go straight for the house reference CD player, tear out whatever hyped-up demo disc the salespeople loved, throw in the SRD,

start with track 12 (250 Hz), and end up on track 7 (31.05 Hz).

It mattered not that the staff of each store would go home that night with tales of a crazed techno-nerd with test tones. It meant nothing that standing waves in unplanned, uncontrolled, unpredictable rooms could radically skew my test results. None of this really applied, because none of the speakers could deliver track 7 anyway! None!

Absolutely amazing. I had no idea that the state of consumer mid- and high-end speakers was as it is. I tried all of the tall-format speakers under \$1,000 (and then under \$2,000) that I could find.

Every one could do 50 Hz. Most were even pretty clean, if a bit loose. All of them loved 62.5 Hz. Big surprise. Then I tried the dreaded track 7. This is what happened. Two famous speakers merely doubled and gave me a rather dirty 62 Hz. Ick! Three gasped and breathed, but emitted no perceivable acoustic energy at all below approximately 1 kHz. These speakers had claimed frequency responses of 22 to 28 Hz! How can these manufacturers lie like that?

One emitted scraping, buzzing sounds. One emitted fiberglass. One emitted smoke. Two blew up (it is unlikely that I will be invited back to the store where that happened). One popped a fuse. Two were civilized and gracefully declined to deliver, making no offensive extraneous noises. These were not bad, but not good.

The Lowdown

But wait! Finally *one* did stand and deliver! Real bass came out and got all over me. After switching to this speaker in the showroom, what happened was so dramatic I actually accused the salesman of having rigged a different power amp to this one set of speakers.

It turned out that he did not, and, after running to the car to get the almost-forgotten *music* CDs, I tested for real audio, found them most agreeable, and then rushed home to call the manufacturer to find out what was going on with the low end.

Well, after an hour's talk, it became apparent that this speaker did, in fact, work. It is actually rated at a respectable SPL at 27 Hz at an astounding 9% distortion. Two 8-inch drivers do this with speed and definition that impressed me. Great care had been taken to select, align and match components to get the job done properly.

For my surround sound application, these black oak towers are perfect as the front primaries. Everyone keeps looking around the room for the subwoofers every time that Buckaroo Bonzai, Darth Vader or even Captain Picard flies over. The subwoofers have been taken out, no longer needed.

Oh yes, the speaker? The Paradigm Studio Monitor from Canada. I have discovered the wonders of well-controlled, 8-inch, low-frequency drivers as opposed to my old (now previous) 15-inch theater system. Much more present. *Tight*. These speakers have brought the fun back to surround

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Do You Know these terms?

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Standard — a reference from which qualitative judgements can be made.

Tracks — (noun) channels on a multi-track recorder (verb) accurately reproduces the audio qualities of another transducer.

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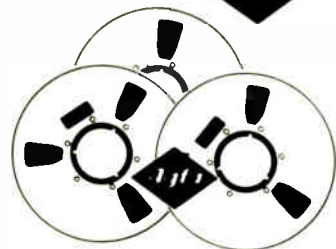
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sound video for me. I need these.

The Box Du Jour

On another note, I had been waiting patiently for my Meyer HD-1s to show. They finally did.

Now here is a totally different concept in what a speaker should be and what it should be used for. I admit that it makes me a bit nervous to talk about two completely different speakers that both impress me as being incredible, and even more so when you consider that both are the products of radical (and quite divergent) technological extremism. It seems that one speaker should simply be the most "right," and all the others less so. But it just doesn't work out that way in the real world, or at least in the world we are using until a real one comes along.

Anyway, these Meyers were originally designed as sort of scientific laboratory, reference, near-field, super-flat, phase-accurate, square wave-capable, calibration-standard monitors. They're nice for the pocket-protector geek crowd, but of limited value to recording studios. A very serious basic design, augmented by hand-selected, matched, tweaked, trimmed production, seemed intellectually interesting but not necessarily the news.

Wrong again, reflex-port breath. I was initially interested as John Meyer has been talking for some time about building a truly *accurate* little monitor that could be trusted enough to rely on as a real reference. I wanted a reference, that's all.

They are here now, and they have not spent a single hour (after the first day) playing "reference." They are my near-fields. At first I was not sure that I wanted to mix on cold, thin, hyper-accurate, totally unflattering speakers. Now I am *sure* that I don't. I want to mix on these. They took only a day or

two to learn, the accuracy is a blessing (if you have the guts to take the criticism and correct the mix), and they translate very predictably to other playback systems. In other words, I know what I am doing with these. There is a certain inner peace in finding a speaker that you can mix music on and trust as a reference to boot.

Inside the box is John Meyer's own heavy little world. You feed balanced line in, and the internal bi-amps, hand-trimmed EQ and phase correction networks, select hand-matched and trimmed drivers, and dynamic protection circuits take over. Pretty scary, but it works.

When I first heard these at an AES show, I walked away feeling that they defied the laws of physics, or at least clearly defined the absolute edge. Many months later they are finally here, and I *still* feel that way. Let me make this clear: the Meyer HD-1s are the tightest, most accurate studio monitors

that I have heard in my life so far. It's like being there again. They are so under control that they are sterile...almost.

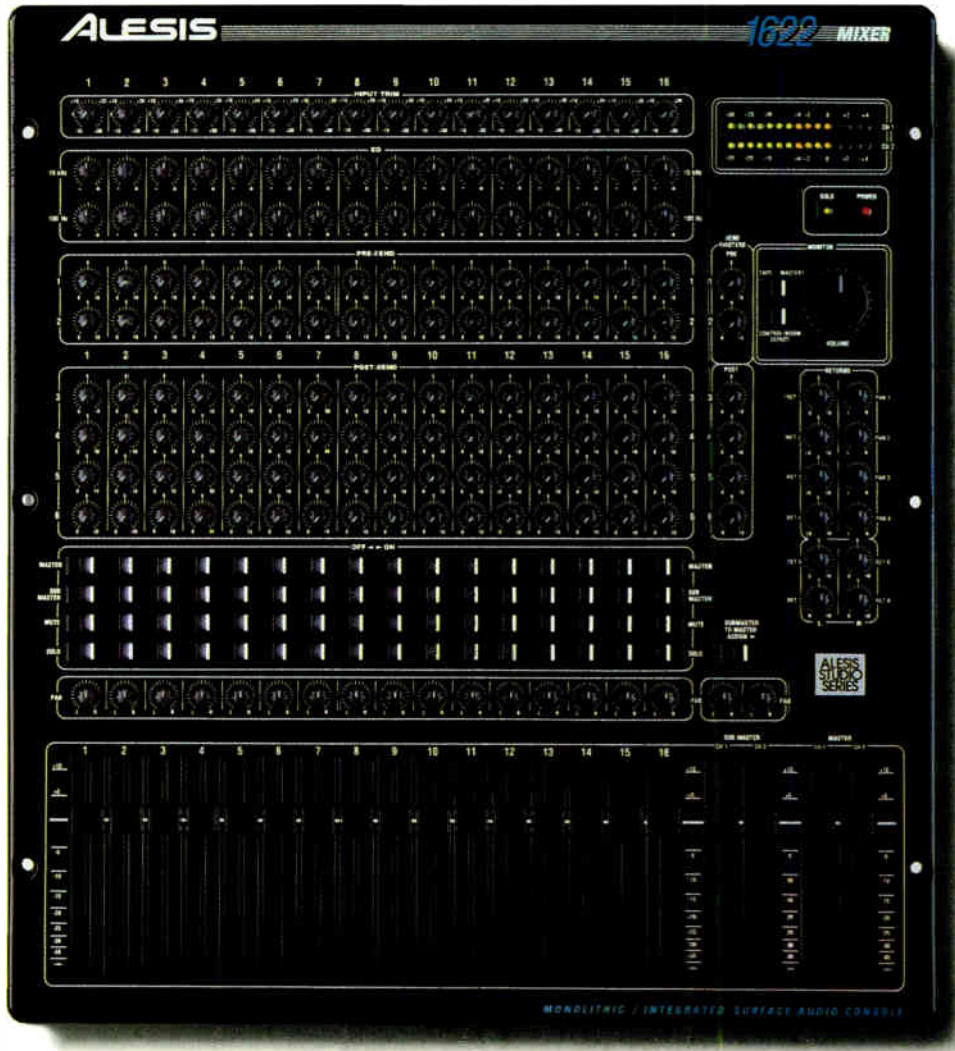
The only real limitation is that they don't get real loud. When the little red (protection indicator) light is on, just don't trust them as much as you would when the light is green (the Joe Isuzu "trust me" mode). The 50Hz response is amazing, and while they do deliver a real 31 Hz, there is a bit of wheezing and fluttering. I guess *some* physical laws apply even to John Meyer.

These are the perfect summer speakers. Air from the ports kept me quite cool at six feet. I need these too.

They cost a lot, and they get hot. But then, so does a Ferrari Testarossa. ■

Contributing editor Stephen St. Croix's frivolous search for the lowest frequency, non-noise, real musical note has turned up Eddie Jobson's "Theme of Secrets" as the winner so far.

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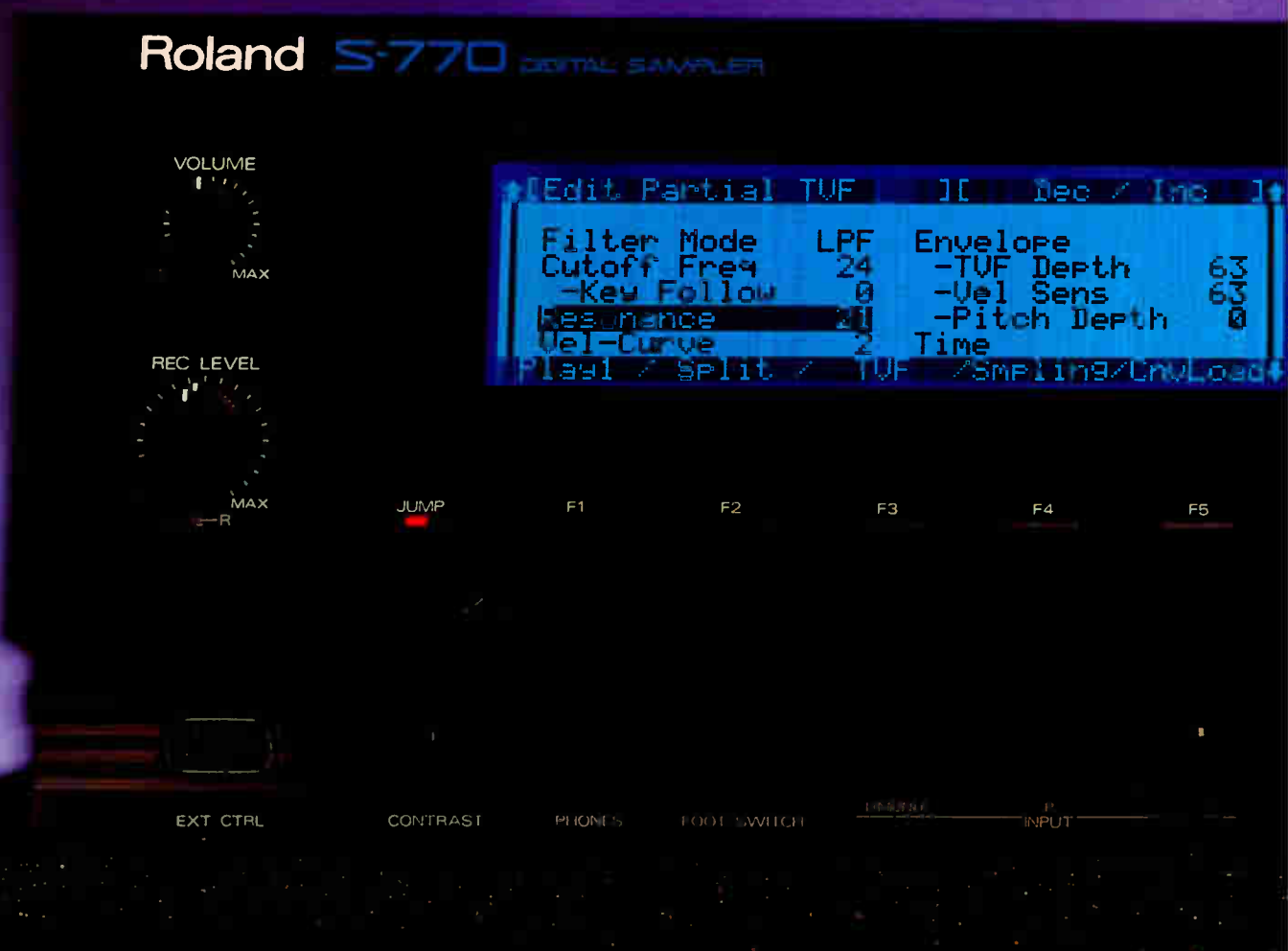


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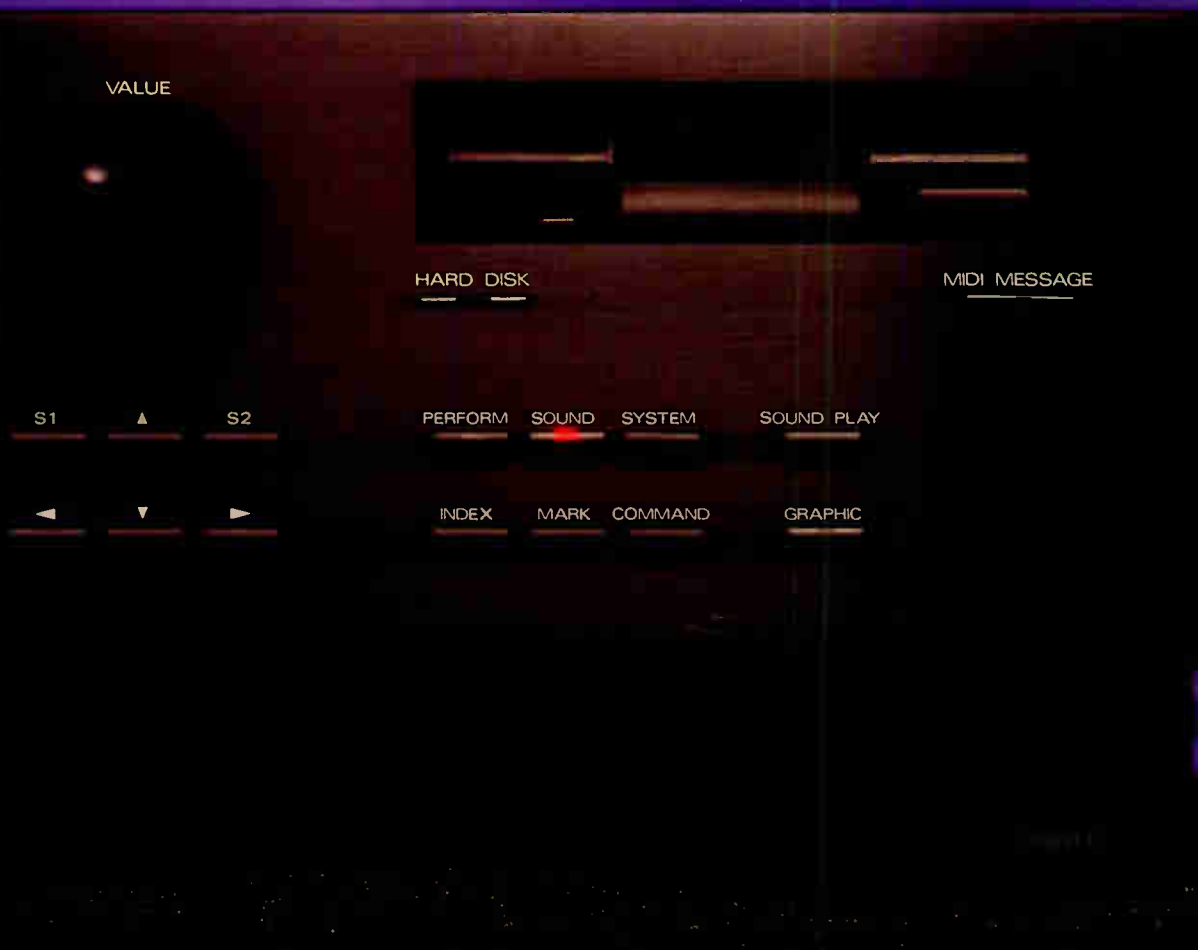
Such as the fact that the Roland S-770 is equipped

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extraordinary sound but the flexibility to go along with it.

Before we forget, the S-770 is also blessed with an elephant-like internal memory. It can be expanded to 16 megabytes which, for those of you without calculators nearby, translates to 83.5 seconds of continuous stereo sampling time at 48 kHz—twice as much as any sampler in its price range.

While we're on the subject of price, there's one more thing we should mention. On many samplers

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And as far as the sonic boom is concerned, that comes later. When you hear the S-770 being played live.

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by Mel Lambert

MAKING CRITICAL CHOICES

Have you ever come across that quaint old expression "poacher turned gamekeeper"? It dates from a long-gone era when landed gentry managed to secure control over large tracts of land, upon which they kept stocks of feathered and furry creatures for the sole purpose of shooting them on high days and holidays. Such was the recreational sport of those times. The guy in charge of these estates, and responsible for preventing nefarious poachers from snaring and otherwise depriving the lord and master of his sport, was the gamekeeper.

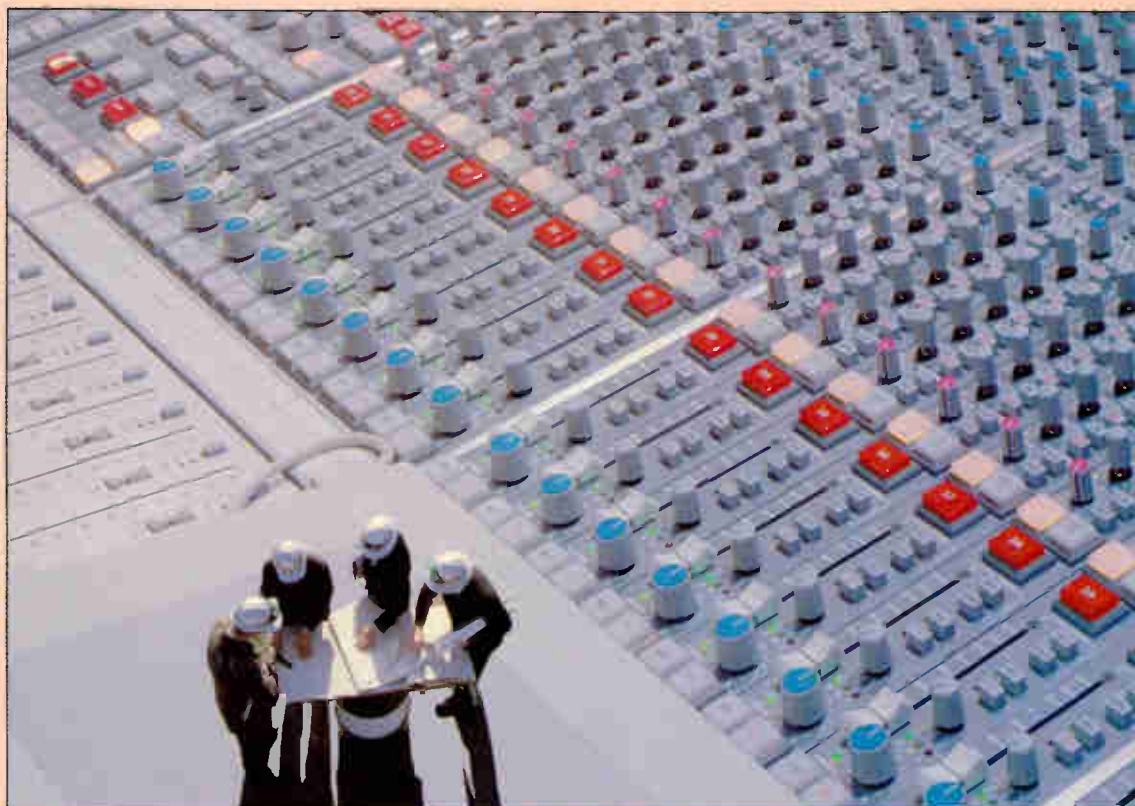
Now who better to put in charge of foiling the attempts of a poacher to steal pheasant, grouse, deer and other treats than an ex-poacher? Rest assured that the idea was speedy in coming to those earls and barons, and a good living could be had by an errant but

fully reformed poacher.

These days, of course, things are very different. But the analogy still holds, particularly when you consider some of the weird and wonderful hardware that seems to be finding its way (and also *not* finding its way) into the pro audio market these days.

On more than one recent occasion I have had reason to doubt the sanity of what I know to be a reputable manufacturer. Why the invective? Simply because, knowing Company A to be a successful innovator of recording and processing hardware. I am stunned that it has spent all that money bringing to market something that users immediately pillory for its crass uselessness.

We have all come across such examples. A "revised" console design that suddenly lacks the clear and



INSET PHOTO: ROBERT PHILLIPS

unambiguous pre/post aux switching on each channel module featured in the Mark 1. Or the automation system that now needs to be primed with an initial mix label, rather than simply picking up the last label and advancing the count by one. (You'll go back later, when the session is winding down, and relabel the mixes with more sensible names.)

Or what about the digital reverb that now offers so many delay and processing algorithms that you need to delve through literally dozens of pages of control parameters, simply to find the one you want? What was once a very useful and easy-to-use feature has now become a cumbersome user interface. The list is endless.

What's the story, you might be wondering? Don't these firms listen to the marketplace and innovate according to the demands of recording and production professionals? By and large they do, and the result is a product that has resulted from a logical sequence of market research, prototype construction, in-house evaluation, beta site assessment and revised production version, followed by a logical

PR, advertising and marketing campaign to bring the widget to the attention of its targeted audience.

The problem comes when somebody doesn't do his or her homework. Either the design department makes an early decision that such-and-such features should be included in the proposed device—without fully establishing either the cost-effectiveness of such a decision or the need for what is often a high-tech solution to a low-tech need. Or the sales and marketing team gets to draw up a wish list of supposedly essential features, without understanding the natural technical advances coming from component suppliers and IC manufacturers.

I recently had a series of animated conversations with a few directors of engineering at leading West Coast post-production facilities. My purpose was two-fold: primarily to gather information for a marketing survey I was conducting on behalf of an Australian digital audio workstation company; and to canvass their opinions on the importance of the various

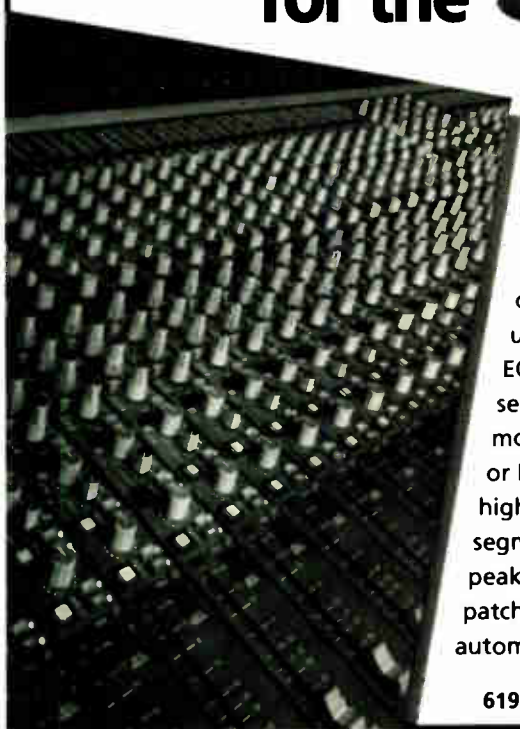
trade shows held throughout the year.

However, I also probed into other subjects, such as the amount of business their facility was attracting, and potential upgrade plans to digital audio and video capabilities. One conversation, in particular, haunts me still. A household name throughout the post industry, and one who works day-to-day behind the console, was telling me about his upcoming plans for upgrading a series of rooms at this leading L.A. complex.

His choice of console was severely limited, he complained, simply because nothing currently available from the Top 10 suppliers came close to what he was after. We mentioned to each other the current favorites among his competition and agreed that they were possible choices. But, without exception, there were so many essential features lacking in their design—or, from prior experiences with these firms, getting custom modifications would be both expensive and difficult—that it quickly became obvious we were considering the lesser of several evils.

On the one hand, Brand X offers a

Get in Gear for the 90's

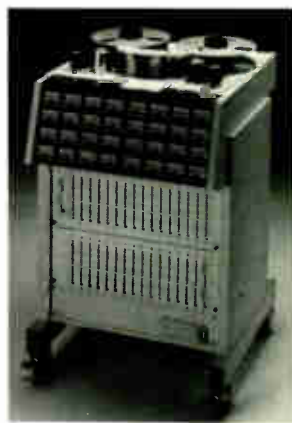


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high-quality signal path, but it lacked the output routing flexibility considered essential for today's stereo and surround sound mixes. Brand Y offers sufficient bus and auxiliary sends, but came with an automation system that was slow and cumbersome. While Brand Z looked the part in every technical respect, it was a nightmare to operate, simply because of its non-intuitive front panel labeling and bizarre signal topology. You get the picture.

The facility in question was currently negotiating with a leading

console designer regarding the possibility of a highly modified version of its digitally controlled music recording board, whose channel, output and monitor sections could be repatched internally to provide sufficient flexibility during complex audio-for-video/film post-production and re-recording sessions. It was an obvious compromise, but with such a restricted market choice, what were his alternatives?

An odd situation, and one that really ought to be addressed by both users and innovators alike. Here's my advice:

For Equipment Manufacturers:

1. Consider setting up regular focus

groups at which representatives from the local recording, broadcast, post-production and other audio-related industries can share their thoughts on planned designs and provide valuable feedback for future products.

2. Undertake a thorough market analysis of competitive hardware, including quantitative as well as qualitative data regarding both volume and projected expansion of existing and peripheral segments.

3. Maintain an active and ongoing dialog with the leading lights in the local recording, production and live sound communities to ensure that you possess a firm understanding of the rapidly changing hardware requirements.

For Facility Operators and Engineer/Producers:

1. Make your opinions known precisely and clearly to the hardware innovators, through both the local sales team and dealer reps, as well as direct communication to the designers and marketing personnel. By becoming involved in the decision-making process—and I'm convinced that your input would be welcomed—potential users of the hardware can ensure that it does all it needs to in the studio.

2. Become actively involved in the concept/prototype/product loop. If our ideas are incorporated at the most crucial stage, rather than being used to correct mistakes in the first versions to hit the market, we stand a far better chance of being offered systems that suit our immediate needs.

3. Form a cohesive voice within the industry. Through membership of such organizations as SPARS and the AES, we can develop closer communication between facilities and hardware innovators.

Why my reference to the expression "poacher turned gamekeeper" at the start of this column? Simply because I believe that if more users of recording and production equipment became involved in its design and marketing, and more manufacturers listened closely to the users of their R&D efforts, all would benefit. ■

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

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Kennedy Center,
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Audio Supervisor,
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Elliot Mazer
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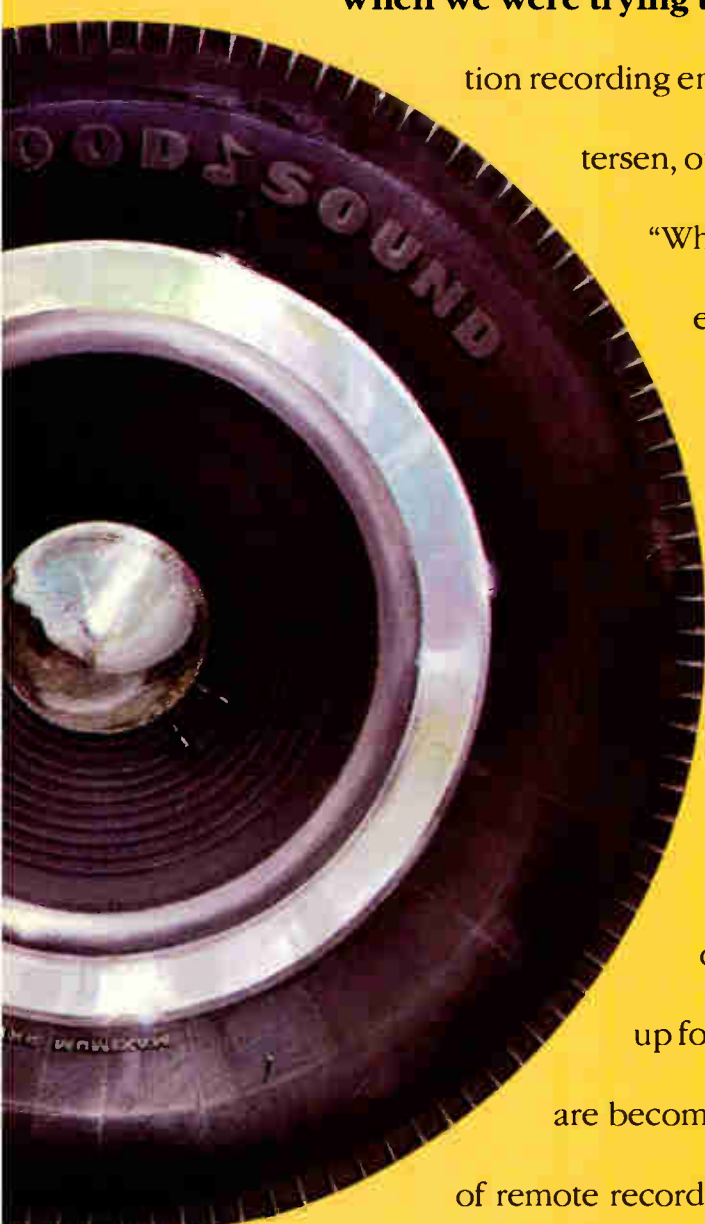
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For In-line recording consoles we offer our Sigma series.

THE Location Monitoring Environment

When we were trying to decide what to ask location recording engineers this year, George Petersen, our products editor, suggested:

REMOTE
ENGINEERS
TACKLE
"THE BOX"



"Why don't we ask them about the monitoring environment? You know, 'How do you make a tin box rolling down a highway sound good?'" 🚗 "Well, mobile recording units have come a long way in dispelling the myth that you can't get good sound in a truck. Tube Traps are in; large, wieldy monitors are out; achieving absolute isolation will always be a problem. In this era of slim, trim digital, more space is opening up for acoustical treatment, and, as a result, trucks are becoming "rooms." We checked in with a number of remote recording engineers, and, as expected, received a variety of solutions and approaches to the specialized acoustic and



GHL
Nashville
Gary Hedden, owner



LE MOBILE
North Hollywood, Calif.
Guy Charbonneau, owner



BIG MO RECORDING
Wheaton, Maryland
Ed Eastridge, owner/engineer

EFFANEL MUSIC
New York City
Randy Ezratty, owner



monitoring problems encountered in the location recording environment.

ASL MOBILE

Flushing, N.Y.

Steven Remote, director of operations

The ASL Mobile audio truck has been active in the Northeast live recording scene for more than 14 years. Recent projects include Mick Taylor (of the Stones) and jazz TV spots for WQCD radio in NYC, featuring Spyro Gyra, Manhattan Transfer, Bob James, Michael Franks, Lee Ritenour and David Benoit.

Remote's truck is lead-lined for RF shielding as well as sound absorption. The back end of the truck uses slotted teak to achieve full-range diffusion, while custom fabric absorption panels are mounted on the left and right sides. The front wall consists of two UREI 813 speakers mounted in wall soffits, driven by a pair of Bryston 4B amps.

Regarding other monitor speaker alternatives, Remote says, "I'm in love with my Klark-Teknik Acoustic Jade II linear phase-active monitors. They've got a tremendous punch.

They've become my main speakers. I just set them on top of the Harrison MR-4 console." But he hastens to add that he carries other monitors, including Yamaha NS-10Ms, E-V Sentry 100As and K&H 92s.

"Longer mobile units seem to sound very hollow, and so I wanted to use a mid-size truck to create a good-sounding environment, with room for enough outboard gear to rival any major truck," Remote says. "The smaller the control room, the better the sound." It was also important for him to have a compact unit so he could navigate the tight situations typical of Manhattan. His solution is a 31-foot-long 1987 Navistar International truck. "Mine is an 18-foot box, but we cut it down somewhat by using a lot of the rear space as storage. There's also a bass trap behind the rear rack, so it absorbs the low end and gives you a tight sound.

"Another thing that's helped my sound is that all my outboard gear is mounted in the ceilings, so there's not a lot of one-sided wall mounting as in a lot of mobile units. It's not only more acoustically symmetrical; it's a more ergonomic environment."

BIG MO RECORDING

Wheaton, Maryland

Ed Eastridge, owner/engineer

After breaking down one too many times in Breezewood, Pa., Big Mo Recording broke down and bought a new truck, actually a new Mercedes 1117 diesel placed on the old 33-foot Ford chassis. Most recently, Big Mo was at Kennedy Center in Washington, D.C., for the "Rosa Parks Birthday Celebration," featuring artists such as Lou Rawls, Dionne Warwick, Marilyn McCoo and the "sleeper of the show," the Lincoln University Choir.

"We haven't done anything special other than put up a lot of Sonex [panels]," says Ed Eastridge, commenting on the acoustical treatment in the new vehicle. "I usually check whatever I'm mixing in the truck on the UREI 811Bs, the Yamaha NS-10Ms and anything else I can get my hands on. I like to have a small speaker in there for a mono idea. Then I like to listen on Sony V-6 headphones.

"I'm not opposed to mixing in an adverse monitoring environment because it's more like reality to me," he continues. "I've talked to some



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PREPPING FOR THE GIG SOME REMOTE RECORDING TIPS

by Gary Platt

If you are an audio engineer and you haven't had the chance to record a live performance in concert, you've missed something special. "Special" because it can be an incredibly horrifying experience if you've never been in that particular environment before, or "special" because you enjoy large doses of adrenaline. If you are someone who has never done one of these babies, you're going to need to be prepared for what's coming or not coming, like the soundcheck, for instance.

First, hire a reputable mobile. There are some really funky ones out there, and you're going to need the best facility you can afford. Check for the following:

- AC line regulation—helps to keep power clean and up to spec.
- Good, clean-sounding console—you're gonna need plenty of inputs, too, sports fans.
- Splitter box—does it have

Jensen or high-grade transformers for splitting signals? What's the length?

- Two multitracks—you're going to need two, make no mistake about it. Do you need 14-inch reel capacity? (It's not always a plus, especially in post-production.)

Have an input sheet that details each mic input for the house sound and recorded sound. Get the input info from the house mixer as to what instrumentation and inputs he or she plans to use. Decide in advance exactly where you want each input to come up on your console, as well as what to augment.

Ask to have "first split," meaning that all inputs go to your input box first and then split to house and monitor boards. This usually goes over like a rotten tomato, but you should get this if possible. It will substantially increase your chances for cleaner sound, correct phantom powering of mics and less confusion on inputs.

Put the console in mix mode, select the mic input globally and check every input yourself. Don't



Gary Platt demonstrating his "drum miking technique."

trust anyone. Make sure each input is clean and actually working correctly. Now, trim the mic preamps to the lowest gain possible. Pad the inputs of drums, extremely loud guitars and probably the vocal mics.

Assign every input at the group assigns. Listen to the output of the tape machine input, not the console output. Bring up the monitor inputs across the board, and put it in mono monitoring for two reasons: It's a quick check on phase problems, especially in the drum kit; it helps eliminate weird acoustics, normal in most mobiles that hide monitoring problems from

—CONTINUED ON PAGE 54

all.

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engineers and producers who have done their best work under adverse monitoring conditions. If you can make it sound good on the Yamahas, a good mix will hold up anywhere."

EFFANEL MUSIC

New York City

Randy Ezratty, owner

Effanel's credits are mind-boggling: the Stones' "Steel Wheels" tour, The Who "Tommy" telecasts, Paul Simon, James Taylor, the Boston Symphony at Carnegie Hall, Peter Gabriel, U2, Pink Floyd, and on and on. And it's no wonder. The company's three-room, 45-foot semi is New York City's only large remote operation, and its new SSL G Series 4000 console and Sony PCM-3348 digital 48-track are in big demand. By the time you read this, the company should have a *second* Sony 48-track.

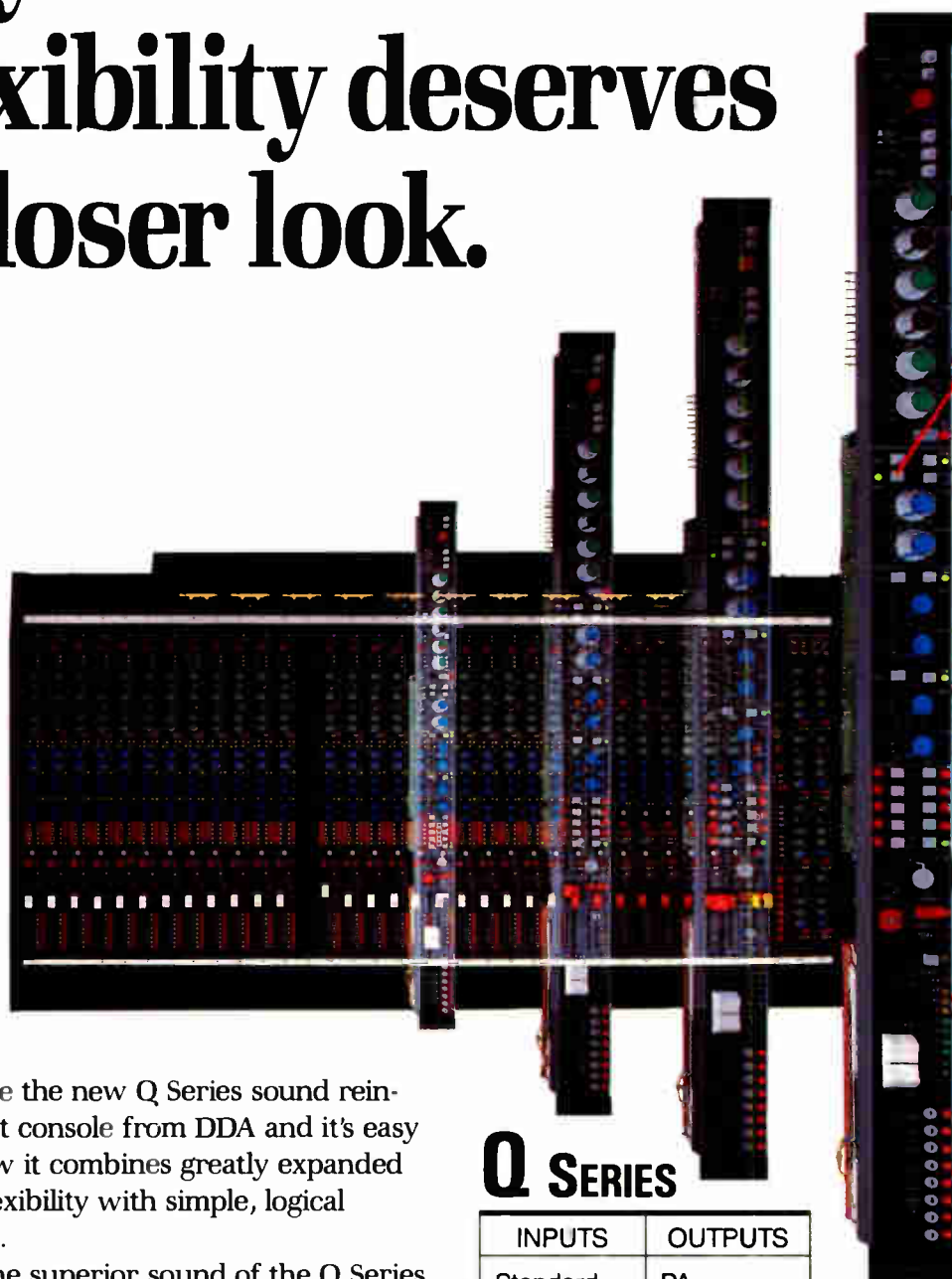
The new monitor of choice for Effanel is the Meyer HD-1, which Ezratty says extends beyond the near-field to cover the mid-field. "They get the big thumbs-up," Ezratty says. "Meyer was kind enough to loan us a set of speakers, and we had a chance to evaluate them under a lot of different conditions with a lot of different engineers. We're now calling them our basic monitoring system, our pivot point for everything else.

"We've also had real good luck with acoustic treatment, using the ASC Tube Traps a lot," Ezratty adds. "There's one in front of and underneath the console—a real resonant spot because the near-fields are on the console bridge. Then we hung tubes overhead all the way to the back of the truck, left to right. They tighten up the bottom end, which is usually the biggest problem in a truck. We also placed them along the walls and, of course, in the corners. Their biggest claim to fame is corner coverage."

Despite all of Effanel's high-tech features and acoustical treatment, Ezratty still gets butterflies. "We were real nervous about the Boston Symphony at Carnegie Hall," he says. "It was a big deal, a big chance for us. I had just bought the Bryston amp, because I knew it was a great amplifier for just about anything. Tom Lazarus, the engineer from Deutsche Gramophone, came in. He plugged in his Rogers SP-1 speakers and put on a DAT of something he had done, and said, 'Well, that's good. This sounds better than most rooms I've been in.' It started the project off on the right

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PHOTOGRAPH: KAREN ANDERSON
LOCATION: THE VILLAGE RECORDER L.A.

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foot; it was a very gracious thing for him to say, and, hopefully, there was a grain of truth in it."

FANTA MOBILE PROFESSIONAL SERVICES

Nashville

Johnny Rosen, owner

When we talked to Johnny Rosen, he had been up 48 straight hours, preparing for Farm Aid IV in Indianapolis. Seventy-two acts in 12 hours! Fanta was to handle audio for TV and radio (live), and audio for post and an album (dead). All out of one 40-foot semi, your "typical 116/120-input, dual 24-track rig.

"The reason we configure for so many inputs is that for these giant shows like Farm Aid, you come out to the order of 120 to 130 inputs," Rosen says. "We like doing multistage shows from one truck rather than two, so everything sounds similar—equally bad all the time. [Laughs]

"It's virtually impossible to make a truck sound good unless you change the laws of physics," Rosen continues. "We use various types of acoustical traps—broadband and narrow band. We have two ASC Tube Traps

mounted directly over the engineer in the top corner of the truck, away from the loudspeaker. They tighten up the low end. Before we had those we had basically one bass drum sound for rock 'n' roll; now we have three.

"Our truck is set up sideways, not lengthwise. We use real big speakers to move a lot of air. Because the back wall, really the side wall, is so close to your head, the delay time is virtually non-existent. We consider all our speakers—small or big—as near-field monitors. We use Electro-Voice Century IIIs driven by a McIntosh amp, and it sounds great in there." Engineers can also listen through the ubiquitous Yamaha NS-10Ms, JBL 4411s and Auratone 5Cs.

GHL

Nashville

Gary Hedden, owner

Gary Hedden and engineer Jim Kaiser are kept busy with mixing and remote recording dates for touring bands coming through the Nashville area. Upcoming projects for the 40-foot GHL truck include acoustic improvisational sessions recorded without tape [rather, it will be recorded magnetically to disk]

in different rooms around Nashville and mixed down in the truck. GHL also has been involved with video production, though Hedden maintains a philosophy of invisibility.

"The recording people need to be as invisible as possible," Hedden says. "We try to make the most use of what's happening onstage without altering what is normal for the musicians. We only supplement when necessary, and try not to disturb a good thing but capture it. The thrust of our philosophy is to make musicians comfortable with what they're hearing, which makes the recording process that much easier."

When working with client engineers, Hedden advises, "Allow yourself enough signal headroom for that unexpected surprise that invariably happens onstage. Operate the equipment conservatively, because at the end of the night all those conservative levels will be eaten up and you'll be right at the edge of distortion. If we're working with engineers used to studio recording, we try to keep them from getting in trouble. There's a different focus and a lot of pressure in a live situation."

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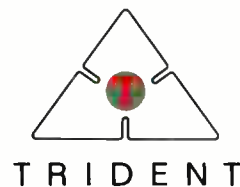
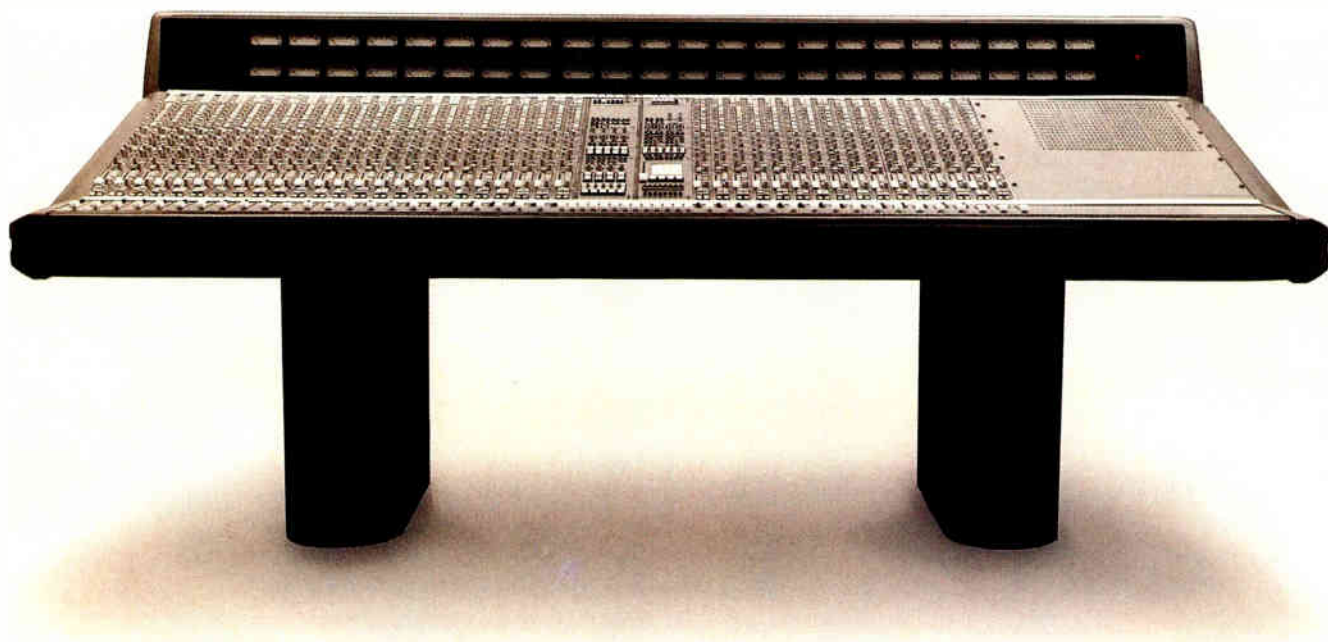
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GOIN' MOBILE

Boston

Lonnie Bedell, owner

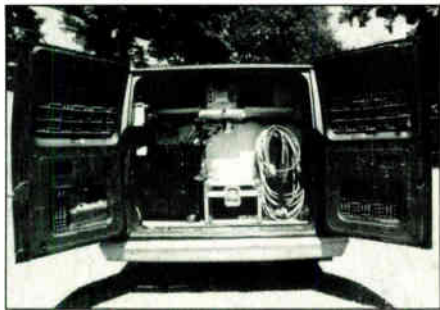
Lonnie Bedell works the East Coast from New England to Florida with his mobile unit. His setup is modest compared to some of the major players: He uses a Tascam MS-16 1-inch 16-track, with Seck 1882 and Hill Multimix consoles in his 1987 Ford D-

150 van. But he's found a niche for himself. Bedell says he's been doing a lot of gospel work lately. "I just recorded a 30-voice gospel choir in a church in Washington, D.C. I'm going back there next week to record a rock 'n' roll band. I do mostly record projects now. Here in the Boston market there is no major label, so I'm getting regional acts working better clubs for

PHOTO: PAUL POTYEN



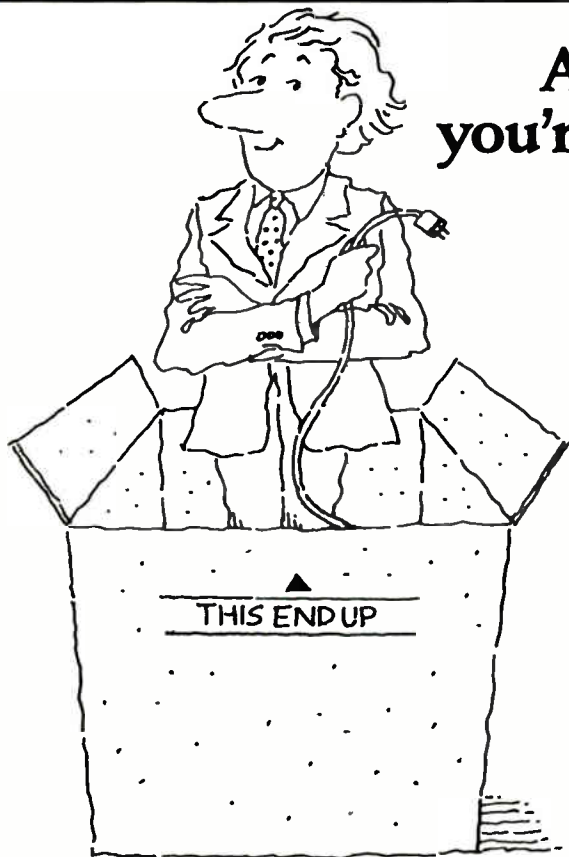
Bud Spangler (left) and Ron Davis on location at Kimball's, San Francisco.



SYNTROPY AUDIO IMAGES LIVE-TO-DAT, SANS TRUCK

Syntropy Audio Images became involved in remote recording about five years ago with a contract with See's Candies to record a weekly program of live jazz performances in the San Francisco Bay Area on KJAZ, called "See's Sunday Night." It began with live broadcasts of the Turk Murphy Band; producer Bud Spangler, also an announcer at KJAZ, and engineer Ron Davis have since branched out with the remote equipment. "We just completed our

—CONTINUED ON PAGE 166



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independent labels.”

Bedell describes his monitoring environment as “tight... My only monitors are a pair of Yamaha NS-10Ms. I mount the video monitor above my head and the two speakers to the left and right, pretty much in a 3- to 4-foot equilateral triangle. When I close the doors of the vehicle, I get pretty good isolation from the source. It’s got fiberglass in the walls, with a wooden interior, although a lot of that is for heat reasons rather than for sound, and the van seals pretty tight. It’s really not much of a problem.”

Bedell feels the van is designed well for his needs. “There are channels that run up and down, left and right for the wiring, and lips under the back doors allow me to put the cables down under the doors and close them. There’s also a good layer of foam under the truck bed, so it’s not as susceptible to shocks as one might expect.”

LE MOBILE

North Hollywood, Calif.

Guy Charbonneau, owner

Guy Charbonneau designed and built Le Mobile back in 1976, and when asked to talk about what factors he

took into account in creating his monitoring environment, he quipped, “It’s hard to remember that far back. Any truck will have natural vibration characteristics, and a remote truck is not as solid as a normal truck. You have to put in isolation and the normal plywood and finishing. I made sure the shell was very sturdy. Basically, it is a box, and when you put a speaker inside you don’t want it to become another speaker box. The kind of wood we used was very dense plywood. Normal ply is like 8-ply and this is like 12-ply for the same thickness. So that’s the first thing: Make sure that the box is solid structurally. That may be why Le Mobile sounds different from other trucks.”

Charbonneau also designed his custom speaker enclosures so they wouldn’t touch the walls. He says most remote trucks are set up for close monitoring. “When you set up three feet or six feet away, you hear a midrange and a tweeter and a woofer, rather than a blend. I prefer listening from farther back.”

He recently modified his JBL 2450 monitors. “They really show you whether the sound is wrong or right. We’re also using the Meyer HD-1 mon-

itors. They flatter the low end, but they’re very pleasant. The Meyer monitors give you a nice other perspective of the sound. I like the combination of the two.

“Some people are building 40-foot trailers and I don’t understand why—I don’t think it’s necessary. If I were building a truck today, I would build it in a 30-foot trailer—five feet more than my box.”

MIDCOM REMOTE SERVICES

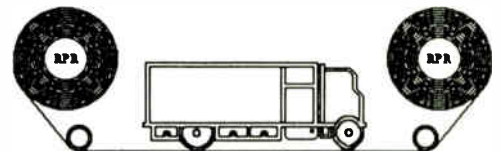
Irving, Texas

Mike Simpson, president

This Dallas-based company ordered a GMC 24-foot straight truck and completely rebuilt its innards. Mike Simpson explains: “We built the truck from scratch—the aluminum enclosure is custom-built. The walls are covered with acoustically hard and soft panels that alternate—this breaks up any reflection.” The truck has a Soundcraft TS-24 console, two Otari MTR-90 24-tracks and Westlake BB5M-6 near-fields for critical monitoring. “Our big speakers—the JBL 2430 Bi-Radials—are bi-amped with Hafler amps. We EQ using a 1/6-octave equalizer by White Instruments, and we tune to a pink noise source.”



Circle #074 on Reader Service Card



Record Plant Remote

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"Our biggest problem is low-frequency information, like a freight train rumbling past or a dumpster being emptied," Simpson explains, adding that they can't do much about it except take isolation to extremes: build cinder block walls with fans in them, for instance. "Of course, then the truck would be so heavy we couldn't get it across state lines."

The company has recorded shows as far north as Wisconsin and as far south as Florida, with credits ranging from a Metallica live radio broadcast to the 1989 Miss USA Pageant for CBS-TV. Most recently, Midcom recorded The Cure's mammoth, two-and-a-half

hour shows in Dallas and Atlanta for an upcoming live album.

RECORD PLANT

Los Angeles

Mark Eshelman, remote manager

At the Record Plant, L.A., Mark Eshelman operates two remote trucks along with head engineer Bill Dooley. Recent projects include Soul Asylum, the Academy Awards, the Grammys and a digital project with Crazy Horse. Monitors are JBLs in one truck, Meyers in the other. Both trucks have API consoles.

The front of the truck is softened

—CONTINUED ON PAGE 166

—FROM PAGE 44, TIPS

side to side. (By the way, put the board back in stereo once you get the equalization correct.)

There are two ways to keep in touch with what's going on up on the stage: a video monitor with a camera angle of the entire stage and a crew member with a headset onstage. Get ready for a mic check, it usually goes by *fast*.

Most engineers have a basic idea of some overall equalization on particular instruments, for instance, elimination of midrange and addition of highs on tom toms. Go ahead and set up the equalizer for what you might think it will be. This is a bit of second-guessing, but it'll speed things up later. Don't engage the EQ yet.

Now here comes the house soundcheck...

Quickly, as each mic is checked for the house sound, de-trim to higher mic pre levels so the fader null point produces a -2 meter reading. Performance level and mic check level are very different beasts. Normally, you can expect only a few hits of each drum, so you've gotta be fast and ready.

Now here comes the band, if you are able to actually get the band. No matter what you do, always ask for the band to play the first song of the concert last at soundcheck. Record the last few songs of the soundcheck onto the multitrack. Since the last song represents the kickoff song, you can finesse the monitor mix before the show actually starts by mixing from the tape. It also gives you a chance to check out any problems in solo at your leisure before the performance.

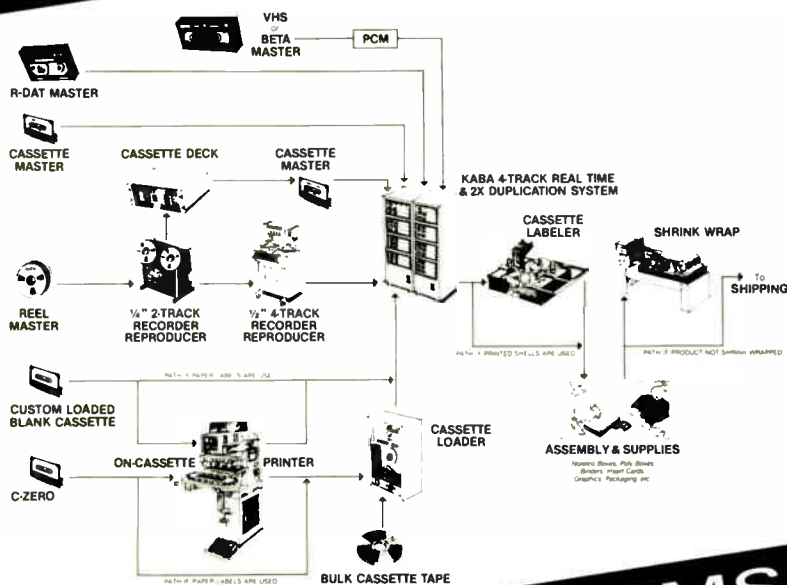
When all is said and done, nothing is more important than good documentation. My suggestion is that you generate SMPTE code on track 24 and have an assistant document each title with a time code address on the box. Make sure good track sheets and comment sheets are included for each song. Mic and equalization information helps in the event you might need to overdub a line or two later.

No matter what, stay cool. ■

Gary Platt is currently the vice-president of Platinum Post in Winter Park, Florida.

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Hi-No Silver!

David Hewitt Gets Back on Track

After his 24-foot recording truck was totaled in an accident last year, David Hewitt of Remote Recording Services (Lahaska, Pa.) went back to the drawing board—literally—to design a new one to meet the demands of '90s recording. Dubbed "Silver" (after its color, though coincidentally producer Jimmy Iovine's nickname for Hewitt is "The Lone Ranger"), Hewitt's new environment is a 44-foot tractor-trailer.

"In this day and age, there's so much gear, and we do such a wide variety of work, we need all that space," Hewitt says. "This thing was designed from the ground up specifically for remote work; it's not something that was adapted to be a remote truck. It has extensive patching and interconnect capabilities, with two 19-inch patch bays that go to about the 7-foot mark. There's extensive video patching as well. We have tielines every-


where—video, audio, phone."

The console is the new, all-discrete 48 x 48 API, equipped with Massenburg groupings to avoid VCAs. "There's a computer-controlled I/O matrix that allows you to store all those settings and do recall. This is *real* recall for the live situation, not just calling back the mix on the faders. It's really great for this kind of work." The principal recorders are Sony 24-track digital, "although one of the interesting things about the truck is that it will accommodate four or more 48-tracks. Everything's set up with DL patching. The truck also has Studer analog machines because we still do a lot of that kind of recording, with Dolby SR. Then, if we need the digital, they just live across the aisle. With Pink Floyd, we used both 32-track digital and a 24-track analog. That used be a nightmare, but in this truck we can do all the submixes and lockups easily."

For monitors, Hewitt and company decided on KRK units (designed by Keith Klawitter of Huntington Beach, Calif.). "We did a sub-

stantial amount of listening to various monitors the last couple of years, trying to come up with something that would do what I'd call an 'interdisciplinary style' of reproducing sound, because we do such a broad range of work. Here I am, doing [Wagner's] *The Ring* at the Metropolitan Opera, but we also do acts like the Rolling Stones and Pink Floyd, and we have some gospel work coming up. It's always been difficult for us to reproduce rock 'n' roll on the kind of speakers that the classical and jazz clients want to hear, because the music is different and the demands are different. But the technology has come a long way in the last couple of years, and I did finally come across these KRKs [Model 15A-3], which are able to make the transition easier. They're 3-way, and comprised of a 15-inch woofer, 7-inch midrange cone, and two 1-inch tweeters. The big advantage is they're all-cone. It's a very smooth sound, yet they can do the punch at the bottom end. They give

—CONTINUED ON PAGE 167



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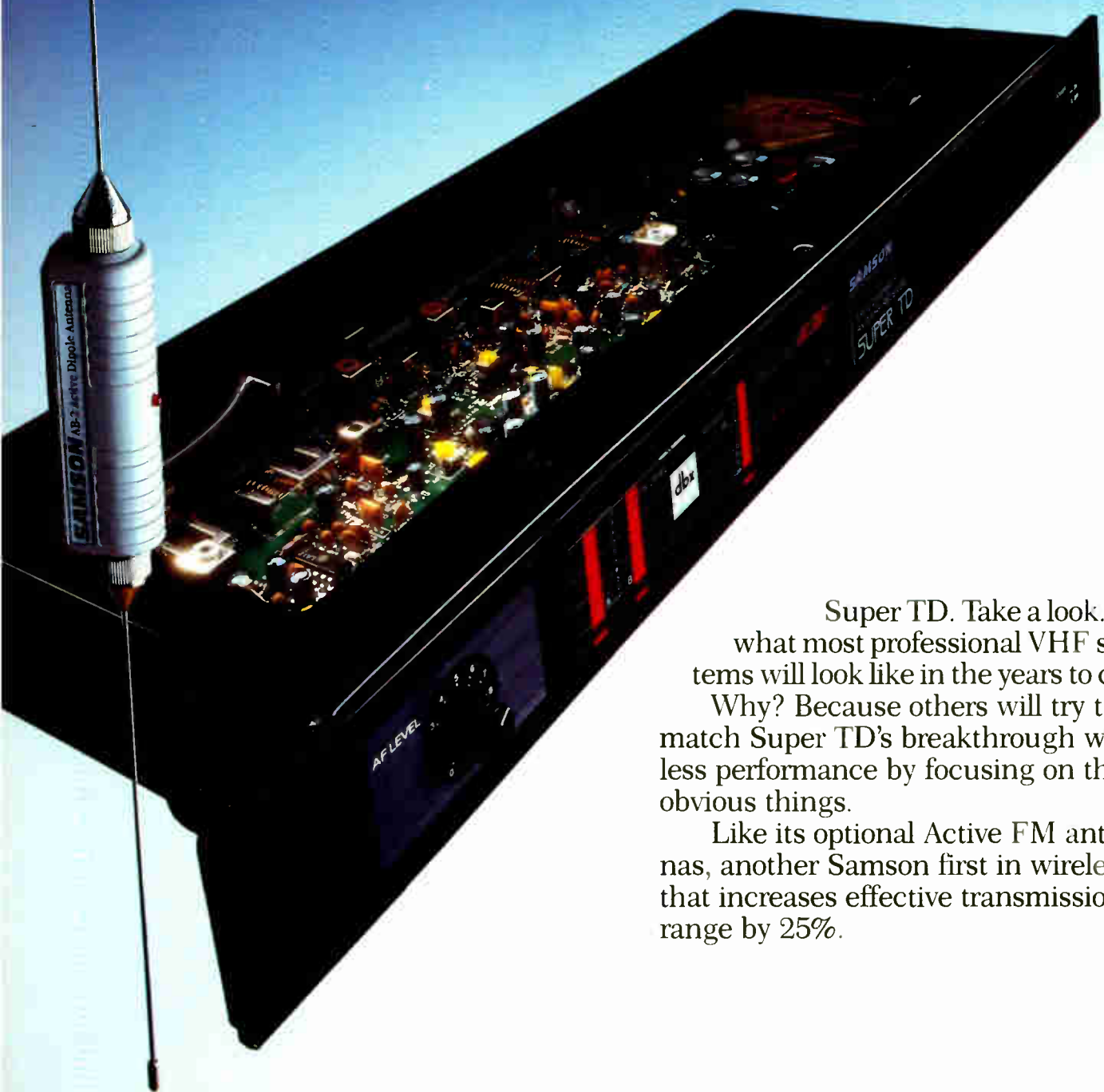
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screens of information coupled to 143 minutes of Mozart's *The Magic Flute*.

WNM's first Audio Notes release uses an Apple Macintosh and a CD-ROM drive that also plays CD audio, to enrich the musical performance with additional music examples, spoken narrative and visuals. A HyperCard stack allows the user to explore the opera performance (taken from the original Teldec recording directed by Nikolaus Harnoncourt) with extensive annotation, music commentary, educational examples, excerpts from other recordings and even videodisc control. Other features include additional graphics you can view on a TV monitor when played on CD+G players and the ability to play electronic music versions of the main character themes (if you have a MIDI interface).

The set is available from computer and record retailers for a suggested list price of \$66. Additional Audio Notes releases planned include Stravinsky's *The Rite of Spring*, Beethoven's String Quartet No. 14, Berlioz' *Symphonie Fantastique* and Brahms' *Deutsches Requiem*.



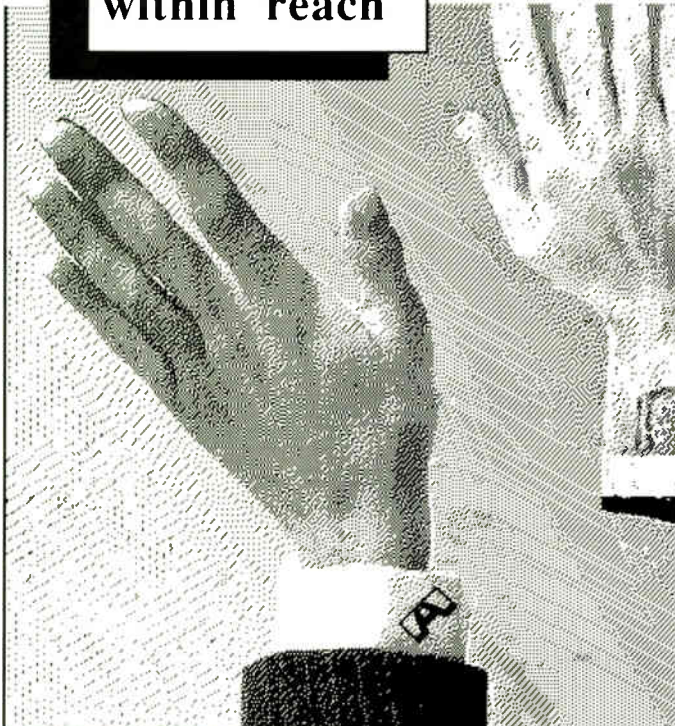
Character themes shown as notation with "Play" buttons.

Farallon Introduces MediaTracks

Farallon Computing, Inc. (Emeryville, Calif.), developer of the MacRecorder digital recording and editing system, is now shipping MediaTracks. This application allows users to "tape" a Macintosh screen session, edit it, add sound to it, annotate it, and play it back in a variety of ways.

MediaTracks is available on floppy disk or CD-ROM format. The latter incorporates the MediaTracks program, ScreenRecorder 2.0 desk accessory, MediaTracks editor and a complete MacRecorder Sound System. It also allows more extensive, interactive, online tutorials; online documentation; and a large selection of demo tapes that have been created using the

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MediaTracks technology.

The program is ideal for training people on things that naturally occur on computers (like complex recording and editing software). According to Farallon, any person who depends on ease-of-creation rather than polished appearance will find MediaTracks to be a valuable tool. While MediaTracks does animation, it should be looked at as a complement to programs like MacroMind Director, which is well-suited to train people on processes that do not occur on a computer, and might be described by animation. It's worth noting that Director can launch other applications, including MediaTracks tapes.

Minimum system configuration is a Mac Plus with 1 megabyte of RAM and hard disk. MediaTracks sells for \$495.

ActionMedia Puts DVI Capability on a Single Board

Meanwhile, over in the DOS environment, Intel Corporation (Santa Clara, Calif.) and IBM recently introduced the first multimedia products developed under a joint agreement. Two ActionMedia 750 boards are part of a new family of interactive digital video technology (DVI) products, enabling developers and users to take advantage of digital video and audio on 386-based computers.

The ActionMedia 750 delivery board compresses and decompresses full-motion, full-screen digital video and audio in real time. By simply adding a delivery board to a personal computer, the user can play back DVI application software.

The ActionMedia 750 capture board converts analog video and audio inputs to digital data for the delivery board to process. Developers creating multimedia applications, as well as end-users who want to compress their own video or audio (e.g., for distribution across video networks) will use both boards.

According to an Intel rep, the delivery board provides an extremely powerful digital video solution at an attractive price. In addition to full-motion video, customers also get audio, fast graphics and a SCSI interface for DVI applications on their PC for \$1,995.

New software programs, including ActionMedia 750 Production Tools and ActionMedia 750 Software Libraries, are also available. Production Tools, such as Intel's RTV 1.5 (30-fps real-

time motion video compression software), enable developers to produce video and audio data files for applications. The software libraries implement Intel's Video Application Programming Interface (VAPI), a collection of C language functions for application programming.

MEDIAscript Offers Design Tools for DVI

Network Technology Corporation (Springfield, Va.) and Arch Luther Associates have joined forces to publish and continue developing MEDIAscript, a set of multimedia application design tools for DVI tech-

nology. MEDIAscript is a powerful, new productivity tool for existing DVI developers and will open up DVI development opportunities for the next wave of DVI publishers. MEDIAscript enables publishers to develop full-featured multimedia applications without C programming.

Described as an interactive environment for developing, testing and running DVI applications, MEDIAscript includes its own application design editor, presentation design tool, pixel paint tool and run-time presentation module. It allows developers to integrate full-motion video (RTV and PLV), images, graphics, audio, anima-

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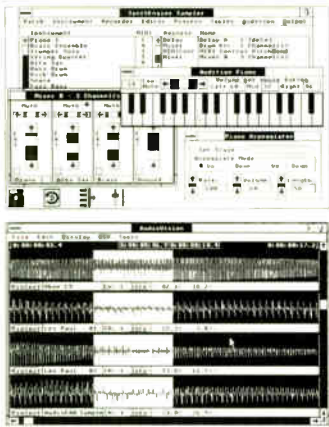
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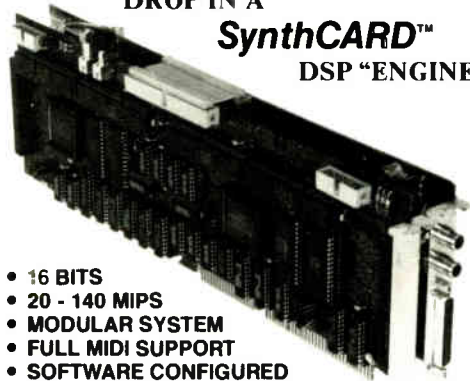
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THE BYTE BEAT

tion, icons and text into interactive applications. MEDIAscript is priced at \$1,495.

Founded in 1983, Network Technology develops products and technology for electronic and optical publishing, offers advanced technology education services, and operates Washington, D.C.'s first CD-ROM and laserdisc showroom. NTC also publishes the LASERTEX META publishing Solutions software. MEDIAscript is being bundled with the Audio Video module of LASERTEX.

Seybold Hosts Digital World

The Seybold Digital World conference will take place June 26-28 at the Beverly Hilton Hotel in Beverly Hills, Calif. The program will feature conference sessions and informal handsets and prototypes.

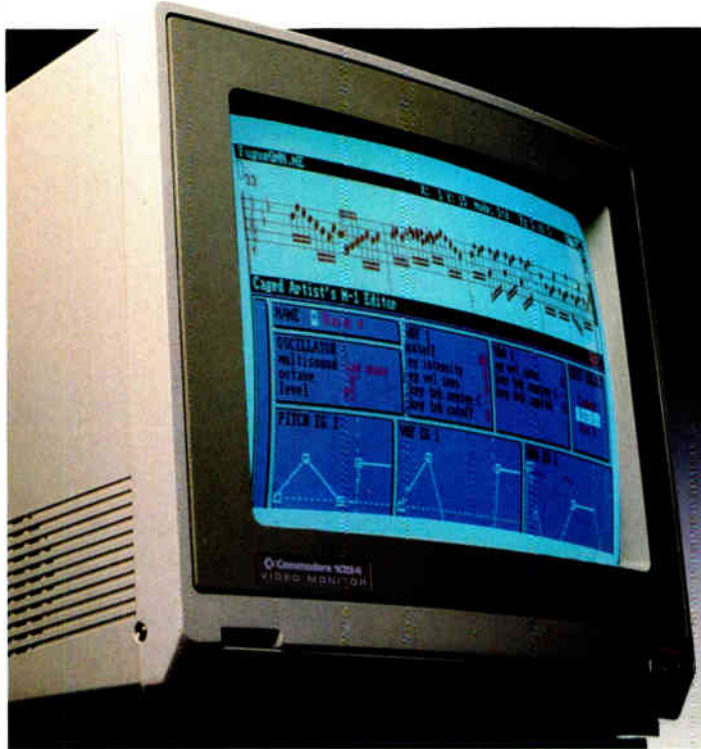
The conference is intended for developers, strategic thinkers, implementers and window-shoppers—people who are actively engaged in one or more aspects of the field and people who would like to learn something about what is happening, how "real" this technology is, what is really involved in putting it to work, and what it might mean for them and their organizations. For more information, contact Seybold Seminars at (213) 457-5850.

Interactive Communications Society Schedules Round Table

The International Interactive Communications Society is a membership organization representing the allied fields of computer science, instructional design, multimedia production and communications, with more than 25 chapters around the world. The New York chapter has organized an industry round table that offers the opportunity to see all the latest products from leading industry vendors. The event is scheduled to take place in New York City in June. For the latest information on the round table, call (212) 533-5166. For IICS membership information, call (408) 866-7941. ■

Mix associate editor Paul Potyten invites readers with interactive tendencies to byte back by writing to him at Mix, or by E-mail, where he can be reached on PAN (Potyten) or ESI Street (IMC736).

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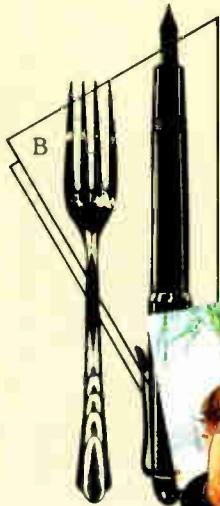
World Radio History

Circle #068 on Reader Service Card

by Mr. Bonzai

WAS (NOT WAS)

BEHAVIOR SELF



Was (Not Was) is a new type of R&B—Rhythm & Balls. As your feet take control and run off dancing, your brain gets whiplash from the lyrics. It's smooth as buttered buns; it's zany on the edge. Their eclectic and critically acclaimed *What Up, Dog?* album featured the Top



10 dance hit "Walk the Dinosaur," "Wedding Vows in Vegas" crooned by Frank Sinatra, Jr., the caressive "Spy in the House of Love" and the corrosive "Dad I'm in Jail." With Don and David Was masterminding, and soul stunners Sir Harry Bowen and Sweet Pea Atkinson interpreting most of the material, Was (Not Was) has at times enlisted the vocal chords of Mitch Ryder, Ozzy Osbourne and Mel Torme.

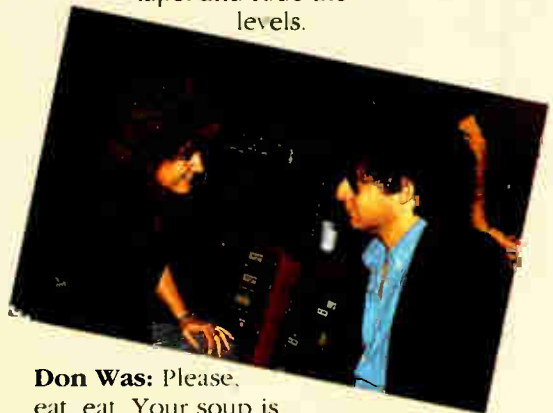
Beyond their unique blend of well-lubricated soul and neo-beatnik outbursts, what surprising and godfatherly producing we get! Bonnie Raitt's *Nick of Time* is an album that sounds good the first time you hear it and winks from the turntable "You wanna hear it again?" And over here we've got Don cranking the propeller on the B-52's and off they go with a "Love Shack" roar. Back there Don and David watch over the historic Roy Orbison/k.d. lang "Crying" session. Upcoming is Iggy Pop via Don, and (let's get ready) Bob Dylan with both Wases at the producing helm.

I dropped by Record Plant, the recording site of her Grammy-winning "Album of the Year," during a photo

shoot of Bonnie Raitt, producer Don and engineer Ed Cherney. After the strobes had dimmed, the three of them gathered in Studio 2 for the first meeting for the much-anticipated follow-up. As a tape of possible song choices filled the control room, Bonnie sang along, sometimes jumping to her feet to emphasize a line. Ed improvised backup as Don considered, nodded and joined in. This was no boardroom—this was a music machine fueled with team spirit.

Don suggested we nip down the street to Mel's for lunch. He ordered two bowls of chicken soup, and we sat down at a picnic table. Mel's is an open-air lunchstand filled with multilingual chow chat and cooks cranked up to maximum volume to boost their S/N over the ambience of a charging herd of trucks pulling up at the Transit Mixed Concrete Co. across the street. "Is this okay?" Don asked.

"Great!" I replied, as I clipped a lapel high on his lapel and rode the levels.



Don Was: Please, eat, eat. Your soup is getting cold.

Bonzai: What is the first music you remember—the first song that got to you?

Don Was: There is a great irony here. The first music I remember hearing was the Broadway cast album of *The Pajama Game*, which my mother played incessantly. It was John Raitt singing, "Hey there, you with the stars

For Left: David and Don share a serious moment. Left: Multi-grammy sensation Bonnie Raitt with producer Don Was at the Record Plant.

PHOTOS MR. BONZAI



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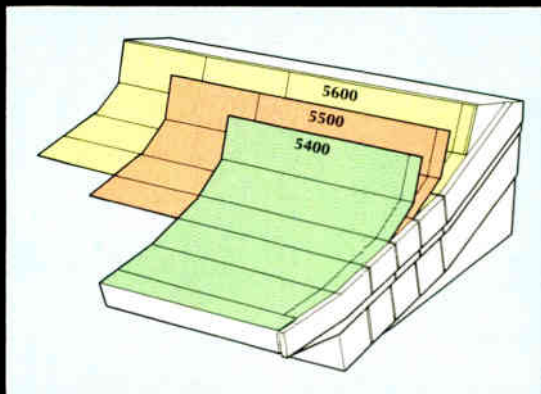
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in your eyes," that first got me. When I first met Bonnie she had me call her dad's answering machine, where he sings that line and then says, "Hi, we're not home now..." I got my mother to call long distance so she could hear it.

Bonzai: The song had a profound effect on you?

Don Was: Well, I guess I felt the need to come back later in life and pay the debt. It probably had no effect on me at all, but it's the first song I remember hearing.

Bonzai: Who was your first teacher?

Don Was: I'm pretty unschooled, actually. My dad went out to the Jewish community center once in 1955 and came back with this old guitar he bought for three dollars. He tried taking lessons, but could not grasp it. It never registered with him, but out of curiosity I asked him what he didn't understand. He showed me a D chord and a G chord, and the guitar was mine after that. I guess he really showed me the beginnings, but I'm sure he never thought of himself as a music instructor.

Bonzai: Who showed you that music could be fun?

Don Was: Actually, I had a terrible music education, but there was one piano teacher in Detroit who I really liked. His name was Murray Jackman, and he played the piano bar at the Playboy Club. He would come to my house and was very cool, and was always trying to pick up on my mother. He was a great influence on me.

I only took three lessons with him, but I didn't really like the discipline of learning scales. I only wanted to play what I felt like playing, and he was the one who said, "Okay, just do it." He explained that everything had chords and if you are going to play a C chord, you might as well be playing *West Side Story* as Mozart. He gave me that greater picture.

I took music classes at the University of Michigan, but I didn't get it. It seemed like everyone was preoccupied with moving up in the hierarchy of the music department. I never cracked the code; I never really got inside of it.

Bonzai: You were a music major?

Don Was: Yes, but just for a minute and then I split. I knew exactly what I wanted to do, and it wasn't happening there.

Bonzai: What exactly did you want

to do?

Don Was: Precisely what I am doing now. It's pretty amazing. I start this record with Bob Dylan in three weeks, and that's exactly what I wanted to do—produce Bob Dylan records. Pretty incredible, and it's been a long time, too. That was 20 years ago.

Bonzai: Where does your music come from?

Don Was: I think it's a combination of having some R&B roots, and then being a little embarrassed being a white Jewish guy imitating it without hedging your bets. This is where you get a Bob Dylan, a guy who is essentially half John Lee Hooker and half Jewish intelligentsia. He's the genetic blend of the two. For second-generation guys with a little consciousness of it, it's hard to throw these roots back, but you have the roots. You can't get around it.

Take, for example, "Yer Blues." The Beatles couldn't quite do a blues song. Lennon had to put his stamp on it, twist it around. Dylan's stuff is all that—essentially roots, blues and folk music with a contemporary twist on it. Zappa added this touch of humor, although I think you can find the humor in Bob Dylan. It's using roots music as a vehicle for rebellion.

Bonzai: You've picked some gentlemen to interpret your music in such a soul-searching way—Sir Harry Bowens and Sweet Pea Atkinson. Is it true that they first thought your material was "sick"?

Don Was: Yes, that's one of the words they've used. But there was a good bond among the four of us from the very beginning. I don't know that they were completely tuned into our nuances, and we certainly weren't totally tuned into theirs. I don't think they got a lot of the stuff, which is the charm of the records. Sweet Pea is not really trying to interpret those lyrics; he runs them through the soul computer.

Bonzai: The words are so great, and they come out so well with their voices. Rhymes like "big producer, cheap seducer."

Don Was: Those are all David's lines. He's an incredible writer. He really hits that borderline. Another step and it would be comical, like Tom Lehrer. He never ventures beyond; he never loses the poetry of it, and yet he pushes it to the extreme. He approaches from such a cockeyed stance and view of life. And I don't just mean songwriting.



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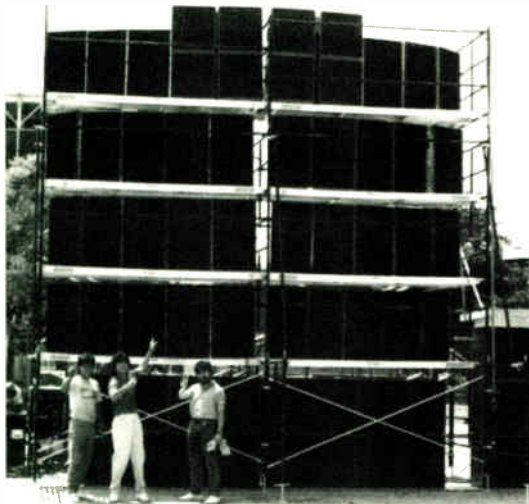
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His view is at such a diagonal to everybody else, and his sense of detail is incredible.

Bonzai: You've had Frank Sinatra, Jr., and Mel Tormé interpret your material. Do they get deeply into the meanings before they agree to sing?

Don Was: In Mel's case, it was the song "Zaz turned Blue," which is a true story with certain liberties taken. A guy named Steve Brown went to our high school and declared to a bunch of us that he had the best scissors hold of anyone in the class. He solicited a volunteer, and Allen Zazlo came forward and was his stooge. So Zazlo submitted to the scissors hold and passed out. Later he became the only kid in our high school class to go off and enlist in the Marines to fight in Vietnam.

Anyway, it's a true story and Mel Tormé was very conscientious about it. We went down to Miami Beach where he was appearing at a hotel. Went to see him, hung out with him and it became pretty clear. Not to overly glamorize, but he's maybe as close as you come in popular culture to being a Renaissance man. Even more than David Byrne. I know it's hard to believe. He's written novels, he's a very good actor, arranger and a well-rounded musician. And for a guy his age—a guy any age—he's really preserved his voice. He didn't hand it away to liquor. He's in full possession of his chops, and he's an intelligent singer.

On the ride over to the studio, he was saying, "Tell me more about this Zaz character." And he did a wonderful job—the first take, and probably the most memorable moment of my life, sitting there having him do this to our song.

Bonzai: I must admit I have laughed while listening to it. It's out there.

Don Was: The desired reaction was that people would start laughing, but the smile would slowly slide off your face. You'd think maybe he's serious. "What is this?" That's the ultimate reaction. If people can ask that question, then I think we've made some successful music. The people I admire are the ones who have defied categorization. The stuff that lasts is clearly that.

Bonzai: Here comes another cement truck. This must be the noisiest corner in Los Angeles.

Don Was: It's a "vibey" corner.

Bonzai: *What Up, Dog?* was named one of *Rolling Stone's* Top 100 albums of the decade, but it probably doesn't fit most record company's concepts of a consistent sound.

Don Was: Yes, we've been called "marketing nightmares" to our faces, if you can imagine that. If you really stop to worry about that you'll make some boring records, and you may sell some.

People who are inspirational to me are guys like Leonard Cohen, whom you interviewed, and people outside of music, like filmmakers, novelists. It doesn't matter if they are trendy or not. They do a body of work. Some things are better done than others, but if you are looking for a 25-year run at the stuff, you'd better lift yourself out of this trend thing or you go down with it.

Bonzai: Another cut, "Can't Turn You Loose." I love it when Sweet Pea has to quiet the band down. And the audience is going nuts, like at a James Brown concert. Was that really recorded live?

Don Was: No, not in concert. If the truth be told, the applause comes from a Tears For Fears record. You should

have been with us the day we recorded. We were on a frantic search in London for some applause. We searched through the tape vaults, and finally our A&R man, who also works with Tears for Fears, said, "Wait a minute. I can get some applause for you." He bailed us out.

It felt live; it was recorded live in one take, and everyone was playing



at once. We just needed something to cover up a little tape hiss and thought, "Why not?"

Bonzai: Tell me about the 12-inch remix you did for the Rolling Stones' "Rock and a Hard Place." Why you?

Don Was: I don't know why me. Mick Jagger is a very cool guy, by the way.

I read all the stories and expected a prima donna to be on the end of the line, but he was very courteous and very intelligent. He was in the middle of doing this tour, with shows that were as elaborate as anything that has ever been performed. And he still had time to do a lot of work on this 12-inch. He phoned in, took updates every two hours.

"Rock and a Hard Place" is 140 beats per minute. He said he wanted it to be played in dance clubs. I said, "Nothing at 140 beats gets played." So we did an elaborate procedure on it, slowing it down to 120 beats a minute. Of course, everything was unlistenable. We had to find the proper harmonizer to bring the voices and guitars up to pitch. Once we did that, we called a drummer named Pat Mastalatto, who plays with Mr. Mister. He came in and beat a quarter note to the track on the bass drum, because the time moves around—it's where the feeling of the thing comes. Once we had quarter notes laid down, we hooked up the Human Clock and replaced all the drums and bass and added keyboards. There's even a mix with no guitars. We did a straight club thing. A pretty outrageous overhaul.

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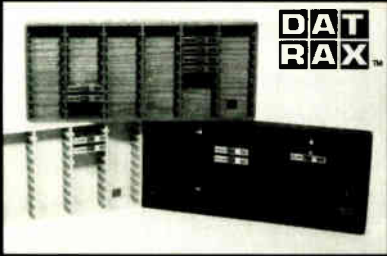
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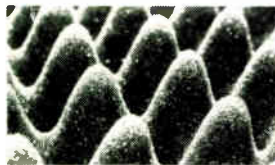
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LUNCHING WITH BONZAI

Frankly, as a Rolling Stones fan, if I had heard it I would have hated it. But I did what I thought was necessary to have it played in a club. That was my portfolio. At the end, Mick Jagger called up and said, "You did everything I asked you to do, and I really hate this." I said I understood and suggested he go test it in a club. His calls started trickling in, leaving messages, mentioning things he sort of liked. He was really sweet and was trying hard to like this thing. "That section there with the repeat voices, that's good."

They pressed records, but I think it's too radical a departure. It's a sickening thing to do to a band. I don't think they shipped many records, and no one has said anything to me about it. I don't think people have heard it. It's a pretty interesting record.

Bonzai: Has Bonnie's album had a big effect on your career?

Don Was: The biggest effect has been learning the value of live rhythm dates. I never did live rhythm dates before—I'm an overdub baby. I crossed an important threshold on that album when I learned you don't listen to a rhythm date the same way you do to overdubs that you are putting into a sequencer. You gotta see the forest and not examine each tree. It's difficult to do, but somewhere in the middle of that album it made sense to me. From that point on, I've really enjoyed doing rhythm dates. It underscored the most basic thing. It hits you going into the music. If you find a good song and sing it well, people will respond to it. You can get lost in the digital delays and all the other stuff.

The most important thing is that Bonnie sings well. She projects her character well. She's real good. It's as simple as that.

For me, the importance in that album was learning restraint. People talk about Sonny Rollins and how the spaces are as important as the notes. It's the same in producing that record. The holes are in there. It gave me a little courage to keep it bare. You make your point.

Bonzai: Do you have a distinct idea in mind when you start a producing project, or does it come in the ensuing chemistry?

Don Was: I'm loath to get into something if I can't hear it first. It's like Hitchcock used to do elaborate plan-

ning. I don't go to that extent, where I have to hear every guitar part beforehand, but if I can't imagine what the overall texture will be, I figure I have nothing to offer. That is the luxury of having the success with Bonnie's record. I can now actually go after people who I have a feeling for. I'm working with Iggy Pop right now, and I grew up on The Stooges. They played at my high school. I knew what his records should sound like before I met him. I was hoping I'd get a chance to produce him, and I met him a year ago. It seemed very natural, and the record is what I hoped for.

I think you go in as a fan. That's the best producer—someone who is a fan. If you are a teenager and you're waiting for the next Duran Duran or Beatles record, you're hoping it's going to be a certain way. You can hear it in your head. I used to dream the next Bob Dylan album, the next Beatles album. I wish I could have woken up and written down the songs. I dreamed whole Beatles songs that never existed, because I was so excited about what was coming next. A producer should have the same enthusiasm, the same insight.

Bonzai: Did Dylan come to you, or did you come to Dylan?

Don Was: I guess he came to me. I met him last summer. Afterward, I got a matter-of-fact phone call from someone in his organization: "Bob was wondering if you would work on a song." It was pretty cool. We did one song with Stevie Ray Vaughn, Jimmy Vaughn, David Lindley and Kenny Aronoff. It worked out well, and we're going ahead with the album. Listen, let's get back to the studio. You gotta talk with David.



Back at the Record Plant, tapes were cued for a commercial Don was producing with singer Ava Cherry. After a brisk agency meeting, Don took me upstairs where an artist was presenting graphics for the new Was (Not Was) album cover. He introduced me to David, and we stepped out to the roof garden for both barrels.



Bonzai: This "Was (Not Was)" name has not been explained to me.


David Was: It's the distributive principle, actually. As in "Was (Not Was)

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= Was Not + Was²." It's sort of algebraic.

Don Was: We took our monikers in the same sense as if the Beatles had called themselves "John Beatle," "Paul Beatle."

Bonzai: And there is some flexibility there, too. I noticed on one album you are known as "Don St. Was" and "David St. Was."

David Was: We went to Geffen Records and we thought with the label's classy image, we should class our act up, so we took on the aristocratic "St." names.

Bonzai: The war between computerized music and human music: What can computers do better than humans, musically?

Don Was: I don't think computers are musical. What they do is remember 10,000 DX7 settings better than humans.

Bonzai: Will things change with the development of artificial intelligence? Will it put that elusive human factor into computers so we won't be able to distinguish between the two?

Don Was: I don't see how. I can't see how you could turn zeros and ones into that.

David Was: Let me put it to you this way. If you are after something that reflects the coldness and the alienation of being in a world that is dominated by things—computers are so rigid in the music-making process—then you should take advantage of it.

I had my best luck with sequencers when I turned the volume down while I played and created a groove. It's like throwing Velcro notes against a Velcro catcher's glove. Without intelligence or reason playing a role, this thing snags onto little impulses you make with your hands. I've always insisted that if you put a family of gorillas in a room for six months with some good electronic gear, they would come up with Prince's *The Black Album*.

Bonzai: David, you were once a jazz critic.

David Was: Yes, on my way to somewhere else. I really never meant to be one, and I apologize to the world for being one.

Don Was: I think you only need apologize to Chick Corea, who you so mercilessly lambasted.

David Was: Well, he wasn't alone.

— CONTINUED ON PAGE 179



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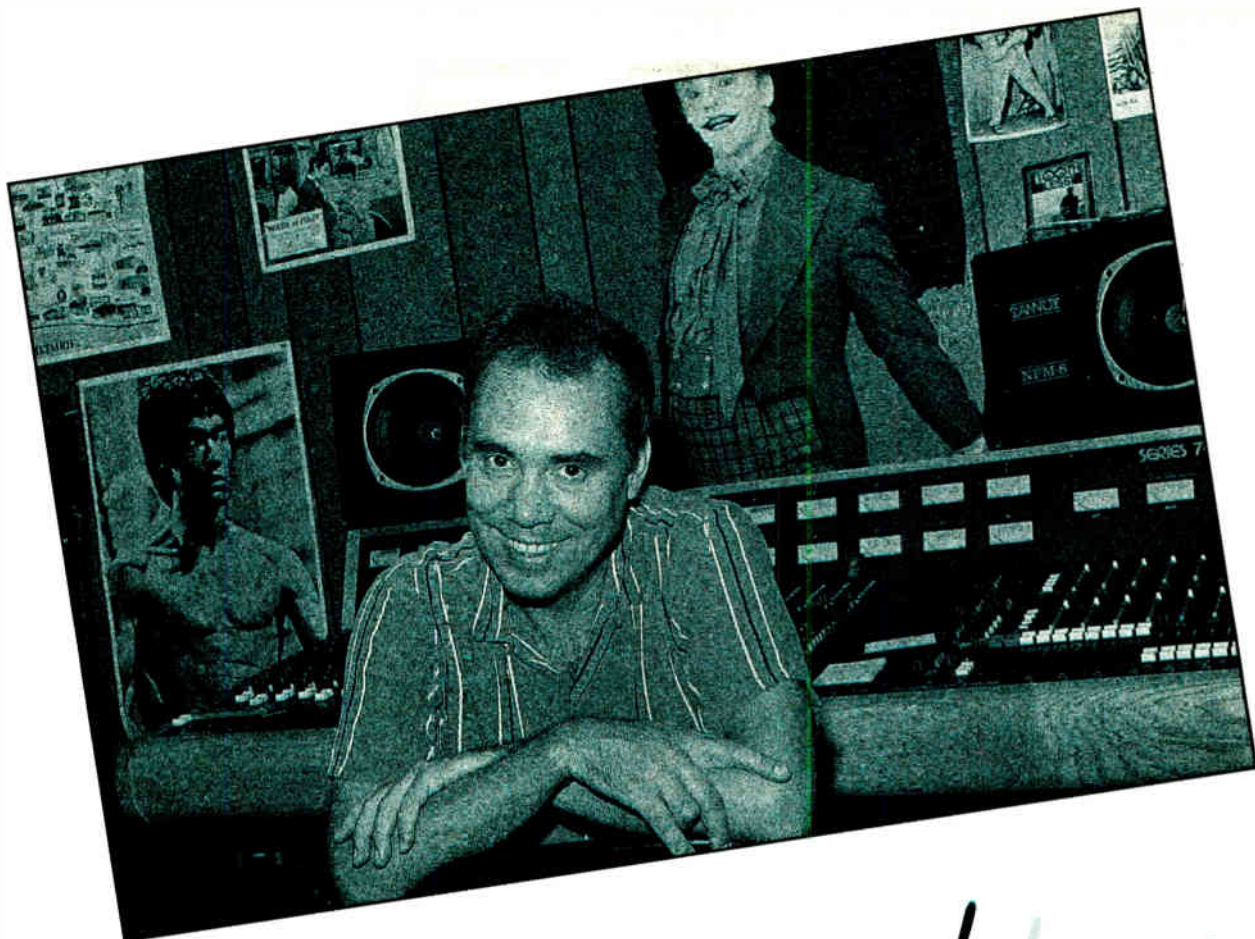
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Throughout the '70s, engineer/guitarist Mark Bingham was closely identified with New York's so-called Downtown scene, having worked on projects by underground pop groups like Bush Tetras and experimental music mavens like Glenn Branca. Also during that period he kept busy composing music for dance companies and performance artists like Michael Smith. The transplanted, small-town Hoosier was right at home on the cutting edge and seemed quite content in his tiny studio apartment on Manhattan's Lower East Side. But a trip to the New Orleans Jazz & Heritage Festival changed all that.

Bingham fell in love with New Orleans, with its toe-tapping zydeco bands, delectable cuisine and more leisurely, unpretentious atmosphere. He moved there in 1982 and since then has kept busy as an in-demand engineer for live remote sessions from such clubs as Tipitina's in New Orleans and Richard's Club in Lawtell. He also gets called by National Public Radio to record segments of the annual New Orleans Jazz & Heritage Festival and has close ties

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with both Black Top and Rounder Records, frequently recording their artists (check out Black Top's *Blues Arama, Vol. 1&2*, recorded in '88 at Tipitina's and Rounder's *Zydeco Live! Vol. 1&2*, recorded at Richard's).

Another ongoing relationship is with his longtime pal, producer Hal Willner. Bingham worked with Willner on the 1984 Thelonius Monk tribute album on A&M, *That's the Way I Feel Now*, and he also helped engineer and arrange some tracks for Willner's 1985 tribute to Kurt Weil on A&M, *Lost in the Stars*. Last fall he finished working on Willner's latest project, an album of Allen Ginsberg's poetry set to music, *The Lion for Real* on Island/Great Jones Records. Most recently, though, he put out his own solo album of renegade guitar music and eccentric songs—*I Passed for Human*—for Dog Gone Records, a label based in Athens, Georgia. Willner co-produced the disc, which was recorded primarily in New York and Dallas.

Bingham currently works with his partner, Jay Weigel, out of Pelican Pictures Recording Studios, located in the warehouse district of New Orleans. Their main console is a 24-channel Trident Series 70, which they use in conjunction with a 16-channel API-550 console.

For remote recordings at nightclubs and on location at the New Orleans Jazz and Heritage Festival, Bingham works with Omega Audio of Dallas, which provides a mobile unit with a 32-input API console and two 24-track analog Studer machines. Recent projects using the Omega truck included performances at the 1990 festival by Little Feat, Dr. John and the Neville Brothers for the Japanese NHK television network; a performance by bluesman Champion Jack Dupree for National Public Radio's *Blues Stage*; and a live performance by the venerable dixieland banjo player Danny Barker for Orleans Records.

Though the Omega truck is fully equipped with gear and support crew, Bingham finds that the challenge of each remote session is adapting to the acoustic environments of each nightclub and dealing with the widely varying frequencies generated by such exotic zydeco instruments as rub-board and accordion. And more often than not he doesn't have access to the Omega truck for the lesser-known local acts he wants to record, and he finds himself using considerably more humble portable gear.

The local Mardi Gras Indians, who perform their drums-and-chant music in ceremonial feathered garb, represent a particular challenge to engineer Bingham: "There was one session I did with a group of Mardi Gras Indians called The Golden Eagles [*Lightning and Thunder* on Rounder Records, recorded live at the H&R Bar in New Orleans]. You really have to improvise on a gig like that, as a sound man. We did it over two nights, and it was interesting because they had a very unusual setup. They have no bass in the band and they use a 16-inch floor tom as a bass drum, played with a mallet. So there's no low octave on anything. The problem was how to make sure that the lead singer, Mark Boudreaux, would be heard above the clamoring of seven percussionists banging on congas and tambourines and cowbell."

His solution was to use a Sennheiser 421 on the lead vocalist, Electro-Voice RE20s on the three backup vocalists, Beyer 88s on the percussion and two Crown PZM mics hung over the bar about 15 feet from the band. "A lot of times when you hear the Mardi Gras Indians," he explains, "you can't really hear the call-and-response singing too well, so that was a major concern of mine."

For a recent live recording of the Rebirth Brass Band, due out in September on Rounder Records, Bingham had to figure out how to get an accurate recording of the six brass players and two drummers doing their thing at the Glass House, a local New Orleans spot that also spawned the Dirty Dozen Brass Band. "The problem with a brass band is that they move a lot when they play. They don't just stand still and play into a mic. They're bobbing and weaving and dancing around as they play. So the challenge was to get a good recording without inhibiting or affecting their normal performance."

The answer was to use lavalier clip-on mics on the horns so they could run around. In addition, Bingham placed two B&K 4007 omni mics and two Neumann KM84s in front of the group and also put up four PZM mics on the walls of the room to pick up the house sounds, including several of the Mardi Gras Indians planted in the house who were playing cowbells and beer bottles to fuel the party groove.

For his two-volume zydeco set at Richard's in Lawtell, Bingham had to improvise some last-minute construc-



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tion on the club. "We had to implant wooden two-by-fours and two-by-eights into the beams to hang the mics, because the secret was to record them without them thinking they were being recorded. So I kept it simple. The ceiling was literally seven feet high. I used a Neumann KM84 straight over the whole drum set, and I had an RE20 on the kick drum and a Shure 57 on the snare. Then I put AKG 414s on the two pillars out front of the stage, which ended up catching a lot of the drum sound.

"There were Countryman direct boxes on the accordion and bass, and basic Shure 57s on the guitar amps. Nothing on the rub-boards. That was picked up by the AKGs on the pillars, and it's so searingly loud, anyway. So the band was basically playing to the level of the drums, which is an oddity in this day and age. The bass drum and snare drum were not pumped through the P.A., as they usually are in concerts. So that was real old-line stuff, recording-wise."

One item that Bingham relies on heavily for these thrown-together club affairs is the Neve stereo compressor/limiter. "That is the sort of savior of all these live recordings," he explains. "It

tends to bring a focus to things that otherwise might be a problem. In general, my attitude about these recordings is the fewer wires the better. But sometimes you have to do some very unnatural things to get it to sound natural. Sometimes you can use mondo compression to get it to sound like it really sounds in the room."

He uses digital reverb sparingly, relying on Yamaha's REV7 and SPX90 units for ambient room reverb, and a Lexicon PCM-70 and Alesis MIDiverb for more subtle effects.

"You try to get a reverb that approximates the size of the room you're in, then the other stuff is just trial and error on the gig—totally spontaneous," he says. "Of course, you don't want to put an eight-second reverb in the middle of a blues band, so there are certain rudiments that you do follow. Scoping out the proper reverb is an art in itself, and the particular settings really depend on the music, the size of the room and the dynamic range of the band. So you have your rudiments and rules, but you often break the rules to get something to work."

For the more cavernous Tipitina's club, Bingham worked closely with

the house soundman, Charles Brady, who also works as sound engineer for the Neville Brothers. "He'll come in and get it to sound good in the house and also set up the monitors," Bingham says. "So he really makes my job very easy because if it feels good to the musicians then it's going to go down on tape well. That's the key to all these live recordings down here. I have found that the most important thing to getting a successful recording is interacting with the musicians. Getting a good performance out of the artists is ultimately far more important to me than any technical considerations. A great performance recorded on a Sony Walkman in the audience is better than a stale performance recorded on state-of-the-art equipment. So I generally take the 'raw is fine' attitude. I have no interest in trying to shine up bad material.

"I think the essence of engineering is getting good performances out of people and getting it on tape without interfering with them. That's really what I like to do as an engineer—no punching in, no remixing—just get it on tape. I really prefer that to working on overdubs in the studio. Being an engineer in a recording studio is like being a plastic surgeon. I prefer the live thing."

Like Chris Strachwitz of Arhoolie Records (another modern-day disciple of ethnomusicologist John Lomax), Mark Bingham is helping to preserve timeless, human sounds in a digital age. He's worked in small garages with 8-track recorders. He's had to cope with the confines of a 7-foot ceiling, the utter chaos of drunken crowds in out-of-the-way roadhouses and the uncertain acoustics of tiny blues bars. Occasionally—make that *rarely*—he's had the luxury of Sony DAT machines and AMS digital reverb. But he gets by, applying the N'awlins motto: "Whatever works, works."

Which is quite a challenge on the limited recording budgets he's usually faced with. As Bingham puts it, "What I have to do is work under conditions that are worse than most rich kids' home studios, and I'm supposed to get records out of them that sound as good as Michael Jackson records. That's what I'm given most of the time."

A thankless task, but somebody's gotta do it. And so far, Bingham's been doing just fine. ■

Bill Milkowski is a Brooklyn-based writer.

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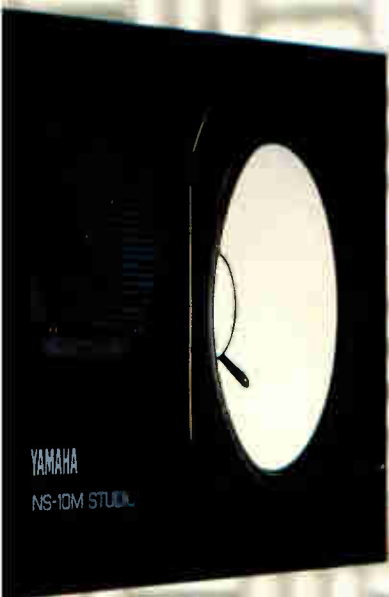
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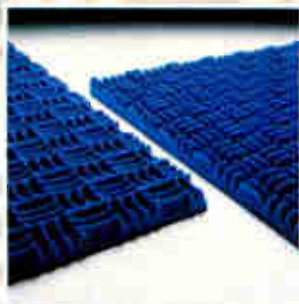
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by Iain Blair

DAVE EDMUNDS

BACK TO BASICS

It's been some 22 years since Welsh rocker Dave Edmunds first roared up the charts as a member of the band Love Sculpture with his turbo-charged version of Khatchaturian's "Sabre Dance." Since then, the 46-year-old singer/guitarist/producer has had a long and distinguished career spanning solo hits such as "I Hear You

Knocking" and "Queen of Hearts," as well as a tenure with Rockpile, the forceful and hard-rocking quartet formed with Nick Lowe, Terry Williams and Billy Bremner.

During the '80s, Edmunds also emerged as one of the most in-demand producers in the music business. His recent production credits include



PHOTO: DENNIS KEELEY

albums for such diverse artists as the Everly Brothers, Dion, Stray Cats, k.d. lang, Status Quo, Shakin' Stevens and Mason Ruffner. This winter he completed work on a new album for his old mate Nick Lowe, and after a five-year absence as an artist, he released a new album of his own, *Closer to the Flame*. Self-produced, and nearly two years in the making, the album is Edmunds' first effort for Capitol Records, and as might be expected, it's a fiery celebration of his rock 'n' roll roots.

Sitting in the Capitol Tower in Hollywood, Edmunds is dressed in black, but in a happy mood nonetheless. He talked to *Mix* about his career, his music, his production work and, of course, his new album.

Mix: What kind of music did you listen to growing up?

Edmunds: Rock 'n' roll was my big influence, especially all the main artists such as Chuck Berry, Elvis, Jerry Lee Lewis, Gene Vincent, Fats Domino, Little Richard, Carl Perkins, Buddy Holly, the Everly Brothers. I loved their music and that sound, that feel, the

moment I first heard it, and it's just stayed with me.

Mix: How did you get started in the business?

Edmunds: I always liked having a band and playing around, and even-

"Some of my favorite records weren't that well recorded, and it really doesn't matter to me. Spontaneity is the vital thing."

ually this group, The Raiders, became the most popular group in South Wales. It was just a trio, and we did quite well. Then I got to know this guy Kingsley Ward, who'd built Rockfield Studio on his farm with his brother, and we made a record there, and then

it got released on EMI. So I got into the business almost through the back door. I didn't move up to London and get a proper manager like everyone else; I just submitted this tape and got a deal that way.

Mix: You were closely associated with Rockfield in the early days. Tell us a bit about the studio and recording there.

Edmunds: It seems that a lot of people think that it was mine and that I owned it. I'm not sure how that story started, except that I always talked about the studio rather than some of the early records. The studio was and still is owned by Kingsley, and we had this idea of making records like Motown or Stax, which were my big influences. It was great fun recording there in the old days, because it was basically just two mono machines in a barn on this farm. Kingsley and Charles, his brother, were farmers, in fact, but they had a band and wanted to make records. So they converted a barn and put in an old Philips machine and an EMI TR90, and we just bounced back from one to the other. We also had a Binson Echo and a Grampian spring reverb, one Neumann mic and a few Shure live mics. That was it—nothing

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Mix: At Rockfield you came up with an instantly identifiable sound on your cover hits of "I Hear You Knocking," "Baby, I Love You" and "Born To Be With You." Can you comment on that sound?

Edmunds: "I Hear You Knocking" by Smiley Lewis was just one of those songs I always loved and wanted to record, and funnily enough, I use the same vocal effect on "Don't Talk To Me" on my new album, with lots of compression and lots of mid-frequency—2.8 and 5.6 are my favorite frequencies. As for "Baby I Love You," I had the same fun building up the tracks the way people do now in home studios, like the Fostex systems. I did everything, from playing to engineering and mixing, so I learned a lot about studio techniques and production. Also, there was no pressure, so it was less a career move than pure enthusiasm. "Born To Be With You" was recorded the same year, in 1973, and again I wanted to do my version of the song but keep it true to the spirit of the original. They sound a bit rough now, but that spirit's still there.

Mix: When you formed Rockpile, what sort of sound did you aim for?

Edmunds: To be honest, we never aimed for anything except going out for a drink afterwards! Musically, I guess we aimed for that real urgent, raw, rock 'n' roll sound that makes you get up and dance, but it was never that calculated. We played and sounded like that because that's how we felt. It was more a case of a bunch of friends who just got together, and Rockpile was the result.

Mix: How did you come to record "Girl Talk" and "Queen of Hearts"?

Edmunds: Elvis Costello was managed by Jake Riviera, who also managed Nick Lowe, and Elvis just gave me the cassette of "Girl Talk" when he came down to the studio one day. Of course, his demo version was vastly different than mine. It was just him on guitar, spitting out the lyrics, very fast and intense. As for "Queen of Hearts," Hank De Vito wrote that. I'd met him through Carlene Carter [formerly married to Nick Lowe], and he was the

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pedal steel player in Emmylou Harris' band. He just sent me the song, along with "Sweet Little Lisa," which I also recorded. "Queen of Hearts" was a big hit in Britain, but they wouldn't release it here, and then Juice Newton jumped on it and used a very similar arrangement, and it was a big hit in the U.S.

Mix: Tell us about your new album, *Closer to the Flame*. When did you start recording, and who's on it?

Edmunds: I started in March 1988. It's taken awhile, but then I was a bit nervous in a way since I hadn't made an album in four years because I'd been busy producing people. I'm also not exactly a prolific writer, and that's not my strong point, so I spent time collecting songs. Then I didn't have a band, so I spent time finding the right musicians to work with. I ended up with Jim Keltner on drums, bassist Phil Chen, who toured with Rod Stewart and Jackson Browne, and keyboardist Chuck Leavell, who used to be with the Allman Brothers and who's been touring with the Stones. I also got The Memphis Horns, which is a group I've always wanted to work with as I'm a Stax fanatic. Then the project got delayed a bit, because in between I was also producing some other albums, such as Nick Lowe's new record.

We recorded my album at Capitol Records, Studio B. We used Studer machines, all the usual gear. In the old days, I was really into engineering everything and knowing all the equipment. Now I don't care so much, and I don't think you can engineer *and* produce, at least not well. So Dave Charles, who also played drums on the album, and whom I've worked with since Rockpile broke up, engineered.

Mix: How would you describe the overall sound of the album?

Edmunds: I wanted to display my influences. Keep the sound a bit updated while preserving that feel of the Sun/Stax era that I think is the best in American music. So it's rootsy rock 'n' roll, with different touches such as rockabilly on "King of Love," gospel on "Fallin' Through a Hole" and R&B on "Test of Love." I wanted a celebration of American music that also sounds current.

Mix: Tell us a bit about your demo procedures.

Edmunds: I hate making demos! I find that when you make demos, you get

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a great feel that you can never recapture on the master, so now I just don't bother. I prefer to work a song out in my head and then just go in the studio and lay the track down. As long as I know I won't waste a lot of studio time doing it like that, I'm much happier trying to capture the moment the first time. You know, I really believe that thinking too much is the worst enemy of any art form. You can overanalyze a song until nothing's good enough, and you lose all perspective.

Mix: Who was the first artist you produced?

Edmunds: I think it was Brinsley Schwartz. It's funny, because I've never really thought of myself as a "producer." It's more just a case of going in the studio and contributing ideas and trying to bring the best out of a song and a performance. So it was rather casual when I started back then, and it was always fun.

Mix: What other artists did you produce in the '70s?

Edmunds: Groups like Ducks Deluxe, Shakin' Stevens and the Flamin' Groovies. That last one was funny. I read in *MelodyMaker* that the Flamin' Groovies were coming over to Britain and that I was going to produce them. That's when I first heard about it. And they booked time at Rockfield, because they'd heard I was there all the time, and sure enough, there I was! So we made a quick deal and I did their album.

Mix: Looking back, what's your favorite album as producer?

Edmunds: I like the second album I did with The Fabulous Thunderbirds, which also featured The Memphis Horns. There's a track, "Streets of Gold," that I'm very proud of, which is very reminiscent of Stax music. It worked, and I still love to listen to it.

Mix: Tell us about the new Nick Lowe album you produced.

Edmunds: That's another one I'm very proud of, and it also demonstrates what we were saying about the demos and the need to keep that spark. Nick would just demo his basic ideas on guitar and send them to me. Then we'd go in the studio with me on guitar, Nick on bass, Jim Keltner on drums and Austin Delone on piano. Ry Cooder also played guitar, and we recorded it all at Ocean Way.

It was definitely a case of capturing the moment, and we worked very

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fast—we completed everything in 20 days, although we then added some more songs. Dave Charles engineered, and we know each other so well that there's a lot of shorthand-type communication.

Mix: What type of producer do you think you are?

Edmunds: I'd say one who tries to capture the moment rather than laboring away at overdubbing and layering sounds. I've learned that I don't like recording that way, which is ironic because that's how I started—putting everything down myself. Now I like to get as many instruments down live and playing together as possible, because of that interaction. To me, the definition of a record is to capture a performance, so once you've got that basic track, then it's fun to overdub. You've baked the cake, now you can put the icing on. Starting with the drum track and then adding bass, then guitar, etc., is just so bloody tedious to me.

Mix: Who are some of your favorite producers?

Edmunds: I'd have to say Phil Spector. The sounds he got are simply mind-boggling. He's got to be the ultimate, the way he really brought depth and dynamics to recording. Brian Wilson is another giant to me. On the other hand, it's often difficult to know exactly what a producer brings to some artists and records. I read reviews where they say, "The producer's given them this clean, crisp sound," but who knows who did that? It's all a throw of the dice really.

Mix: How do you feel about the recent technological advances in recording?

Edmunds: I think it's all great, but I'm not really a tech-head, and as long as I know they all work, I'm happy to forget them. I think often it can be a case of the tail wagging the dog. Some of my favorite records weren't that well recorded, and it really doesn't matter to me. Spontaneity is the vital thing to me, and that's why I hate computer mixing—you lose that moment.

Mix: What's your ideal recording environment?

Edmunds: I like big rooms with lots of iso booths, and a room right next to the control room so I can plug in my guitar without tons of long leads and DIs. The luxury of space, really.

Mix: Do you have favorite studios?

Edmunds: I like well-maintained studios, and I have certain equipment preferences, such as Studer machines and Neve desks. And yet you can never

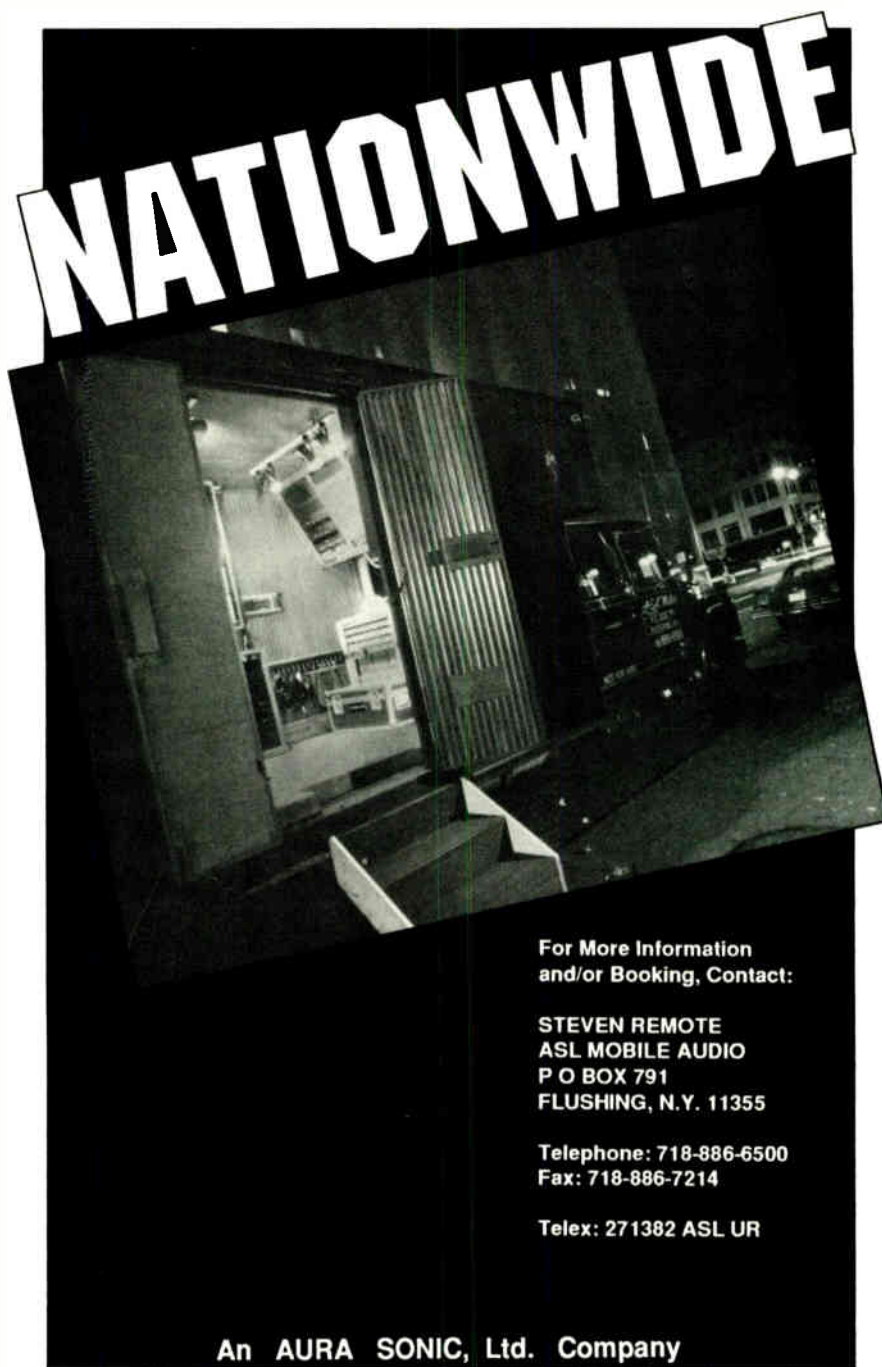
nail down anything when it comes to recording. For instance, I recently did Dion's album and recorded it on a Neve console. Then Paul Simon wanted to sing on it, and when I took the multitrack back to London, the only studio I could get was an SSL room. Well, when I started mixing, I hated it, and I compared it to the original mix, and it sounded awful. So we had to work really hard at a remix, but the end result was that it sounded much better than the original mix which I thought was great, except that it didn't have Paul Simon on it. So, using a desk I didn't like, I ended up with a far better

mix! It's a crazy business.

Mix: Finally, what artists would you like to work with that you haven't yet?

Edmunds: Definitely Dave Stewart. I think we have a similar ear for sounds, and it'd be an interesting collaboration. There's also one band that I really wanted to produce, The Subdudes, who I unfortunately missed out on, because I was producing Dion, the Stray Cats, Nick Lowe and then my own album, and everything overlapped. I'd love to produce those guys. ■

Iain Blair is a Southern California-based writer.



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by Dan Daley

OPENING UP THE DAWs

There's lots of buzz around digital audio workstations (DAWs) these days, as much about their prices as their abilities. Disk-based systems such as the NED Synclavier and PostPro or the AMS AudioFile are extremely useful

facility owners.

However, in the glitz that surrounds these puppies, another issue has been obscured: Digital audio workstations of another sort abound in the marketplace, and at prices anyone can afford.



and sophisticated digital systems that are changing the way the industry does business. Project studio owners might look at them longingly, the way they look at their small vocal booths and dream of the A room at Power Station.

Keyboard systems like the Korg M1 and the more recent T1, Roland W-30, entry-level D-20 and the new Yamaha SY77 don't fill a Synclavier's shoes but do fit the mold, so to speak. They're digital; they provide keyboard access;



However, that very complexity, coupled with their relatively high prices, have made them almost dream-like for many, regarded as tools available only to better-heeled studio and

they have onboard sequencers providing sound, track and pattern editing capabilities. Some can sample, and those that don't, do accept external sound sources via RAM cards. They



Three examples of the new breed of cost-effective music workstations are the Roland W-30 (top), the Korg T1 (center) and Yamaha's SY77 (bottom photo).

can be off-loaded digitally onto a digital storage medium (again, RAM cards); and, of course, they are MIDI-compatible.

The big difference is in their inability to serve as a multitrack recorder for sounds other than their own. Even when sampling is available on them, the relative paucity of internal memory limits totally tapeless recording. On the other hand, this is offset by the virtual track capacity they add to small project studios. The memory issue has been ameliorated to a considerable degree by third-party after-market developers of storage hardware. For instance, there is a disk system called Frontal Lobe on the market that will greatly expand the memory capabilities of the M1. And the internal memory situation is being addressed by manufacturers.

What this means is that project studios can enjoy and provide many of the advantages that digital audio workstations offer at prices that don't break either the capital investment balance sheet or the clients' budget, which in the case of project studios is often, by definition, marginal. The average list or suggested retail price on these units is around \$2,700—

considerably less than the tens of thousands more common in the bigger leagues.

Larry DeMarco, director of market-

Workstations like this give people the ability to provide broadcast-level work out of home studios.

ing at Korg, adds another aspect that these less gilded DAWs offer: "They can have multiple digital effects on-board. That's especially important to the guy on a budget, as is the case in project studios. Furthermore, the effects, certainly in the case of the M1, are tailored to the individual sounds by musicians. A lot of thought goes into assigning factory effects patches to sounds. Still, the effects have considerable parameter controls on them, and they can be personalized by the user quite easily." One other aspect of internal processing is that it can free up rackspace, which can be a critical

consideration in urban installations where space is at a financial and physical premium.

DeMarco points out another shared aspect of these digital workstations with their larger brethren: "When a product achieves a large degree of popularity, a lot of people can do work in different locations using the same format. Information can be loaded to cards and passed around. Sharing information—and, by implication, creativity—is easier because as time goes by, the format becomes more accessible."

This raises another question—will there always be a gap between levels of DAWs, in terms of formats, capabilities and prices? The answer could have profound implications not only for the future of technology but also for how the audio industry will evolve in the future. Project studios and home studios developed because of the increased democratization and affordability of technology; that development in turn is having an effect on the dynamics and economics of the audio industry. In many instances it has affected the ability of commercial facilities to even survive, much less prosper.



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Korg's Larry DeMarco is unsure how close these parallel lines might get; however, he notes that units like the M1 are evolving their own second generations just as their larger counterparts are. Korg's T Series of workstations have increased memory capacities and sampling. The T1 can handle 50,000 internal events versus the M1's 7,400, and has doubled its predecessor's ROM capability while incorporating a 3.5-inch disk drive.

Roger Maycock, a product specialist at Roland, is less equivocal. "Due to the market forces that pervade the

industry," he says, "people want more and more for less and less. As a result, manufacturers have to offer more functions and features on products, to the point where the sophistication level might approach that of units costing tens of thousands of dollars. Musicians, in general, and certainly project-type studios, in particular, are not in a position to buy 30 to 40 pieces of gear. These types of studios are doing more work, and workstations like this give people the ability to provide broadcast-level work out of home and project studios at a more feasible price point." As an example he points to the W-30's capacity for 16

tracks of MIDI sequencing, 16-voice polyphony and a 17,000-event internal memory.

Yamaha's Bob Frye, a product manager in the synthesizer, guitar and drum division of the company, foresees a "continuing demand for more and more power and lower and lower prices" driven in large part by such project studios. "With increasing memory and faster access times you'll see instruments of more modest prices approaching the performance of instruments like Synclaviers," he says.

Even as Frye spoke, Yamaha was releasing its latest synthesizer product on the market, the SY77, which brings this level of system closer still to making DAW an everyday part of project studios. Expected to price out a bit higher than the others, somewhere around \$3,000, the SY77 has a 16-track sequencer onboard, four DSPs, a 16,000-event memory, interactivity between song and pattern modes allowing more sophisticated editing, and a much more comprehensive readout, including a scrollable event list. It doesn't, however, sample.

"We view this instrument as capable of being used as a complete music production tool," says Frye. "It's not simply a synthesizer, but much closer to a workstation that interacts easily with a user and allows for a lot of production work to be done quickly and effectively."

With this sort of equipment and power coming down the pike at these kinds of prices, it's clear that the hand of the project studio operator is being substantially strengthened. If a project studio was created by and around a core of clients in a specific field of music production, then this equipment can keep those clients satisfied and within budget while providing the advanced technology of digital sound.

And it could eventually get to the point where facilities with this equipment and someone skilled at using it could begin to affect the MIDI and Synclavier rooms that a number of commercial studios have put in to compete with project and home studios. In truly competitive business environments like Manhattan and Los Angeles, this could lead to firefights in the streets with deadly automatic weapons (another sort of DAW). ■

Dan Daley is a Mix contributing editor, as well as co-owner of a New York City recording studio.

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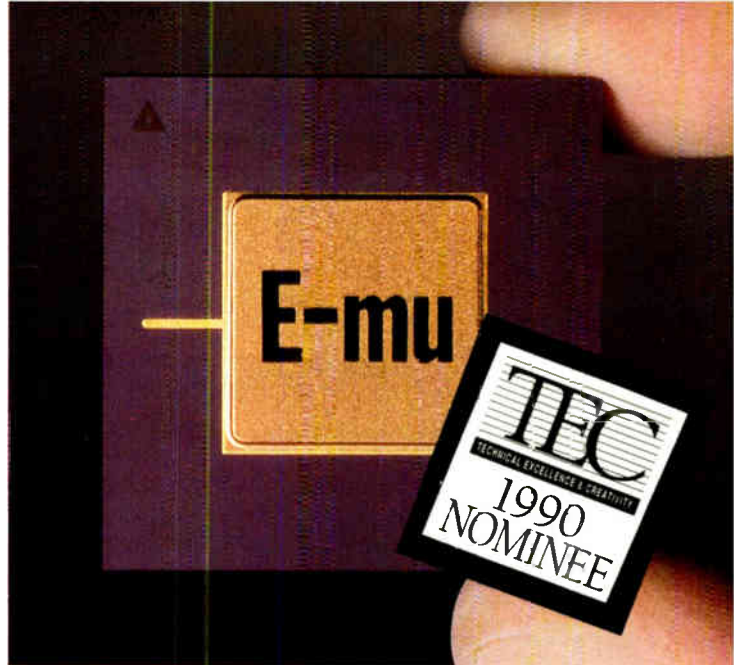
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NEWS

FROM AROUND THE WORLD



Vaudeville Goes Digital in Toronto

The recent restoration of the magnificent 1,500-seat Elgin Theatre in Toronto, Ontario, includes the first theatrical installation of a new computer-based Reverberation and Sound Enhancement System. The RSES is unique in that it employs paralleled, multiple-output digital signal processors operating under MIDI control. But in order to appreciate the full significance of this undertaking, it's important to know the history of the Elgin.

The theater was built in 1913 for vaudeville, and in 1930 it was converted to show films. After a long and distinguished life as a movie house, the Elgin—along with its companion 1,000-seat Winter Garden Theatre, located seven stories above the Elgin—was purchased in 1981 by the Ontario Heritage Foundation. Shortly thereafter, the complex was designated a national historic site by this quasi-governmental agency.

The designer of the sound enhancement system, Neil Muncy, has worked as an independent consultant since

1976, specializing in the design of recording and broadcast facilities and the development of solutions to acoustical and technical problems. "Since the Elgin was [originally] designed for vaudeville, the acoustics are on the dry side," he says. "The general trend at that time was to upholster the daylight out of the space." Begun in 1987, restoration was completed last December at an expense of \$29 million.

"There were many constraints in restoring it," Muncy continues, "because the principle mandate was to make it *look* just like it did in 1914, as well as to 'make it *sound* better,' whatever that means. It became apparent when [acoustician] Robert Tanner and [architect] Mandel Sprachman got involved that the reverb time in the space was almost certainly going to be too short for the kind of shows that are done in these kinds of performing spaces today. So our job was to come up with an electronic reverberation enhancement system to overcome that problem."

Muncy's answer was RSES. Reverberation parameters—including reverb time, level and slope—are adjustable in real time by means of a portable, specially configured MIDI control device (programmed by Steve Barbar of Lexicon), as well as via direct MIDI interface with show sound systems, lighting system cues, and on-stage and orchestra performers using MIDI instruments. Reverberation time can be extended from the natural half-second response time of the theater itself to more than three seconds.

All reverberation enhancement parameters are programmable, using software developed by Dr. David Griesinger of Lexicon, and can be modified to simulate the sound of almost any conceivable acoustic venue. A sense of spaciousness is created by the flush-mounted, ceiling loudspeaker arrays, which provide a

What you don't see is what you get, including 110 ceiling-mounted speakers at Toronto's newly redesigned Elgin Theatre.

high degree of laterally scattered energy otherwise not obtainable in such a space. "We were looking for loudspeakers that are very neutral in their sound," says Muncy. "We looked to the work of Canada's National Research Council for suggestions, and we selected a speaker made by Paradigm Electronics that ranked very highly in their evaluations."

The system uses 116 loudspeakers mounted in the ceilings, both above and below the balcony. Under normal lighting conditions it's almost impossible to see them. "Mounting them just in the ceilings seems to have accomplished what we wanted, which was to provide lots of additional lateral reflections," Muncy says.

The sound enhancement capabilities of the system are user configurable via a patch bay that provides direct inputs into any combination of the 28 amplifier/speaker channels for special sound effects, low-level, under-balcony sound reinforcement, and surround sound for film presentations. Electronically reverberated energy can also be added via direct feeds to the inputs of the DSP units. The front end includes two B&K cardioid condenser microphones.

Muncy is pleased with the results. "One of our design goals was to come up with a system that no one would be aware of unless it wasn't working. When you clap your hands, the sonic

impression you get of the visual space is what you'd expect. When you turn the system off and clap your hands, it just falls down and dies. It's quite dramatic.

"We're not nearly finished with the system," Muncy adds. "There's more hardware to go in and some more software to write. But it's in use now, and we have to work around the show schedules." (*The Wizard of Oz* was in there as this article was being written.)

Townshend Announces Eel Pie Agreement With The Mill

Pete Townshend has signed an exclusive deal with The Mill Recording Studios to manage booking at his own Eel Pie Studios. Townshend is happy with the new association, adding, "I have just re-equipped the streamlined Eel Pie Studios, but we now have reduced space for administrative staff. The Mill is handling all bookings, administration and session logistics on our behalf."

The two world-class establishments have more than the River Thames in common. The Mill at Cookham near Maidenhead, Berkshire, and Eel Pie at Twickenham, Middlesex, were among the first British studios to install Neve VR consoles with Flying Fader automation. Both studios also have Mitsubishi digital multitracks.

The Mill was previously owned by another rock guitar legend, Led Zeppelin's Jimmy Page. Originally called The Sol, the studio was conceived by producer Gus Dudgeon and was purchased last summer by HSH Music Ltd. The studio has since been completely refurbished.

Eel Pie was set up in the early '70s as Townshend's own private studio and was launched commercially in 1981. It was fitted with a new main room and control room five years ago. In addition, Townshend recently completed installation of two Soundcraft Delta consoles for the facility's dedicated Synclavier programming suite.

Toronto's McClear Place Purchases Pathe Sound

Bob Richards, president of McClear Place Studios Ltd. and Studioasis Media Corporation in Toronto, has concluded negotiations with Astral Bellvue Pathe Inc. for McClear Place's purchase of Pathe Sound and Post Production Centre. The new division will be called McClear Pathe.

McClear Place is known for its audio recording work for film, records, broadcast commercials and television post-production, while Pathe Sound has long been a leader in post-production, with mixing, recording and editing services for television and feature films.



Studio Spotlight

Le Voyageur II, based in Paris, France, is a state-of-the-art remote vehicle equipped to handle live concerts, TV transmissions, and video and film production. The

mobile unit has been designed to adapt to any kind of audio, video or synchronization standard. A sophisticated patching system allows for recording through the truck's own 48-input Neve VR Series console and/or any exter-



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Plans call for improvement to the facilities at McClear Pathe. Joe Grimaldi, vice president and general

manager, says. "Initial plans are to upgrade the existing mixing theaters in order to complement our Synclavier 3200 tapeless studio and seamlessly handle projects for the television producer."



Pete Townshend in the Synclavier suite at Eel Pie Studios.

manager, says. "Initial plans are to upgrade the existing mixing theaters in order to complement our Synclavier 3200 tapeless studio and seamlessly handle projects for the television producer."

Leader Establishes New European Subsidiary

Leader Instruments Corporation, manufacturer of test and measurement equipment for broadcast video and other electronic industries, has announced the establishment of a new European subsidiary, Leader Instruments Europe, Ltd.

The new London office was opened in January. John Pierce, general manager of Leader Instruments Europe notes, "The opening of this new office marks Leader's expanding business and growing presence in the European market," adding that Leader has already expanded its business in the United States and Hong Kong. The 36-year-old company is headquartered in Hauppauge, New York.

HGA Opens Tokyo Office

London-based studio design consultancy Harris, Grant Associates has announced the opening of a Far Eastern office in Tokyo. The new office, headed by Sheen Uchida, provides support for HGA's market profile in Japan, and will play a crucial role in the coordination and management of projects by the company in the Far East and Australia.

The new office operates from the

premises of Ohba Trading, the Tokyo-based specialist audio distributor that also handles RPG Diffusor Systems. Ohba Trading's Uchida is fluent in Japanese and English, and has already

proven a great asset in providing local client support and as a liaison with HGA's home base. The opening of the Japanese office follows 12 months after the official formation of Harris, Grant Associates as a limited company within the Discrete Research Group. While HGA is well-known in Europe and North America, the company's design expertise has recently been used at Sydney's Rhinoceros complex, as well as in projects for a number of Japanese clients.

International Bits & Pieces

New England Digital Corporation reports that the **BBC** recently purchased a Synclavier 9600 Digital Audio System for the production of radio plays in its Scottish division...Italian sound reinforcement equipment designer and manufacturer **dB Technologies** (Bologna) has enlisted pro audio marketing consultancy **Trevor Cash International** to help set up an international distribution network and spearhead a worldwide sales and marketing campaign...**Floating Earth**, a rapidly expanding classical music recording and digital editing company, has opened a new 4,000-square-foot facility in Perivale, West London. The new space consists of two machine rooms and two large edit rooms, one using a Sonic Solutions hard disk editor and the other featuring a Sony CD mastering system based on the DAE 3000 editor...**Chipperfield Post Productions Ltd.** has announced the pur-

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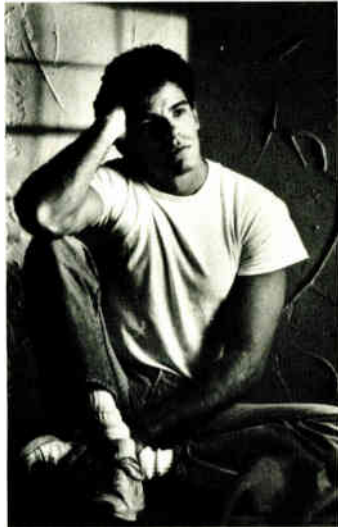
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chase of two AudioFrame digital audio production systems for its new facility in Soho. Building on the success of its existing casting studios, the company is initially targeting commercial production clients, although the group expects to diversify into other post-production areas as the facility becomes established... In news from UK-based Audio Kinetics, Ruth Partington has been appointed to the position of technical support administrator, and Nick Smith to sales engineer. The company also reports that **Multitrack Hire** has become the first UK rental company to offer its ES.Lock products for rent, following the purchase of two ES.Lock 1.11 synchronizers and one ES.Lock Penta five-machine controller... Turning to the French West Indies, Henri Debs, owner of **Studio Debs** in Pointe-a-Pitre, Guadeloupe, has installed two Mitsubishi X-880 32-track digital recorders and a 2-track X-86 as part of a redesign project that adds a second studio to the complex. The project was designed by Doug Jones and audio engineer Bob Katz. Studio Debs specializes in recording the indigenous Caribbean music known as Zouk, and has recorded some of Zouk's most renowned artists... Amek is now offering Motionworks' Motionworker interface system as an option with its Mozart console, and as an upgrade for present owners... Among recent sales of Digital Audio Research SoundStation II systems are an 8-channel unit to **Bekker**, a video post-production house in Dusseldorf, West Germany, and a 16-channel system to **Eurosonic**, Madrid's best-known music recording facility. Eurosonic is opening a new video post-production suite designed by John Flynn to incorporate the new SoundStation, which includes DAR's own WordFit dialog synchronization system... Soundtracs reports sales of IL Series consoles to customers in the UK, Austria and Germany. An IL 4832 has been ordered by **The Yard**, a commercial studio in London; **Creativsound** of Modling, Austria, has also purchased an IL 4832; and **Nightingale Records** in Forcheim, West Germany, received an IL 3632 board... Sound & Vision '90, the fourth international conference of the SMPTE's Australian Section, will be held July 3 to July 6 at the showground in Sydney. ■

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*Billboard's 1990 International Recording Equipment & Studio Directory, Oct. 1989.

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by Richard Giannone



MARK MORGAN'S STUDIO WITH A VIEW

Mark Morgan, Starship's stellar keyboard player, has good reason to be smiling. The band's recent album, *Love Among the Cannibals*, hit the charts last September, fueled by the hit single "It's Not Enough." Then came a European tour. His beautiful home, high in the Marin County hills, is where you'll find his studio, which has an incredible view of the valley below.

The studio itself is located on the ground floor of a two-story home. While modest in size, the control room sports plenty of windows and a roomy, open layout.

All this didn't come overnight to Morgan, who started playing piano at 7 years old. After high school he attended the Berklee College of Music in Boston. "That's when I really got into playing," he says. "When I got back from Berklee, I started to work clubs, doing shows five nights a week." It was a natural pro-

gression to session work for Morgan as he continued to gig, working with the likes of Rickie Lee Jones and Chaka Khan.

His affiliation with Starship began in 1987 when he joined them for the No Protection tour. "I did the tour for that album and after that they asked me if I wanted to be a member," Morgan explains. "It was good for me at that time. I needed a change. I'd never really been in a band, and I was always kind of a hired guy. So it was interesting falling into that."

Upon entering Morgan's studio, the first thing you notice is a New England Digital Synclavier. It strikes a commanding presence in the room. "It's Mac II-based," Morgan explains proudly. "There's a 160MB hard disk and an optical disc, which can store up to about three hours worth of sound." Using the Synclavier as the hub of his



PHOTO: PHIL BRAY

ARTIST'S STUDIO

recording center (he also used it extensively on the last Starship album), Morgan hopes to use the studio not only for demo and writing projects, but to broaden his horizons.

"I want to get into doing some films, production work and things like that," he says. "But it's pretty much just for me and writing with the band. We do our demos in here, and the Synclavier will be what we use for recording because the sequencing and the sampling are so great." Morgan also has an Akai S1000 sampler, a couple of Emaxes and two Yamaha TX816 racks.

Morgan also maintains a Fostex B-16 with a 450 autolocator, as well as a Fostex Model 20. "I use the 2-track for mixing down, but I'm going to acquire a DAT player soon. I've looked at the Technics, and Casio has one coming out soon that's supposed to be pretty nice, but I haven't made any decisions yet. I think I want one that is portable so I can take it to other studios."

The selection of equipment came at different times and for different reasons. "A lot of the choices were

made for space reasons," Morgan says. "I acquired some of [the equipment] before Starship, so budget was another consideration. The Fostex was the best 16-track out for the price at the time. It still sounds great; people make records on it. You can definitely do nice things with it. Craig [Chaquico, Starship guitarist] has the same autolocator and machine in his studio, so he can bring his stuff up, and I can put some keyboard parts on it and send it back down.

"The Ramsa [WR-T820] is a great board, but at this point I think I need more inputs," Morgan continues. "I have 16 outs in the Synclavier now, and I really only have 16 available on the console because I use four for reverbs and effects. I'm looking at boards now, and I'm thinking of getting a Dayner console. It comes in a small space, about six feet wide, but you can get up to 128 inputs."

Not having to worry about the neighbors is just one advantage of near-field monitoring, which Morgan uses exclusively. He uses Norberg monitors and finds them less fatiguing than others he's used. "They were designed by a classical engineer for classical music, and they sound good

when I go anywhere else," he says. His monitoring system also includes a Carver M-0.5T power amp, which, with 200 watts per side, gives him plenty of headroom and comes across with a good, clean sound.

The studio's outboard equipment includes a Lexicon PCM70, Yamaha REV7 and an AMS reverb. "I like all of them," Morgan says. "I like the chorusing on the AMS. It's got a grainy quality to it that gives it a Gabriel-ish type of sound that you really can't get out of the PCM70s, which sound really clean." The studio also contains a MIDI Minimoog, Korg EX-8000 and Prophet-2000 ("it's got great percussion sounds").

For all of Morgan's choices in equipment, he sees his studio as similar to others its size. "Everyone has their different needs, but for the most part this studio is very functional. It works out great. With the 450 autolocator I can run everything SMPTE. I can slave anything I want. I don't really think I need anything else, except maybe a few more inputs." ■

Richard Giannone is a musician, studio engineer and freelance writer based in the San Francisco Bay Area.

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NEW PRODUCTS

AUDIX HR STUDIO MONITORS

The new HR series of studio monitors from Audix of Pleasanton, Calif., is designed for studio listening applications in the near field. Two versions are available. The HR-1 (\$499/pair) has a single, cast-frame 6.5-inch driver with a 1-inch polyamide tweeter, while the HR-2 (\$649/pair) has two 6.5-inch speakers for LF performance down to 47 Hz (± 2 dB). Features include a 24dB/octave, 3kHz crossover; the vented enclosure has a thick neoprene front panel covering designed to eliminate unwanted reflections from the driver mountings, etc.

Circle #001 on Reader Service Card



APHEX EXPRESSOR™

A new compressor/limiter from Aphex (Sun Valley, Calif.) is the Expressor (\$495), a single-channel unit with control over threshold, attack, release and ratio, as well as sidechain manipulation of LF filtering and a choice of hard or soft knee compression. Some of the unit's unique features include adjustable High Frequency Expansion (a patented process designed to counteract the dulling effects of high compression ratios) and Spectral Phase Refractor, which was first used with the Aural Exciter Type III. SPR is said to restore clarity and openness to LF signals without adding equalization or bass boost.

Circle #002 on Reader Service Card

PROSONUS PERCUSSION 1

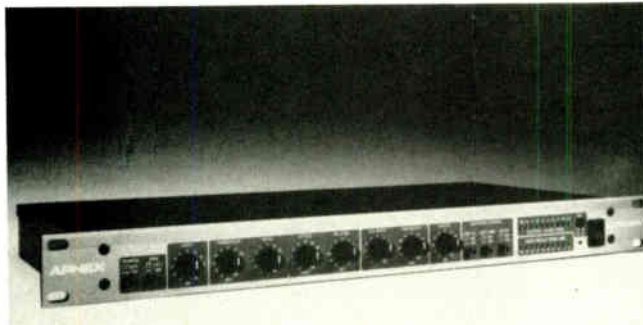
"Percussion 1," the latest addition to the Prosonus Sound Library (Hollywood, Calif.), is a collection of samples on CD offering 43 bands of percussive sounds on prepared piano. Recorded directly to PCM-1630, the disc has 43 bands (each with three to 26 sounds), ranging from conventional to other-worldly, all created by striking, rubbing, hitting and plucking piano strings.

Circle #003 on Reader Service Card

AUDIO-DYNE AD-357S

Designed for cost-effective sound reinforcement and studio applications is the line of Audio-Dyne mics, distributed by Freed Intl. of Ft. Worth, Texas. One of the first models introduced in the U.S. is the AD-357S, a cardioid vocal mic that features a neodymium cartridge and a "soft grip" handle. It retails at \$109.95, including case, windscreen and stand adapter.

Circle #004 on Reader Service Card



NICHE™ AUDIO CONTROL MODULE

Distributed by the Russ Jones Marketing Group (Northridge, Calif.) is the Niche Audio Control Module, a MIDI-driven, console automation system priced at \$479. This single-rackspace unit uses a non-VCA design to control the audio levels of up to eight channels (multiple ACMs can be chained for more channels), with a stated frequency response of 30 to 30k Hz (± 0.1 dB) and a signal to noise ratio of over 95 dB.

Circle #005 on Reader Service Card

TURTLE BEACH DIGITAL AUDIO EDITOR

The 56K/SoundStage system from Turtle Beach Softworks (York, Pa.) is a PC-based digital audio recording/editing system that allows the onscreen manipulation of stereo or mono digital audio signals at sampling rates of up to 48 kHz. The system features standard cut/paste/copy editing, along with fade in/out, digital EQ, reverse play, crossfading and editing resolution to the sample level. Files can be triggered manually or via MIDI or SMPTE time code. Inputs/outputs can be analog (balanced/unbalanced) or AES/EBU digital, and available options include SMPTE chase-lock capability. The system is available on a turnkey basis (with hard disks from 80 MB to 600 MB) or separately, for those who want to use an existing IBM/compatible 80386 computer.

Circle #006 on Reader Service Card



SYMETRIX MULTI-DYNAMICS PROCESSOR

The latest addition to the Symetrix (Seattle, Wash.) 200 Series half-rack system is the SX206 four-in-one dynamic range controller, operating as a compressor/limiter, gate, downward expander or ducker, with each mode selected via silent CMOS switching. Features include independent control of threshold, attack, release, range/ratio and output level, as well as stereo link capability. It retails at \$329, with 1/4-inch balanced or unbalanced connections.

Circle #007 on Reader Service Card

CONVOLVOTRON 3-D SOUND PROCESSOR

Crystal River Engineering, of Groveland, Calif., is now delivering the Convolvotron, a high-speed digital signal processor that enables the listener—using standard headphones—to spatially locate up to four independent, simultaneous sound sources. This two-card, PC-based system uses 128 parallel multiply/shift/accumulate processors that are said to operate more than 20 times faster than conventional DSPs.

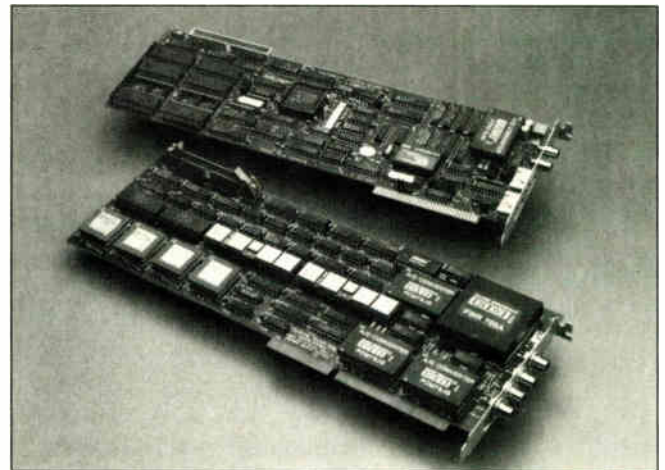
Circle #008 on Reader Service Card

OTARI DISKMIX 3

Now available from the Console Products Group of Otari (Foster City, Calif.) is Diskmix 3 Moving Faders, which combine the audio performance of Penny & Giles motorized faders with the speed of 68000 co-processing in a time code-driven environment. Available optionally on Otari's Sound Workshop line of consoles (or as a retrofit/OEM product for other mixers), the system features: "Update Touch"

(allowing updates to begin as soon as a fader is touched); "Leave Update" (for smooth transitions from the update to the stored mix); automatic storage of mixes to hard disk at the end of each pass; and extensive offline editing capabilities, such as cut, merge, splice, insert, delete, etc. Prices begin at \$36,900, and Diskmix 3 Moving Faders can be installed in any console with separate fader panels.

Circle #009 on Reader Service Card



HOT OFF THE SHELF

Saki Magnetics has unveiled a line of Permalloy factory-equivalent **replacement heads for Studer and Otari 24-tracks**. No wiring modifications are necessary, and Saki will install and optically align the heads on the customer's base plate. Call (818) 880-4054 for details...**Manhattan Production Music** now offers 26 CDs, ranging from pop, acoustic, news, sports and the latest, "Movie Magic," recorded at Abbey Road Studios with the London

Symphony. All are available on an annual blanket license, and a 14-day trial is available. Call (212) 333-5766 or (800) 227-1954 for info...Penguinino (\$1,295) is a special **air conditioner designed for windowless spaces**, such as studios and edit rooms. The 97-lb. unit runs on standard current and is mounted on casters for moving from room to room. Call DeLonghi America for details at

(201) 507-1110...**Omni-music's FX Series One** is a 12-CD set of digitally recorded sound effects, including transportation, office, home, city, suburbia, sports and other sounds. Also included are one- to three-minute environmental tracks of various ambiances. The set is buyout-priced and comes with indices and a computer-based search system. For info and a free CD sampler, call (516) 883-0121 or (800)

828-6664...VGS California has unveiled an **adjustable console stand** that can accommodate mixers from 32 to 57 inches in width. The all-black unit is constructed of welded steel and includes four locking casters. Call (818) 509-5738 for details...**The Stick®** fretted fingerboard instrument is now available in a lightweight (4.5-lb.) oak version, as well as polycarbonate, baritone and double bass versions. Call (818) 884-2001 for details.

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Rob Jones and Max Rooks, RPM Studios
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PRODUCT

CRITIQUES AND COMMENTS

MacPherson M4 Compact Coaxial Loudspeaker

If there's something that looks vaguely familiar about these speakers, it could be their distinctive coaxial driver, which is the same as that used in the Red Acoustics models from a couple of years back. At \$450 each and designed for high-end foreground reproduction applications, the MacPherson M4 packs this high-performance driver into a compact enclosure just 11 inches high and weighing 18 pounds.

The coaxial driver combines a heavy-duty 8-inch speaker that incorporates a cast aluminum basket with a dual-spider cone. A 2.8kHz crossover routes highs to a Philips 1-inch soft dome tweeter, coaxially mounted on a cast support structure. The sealed,

trapezoidal enclosure is constructed of 1/2-inch birch ply in a textured black finish. Rear panel connections include both XLR and five-way binding post varieties. A perforated, heavy-gauge steel screen offers protection from the abuses common to fixed installation/live performance speakers and can be removed if the M4s are used in a less hostile environment.

I started my listening tests driving the M4s with a 100-watt/channel power amp, which turned out to be woefully inadequate. Since the speakers have a sensitivity rating of only 86 dB (1W/1M), they really require an amp in the 200- to 400-watt range to provide adequate headroom and level. The M4s sounded much better when being fed from a 300W/channel amp, which allowed the speakers to reach their rated maximum SPL level of 101 dB with no sweat. The result was punchy, with a surprising amount of bass. While MacPherson reports a number of M4 owners have been using the speakers as near-field studio monitors, I did not feel very comfortable with them in this application. Of course, this is a matter of personal taste, but I feel the M4s are far more suitable in sound reinforcement scenarios.

With their compact size and high power handling, the M4s are applicable for close-field stage monitoring and could easily fit into a keyboardist's rig or alongside a drummer.

In fixed installations, the M4s could be used as a compact fill or under-balcony speaker, or as a foreground music system. MacPherson also offers a version of the M4 with T-nuts, designed for



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Yamaha "Sound Reinforcement Handbook, 2nd Edition"

Sound reinforcement is one area of professional audio where the availability of straightforward, down-to-earth information has always been in short supply. First published in 1987, the *Sound Reinforcement Handbook* began as a project between Yamaha and Gary Davis, who has written manuals for Yamaha and other major manufacturers over the years. To complete this task, Davis enlisted Ralph Jones, well known for his writing in numerous publications and his work with Meyer Sound Labs. The resulting text, covering basics, theory and practical applications, took three years to write and sold nearly 15,000 copies, an impressive number for a text in this relatively small industry.

In this second edition, Davis and Jones clean up a few of the minor bugs in the first edition, while the book's expanded new format makes the data far more accessible. As in the first edition, the focus remains on practical applications, with solid information on electronic and acoustical theory and how it applies to real-world situations. Actually, the book goes far beyond the coverage of just "sound reinforcement" topics, since chapters such as decibels and sound levels, interpreting specs, signal processing, test equipment, synchronization and MIDI offer information of interest to all audio professionals.

Published by Hal Leonard, the *Sound Reinforcement Handbook* is a thorough, well-written treatment of the subject. Over 400 pages in length, and profusely illustrated with clear charts and diagrams, the \$34.95 book serves equally as either a text for the beginner or as an occasional reference for the professional. It's available from the Mix Bookshelf (800) 233-9604 or (415) 653-3307, Yamaha pro audio dealers and technical bookstores. ■

George Petersen lives with his wife and two musical dogs in a 100-year-old Victorian house on an island in San Francisco Bay.

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Circle #106 on Reader Service Card

number of set changes.

Audio Analysts equipment update...The much-awaited CADD mixing consoles are now being used on the road with **Billy Joel** and **Heart**. Originally, the console was to be manufactured for sale to the pro market, but now it's not for public consumption and probably never will be. The company will be adding more CADD consoles to its inventory, though. Audio Analysts has updated its progressive CADD DL1 digital crossover with improved software.

Speaker manufacturer Meyer Sound has expanded its Source Independent Measurement training program. Engineers desiring SIM certification can attend training seminars in Tokyo, New York, London and Berkeley, California. Introductory one-day seminars are also available in these and other selected cities for those wanting to find out what SIM is about.

Delicate Productions (Camarillo, Calif.) has been busy with its new Martin F2 main speaker systems. Past tours this year include **Bonnie Raitt**, **The Sugarcubes**, **Peter Murphy** (see "On the Road"), **David Byrne**, **Donny Osmond**, **The The** and **Bonham**. Delicate's corporate/industrial division (with Apogee AE5 and Martin F2 systems) has been occupied with several noteworthy benefits. One such benefit was "An Evening in Brazil" for **The Rainforest Foundation**. Many major recording stars performed at the glitzy benefit, which was held in a Beverly Hills mansion to raise money to save the world's vanishing rainforests. Sixteen Martin F2 cabinets were used for the main P.A. along with Martin LE600 and VRS cabinets.

Guam: Where America's Day Begins...The Pacific island of Guam checks in with fascinating news. Former road warrior **R. Dee Clark** reports that a growing pro audio company on this far-flung U.S. territory recently purchased a

Showco main P.A. system.

Shimbros Audio Productions was formed four years ago to primarily do the in-house promotions and productions for parent company Ambros Inc., the Budweiser distributor for Micronesia. Owners **Paul Shimizu** (general manager) and his brother **Joe Shimizu** (controller) run the company with Clark supplying technical and engineering expertise.

"The entire audio, lighting and stage production has grown to such proportions that now we are buying and producing major acts through Tom Moffatt Productions in Hawaii and local promoter Dan Bradley. We are now able to start servicing the Pacific Rim and Guam with a quality touring system. We just purchased a main P.A. Showco AX system comprised of 16 pairs of the AX 2-box cabinets and four pairs of active 4-way SS enclosures (a smaller version of the AX) for sidefills, frontfill and smaller shows. This is the first time Showco has ever sold one of its sound systems," Clark states. "We are looking forward to enabling major acts from the mainland to use quality equipment here on Guam while on their way to and from Japan, Hong Kong, Taipei, Singapore, Philippines, Australia and Hawaii. The entire system is being put together so it can travel...We want to maintain our identity here as well as become an extension of Showco."

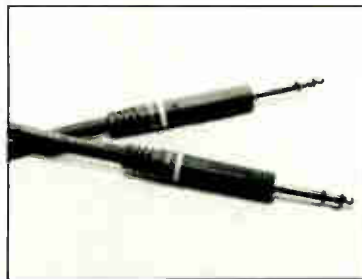
The main venue on the island is the 4,500-seat University of Guam fieldhouse. Shimbros has done concerts on Guam, Saipan, Hawaii and Palau with the Doo-bie Brothers, Oingo Boingo, Cinderella, UB40, Mike Love, Cecilio & Kapono, and Kenny Loggins.

In addition to using the Showco AX system, Shimbros also has 3-way, non-reflective geometry enclosures designed by Boyd Collings, with two PAS 15s and two 2-inch TAD compression drivers each. These are small cabinets with an incredible power-to-weight ratio. Complementary, dual 18-inch manifold-

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A thorough, cross-referenced guide to professional audio products and manufacturers. Cross-referencing offers easy access to a complete list of makers of dozens of products essential to the audio professional.

Manufacturer's Listing

KTR PRODUCTS; 1234 Mackey Rd., Cleveland, OH 43629; (216) 555-1213, fax (513) 555-1214. President: Kevin T. Reynolds. Marketing Manager: John L. Sullivan. **Regional Offices**: New York, NY (212) 555-8989, contact James Flannigan; Miami, FL (305) 555-0001, contact Sonny Agee; Los Angeles, CA (213) 555-7895, contact Harry Bartell. **Products Manufactured**: HDWR, SOFT, DISK, MSTC, MIXC, SP, REC, VE, OTH.

LEVINE AUDIO; 1313 Faraday Lane, Santa Mira, CA 94964; (415) 555-4455, fax (415) 555-1289, E-Mail IMC 007; Marketing Man-

Cross-Referenced Index

TAPE RECORDERS

Analog Multitrack: Fostex, **KTR Products**, Levine Audio, Otari, Revox, Scully, Sony, Studer, Tascam

Analog 2-Track: Fostex, **KTR Products**, Levine Audio, Nagra, Nakamichi, Otari, Scully, Revox, Studer, Sony, Stellavox, Tascam

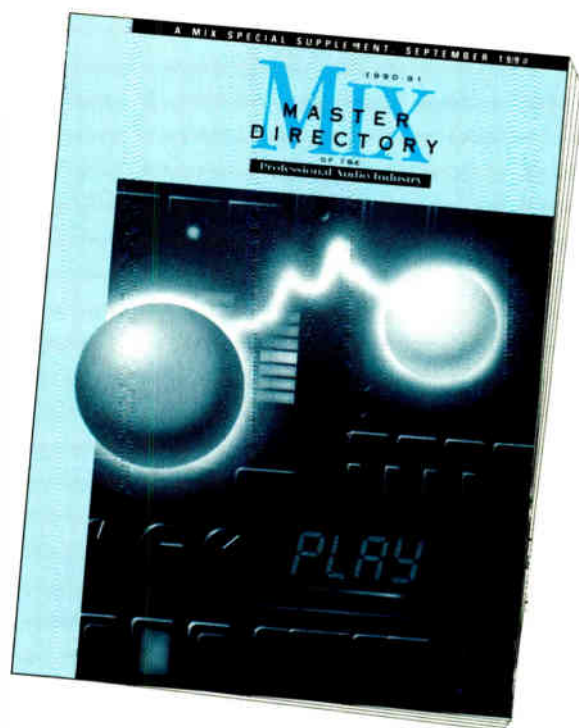
Digital Multitrack: Akai, Mitsubishi, Otari, Sony, Studer, Tascam

Digital 2-track: Audio + Design, Fostex, JVC, Levine Audio, Mitsubishi, Nakamichi, Panasonic, Radio Systems, Sony, Studer, Tascam

by the Book.

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- **Calendar of Trade Events and Conferences**
- **Directory of Industry Organizations**
- **Easy to Use Services Key**—Handy coding system refers users to the companies or individuals who offer exactly what they're looking for. A listing is followed, for example, by:
AR—Audio Recording
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style subwoofer boxes are used when needed. Equalizers are TEQ Industrial Research, and crossovers are Electro-Voice XEQ-3s. Crown Micro and Macro-Tech 1200 and 600 amplifiers power this system.

The rest of Shimbros' current equipment inventory consists of 22 Crown-powered monitor wedges loaded with a PAS 2580 15-inch coaxial driver and a 2-inch JBL 2450. Shimbros is also building a dual 15-inch/dual 2-

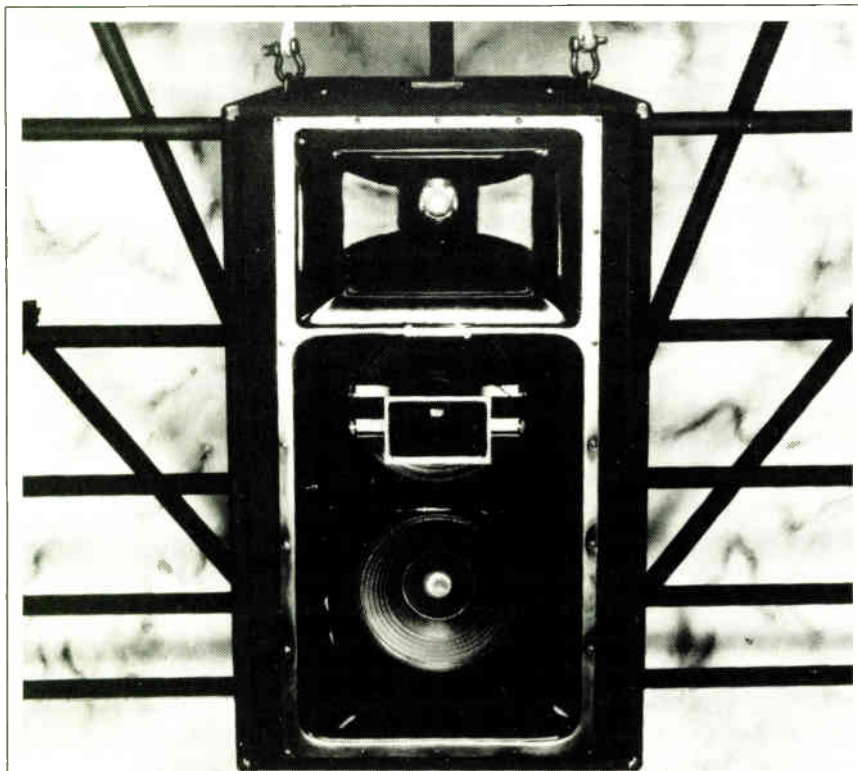
inch version using the same components. Klark-Teknik DN300 equalizers with Electro-Voice XEQ-2 crossovers are used on the monitor wedges. Consoles are a Gamble HC 40 x 16 x 2 and a TAC Scorpion 30 x 8 for the house and a TAC Scorpion 30 x 12 onstage. Other gear includes dbx 166 and 900 Series for compressors and gates, a 48-foot by 48-foot stage with 38-foot towers for the audio, and several small sound systems for lightweight local work.

Schubert Systems Group

(North Hollywood, Calif.) managed to keep most of its touring equipment working through the spring. The coming summer season looks promising as well, according to owner **Dirk Schubert**... Japanese superstar **Kitaro** has 24 SSG Steradian main cabinets and 12 SSG Steradian subs and a slew of Gamble consoles out on his current tour. Series EX-56 and HC-24 models are used for the house with SC-40x16 and HC-24 models onstage. **Bobby Hickey** is the house engineer for the March to October tour that first hit the U.S. before going to Europe and Japan... **L.A. Guns** (February to April) and **Michael Penn** (February to April) both used SSG monitor systems this spring... **Oingo Boingo** is out until late July with a 28-box system. **J.D. Brill** is mixing out front on a Gamble Series EX... Scheduled summer tours are with **Bruce Hornsby and the Range**, **Basia** and **David Sanborn**. SSG's Power Plant rehearsal studio reports steady business with many well-known national acts. Schubert's equipment changes shows JBL 2450 compression drivers matched with custom D.D.S. horns on all its single 12-inch, single 15-inch, dual 12-inch and dual 15-inch monitor wedges.

Canadian touring sound and lighting company **Pierce Sound** is based in London, Ontario. Its flying main speaker system is comprised of Meyer MSL-3, UPA-1 and 650-R2 subwoofers. The ten-mix monitor system uses proprietary monitor enclosures loaded with dual 12-inch Electro-Voice woofers and a JBL compression driver. The house console is a Soundcraft Series 4 40 x 16 x 2 with an 8-channel matrix. Pierce Sound's client base includes **Blue Rodeo**'s Canadian tour, folk festivals, colleges and theater productions.

Sound reinforcement company **Audio Arts** (Buffalo, N.Y.) was started in 1984 as Starving Artists Sound Co. The new name (not to be confused with Audio-Arts/Wheatstone mixing con-



Puts the others in perspective...

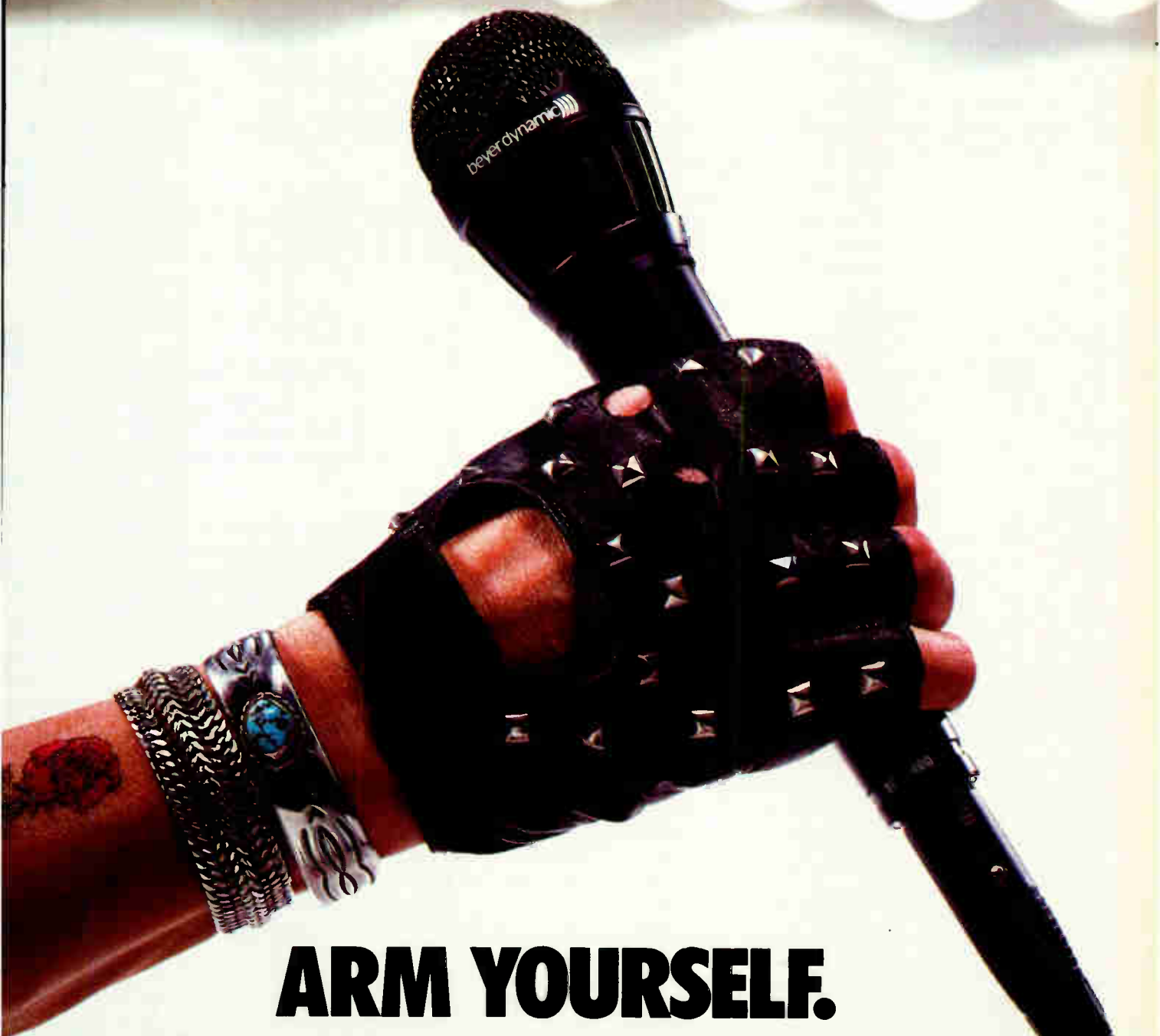
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soles) became effective this year along with a commitment to high-quality audio production. Owner **Kenneth Malke** says, "We started out doing small clubs on the local music scene and then got into doing some outdoor shows and festivals. We have also supplied equipment and personnel support for other companies in the past with our three older small club P.A. systems. Since we bought the Adamson cabinets we have gotten more involved with small regional tours and bigger shows around the Northeast and parts of Canada." Audio Arts is now using Adamson Acoustic Design's 2-box loudspeaker system that features a durable, 10-inch compression driver and the intriguing Acoustic Waveguides horn. The mains are powered by Crest 8001, 7001 and 4801 amplifiers, while proprietary JBL-loaded monitor wedges are powered by Crest 5001s. Currently, Audio Arts has 12 main

boxes with another 20 on order. Malke comments on the Adamson loudspeakers. "It is a really smooth cabinet—little equalization is necessary, and the pattern control is the best I've heard. The vocal clarity is superb, there is no harshness in the horns, and the box is easy to handle and pack."

Showco (Dallas, Texas) announced a new association in Japan with Tokyo sound reinforcement company **Hibino**. "There is now enough Prism equipment to service the Big Egg and all the other large venues in Japan," says Showco's **Wil Sharpe**. Hibino has leased Prism system stacks and racks that can be broken down into numerous smaller systems. Several monitor systems were provided as well. On the subject of equipment, Sharpe says, "We have converted all our main systems over to Prism technology."

Showco Shorts: The gigantic **Rolling Stones** extravaganza is now touring Europe and tying up most of Showco's gear...**The**

Highwaymen, featuring stars Willie Nelson, Johnny Cash, Kris Kristofferson and Waylon Jennings, traveled the U.S. from February through April...**Diana Ross**' tour will end in mid-summer...Industrial rockers **Ministry** finished their theater/club tour in February...**Joe Satriani** was out on a theater tour...**Eric Clapton**'s U.S. arena tour, with engineer **Mike Ponczek** mixing house, ended in May...Chart-topping **Milli Vanilli** began production rehearsals in March and proceeded to go out on a long North American tour...**Stevie Ray Vaughan & Double Trouble** continued a tour with dates until fall...**Little Feat** started a long U.S. tour in April... Other scheduled summer tours include **Linda Ronstadt**, **Neville Brothers**, **James Taylor**, **Beach Boys** and the **Moody Blues**.

Jacobs Audio (Colorado Springs, Colo.) has been adding to its equipment inventory and reports buying a new Soundcraft

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LIVE SOUND

8000 house console to go with its Ramsa WR-S840. Jacobs also picked up Drawmer noise gates, eight more Martin 1000 enclosures for sidefills and drum monitors, the new Yamaha DDL3 3-output crossover to run subs off a separate output, and new flybars for its Martin F2 loudspeaker rig. Owner **Chris Jacobs** says that early spring was fantastic, with jobs all over Colorado. Work included mini tours with **NRBQ**, the **Radia-tors** from New Orleans and many national one-offs. Jacobs is also pleased with the Martin system. "The F2 flies well, sounds great and is reconfigurable, making it very versatile. We do everything from heavy metal to symphony work with the F2, and no one has ever said they didn't like it."

David Bowie's world tour with **Maryland Sound Industries** started in Canada and then progressed to England and Europe before going to Australia, Japan and finally South America in late May. Bowie hit the U.S. in early June and will tour through mid-August. The huge system includes Gamble Series EX and Ramsa WR-S840 consoles and 116 MSI main P.A. cabinets.

Battlestar Audio Support Systems (Lorain, Ohio) is active in the Cleveland area installing and maintaining sound systems in various clubs. Owner **Clarence Carter** said that his 10-year-old company also tours primarily with reggae and R&B acts—the most recent being with **Satta** on a ten-week club tour of the East Coast—and provides live audio for clubs such as Coconuts and Peabody's Cafe.

Battlestar's gear includes Soundcraft 400 consoles on both mains and stage. Main P.A. is made up of 15 composite E-V-loaded cabinets with two 15-inch, two 10-inch, and a Community radial horn with a 2-inch JBL driver. For low end Battlestar uses double 18-inch JBL 2240s for its subwoofers. Crown MT1200s power the mains, and

Crown PSA-2s handle the subs. Proprietary monitor wedges are outfitted with dual 12-inch JBLs. Rane equalizers. Lexicon, DeltaLabs, Yamaha SPX90 and Alexis Midiverb devices are used for signal processing.

Rent-a-Tech...In the nightclub scene, sound reinforcement equipment and personnel quality in venues can often be described as less than superb. Bands are at the mercy of the club's P.A. system and staff engineers. **Concertech** (New York, N.Y.) was recently formed by **Carl Koster** to provide independent technical, engineering and equipment support for bands looking to improve their club sound situation.

"Concertech has been established to address the need for cost-effective audio engineering and equipment rental services for smaller and medium budget acts in the tri-state area," Koster says. "We provide an engineer and the same high-quality microphones and effects devices available to top-name acts, but on a smaller scale." Koster said that many bands have retained Concertech's services on a regular basis for both FOH and monitor mixing. Most of the work is centered in Manhattan and features highly mobile equipment (everything fits in a taxi), specialized set miking and experienced mixing engineers. Concertech's customized mixing service allows artists to have more control over their sound in clubs while continuing to use each club's speaker cabinets and amps.

(Note: Some of the data in this column and in "On the Road" is based on information provided by the companies. Address all correspondence and photos to Mix Publications, Sound Reinforcement Editor, 6400 Hollis Street, Suite 12, Emeryville, CA 94608.) ■

Mix sound reinforcement editor Mark Herman also operates a company specializing in console rentals for live sound and touring applications.

by Robin Tolleson

GEORGE BENSON IN BRAZIL

George Benson can be thankful. The Free Jazz Festival in Sao Paulo was moved this year from the crypt-like Anhembi convention auditorium to the more musically suited "Palace," a 1,700-seat, downtown nightclub. The concerts at Anhembi last year were, in the words of Marcio Pilato of the Brazilian sound company Loudness, "like a Lexicon PCM70 working all the time in the system. A lot of reverberation."

Benson, riding a successful re-entry into the jazz market with *Tenderly*, felt at home in Sao Paulo, thanks to the five-person crew he brought from home and the thoughtful Brazilian technicians. "They've got some very conscientious people who love sound and music," he says. "I feel safe here, and I think the crew is comfortable, too. They seem to have no problem working with the local crews."

Bruce Galloway is Benson's production manager and house engineer. The lighting in Brazil was done by Billy Hislip. The guitar tech was Steve Moore, the drum man was Jeff Sylvanis, and the stage monitor mixer was Jeff Scornavacca from Maryland Sound. "That stage sound is extra, extra important," Benson says. "I like to have those monitors up close so they really become monitors, not just an

addition to the sound, but something I can depend on before it gets out there."

The guitarist/vocalist doesn't mind spending time at the soundcheck, just so he can feel comfortable. "There's nothing like being there and checking it out for myself and getting the right balance between what's bouncing off the wall and

going out in the theater, because that's too late. That won't help you."

"George works so much of the stage that he actually uses the sidefills for the majority of his sound," engineer Galloway says. "He uses two wedges in the front to fill in a little dead area in the middle of the stage. He can really go anywhere he wants without it fluctuating much."

"Perhaps I should have them put a little guitar in the front monitor," Benson says. "In the past that hasn't proven to be good because they always give me a direct sound. The amplifier seems to round out the sound. With the monitor in front, I hear the pick too much. I don't like that 'ping' sound."

"I try to adapt to any situation in the house. But we really work on the stage sound in great detail," Galloway says. "We want it this way only. If his voice isn't reproduced the way he's used to hearing it, it's almost like using a different amplifier to play his guitar through. He wants it to sound natural. The guy has done a lot of shows, so he knows what his voice sounds like. That's why we

strive hard to keep all the monitoring together for him.

"Even when it looks like it's going to cut me short on time, I'll let the monitor engineer get his whole thing together without even

—CONTINUED ON PAGE 180



what's actually coming at me from the front monitors and the sidefills. The sidefills give me the environment that I'm used to, a normal environment independent of what's

1990

Sound Reinforcement House Mixing Console Buyer's Guide

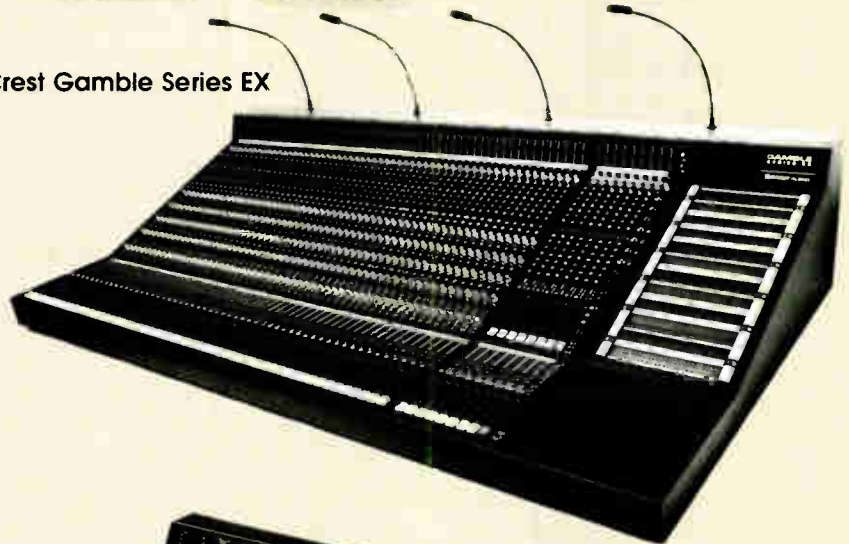
T

he "1990 Sound Reinforcement House Console Buyer's Guide" information chart (see pages 127 and 128) lists standard functions and features, as well as a special section on input equalization. Many of the 30 different models have unique characteristics and considerable options available, so each manufacturer's address and telephone number has been listed at the end of the guide for those desiring more complete information.

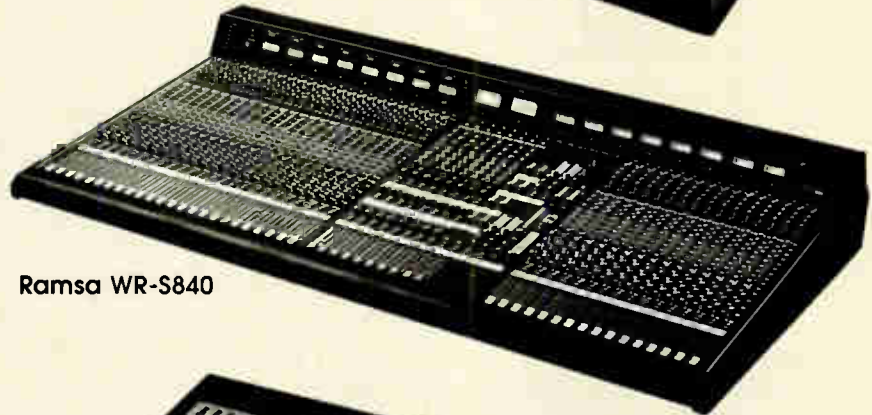
Before we get to the chart, however, let's take a brief look at what's happening in the world

by Mark Herman

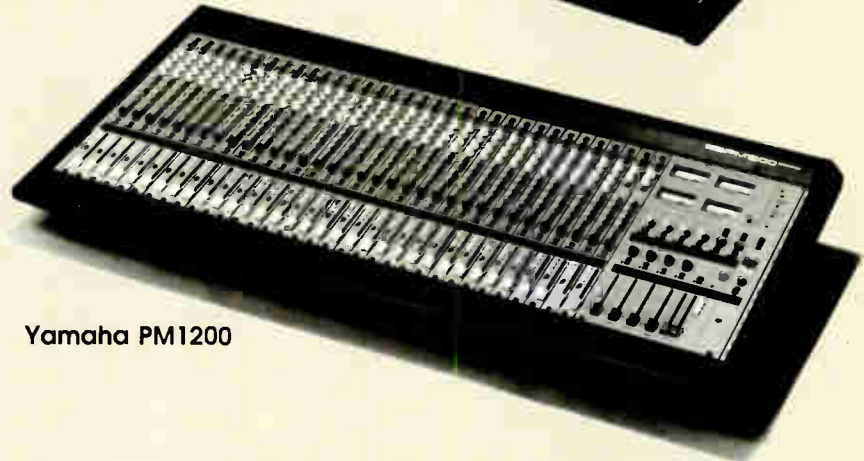
Crest Gamble Series EX



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Ramsa

Ramsa was one of the major success stories of the late '80s, with the introduction and marketing of the WR-S840 Series, designed primarily by Ameri-

BUYER'S GUIDE

can engineer John Windt. Ramsa has produced a reliable, good-sounding product that is attractive to a broad segment of end-users. The limitations of the WR-S852 seem to be the absence of mute groups and the lack of VCAs.

Highlights include superior grounding, construction and stable circuit design.

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1990 SOUND REINFORCEMENT HOUSE MIXING CONSOLE BUYER'S GUIDE

Manufacturer & Model	Year	List \$	Inputs	Other Input Conf.	Groups	Outs	Matrix	AuxSD	AuxRTN	VCA	Muting	Main Metering	Dimensions	Wt.
AudioTechnology Paragon	80	87,950	40	32	18/8s	S	18x4s+4	18	8s	9	8 Scene	48 BG	80x45x20	425
AMEK/TAC SR8000	87	83,215	42	24 extender	18	S	18x8	18	NO	Opt	8 Group	27 VU or 27 BG	84x38x15	750
Crest Gamble Series EX	87	79,900	58	*Custom	8s	S,M	8s x 8s	8,1s	NO	NO	8 Scene	85 BG	74x40x15	400
Soundtracs SPA 4000	89	55,900	40	24,32,48	8	S	8x8	8	8s	8	8 Scene	11 VU	88x43x14	398
Midas XL2	89	50,000	40	24,32	8	S,M	2x2	8	8	NO	8 Group	52 BG	73x34x13	398
Hill Concept 4400	88	47,950	48	18,24,32,40	18	S,C	18x8	12	18	Opt	2 Group	88 BG, 1 VU	99x57x17	350
Yamaha PM3000	88	45,500	40	24,32	8	S	11x8	8	4s	8	8 Scene	14 VU	78x38x12	302
DDA Arena	89	42,000	40	18,24,32	8	S,M	8x8	8	8	8	8 Group	10 VU, 40 BG	88x39x14	NA
Soundcraft 8000	88	37,700	40	18,24,32	8	S,M,C	8x8	8	Opt (8)	Opt	Opt (4)	10 VU	78x30x13	200
Ramsa WR-C900	89	38,500	32	18,24,40,48	*4	L,R,C,S	*10x8	4	4	NO	NO	10 VU	84x38x12	NA
Ramsa WR-S852	88	38,300	52	24	8	S,M	8x10	8	12	NO	NO	18 VU	73x39x12	283
DDA O Series	88	31,185	40	18,24,32	8	S,M	8x8	8	NO	NO	NO	10 VU, 40 BG	88x38x14	NA
Allen & Heath Saber PA	89	27,000	48	24,32,40,58,80	*8	S,M	10x8	8	4	Opt	*	8 BG, 2 VU	80x32x8	300
DDA Q Series	89	28,900	40	18,24,32	8	S,M	8x8	8	8	NO	8 Group	10 VU, 40 BG	79x30x11	NA
Toa RX-7	NA	28,200	32	18,24	4	M	4x8	4	4	NO	NO	14 VU	87x33x15	303
Yamaha PM1800	88	23,900	40	18,24,32	8	S	8x4	8	4s	NO	8 Scene	13 VU	73x34x12	221
AMEK/TAC Scorpion II	89	22,489	40	18,32	8	S	8x8	8	4	NO	NO	11 VU or 11 BG	88x33x10	340
Soundcraft 500	85	20,530	40	18,24,32	8	S	Opt 8x8	8	8	NO	NO	10 VU	85x34x11	170
D&R Stylyx	89	18,978	40	18,24,32	8	S	NO	4	8	NO	NO	12 BG	55x30x8	121
Conneaut Audio Maxcon	89	18,400	32	20,24,32,48	8	S,M	NO	8,1s	8	NO	8 Group	18 BG, 2 VU	38x33x17	150
Studiomaster Series II	85	15,525	40	18,24,32	18	S	NO	8	8	NO	NO	19 BG	72x30x8	150
DDA S Series	88	14,850	32	18,24	4	S,M	4x4	8	4	NO	NO	8 VU	81x30x11	NA
Soundtracs MX	NA	12,800	32	24,40	8	S	4x4	8	8s	NO	NO	11 BG	88x33x9	137
Studiomaster Series III	87	11,335	40	18,24,32	8	S	NO	8	NO	NO	NO	11 BG	77x28x5	148
AMEK/TAC Bullet	89	10,552	28	30x4x2	8	S	NO	4,1s	8s	NO	NO	11 VU or 11 BG	41x22x12	130
Soundcraft 200 Delta	89	10,370	32	8,18,24	4	S,C	*4x8	8	8	NO	NO	8 BG	51x27x9	80
Peavey Mark VIII	89	10,000	38	24	8	S	2x10	8	8	NO	NO	10 BG	70x34x14	178
Studiomaster Series 5	87	8,385	40	18,24,32,48	8	S	NO	5	2	NO	NO	10 BG	71x24x8	138
Allen & Heath SC432 XA	88	8,700	32	18,24,32	4	S,M	4x4	4	2	NO	NO	8 BG	55x27x4	150
Yamaha PM1200	90	8,500	32	18,24	4	S	NO	4	2s	NO	4 Scene	4 VU	55x27x8	150

S = stereo

M = mono

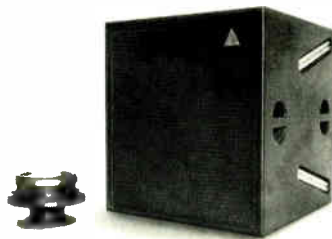
BG = bar graph

Opt = optional

* = check with manufacturer for more information

NA = not available

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*Presented by Dr. E.R. Geddes at the 83rd AES Convention, Oct. 1987



ADVANCED CONCERT SYSTEMS

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Telephone: (416) 420-6279 Fax (416) 420-0813

well as an updated version of its Scorpion line. The new Scorpion II adds several minor features and now sports different cosmetics, but otherwise remains essentially the same. The Scorpion line has been popular ever since its original release several years ago, mostly since it is a decent, affordable console with touring capabilities. Anyone looking to buy a cost-effective mid-level console should seriously consider this model.

TAC's large SR9000 concert model has sold well recently in overseas markets but has not yet caught on in the North American market. With 16 auxiliary sends and a host of other features, it offers plenty for the house engineer. The \$83,000 list price makes this an investment for serious companies only.

Audio Teknology

Audio Teknology is a newcomer to the console marketplace. Its Paragon shows plenty of promise, boasting a plethora of features—especially its extensive gate and limiter signal processing for each input channel. Another great design feature is the ability to instantly change from a house console into a monitor console with only the flip of a few switches. President and engineer Chris Strahm developed the console's high-performance balanced-input and -output devices. The Paragon is just now rolling off the production line and remains unproven at the time of this writing, but from all present indications it should be a big hit in the high-end market.

Yamaha

The Yamaha PM3000 is the most requested large console in the field today due to its relative affordability, great distribution and usable functions. Its strengths are the programmable scene muting, VCA and matrix functions. Some users cite the need for improvement in the EQ section, but it's sufficient for most engineers. I own several PM3000s and have never had any difficulties with reliability or maintenance beyond burned-out light bulbs and the occasional blown chip. The PM3000 is acceptable for almost all contract riders. The PM1800 is a scaled-down PM3000 without VCAs—ideal for those needing a higher-end Yamaha console but short on funds.

Circle #172 on Reader Service Card

MACRO TECHNOLOGY



BUYER'S GUIDE

Though not as extensively sold as the PM3000, it's popular for mid-level audio applications and widely accepted.

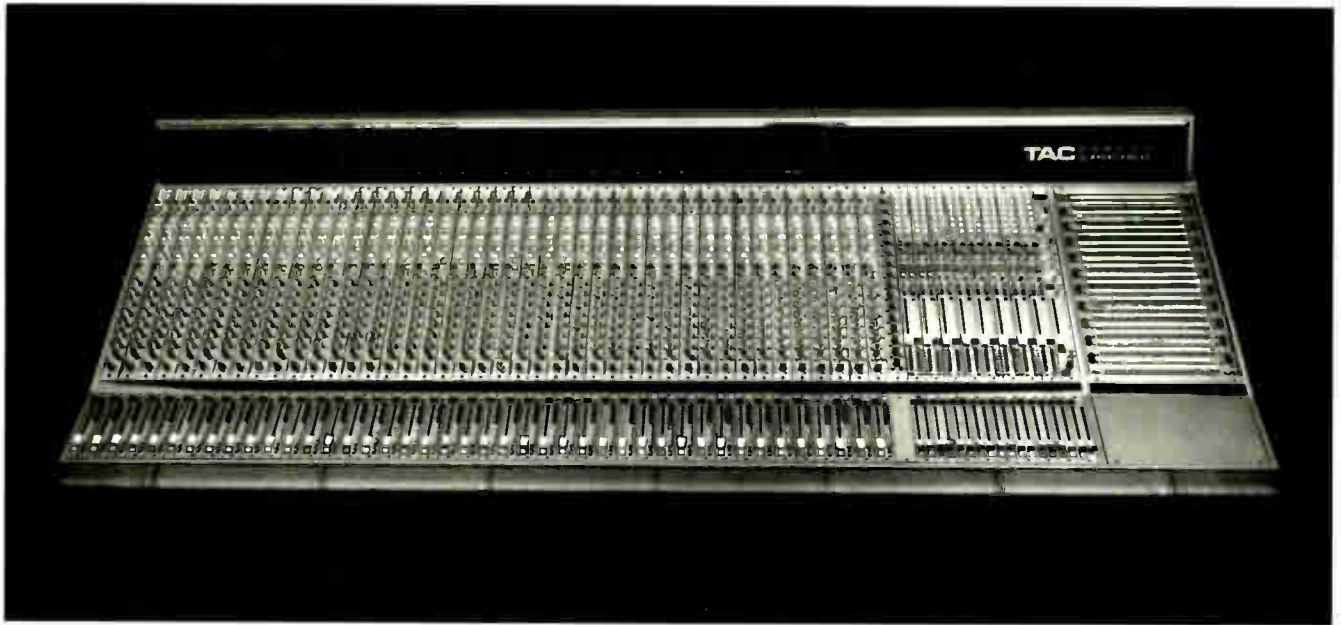
If you are in the market for a low-

cost house console, check out the new PM1200 that Yamaha began shipping this spring. With programmable scene muting that can be automated with the PM3000 and PM1800, it can be conveniently used as a submixer for users desiring affordable inputs, or as a

stand-alone unit with up to 32 inputs.

Klark-Teknik

Midas used to be a big name in the console industry, but lost much of its considerable market share in the '80s. Now Klark-Teknik has taken over the



TAC SR9000 Superconsole

Maxell has the classics



Photo: Bill Milne

Sound Reinforcement Mixing Console Manufacturers

Allen & Heath
5 Connair Road
Orange, CT 06477
(203) 795-3594

AMEK/TAC,
10815 Burbank Blvd.
North Hollywood, CA 91601
(818) 508-9788

Audio Teknology, Inc.
7556 SW Bridgeport Road
Portland, OR 97224
(503) 624-0405

Conneaut Audio Devices
PO Box 120
Conneaut, OH 44030
(800) 762-9266

Crest Audio Gamble
150 Florence Ave.
Hawthorne, NJ 07596
(201) 423-1300

D & R Electronics USA
Route 3, Box 184-A
Montgomery, TX 77356
(409) 588-3411

Hill Audio
5002B N. Royal Atlanta Dr.
Tucker, GA 30084
(404) 934-1851

JBL Soundcraft
8500 Balboa Blvd.
Northridge, CA 91329
(818) 893-4351

Klark-Teknik/DDA, Midas
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Farmingdale, NY 11735
(516) 249-3660

Panasonic/Ramsa
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Cypress, CA 90630
(714) 373-7277

Peavey Electronics Corp.
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Meridian, MS 39302
(601) 483-5372

Samson Technologies/
Soundtracs,
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(516) 932-3810

Studiomaster,
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Anaheim, CA 92807
(714) 524-2227

Toa Electronics
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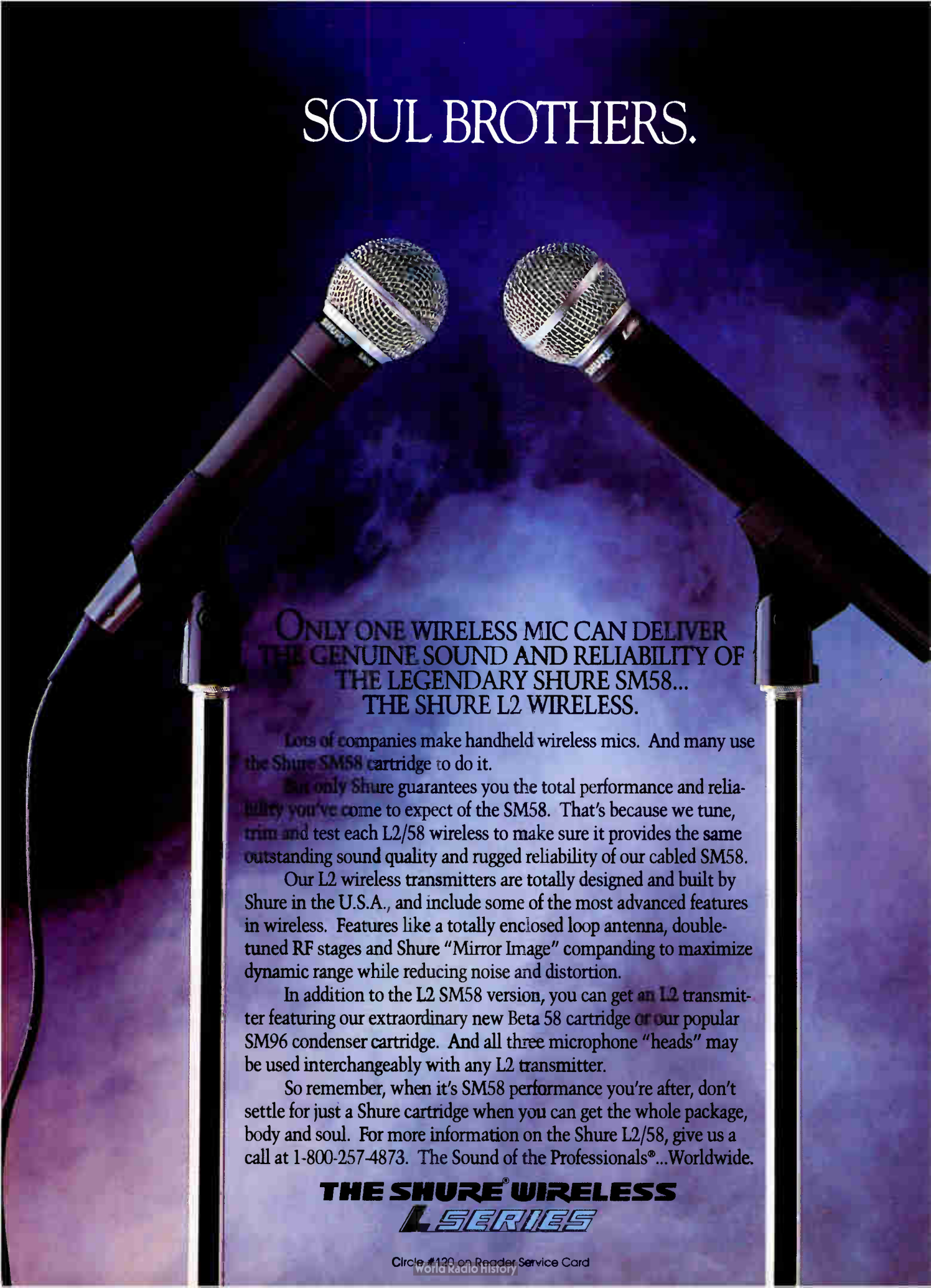
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In addition to the L2 SM58 version, you can get an L2 transmitter featuring our extraordinary new Beta 58 cartridge or our popular SM96 condenser cartridge. And all three microphone "heads" may be used interchangeably with any L2 transmitter.

So remember, when it's SM58 performance you're after, don't settle for just a Shure cartridge when you can get the whole package, body and soul. For more information on the Shure L2/58, give us a call at 1-800-257-4873. The Sound of the Professionals®...Worldwide.

THE SHURE® WIRELESS
L2 SERIES

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World Radio History

Midas line and is making an honest attempt at reviving this former console powerhouse, which was plagued by production, service and inventory problems. In this light it will be interesting to see how Klark-Teknik does in the months ahead with its new Midas XL2 product.

Klark-Teknik's DDA Q Series may be the most underrated console in the market. Expect it to catch on soon because most end-users report being delighted with this console, which offers much at an affordable price. The DDA Q Series seems to be a good choice for installations, theater work, and mid-level P.A. applications.

The DDA Arena is an unproven item at this time. A couple of Arenas were just sold to two regional companies, but no national sound company has road-tested this new model yet. It appears that the DDA Arena has plenty to offer for the price, although the equalization section could use some upgrading if K-T wants to compete with high-end models.

D&R

D&R primarily makes recording consoles but has models that can be used for live work as well. For some reason this Belgian manufacturer's products have not yet caught on in the U.S. Could it be that some live sound companies are put off by the fact that D&R's consoles are designed for both live and recording use? The engineering, electronic performance and part selection are all actually very good relative to price in the Stylyx model. But perhaps D&R's penchant for innovation has taken it too far out of the mainstream for some people.

Conneaut Audio Devices

Conneaut Audio Devices is a newcomer to the industry and primarily targets its products toward the recording market. The Maxcon shows some promise for live applications, though, and with a few changes directed toward the sound reinforcement market, it could become one of the better affordable mid-level consoles.

Soundcraft

Soundcraft has updated and improved the widely sold small 200 Series line (see review in *Mix*, March '90). The new 200 Delta offers improved electronics, better ergonomics, more



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BUYER'S GUIDE

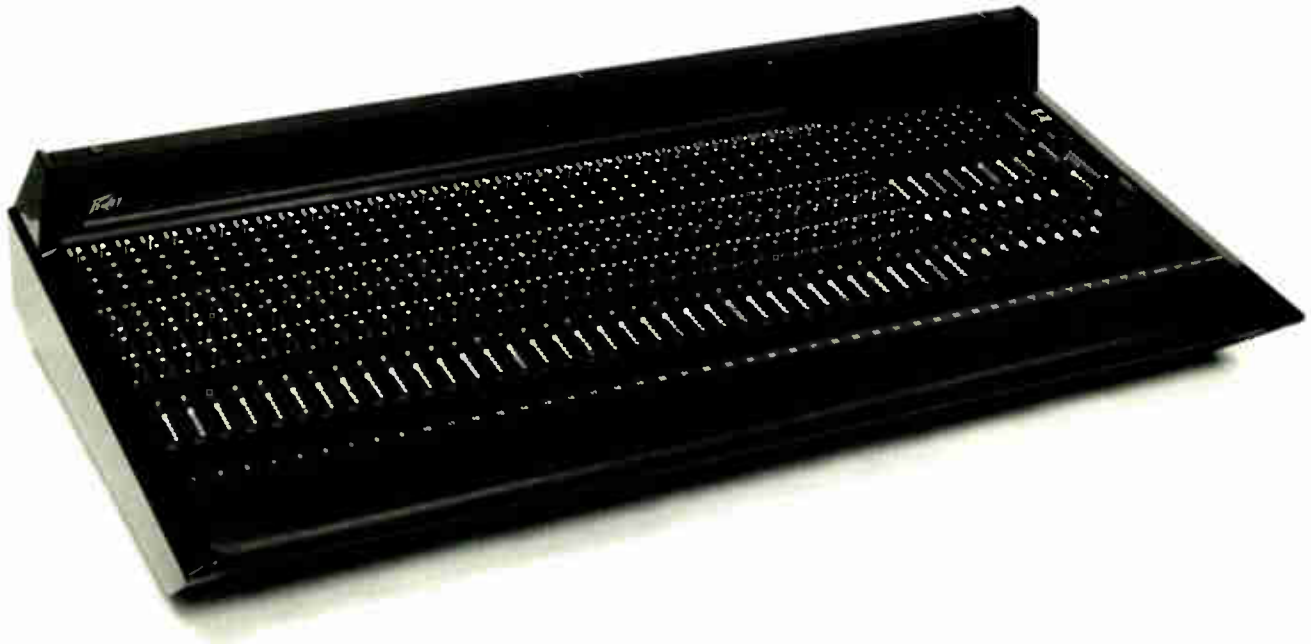
options and a price tag that amazingly remains the same. This unit could be just the ticket for those looking for a good, small professional console.

On the other hand, loping along, but not really finding its place in the marketplace, is Soundcraft's 8000. Many end-users report that the 8000 sounds fine and has a good reliability and maintenance record. Maybe the

price tag is just a little too high for the features offered.

Peavey

Peavey is making a strong push to enter the lower end of the pro audio



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The ATI Paragon. For engineers who've had mixed feelings about live consoles.

There's a new kind of live console. One designed for all the engineers who only feel lukewarm about their current mixer.

You've already heard the rumors about the Paragon™. About how it has been developed to be the ultimate live console. Now it's here. And once you sit down and work with it, you're going to get excited about mixing again.

The Paragon has all the features and control of the best studio boards.

Including RMS compression, parametric noise gate, and four-band fully parametric EQ on each channel.

There's also radical new circuitry inside the console for quieter sound and more dynamic range than you've ever imagined.

The Paragon is built the way live consoles always should have been built. With consistent feel and performance from module to module, board to board.

Every switch, every fader is of the highest quality, and laid out exactly where you need it. Each console provides complete facilities for both house and monitor applications. A truly universal board.

A console this well designed didn't happen by accident. It was created by some of the best sound reinforcement pros in the industry. Experts who dedicated their experience and resources to one objective: designing the best live mixing system in the world.

Call ATI and find out more about the Paragon. It'll give you a whole new feeling about live consoles.



Audio Teknology Incorporated

7556 SW Bridgeport Road, Portland, OR 97224 (503) 624-0405. Fax: (503) 624-0194.

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THE 1990 TEC AWARDS NOMINEES

OUTSTANDING TECHNICAL ACHIEVEMENT

Recording/Storage Technology

- Akai A-DAM System
- Lexicon Opus/E
- Panasonic SV-255 DAT
- Solid State Logic ScreenSound
- Sony TCD-D10PRO DAT
- Studer/Editech Dyaxis 2.4

Signal Processing Technology

- Alesis MIDverb III
- ART SGE Mach II
- BASE Bedini Audio Spacial Environment
- DigiTech MEQ-14 MIDI Equalizer
- Eventide H3000 SE
- Lexicon LXP-5

Console Technology

- Alesis 1622
- Amek Mozart
- Neve VR Series
- Otari Diskmix 3
- Soundcraft 200 Delta
- Trident Vector

Transducer Technology

- AKG C-426B Microphone
- Apogee AE-4 Speakers
- Crown SASS Microphones
- Intersonic Bass Tech-7 Subwoofer
- JBL 2200 Series Speakers
- Meyer HD-1 Monitors

Musical Instrument Technology

- E-mu Systems Proteus
- Ensoniq VFX-SD
- Korg T-Series
- Peavey DPM-3
- Roland U-220
- Yamaha SY77

Computer Software/Peripherals

- Lone Wolf MIDItap
- Mark of the Unicorn Performer 3.3
- Passport Designs Pro-4
- Spectral Synthesis Synthcard
- Steinberg/Jones Cubase
- Words & Deeds Archie 2.0

Ancillary Equipment

- Adams-Smith Zeta 3B Synchronizer
- Ampex DAT-Pak
- Audio Precision System 1 + DSP Test System
- Jensen Twin Servo 990 Microphone Preamp
- Tascam MIDlizer Synchronizer
- TimeLine Lynx Keyboard Control Unit

Sound Reinforcement Product of the Year

- Apogee AE-4 Speakers
- Crown System IQ-2000
- Crest Gamble Series EX Consoles
- JBL 2200 Series Speakers
- Showco Digital Crossover
- Soundcraft 200 Delta Consoles

Recording Product of the Year

- Akai A-DAM System
- Gotham CDR-90 Reference System
- Neve VR Series
- Solid State Logic ScreenSound
- Studer/Editech Dyaxis 2.4
- Tascam MSR-24 24-Track Recorder

OUTSTANDING CREATIVE ACHIEVEMENT

Recording Engineer

- Ed Cherney
- Bob Clearmountain
- Keith Cohen
- Kevin Killen
- George Massenburg
- Shelly Yakus

Remote/Broadcast Recording Engineer

- Guy Charbonneau
- Bob Clearmountain
- Ron Estes
- Randy Ezratty
- Ed Greene
- David Hewitt

Mastering Engineer

- Greg Fulginiti
- Bernie Grundman
- Ted Jensen
- Bob Ludwig
- Steven Marcussen
- Denny Purcell

Sound Reinforcement Engineer

- Rob Colby
- Clive Franks
- Dave Kob
- Benjamin LeFevre
- Mike Ponczek
- Brian Ruggles

Record Producer

- Peter Asher
- Jimmy Jam/Terry Lewis
- Quincy Jones
- Daniel Lanois
- Hugh Padgham/Phil Collins
- Don Was

Audio Post-Production Engineer

- John Alberts
- Bruce Botnick
- Ben Burt/Richard Hymms/Gary Summers/David Slusser
- Tom Fleishman
- Scott M. Gershin
- Ken Hahn

OUTSTANDING INSTITUTIONAL ACHIEVEMENT

Acoustics/Studio Design Company

- Tom Hidley Design Service, Montreux, Switzerland
- Joiner-Rose Group, Dallas, TX
- Perception, Inc., Los Angeles, CA
- RLS Acoustics, San Francisco, CA
- Walters-Stork Design Group, New York, NY
- Waterland Design, Hollywood, CA

Recording Studio

- A&M Recording Studios, Hollywood, CA
- Conway Studios, Los Angeles, CA
- Ocean Way, Los Angeles, CA
- Power Station, New York, NY
- Real World, Bath, England
- Skyline Studios, New York, NY

Sound Reinforcement Company

- Audio Analysts, Plattsburg, NY
- Clair Bros., Litz, PA
- Electrotec Productions, Canoga Park, CA
- Maryland Sound Industries, Baltimore, MD
- Showco, Inc., Dallas, TX
- Ultra Sound, San Rafael, CA

Mastering Facility

- Artisan Sound Recorders, Los Angeles, CA
- Fullersound, Inc., Miami, FL
- Bernie Grundman Mastering, Los Angeles, CA
- Masterdisk Corp., New York, NY
- Precision Lacquer, Hollywood, CA
- Sterling Sound, New York, NY

Remote Recording Facility

- Efanell Music, New York, NY
- Fanta Professional Services, Nashville, TN
- Le Mobile, North Hollywood, CA
- Record Plant Remotes, Los Angeles, CA
- Remote Recording Services, Lahaska, PA
- Westwood One Mobile Recording Division, Culver City, CA

Recording School/Program

- Berklee College of Music, Boston, MA
- Full Sail Center for the Recording Arts, Winter Park, FL
- Institute of Audio Research, New York, NY
- Middle Tennessee State University, Murfreesboro, TN
- Trebas Institute of Recording Arts, Hollywood, CA
- University of Miami, Coral Gables, FL

1990 TEC AWARDS HALL OF FAME INDUCTEES:

Deane Jensen, Quincy Jones, George Massenburg

The 1990 TEC Awards will be held Sunday, September 23, at The Biltmore Bowl in downtown Los Angeles.

For more information, contact Karen Dunn at (415) 420-0144.

WATCH FOR YOUR VOTING BALLOT IN THE JULY ISSUE!



PHOTO: C.R. KING

BUYER'S GUIDE

console market with the 36-channel Mark VIII. Loaded with an impressive array of features and a very reasonable price tag, it should do well. Small P.A. companies and clubs with a limited budget will find that the Mark VIII has many of the functions one would expect on a much more expensive console.

Soundtracs

Soundtracs recently unveiled the SPA 4000 for the concert touring market. End-user feedback isn't really available yet. The Soundtracs MX has been available for several years and remains basically the same. Found primarily in local and regional sound companies' inventory, the MX is usually acceptable to most mid-level end-users, although few travel the national concert circuit.

Soundtracs SPA Series



Short Takes

Most customers report satisfaction with Allen & Heath's recent live models. Local and small regional companies tend to be the primary consumers.

Great Britain's Hill Audio carries the Concept Series of live consoles. Basically, only the 4400 is really marketed in the U.S. to regional and national sound companies. It has many options and an EQ section unlike any other console. At this time only a few have been sold in the U.S., so user feedback is limited.

Studiomaster is best known for recording consoles, but the Series 5, III and II models can be used for live applications, as well as recording. Studiomaster's line is for those on a limited budget but needing versatile pro equipment. They are mainly used by small sound companies and various clubs.

Toa still sells a few of its RX-7 models every year, but the console has never made much of an impact. Only having four subgroups and four aux sends is a limiting factor—along with the rather high list price. ■

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Wireless Mics

IN SOUND REINFORCEMENT



by **George Petersen**

Whether in a small club or a televised mega-festival in a packed stadium, wireless systems are almost certainly in use somewhere onstage. Once available only to the

PROBLEMS



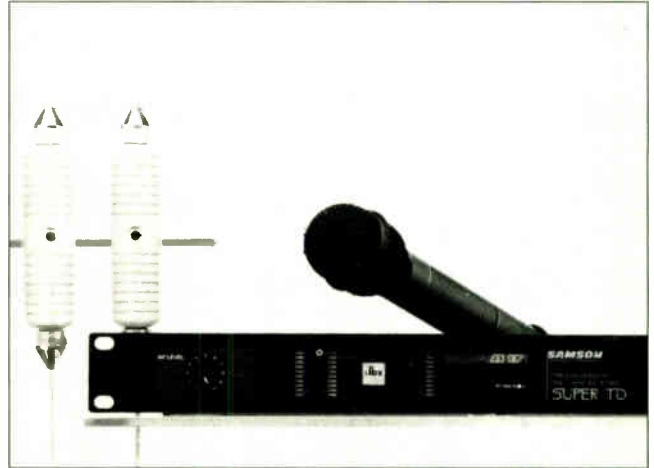
SOLUTIONS

top touring acts, advancements in RF (radio frequency) technology, along with the miniaturization of transmitter circuits, has helped to make pro-quality wireless systems affordable to just about any sound reinforcement company, large or small.

But one thing hasn't changed: the need for reliability, especially in live performance situations where the concept of a "second take" is mere fantasy. Besides top-quality audio performance, a wireless rig used in sound reinforcement has to be rugged enough to stand up to the abuses of the road, as well as provide protection from interference from the ever-crowded airwaves. We talked to a number of sound



From top left photo, clockwise: Nady 650 wireless system, Beyer SEM 186, Samson Super TD Series and Shure L Series wireless handheld transmitter



Opposite page: Sennheiser SKM 4031 transmitter

reinforcement companies about their current systems and asked for some of their solutions to problems concerning life in the wireless lane.

**BURNS AUDIO
Sun Valley, California**

Located in the small town of Sun Valley, Calif., Burns Audio has carved out a niche for itself by specializing in providing sound reinforcement for live television events. Past clients have included the Grammy Awards (as featured on the cover of this month's *Mix*) the Academy Awards, People's Choice Awards, as well as the Golden Globe and Country Music Awards, to name a few. According to company representative Dave Bellamy, Burns Audio also maintains a healthy rental business, supplying audio equipment to all the major TV networks, and their wireless complement includes Sennheiser 2003 UHF and Vega R-42 VHF systems.

What's the most important consideration when renting a wireless system?

Fiber Optics
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Become Reality*

Fiber optic communications is nothing new. In fact, this is time-tested technology, and certainly the myriad installations for telephone communications have proven this to be a reliable, effective way of moving large amounts of data. What is new, however, is the increasing interest in using fiber optics in studio and sound reinforcement applications.

Basically, these systems operate by converting the audio input to a digital datastream, which is multiplexed and transmitted over a fiber optic cable to one or more receivers that decode the incoming light pulses back into audio. Unlike copper

—CONTINUED ON PAGE 144



Now beta testing with several major sound companies is Lester Audio Labs DAS 2000, a multi-station system that can handle up to 64 lines of audio under program-mable Soft Patch™ control.

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- ★ Kathleen Battle/Jessye Norman (Deutsche Grammaphone)
- ★ Peter Gabriel ("Passion")
- ★ Depeche Mode ("101")
- ★ Suzanne Vega ("Days of Open Hand")
- ★ Keith Jarrett (ECM)
- ★ "Great Performances" (PBS)
- ★ NBC ("Night Music," David Letterman 8th Anniversary, Daytime Emmys)
- ★ MTV (Earth Day, Central Park '90)

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48 TRACK DIGITAL

Circle #178 on Reader Service Card

The main thing we focus on is making sure that our equipment is working as well as it possibly can before it leaves here, and we have an extensive diagnostic and maintenance program to make sure that is the case. If you're in a position to rent RF, be sure you rent from a company that really takes care of the units, so you'll know that they'll work well. Dealing with RF has really become a specialty in this business.

I'm heavily involved with frequency coordination: A unit won't work if it's on the wrong frequency or conflicting with another unit. For example, I'm sending a unit out today that's going to Boston and then to Miami. I have to know what television stations are in those areas, plus I have to know if there are any other radio frequencies being used in those individual venues. A lot of what I do is investigation—finding out what's going on to avoid any possible problems downstream. I have a book listing everybody's frequencies everywhere, and I keep it constantly updated, along with what frequency preferences people have.

How do you feel about UHF vs. VHF systems?

There are few UHF transmitters out there, and you're going to have less potential for interference because there's so little traffic in UHF. For that reason alone, you're going to have fewer problems.

How important are batteries?

Batteries are a very important issue. We use Duracells. They're excellent batteries—with a good battery life and consistent performance—but they also fit well into the battery compartments of the Vega transmitters. Occasionally, a client may try using an old battery that checks out fine on a static voltage test with a voltmeter, but the voltage may drop way down when the transmitter is turned on. Generally, battery problems are minimal. Just put in fresh batteries after the rehearsal, before you go to tape or go on the air.

Some time ago, there was some talk about rechargeable batteries making some headway into the wireless mic business. Any progress in this area?

Nobody uses rechargeable batteries, since you never know if it's up to full charge. No one wants to take the risk of putting in a battery that might go dead during a performance. And every time you recharge a battery, it becomes weaker. Everybody is afraid to use rechargeables. A couple of years

ago, Vega came out with a version of the PL that had rechargeable batteries, but they changed it to use a replaceable battery. I don't think we'll ever see rechargeable or reusable batteries in this business. It's certainly not a cost factor, especially in terms of a show's budget and what's at stake.

dB SOUND

Des Plaines, Illinois

While this 18-year-old firm specializes in national and international tours, dB Sound also handles industrial shows for clients such as Mitsubishi Motors and Nintendo. The latter assignment proved to be a 30-week series of arena shows featuring video game competitions and exhibits of new Nintendo products. As a leading sound company in the Midwest, dB has worked closely with Electro-Voice in the design of products such as E-V's Manifold Technology and DeltaMax loudspeaker lines. At press time, Aerosmith was out with one of dB's E-V systems, while the company was gearing up to send systems out on the Prince and UB40 tours, according to dB representative Todd Johnson.

What kind of wireless systems are you using at dB?

For most of the touring we use Cetec Vegas—the R-42s or the R-32s. We try to stick with the R-42 units, which are pretty consistent and can take a lot of abuse. I have the new Shure diversity systems out on the Nintendo shows—they're pretty reliable. We also have some older Nady units that I'll send out if the job only requires one or two channels in a limited area for a night.

How do you feel about UHF systems?

UHF systems are a little trickier to use. You have to be more adept at being able to tune them—squelching them out and finding frequencies that are between local TV stations. Once you get the knack of using UHF, they're not so bad—they're just not as user-friendly as VHF systems. Antenna placement is more crucial with UHF, and they are more affected by metal things like lighting trusses. However, UHF does offer a greater selection of frequencies, which is a big factor. It's like anything else—you just have to get used to them. I just finished using the latest model of Sony UHFs, and I was impressed with their performance. They were really good compared to the older, rack-mount Sony UHFs. I've also used some of the Sennheiser UHF stuff. They don't play



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around—it's the best stuff I've ever used, although they're expensive.

What trends have you noticed in the wireless industry?

An artist may have a preference for a certain mic capsule on a wireless,

and two years ago you didn't have much of a choice. Today, you can call up Vega and get an E-V 757 or just about anything you want, and it's about time that they did that. You wouldn't think that this was so much

of a big deal—unless you're dealing with a condenser mic—but for a long time, capsule selection was pretty limited. Other manufacturers are also offering wider selections. Samson has come out with an interchangeable

—FROM PAGE 141, FIBER OPTICS

cabling, fiber optics offer freedom from EMI (electromagnetic interference), RFI (radio frequency interference) and EMP (electromagnetic pulse interference). These can play havoc with metallic cable snakes, which can act as a giant antenna, attracting all kinds of nasty audio artifacts, such as glitches and hum, especially when snakes are used near power lines, heavy electrical equipment, and radio or television transmitters. Since fiber optic systems require no shielding or common metal-to-metal connections between interconnected units, ground loops are eliminated and isolation transformers are not required.

One obvious advantage of these light-based systems is the ability to send data over long distances, with losses ranging in the 0.5dB/mile

range, as compared to metallic snakes where 1dB to 2dB losses are commonly encountered in lengths of a couple of hundred feet. And the weight of the snake is substantially reduced, a major consideration when dealing with long 54-pair snakes, which can weigh hundreds of pounds in wired form. A similar fiber optic cable could be carried easily by one person.

Besides the physical advantages, many fiber optic audio systems have the ability to function as switching/routing/patching networks. In such cases, several stations—such as house console, monitor console, remote recording truck and broadcast vehicle—can be interconnected to the stage inputs, with each having independent control over patching and routing functions. This feature is ideally suited for festival situations,

especially those involving multiple stages and/or several house consoles operating in a "tag-team" fashion, with one board being set up for the next act while the show is running.

Of course, there are some disadvantages of fiber optics, the most obvious of which is cost. Since each input channel requires an A/D converter connected to a multiplexing system (with a D/A converter for each output channel at each receiver), fiber optic systems are obviously hardware-intensive and are not inexpensive, especially given the current pricing of high-quality ADCs and DACs. However, when compared to the cost of a quality snake system with high-performance transformer splitting, the price difference may not be so noticeable.

—GP

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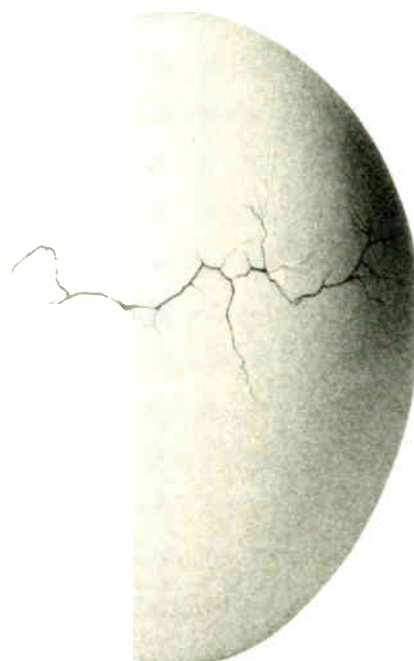
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capsule thing, and Beyer is working on one, because with their system, you have to unscrew the capsule to change the battery. The big Beyer rig is good-sounding and quite clean.

How do you deal with RF problems?

In downtown Chicago here, we've got one of the heaviest RF fields in the world. It's a fact, because before I worked here I did the extended run of the play *Hair*, and we had 12 channels of wireless there in this big theater right next to the El [elevated streetcar] tracks. We went through quite a few systems with that, trying to get it just right. One time I had an

Fiber Optic System Manufacturers

The Grass Valley Group (Wavelink)
13024 Bitney Springs Road
Grass Valley, CA 95945
(916) 478-3000

Lester Audio Labs (DAS 2000)
1111 W. Mockingbird #1342
Dallas, TX 75247
(214) 637-9311

Litton Systems Inc. (VEAM)
100 New Wood Road
Watertown, CT 06795
(203) 274-9681

Klotz & Co. (Oak Link)
c/o Electronic Systems Labs
120 S.W. 21 Terrace C-104
Fort Lauderdale, FL 33312
(305) 791-1501

Lone Wolf (AudioTap)
1509 Aviation Blvd.
Redondo Beach, CA 90278
(213) 379-2036

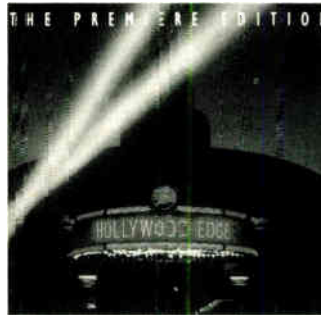
OptoDigital Design (Light Speed 12)
274 Wattis Way
South San Francisco, CA 94080
(415) 871-6000

National Photonics (Sidewinder)
2965 E. Hillcrest Drive #304
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interference problem, which turned out to be caused by a guitar player's cheap wireless in a club next door. Their first set started at 10 p.m., and we'd start having problems every night at that time. With wireless systems, you always have to think about what's around you.

Frequency selection can be pretty touchy. I keep in contact with the different people who own wireless systems in this area, and I know what everybody else has. For example, the people at On Stage Audio (Elk Grove Village, Ill.) have a list of what I have—everybody helps each other, so you don't have a problem.

Any general advice about placing antennas?

I like to keep antennas within line-of-sight, as close to the receivers as possible, and try to keep antennas away from metal. The whole antenna thing is a trial and error process—it doesn't work the same way in every place. We had some problems on a Nintendo show in a convention center in Cleveland. There was a lot of metal in the structure, and moving the antennas five feet cleared up the problem. With our Shure system,

we've got a distributed antenna system that's real clean and nice, with six units mounted in a rack. A lot of the time it's best to use a distributed antenna system in hotels and things, so instead of having 6 million antennas we use a pair of antennas with a

splitter.

Anything else?

Dealing with wireless is a pretty touchy issue, but making sure that everything is well-maintained and keeping fresh batteries is the key to success. When I was doing *Hair*, I tried just about every battery in the world, looking for something that lasts longer, and Duracell seemed to do it. I probably went through about 15,000 batteries with that show. I start a show with fresh batteries and change them at the intermission. I'm not one for taking chances with batteries. If you get to a crucial point where you should have changed that battery and you didn't, then you'll pay for it. At that point you're being penny-wise and pound-foolish.



Vega Pro Plus wireless system
T-89 wireless transmitter

ELECTROTEC PRODUCTIONS **Canoga Park, California**

Founded in 1982, with headquarters in Southern California and subsidiary facilities in Nashville and London, Electrotec can handle up to six tours simultaneously. The company has been nominated for a 1990 TEC Award in the category of Sound Reinforcement Company of the Year, and

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World Radio History

according to engineer Jeff Forbes, some of Electrotec's recent clients included Alabama, Elvis Costello, Jefferson Airplane, Randy Travis, The Eurythmics, Barry Manilow, Tesla and Tom Petty.

What kind of wireless systems does Electrotec use?

We own some Nady equipment—the 700 Series, 701 Series and down. We've just started checking out the new Samson Series, which has the 10-channel receiver that allows you to change channels if you have any RF problems—and our first indication is that it's quite good. That's all we own. A lot of times we rent Vega or HME systems. We don't maintain a large stock of wireless here, because it seems that more and more of the artists have their own wireless systems.

What are your major concerns about wireless performance?

A lot of engineers talk about different capsules or types of lavaliers to use, but our main concern with wireless systems is reliability and how well the transmitter locks to the receiver, because the best-sounding mic capsule in the world won't do anything for you if the signal is drifting all over. This can depend on a lot of things—where the performer is onstage in relation to the receiver, the venue itself and local communications in the air. We always do RF checks after rehearsals, by taking a mic out onstage and listening for any spots that are "dead." If that occurs, you can move the antennas or receivers, but if that doesn't help, then you need to notify the performer that the mic is less effective in those areas.

Often, everything works fine during the rehearsal, and problems come up at night, when security people, the police or remote television crews show up. These people weren't there during the rehearsal, and now you've got a bunch of walkie-talkies and wireless communications. Suddenly the air is full of all kinds of transmitted signals, and the ability of your mic to lock to its receiver is dictated by these situations. If someone keys a 5-watt walkie-talkie while standing in the monitor area next to a receiver that is looking for a 1/2-watt output from a hand transmitter, it can pop them real good. So you need to keep these away from the receivers and make sure the staff is aware of the problem.

How do you deal with common wireless problems?

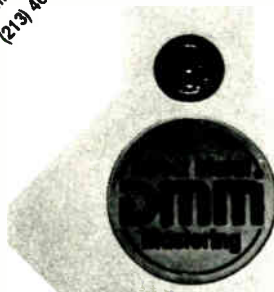
You generally have one main mic

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for the lead singer and a backup mic. With Barry [Manilow], we'd also have multiple handheld mics transmitting on the same frequency. Usually, if you have a problem with your wireless, it's a problem with the transmitter being dropped or hit. Then you can just grab the damaged one and provide another operating on the same frequency, which saves the engineer from having to repatch or set up another input channel. We also usually carry a spare wireless setup, because you'll find that some cities or areas are notorious when it comes to RF problems. There's a place in Jacksonville, Florida, that's next to a big transmitting antenna. During the day you usually have problems, but at night the transmitter goes to half-power and everything's okay.

When we did Barry on Broadway we had occasional problems—with all the taxis, police and other theaters in the area, you have a lot of RF. Consequently, you try to maximize your chances of keeping the signal as clean as possible between the transmitter and the receiver. With Barry, we just put his receiver onstage in front of him, so at any given time, it wasn't more than about five or six feet away. Yet even with the receiver that close, we'd still have problems on some nights, which gives you an indication of just how bad that area can be in terms of RF problems. It's almost an unspoken rule that whenever you're using wireless onstage, you also have a wired mic as a backup. There isn't a performer in the world who won't be seen performing with a cable, if it's the difference between being and not being heard.

Anything else?

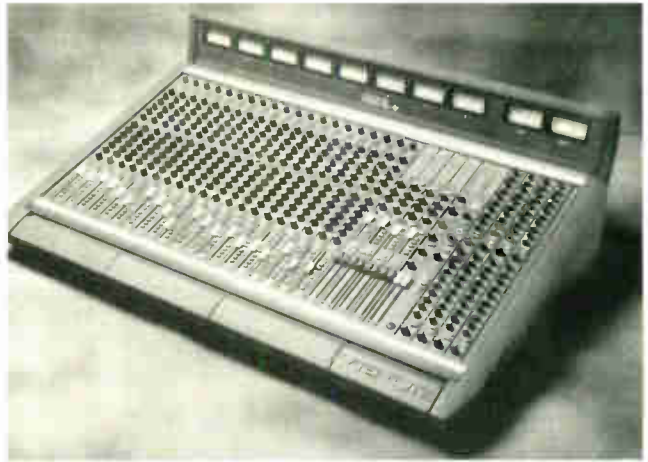
Wireless can be very helpful, especially when you're working in bad weather, because the performer is not really tied to anything you could get a shock from. We did a show with the Go-Go's where the lead singer was running around in the rain, and we didn't have to worry about her getting shocked, since there wasn't any physical connection to the audio system. We had a situation with Barry, where he was out singing in the rain during this mini-hurricane in Memphis, Tennessee. The management came running to us, wondering if he could get shocked while onstage, but he couldn't get shocked because he wasn't plugged into anything, so they left him out there and he had a ball doing the show. ■

Circle #156 on Reader Service Card

SOUND REINFORCEMENT NEW PRODUCTS

SOUNDCRAFT VENUE CONSOLE

Designed for sound reinforcement applications is the Venue, a new 8-bus console series from Soundcraft. Stereo and mono input modules are available, featuring six aux sends, phase reverse, 100mm long-throw faders and sweepable-mid EQ (4-band mono, 3-band stereo). A dual group stereo return module can be used to create subgroups or to bring stereo effects into the mix, and up to four dual-matrix modules can be fitted for 8 x 8 matrix output mixing. Available in seven standard configurations (16 x 8, 24 x 8, 32 x 8 and 40 x 8, along with three matrix versions: 20 x 8, 28 x 8 and 36 x 8), the boards can also be ordered in short-loaded form. The larger frames include an over-bridge with 10 VU meters, which augment the on-board LED metering. Circle #010 on Reader Service Card

**SHURE L2 WIRELESS TRANSMITTERS**

Available in three versions (with interchangeable SM58, SM96 or Beta 58 mic capsules) is the line of L2 transmitters designed for use with the L Series of wireless microphones from Shure Brothers (Evanston, Ill.). The L2 models employ surface-mount technology circuitry, and efficient, internal-loop antennae provide reliable performance from a compact, lightweight package. Other features include an Armo-Dur™ case, separate audio mute and power switches, a continuous battery indicator, double-tuned RF stages, "Mirror Image" companding for increased dynamic range, and a concealed gain adjustment switch. The L2 models—priced from \$532 to \$748.50—operate in the VHF band (169 to 185 MHz) and are available separately or as part of an L Series system.

Circle #011 on Reader Service Card

**YORKVILLE PULSE SPEAKERS**

Pulse is a new series from Yorkville Sound (Niagara Falls, N.Y.). The Pulse 10/12/15 two-way enclosures and monitors combine 10-, 12- or 15-inch speakers with a "Tractrix" horn/compression driver design that is said to offer smooth, natural high-end response, even 60° off-axis. The Pulse 312 is a three-way system with dual 12-inch woofers, 12-inch mid and conical horn/titanium driver combo. The latter is also used in the Pulse 150, which features a 15-inch bass driver. Two subwoofers (with Eminence 15- or 18-inch drivers) are also available.

Circle #012 on Reader Service Card

BAG END TA-12 JUNIOR

Bag End, of Barrington, Ill., has unveiled the TA-12 Junior, a lighter-weight, lower-cost version of the company's popular TA-12. Priced at \$510, the TA-12 Junior has a compact, 43-pound, 23 x 14 x 12-inch ported enclosure. The Junior employs a 12-inch mid driver and constant-directivity horn tweeter in a Time Aligned™ configuration. Frequency response is stated at 70 to 19k Hz and sensitivity is 101 dB (1W/1m). The speaker is available in black carpet and walnut oil finishes.

Circle #013 on Reader Service Card

INTERSONICS BASS TECH 7

Bass Tech 7, the newest addition to the line of ServoDrive subwoofers from Intersonics (Northbrook, Ill.), replaces the traditional magnet/voice-coil speaker design with a fast, rugged servomotor, drive shaft and patented active cooling system. The unit uses two 15-inch pistons to achieve a bandwidth of 28 to 125 Hz and has a stated maximum SPL of 134 dB at full, rated power (400 watts). The Bass Tech 7, constructed of 14-ply Baltic birch and finished in black carpeting, is 45 x 45 x 22.5 inches and weighs 230 pounds.

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TROUBLESHOOTING

SAFE RIGGING

BASIC PRINCIPLES FOR SUSPENDING LOUDSPEAKER SYSTEMS

PART 3

HANGING AND INSTALLING A LOUDSPEAKER SYSTEM

(Editor's Note: The following article is adapted from JBL Technical Notes, Volume 1, Number 14, and used with the permission of JBL Professional. This material is intended for informational purposes,

and none of the enclosed information should be used without first obtaining competent advice with respect to its applicability to a given situation. None of the material is intended as a representation or warranty on the part of JBL, and anyone making use of this information assumes all liability arising from such use.)

Attachments to Loudspeakers

Bolts, shackles, clips and eye bolts all develop the greatest strength along their axes—vertical orientation in hanging applications. It follows that the safest location for hanging attachment points will be at the tops of cabinets to minimize angular stresses on hardware. This requires that the cabinet be strong enough to safely hang from its top. Where multiple enclosures are needed, this can result in cabinets hanging from other cabinets. This makes the loudspeaker enclosure an integral part of the hanging hardware system.

A 5-to-1 design factor is generally assumed for hanging hardware. It follows that loudspeaker cabinets must be capable of similar design factors. The secure attachment of hanging hardware is no assurance that a cabinet will not pull apart under its own weight. *An unmodified cabinet will be no stronger than the material it is made from and the joinery techniques used to assemble it.* As a general rule, all wood and wood-fiber loud-

speaker systems over 50 lbs. require structural reinforcement for hanging installations.

For plywood enclosures, hanging hardware is shown bolted to steel reinforcement plates attached securely to the cabinet in a steel-wood-steel sandwich configuration (see Fig. 1; one corner is shown). All load-bearing panel intersections should be similarly reinforced with steel plates. This method is not suitable for wood-fiber or particle board cabinets.

Particle board and wood-fiber cabinets should be reinforced externally with continuous steel strap or welded steel channel secured to the box so as to surround the enclosure completely, capturing dadoed-in baffle and back panels. This reinforcement method is suitable for all cabinet types. If the baffle board isn't dadoed in the side walls, the cabinet shouldn't be hung and an appropriate substitute should be found. Never rely upon the internal bond strength of particle board or wood-fiber cabinets to carry the weight of a large (over 50-lb.) system.

Small loudspeaker systems are subject to the same mounting considerations. Because they are small and fairly light, however, installers tend to make assumptions that frequently prove unsafe in the long run.

When particle board cabinets are to be suspended from T-nuts and eye bolts, installers should be aware of loading limits that attend this practice. New particle board will exhibit an internal bond strength of 60 to 70 psi (ASTM D-1037). A 14-20 T-nut in 3/4-inch material will subtend approximately 1.4 square inches of bonded surface, resulting in a nominal (breaking) strength of 85 to 98 pounds. Using an assumed design factor of 5, the maximum axial load on a single T-

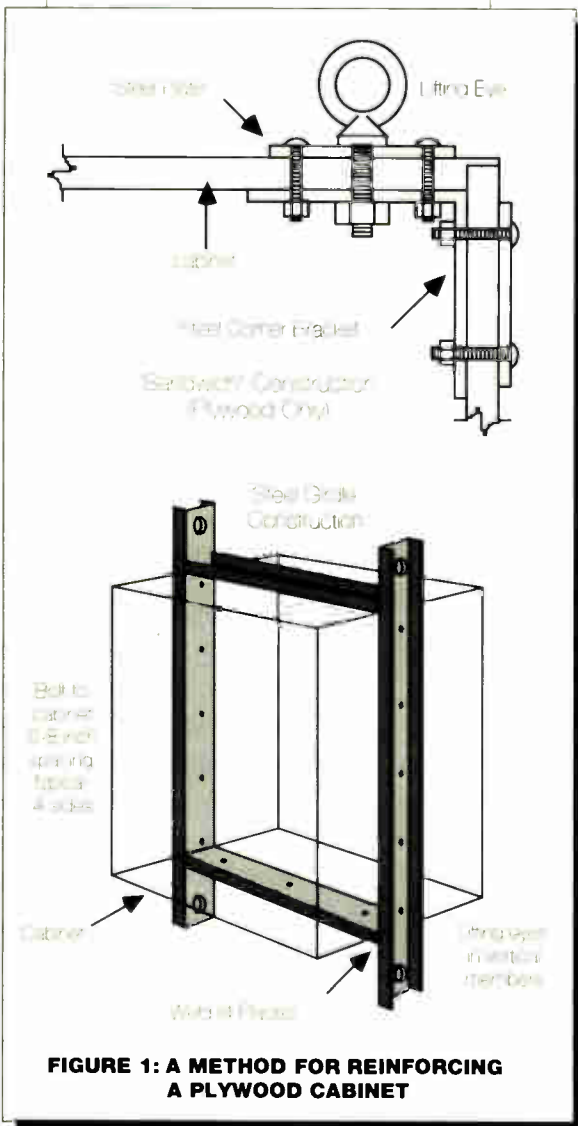


FIGURE 1: A METHOD FOR REINFORCING A PLYWOOD CABINET

nut would become 17 to 20 lbs. Reduce these factors by one-third for 1/2-inch material. This is for particle board that is new or in new condition only. Clearly, this is *not* an acceptable suspension method for large loudspeaker systems.

Conventional particle board is limited to interior use only. The resins in most particle boards will not withstand prolonged exposure to moisture or high humidity. Wide variations of temperature will yield moisture saturation followed by evaporation, under which essential bonding agents will be drawn from the material. This process can eventually result in a cabinet with little more strength than a graham cracker.

The Installation Environment

We have examined hardware systems and precautionary measures to ensure that the connections to the loudspeakers are made in a safe,

INSTALLATION GUIDELINES

1. Never attach or suspend loads to/from a wall or ceiling surface. Always make a secure attachment to *structural* members.

2. Be absolutely certain of the structural integrity of any member that is to be used to support external loads—hidden structures can have hidden weaknesses.

3. Do not rely upon nails or wooden threads to support overhead loads. Nails, wood screws, lag screws and lag screw eyes are untrustworthy.

4. Never assume anything. Owner- or third-party-supplied suspension points may be inadequate for the intended use.

5. Recognize your limitations. Seek help from competent outside sources—architects, structural engineers or rigging specialists—when in doubt.

6. Safety first. Public safety demands that those responsible for placing equipment in potentially hazardous locations do so with full knowledge and use of appropriate precautions and safety measures.

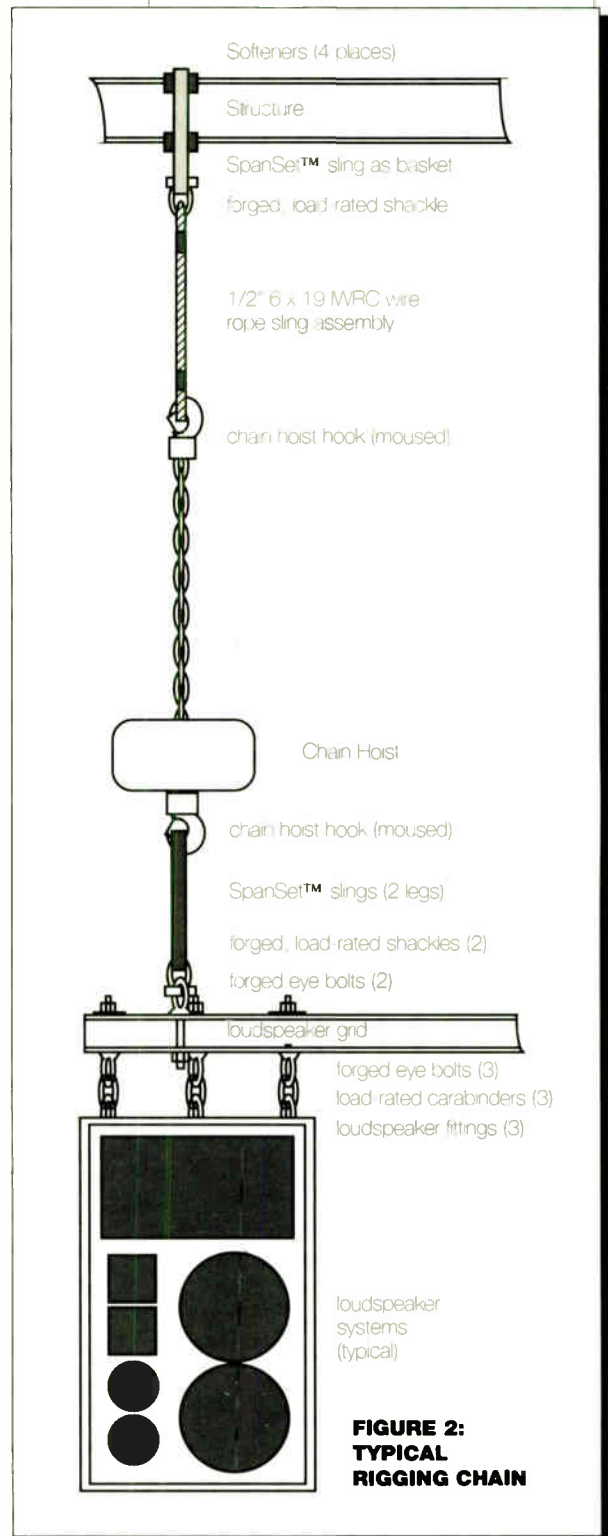
secure manner. What remains is to properly hang the system.

For new construction, the sound system contractor should inform the architect of the planned hang points and the total, concentrated weight on each point. The architect will then be able to provide the necessary load capacities and attachment fixtures as part of the structural plans and specifications. This information should be supplied for each and every suspended component, regardless of size and weight.

The task becomes more difficult in existing buildings and structures when adding sound facilities or remodeling existing systems. Most projects are undertaken without the professional services of an architect or structural engineer. Under these circumstances, the sound system contractor is left to his or her own devices to render a safe installation.

Hanging a System

The first step in hanging a sound system is to obtain qualified advice about the load carrying capacity of the building or structure. The engineer or rigger will need to know how much weight needs to hang where. If the load isn't too heavy and you're not fussy, you may be fortunate enough to be able to hang in straight drops. Fig. 2 shows a portion of such a hanging system. Although the example shown is a portable sound system, the principles involved are identical for fixed installations with the substitution of a one-leg sling for the



**FIGURE 2:
TYPICAL
RIGGING CHAIN**

chain hoist. We will examine the rigging hardware system, beginning at the top.

The I-beam is shown wrapped with a SpanSet used as a basket sling. The corners of the beam are padded with softeners (burlap) to ease the tension of the outside fibers of the sling. We have cho-

sen a sling that is of sufficient length to yield a 68° sling load angle, which gives us a load angle efficiency of better than 90%. Since our sling has a rated capacity of 7,900 lbs. at an assumed 5:1 design factor, the sling will have a rated capacity of 7,900 lbs. x 2 (basket sling) x 90% (load angle efficiency), or 14,200 lbs.

An alternative sling is wire rope. Wire rope is preferred in some venues and by certain riggers and fire marshalls due to its ability to with-

stand greater heat than a polyester sling before failure in the event of fire. When using wire rope around a beam, however, the bend radius often equals the diameter of the wire rope. This results in an efficiency rating of 50%. The strength of the basket (both legs) would be virtually the same as that of a single wire rope. Wire rope beam-wraps must be padded carefully.

The two ends of the sling are then coupled with a 1/2-inch 6 x 19 wire rope sling assembly using a 5/8-inch screw-pin shackle hav-

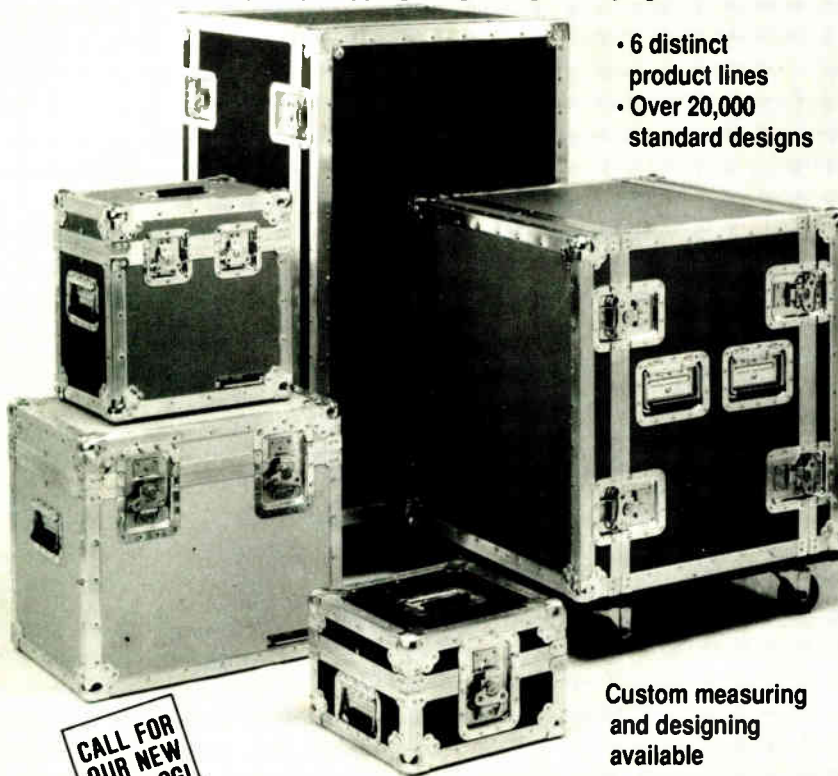
ing a working load limit (rated capacity) of 6,500 lbs. at an assumed 5:1 design factor.

The wire rope has a rated capacity of 4,600 lbs. at the same 5:1 design factor. This sling section may be omitted in venues with low enough ceilings for the chain hoists to bring the loudspeakers to trim.

The chain hoist hook connects directly to the wire rope sling eye. Chain hoists come in a variety of capacity ratings and climbing speeds. Because we need to hang in many different locations, we have no desire to lift the chain hoists into position each time by hand. Rocky Paulson of Stage Rigging (San Carlos, Calif.) modified the CM hoists to operate upside down and *climb* the chain. We choose a brace of one-ton hoists. The rated capacity of the hoist is for lifting purposes and includes a generous design factor. The CM hoists also include a clutch that will slip if the hoist is overloaded. Both hoist hooks should be equipped with working safety latches, or be safety-wired

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RULES FOR SAFE LIFTING

1. Do not overload any piece of equipment.
2. Sling the material to be lifted properly. Do not allow slings to be placed against sharp objects or rough or cutting surfaces.
3. Always align lifting equipment over the center of gravity to enable a straight vertical lift. Never attach a hoist or lifting line to the load at an angle.
4. Always use properly installed load-rated hardware and fittings. Double-check all connections before lifting.
5. Carefully inspect all lifting equipment—everything in the rigging chain—before making a lift. Replace any worn or defective equipment.
6. Never lift or support overhead loads from an open hook. Always use safety hooks, latches or other devices when material is being hoisted overhead.
7. Use tag lines to control any load that may become unmanageable during lifting.

(moused) closed to prevent the slings from slipping out of the hook before commencing a lift.

Below the chain hoist, the loud-speaker grid is carried by a two-leg SpanSet sling assembly to support the grid front and back. Assuming a 45° load angle for each sling leg, the load angle efficiency is 70%. Each sling leg has a rated capacity of 5,280 lbs.; therefore, the sling capacity becomes 7,390 lbs., or 3,695 lbs. per leg.

The sling attaches to forged carbon steel, 3/4-inch shoulder eye bolts using 5/8-inch shackles. Each eye bolt is limited to a rated capacity of 1,300 lbs. at a 45° pull angle. This tension will be realized when each eye bolt is loaded to 900 lbs. because of the 70% load angle efficiency. Clearly, the eye bolt is the weakest link in this rigging chain.

Our loudspeaker grid design has been certified by a licensed structural engineer and welded by certified craftsmen. Each loudspeaker hangs from three points using 1/2-inch shoulder eye bolts and load-rated carabinders. The eye bolts are

Safe sound system rigging is the application of known and simple engineering principles, along with a healthy dose of common sense and know-how, to a relatively uncomplicated set of problems.

the weaker element, having a rated capacity of 2,200 lbs. for a straight pull. We have chosen JBL Concert Series loudspeaker systems, which incorporate three top attachment points, each with a rated capacity of 1,000 lbs. at an assumed design factor of 5:1.

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Safe sound system rigging is the application of known and simple engineering principles, along with a healthy dose of common sense and know-how, to a relatively uncomplicated set of problems. There are no shortcuts in rigging equipment, tools and techniques. The potential losses resulting from property damage and personal injury following the failure of second-rate hardware or faulty rigging practices can be staggering. Safe sound system rigging is no accident. ■



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by Blair Jackson

LIVE RECORDINGS

SOME ROCK 'N' ROLL CLASSICS

While there is a long, noble tradition of live jazz albums, in rock 'n' roll the phenomenon began in earnest in the late '60s with the rise of bands who veered away from the previously accepted practice of playing note-for-note copies of their studio recordings. All of a sudden, a song like Cream's "Sweet Wine"—which was four minutes on their debut album—was being extended for ten to 15 minutes in concert; and bands who were unsuccessful at making conventional "hit" records earned reputations as killer live bands. Capturing the true live character of a band has always been tricky—the experience of seeing a great group is so powerful, even cathartic, a mere recording frequently seems flat by comparison. And, of course, some groups record the "wrong" tours for their albums—that is to say either the material or the performances during shows preceding or after the tour they've recorded on multitrack show-

cased their live skills much better. *C'est la guerre.*

The classic albums I've chosen all capture a group or artist at an undeniable creative peak. In all of this music there is a spirit of risk-taking—whether adventurous improvisational jamming, or re-arranging familiar songs to make them sound completely new. Albums that simply feature live versions of a band's hits are a dime a



The Grateful Dead at Woodstock, 1969. (L to R) Phil Lesh, Bill Kreutzmann, Mickey Hart, Jerry Garcia, Pigpen.

dozen—and most are ultimately disposable. These ten (arranged chronologically) are valuable documents of true musical magic. I have arbitrarily excluded multi-artist "event" compilations. Where possible I've included some information about the recording, but this is more about passion than purity of sound. After all, *James Brown Live at the Apollo, Volume 2* may be sonically lacking, but who's going to deny it is the very embodiment of soul?



(From top, clockwise): Bob Marley; Talking Heads' 1983 "Stop Making Sense" tour; Nils Lofgren, Clarence Clemons and Bruce Springsteen on the Boss' 1985 tour.

PHOTO: RON DELANEY



PHOTO: RON DELANEY

1 Grateful Dead: *Live Dead* (Warner Bros., 1969). Engineers Bob Matthews and Betty Cantor used the second Ampex 16-track ever made to record a number of Dead shows at San Francisco's Fillmore West and Avalon Ballroom in the winter of '69. With just six songs spread out over four sides (including a 23-minute version of their most famous jamming tune, "Dark Star") this recording represents the absolute pinnacle of acid rock. The remastered single-CD version makes the original first three sides of the album one continuous piece of music for the first time.

2 The Who: *Live at Leeds* (MCA, 1970). The Who at their most ferocious—part blues band, part proto-metal, utterly original. The explosiveness of the recordings of "Summertime Blues" and "My Generation" has rarely been equaled in the 20 years since it was made. The only drawback is the record's length: At just 45 minutes it really only represents about a third of a typical Who show from that era. Though the band recorded their entire '69 American tour, Pete Townshend was dissatisfied with the results and supposedly destroyed the tapes. This album comes from a single show at

Leeds University in Britain on February 14, 1970. Kit Lambert supervised the recording in Pye Records' mobile unit.

3 The Rolling Stones: *Get Yer Ya-Yas Out* (London, 1970). The Stones' first live LP, *Got Live If You Want It*, released in 1966, was a muddy-sounding, hyper-paced but still exciting mess where the screams of the band's female fans was sometimes louder than the music. *Get Yer Ya-Yas Out* captures the Stones at Madison Square Garden during what was arguably their best tour ever (fall '69),

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MUSIC & RECORDING NOTES

but as a single LP, it is disappointingly short. Glyn Johns produced and engineered in the Wally Heider mobile.

4 The Allman Brothers: *Live at the Fillmore East* (Capricorn, 1971). Hot rock, raw electric blues and impressionistic instrumentals make this *tour de force* one of the best albums of the rock era. Two decades later it still sounds fresh. No one before or since played slide guitar like Duane Allman. Sonically, the album is a masterpiece, capturing every nuance of the band's sound. Tom Dowd, along with engineers Aaron Baron and Larry Dahlstrom recorded it at the Fillmore March 12 and 13, 1971, using Location Recorders' remote unit. The live tracks from 1972's *Eat A Peach* (including the 33-minute "Mountain Jam") also came from those shows.

5 Lou Reed: *Rock'n'Roll Animal* (RCA, 1974). The post-glam Reed playing in front of the best band of his career, led by guitarists Steve Hunter and Steve Wagner. The music is at once majestic and harrowing (as befits a song like "Heroin"). The versions of "Sweet Jane" and "Rock and Roll" are definitive. Produced by Reed and Steve Katz, the record, culled from fall '73 shows at New York's Academy of Music, was engineered by Gus Mossler in the Record Plant mobile truck. A second album derived from the same set of shows, called *Lou Reed Live*, was released in 1975 after *Rock'n'Roll Animal* became the biggest hit of Reed's career.

6 Bob Dylan & The Band: *Before the Flood* (Geffen, 1974). Talk about chemistry! Dylan and The Band's first tour together since '66 found both at their best.

The Band are simultaneously loose and tight, and Dylan's singing is emotion-filled throughout. This works as both a "Dylan's Greatest Hits" and "The Band's Greatest Hits" album to a degree. The version of "Like a Rolling Stone" alone makes it worth owning. It was recorded by Phil Ramone (who once described the record as "the peak of my career") and Rob Fraboni, who taped 35 hours of the tour. Post was done at the Village Recorder in Los Angeles. The Band leader Robbie Robertson, who produced the album, couldn't remember what truck was used, and it isn't listed on the album jacket.

7 Bob Marley & the Wailers: *Live* (Island, 1975). More than most live albums, this one, recorded at the Lyceum in London on July 18, 1975, really shows the magic that can occur between a band and audience: Just listen to the spontaneous singing by the crowd on "No Woman No Cry" before Marley even opens his mouth; or the electric call-and-response chanting during "Get Up Stand Up." This, coupled with Marley's next studio LP, *Rastaman Vibration*, helped put a fast-developing career into overdrive. It remains one of the finest reggae albums. Island Records boss Chris Blackwell produced the disc with engineer Steve Smith, who manned the Rolling Stones' mobile with Dave Harper.

8 Little Feat: *Waiting For Columbus* (Warner Bros., 1978). It's rock 'n' roll with soul, hot funk New Orleans style, and more than a bit twisted. Like the Dead, Little Feat thrived playing live, and this album captured them wonderfully. It's ostensibly a "greatest hits" collection, but the arrangements are completely fresh and alive (thanks, in part, to the addition of horns on several tracks), and there's an over-

all consistency that is lacking on most of the band's studio albums. Principal recording was by the London-based Manor Truck (with its Helios console) at the Rainbow Theater (in London) and at Lisner Auditorium in Washington, D.C. George Massenburg and Andy Bloch were the engineers. The late Feat leader Lowell George produced.

9 Talking Heads: *Stop Making Sense* (Sire, 1984). You may ask yourself, "Has there ever been a cleaner-sounding live album?" And you may ask yourself, "Has there ever been another band that hit and *reveled* in modern grooves like this before?" And you might ask, "Who made this amazing record? How did it get here? And is the film of the same name available at my local video outlet?" It was recorded at the Pantages Theater in Hollywood in December 1983, with Allen Chinowsky as chief engineer in the Record Plant's mobile. Some re-recording was done later at Can-Am and Ocean Way in L.A., and Right Track in New York. Alas, the Heads have not toured since. Co-winner, with The Clash's 1980 "London Calling" tour and Joe Jackson's 1982 "Night & Day" tour, of my Best Tour of the '80s award.

10 Bruce Springsteen: *Live 1975-85* (Columbia, 1986). Considering this three-CD set spans a decade, and recording environments ranged from small clubs to hockey arenas, this all sounds amazingly good. (Of course, *everyone* has some complaints about favorite songs being omitted, etc.) According to engineer Bob Clearmountain, who assembled it for the most part (and added sampled snare and other touches throughout). Jimmy Iovine recorded most of the early material, and Toby Scott the later songs. The collection really does capture the breadth of

Springsteen's output, and the recording manages to capture the E Street Band's incredible dynamic shifts with apparent ease.

Another five worth noting: Jefferson Airplane: *Bless Its Pointed Little Head* (RCA, 1969). Balin, Slick and Kantner in a vocal love dance, with Casady and Kaukonen laying down the thunder. Recorded at the Fillmore East by the Record Plant mobile truck.

Van Morrison: *It's Too Late to Stop Now* (Warner Bros., 1975). Gritty R&B and ethereal Celtic ramblings courtesy of Van and the Caledonia Soul Orchestra. Recorded at the Troubador and Santa Monica Civic in L.A. by the Wally Heider remote, and the Rainbow Theater in London by Pye Recording. Don Landee engineered.

Jackson Browne: *Running On Empty* (Geffen, 1978). JB and his best band (Lindley, Kortchmar, Sklar, etc.) live in concert, in hotel rooms, on their bus, etc., in a grand concept album about life on the road. Produced by Browne and Greg Ladanyi; engineered by Tom Walsh, Russell Schmitt, Norman Mershar, Mark Salwasser and David Hewitt, using the Record Plant (NYC) and Showco remotes.

David Bowie: *Stage* (RCA, 1978). The thin-white Duke, backed by Carlos Alomar and other notables, play some of Bowie's most challenging and compelling material. Heavy going at times, but fascinating. Tony Visconti co-produced with Bowie and engineered in the RCA mobile unit.

Joni Mitchell: *Shadows & Light* (Geffen, 1980). "Later" Joni with a band that included Pat Metheny, Michael Brecker and Jaco Pastorius. A sparkling recording. Recorded at the Santa Barbara Bowl in September '79 by the Record Plant remote; engineering by Andy Johns and Henry Lewy.

Ten great live performers who never made a live album (or have not yet): The Clash, Elvis Costello, Sly & the Family Stone, Linda Ronstadt, Patti Smith, the adult Stevie Wonder, Bonnie Raitt, Prince, Blondie, R.E.M. ■

Blair Jackson is managing editor of Mix.



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SOME THOUGHTS ON STEREO

In January of 1988 I heard stereo

for the first time. This may seem like an odd statement coming from an audio engineer with 15 years of experience. I've cut tracks, laid down overdubs, mixed, cut lacquers for vinyl, and for the last seven years I have been mastering for CD. Stereo for the first time only two years ago? That's not as strange a statement as it may seem if you consider what the word "stereo" means. Most people mistakenly think of stereo only in left-right terms and not by its full meaning, which includes depth.

As an engineer, musician and audiophile, I've spent many years considering the importance of monitoring. I'd like to discuss some of those considerations, specifically, monitor placement and the true meaning of stereo.

I remember my first exposure to a so-called "stereo" recording. I can recall being

BY BARRY DIAMENT

an auditory witness to a tennis match in my living room, one player on the left, the other on the right, the ball alternately bouncing from side to side. But this wasn't stereo. It was a clever use of two monaural channels. Similarly, those music recordings I'd heard with lead guitar on the left, piano on the right, drums, bass and vocals seemingly centered were also double mono, not stereo.

It might be useful to examine a visual analogy. We are equipped with two eyes, not only for differentiation of objects on our left and right, but for perceiving depth as well. Try touching the period at the end

of this sentence with one eye closed. It's not as easy to locate as it is with two eyes, is it? So it is with our hearing mechanism; two ears permit depth perception. Stereo involves the ability to perceive three-dimensional space.

Two fundamental factors contribute to our ability to hear in 3-D: loudness and time. A sound coming from an object on our right will be slightly louder at the right ear than at the left because the sound going to the left ear has to travel a longer distance, and the sound wave will lose energy proportional to the distance it travels. This is the basis for the majority of "stereo" recordings and playback systems. An engineer using a pan pot can make a monaural sound appear to come from the left or right, but this doesn't take the whole picture into account.

Timing information is what adds the third dimension to our hearing. Imagine two instruments, say a saxophone and a piano, both stage left. In a close-mic recording of each instrument the engineer might pan both sounds to the left, and the listener will hear them emanating from the left speaker. If the sax level is slightly louder it will appear slightly in the foreground. If both the sax and piano are equally loud, they will appear to be in the same plane. Now imagine both instruments being picked up by the same microphone (still panned left). The listener will hear both instruments emanating from the left speaker, but if the sound from the horn reaches the mic before the sound from the piano, the horn will appear *distinctly* in front of the piano. I've deliberately kept this example simple by

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considering only the direct sounds from the instruments, as if they were recorded in an acoustically dead room. If the same sounds were recorded in a "live" room, wall reflections would provide the listener with timing information not only on the specific distance between the players but also on the size of the room and how far from the walls each of the players is.

So now we have a recording containing depth information. How can we best retrieve that information on playback? We come back to the same basic cues for the perception of true stereo: loudness and time. Loudness is addressed by having two speakers, one to the left and one to the right side of the listening room. Timing is not so simple.

If the subtle cues that make up the timing information in a recording are to be recovered on playback, attention must be paid to speaker placement in the listening environment. Most playback systems (including most professional control rooms and mastering rooms) are set up for left-right reproduction only. Is it any wonder that many of these people cast a skeptical eye at any reference to "depth imaging" as mentioned in many

audiophile publications?

The frequency-dependent (as opposed to time-dependent) aberrations of misplaced stereo monitors are more easily recognized. Speakers are commonly placed against (or in) the rear wall, separated as far as possible (usually in the corners). Placing monitors at room boundaries (i.e., walls) and especially at the junction of two or three boundaries (wall, ceiling and floor corners) serves to excite the resonant modes of the room. The prime result appears to be "more bass" and, as a result, this placement is sometimes suggested by manufacturers of speakers that "need help" in the bass. But are you really getting more bass, or simply more "room"? Some acousticians try to circumvent the resonance problem by using monitor equalization. This is a "remedy" for a problem that needn't exist in the first place, and it's one ridden with side effects. Assuming (and this is a big assumption) the monitors are capable of accurately reproducing the input signal, the goal is to place them where they'll best be able to do their job without interference from the listening room itself: far away from points that will excite the room.

This explains why many engineers claim to hear more accurately from so-called "near-field" monitors located atop or slightly behind the mixing console than from the larger, more expensive "main monitors" generally located near (or in) the wall. Try placing the two types in the same location and see which sounds better. It's the *placement* that makes those diminutive designs sound so good. By locating speakers away from the rear wall, the room's resonant modes aren't being activated as much, and a deleterious early reflection from the wall is minimized. Their smaller front baffles also allow the high-frequency drivers of "mini monitors" to more closely emulate a free space placement by minimizing the effects of cabinet diffraction. Every loudspeaker generates a rear firing wave, both from the driver (refracted by the speaker cabinet) and from the cabinet itself. Even if you've avoided the worst room modes by not placing the speakers in corners, placement against (or in) the rear wall will result in the direct sound being followed closely by an early reflection from the wall behind the speakers. This reflection will cause a smearing of timing information, ob-

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scuring depth and low-level detail. It can also make you think your mix contains less reverb than it actually does. Similar obfuscation occurs in the lateral plane if monitors are too close to side walls.

One of the most often overlooked "laws" of audio is the "rule of thirds." Simply stated, to find the ideal speaker location place your speakers one-third of the way in from the left and right sides of your room, and one-third of the way toward the wall that the speakers will face. At first, those accustomed to a left-right spread will think the speakers are too close to each other, but reasonably accurate monitors playing a reasonably stereophonic recording will display a left-right spread that extends beyond the speakers. In the best situations, that image will spread wall-to-wall and without the image-smearing early reflections caused by placing monitors near side walls.

Placement away from the wall to the rear of the monitors will allow image depth to form (assuming it's in the recording). When you bring the speakers forward (toward you), the depth images stay at (or even behind!) the rear wall. Of course, two-dimensional recordings remain strung across the plane of the loudspeakers like "painted ships upon a painted sea."

By definition, the "reasonably accurate" monitors mentioned above will not have any major frequency response aberrations. If you place them where they will not excite the room, you can achieve flat response without paying the price exacted by room/monitor equalizers with their attendant ringing and phase shift (which are time-related distortions).

So in the first month of 1988 I had my first exposure to real stereo. The experience occurred at the home of a friend who is editor and publisher of an audio journal. When I entered his listening room, the first thing I noticed was the unusual (to me) placement of the loudspeakers. When the record started playing I was shocked by the audio equivalent of a hologram, so true-to-life was the spatial representation, and this with a non-audiophile, several-years-old pop recording.

When I returned to my own system, my first order of business was to move the monitors (already one-third room width apart but only two feet in front of the rear wall) forward another three-and-a-half feet. Voila! It was the

single, largest improvement I've ever heard in the system.

I effected the same change in the CD mastering room and have found it not only much easier to hear the sound contained in master tapes but easier to hear low-level information without turning up the monitor volume. Hearing *into* a recording is greatly facilitated as the sound no longer seems to emanate from the speakers. The listener is brought to the recording site, rather than bringing all 110 members of a symphony orchestra into the mastering room.

The ultimate quality of our work as audio professionals depends largely

on how well we can hear what we're doing. It's unlikely that Rembrandt could have blended his colors so exquisitely had he been wearing a pair of Ray-Bans. The importance of monitoring systems and their proper implementation should be a high priority in the design and budget of studios and mastering facilities. The outcome can only be an advance in our art and greater enjoyment of the music. ■

Barry Diament is the owner of Barry Diament Audio, a company in New York City that specializes in mastering for compact disc.

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SECRETS OF GUITAR MULTI-EFFECTS



Multi-effect guitar processors, offering quick and easy guitar sound setups by storing dozens and sometimes hundreds of different effect patches, can be invaluable in the studio when you need to get tracks down fast. They're so easy to use, in fact, that there's a great temptation to just punch up a good-sounding preset and wail away. However, doing that also means you'll miss out on a lot of the hidden potential in these units. Let's look at how to extract the maximum possible level of performance from today's multi-effects, particularly with respect to MIDI control.

The Many Faces of Mr. MIDI

One of the best features of these boxes is that you can do all kinds of real-time control via MIDI continuous controllers as well as work with program change commands, but the type of MIDI implementation—and efficacy thereof—varies drastically from unit to unit.

For example, suppose a device lets you change delay on the front panel from 0 to 1,000 milliseconds, in 5-millisecond increments. That's 200 possible settings, 72 more than the possible number of values that can be addressed by a single, 7-bit MIDI continuous controller. Some parameters offer even more possible settings.

The opposite problem occurs when a device quantizes something like volume into ten steps, controllable by

MIDI volume commands. How does the unit divvy up 128 continuous controllers to select the ten steps?

This may not be an issue if you don't use MIDI, but if you want to program controller changes into a sequencer, it helps to know what a given controller value will call up in the unit. To determine how various units respond, I devised a test sequence that issues a new controller value message every measure (measure 1 sends value 1, measure 2 sends value 2, and so on). Most units will update their display when you send a continuous controller message, making it easy to correlate data values to effects settings. This is especially true if you run the sequence at a slow tempo. As soon as the display changes, check which measure the sequencer is on. Since there's a one-to-one correspondence between measure number and controller value, you can identify which value produced the change.

It's worth writing this information down in a notebook for future reference. That way, if you want to insert a sequenced message that sets a device to a particular delay time, just look up the delay time and insert its corresponding value.

An often-overlooked aspect of sending controller messages is that you can save on program memory by storing "template" effects and sending particular messages to modify that

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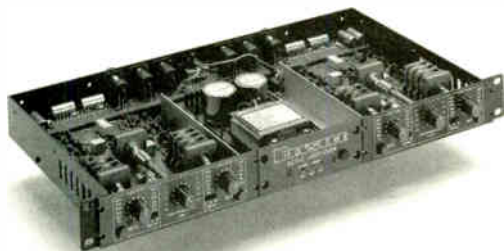
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template. For example, I have a generic echo patch that I use whenever I need an echo. At the head of the tune (or, if necessary, in the middle of a tune), a sequencer sends out controller commands that set the delay time, amount of feedback and dry/echo mix. You don't need to store a bunch of patches with different delay times: just store one and modify it as necessary.

Of course, the sophistication of the MIDI implementation varies greatly from unit to unit as well. For example, DOD's GSP-5 can assign every available parameter (and there are lots!) to a unique MIDI controller, but these are global. In other words, if the delay time parameter is set to respond to a specific controller, then all patches that include that delay time parameter will have it respond to the same controller—whether you want it to or not. Overall, though, I've found this to be a very workable scheme (Yamaha's FX500 takes a similar approach to handling controllers).

ART's SGE has an outstanding MIDI implementation: Up to eight parameters can be controlled per patch and assigned to any of several MIDI con-

trollers. But the best part is that you can set a center point and scaling for each parameter. The center point "biases" the response (for example, you could control volume from half-way up to three-quarters of the way

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having to move one
pedal or hit one
footswitch was a
revelation.

up rather than always having to control from full off to full on). Scaling, which can be positive or negative, determines the sensitivity to controller data. Thus, a given change in data values can produce a greater or lesser variation, depending on how it is scaled.

Patch Management

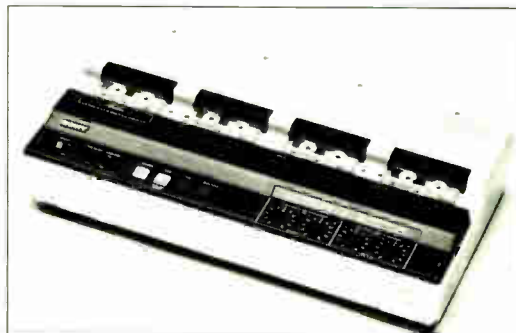
It's easy to take a haphazard patch management approach and just call up factory programs until you hit something you like (and then make a few tweaks if necessary). Hunt-and-peck sound design takes time, though, so I eventually came up with a system that might work for you. It involves separating the available programs into certain categories (mine are clean rhythm, fuzz rhythm, clean lead, fuzz lead and special effects). Within each are the various "templates" alluded to above. A separate sheet describes each program (which is mandatory if programs are identified only by numbers). This makes it easy for me to find programs, but also, if you're working with someone else, it gives them something to look over for possibilities ("Hmmm... 'Clean Rockabilly Slapback Lead' seems like a good place to start"). Having this information along with the MIDI controller info makes it easy to set up sounds in seconds.

Once you have a set of patches, make sure you save them via a system exclusive dump. I do most of my saves using the Ensoniq EPS as a MIDI system recorder, but a variety of multi-

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effects-compatible generic librarians exist, and many computer-based sequencers can also receive and transmit sys ex, sometimes from within a track. The latter feature is especially handy for transmitting small bursts of sys ex at the head of a sequence to set up a patch for a particular tune.

Down the Road

MIDI-controlled signal processing is a guitarist's dream. The first time I played a concert without having to move one pedal or hit one footswitch was a revelation. With so many keyboards containing sequencers these days, and so many bands playing to a click, there's no reason not to program all your changes electronically. Here are a couple of pertinent tips.

First, drum machines can often be programmed to ignore continuous controllers or program changes. As a result, you can "piggyback" signal processor-directed MIDI data along with MIDI messages going to the drums. This saves a channel and causes no problems.

Second, remember that a keyboard's onboard sequencer will have a limitation or two. Some won't record certain controllers or data, some handle program changes more elegantly than others, and so on. I feel that a sequencer must be able to record and transmit program changes, all popular MIDI controllers (volume, pitch bend, notes, etc.) and at least one or two controllers you can define yourself. Sequencer memory is not so important if you change controller settings on a "snapshot" basis (i.e., insert a change whenever necessary), but long, continuous changes eat up bytes. Samplers with onboard sequencers often make good live sequencers because with many models you can trade sample memory for sequence memory, and therefore store a few choice sounds along with lots of sequences.

One thing's for sure: We're just starting to scratch the surface with signal processors and MIDI. As keyboard sounds become more standardized, look to signal processing as providing the next opportunity to make truly original sounds. ■

Craig Anderton composes music, produces albums, and writes books. He is also founding editor of Electronic Musician, our sister publication.

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Circle #027 on Reader Service Card

—FROM PAGE 54

around the monitor area, and the back of the truck is brightened with hard-wood. Prior to a session, Dooley recommends establishing a relationship between the house engineer and the monitor engineer to resolve any unforeseen problems.

Clients bring their own engineers and near-field monitors (Record Plant supplies Yamaha NS-10s), and Eshelman sets the truck to their specifications. With a touring act, they'll usually go with the band's setup and augment with a few microphones. Dooley's philosophy—let the client set up the way they want—"If we throw

them a curve ball, we mess up the house sound and that messes up my sound."

SHEFFIELD AUDIO/VIDEO PRODUCTIONS

Phoenix, Maryland

John Ariosa, technical engineer

Sheffield is in the process of evaluating a 48-foot tractor-trailer, which the company hopes to have on the road by the end of this year. Recent credits include work on the Disney/MGM Theme Park (Cranium Command) and Wynton Marsalis live at the Village Vanguard in New York City.

"There's only so much you can do

—FROM PAGE 51, *SYNTROPY*

fourth recording in *The Maybeck Hall Series* for Concord Jazz Records," Spangler says. The first two, which have been released, are JoAnn Brackeen and Dave McKenna piano solo recordings.

Spangler and Davis operate without the benefit of a remote truck, preferring to set up right in the room—a challenging environment for recording. They use a Ramsa WR-118 console (sometimes augmented by another board) that feeds a Panasonic SV-3500 Pro DAT deck. The monitoring environment consists of customized, sealed headphones—an adapted hearing protector made by the David Clark Company, Model 19A, called the "Straightaway." Inside are the earphone elements from a pair of Sennheiser HD 414s. "They work quite well, except for the low-end illusions," Spangler says. "We never know for sure whether we're getting the bass drum sound that we're feeling in our chest onto the DAT tape."

Davis adds, "That's the main problem of recording and mixing in the house. Generally, we work around that by recording to DAT during at least a drum and bass soundcheck and then listening to the playback and adjusting. I usually monitor off the board so I can solo different channels. We also have an extension from a Symetrix headphone amp so Bud can stand outside the room and then give me additional feedback. It's also a big help, when we go back into a Bay Area jazz room, having already recorded there, since by now we're familiar with the idiosyncracies of each."

Spangler continues, "It's part of our responsibility to be as unobtrusive as possible while we are in the room, so we try to take up as little space as possible, and we've never considered doing anything more to isolate ourselves, because we *do* get very good results."

Their most involved remote to date was for the Peter Apfelbaum Heiroglyphics Ensemble, an eclectic 14-piece jazz group at Kimball's East in Emeryville, Calif. The company records everything from acoustic music to fusion and Brazilian bands that incorporate synthesizers.

—Paul Potyen

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with a truck," says engineer Ariosa. "You're usually limited—at least in our applications—to a 3-inch wall so that the console can fit in the width and you can have depth for a monitoring field. Given that, you're limited in how much treatment you can actually put in the side walls.

"We make every effort to

make everything solid," he continues. "We use the densest materials we can, bearing in mind the weight factor. Our truck has a 25,000-lb. gross vehicle weight. When you start putting in three layers of 3/4-inch slate board, or presswood, which is about the densest material you can get in that size, the weight adds up real fast." ■



Inside the Sheffield remote audio truck

—FROM PAGE 55, HEWITT

you the kick drum sound you expect for popular music, yet they're smooth enough for acoustic music. They're tri-amped. We're using Keith's crossover, and Bryston 4Bs all the way around. We have a bridged 4B on each woofer, and then we split a 4B between mid and high on each side.

"We've gone to a more near-field monitoring situation in this truck. The old one was fairly live, with the mixer's head approximately 12 feet from the monitors. In this case we're closer to a 6-foot triangle. Things keep creeping closer and closer, but

that makes sense particularly in a remote truck, because in my opinion, there just isn't any other satisfactory way to do it. I've tried 'em all, and that works the best for me.

"We laid it all out with CAD/CAM to optimize all the different positions, where we'd put various pieces of equipment, and how they were going to fit," he continues.

"We generated our designs that way, and that enabled us to do things like rotate the speakers in three dimensions and plot that sort of thing out. It was relatively simple to get them in exactly the position we wanted. In the past, that's been

a big problem—fitting that in with air-conditioning and everything else. I think the CAD/CAM is the main reason it's been so trouble-free so far. Everything was worked out in advance—all the patch bays and wire numbering was done on computer."

In terms of acoustic treatment, "We go anywhere from one inches to four inches of double-density fiberglass, and it's all cloth-covered, much like a conventional studio. It's very dead where it needs to be. I must admit, I've been very impressed so far."

—Blair Jackson

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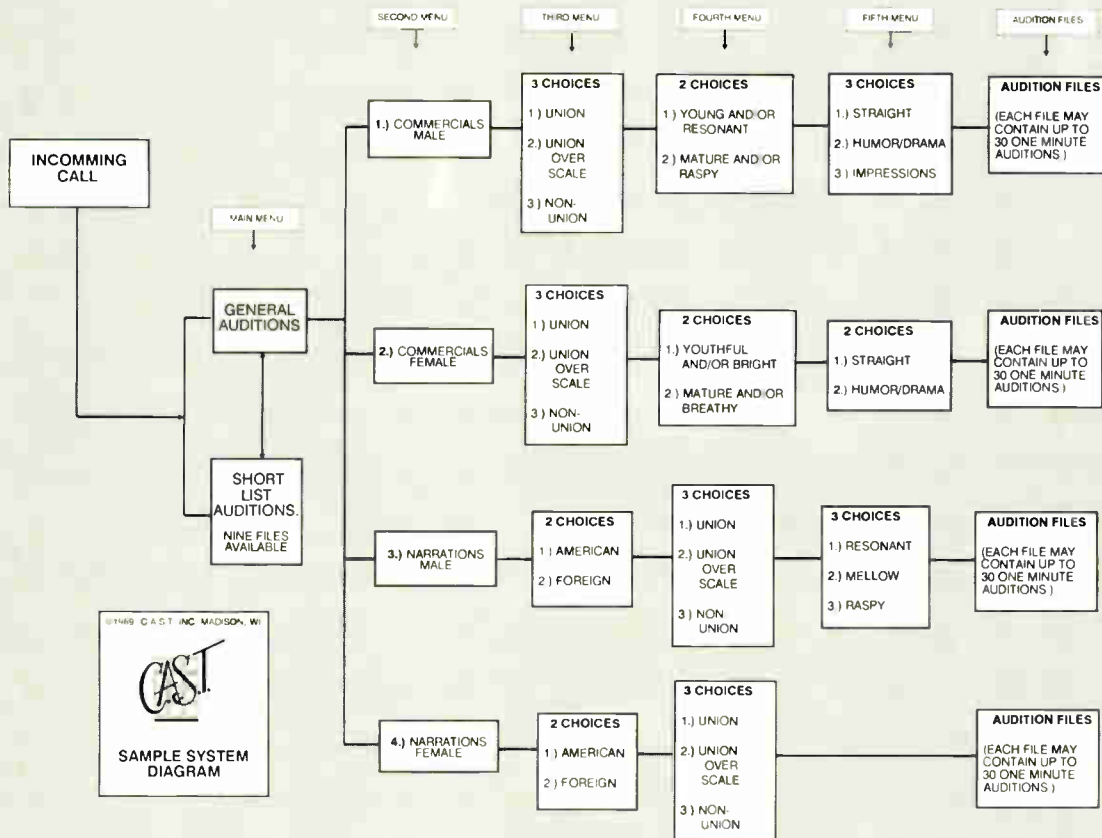
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by Lawrence Henry

REACH OUT & CAST SOMEONE



Computerized Audition Service for Talent (CAST) allows producers and casting directors to compare voice-over auditions rapidly, via an interactive voice mail system accessible through any touchtone telephone.

Talent tends to cluster, and for good reason. Cinematographers live in Los Angeles, steel guitar pickers in Nashville, and sachertorte bakers in Vienna. It's true of voice-over artists, too. An enormous number of the best ones make their homes in New York, Los Angeles, Washington, D.C., or Chicago.

Today, however, A/V, video, film and television production facilities are springing up all over. Take business television, for example, companies that own and operate their own TV networks. There's Federal Express in Memphis, Digital Equipment Corp. in Bedford, Mass., Domino's in Ann

Arbor, Texas Instruments in Dallas, Allen-Bradley in Milwaukee and IDS TowerNet in Minneapolis, to name a few. Add the considerable and growing production needs for corporate A/V in promotion, training, sales and marketing communications all over the country, and you have a healthy need for voice-over talent everywhere.

Now, thanks to phone patch recording, the big metropolitan voices are within everyone's reach. Over 300 voice-over professionals can be auditioned by telephone, thanks to CAST (Computerized Audition Service for Talent), a new company that provides

— CONTINUED ON PAGE 170



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these auditions via a marriage of telephone voice mail and computer technologies. Based in Madison, Wisconsin, CAST was founded by John Rustad, himself a voice-over artist.

Voice artists send a 60-second, reel-to-reel demo to CAST; for a yearly fee ranging from \$200 to \$300, CAST digitizes the recording and stores it on a 650MB hard disk on an IBM AT-compatible computer.

The CAST service uses touchtone phones in such a highly interactive way, custom software had to be written for it. "My objective was to speed up the producer's talent search," Rustad says. "To do that, I wanted to presort voice talent into usable categories via a touchtone, interactive database. I did try a lot of existing voice-mail systems, but couldn't find anything I was happy with."

FAR Systems Inc., a Wisconsin-based company, eventually customized its off-the-shelf voice-mail software for CAST use and "developed a whole new, interactive software system" especially for CAST. Rustad explains, "When you call in, voice prompts direct you through a 'tree'-

structured system. It's basically just a big, flat file.

"Once you branch to the file holding the auditions," Rustad continues, "the system switches to interactive. This allows the producer to manipulate the auditions within the file—something you can't do with a flat-file database."

In this interactive phase, a producer presses the touchtone buttons to issue commands, and thus can compare voice auditions in a number of categories: male/female, young/mature, straight/humor/drama and so forth.

One of the system's unique features allows a producer to create "short lists" of auditions for future reference. "Every registered producer gets nine short lists," Rustad says. "You can store up to 30 auditions in any one short list. They stay in memory until you decide to erase them."

This "short list" feature allows producers to compare preselected sets of auditions back-to-back—especially valuable for producers who must use such a list to help sell a client or obtain client approval.

Once a short list is selected, a conference call can be set up involving the producer, the client and the

CAST system. Or the producer can call CAST from the client's phone and issue a touchtone command to bring up the short list file. Once a talent is selected, another touchtone command reveals the talent's phone number. The producer can then call the talent directly.

"We are strictly an information provider," Rustad says. "We don't get involved in the booking transaction. Instead, CAST charges producers a fee for using the system—currently \$3 for the first minute and \$1 for each additional minute." Producers must register and obtain an ID number to use the system.

In addition to its interactive features for callers, CAST also provides services to the talent on file. "They get a record every month of every search that's performed involving them," Rustad says. "So they know how many times their audition was listened to, how many times somebody requested their phone number, and how many times they made somebody's short list."

CAST is the second service to provide telephone voice casting. The first, started four years ago, was Producers Audition Hotline, of Olney, Md., just outside Washington, D.C.



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Like CAST, Producers Audition Hotline was started by a voice-over artist, Mike Weiner. Unlike CAST, Producers Audition Hotline is not an interactive system. Instead, Weiner prints a directory of his talent and their phone numbers, which he distributes via direct mail and display advertising. The Hotline, so far, includes only union talent. (CAST includes both union and non-union talent, with a special category for union talent working above scale.) "This is a very basic service," says Weiner; callers simply select the talent's three-digit code and listen—that's it. The current D.C.-based system offers 90 voices, and Weiner anticipates "moving from one metropolitan area to another, opening new services." His New York service started up in August 1989. Weiner plans to open an L.A. service in March 1990.

Going against the phone patch trend, Weiner says, "I believe each market needs to have a service with local performers serving producers in that market." In Weiner's view, "Phone patch is catching on, but I still think the big whale in the sea is a producer asking for a performer to come to a studio at a certain time."

Nonetheless, Weiner acknowledges, "For some reason, producers in Bemidji, Minnesota, feel that voices in New York or L.A. are better. It's partly justifying expenses to the client. 'Our talent fees were so high because we brought in a New York voice.'"

Producers Audition Hotline charges no fee to the caller and does not use toll-free numbers. Performer fees are "the only revenue, at this stage," Weiner says. Performers pay \$175 to place a two-minute audition on the Hotline. In New York, Weiner has established an introductory rate of \$250, which he anticipates increasing to \$500, for a two-minute audition. In the Washington, D.C., area, Producers Audition Hotline now receives "around 500 calls a month."

For both CAST and Producers Audition Hotline, the idea of auditioning talent by phone is "too new at this stage to really get a handle on," as Weiner says. He doesn't really know where most of his business might come from. Rustad agrees. CAST "still hasn't yielded enough data for me to tell exactly where most of our producer calls will come from," he says. He guesses the service is most likely to appeal in two areas:

"One is the industrial producer who is perhaps not in a major market. I got a call from a producer in Chattanooga this morning who said he used phone patch all the time, because he exhausts his local talent pool.

"The second is the small-to-medium-size ad agency producer. Giant agencies have in-house casting and an in-house coordinator. It's the talent coordinator's job to categorize all the talent demos and packages they have in stock. But the smaller agencies probably do not have that kind of department. So they rely on outside sources. These are the kinds of creative directors who have a box of tapes

in their closet. For those agencies, CAST can be their talent coordinator for voices."

Both CAST and Producers Audition Hotline provide free tryouts for prospective customers. For CAST, call (800) 888-7949; to use the service itself, call (800) 888-7864. Producers Audition Hotline can be reached at (301) 924-4327 in the Washington, D.C., area, and (212) 593-4327 in New York City. ■

Laurence Henry is a Los Angeles-based freelance writer whose work has appeared in Investor's Daily, Adweek and Psychology Today.

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by Philip De Lancie

RIAA REPORT

CD THRIVES AS VINYL DIVES

It's time once again for a look at the health of the record industry, as reflected in the Recording Industry Association of America's final report on prerecorded music shipments for 1989. All in all, it was a year of modest growth for the association's member companies, which account for about 90% of the U.S. prerecorded music market. Total net shipments, after returns, of all configurations rose 39 million to a record high of slightly more than 800 million (Fig. 1a), an increase of 5% over 1988 (Fig. 2a).

Leading the rise among album-length products was the CD, which continued its six-year climb with a 38% jump in shipments. That brings CDs up to 30% of the album market (Fig. 3a). The gain seems to have taken a bit of wind out of the sails of the cassette. After a couple of years of vigorous growth, that format actually sold 4 million fewer units in 1989 than 1988, a drop of about 1%. But cassettes still account for just about two of every three albums shipped. Most of the CD's advance was at the expense of vinyl albums, which continued to nose dive. LP/EP shipments were down 52%, accounting for a mere 5% of the album market.

The RIAA figures are likely to intensify the debate over who is respon-

sible for the LP's demise. *Billboard* has reported on the feeling among many retailers that major record companies, by their policies on back-orders and

returns, create disincentives for stores to carry the format, and are thus killing it off prematurely. The companies, on the other hand,

claim to simply be responding to the preferences of consumers. Be that as it may, the value of LP shipments, despite the decline, was about \$220 million (Fig. 3b), \$25 million greater than the cassette single market being touted by record companies as a fantastic success. So there's clearly the potential for somebody to make a bit of profit servicing the demand for vinyl. One possibility being explored is for independent manufacturers to license from the majors the rights to put their product out on vinyl.

Arrangements for licensing are reportedly already under discussion at some labels as a means of continuing to service jukeboxes while otherwise discontinuing the moribund 7-inch 45. Vinyl singles in general fell to 32% of the singles market in 1989 (Fig. 4a), as unit shipments declined 44%. Enthusiastic consumer acceptance of the cassette single was clearly the major factor, as evidenced by a 239% rise in units, which brought the format from 25% to 68% of the singles market in just one year. Despite the vinyl setback, singles sales jumped a healthy 26%. As for the ill-fated

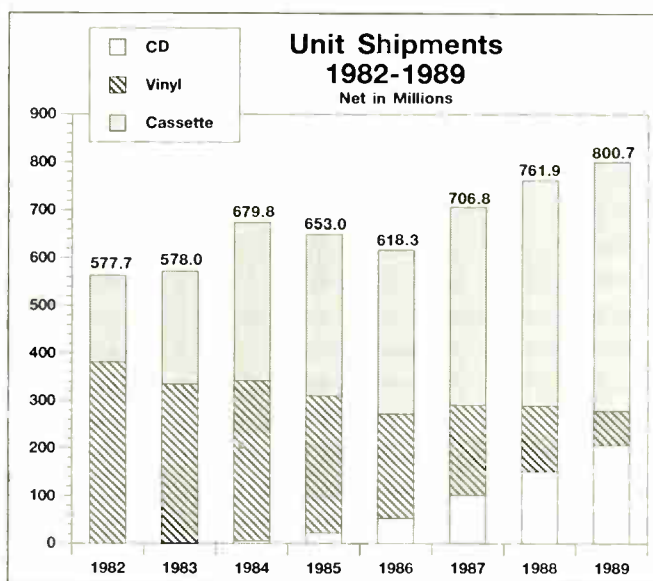


Figure 1a

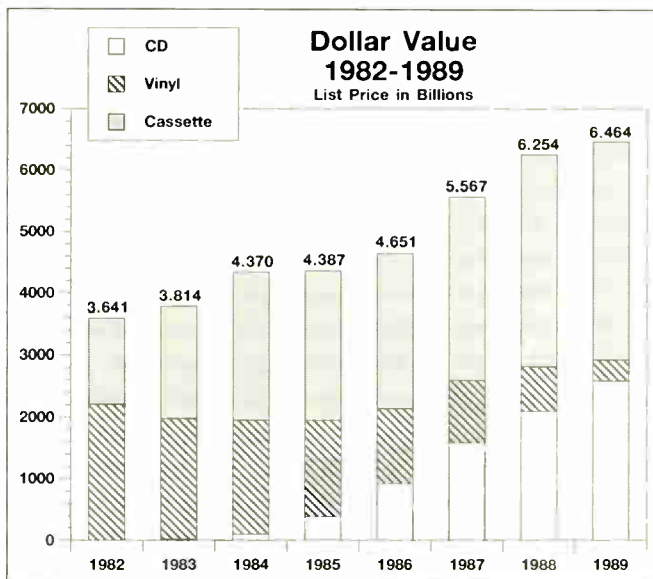


Figure 1b

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LISTEN TO THE DIFFERENCE.

CD single, the RIAA report confirms the dismal failure of record company marketing strategies in this area. Given its dubious achievement of having had more returns than shipments in 1989, the configuration may be considered essentially dead for the time being.

The total value, at suggested list price, of all units shipped by RIAA members edged up in 1989 to \$6.46 billion, a gain of \$209 million, or 3.35% (Fig. 1b). The fact that the increase in value was smaller than the rise in shipments results from a slight decline in the average list price per unit from \$8.21 in 1988 to \$8.07 in 1989 (Fig. 5). What pulled that figure down was the increase, from 12% to 14%, in the portion of overall units sold that were singles. Prices on vinyl singles actually rose, possibly due to an increase in the proportion of 12-inch compared to 7-inch. Oddly enough, CD single prices went up as well, indicating that the average value of all the units returned was higher than that of the units that were sold in 1988. Overall, the market share gain of cassettes, listed at \$2.55, balanced out price gains in the other formats, and held average prices for all singles combined at their 1988 level of \$2.75.

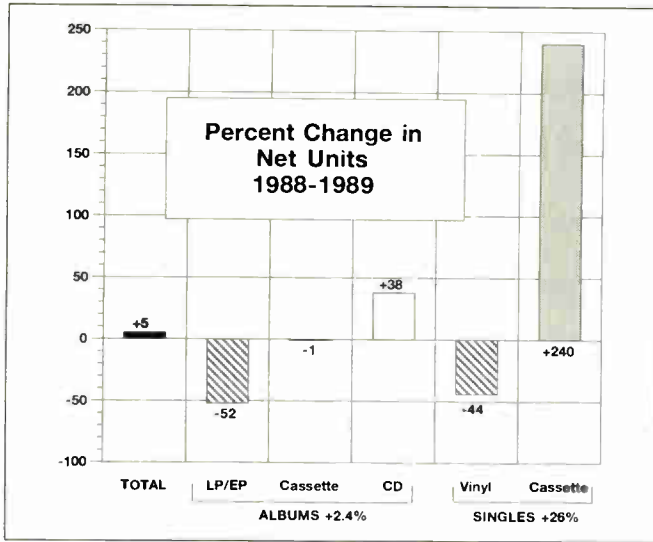


Figure 2a

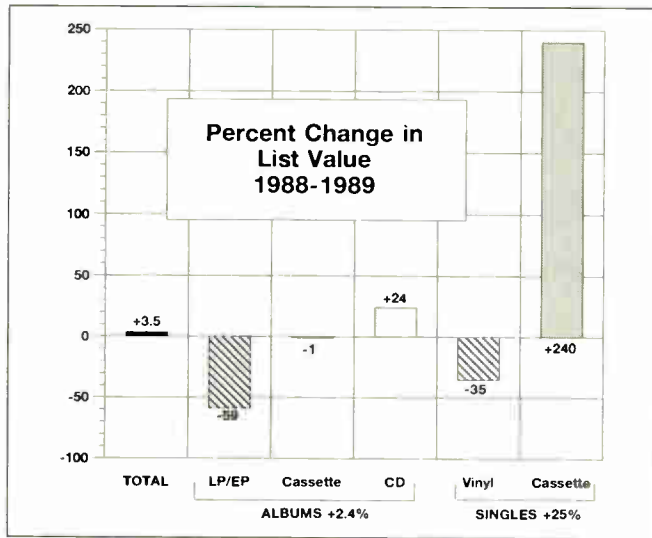


Figure 2b

Looking at album configuration pricing, LPs dropped \$0.98 to \$6.37, perhaps reflecting an eagerness on the part of record companies to clear out their stocks before too many retailers stop carrying the configuration. CDs came down too, falling \$1.47 to \$12.49. Still, many retailers and replicators feel that record companies need to go further to ensure mainstream consumer acceptance of the format, because the \$5.00 difference between CDs and cassettes is still significant. The CD and LP price drops were offset by the increased proportion of the album-length sales going CD, so the average price of all album configurations together held steady at \$8.94.

So what do all these figures imply for the future? If I really knew, of course, I'd be on *Geraldo*, peering deep into the hearts, minds and wallets of an astounded audience. Nevertheless, it is possible to hazard an observation or two on the shape of things to come. Looking at individual configurations, vinyl is at the tail end of a 12-year collapse that has taken it from being the standard of the industry to a specialty item. CDs have undoubtedly both contributed to and benefited from the change, as have cassettes. Is the flattening of cassette sales a sign that the CD has begun to have the same impact on cassettes that it had on LPs? It's too early to tell, but it seems to me that cassettes will continue to hold their own for a while longer. Cassette sales leveled off before, in 1985 and 1986, only to come back strong in the following years. And the dynamic showing by cassette singles, especially in contrast to that of CD singles, would seem to obviate any suggestion that consumers are ready to start junking their cassettes in favor of CDs. 1990 will see cassettes essentially eliminate the 7-inch 45 as the hit-single release format, though 12-inch records will maintain a niche in dance-oriented

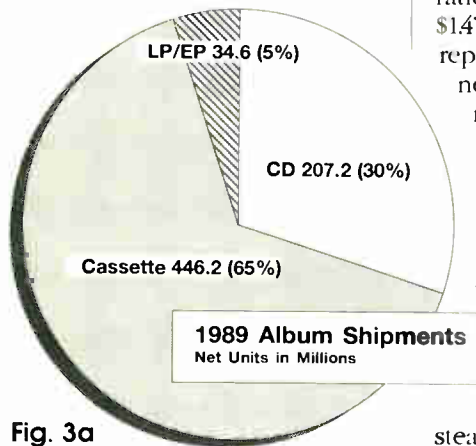


Fig. 3a

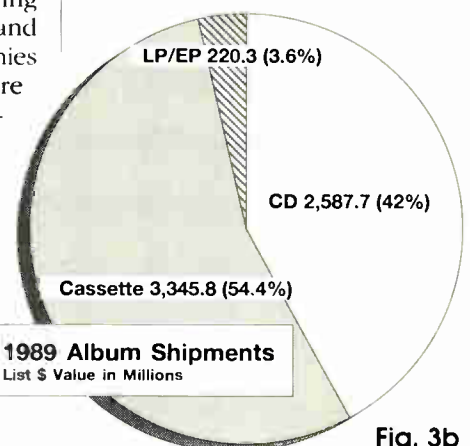


Fig. 3b

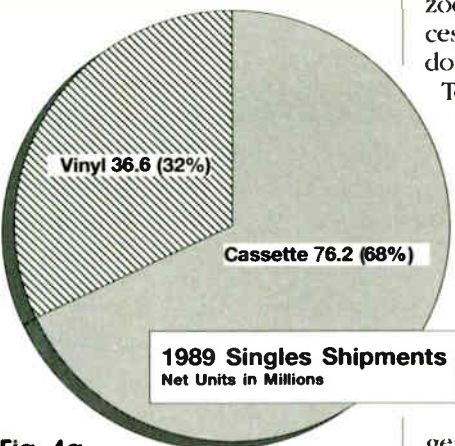


Fig. 4a

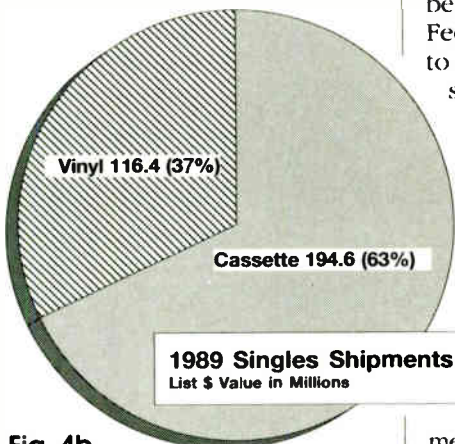


Fig. 4b

specialty markets.

As for the prerecorded music market as a whole, the trend is toward slow growth. Shipments

zoomed up 14% in 1987, but successive years saw growth rates fall down to 8% in 1988 and 5% in 1989. To turn that trend around would take a pretty strong upsurge in the amount of money that consumers have available to spend on entertainment. The prospects depend largely on economic conditions outside the music market itself. As of this writing, experts are saying that economic growth in general is less than robust, so the extra money probably won't be generated by a big boom. At the same time, inflation is thought to be creeping up, which means the Federal Reserve Board isn't likely to drop interest rates any time soon. Credit will continue to be relatively expensive, not only for consumers but for the businesses on which they depend for their incomes. These constraints on the ability to either earn or borrow money should put a damper on consumer spending for non-essentials. So the music market, if it grows at all, seems headed for continued incremental growth, rather than dramatic acceleration. ■

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

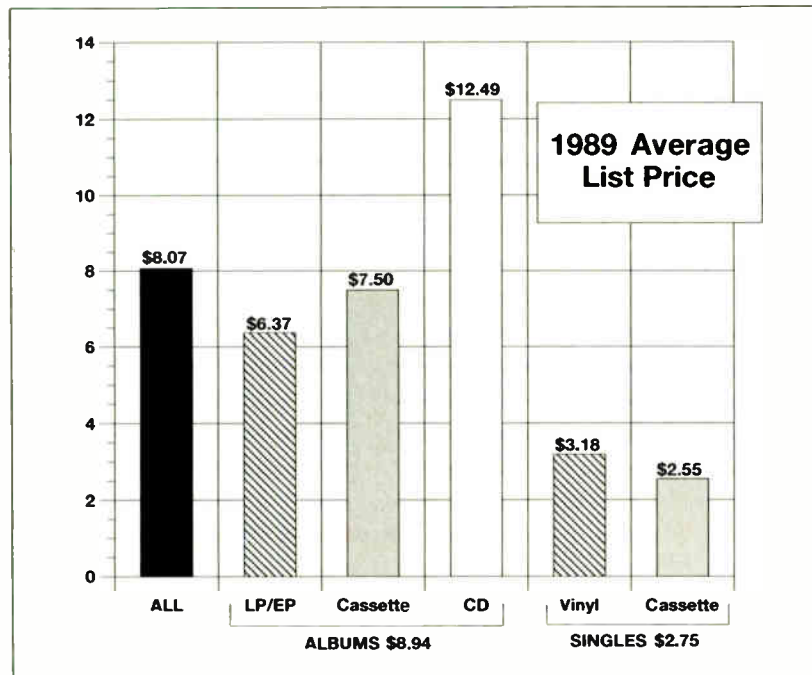


Figure 5

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Circle #154 on Reader Service Card

by Philip De Lancie

TAPE & DISC NEWS

San Francisco's Sonic Solutions has teamed up with START Lab of Tokyo to offer a system for small-scale write once-read many CD-Audio recording (see also "Insider Audio"). The package integrates START Lab's CD Maker into the Sonic System, a Macintosh II-based digital audio processing and editing environment. Software developed by Sonic functions as the user interface to the CD Maker for creating disc table of contents and controlling recorder operation. The hardware, which consists of the CDW-E1 encoder and the CDW-W1 recorder, is manufactured by Sony and marketed by START Lab as part of a joint venture with Taiyo Yuden, which makes the recordable CD-R discs. Up to 32 recording units may be used simultaneously with each encoder. Sonic Solutions is now the exclusive U.S. distributor of CD Maker for SCSI-interfaced audio applications. Sony will apparently handle distribution for other applications, such as CD-ROM, toward which the Sonic System is not targeted.

The blank CD-Rs, available in 60- or 74-minute lengths, are built on a pregrooved polycarbonate substrate. The substrate is spin-coated with a recording layer of organic dye, then overlaid with reflective and protective layers of gold and UV resin, respectively. During recording, digital audio data from a

1630 tape or the Sonic System's hard drive storage is fed through the Mac's SCSI port to the encoder, where it is processed and sent on to the recorder. The recorder's write laser focuses at the recording layer, heating the dye above its decomposition

mastering. The system is also being touted for archiving, as well as limited run applications for broadcast and post-production. The cost of an initial encoder/recorder combination is \$25,000, with each additional recorder priced at \$15,000.

Including the cost of the Sonic System and a Mac II, the package is competitively priced with the Yamaha PDS System offered by Gotham Audio for similar applications.

• • •

Pilz Compact Disc of Costa Mesa, Calif., has announced its intention to construct the world's largest CD manufacturing facility. Planned for Orange County, Calif., the 210,000-square-foot factory is projected to handle an annual output of 100 million CDs, including corresponding boxes and trays. The West Germany-headquartered company, Europe's fifth largest CD replicator,

is seeking investment from independent American labels in return for profit participation and assured output from the plant when it comes online in 1992.

• • •

Preliminary figures have been released by the Optical Publishing Association (Columbus, Ohio) on the 1989 CD-ROM market. Figures compiled for the Optical Publishing Industry Assessment show total worldwide revenue from sales of drives and software titles last year increased 50% over 1988 to \$571



At work on the Sonic System.

point of 250° C. The immediately adjacent polycarbonate absorbs the heat and expands into the decomposed dye materials. That creates, looking from the read side of the disc, a pit which has a lower reflectivity than the surrounding "land" area. According to START Lab, the discs thus recorded meet the worldwide Red Book CD standard.

Sonic intends to market the CD Maker package to studios and record companies for reference use in mastering, and perhaps even as an alternative to the 1630 system for CD

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World Radio History

million. The total worldwide installed base rose 102% to 340,000, while the number of titles available for sale or in-house distribution leaped 107% to approximately 1,300. According to the OPA's Richard Bowers, final figures are likely to show even stronger growth.

• • •

ElectroSound Group has redistributed its West Coast cassette duplicating capacity, closing its Los Angeles plant. Equipment has been relocated to the company's Hauppauge, N.Y., facility, and to a plant in Indianapolis, Ind., that had been used exclusively for record pressing. According to president Richard Projain, increased demand in the East and Midwest has created the need for the centralization of shipping and manufacturing in those regions.

SPICES

Concept Design (Graham, N.C.) is introducing the High Speed Load system, allowing duplicators to transfer digital audio into the DAAD dig-

ital high-speed duplication master at rates up to 10:1... **Musicon** has relocated its tape duplication operations from Southern California to a 14,500-square-foot facility in Wilsonville, Ore. The new plant, with added King 790 loaders and Versadyne 1500 slaves, has a capacity in excess of 1 million cassettes per month... **Kewall Real Time Tape Duplicators** of Bay Shore, N.Y., has expanded its capacity with the purchase of 30 additional decks. The company is also now equipped to handle masters on DAT or VHS Hi-fi.

321 Studios is now open for business at the former site of the New York Record Plant. Engineer Joe Brescio is in charge of the studio's master cutting room, equipped for CD and record mastering. The facility also includes a production and digital assembly room, and the addition of a digital editing suite is in the works... **Custom Mastering** in Nashville has purchased an SDP-1000, Sony's new "digital audio effector." The system combines a processor, controller and monitor to allow real-time and time code automated EQ,

level and dynamics processing of masters in the digital domain.

Apple Computer has lowered the suggested retail price of its AppleCD SC drive 25% to \$899 as part of an effort to promote the use of CD-ROM. The drive's software has also been updated, and a solution to the dust accumulation problem that impaired the performance of the read laser has been developed. Correction of the problem on older drives is being offered free through authorized Apple dealers... **Mediagenic** of Menlo Park, Calif., is now offering MADE, the multimedia applications development environment. The technology allows microcomputer-based development of interactive products, combining high-resolution color graphics and CD-quality sound with intuitive interfaces... **Correction Dept.** In March we reported that **Tape Duplication Technology** of Fort Wayne, Ind., offers stereo conversion of Magnefax-type duplicators. The company offers nearly everything but Magnefax. Our apologies. ■

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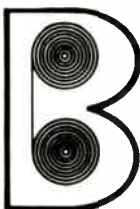
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—FROM PAGE 72

Chick, I apologize.

Bonzai: Was this to make money?

David Was: It was basically to not work and make money. I just continued the same lifestyle I had led throughout my adolescent years with this fine gentleman. Being a jazz critic is like going to art school. It was an art school without walls. Meeting these guys who we'd grown up revering and mythologizing—Miles and Ornette, Jelly Roll Morton. It was like...What did Dylan say about Woody Guthrie?

Don Was: You mean about never brushing his teeth?

David Was: Yes, but he also spoke of the end of idolatry. By meeting them, it makes artists not only human, but less than human. You see that all the pieces don't have to be there. Genius isn't a function of mental or physical health, but of the missing piece in the puzzle of these personalities. That's what made them unique, their limitations.

Bonzai: Don, 20 years ago you knew what you wanted to be doing today. How about you, David?

David Was: I suppose not. I came from a family of actors, and that seemed like a pretty good job to me. Slowly but surely, I wiped it out of my banks because it seemed like a dumb profession. Not a heck of a lot of room for playing the theater in America. You wind up on *Alf*.

Bonzai: So music was your next goal?

David Was: Well, I met Don when he was playing the junior high talent show doing a crude impression of Dylan. I had never heard of Dylan at 11 years old and took Don to be the real thing. Later on, naturally, I was bitterly disappointed. But I did fall under the sway of music and started studying and quitting every major instrument in the orchestra by the time I was 18.

Bonzai: What instrument do you think you are best at?

David Was: Flute, bassoon.

Bonzai: And you, Don, your best instrument?

Don Was: I can get by on the bass.

Bonzai: Do these Was (Not Was) albums make any money? [Both laugh]

Don Was: No, not really, but the last one sold a few.

Bonzai: How do you pay all the people who are on your records? I've never seen such humongous credit lists. Great artists, too.

David Was: We're like a benevolent association. Sort of a soup kitchen. We've kept a lot of people alive. It's the most satisfying thing about our work.

Bonzai: It seems that Don has been taking the producer spotlight, and probably making a lot more money than you. Is that true?

Don Was: I haven't seen his bank statement, but I will say that you have not heard David's solo album yet, which will seriously tilt the earnings in his direction.

Bonzai: Is that coming up?

David Was: Yeah, it's the pigpen to splash around in, without trying to create any serious hits or anything.

“Genius
isn't a function
of mental or physical
health, but of the
missing piece in the
puzzle of these
personalities. That's
what made them
unique, their
limitations.”

Taking care of the nastier side that they don't want us to reveal on our Was (Not Was) albums any more.

Bonzai: And you are the main lyricist in the group?

David Was: Yes, but Don is my editor. He will edit a song from three pieces laying around in three different rooms. Bing, bing, bing—all of a sudden you've got “Yesterday,” “Stardust.”

Bonzai: Do people think you are brothers?

Don Was: People think we are brothers, and they think we are black. They think we're Harry and Sweet Pea. Usually, when I meet people for the first time in person, they think I am my own lawyer.

Bonzai: Do either of you sing on any of your records?

Don Was: David does all the spoken word vocals on “Dad, I'm in Jail.”

Bonzai: What's this I hear about a new artist you are working with, Natalie Archangel?

Don Was: She's very talented. She and her A&R man at MCA Records approached me about producing. They played some of her songs for me, and one of them was clearly an homage to The Four Seasons. It seemed as if you ran all of The Four Seasons' songs into a computer and came up with the sum total, you'd come up with this track called “My Older Lover.” So, I thought, why don't we get Frankie Valli to sing it with Natalie? Great video—Frankie playing the older lover. And he was very receptive to it.

Bonzai: Isn't this great that you can just call people up and say, “I've got a great idea!”

Don Was: It's the coolest, yeah. The very first record I ever bought was “Candy Girl.” When you get a very familiar voice in the studio, and you're testing the mic before you run the track, and you hear this voice that you know—it sends shivers up and down the spine. I experienced one such shiver with Frankie when he started singing. He sounds as good as ever.

Bonzai: What a way to start out the decade, huh? You guys are on the top of the heap!

Don Was: Watch out, he's setting us up for something.

Bonzai: No, no. I was just wondering, do you ever wake up and fear that the ice is suddenly thin and the whole success will come crashing down?

Don Was: I think everything is cyclical. You look at a kid like Boy George, for example. He experienced a bit of a collapse and took it to heart. I think if you examine anyone who is in this business for the long run, they have their ups and downs. I expect our success to last for another good week, and beyond that I'm not too worried. I think we know what we're doing now. If you know what you're doing and you have something to say, trends can't take that away from you.

David Was: There were so many times when we should have fallen through the ice and didn't. You don't expect to drown any more and are constantly surprised by things working out. You begin to trust yourself more. It's what you are doing that makes it happen, not being the Tiffany of the week. We've been rolling for ten years like this, so I guess it could only get better. ■

Our roving provocateur Mr. Bonzai (not Bonzo) walks the dinosaur to burn off all these “lunching” calories.

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LIVE SOUND

—FROM PAGE 123, GEORGE BENSON

running tape in the house or listening to the system. A lot of times he needs an extra half-hour of peace and quiet to do what he's going to do. By giving him that extra time, everything's set and things aren't going to be changing on me. Then it's up to me to do what I've got to

"I think mixing monitors is much more difficult than mixing house. You've got eight, nine or ten small P.A. systems scattered around the stage, within a foot or two of microphones."

do. I think mixing monitors is much more difficult than mixing house. You've got eight, nine or ten small P.A. systems scattered around the stage, within a foot or two of microphones."

Benson knows what he wants to hear in his monitors. "I get the bass drum and keyboards and the vocals. The other guitar player [Mike O'Neill] doubles as a singer, and we have a female vocalist [Kate Marcowitz] who plays light percussion, so we put a little of that in and try to get a balance," Benson says. "I like to hear the bass drum to get the real timing, because he's so far back, and that split-second makes a difference. A tune can really go downhill because of that misconception of time. I've found that if I get that click of the bass drum it really helps us stay in sync. And the keyboards are in there for inspiration. They make me want to sing, and they give me ideas. I bounce off their harmonies and rhythm concepts."

To make sure everything Benson hears is familiar, Galloway carries certain equipment when he tours overseas. "The Helpenstill

pickup bar is a piece of gear that we won't go anywhere without, so he can hear the piano the way he wants to hear it, and the piano player can, too. Also we carry certain microphones, PZMs, all his wireless stuff, all his amplifiers. You get to certain parts of the world and they just don't have it. And we're paid to keep the stage to a point where they can just get up and play."

Benson has Nady Systems wireless setups for both vocals and guitar. "He has a stereo-type configuration," Galloway says. "On one side he uses a Polytone for the darker part of his sound, and on the other side he uses a new version of a Twin Reverb called 'The Twin,' which we run direct. It gives us a good combination of a clean sound mixed with the darker sound. He never wants his guitar to come off in a brittle fashion. He's really into that nice, round sound.

"People don't realize what a difference microphones make," the engineer continues.

"All of a sudden their microphone just isn't active in the certain frequencies they're used to hearing, and you just can't refabricate those frequencies' equalization. Everything goes back to the source. Once you deal with it from there back, that's when toys can really accentuate the sound. I don't think you should have to fabricate a sound."

"It is very difficult to grow as a sound company in Brazil, because we have importation problems. We have to pay a high duty," says Marcio Pilato of Loudness. "We have ordered a new Midas, 40-input, XL Series. We will be the first Midas in Brazil. Now we are using TAC Scorpions, 40 inputs and 12 outs."

The bins are Brazilian speakers called Novique. "It's not like JBL," Pilato says, "but they are trying to make a good speaker." The monitors are custom-made by Loudness. "We modified the monitor to bi-amp it with DDA crossovers. Now it is active. We plan to change the monitor system to a double 15-inch with a driver. The current bins are one 15-inch and a driver. The tweeters are a Brazilian speaker called 'Selenium.'"

The mics onstage in Sao Paulo look like those in any normal professional show—Sennheiser 431, Shures, AKGs, PZMs, Beyers. "And we have transformers to keep the voltage at 120 with low variation," Pilato says, addressing another problem that can haunt electronic musicians in countries with unregulated power.

The engineer's main problem in the house at this show may be trying to keep the reins on the eight large bins on each side of the stage. "We had this much space to put the speakers," says Pilato. "How did we decide? It's what we can fit up there, what can I tell you? We don't have flying systems in Brazil, because the roofs don't support them."

"They're into a little bit of overkill here," Galloway says. "I'd rather have a few boxes that we can really turn on and make them work. People don't realize that you just can't turn it all down. You have to turn on each box individually, and if you have a little too much it just makes it tough. You get a lot of level

bouncing all over the place. It starts slapping off the back wall, and all of a sudden George is getting a full mix. That's what he's got ten mixes onstage for, so he *doesn't* have a full mix. This place is slightly cavern-like too, but it's sold-out, so I think with a full house the sound will be real nice.

"I told the engineer with Loudness that it sounded a little harsh, with too much high and midrange. And he said, 'Yeah, it sounds like that until it fills up, then it will go away.' So that's what they're there for. They know the room, which helps."

Keyboardists Barnaby Finch and David Garfield, drummer Gerry Brown and bassist Stanley Banks also joined Benson in Brazil. "They're all real seasoned musicians, and it makes things a delight for our crew," Galloway says. "They understand, especially when we go overseas or something, that it's just not always going to be an ideal situation. You just deal with it."

The sound never got out of hand

during the week-long Free Jazz Festival, even with artists as musically diverse as John Zorn, Joe Williams, Branford Marsalis, John Scofield, Horace Silver, Cecil Taylor, Max Roach, the Count Basie Band and Mauro Senise. The unorthodox percussion rig of Joao Parahyba, a blend of traditional Brazilian and modern sampling and electronics, was miked beautifully, as was Zezo's acoustic guitar during Olmir Stocker's set.

Changes between groups were done swiftly, some in under ten minutes. "We want to do things right," Pilato says. "We don't have a lot of equipment, we don't have schools here, we can't import, but we want to do it right. We know that it's not a Clair or Showco or Maryland Sound system. It's a small company. We are great to Brazil, but we are small to the world. This is the Third World." ■

Robin Tolleson is a contributor to Mix, downbeat, Musician, Modern Drummer and other publications.

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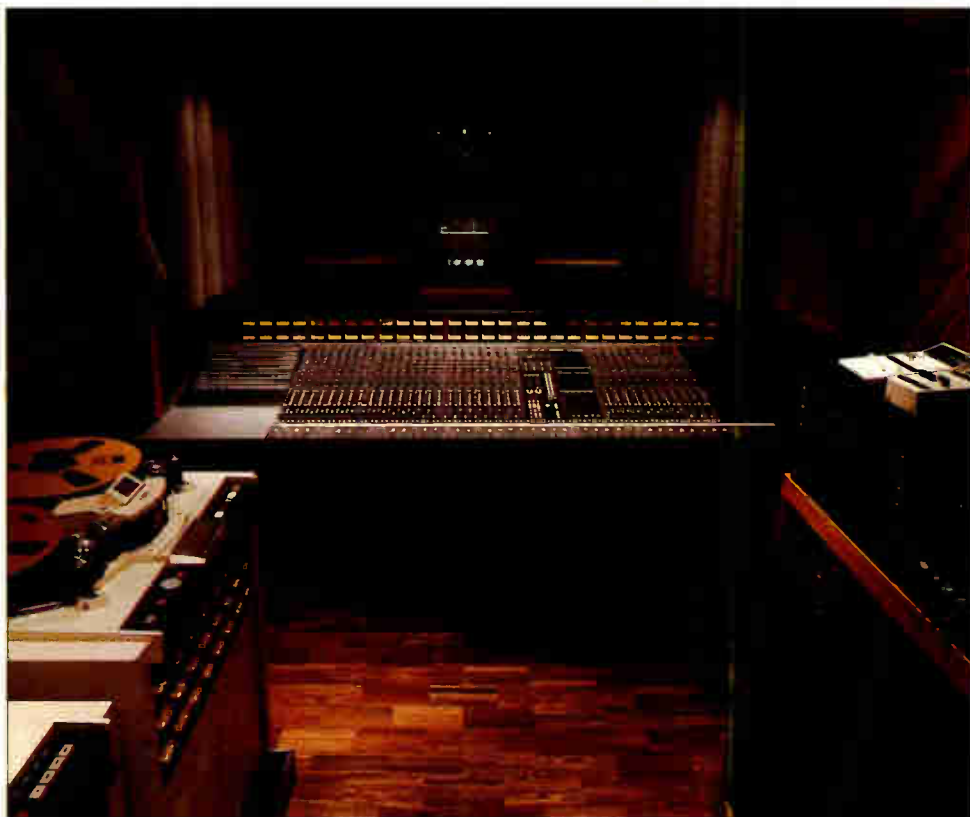
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REMOTE RECORDING & SOUND REINFORCEMENT

Information in the following directory section is based on questionnaires mailed earlier this year and was supplied by those facilities listed.

Mix claims no responsibility for the accuracy of this information.

Personnel, equipment, locations and rates may change so please verify critical information with the companies directly.



Established in 1980 by Randy Ezratty, Manhattan-based E-fane! Music, Inc., is a full-service remote audio recording facility available for album, film, concert video and live broadcast events worldwide. The three-room, 45-foot truck features an SSL 4000 G Series automated console, two Sony 3348 48-tracks and two Otari MTR-90 24-track machines with 48 channels of Dolby SR. Photo by Mark Shane.

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Mix listings procedure: Every month, *Mix* mails questionnaires to recording studios and/or other vital facilities and services for the recording, sound and video production industries. There is a nominal charge to list a Boldface Listing (name, address, contact) and an Extended Listing (equipment, credits, specialization and photo or logo). If you would like to be listed in a *Mix* Directory, write or call the *Mix* Directories Department, 6400 Hollis Street #12, Emeryville, CA 94608; toll free 800-344-LIST!

Upcoming Directory Deadlines:

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The MR Series console comes in three configurations—eight, 12 or 16 inputs. Each input accepts mic, line and tape sources. It has a three-band channel equalizer with sweepable mid-band for tone adjustments. Three aux sends so you can set up mixes to headphones, stage monitors or effects processors. Two stereo aux returns. A cue buss to monitor inputs and outputs without skipping a beat.

A talkback system. Six calibrated VU meters for accurate monitoring and matching of signal levels. Plus a host of other features that make this console easy to work with whether you're on stage or off. At a price that's reasonable for any console, let alone one that does the job of two.

The MR Series Professional Mixing Console. When you start going places, it'll show you the way. Check one out at your Yamaha Professional Audio dealer.

Yamaha Corporation of America, Professional Audio Division, P.O. Box 6600, Buena Park, CA 90622-6600. In Canada, Yamaha Canada Music Ltd., 135 Milner Avenue, Scarborough, Ontario M1S3R1.

YAMAHA

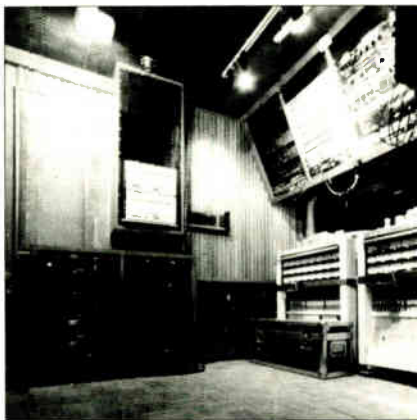
Professional Audio Division

Tonight, this console hits the road. Tomorrow, it'll make tracks.



REMOTE RECORDING & SOUND REINFORCEMENT

Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Washington, DC



ASL MOBILE AUDIO
Flushing, NY

text 4010 reader/generator. **Outboard Equipment:** (3) Yamaha SPX9011, Yamaha REV7, Klark-Teknik DN780, Baxcus-Bery 8r/2 processor, Ursula Major Space Station, MXR-01, (2) Brooke-Siren DPR-402 comp/peak limiter/de-esser, (2) dbx 160X, (2) dbx 116L, (2) UREI 1176LN, (58) noise gates by: Rebsis, Valley People, BSS, Klark-Teknik and Drawmer, Everette 910, Klark-Teknik DN700, TC Electronics 2290 w/11-second memory, Lexicon PCM41, (2) Klark-Teknik DN360, (2) Klark-Teknik DN410, additional de-essers, ECs, comp/line too numerous to list. **Microphones:** Over 112 microphones and direct boxes by: Sennheiser, Shure, Sony, E-V, Milab, AKG, Beyer, Neumann, Crown, Realistic, Brooke-Siren, ASL. **Monitor Speakers:** (2) JFEI 813, (2) K&H C32 (tri-amped, self-powered), (4) Yamaha NS-10M, (8) E-V Serinity 100A, Klark-Acoustic Jangle (self-powered), Auratones. **Power Amplifiers:** (2) Bryston 4E, Crown D-60 (heaphone amp in control room). **Video Recorders:** (2) Sony SL-HF90C Super Beta Hi-fi, Akai VS-603S VHS Hi-fi, call for full video production packages. **Video Monitors:** (3) 13" color, (2) RCA B&W 11", (2) Panasonic 3" color. **Switchers:** Dynair 12-channel video. **Cameras:** Panasonic color (remote zoom, focus, pan and tilt), (2) RCA CCTV B&W, broadcast-quality cameras available. **Other Major Equipment:** (76) audio mic/lines (via 4 x 19 pair audio snakes, individual XL-connectors also available), (4) individual communication lines to mobile unit, (8) video sends and returns to mobile unit, (5) incoming Telco lines multiple stereo signal feeds for Telco and satellite links, (2) portable mobile cellular telephones (incoming/outgoing service), 1,500-point Bantam jackfield/48-point video jackfield, 60-channel, 4-way, Brooke-Siren active splitter system, 3r-channel, stage box, (20)-isolated 600-ohm tie-line, audio and video tie-lines available in travel crew cab! **Rates:** Available upon request. Daily, weekly and/or monthly lockout welcomed. **Specialization & Credits:** Aura Sound Ltd. (ASL Mobile AV), established in 1977, is a full-service audio/video facility handling a variety of mobile productions. From television and radio broadcasting (via satellite uplinks and Telco feeds) to dual analog or digital multi-track recording! Our philosophy is to bring the multimedia, multitrack control room to the concert hall, video facility, MIDI studio, rehearsal space, home and/or anywhere else desired, to develop the sounds and visions needed. The ASL Mobile Unit offers complete basic track, mixdown and pre/post audio for video to clients ranging from top audio and video backgrounds to local artists and bands. Here is a selected list of clients and artists who have used our mobile production facilities: Spyro Gyra, Manhattan Transfer, Bob James, Michael Franks, Les Ritzenou, David Benoit, Judy Collins, M'ck Taylor, Howard Stern, "J.S. Open Sores" video, Squeeze, Adrian Belew, Lenny Kravitz, Pat Benatar, Thomas Dolby, Living Colour, Public Enemy, XTC, Jazzy Jeff and the Fresh Prince, Neville Bros.

AUDIO ANALYSTS U.S.A., INC.; *Sound Reinf.;* 13 Industrial Blvd. W.; Plattsburgh, NY 12901; (518) 561-5071. Contact: Bert Pars.

THE AUDIO WORKSHOP; *Sound Reinf.;* 1728 Leishman Ave.; Arnold, PA 17068; (412) 335-7766. Contact: James N. Guzzo.

BACKTRACKS LOCATION DIGITAL; *Audio Recording;* 5 School Ave.; Montpelier, VT 05602; (802) 223-2551. Contact: Mike Billingley. **REMOTE RECORDING.** Specialization & Credits: We love music and sound, and specialize in all the wondrous nuances of 44.1kHz digital recording...both remote in good half's and on location with DC power. As inventors and patent holders of Crown's Stereo Ambient Sampling System (SASS™), microphone, we continue our pioneering work with stereo imaging, using the SASS-P and SASS-B plus our own design: for both ultraquiet location work and a special 4-channel SASS-plus-digital recorder configuration. We use all the best components for accuracy and detail, including John Hardy reamps, modified B&K mics and power supplies, Star-Quid cable and A1:000e filter sets. We lovingly record acoustic ensembles (ethnic, folk and classical), percussion, location samples and sound effects, environmental ambience including 4-channel and live performances. CD premastering/edit-

ing and digital domain modification: in-house give us full control of the final stereo or 4-channel image. We create auditory environments for museums and galleries. Artist commissions are welcome!



BIG MO RECORDING
Wheaton, MD

BIG MO RECORDING; *Audio and Video Recording;* 11264 Triangle Ln.; Wheaton, MD 20902; (301) 946-7364. Contact: Ed Eastridge. **REMOTE RECORDING.** Vehicles: 1993 Mercedes Benz. **Control Room Dimensions:** 8 x 24. **Mixing Consoles:** Custom 40 x 16 x 40 w/J.L. Cooper MAGI II automation. **Audio Recorders:** Sony/MCI JH-24 24-track, MCI JH-14 24-track, Sony 5003 2-track, Panasonic SV-3500 DAT, Sony PCM-501 digital processor. **Noise Reduction Systems:** Dolby A (32 channels). **Synchronization Systems:** Adams-Smith Zeta-3. **Outboard Equipment:** Lexicon PCM70, Lexicon PCM60, Lexicon Prime Time, Klark-Teknik DN-7E0, Roland DEP-5, (2) UREI LA 3A, ADR stereo comp/limiter, dbx 160, dbx 900 rack, Valley People rack. **Microphones:** (4) Neumann U87, (2) Neumann U85, (6) Sennheiser 421, (6) AKG 451, (3) AKG 535, AKG D-12, (2) AKG 414, (3) Shure SM57, (3) Shure SM58, (2) Crown PZM. **Monitor Speakers:** UREI 811B, Yamaha NS-10. **Power Amplifiers:** Bryston 3B, QSC. **Video Recorders:** (2) Sony BVU-800 3/4", (2) Sony BVU-200 1/2", JVC 3/4" editing deck. **Video Monitors:** Panasonic. **Switchers:** 3M 9-input w/double faders. **Cameras:** (6) RCA TK-76. **Rates:** Call for rates. **Specialization & Credits:** Credits include: WJFK Radio—Melissa Etheridge, live broadcast; WHFS Radio—Richard Thompson Band, live recording; WAMU Radio; WETA TV—"In Performance at the White House"; WHMM TV—Rosa Parks Tribute, with Dione Warwick, Laj Rawlis, Marilyn McCoo; ABC TV—"Project Literacy"; Rounder Records; Friskways Records; Sweettrain Records; The Seldom Scene—"15th Anniversary Celebration," with Linda Ronstadt, Emmylou Harris, Ricky Skaggs, Tony Rice; Danny Gatton; The Nighthawks; Edwin Hawkins; New Potato Caboose—produced by Elliot Mazer. Also available: studio recording and production. Video crew on request.

BRANDY WINE ELECTRONIC LTD.; *Sound Reinf.;* 432 Ayre St.; Newport, DE 19804; (302) 999-9992. Contact: Dirk MacAlpina.

CLAIR BROTHERS AUDIO, INC.; *Sound Reinf.;* PO Box 396; Lititz, PA 17543; (717) 665-4000. FAX: (717) 665-2786. Contact: Greg Hall. **SOUND REINFORCEMENT.** Specialization & Credits: Recent tours: The Who, U2, Madonna, Janet Jackson, Michael Jackson, Kenny Rogers, Fleetwood Mac, Robert Plant, Peter Gabriel, R.E.M., Don Henley, Bon Jovi, Tina Turner, Anderson/Burford/Wakeman/Howe, Kitaro, Eliot John, Paul Simon, Waterboys, Army Grant, BoDeans, Michael W. Smith, Stevie Nicks. Offices and full inventories in London and Tokyo.

COLLEGIUM SOUND, INC.; *Sound Reinf.;* Rental, *Audio Recording;* 35-41 72nd St.; Jackson Heights, NY 11372; (718) 426-8555. Contact: Don Wade.

COUNTS & COUNTS; *Sound Reinf.;* Rental, *Audio and Video Recording;* 181 Warrington St.; Providence, RI 02907; (401) 781-8478. Contact: Bill Counts, Stewart Counts.

DSL SOUND, INC.; *Sound Reinf.;* 4 Manila Ave.; Hagerstown, MD 21740; (301) 797-1070. Contact: William Hetzer, Charles Needy.

EAR FORCE SOUND CO.; *Sound Reinf.;* 201 Beacon St. (rear); Greensburg, PA 15601; (412) 834-4100. Contact: Chris Randy. **SOUND REINFORCEMENT.** Touring Radius: Regional. **Maximum Venue Size:** Monitors only. **Vehicles:** Various. **Monitor Loudspeakers:** (2) E-V MTL-4 sidefill lows, (2) E-V MTH-4 sidefill low-mid, high-mid, high, (12) EFS 2-12", 1-2" wedge monitors (all JBL-loaded), dual 18" drumfill low. **Monitor Consoles:** Various upon request. **Outboard Equipment:** (8) UREI 539 1/3-oct EQ, Klark-Teknik DN300 dual 1/3, (5) dbx 160 comp/limiter, (2) E-V MTX processor, (6) Brooke-Siren FDS-310 crossover. **Power Amplifiers:** (9) Crown MA-2400, (6) Crown MA-1200. **Microphones:** Various upon request. **Other Equipment:** Various upon request.

ACE SOUND & LIGHTING; *Sound Reinf.;* Rental; PO Box 1183; Bellmawr, NJ 08031; (609) 456-2774; FAX: (609) 467-5294. Contact: Ace Porter.

A.D.R. STUDIOS, INC.; *Sound Reinf.;* Audio Recording; Skylight Run, Taxter Rd.; Irvington, NY 10533; (416) 486-0856. Contact: Jack Davis.

ANDREWS AUDIO CONSULTANTS; *Sound Reinf.;* Rental; 347 W. 39th St.; New York, NY 10018; (212) 736-9570; FAX: (212) 736-5961. Contact: David Andrews, Mike Sinclair. **SOUND REINFORCEMENT.** Touring Radius: National. **Maximum Venue Size:** Stadium and arena. **House Loudspeakers:** Meyer MSL3, Meyer MSL10. **Flying System Available:** Yes. **Monitor Loudspeakers:** Meyer UPA1, UM1, 500, custom 2 x 15, custom 2 x 2-12. **House Consoles:** Yamaha PM3000-40, (3) Audioarts 40/32-channel, Ramsa WRS-852. **Monitor Consoles:** Audioarts M16 40 x 16, TAC Scorpion 30 x 12, Ramsa WRS 840F 40 x 18. **Outboard Equipment:** Lexicon PCM70, dbx 900 series, Yamaha SPX9011, dbx 160X, dbx 166, UREI 539, Klark-Teknik DN360B, BSS FDS-320, Meyer CP-10. **Power Amplifiers:** Crown MA-1200, Crown MA-2400. **Microphones:** Telex RF, Vega RF, Shure SM57, Shure SM58, Shure SM87, E-VN-DYM, AKG 451, PZM all models, Sennheiser 421, Countryman direct boxes. **Other Equipment:** Technon TEF, Meyer SIM™ equalization system, Irie 30, Vega RF headset system.

APPLIED AUDIO; *Sound Reinf.;* Lighting, Staging, Rental, *Audio and Video Recording;* 2 Townline Cir.; Rochester, NY 14623; (716) 272-9280; FAX: (716) 272-1156. Contact: Seth, Roger, Lou.



ASL MOBILE AUDIO
Flushing, NY

ASL MOBILE AUDIO; *Audio and Video Recording;* PO Box 791; Flushing, NY 11352; (718) 886-6500; FAX: (718) 886-7214. Contact: Steven Remote. **REMOTE RECORDING.** Vehicles: 1987 International turbo diesel w/4-door travel-crew cab, dual fuel tanks and air-ride suspension. **Control Room Dimensions:** 17' x 7'6" x 7'10", truck length is approx. 31.5' long. **Mixing Consoles:** Harrison MR-4 36 w/ARMS automation, CAD Maxon 16 x 8 x 2, Hill multimeter 16 x 4 x 2, Roland M-160 16 x 2 submixers, additional submixers available, 84 mic/lines total. **Audio Recorders:** (2) Otari MTR-90 24-track, Otari MTR-10 2-track, (2) Sony DTC-1000-ES DAT, (2) Akai GX-912 cassette deck, (2) Sony TCWR-900 dual cassettes, Nakamichi DMP-100 digital processor w/(2) Sony SL-HF900 Super Beta Hi-fi. **Noise Reduction Systems:** Dolby SR, others available on request. **Synchronization Systems:** TimeLine Lynx, Fos-

REMOTE RECORDING & SOUND REINFORCEMENT

EFFANEL MUSIC, INC.; *Audio Recording; New York, NY 10011; (212) 807-1100. Contact: Randy Ezratty. REMOTE RECORDING. Vehicles: A—45' Matlock air-ride mobile control room, B—24' Grumman step van, C—flight case portable system. Mixing Consoles: Solid State Logic G Series w/studio computer, Sound Workshop Series 34 custom 52-channel, Sound Workshop Series 341 custom 72-channel. Audio Recorders: (2) Sony 3348 48-track digital, (2) Otari MTR-90/2 24-track analog, (2) Otari MTR-12 2-track analog, (2) Sony/Audio Design Pro DAT. Noise Reduction Systems: Dolby SR*

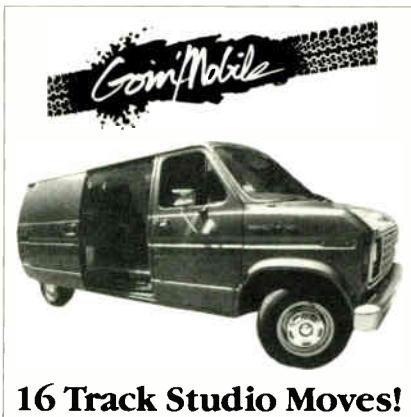
Effanel Music Location Recording Worldwide

EFFANEL MUSIC, INC.
New York, NY

48-channel. **Synchronization Systems:** TimeLine Lynx. **Outboard Equipment:** (16) Hardy M-1 mic preamp, (4) Massenburg mic preamp, (2) Drawmer 1960 stereo tube limiter, (8) Drawmer 201 gate, Lexicon 224XL reverb, Lexicon 224 reverb, Lexicon 200 reverb, (2) Yamaha REV5, (2) TC 2290 delay, (2) API 5502 EQ, Neve 33609 stereo limiter, Smart stereo limiter, (2) Lexicon PCM42 delay, (16) dbx 900 Series limiter/gate/de-esser, (4) dbx 160X limiter. **Microphones:** World-class collection—AKG, Neumann, B&K, Sony, Schoeps, Beyer, Sennheiser, Shure. **Monitor Speakers:** Gauss, Rogers, ProAc, E-V, Yamaha. **Power Amplifiers:** (2) Bryston 4B, (4) Hafler 500. **Video Monitors:** (3) Panasonic 19" color. **Switchers:** Solid State Logic. **Cameras:** (3) color CCTV for real-time performance monitoring. **Other Major Equipment:** Jensen custom 52-channel transformer/splitter system. **Specialization & Credits:** Effanel is proud to be the first remote recording company to offer SSL/dual 48-track digital recording. Recent credits include: The Rolling Stones, Atlantic City '89; The Who, "Tommy"; Carly Simon, "My Romance"; Spike Lee "Do It A' Cappella"; David Letterman's 9th Anniversary Special; "Night Music" series; Peter Gabriel, "Passion." Our portable system provides 96-channel, dual 48-track recording facilities worldwide.

EIGER ENGINEERING; *Sound Reinf., Lighting, Staging, Audio and Video Recording; 203 Waverley Ave.; Watertown, MA 02172; (617) 924-6514. Contact: Thomas P. Scheuzger.*

GOIN' MOBILE; *Audio Recording; 304 Newbury St. #110; Boston, MA 02115; (617) 232-7969. Contact: Lonnie Bedell. REMOTE RECORDING. Specialization & Credits: Goin' Mobile operates a 1" 16-track remote recording truck, based in Boston. We offer live concert recording, on-location sessions and broadcast mixes to clients throughout the Northeast. Equipment includes: Seck 1882 console, Hill Multimix (total 28 inputs), Tascam MS-16 16-track w/dbx, 32-channel 200" splitter snake, CCTV monitoring, plenty of rack gear, mics, stands and more. Past clients include: Fort Apache Studios, Darleen Wilson, Karen Kane, Frank Cunningham, David Estes/Rambo-McGuire Ministries, Plate O'Shrimp, CF Video, Heartpunch Studios, Joel Hillier, The Pale Nephews, The Matarians, Mojaka, Liam Clancy, The Tsunami Poets, Frank Cunningham, The Rock Church, The Agape Victory Church, Beat Surrender, Power-*



16 Track Studio Moves!

GOIN' MOBILE
Boston, MA

glide, Bebop Productions, Big City Productions and many more. Additional industry references upon request. Remember...you don't have to go 24-track. At 50% to 75% less, get our quote before you decide. Call for free brochure.

GUSSOUND; *Sound Reinf., Lighting, Rental, Audio Recording; 2809 Lakehurst Ave.; Forestville, MD 20747; (301) 967-7267. Contact: Shawn Vitale.*

TERRY HANLEY AUDIO SYSTEMS, INC.; *Sound Reinf., Lighting, Staging, Rental; 329 Elm St.; Cambridge, MA 02139; (617) 661-1520. Contact: Dan Kidwell, John Doerschuk.*

HOLLYWOOD SOUND; *Sound Reinf., Rental; 601 Chartiers Ave.; McKees Rocks, PA 15136; (412) 771-3060. Contact: Gary Hollywood, Ross Hindman. SOUND REINFORCEMENT. Touring Radius: Local, regional, national. Maximum Venue Size: 60,000. Vehicles: Yes. House Loudspeakers: Turbosound TMS-3, Turbosound TSW-124, PAS MFS-2, PAS 2-18BM. Flying System Available: Yes. Monitor Loudspeakers: Bi-amped wedges w/15" and 2" JBL horn, tri-amped sidefill 2 x 15" folded, 2 x 15 2" horn, tri-amped drumfill 2 x 18", 2 x 15" and 2 x 1" horn. House Consoles: Yamaha PM3000 40 x 8 x 2, Yamaha PM1800 40 x 8 x 2, Yamaha MC2404. Monitor Consoles: Soundcraft 400B 32 x 8 x 2. Outboard Equipment: dbx 166X comp/limiter, Yamaha GC2020B comp/limiter, Furman QN-4 noise gate, Klark-Teknik DN30/30, Yamaha REV7, Yamaha SPX90II, Yamaha SPX90, Roland SDE-3000, others available upon request. Power Amplifiers: Crest 8001, Crest 7001, Crest 5000, Crest 4001, Carver PM-1.5, Carver PM-350. Microphones: Shure, Sennheiser, AKG, Yamaha, others available upon request. Other Equipment: Complete line of band equipment. Rates: Upon request, per job and location, please call. **Specialization & Credits:** Joe Walsh, Danger Danger, XYZ, Miki Howard, Mr. Big, Princess Pang, Grace Jones, Public Enemy, Steve Stevens, Force MD, Badlands, DAD, Camper Van Beethoven, Blue Murder, Kings X, Debbie Harry, Living Colour, Melissa Etheridge, Extreme, Marchello, Zymox, Moev, Rainmakers, Samantha Fox, Arlo Guthrie, Miles Jay, Ocean Blue, Kingdom Come, Bonnie Raitt, Yellow Jackets, Peter, Paul and Mary, Cinderella, KIX, Fishbone, Smithereens, Paul Kelly & The Messengers, Aswad, Bad Company, Winger/Spyro Gyra, DJ Jazzy Jeff and the Fresh Prince, Tone Loc, Bullet Boys, Wolfgang Press, New Kids on the Block, Paul Stanley, B.B. King, The Fixx, Flock of Seagulls, Third World, Waiters, etc. We are a company dedicated to excellence in the field of sound reinforcement with a total technical experience of over 50 years.*

IMPACT AUDIO; *Sound Reinf.; 208 Stephens St.; Belleville, NJ 07109; (201) 759-0261. Contact: Sam Andriano.*

IN PHASE AUDIO; *Sound Reinf., Lighting, Rental; 158 Alton Rd.; Stamford, CT 06906; (203) 348-6052. Contact: Jim Durkin.*

BOB JOHNSON AUDIO ENGINEERING; *Sound Reinf., Rental, Audio Engineering; 7 Crofut Rd.; Naugatuck, CT 06770; (203) 729-7871. Contact: Bob Johnson.*

J3 STUDIO; *Audio Recording; 120 Simpson Rd.; Ardmore, PA 19003; (215) 642-6558. Contact: John Muhlen III. REMOTE RECORDING. Vehicles: Variable. Control Room Dimensions: 15 x 10. Mixing Consoles: Alesis 1622 16 x 8, Boss BX-800 8 x 2. Audio Recorders: TEAC TCA-43 4-track reel-to-reel, JVC TD-V711 2-track cassette, Technics RS-TR355 2-track cassette. Noise Reduction Systems: (3) Dolby B, Dolby C, (2) Dolby HX Professional. Outboard Equipment: Alesis Quadraverb digital effects processor, Alesis MicroLimiter compressor/limiter, Alesis MicroGate noise gate, BSR EQ-300 stereo 11-band graphic EQ. Microphones: (4) Shure SM57, (2) Audio-Technica 75D, (4) Audio-Technica PR60, Neumann U925. Monitor Speakers: (2) JBL J320A modified, (2) JBL 2600. Power Amplifiers: JVC R-X500. Other Major Equipment: Macintosh SE w/20MB HD, MIDI-compatible software including 16-track sequencer, Yamaha DX100 digital synthesizer, Technics SL-P999 4-DAC 20-bit CD player, AKG K-240M monitor headphones. Rates: Available upon request.*

KARIBU VALLEY INDUSTRIES; *Sound Reinf., Rental; 1310 Racquet Rd.; Baltimore, MD 21209-2113; (301) 321-6015. Contact: R.K. "Frank" Rankin.*

ROBERT LANCEFIELD RECORDING; *Audio Recording; 400 Plaza Middlesex; Middletown, CT 06457; (203) 347-1634. Contact: Rob Lancefield.*

LLOYD SOUND SYSTEMS/WIZARD LIGHTING AND SOUND EQUIPMENT; *Sound Reinf., Lighting, Rental; 62 Scammell St.; Cortland, NY 13045; (607) 753-1586; (607) 756-7467; FAX: (607) 849-3119. Contact: John Lloyd, Chris Seyerle. SOUND REINFORCEMENT. Touring Radius: National. Maximum Venue Size: 5,000-seat indoors, 3,500 outdoors. Vehicles: Leased. House Loudspeakers: (8) Klipsch M.W.M., (4) TL 50/50 cabinet, (4) HR-6040 horn, (4) Renkus-Heinz horn. Flying System Available: No. Monitor Loudspeakers: (9) 2-12" w/JBL 2370 horn w/2425 drivers, (2) JBL-loaded KF-400. House Consoles: Soundcraft Series 500 24 x 8, Soundcraft Series 400 24 x 4. Monitor Consoles: Soundcraft Series 500 40 x 12, Soundcraft Series 400 16 x 8. Outboard Equipment: 40-channel splitter snake, JBL/UREI 7110 comp/limiter, (8) Symetrix S44 noise gate, Brooke-Siren DPR-402 comp/limiter, (2) Yamaha REV7, Yamaha SPX90, DeltaLab DL-4 digital delay, Yamaha D1500 digital delay, Goldline 1/3-octave analyzer, (4) Klark-Teknik DN360 EQ (monitors), Klark-Teknik DN300 EQ (house), PB-40 patch bay (house and monitors), (2) Rane AC23 crossover (house), (5) Rane AC22 crossover (monitors), Aiwa cassette deck, Sony CD-5 CD player. Power Amplifiers: (3) Crown MT-1200, (15) Crown MT-600. Microphones: Shure SM57, Shure SM58, Shure SM59, E-V RE10, E-V RE15, E-V RE20, E-V 1776, AKG D-112, C-Tape, PZM, active and passive Dis. Lighting: 120k double-hung box truss, CAE 2.4 dimmers, Genie Super Towers, CAE LP-1000 control desk, Rosco 1500 fog machine, Altman Orbiters (long throw). Other Equipment: Clear-Corn system, UHG FM hand-held radios. Rates: Available upon request.*

MARYLAND SOUND INDUSTRIES, INC.; *Sound Reinf.; 4900 Wetheredsville Rd.; Baltimore, MD 21044; (301) 448-1400. Contact: Ronnie Smith.*

MAX SOUND; *Sound Reinf., Staging, Rental; 11 Montrose Rd.; Yonkers, NY 10710; (914) 793-9735. Contact: Christopher Greco.*

MERLIN SOUND; *Sound Reinf., Audio Recording; 149 Merrymount Rd.; New Durham, NH 03855; (603) 859-2372. Contact: Gunnar Stohberg.*

METRO SOUND; *Sound Reinf., Lighting, Staging, Rental; 2647 Broadway, Ste. 2 West; New York, NY 10025-5063; (212) 316-0426. Contact: Alan Thompson.*

MHA AUDIO, INC.; *Sound Reinf.; 20 N. Mulberry St.; Hagerstown, MD 21740; (301) 733-9337; FAX: (301) 733-2065. Contact: Mike Scarfe.*

NEW ENGLAND MOBILE RECORDING; *Audio Recording; PO Box 409; Stow, MA 01775; (508) 562-2111. Contact: Jay W. Goodrich. REMOTE RECORDING. Specialization & Credits: New England Mobile Recording is a complete 24-track location recording studio. It is ideal for large concerts, albums and radio broadcast work. The facility has an attractive and spacious interior that can accommodate an entire band as easily as a stationary studio would. Three isolation chambers provide recording possibilities unavailable from most mobile units. The bus, a customized Eagle motor coach, is wired for 16 video and 52 exterior audio inputs and 40 interior inputs. We presently use equipment by: MCI, Tascam, ADR/Scamp, JBL/Augsburger monitors, Shure, AKG, Audio-Technica, Sennheiser, Dolby Labs, Countryman Assoc., Sescum, custom-made snake (200') and splitter (52 x 2), Crown, Technical Projects, Beyer, Roland, Auratone, E-V, Yamaha, Lexicon, Mesa/Boogie and Neumann. Additional audio and video equipment can be brought in as required. Our friendly and knowledgeable staff would like to confer with you about your recording needs. Call for further information.*

NORTHEASTERN DIGITAL RECORDING, INC.; *Audio Recording; 2 Hidden Meadow Ln.; Southborough, MA 01772; (508) 481-9322. Contact: Toby Mountain. REMOTE RECORDING. Specialization & Credits: We specialize in live-to-2-track digital, using the Sony PCM-1610/1630 system (PCM-F1, DAT also available). We also have full digital editing and compact disc services available. Credits: David Bowie, Frank Zappa, Arlo Guthrie, Richie Havens, The Fringe, Kingston Trio, The Shaw Brothers, Matt Glaser, Rykodisc, Rounder, Chrysalis, A&M, Folk Era.*

OFF THE WALL SOUND; *Sound Reinf., Lighting, Rental; 10 Howland Cir.; West Caldwell, NJ 07006; (201) 228-4099. Contact: Dennis Wall.*

ONE HAND CLAPPING; *Sound Reinf., Lighting, Staging; 58A Phelps Ave.; New Brunswick, NJ 08901; (201) 545-6533. Contact: Terry Richards. SOUND REINFORCEMENT. Touring Radius: Regional. Maximum Venue Size: 7,000 seats. Vehicles: As required. House Loudspeakers: (16) Turbosound TMS-4. Flying System Available: Yes. Monitor Loudspeakers: (6) E-V FM1202, (2) Yamaha drum wedges. House Consoles: Soundcrafts 32 x 8 x 2, Yamaha 24 x 4 x 2. Monitor*

Consoles: Yamaha 24 x 8. **Outboard Equipment:** Roland SDE-1000 delay, Yamaha REV7, Yamaha SPX90, Valley People ManFrame, (5) Yamaha stereo 1/3-octave EQ (1 house, 4 monitor), (4) Yamaha stereo limiter (monitors), BSS 360 x-over (house), conditioned power in all effects racks, (2) Rane 1/3-octave R.T.A., Sony CD player, Nakamichi ZX-9 cassette deck available on request. **Power Amplifiers:** (8) Crown Macro-Tech 2400 (house), (4) Yamaha P2250 (monitor). **Microphones:** Selection including Shure SM57/58, AKG D-12, Nakamichi, Sennheiser, etc. **Lighting:** AVO, Cello and Leprecon control consoles; Leprecon and Electrol dimming; Thomas truss; Procan, Thomas and Altman fixtures; Loadstar and Genie rigging. **Other Equipment:** 400-amp power distribution, stage power can be provided. **Rates:** On request.

PMA INDUSTRIES INC.; *Sound Reinf., Lighting, Staging, Rental;* 681 Killingly St.; Johnston, RI 02919-3914; (401) 421-6221. Contact: Kevin M. Delaney.

TOM POHORILLA AUDIO SYSTEMS; *Sound Reinf.,* PO Box 31; Devon, PA 19333; (215) 647-1570. Contact: Tom Pohorilla.

POMEROY AUDIO; *Audio Recording;* 193 Baltic St.; Brooklyn, NY 11201; (718) 855-2650. Contact: Doug Pomeroy.

PRAGMATECH SOUND CORP.; *Sound Reinf.;* 4516 Byron Ave.; Bronx, NY 10466; (212) 325-8888. Contact: Jim Salta, Don Periman.

PRO SYSTEMS INC.; *Sound Reinf., Lighting;* 5 Glen Rd., RD 3; Manchester, CT 06040; (203) 643-8401. Contact: Glen R. Alici. **SOUND REINFORCEMENT.** Touring Radius: Local, Regional. **Maximum Venue Size:** 3,500 Vehicles: '85 Ford E350 14' cube, '84 Ford E350 14' cube. **House Loudspeakers:** (8) Turbosound TMS-4, (4) Turbosound TSE-118, (2) Turbosound TSE-211. **Flying System Available:** No. **Monitor Loudspeakers:** (4) PAS 15" coax, (4) PAS. **House Consoles:** Soundtracs 24 x 8, Soundtracs 16 x 4. **Monitor Consoles:** Available on request. **Outboard Equipment:** (2) Lexicon LXP-1 w/MRC, Lexicon PCM42, (2) Yamaha SPX90II, DigiTech DSP-256, Valley Dyna-Mite, (2) Valley GateX, Aphex Type C Aural Exciter, (2) Symetrix 201 parametric EQ, (3) White Instruments 4560 1/3-octave EQ, (2) dbx 160X, dbx 166X. **Power Amplifiers:** Crest 5000, (2) AB 1100A, (4) AB 900A. **Microphones:** (8) Beyer M69, (3) Beyer 201, Beyer M88, (4) Shure SM58, (8) Shure SM57, E-V RE20, (2) AKG D-112, (2) AKG C-1000S, (8) Pro Co Director. **Lighting:** Leprecon LP-1000, LP-500, Martin Magnum and Martin Jr. foggers, Leprecon dimmers, polished aluminum Par 64 and 56 rack-mount,

Lycian Midget, Lycian Clubspot. **Other Equipment:** (16) TMS-4 depending on availability, SDL-5 on request. **Rates:** Call for rates.

PROMIX; *Sound Reinf.;* 111 Cedar St.; New Rochelle, NY 10801; (914) 633-3233; FAX: (914) 633-0347.

**When There's Only
One Chance to get it
Right.**

**Record Plant Remote
New York City**

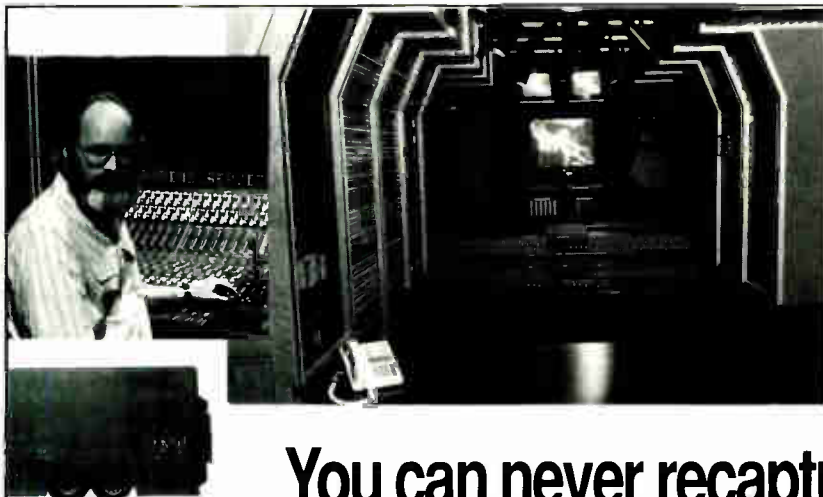
**RECORD PLANT REMOTE
West Milford, NJ**

RECORD PLANT REMOTE; *Audio Recording;* 109 Pinecliff Lake Dr.; West Milford, NJ 07480; (201) 728-1955. Contact: Kooster McAllister. **REMOTE RECORDING.** Vehicles: 1990 Volvo FE7 35' 32,000 GUW. **Control Room Dimensions:** 7 x 23. **Mixing Consoles:** Trident Series 80 custom 48-input 32-bus, (4) Yamaha 406 rack mixer. **Audio Recorders:** (2) Ampex MM1200 24-track, (2) Sony 3324 digital upon request, Sony 1000ES R-DAT, Sony PCM-501, (2) Denon DR-M24HX cassette. **Noise Reduction Systems:** Dolby SR upon request. **Synchronization Systems:** TimeLine Lynx/BTX, Audio & Design TCR-1 reader/reshaper. **Outboard Equipment:** (11) API 560 graphic EQ, (5) API 550A parametric EQ, Yamaha SPX90II digital reverb, Yamaha REV7, (2) UREI 1176 limiter, (2) dbx 160X compressor, (6) dbx 160 compressor, API 325 line amp, 600-ohm distribution amp. **Microphones:** Shure, Neumann, AKG, Sennheiser, E-V, Beyer, Sony, RCA. **Monitor Speakers:** (2)

UREI 813, (2) Yamaha NS-10, (2) Auratone, (2) B&W DM-101. **Power Amplifiers:** Bryston 4B. **Video Monitors:** NEC 20", (2) Panasonic 10", (2) color lock-off camera onstage monitor, black and white lock-off camera onstage monitor, fully isolated video patch bay. **Other Major Equipment:** 15kVA onboard Yawmar/UMA generator, transformer isolated tech and aux. AC distro, (3) 12-channel line-level w/3 video lines sub-snakes, (2) 27-channel 3-way (w/Jensen JE-MB-D) splitter boxes, 600' main snake Belden 54, 600' 6- and 12-channel sub snakes, Chaos audio intercom. **Rates:** Available upon request. **Specialization & Credits:** Now traveling on an extended 1990 Volvo FE-7 chassis, Record Plant Remote has undergone over \$80,000 in renovation and upgrade. Our expanded control room interior provides for a pleasant and comfortable production environment, while maintaining the highest technological support and efficiency. Our various artist and clients include: 1990 MTV *Dawn of the Decade* New Year's party, Atlantic Records *40th Anniversary*, *International Rock Awards*, Howard Jones, Bon Jovi, James Taylor, Joe Walsh, Billy Joel. Video, film or live satellite broadcast all can be handled with ease. Four independent auxiliary snake systems and a comprehensive video code/sync patch bay, combined with our custom API line distribution network, guarantee signal quality is of the highest standard.

REMOTE MEN VISUAL MUSIC; *Audio and Video Recording;* PO Box 791; Flushing, NY 11352; (718) 886-6500; FAX: (718) 886-7214. Contact: Steve Remote. **REMOTE RECORDING.** **Specialization & Credits:** Remote Men Visual Music is the production end of Aura Sonic Ltd. Remote Men is available for on-location audio-for-video production. From TV and radio broadcasting to dual analog or digital multitrack recording, Remote Men will accommodate your every need, nationwide via the ASL Mobile Unit and/or the mobile unit of your choice. Recent clients include BBC, WBCN-FM, WQCD-FM, WPXI-TV, A&M, Epic, RCA, to name a few.

REMOTE RECORDING SERVICES, INC.; *Audio and Video Recording;* PO Box 334; Lahaska, PA 18931; (215) 794-5005. Contact: David Hewitt. **REMOTE RECORDING.** Vehicles: "Silver Truck" 9 x 14 feet. **Mixing Consoles:** API Discrete Series 48 x 48, 560 EQ, Massenburg ladders, Auto reset, Studer 961 10 x 2, Studer 962 14 x 4, Audio Scopes 96-meter display all discrete. **Audio Recorders:** (2) Studer A820 24-track, (2) Sony PCM-3324/3348 digital 24/48-track available, (2) Studer A810 2-track w/time code, Sony PCM-1610 digital w/Apoogee filters and BVU-820 VCR, Sony PCM-701 and Sony DAT available, Nakamichi cassettes. **Noise Reduction Systems:** Dolby SR available (24-track). **Synchronization Systems:** (2) TimeLine
—LISTING CONTINUED ON NEXT PAGE



**"When you play
music, when it's
over, it's gone,
in the air.**

You can never recapture it again." ERIC DOLPHY

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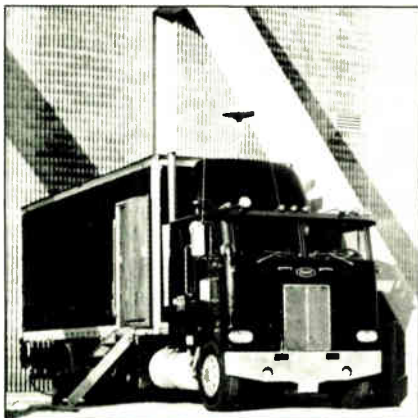
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NORTHEAST

REMOTE RECORDING & SOUND REINFORCEMENT



REMOTE RECORDING SERVICES, INC.
Lahaska, PA

Lynx. **Outboard Equipment:** Lexicon 480L, (4) UREI LA-3A, (5) UREI 1176, (7) dbx 903 limiter, Yamaha REV7, (4) Dyna-Mite gate, (2) API 550A EQ, (2) API 550B EQ, Aphex Compellor, (2) Dynafex dynamic noise filter, Lexicon PCM60. **Microphones:** AKG, Beyer, Countryman, E-V, Neumann, Sennheiser, Shure, Sony, Wahnbrock PZM. **Monitor Speakers:** KRK, CSI MDM-4, Hartke M-18, Yamaha NS-10, Auratone. **Power Amplifiers:** Bryston 4B, Bryston 3B. **Video Monitors:** (4) Mitsubishi 13" multisync, NEC 25", (3) Sony 5", (2) NEC 12". **Switchers:** Videotek Video DAS, Panasonic 6 x 1. **Cameras:** Sony CD color, (2) Sony B/W. **Other Major Equipment:** 72 inputs of Jensen mic splitters, extensive video patch bay, Videotek sync generator, video humbuck coils, extensive cabling for large tours or shoots, PCM-1610 mastering system and Studer consoles available separately in road cases. **Rates:** Please call for quote.

ROCK SYSTEMS AUDIO; *Sound Reinf., 100F Executive Dr., Edgewood, NY 11717; (516) 242-8008. Contact: Leon Esker, Joseph Light.*

RTM AUDIO; *Sound Reinf., Lighting, Staging, Rental; 710 North Ave., Garwood, NJ 07027; (201) 789-9352. Contact: Tom Mathews.*

SCAVENGER SOUND, INC.; *Sound Reinf., Lighting, Staging, Rental; PO Box 1986; Glen Burnie, MD 21061; (301) 760-2135. Contact: J.J. Harding.*

SCORPIO SOUND SYSTEMS, INC.; *Sound Reinf., 56 Manley St., West Bridgewater, MA 02379; (508) 584-0080. Contact: Gary King. **SOUND REINFORCEMENT. Touring Radius: National. Maximum Venue Size: Arenas. Vehicles:** In-house and lease. **House Loudspeakers:** EAW KF-550 Series custom including arrayable: full-range KF-550C, low-end, BH-550, mid-high MH-102-60T, subwoofer SB-550. **Flying System Available: Yes. Monitor Loudspeakers:** EAW custom 4-way and 2-way fills w/TAD and JBL components, custom 1 x 15, 2 x 15, 2 x 12 wedges w/TAD and JBL components. **House Consoles:** Soundcraft Series 4 40-channel, Yamaha PM3000 40-channel, Soundcraft 800B 40-channel. **Monitor Consoles:** Soundcraft 800B 40-channel, Soundcraft 800B 32-channel, Soundcraft 400B 32-channel, more coming. **Outboard Equipment:** Lexicon, Yamaha, Roland, BBE, Aphex, Klark-Teknik, White, BSS, Drawmer, dbx 900, UREI, Tascam, HME. **Power Amplifiers:** Crest 8001, 7001, 6001, 4801, 1001A, Carver PM 1.5. **Microphones:** Shure, Beyer, Sennheiser, E-V, AKG, C-Tape, wireless. **Other Equipment:** Juice Goose voltage regulation system, rigging and CM hoists.*

SEE FACTOR INDUSTRY, INC.; *Sound Reinf., Lighting, Staging, Rental; 37-11 30th St., Long Island City, NY 11101; (718) 784-4200. Contact: Bob See, Mark Friedman, Shelly Diamond. **SOUND REINFORCEMENT. Touring Radius: Na-***

*tional. **Maximum Venue Size: Unlimited. House Loudspeakers:** Meyer Sound Labs MSL-3, 650 R2 subs, UPA-1A, USW, UPM-1, Martin 4-way w/JBL components. **Flying System Available: Yes. Monitor Loudspeakers:** Meyer Sound Labs UM-1, Martin LE-200, JBL custom 3-way wedges, JBL custom 4-way sidefills. **House Consoles:** Yamaha PM3000, Midas Pro-40. **Monitor Consoles:** Ramsa WRS-840, Midas Pro-40. **Outboard Equipment:** All including Meyer Sound Labs, Klark-Teknik, BSS, Drawmer, dbx, Aphex, Yamaha, Lexicon, Roland, Eventide. **Power Amplifiers:** Crest 4001, Crest 7001, Crown PSA-2. **Microphones:** Shure, Beyer, AKG, Sennheiser, E-V, Countryman, Crown, Ramsa. **Staging:** Complete sound installations. **Lighting:** Strand automated units/controls, Avolites 60-96 channel, Avo QM500 90 and 180 channels, Avolacue controllers, Kliegl Performers, Strand Light Palettes, LMI dimmers 1K/2, 4K/12K modules, unlimited trussing in box, triangle and custom designs. **Other Equipment:** Complete line of rigging accessories and controls, CM Loadstar 1- and 2-ton hoists w/up to 120' of lift available in single- or 3-phase power. **Rates:** Call.*

SEE HEAR EAST; *Sound Reinf., RD. 2, Box 147; Germantown, NY 12526; (618) 537-4658. Contact: Judy Elliott-Brown. **SOUND REINFORCEMENT. Specialization & Credits:** We specialize in providing studio quality sound in a concert environment for the acoustic artist. Our clients include The Paul Winter Consort, Will Ackerman, Phil Aaberg and Michael Hedges. Please contact us with your sound requirements, we are sure you will be pleased. (Industrials and concert sound inquiries of all types are welcome.)*



SHEFFIELD AUDIO-VIDEO PRODUCTIONS
Phoenix, MD

SHEFFIELD AUDIO-VIDEO PRODUCTIONS; *Audio and Video Recording; 13816 Sunnybrook Rd., Phoenix, MD 21131; (301) 628-7260. Contact: Richard Van Horn, Nancy Riskin. **REMOTE RECORDING. Vehicles:** 30' custom-built diesel Mack truck with heated and air-conditioned control room (audio), 22' Isuzu (video). **Control Room Dimensions:** Spacious oak and carpeted control room, heated and air-conditioned. **Mixing Consoles:** Neve 8068 MkII 32-input, Neve 5104 24-input, Amek 16-input, Sontec/Massenburg 32-input mic preamps w/4-band parametric EQ. **Audio Recorders:** (2) Sony 3324 digital multitrack, (2) Otari MTR-9011 multitrack analog, (2) Sony 3202 2-track digital, Sony DMR-4000 digital master, Sony PCM-1630 digital processor, Sony PCM-2500 DAT. **Synchronization Systems:** TimeLine Lynx. **Outboard Equipment:** (3) UREI 1176, (2) UREI LA-3A, Lexicon 200, (4) Neve limiter/compressor, Tascam 122 MkII cassette decks, Otari time code reader, additional gear available upon request. **Microphones:** Shure, Sony, Beyer, AKG, Crown PZM, Sennheiser, Neumann, E-V. **Monitor Speakers:** UREI 811B, Yamaha NS-10. **Power Amplifiers:** Crest, BGW. **Video Recorders:** (2) 1" VTR, Betacam SP. **Video Monitors:** Sony. **Switchers:** Grass Valley. **Cameras:** (3) Ikegami H155 chip camera, Sony BVP-30, (2) Thompson 601A. **Other Major Equipment:** 350' of 52-pair audio cable w/Jensen 48-channel transformers, isolated mic splits, 500' of power cable, Liebert computer power regulator. **Rates:** By request.*

SHOWTIME SOUND SERVICES; *Sound Reinf., PO Box 3372; Westport, MA 02790; (617) 636-6040. Contact: Lloyd Jacobsen. **SOUND REINFORCEMENT. Touring Radius: Regional. Maximum Venue Size: 15,000 seats. House Loudspeakers:** 32 units SSS modular 2-box system, 4-way active. **House Consoles:** custom 28 x 8 x 2 w/8 x 4 matrix, Allen and Heath, Tangent, Kelsey, Biamp. **Outboard Equipment:** Lexicon reverbs, UREI compressors, dbx compressors, Loft compressors, Loft noise gates, Yamaha EQs, Ashly EQs, Ursa Major reverbs, Yamaha reverbs, ART reverbs, DeltaLab DDLs, ADA DDLs, Korg DDLs, Loft crossovers, Crown crossovers. **Power Amplifiers:** Crown, QSC. **Microphones:** Crown, AKG, A.T., Beyer, Shure, E-V, Sennheiser.*

SIGNET SOUND; *Sound Reinf., Rental; 115 E. 87th St., Ste. 10A; New York, NY 10128; (212) 348-9335. Contact: D.B. Weiss.*

SINE WAVE AUDIO GROUP; *Sound Reinf., Rental, Audio and Video Recording; 119 Hampton Rd., Garden City, NY 11530; (516) 248-1263. Contact: Thomas Ethimiou.*

S.K. SYSTEMS, INC.; *Sound Reinf., Lighting, Staging; 1560-5 Ocean Ave., Bohemia, NY 11716; (516) 563-7375. Contact: Tom Heinsch, James McKevery.*

SNOW SOUND; *Sound Reinf., Lighting, Staging, Rental; 441 Baileyville Rd., Middlefield, CT 06455; (203) 349-8211. Contact: Robert Neumann.*

SOUND BY FITCH; *Sound Reinf., RD 2; Pottstown, PA 19464; (215) 469-6082. Contact: Bill Fitch, Jr. **SOUND REINFORCEMENT. Touring Radius: National. Maximum Venue Size: 60,000. Vehicles:** (3) 45' air-ride semi tractor trailers, (2) straight box trucks. **House Loudspeakers:** (60) Turbosound TMS-3, (10) Turbosound TMS-4, (15) JBL 3-way. **Flying System Available: Yes. Monitor Loudspeakers:** (44) Turbosound, EAW, JBL. **House Consoles:** Yamaha PM3000 and PM1000, Soundcraft 800B, Ramsa 1842. **Monitor Consoles:** Ramsa, Soundcraft. **Outboard Equipment:** Klark-Teknik, dbx, Lexicon, Yamaha, Brooke-Siren. **Power Amplifiers:** QSC, Crest, UREI, Yamaha. **Microphones:** Sennheiser, Shure, Beyer, E-V, AKG.*

SOUNDPORTeast; *Sound Reinf., Lighting, Staging, Rental; 31 A Spar Dr., Erial, NJ 08081; (609) 228-5283. Contact: Rich Symudai.*

SPL SOUND, INC.; *Sound Reinf., Audio Recording; 27 Temple Rd.; Vineland, NJ 08360-3911; (609) 691-6690. Contact: Steve Ponzetto.*

STEED AUDIO, INC.; *Sound Reinf., 1038 Pennsylvania Ave.; Monaca, PA 15061; (412) 728-1234. Contact: Tom Beck.*



PRICE STEVENSON ACOUSTIC RESEARCH
Downingtown, PA

PRICE STEVENSON ACOUSTIC RESEARCH; *Sound Reinf., Rental; 1591 Broad Run Rd., Downingtown, PA 19335; (215) 383-1083. Contact: Price Stevenson. **SOUND REINFORCEMENT. Touring Radius: Regional. Maximum Venue Size: 12,000 seats. Vehicles:** Step van, 18' box w/LG, 40' trailer. **House Loudspeakers:** (20) Woodworx/Roadworx full-range, (8) Woodworx/Roadworx subs, (8) Community Light & Sound MB60, (16) Community Light & Sound RH60, (4) JBL 4550, all JBL- and TAD-loaded. **Monitor Loudspeakers:** (16) Woodworx/Roadworx, (4) Community Light & Sound, (4) E-V, (8) custom. **House Consoles:** TAC 32, Soundcraft 16, (2) Sunn, (2) Yamaha. **Monitor Consoles:** Yamaha 2408, Troupier 20 x 4. **Outboard Equipment:** Roland 101, Roland 1000, (2) Roland 2000, Lexicon PCM60, Yamaha SPX90, (2) Ibanez 2000. **Power Amplifiers:** (12) Crest 4000, (6) Crest 800, (4) Crown Micro-Tech 300, (4) JBL 6290, (4) BGW 750, (4) Peavey 800. **Microphones:** (8) Sennheiser 421, (30) Shure SM58, Shure SM57, (12) E-VRE11, (2) AKG D-12, (2) Sennheiser 441. **Other Equipment:** Hammond B-3, Marshall, Ampeg, wide variety of P.A. equipment available, Yamaha drum kits, Ludwig drum kits. **Rates:** Single piece to full system, call for info. **REMOTE RECORDING. Specialization & Credits:** Chubby Checker, Bobby Rydell, Dovells, Marvellettes, Joey Dee, Charlie Gracie, Carmen Dee Orchs., Dead End Kids, Money, Puzzle, Numbers, Little Buddy, Chill Factor, Secrets, Stand, Turnstyles, John Eddie, Portrait, Thin Ice, Sovereign, Uptown Swing Band, Pin Ups, Ken Kueiter, Psychopath, Crank, Steel, Desoto, Redtones, Sleeper, White Fox, Ambush, Position, China Club, Copacabana, NY Marriott Marquee, Heebeegeebees, Max's Kansas City, Vets Stadium pregame show, The Stage, Koloa Church, Kauai, Hawaii, Kenny Marks & The Remarkables, Dave Meese, Pulsations (M.S.O.E., R.I.A., Syn-Aud-Con, A.E.S., D.V.A.S.A.), Phila. Civic Center, Trump Castle, NJ, Bally's Casino, Keith Whitley, Tari Hensley, Smothers Brothers.*

TECHNICAL SUPPORT SERVICES; *Sound Reinf., Lighting, Staging, Rental; 275 Middle St., Middletown, CT 06457; (203) 347-5314. Contact: Douglas Fay.*

WARM BROWN SOUND; *Sound Reinf., Rental, Audio Recording;* PO Box 1888; Brattleboro, VT 05302; (802) 254-4283. Contact: Chris Kelly.

ZEO BROTHERS PRODUCTIONS, INC.; *Sound Reinf., Rental;* 429 Lincoln Ave.; Hatboro, PA 19040; (215) 956-0328. Contact: George Zeo.

SOUTHEAST

Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia

AIRSHOW, INC.; *Audio Recording;* 7021 Woodland Dr.; Springfield, VA 22151; (703) 642-9035. Contact: David Glasser. **REMOTE RECORDING. Specialization & Credits:** Specializing in location recording, engineering coordination, and consulting for remote recording and broadcast. We can supply a portable recording system, featuring Calrec console, Sony R-DAT, API preamps and audio distribution, packaged for efficient on-site set up and transport. Recent projects and clients include: 1989 New Music America Festival; Sweet Honey in the Rock Live at Carnegie Hall (1988 Grammy nominee); New Orleans Jazz & Heritage Festival; Smithsonian Festival of American Folklife; Manchester and Baltimore String Quartets; Heat (National Public Radio nightly entertainment show); New Orleans Jazz & Heritage Festival; NPR; Maryland Public Television; Smithsonian Institution. In 1989 we expanded our range of services with the opening of the Airshow digital audio editing suite offering hard disk-based digital editing and CD mastering for clients such as Rounder Records, the Santa Fe Chamber Music Festival and Folkways Records. Please give us a call to discuss your next remote recording, broadcast or digital editing project.

AUDIO OASIS; *Audio Recording;* 3210 Gary Ct.; Falls Church, VA 22042; (702) 532-REEL. Contact: Remy David, Dan Colow. **REMOTE RECORDING. Vehicles:** 31' Mercedes 1116 moving van. **Control Room Dimensions:** 15 x 8 x 10, vocal booth/young 6 x 8 x 10, storage 5 x 8 x 10. **Mixing Consoles:** API/Audionics 52 x 32 x 48, (2) API 3124M 4 x 2. **Audio Recorders:** (2) PEI Elite 24-track, Sony PCM-F1, Panasonic SV3500 DAT, (2) Scully 280B-2, TEAC 122 cassette deck. **Noise Reduction Systems:** Dolby A and SR24-track, dbx single-ended dynamic filter. **Synchronization Systems:** Adams-Smith Zeta-3 w/100-point autolocator. **Outboard Equipment:** (2) UREI 1176LN, (2) UREI LA-4, (2) dbx 166, (2) dbx 160X, dbx



AUDIO OASIS
Falls Church, VA

119, (2) PYE 5752/02 PDM limiter, Lexicon PCM70, Lexicon PCM60, Yamaha SPX90, Alesis MIDverb, Aphex Type C Exciter, (2) DeltaLab Efectron II, (4) Allison Research Kepex 1, Orban 516EC 3-channel de-esser, Orban 674A parametric/graphic EQ. **Microphones:** (2) Neumann U87, Neumann KM86, Neumann KM56 tube, (2) AKG C-414EB 4-track, AKG C-452, (2) Shure SM81, (2) Sennheiser MD-421, (4) Beyer M160 ribbon, (2) E-V 635A, (4) Sony ECM-50, (2) Crown PZM, (6) Shure SM56, (10) RD2 DI boxes. **Monitor Speakers:** (2) UREI 811B, (2) JBL 4301, (6) Realistic Minimus-7. **Power Amplifiers:** Pioneer Speck 2 250W/ch., Crown DC-300A, BGW 15G. **Video Recorders:** Panasonic Industrial Hi-fi-S-VHS. **Video Monitors:** Sony 14" Trinitron, (2) 9" industrial color. **Switchers:** Cross point latch 6-input. **Cameras:** (2) RCA color "chip." **Other Major Equipment:** (3) RD2 24-channel active/passive splitter snake system, RD2 video/audio interface snake, extensive intercom/2-way/cell-phone/telco communications system, extensive patching and all the trimmings. **Rates:** From \$300/day for our "advertisers spot production special" to \$2,500/day and up for dual sync-lock, 48-track audio-for-video teleproduction tours. Call for specific rates for your actual requirements. **Specialization & Credits:** Audio Oasis, a division of Reelpeople Recording Services, has been supplying the Baltimore/Washington area with quality audio services since 1979. Our recent expan-

sion now includes our new unique "Total Audio Production Truck," which includes a voice-over/overdub booth, as well as our 48-track, fully equipped, Total Recall, automated, Sphere Eclipse C remix room and MIDI studio. Our exclusive, large talent pool of network television audio designer/engineers and music mixers are the most competent engineers in the mid-Atlantic region. Each with over 15 years' experience in this field, totaling nearly 100 years of combined knowledge. At Audio Oasis, "we're not a mirage, we're Reelpeople." Call us first.

BACKSTAGE, INC.; *Sound Reinf., Lighting, Staging, Rental;* 310 W. Broad St.; Richmond, VA 23220; (804) 644-1433. Contact: Fred Brumbach. **SOUND REINFORCEMENT. Touring Radius:** Regional. **Maximum Venue Size:** 10,000. **Vehicles:** 24, 26' high cube Ryder lease. **House Loudspeakers:** (20) PAS MRS-1 stack w/double 12" mids, (16) Ramsa WRS-200 for small venues. **Flying System Available:** Yes. **Monitor Loudspeakers:** (22) Renkus-Heinz 2" and 1" x 15 bi-amped and passive wedges, (8) Community RS 440 sidefill. **House Consoles:** Ramsa WRS-852 house, Soundtracs M Series 32 x 8, Soundcraft Delta 200 16 x 4 x 2. **Monitor Consoles:** Soundtracs M Series 32 x 12, Allen and Heath SR Series 24 x 8. **Outboard Equipment:** (6) Rane GE-30 house EQ, (3) dbx 166 house compressor, (8) dbx 166, (2) Omnitape 4-ch. gate, (4) dbx 160X, (2) Klark-Teknik 1/3 stereo EQ, (2) Yamaha 1/3 stereo EQ, (2) Yamaha SPX900 digital reverb, Yamaha REV5 digital reverb, Lexicon PCM70 digital reverb, (2) DeltaLab 1024 digital delay, (4) Alesis MIDverb II, ART DR-1 digital reverb. **Power Amplifiers:** QSC MX1500 house mains, Carver 1.5, 2.0 house mains, QSC 3500, 1400, 1700 monitor amps. **Microphones:** Sennheiser 431, 421, E-V 757, 408, PL95, PL6, Shure SM58, 57, AKG D-112, 460, Countryman Isomax III, Audio-Technica 812, 813, 841A, Sampson wireless Broadcast series. **Staging:** (160) 4 x 8 x 0-4 high. **Lighting:** 320' truss w/ aluminum cans—ground or flown, 100' Unipar units, Avoce boards, Strand CD-80 matrix control. **Other Equipment:** Scenery and soft goods, props, sets, costumes, lve, K-T and Audio Control RTA, Techron TEF12 (on request).

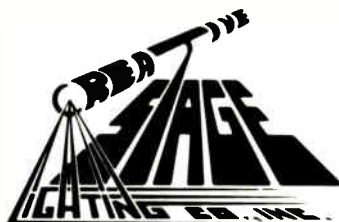
BRANTLEY SOUND ASSOCIATES, INC.; *Sound Reinf., Staging, Rental, Audio Recording;* 204 Third Ave. S.; Nashville, TN 37201; (615) 256-6260. Contact: Leland P. Brantley.

CANANWILL SOUND, INC.; *Sound Reinf.;* PO Box 26283; Jacksonville, FL 32218; (904) 755-8553. Contact: Keith Tuenge, Ken Kleinecke.

BILL EASTERLING PRODUCTIONS; *Sound Reinf., Lighting, Audio and Video Recording;* 114 Retriever Ln.; Summerville, SC 29485; (803) 873-3246. Contact: Bill Easterling.

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SOUTHEAST**REMOTE
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SOUND
REINFORCEMENT**

ELECTRIC EAR PRODUCTIONS, INC.; *Sound Reinf., Lighting, Staging, Rental.* 60 Parris Ave., Nashville, TN 37210; (615) 255-3821. Contact: Bob Langlois, Tom Prather. **SOUND REINFORCEMENT. Touring Radius:** National. **Maximum Venue Size:** 20,000. **Vehicles:** 1985 Peterbilt air-ride tractor; w/4-man sleeper, 48' air-ride drop frame trailer, 1987 24' Ford L800 Bobtail truck. **House Loudspeakers:** Meyer Sound Labs MSL-3, Meyer Sound Labs 650 R-2, Meyer Sound Labs USW subs, Meyer Sound Labs UPA-1, Electro-Voice MTH-4 manifold, Electro-Voice DeltaMax DML 1152. **Flying System Available:** Yes. **Monitor Loudspeakers:** Meyer Sound Labs UM-1 and UP-1, Electro-Voice DeltaMax DML 1152, Electro-Voice FS 2112 and FM 1202. **JBL House Consoles:** Yamaha PM3000 w/40 channels, Yamaha PM1800 w/40 channels, Soundcraft 800B w/32 channels. **Monitor Consoles:** Ramsa 840 w/40 channels, Yamaha 2800 w/32 channels, Yamaha 2408 w/24 channels. **Outboard Equipment:** Klark-Teknik DN360 EQ, Klark-Teknik DN500 compressors, Klark-Teknik DN510 noise gate, White Instruments 4650 1/3-octave EQ, Lexicon PM70, Yamaha REV70, Yamaha SPX900, Valley comp/lim. **Power Amplifiers:** Crest 4001, Crest 6001, Crest 7001, Crest 8001, Carver 1.5 PM, Carver 2.0 PM. **Microphones:** Shure Beta 57 and Beta 58, Shure SM81, SM57, SM58, SM91 and SM98, Electro-Voice RE20, N-408, N-757, Sennheiser 441, 431, 421, Beyer M500, M88. **Staging:** Tomcat load bearing 40 x 40 top expandable to 40 x 60, 40 x 60 stage w/soundwings, Nivolve risers. **Lighting:** Celco Major w/60 channels, James Precept 60, Janes 36 channels, Thomas and Tomcat droplume truss pre-rigged, Celco and Avolite dimmers. **Other Equipment:** Lycian long-throw spotlights, Lycian truss spotlights, Phoebus UltraArc long-throw, log machines, backdrops, Pyro effects, backline rentals. **Rates:** On request.

FX SOUNDE CO.; *Sound Reinf., Lighting, Staging, Audio and Video Recording.* 6247 Holly Bay Dr., Jacksonville, FL 32211; (904) 744-4663.

GARRETT SOUND & LIGHTING; *Sound Reinf., Lighting, Staging, Rental.* 9314 NW 102nd St., Miami, FL 33178; (305) 884-8339; (305) 776-4915; FAX: (305) 884-8313. Contact: Wally or Ron. **SOUND REINFORCEMENT. Touring Radius:** National. **Maximum Venue Size:** 100,000 to 150,000. **Vehicles:** 2 x tractor and trailer 4 x 30' box trucks. **House Loudspeakers:** JBL 4871 concert series, JBL 4842 subwoofer system. **Flying System Available:** Yes. **Monitor Loudspeakers:** JBL 4604 floor wedge, JBL 4602, JBL 4871. **House Consoles:** Soundcraft 8000 40-channel, Midas 40-channel, Sony MXP-2000, Ramsa. **Monitor Consoles:** Soundcraft 800B 32-ch., MCI 24-ch., Midas 32-ch. **Outboard Equipment:** Yamaha REV7, Yamaha SPX90 and SPX900, Klark-Teknik DN360, BSS FDS360, dbx MXR, Bamp. **Power Amplifiers:** Crest 8001, Crest 7001, Carver 2.0, Carver 1.5, Carver PM100, Carver 350. **Microphones:** Shure, Beyer, Sennheiser, AKG, E-V, Audio-Technica. **Staging:** Multistaging w/ly tops, major concert staging w/load-bearing roofs. **Lighting:** 400k of Thomas trussing, EDI dimmers, Leprecon dimmers, Avolite console, Xenon Super-Troopers. **Other Equipment:** Rigging motors, camera towers, lighting towers, generators.

GEORGE D. PRODUCTIONS, INC.; *Audio Recording.* 19300 SW 106 Ave. #3; Miami, FL 33157; (305) 378-2163. Contact: George D.

IMAGE INTERNATIONAL, INC.; *Sound Reinf., Lighting, Staging, Rental, Audio and Video Recording.* 5858 Lakehurst Dr.; Orlando, FL 32819; (407) 351-7065. Contact: Jeff Bates.

INDEX AUDIO; *Sound Reinf., Lighting, Rental.* PO Box 22654; Nashville, TN 37202; (615) 399-8830. Contact: Tim Prince.

INTEGRATED SOUND & LIGHT; *Sound Reinf., Lighting.* 13218 Pleasantview Ln.; Fairfax, VA 22033; (703) 378-5409. Contact: Ivan Beaver.

MAGNETIC MEMORIES; *Audio Recording.* PO Box 3373; Kingsport, TN 37664; (615) 246-3452 (6-10 EST). Contact: Lawrence Morris.

MARTIN AUDIO; *Audio Recording.* 642 Holly Ave.; Winston-Salem, NC 27101; (919) 722-0699. Contact: Frank Martin.

MASTERSOUND, INC.; *Audio Recording.* 7425 Buckland Rd.; Charlotte, NC 28208; (704) 588-2491. Contact: Jim Deal.

MD SYSTEMS; *Sound Reinf., Rental.* 128 Space Park South Dr.; Nashville, TN 37211; (615) 331-9090; (800) MDROCKS. Contact: John McBride. **SOUND REINFORCEMENT. Touring Radius:** National. **Maximum Venue Size:** 20,000. **Vehicles:** Lease all vehicles—standard 48' air-ride trailers 102". **House Loudspeakers:** (24) JBL 2241 2 x 18" proprietary sub cabinets (24) proprietary mid-high packs—JBL 2123 4 x 10", JBL 2445 2 x 2" horn. **Flying System Available:** Yes. **Monitor Loudspeakers:** (17) proprietary single 15 wedges JBL 1 x 2226 and 1 x JBL 2445, (9) proprietary double 15 wedges 2 x JBL E 140 1 x JBL 2445. **House Consoles:** Yamaha PM3000 40-ch., TAC Scorpion 40 x 12 x 2. **Monitor Consoles:** (2) Soundcraft 500 40 x 12. **Outboard Equipment:** Klark-Teknik DN360 EQ, White Instruments 1/3-octave EQ, Brooke-Siren crossovers, Lexicon 224, 200, LXP-1, LXP-5, Roland 3000, Eventide 949, dbx 160X, 166, 903, 904, Yamaha SPX90, Drawmer stereo gates. **Power Amplifiers:** Crest 8001 house and monitor low-end, QSC 1200/1400 monitor high-end. **Microphones:** Sennheiser 421, 431, 441, Shure SM57, SM58, SM81, E-V RE20, 757, AKG D-12E, Beyer M88, Crown PZM, Countryman Isomax II, Countryman direct boxes. **Rates:** Negotiated per contract.

MR. O AUDIO; *Sound Reinf., Lighting, Rental, Audio Recording.* 2035 S. Lumpkin Rd.; Columbus, GA 31903; (404) 687-6221. Contact: Maurice Owens. **SOUND REINFORCEMENT. Touring Radius:** Local, regional. **Maximum Venue Size:** 12,000. **Vehicles:** Volvo 28" and rental trucks for dependability. **House Loudspeakers:** (18) OAP DP-118, JBL 18"/15"/12"/2" comp driver w/biradial, OAP FH-118 subs, Mr. O W25H (2 15"/1" JBL comp driver w/biradial EQ), Mr. O 52Ts (15"/1" JBL comp driver w/60-degree horn). **Flying System Available:** Yes. **Monitor Loudspeakers:** (16) OAP 2-way Blamp wedges (15"/1" comp driver w/90-degree horn), Mr. O 52T (sidetfills), Mr. O KA1 drum monitor (2 15"/1" comp driver w/90-degree horn). **House Consoles:** Soundcraft 500 32 x 8, Wheatstone 40 x 8, Yamaha 2404, Yamaha EM300 12 x 4. **Monitor Consoles:** Studiomastr 20 x 8, Yamaha 2408. **Outboard Equipment:** Brooke-Siren FDS-360, (2) Klark-Teknik DN360, dual-octave graphic EQs, (8) dbx 166 comp/limiter, Lexicon 95 Prime Time II, Yamaha REV7, (2) Yamaha SPX90, Yamaha SPX900II, Efectron III, Ibanez HD-1500, UREI 539 1/3-octave EQs, Yamaha 2031 dual 1/3-octave EQs, Valley People Dyna-Mite (comp/lim/gate/de-esser), UREI 525 crossovers, dbx 160X compressors, Crown VFX-2A crossovers, Eventide H910 Harmonizer, Rane AC-22 and AC23 x-overs. **Power Amplifiers:** Crown PSA-2, Crown DC-300A, Yamaha P2200, BGW 750, Crown D-75, Crown MA-2400, Crown MT-600. **Microphones:** Shure SM58, Shure SM57, PE56, Sennheiser 421, AKG 414. **Lighting:** (148) PAR 64 w/(2) 40' truss, 24 channels of Leprecon (2.4k) and Scrimmer (4.8k) dimming, 10 channels of non-dim 30-amp circuits, CM Loadstar 1-ton chain hoist. **Other Equipment:** Oberheim DX drum machine, Korg Poly-61M, Moog Minimoog Model D, Akai AX-73 MIDI keyboard, Akai 612 sampler, Roland TR-505 drum machine, Accoustic 370 bass head and Ampeg B-25 cab, (2) JBL 2225, Fender Twin w/JBLs, Ampeg V-4 amp and cab., Rane HC-6, headphone amp, Conn Strobotuner. **Rates:** Call for rates. **REMOTE RECORDING. Vehicles:** Modified Ford E-100 van (mxdown in studio). **Mixing Consoles:** Same. **Audio Recorders:** Tascam MS-16, Niko tape decks, Tascam 388-track, Tascam 234 4-track, TEAC 3300 2-track, Tascam 32 2-track, Nikko 350 cassette decks, TEAC V-385 cassette deck. **Noise Reduction Systems:** DX-4D Type I. **Outboard Equipment:** Same. **Microphones:** Same. **Monitor Speakers:** JBL 4312, JBL 4311, Auratone 5C, UREI 809. **Power Amplifiers:** Crown D-75, Crown DC-300A. **Rates:** Call for rates.

MODERN METHOD PRODUCTIONS, INC.; *Sound Reinf., Lighting, Staging, Rental.* 3228 Bob Wallace Ave., Bldg. #5; Huntsville, AL 35805; (205) 536-8025. Contact: David or Bobby Hendricks.

MUSE PRODUCTIONS; *Sound Reinf., Lighting, Staging, Rental.* PO Box 43; Auburn, AL 35602; (205) 821-0088; (205) 826-6302. Contact: Robert Hawthorne, Russ Thatcher. **SOUND REINFORCEMENT. Touring Radius:** National. **Maximum Venue Size:** 20,000. **Vehicles:** Volvo F614 24' box vans. **House Loudspeakers:** Apogee 3 x 3, Apogee AE-12 concert series subwoofers, Apogee AE-5, Apogee AE-10 subwoofers, PAS MRS-2, PAS 218BM subwoofers. **Flying System Available:** Yes. **Monitor Loudspeakers:** Apogee floor wedges, Apogee AE-5, Apogee AE-12, Turbosound TFM2, all bi-/tri-amped. **House Consoles:** Yamaha PM3000 40-ch., Soundcraft 500 40-ch., Soundcraft 200 24-ch. **Monitor Consoles:** Soundcraft 500 40 x 12, Allen and Heath Brenell 24 x 8. **Outboard Equipment:** TC Electronic 2209 w/sampling, Lexicon PCM70, Lexicon PCM60, Lexicon PCM42, Lexicon PCM41, Eventide H3000, Yamaha SPX900II, dbx 160, dbx 166, Klark-Teknik DN360, Klark-Teknik DN60, White 4650 EQ, Apogee 3 x 3 RV processor, Apogee A-12 processor, Apogee A-5 processor, Apogee AE-10 processor, Brooke-Siren DPR-402 comp/lim, Valley International Kexip II, Comanders, Max-Q. **Power Amplifiers:** Crest 8001, Crest 7001, QSC 3800, QSC 2000, QSC 1500. **Microphones:** Shure SM57, Shure Beta 58, Shure SM81, Shure SM85, Beyer M88TG, Beyer M201, E-V RE20, Sennheiser MD-421, Sennheiser MD-431U, Sennheiser MD-441, AKG 414, AKG 451, AKG 535EB, AKG D-12E, AKG 747, PZM, Countryman DI, Whirwind DI. **Staging:** 40 x 40 plus soundwings and top. **Lighting:** Duncan OF-91 and BD-91 box



MUSE PRODUCTIONS
Auburn, AL

truss pre-rigged w/12k per section. Duncan double-hung rolling racks w/BK per rack, Genie Super Towers, 1-ton CM chain hoists, CAE/Leprecon consoles and dimmer racks, follow spots; Avolite consoles and Xenon spots available on request. **Other Equipment:** Entire system multipinned for reliability, speed and ease of setup and tear-down. Any outboard equipment or microphone not specifically listed is available upon request. **HME Intercom Systems, Nakamichi cassette decks and backline rentals. Rates:** Available upon request. **Specialization & Credits:** Muse caters to a variety of music including new age, rock, country, gospel and more. Muse's credits include: Birmingham City Stages one and two, Bo Diddley, Fabulous Thunderbirds, Georgia Satellites, Drivin'-N-Cryin', Ricky Scaggs, Lyle Lovett, Chuck Berry, John Hiatt. These are only a few of the artists Muse has worked with. Muse Production can supply professional sound and lighting for your needs whether they be tours, one-night events or festivals at a price that is right for you. We would be honored to add you to the list of satisfied customers. For further information, please call.

ON STAGE AUDIO; *Sound Reinf., Rental;* 773 Kirkman Rd., Ste. 120; Orlando, FL 32811; (407) 292-0012. Contact: Greg Smith.

OVERLAND SOUND COMPANY, INC.; *Sound Reinf.;* 3821 Macomb St. N.W.; Washington, DC 20016; (202) 364-6033. Contact: Bill Mills, Owen Orzack. **SOUND REINFORCEMENT. Touring Radius:** Regional. **Maximum Venue Size:** 2,500. **Vehicles:** GMC 6000 w/18' box. Other vehicles available on request. **House Loudspeakers:** (4) Woodworx FR-1, (4) Woodworx SB-1, (4) Woodworx Max 2a. **Flying System Available:** No. **Monitor Loudspeakers:** (8) Woodworx Max 1, (4) Woodworx Max 2. **House Consoles:** DDA D Series 32 x 8 x 2 w/4 stereo input ch., DDA S Series 24 x 4 x 2 w/4 x 2 matrix. **Monitor Consoles:** DDA D Series 32 x 14 x 2 w/4 aux sends, Yamaha 1608M 16 x 8. **Outboard Equipment:** White Instruments 4650 EQ, Ashly Audio DG131 EQ, Orban 424A comp/lim, JBL/UREI 7110 comp/lim, Yamaha SPX900, Lexicon PCM60, Klark-Teknik DN410, Aphex gates. **Power Amplifiers:** Crest 8001, 7001, 4801, Carver PM100, 1.5 and 1.5A. **Microphones:** AKG 451, Beyer M88, M69, Crown PCC-160, E-V 408, Sennheiser 421, Shure SM57, SM58.

PARADISE SOUND
PRODUCTION SERVICES
ORLANDO, FLORIDA
(407) 657-0333

PARADISE SOUND
Winter Park, FL

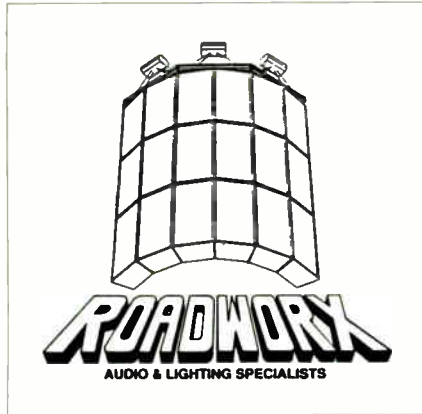
PARADISE SOUND; *Sound Reinf., Lighting, Staging, Rental;* 2721 Forsyth Rd., Ste. 256; Winter Park, FL 32792; (407) 657-0333. Contact: Larry Epstein.

PARALLAX RECORDING; *Audio Recording;* 123 E. State St.; Ridgeland, MS 39157; (601) 856-2525; FAX: (601) 856-9462. Contact: James A. Griffin.

PYRAMID AUDIO PRODUCTIONS, INC.; *Sound Reinf., Lighting, Rental;* 849 Fulton St.; New Orleans, LA 70130; (504) 522-5473. Contact: Don Drucker.

RAM SOUND; *Sound Reinf., Lighting, Rental;* PO Box 906; Mary Esther, FL 32569-0906; (904) 664-6859. Contact: Bob McTyre.

RM AUDIO; 3586 Pierce Dr.; Chamblee, GA 30341; (404) 458-6000. Contact: John L. Tyler.



ROADWORX AUDIO & LIGHTING SPECIALISTS
Greensboro, NC

ROADWORX AUDIO & LIGHTING SPECIALISTS; *Sound Reinf., Lighting, Staging, Rental;* 913 S. Chapman St.; Greensboro, NC 27403; (919) 378-0650; FAX: (919) 378-1498. Contact: Vickie Edwards Hutchins, Hugh K. Sarvis Jr. **SOUND REINFORCEMENT.** Touring Radius: National. Maximum Venue Size: 30,000. Vehicles: Tractor trailer and 24' vehicles. **House Loudspeakers:** (60) Woodworx SR-1 full-range enclosures, (24) Woodworx SR2 full-range enclosures, (24) Woodworx FR3 full-range enclosures, (24) Woodworx Sub dual 18 enclosures w/2241H JBL components. **Flying System Available:** Yes. **Monitor Loudspeakers:** (48) Woodworx MAX-1, (24) Woodworx MAX-2, assorted sidefill, drum and keyboard monitors available. **House Consoles:** Yamaha PM3000 40-channel, Soundcraft 8000 40-channel, Soundcraft 500 40-channel, Soundcraft 200 seq. 32-channel. **Monitor Consoles:** Ramsa WRS-840 40 x 18, Soundcraft 500 40 x 12, TAC Scorpion 30 x 12, Yamaha PM2800 40 x 14. **Outboard Equipment:** Woodworx digital control processor, Industrial Research TEQ, TC Electronic EQs and analyzers, White 4400 and 4650 EQs, dbx gates and limiters, Valley People limiters, Klark-Teknik DN60 analyzers, Yamaha REV7, REV5, SPX900, Lexicon PCM42, 70, LXP-1, proprietary power distribution systems, Whirlwind 40-channel splitters w/mass connectors and transformer-isolated multiple stage boxes, Drawmer gate and limiters. **Power Amplifiers:** AB Systems 1200C and 1100A, Crest 8001, Crest 2400. **Microphones:** AKG, Shure, Beyer, Sennheiser, Neumann, Samson wireless. **Staging:** Concert staging available in various sizes w/top. **Lighting:** (20) Thomas Truss pre-rigged w/240K and Genie Supertowers, Avolites Roloques 60-channel, Leprecon LP-1000 and LP-2000, Leprecon LD-2400, dimmers in racks w/patch bays. **Other Equipment:** TEF 12 system, various backline gear available on request.

ROBINETT RECORDINGS; *Audio Recording;* 3609 Trawick Circle; Raleigh, NC 27604; (919) 231-3760. Contact: Dwight Robinett.



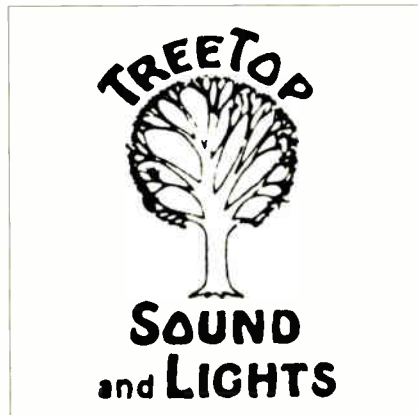
SERIOUSLY SOUND
Atlanta, GA

SERIOUSLY SOUND; *Sound Reinf., Lighting, Staging, Rental;* 550-C Amsterdam Ave.; Atlanta, GA 30306; (404) 872-0346. Contact: Garry Sharp, Dave Lowell. **SOUND REINFORCEMENT.** Touring Radius: National. Maximum Venue Size:

15,000. **Vehicles:** Hino 24', Ryder lease. **House Loudspeakers:** EAW KF-850, SB-850, Renkus Heinz SR-2, Renkus-Heinz LR-2. **Flying System Available:** Yes. **Monitor Loudspeakers:** Woodworx Max II, Woodworx Max I, SSI TAD sidefills, Woodworx drum fills. **House Consoles:** Yamaha PM3000 40-ch., Yamaha PM2000 32-ch. **Monitor Consoles:** Ramsa S840 40 x 18, MCI 32 x 12. **Outboard Equipment:** Lexicon PCM70, Yamaha REV5, Yamaha REV7, Yamaha SPX900, Yamaha SPX90II, Lexicon LXP-1, Roland SDE-3000, dbx 166, Audio Logic MT-44 gates, Renkus Hienz X-31 processor, EAW MX-800 processor, JBL/UREI 55474 EQ, TDM time aligned crossovers. **Power Amplifiers:** Crest 8001, Crest 7001, Crest 4800, Carver 2.0, Carver 1.5A. **Microphones:** Sennheiser 431, 421, Shure SM58, SM57, SM85, AKG 451, 461, D-112, E-V RE20, Beyer M88, M69. **Staging:** Yes. **Lighting:** In-house 200-light system, CAE-Thomas format etc. Full theatrical inventory ellipsoidals, FarCyes, etc., soft goods, special lighting, Lyciar, high-end, data color pros, ACLs etc. **Other Equipment:** Large inventory of stage equipment, complete audio/visual rental inventory. **Specialization & Credits:** Partial client list: Lakewood Amphitheater, Atlanta Jazz Festival, Page Concerts, Maryland Sound, Frankie Valli, Four Tops, Smokey Robinson, Atlanta Ballet, R.A. Roth, Inc.

SGA PRODUCTION STAGING, INC. (SEE NC LISTING FOR EQUIPMENT); *Sound Reinf., Lighting, Staging, Rental;* 4187 34th St.; Orlando, FL 32811; (407) 649-4821. Contact: Dan Hubbell, Mark Reed.

TENNESSEE CONCERT SOUND; *Sound Reinf.;* Hwy. 70 E.; Brownsville, TN 38012; (901) 772-2292. Contact: Stewart Tritt, Bernie Bernil.



TREETOP SOUND AND LIGHTING
Portsmouth, VA

TREETOP SOUND AND LIGHTING; *Sound Reinf., Lighting, Staging, Rental;* 4711 George Washington Hwy.; Portsmouth, VA 23702; (804) 487-6671; (804) 487-1321. Contact: Asa L. Kelly, Jr. **SOUND REINFORCEMENT.** Touring Radius: National. Maximum Venue Size: 100,000. **Vehicles:** Tractor trailers, (6) 26' Mercedes 1317. **House Loudspeakers:** (96) Stacks Lab-Q system. **Flying System Available:** Yes. **Monitor Loudspeakers:** (48) JBL 2445/2205 2", 2405 15" tweeter wedges, (proprietary FL-3). **House Consoles:** PM3000, Gambie, Soundcraft Series 4. **Monitor Consoles:** Yamaha, Soundcraft, Midas, Ramsa. **Outboard Equipment:** Klark-Teknik EQs, dbx, Lexicon, Eventide, White Instruments, Valley, DAT available upon request. **Power Amplifiers:** QSC 3800, 3500, 1500. **Microphones:** AKG, Sennheiser, Beyer, Shure, Stewart DI, Countryman, BSS.

TURN OF THE CENTURY PRODUCTIONS; *Sound Reinf., Lighting, Staging, Rental;* 2629 24th St. N.; St. Petersburg, FL 33713; (813) 327-2496. Contact: Rick Baynard, David Cramer. **SOUND REINFORCEMENT.** Touring Radius: National. Maximum Venue Size: Unlimited indoors or outdoors. **Vehicles:** 45' x 102" air-ride trailers w/late-model air-ride International 9700 tractors, Peterbilt 26' air-ride straight truck w/ crew sleeper. **House Loudspeakers:** Turn of the Century Productions' "Overture System" proprietary, full-range flying cabinets w/JBL components, (2) 18", (2) 12", (2) bi-radials. **Flying System Available:** Yes. **Monitor Loudspeakers:** 2225-2425 bi-amped floor wedges, tri-amped drum fill, tri-amped stereo sidefills. **House Consoles:** Yamaha PM3000/40C, Ramsa WR-S840, Soundcraft 800B 40 x 8, Soundcraft 800B 32 x 8, all w/ spare power supplies. **Monitor Consoles:** Amek-TAC Scorpion 40 x 12 w/balancing update, Soundcraft 40 x 12, Audioarts 24 x 8. **Outboard Equipment:** Crown RTA-2 real-time analyzer, Klark-Teknik DN300 1/3-octave EQ, Klark-Teknik DN360 1/3-octave EQ (monitors), UREI, Yamaha, 1/3-octave EQs also available, UREI LA-4 compressor/limiter (mains), BSS FDS-360 crossover, BSS FDS-310 crossover, UREI 525, Loft 602, Loft 603, dbx F900 mainframes w/902, 902, 904 modules, dbx 160X, dbx 166 gate/limiter, Omnicraft GT-4 quad noise gate, Roland SDE-3000 DDL, Yamaha REV5, Yamaha REV7, Yamaha SPX90II, Yamaha SPX90, Yamaha R1000, Eventide H3000 Ultra-Harmonizer, Eventide H910, Eventide F201, Lexicon 200 digital reverb, Lexicon PCM70, Lexicon PCM60, Lexicon PCM41, Clear-Corn MS2000 main stations, Nakamichi

MR-28 cassette decks, TEAC, Technics, Yamaha, Sony cassette decks and CD players, Crown D-75 headphone amps, AKG 40 headphones, Furman PL-8 light modules, other outboard gear available upon request. **Power Amplifiers:** Mains: Crest 8001, Crest 4001 w/1875 watts/cabinet, Monitors: QSC 3800, QSC 3500, Crown PSA-2, Crown Macro-Tech 1200, Crown DC-300 Series 2. **Microphones:** Shure SM58, Shure SM57, Shure SM81, E-V PL20, AKG D-12E, AKG D-112, AKG C-451, AKG 451, Beyer Dynamic M88, Sennheiser MD-421, Sennheiser MD-431, Sennheiser MD-441, Crown PZM, Crown PCC-160, C-ducer, Sony wireless, Countryman DI, Whirlwind DI, combiners, splitters, etc. **Staging:** 48 x 40 stage w/load-bearing roof. **Lighting:** Over 600kW of lighting, AVO CM500-90, Thomas trusses, Leprecon LD2400 custom dimmer racks. **Other Equipment:** Yamaha Stage series drum kits, Yamaha CP80 piano, Yamaha CP70 piano, Yamaha CP60 piano, Yamaha DX7IID, Roland D-50, Roland JC-120, Fender Twin, Marshall 100-watt w/4 x 12 angle tops and bottoms, Gallien-Krueger 400RB, Guild-Houtke 4 x 10, SVT heads and 8 x 10 cabinet, LP congas, LP timbales, Ludwig timpani, (32) Tascam reel-to-reel, etc., complete line of rental equipment available upon request.

UNITED SOUND & ELECTRONICS; *Sound Reinf., Lighting;* 309 Broadway Ave., PO Box 3000; Clarksburg, WV 26301; (304) 622-6461. Contact: Rob Harold. **SOUND REINFORCEMENT.** Touring Radius: Local. Maximum Venue Size: 5,000 to 10,000 depending on SPL requirements. **Vehicles:** 2 vans, 14' truck. **House Loudspeakers:** (8) JBL 4699 cabinets, (2) JBL 4550, (4) JBL 4560 40 x 60 and 40 x 90 horns w/7,800 watts power total. **Flying System Available:** No. **Monitor Loudspeakers:** (8) JBL 4604 w/15" low and 1" horn. **House Consoles:** Heil 16/3, Soundtech 24/4, Soundtech 16/4. **Monitor Consoles:** (2) Yamaha MC1608M w/up to 32 channels w/8 mixes available. **Outboard Equipment:** 1/3-octave 4-channel, 2/3-octave 4-channel, 1/3-octave stereo EQ, UREI comp/lim, Soundtech comp/lim, ProVerb, MIDiverb, Ibanez delay unit. **Power Amplifiers:** JBL 6290, QSC MX1500, Heil Pro200. **Microphones:** Selection of, Shure SM57, SM58, SM94, SM96, SM77, E-V PL80, Sennheiser MD-421. **Staging:** Scaffolding available for speaker stacks only. **Lighting:** Litron crank-up towers 16', (2) Altman Comet followspots, 30' of truss for flying (small venues only), approx. 32 PAR 64 fixtures, some fresnels, 12-channel ETA console, approx total 28kW. **Other Equipment:** Monitor amplifiers: (2) QSC MX1500, (2) Soundtech PL1000 totaling 4,000 watts.

WEBE TECHNICIANS; *Rental, Audio Recording;* 209 Gann Dr.; Nashville, TN 37210; (615) 391-5252. Contact: Larry Haley.

WISE ENTERTAINMENT PRODUCTIONS; *Sound Reinf., Lighting, Staging, Rental;* PO Box 8656; Columbia, SC 29202-8656; (803) 967-9090. Contact: Doug Baker, Tim Lee.

WOLF SOUND, INC.; *Sound Reinf., Lighting;* 1881 NE 146th St.; N. Miami, FL 33181; (305) 956-9522. Contact: Wolfgang Federlin.

WOODY'S PRO SOUND & MUSIC; *Sound Reinf., Lighting, Staging, Rental, Audio and Video Recording;* PO Box 1428, Hwy. 11 W.; Chilhowie, VA 24319; (703) 646-3392. Contact: Woody Routh, Robin Routh.

NORTH CENTRAL

Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin

ACCUTRACK RECORDING & SOUND CO.; *Sound Reinf., Audio Recording;* 298 E. Dennis; Wheeling, IL 60089; (708) 635-7199. Contact: Dave Levit.

AERIAL ENTERPRISES, INC.; *Sound Reinf., Staging, Rental, Audio Recording;* 10106 Industrial Dr.; Whitmore Lake, MI 48189; (313) 231-2500. Contact: Steve Fisher, Ed Learned, Jim Lillie.

ALLIANCE RECORDING CO. INC.; *Sound Reinf., Audio Recording;* 8449 Parshallville Rd.; Fenton, MI 48430; (313) 632-5653. Contact: Al Hurschman.

ARROW AUDIO, INC.; *Sound Reinf., Lighting, Staging, Rental;* 101 W. Edison Ave.; Appleton, WI 54915; (414) 731-4888. Contact: Curt Maas.

AUDIO VISIONS PRO SOUND; *Sound Reinf., Lighting, Staging, Rental;* 8934 J St.; Omaha, NE 68127; (402) 592-0779; FAX: (402) 592-0997. Contact: Mike Murphy, Rick Curzon.

AUDIO-PRO; *Sound Reinf.;* 514 E. Jewett; Springfield, MO 65807; (417) 882-8404. Contact: John Pitts.

CHICAGO MUSIC COMPANY; *Sound Reinf., Rental;* 3530 N. Lincoln; Chicago, IL 60614; (312) 477-3900. Contact: Jack Alexander, Ken Stevens.

CLEARWING AUDIO & CASE CO., INC.; *Sound Reinf., Lighting, Staging, Rental;* 3313 N. 124th St.; Brookfield, WI 53005; (414) 781-8383. Contact: Gregg Brunclik.

NORTH CENTRAL

**REMOTE
RECORDING
SOUND
REINFORCEMENT**

DODD TECHNOLOGIES, INC.; *Sound Reinf., Lighting, Staging, Rental; 10888 Allisonville Rd., Fishers, IN 46038; (317) 842-4905. Contact: Mark Dodd, Robin Shanks.*

ELECTRO-VOICE, INC.; *Sound Reinf.; 600 Cecil St.; Buchanan, MI 49107; (616) 695-6831. Contact: Keith Clark.*

EMERALD CITY AUDIO, INC.; *Sound Reinf.; 13136 Martin; Minneapolis, MN 55433; (612) 757-6153. Contact: Rob Koester, Dave Cowan. SOUND REINFORCEMENT. Touring Radius: Local and regional. Maximum Venue Size: 5-10,000 seats. Vehicles: (2) GMC 22', lease semis. House Loudspeakers: Full-range (2) JBL 2225, JBL 2123 on CD horn w/Phase plug, JBL 2445, JBL 2405 subwoofer, (4) JBL 2225. Flying System Available: Early 1991. Monitor Loudspeakers: (8) wedges JBL 2226, JBL 2426 bi-amped, (8) wedges E-V L15, Renkus 1800 passive, (2) wedges E-V L15, JBL 225 bi-amped, (2) sidefill (2) Gauss 15, (2) Gauss 10, JBL 2445 w/Gauss tweeter, 4-way drum fill. House Consoles: Yamaha PM1800/40C 40 x 8, Soundcraft 600 32 x 8. Monitor Consoles: Studiomaster 12M 32 x 12, Hill M-1 24 x 8. Outboard Equipment: Brooke-Siren FDS360, Klark-Teknik DN360, BBE 802 processor, dbx real-time, dbx 900 Series, Yamaha REV7, Yamaha SPX900 w/remote, ADA delays, Technics CD player, (4) Yamaha Q2031 EQ, (3) DAX 1/3-octave stereo, (2) UREI LA-4, ART Six gate, Yamaha SPX90, Aphex Type C, BBE 402, we can meet most any rider. Power Amplifiers: (16) SCS 2600A MOSFET (20k watts) house, (10) SCS 2450 MOSFET (9,000 watts) monitor, Carver, OSC sidefills, passive wedges. Microphones: (20) Shure SM58, (20) Shure SM57, (2) AKG D-112, E-V PL20, (4) E-V 308, Toa condensers, (2) Samson wireless SM58/SM87, Countryman/BSS DI. Lighting: Subcontract Thomas truss, chrome pars ground support, motors: 150k par 64. Other Equipment: Clear-Com, 2001 snake/amp connectors, signal snake w/com lines at all amp racks, several club-type systems. Rates: Upon request.*

GREAT LAKES SOUND, INC.; *Sound Reinf., Lighting, Staging, Rental; 112 Arco Dr.; Toledo, OH 43607; (419) 534-2260. Contact: Bill Robison. SOUND REINFORCEMENT. Touring Radius: Regional. Maximum Venue Size: Up to 15,000. Vehicles: 24' plus assorted vans. House Loudspeakers: (2) Adamson 2-box system, (12) proprietary design trapezoidal w/ JBL 2445, 2123, 2225, (8) 4050 W cabinet w/(2) 2225, (4) double 18 w/RCF 1,000-watt 18", (14) Bose 802-1, (6) Bose 302 subs. Flying System Available: Yes. Monitor Loudspeakers: (8) JBL 4604 bi-amped 15" and 1", (6) MacPherson LPM2 15" and 1", (4) JBL 4602 12", bullet. House Consoles: Soundcraft 500-32, Yamaha PM3000-40, Soundcraft Delta-24. Monitor Consoles: Soundcraft 500-40, Soundcraft 400B-32. Outboard Equipment: dbx 900 rack, 160, 160X, 1531, TDM 24CX-4, 30GE-2, ARX 6-gate quad comp, Flare RE27, GE27, GE30, ME30, GE14, AC22, AC23, KT-DN360, Nakamichi MR-2, dbx DX-5, Yamaha SPX90II, SPX90, REV5, Lexicon PCM70, Roland SDE-3000, Alesis MIDVerb II and much more. Power Amplifiers: Crest 8001, 7001, 4801 and 4001, Carver PM2.0 and PM 1.5. Microphones: Shure SM58, SM57, SM54 and SM7, AKG 451, E-V RE20, Sennheiser 421, Beyer M500, Crown PZM and PCC, C-Ducer C-tape, assorted wireless all-diversity hand and body, Countryman DI, ProCo DI. Staging: Assorted types plus roof available. Lighting: (48) 64-1k ACL banks, assorted dimming, (24) 56-1/2k arri12s 12 ellipsoidals 1k, (16) 38-150-watt assorted trees and towers D.J. lighting, trussing 14' Rohm to Thomas. Other Equipment: Clear-Com 7 station, Summa lasers, 1500 foggers, D.J. systems 14' x 26' portable movie screen, portable podiums w/sound. Rates: Quotes on a per-job basis.*

HALF STREET PRODUCTIONS; *Sound Reinf., Lighting, Rental, Audio Recording; 5835 Victoria Ave.; St. Louis, MO 63110; (314) 644-0992. Contact: Ken Bohannan.*

C.V. LLOYDE; *Sound Reinf., Rental; 102 S. Neil St.; Champaign, IL 61820; (217) 352-7031. Contact: Robert "Bub" Philippe. SOUND REINFORCEMENT. Touring Radius: Local, regional and national. Maximum Venue Size: 16,000. Vehicles: Rent, lease Ryder. House Loudspeakers: (48) CVL C-1F (C.V. Lloyd custom) full-range cabinet, (8) CVL C-15 custom subsystem cabinet. Flying System Available: Yes. Moni-*

tor Loudspeakers: (16) CVL CX1526 bi-amped wedge, (4) CVL C-1F tri-amped sidefill. **House Consoles:** Yamaha PM3000 40C, Yamaha PM2000. **Monitor Consoles:** Yamaha PM2800 40M, Yamaha 2408M. **Outboard Equipment:** Yamaha REV5, Yamaha SPX90II, dbx 166, Klark-Teknik DN360, BSS FDS360, Drawmer LX20, Drawmer DS201, Yamaha 2031, DeltaLab DE4, additional equipment available. **Power Amplifiers:** Crown MA2400 (main), Crown MT-1200 (main and monitor), Crown MT-600 (main and monitor), Crest 8001 (sub). **Microphones:** Shure, AKG, Audio-Technica, Samson, Crown, Yamaha, Sennheiser, Countryman, E-V. **Staging:** Upon request. **Lighting:** Upon request. **Other Equipment:** 3-phase AC distro, 250' 52-channel, parallel and transformer snake, Clear-Com, backline equipment. **Rates:** Upon request.

MAGIC MASTERS SOUND & LIGHTING; *Sound Reinf., Lighting, Staging, Rental; 3008 S. Jefferson Ave.; St. Louis, MO 63118; (314) 771-1115. Contact: Gregory L. Hardin.*



METRO MOBILE RECORDING
Glenview, IL

METRO MOBILE RECORDING; *Audio Recording; 2097 John's Ct.; Glenview, IL 60025; (708) 998-6420. Contact: Timothy R. Powell. REMOTE RECORDING. Vehicles: 1983 Chevy Hi-Cube truck. Control Room Dimensions: 12 x 8. Mixing Consoles: Neotek Elite 50 x 24 w/4-band EQ, 100-input mixdown, Hill Multi-Mix 16 x 4 rack-mount, Hardy M-1 mic preamp, Valley People Dyna-Mic, 32 channels Pro-Mix VCA MIDI-based automation. Audio Recorders: (2) Sony/MCI JH-24 24-track 15/30 ips w/14" reel capacity, Panasonic SV3500 DAT, Sony 300ES DAT, Sony TCD-D10 Pro DAT portable, (2) Tascam 112R, Nakamichi MR-2, available upon request; Sony 300ES DAT, Fostex E-16 16-track 1/2" w/Dolby C, Tascam 40-4 4-track 1/4" w/dbx, Scully 2808 2-track 1/4" 30-15 ips w/dbx, (2) Technics 1500 2-track 1/4" 1/4" w/dbx, Sony ES553PCM digital processor w/Sony SLHF-900 and SLHF-450 Beta. Synchronization Systems: Adams-Smith Zeta-3 transport w/SMPTE, Otari EC201 SMPTE. Outboard Equipment: Eventide Ultra-Harmonizer, Lexicon PCM60, Lexicon Prime-Time, Alesis Microverb II, Yamaha REV7, SPX90 and SPX90II, (3) Yamaha D1500 digital delay, DeltaLab ADM-256, Sound Workshop 262 stereo spring reverb, Studio Technologies AN-2 stereo synthesizer, Aphex Compeller limiter and Type C Aural Exciter, (5) dbx 160X, (5) dbx 166 limiter, (2) dbx 463X noise gate, (2) dbx 262X de-esser, (2) dbx 563X silencer, Burwen DNF 1201A dynamic noise filter, USAudio GateX noise gate, Omni Craft GT-4 noise gate, Orban 622 parametric EQ, MXR dual limiter, NAD 4300 AM/FM tuner, Eventide Omnipressor. Microphones: (2) AKG C-414ULS, (2) AKG C-414P48, (2) AKG C-414EB, (4) AKG C-61, (2) AKG C-451EB, (2) AKG C-452EB, AKG D-112E, (2) AKG D-20GE, Audio-Technica ATM-11R, Audio-Technica ATM-31, Audio-Technica ATM-811, Audio-Technica ATM-857QM, Beyer MC740, (2) Beyer MC713, (2) Beyer M160, (4) Beyer M260, (3) Beyer M88, (2) Bruel & Kjaer 4006, Bruel & Kjaer 4007, (4) E-V ND-357, (2) E-V ND-757, E-V PL77A, E-V 655C, Fostex M88RP, Miab DC96B, (3) Nakamichi CM-300 w/cardiod, omni, super-omni and shotgun, (8) Neumann KM84, Neumann KM88, (2) Neumann KM86, (2) RCA 44-DX, RCA 74B, (2) Schoeps SKM-5U w/MK-4 cardioid capsules, (10) Sennheiser MD-421, (6) Shure SM81, Shure SM99, Shure SM33, (10) Shure SM57, (5) Shure Beta SM58, (2) Shure SM58, Shure SM61, (2) Shure 545, Sony C-500, (2) Sony ECM-377, (2) Sony ECM-22P, Sony ECM-55B, Sony ECM-150. Monitor Speakers: UREI 809, Yamaha NS-10, Tannoy 6.5 PBM, JBL 4313, Fostex RM-780, Calibration Standards MDM-4, Auratone 5C. Power Amplifiers: Carver 1.0T, Crown D-150A-IJC, Crown D-75, Yamaha P2075, Sony Tan-5550, Rane HC-6. Video Monitors: (2) Sony CVM-1270 color. Cameras: Panasonic WV-F2 CCD color video, Toshiba IK-2000 color video. Other Major Equipment: 120-amp single-phase power distribution with 250' of cable, 48-channel snake and splitter system, Clear-Com intercom w/(5) beltpack/headsets, Talkman wireless intercom, direct boxes: (5) Secom passive, (2) Stewart active, (4) ProCo passive, (7) Missing Link active, plus cables, stands, subsnakes headphones and more. Specialization & Credits: Metro Mobile offers the finest in 48-track remote recording, mixing for live broadcast, and on-location studio tracking. Recent credits include BoDeans "Home,"*

Eleventh Dream Day "Beet," Replacements "Inconcerated" CD, Neville Bros. "Live" CD, Tom Tom Club "Live" 12", John Cougar Mellencamp "Jackie Brown/Seventh Son" single, The Pixies "Live" EP, Wire "IBTABA," Frehley's Comet "Live + 1," Descendents "Live Age," Don Dixon "Chi-Town Budget Show," Basia "Live" CD, Siegal-Schwall "The Reunion Concert," Lonnie Brooks "Live from Chicago," Koko Taylor "Audience with the Queen," Jerry Goodman "It's Alive," The Godfathers "Live" EP, James Cotton "Live from Chicago." Clients: Westwood One Broadcasting, HBO, The A&E Network, The Disney Channel, National Public Radio, PBS, WXRT, WLUP, WBEZ, KTCA, WBBM, Alligator Records, King Biscuit Flower Hour, A&M Records, Epic Records, Atlantic Records, PolyGram Records, MCA Records, Elektra Records, Warner Bros. Records.

MIRAGE SOUND & LIGHT; *Sound Reinf., Lighting, Staging, Rental; 155 N. Elmwood; Oak Park, IL 60302; (708) 383-6455. Contact: Robert Berggren. SOUND REINFORCEMENT. Specialization & Credits: With our "top of the line" equipment (JBL, Soundcraft, BSS, Klark-Teknik, etc.) and excellent prices, we have been able to please hundreds of acts each year. The following is a partial list, but not a legal endorsement, of customers who have used Mirage Sound and Light equipment and/or services: Thompson Twins, Billy Idol, Chubby Checker, PMI, Grateful Dead, Tower of Power, Tanya Tucker, The Bangles, Steve Dahl, Dick Clark, Phyllis Diller, James Brown, Hyatt and Hilton Hotels, along with live TC and radio. Let us know how we can serve you.*

NIPTRON SYSTEMS; *Sound Reinf., Lighting, Audio Recording; PO Box 23124; Richfield, MN 55423; (612) 823-3860. Contact: Nip, Steve R. Barrette.*

NORTH SHORE AUDIO & ENTERTAINMENT SERVICES; *Sound Reinf., Lighting, Staging, Audio Recording; 2255 Par Ln. #722; Willoughby Hills, OH 44094; (216) 944-8013. Contact: Jim Borton.*



ON STAGE AUDIO
Elk Grove Village, IL

ON STAGE AUDIO; *Sound Reinf., Rental; 2380 Brickvale Dr.; Elk Grove Village, IL 60007; (708) 595-4941. Contact: Mario Educate, Tom Nicks, Stan Dickerson. SOUND REINFORCEMENT. Touring Radius: National. Maximum Venue Size: 15,000. House Loudspeakers: Electro-Voice DeltaMax, Turbosound, Ramsa, Apogee. Flying System Available: Yes. Monitor Loudspeakers: EAW, Apogee, Turbosound. House Consoles: (2) Yamaha PM3000, DDA, Soundcraft, Ramsa. Monitor Consoles: Yamaha 2408, (2) Ramsa WR-S840. Outboard Equipment: Klark-Teknik 1/3-octave EQs, parametric EQs and digital delays, Yamaha REV5, SPX90II, SPX900, 160, dbx 166X, Aphex Type III and Type C. Power Amplifiers: Crest 8001, Crest 4001, Crest 2501. Microphones: Celec Vega R42 pro diversity units, all specialty mics, Audio-Technica AT851 podium. Other Equipment: Clear-Com 4-Channel main stations, Clear-Com 2-channel beltpacks w/Beyer DT108 headsets, Clear-Com wireless headsets, Teac and Otari 4-track reel-to-reel decks, Yamaha and Nakamichi cassette decks. Rates: Upon request. Specialization & Credits: On Stage Audio was formed in 1984 with the sole purpose of providing high-quality audio for corporate industrial theater and corporate entertainment. Clients: Anheuser Busch, McDonald's, IBM, Jack Morton Productions, Production Associates.*

PASCO SOUND, INC.; *Sound Reinf., Lighting, Staging, Rental; 1025 Hill Pl.; Jackson, MI 49202; (517) 787-8917; (800) 359-0646. Contact: Calvin L. Williams.*

PRODUCTION SUPPORT SERVICES, INC.; *Sound Reinf., Lighting, Staging, Rental, Audio and Video Recording; 172 Tumulty; St. Louis, MO 63021-6479; (314) 394-1275. Contact: Robin Nunn.*

RG SOUND AND COMMUNICATIONS; *Sound Reinf., Lighting, Staging, Rental; 414 N. Mill St.; Celina, OH 45822; (419) 586-3671. Contact: Andy Godwin.*

R/J RECORDING & SOUND; *Sound Reinf., Lighting, Staging, Rental, Audio and Video Recording;* PO Box 302, 530 Lark St.; Geneva, IL 60134-0302; (708) 232-1932. Contact: Richard J. Peck. **SOUND REINFORCEMENT. Specialization & Credits:** We at R/J Recording & Sound pride ourselves in providing the highest quality in every facet of our business: sound reinforcement for corporate events, seminars, theaters, local entertainment and national touring groups. Also major festivals, county fairs and concerts. Credits: David Arkenstone, Village People, Ray Charles, Tony Bennett, Judy Collins, Tom T. Hall, Mel Torme, Jack Jones, Johnny Lee, Mel Tillis, Tanya Tucker, Derek S. Holmes, New Seekers, Association, Flare Earth, Drifters, Shirelles, Yesterday, Mickey & The Memories, Ross Tomkins, Ernie Watts, Bobby Shew, Dennis Dlabasi, Bill Evans, Twila Paris and Diane Schuur. Specialization: Our regular customers call us "the most consistent high-quality sound company in Chicagoland." We have full monitor mixing, Soundcraft consoles, multiple systems, with competent sound engineers and people who care about your events. We'll promise you a worry-free production and the best quality in the Midwest. Call us first and let us prove it to you!

SEGUE SOUND CO., U.S.A.; *Sound Reinf., Lighting, Staging, Rental;* 805 Ave. F; Dodge City, KS 67801; (316) 227-2078. Contact: Bill Knight.

SELECT WARE, INC.; *Sound Reinf., Lighting, Audio Recording;* 2374 Flora; Cincinnati, OH 45219-1222; (513) 421-5551. Contact: M.W. Grossmann.

SGA PRODUCTION STAGING, INC.; *Sound Reinf., Lighting, Staging, Rental;* 2222 Spikes Ln.; Lansing, MI 48908; (517) 372-5278. Contact: Keith Menne, Mark Reed. **SOUND REINFORCEMENT. Touring Radius:** National. **Maximum Venue Size:** 40,000. **Vehicles:** (2) 48' tractor/trailer w/air-ride, (5) straight trucks. **House Loudspeakers:** (48) Meyer Sound Labs MSL-3, (36) Meyer Sound Labs 650-R, (32) Meyer Sound Labs UPA-1, (4) Meyer Sound Labs USW, (6) Meyer Sound Labs MSL-10. **Flying System Available:** Yes. **Monitor Loudspeakers:** (32) Meyer Sound Labs UM-1. **House Consoles:** (4) Yamaha PM3000 40 channels, Harrison HM-4 40 channels, (2) Yamaha PM1800 24 channels. **Monitor Consoles:** (4) Ramsa WR-S840 40 x 18, Yamaha MC2408 24 x 8. **Outboard Equipment:** Lexicon PCM70, Yamaha REV7, Yamaha REV5, Yamaha SPX90, dbx 900 Series, dbx 160X comp/limiter, Klark-Teknik DN-360, DN-410, DN-716, as required for specific production needs. **Power Amplifiers:** QSC MX-1500, QSC MX-2000, Crest 8001. **Microphones:** As required: complete inventory of Shure, AKG, Sennheiser, Beyer, Crown PZM, E-V, Countryman. **Staging:** Complete inventory StageRight portable staging systems as production requires. **Lighting:** Thomas Truss and Roof Systems, Avolites QM-500, Avolites RC-60, CAE dimmers, CM1-ton chain motors. **Other Equipment:** Delcom videowall rental, production, technical support and programming. See Florida listing for Orlando office/warehouse location.

SOUTHERN THUNDER SOUND, INC.; *Sound Reinf., Lighting, Rental, Audio and Video Recording;* 2814 Washington Ave. North; Minneapolis, MN 55411; (612) 521-2356. Contact: Art Welter, Kurt Craig.

SUN SOUND SYSTEMS, INC.; *Sound Reinf., Rental, Audio and Video Recording;* 4846 W. Main St.; Skokie, IL 60077; (708) 679-1150. Contact: Ron Bressler.

TECH-ONE SOUND; *Sound Reinf., Rental, Audio Recording;* PO Box 4656; Youngstown, OH 44515; (216) 799-8951. Contact: Paul J. Pompura.

VIKING SOUND & RECORDING; *Sound Reinf., Audio Recording;* PO Box 349, 124 Pine St.; Edna, KS 67342; (316) 922-3827. Contact: Richard Erickson.

WAVELENGTH PRODUCTIONS; *Sound Reinf.;* 7105 N. Paulina, Ste. #3; Chicago, IL 60626; (312) 973-2477. Contact: Marcy J. Hochberg.

WEST RIVER LIGHT & SOUND; *Sound Reinf., Lighting, Staging, Rental;* 2907 Wilson Dr., PO Box #33; Sanford, MI 48657; (517) 687-2732. Contact: Chris Irons.

WILLIAMS SYSTEMS; *Sound Reinf., Lighting, Rental, Audio Recording;* PO Box 5901; Lafayette, IN 47903-5901; (317) 447-2435.

WIX MIX SYSTEMS; *Sound Reinf., Lighting, Staging, Rental;* 3947 Snelling Ave. S.; Minneapolis, MN 55406; (612) 724-2137. Contact: Loren Wikander. **SOUND REINFORCEMENT. Touring Radius:** National. **Maximum Venue Size:** 10,000 seat. **Vehicles:** GMC straight trucks and semis from Ryder Trucks. **House Loudspeakers:** (24) H-35 3-way cabinets (Welter Systems) w/E-V cones and JBL drivers, (24) L-2 bass cabinets (Welter Systems) w/E-V cones, (10) Empire #3 front-loaded Wix Mix cabinets, (10) Empire #4 front-loaded Wix Mix cabinets. **Flying System Available:** No. **Monitor Loudspeakers:** (8) D.F. cabinets (Wix Mix) sidefill and drumfill boxes, (20) 2 x 15 slant w/JBL 2445s and E-V 15Ls, (10) 1 x 15 slant w/JBL 2425s and E-V 15Ls. **House Consoles:** Soundtracs M Series 32 x 8 x 2, Soundcraft 20SJ 24 x 4 x 2, Soundcraft Delta 200 24 x 4 x 2. **Monitor Consoles:** Hill Audio M Series 32 x 10, Peavey 24 x 8, Peavey 16 x 6. **Outboard Equipment:** (4) Roland SDE-3000A, (2) Yamaha REV7, (2) Yamaha SPX900 w/remote,



SYSTEMS

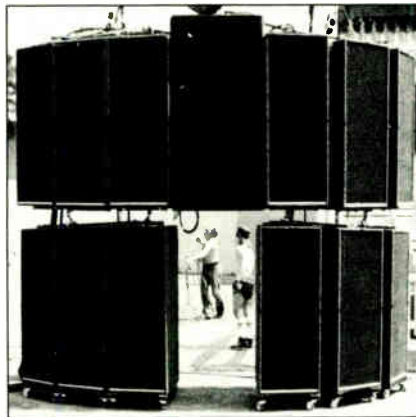
WIX MIX SYSTEMS
Minneapolis, MN

Roland DEP-5, (3) Yamaha SPX90, (2) Furman Q44A quad drum gate, (8) dbx 166 comp/limiter, (4) Klark-Teknik 31-band EQ, (8) Yamaha Q2031 dual 31-band EQ. **Power Amplifiers:** (15) Crest 5001, (17) Crest 3501, (16) Carver PM 1.5. **Microphones:** (20) Beta 58, (15) SM58, (10) Beta 57, (20) SM57, (7) AKG C-408, (10) Sennheiser 421, (6) Shure SM81, (4) AKG D-112E, (2) Toa RD-10, (4) Toa RD-16, (5) Beyer M88. **Staging:** (12) 4 x 8 Wenger risers 2' high. **Lighting:** 80 Par 64 instrument lighting system, front and rear truss (triangle), Genie towers, Leprecon controller/wing dimming. **Other Equipment:** Pearl complete drum set, Fender Twin, Ampeg bass rig w/18" E-V and 15" E-V, Korg M-1.

SOUTHWEST

Arizona, Arkansas, Las Vegas, Mexico, New Mexico, Oklahoma, Texas

A-1 AUDIO, INC.; *Sound Reinf., Rental;* 3780 Scripps Way; Las Vegas, NV 89103-3001; (702) 364-0203; FAX: (702) 362-7607. Contact: Glenn Kern, Dave Mauro, Dave Torti. **SOUND REINFORCEMENT. Touring Radius:** International. **Maximum Venue Size:** Unlimited. **House Loudspeakers:** A-1 Audio fully integrated flying P.A. w/Meyer Sound Labs MSL-3, UPA-1, USW, 650. **Flying System Available:** Yes. **Monitor Loudspeakers:** Meyer Sound Labs UPA-1, UM-1, MSL-3, custom double 12" and single 15" slants. **House Consoles:** Yamaha PM3000, PM2000, PM1800, DMP7, Harrison Alive, Cadac, Soundcraft 800C. **Monitor Consoles:** Ramsa WR-S840, Yamaha PM3000-40C, MC2408, Harrison, Soundcraft 800C. **Outboard Equipment:** Lexicon, Yamaha, Klark-Teknik, BSS, dbx, UREI. **Power Amplifiers:** Crest, BGW, Yamaha, Meyer Sound Labs. **Micro-**



A-1 AUDIO, INC.
Las Vegas, NV

phones: Sennheiser, AKG, Shure, Beyer, Countryman. **Other Equipment:** Wireless systems by Sennheiser, Vega, Micron; tape systems: reel-to-reel, cart and DAT. **Specialization & Credits:** With its facility located minutes from the Las Vegas strip and in Hollywood, CA, A-1 Audio, Inc., has provided superior equipment and services to the entire entertainment industry for over 20 years. Providing support and customized systems to international concert touring, television, film, theater, corporate events and showrooms with our extensive fabrication and technical departments. We maintain service and testing procedures to ensure the usefulness and safety of our systems, close manufacturer ties to help our clients fill their needs and custom modification facilities to allow us to fulfill the diverse and specialized requirements of the industry.

ADVANCED AUDIO SYSTEMS; *Sound Reinf.;* 2445 E. Thomas Rd.; Phoenix, AZ 85016; (602) 956-0580. Contact: Tony Van Nole.

ADVANCED PRODUCTION SERVICES, INC.; *Sound Reinf., Rental;* 1035 S. Tyndall; Tucson, AZ 85719; (602) 884-8550. Contact: Mark Cowburn, Mark Miceli. **SOUND REINFORCEMENT. Touring Radius:** National. **Maximum Venue Size:** 15,000. **Vehicles:** Local 5-ton bobtail, (2) delivery vans. **House Loudspeakers:** (16) APS mid-high, (16) APS 18" subwoofer, (16) McCaulley APS-1 (12" driver, 1" driver, HF drivers bi-amped). **Flying System Available:** Yes. **Monitor Loudspeakers:** (9) JBL bi-amped wedge monitor, (4) JBL tri-amped sidefill, (2) JBL bi-amped drum fill, (8) Community L&S passive wedge monitor. **House Consoles:** Yamaha PM2000 32 x 8, Yamaha PM1000 16 x 4, Yamaha MC2404, E-V 16 x 4. **Monitor Consoles:** Yamaha 24 x 8. **Outboard Equipment:** (6) White Instruments 1/3-octave EQ, (6) UREI 1/3-octave EQ, (8) Flare 1/3-octave EQ, (4) dbx 160, (4) dbx 160X, Yamaha DL1500 digital delay, Yamaha REV7, Yamaha SPX90, (2) Rane AD13 delay unit, (2) Brook-Siren 4-way crossover. **Power Amplifiers:** (12) Crown Micro-Tech 1200, (2) Crown Macro-Tech 2400, (4) Crown DC-300A, (3) Rane MA6, Crown PSA-11. **Microphones:** (16) Shure SM58, (12) Shure SM57, (8) E-V DS35, (8) AKG 451, (2) Shure SM81, (8) Crown PCC-160, (4) Sennheiser 421, (2) stereo C-ducer, (10) Samsong PR50 wireless, (20) Sennheiser MKE-11, (16) Sony ECM-44. **Lighting:** Complete lighting system available for tours and clubs. **Other Equipment:** IBMCL 1/3-octave analyzer, Ivis IE-30 1/3-octave analyzer, Crown System 12 TEF analyzer, (3) 100-amp distros, (4) C-M chain motor, (3) 10' truss, Panasonic video camera, (2) 9" monitor.

BERNHARD BROWN, INC.; *Sound Reinf., Lighting, Rental;* 11311 Indian Trail; Dallas, TX 75229; (214) 241-4334; FAX: (214) 241-2841. Contact: Bill Hosh. **SOUND REINFORCEMENT. Touring Radius:** National. **Maximum Venue Size:** Stadiums. **Vehicles:** Peterbilt 359 air-ride conventional tractor w/400 HP Caterpillar, Int'l 1954 bobtail w/26' 105" box, Mercedes Benz 1318 bobtail w/20' box, air-ride electronics vans available for tour rentals. **House Loudspeakers:** (108) Turbosound TMS-3 3-way, (20) Turbosound TSW-124 subwoofer, (10) Turbosound TSW1 full-range, (8) W-type subwoofer w/Gauss 18" drivers. **Flying System Available:** Yes. **Monitor Loudspeakers:** (15) Turbosound TFM2 floor monitor w/2 x 15" and 2" coax bi-amped, (10) EAW 2 x 12" w/2" horn bi-amped, (16) BBI custom 2 x 12" w/1" bi-amped. **House Consoles:** (2) Yamaha PM3000-40C, Yamaha PM2000-32 (updated by John Windt), Soundcraft 200SR 24 x 4 x 2, Yamaha MC2404 24 x 4 x 2. **Monitor Consoles:** Yamaha PM2800 40 x 14, TAC Scorpion 40 x 12, Soundcraft 400B 32 x 8, Mitec 16 x 8. **Outboard Equipment:** Brooke-Siren system, Klark-Teknik, Drawmer, UREI, dbx, Lexicon, Roland, Allison Research, Korg, Yamaha, many more, loaded to artist spec. **Power Amplifiers:** (56) Crest 8001, (16) Crest 7001, (16) QSC Series 3 3800, (20) QSC Series 3 3500, (6) QSC MX-1500, (10) Carver PM 2.0+. **Microphones:** AKG, Sennheiser, E-V, Beyer, Neumann, Shure, C-tape, Countryman active Dis. **Lighting:** (144) Par 64 1k in Thomas pre-rigged truss, AVAB Designer Series digital soft-patch consoles, AVAB DDII digital dimming racks, other lighting available, Genie Lifts and 1-ton motors, Ultra Arc spots. **Other Equipment:** Backline equipment rentals available.

CROSSROADS AUDIO, INC.; *Sound Reinf., Lighting, Rental, Audio Recording;* 2623 Myrtle Springs Ave.; Dallas, TX 75220; (214) 358-2623; FAX: (214) 358-0185. Contact: Blake Dewberry, Chuck Conrad. **SOUND REINFORCEMENT. Touring Radius:** Regional. **Maximum Venue Size:** 20,000 indoor/60,000 outdoor. **Vehicles:** Volvo F6 24' bobtail, Isuzu 16' bobtail, 45' air-ride tractor trailer available on contract, GMC/Greyhound bus conversion mobile recording/crew vehicle. **House Loudspeakers:** (64) Crossroads C-48 flying proprietary w/E-V and JBL components, (12) Crossroads C-52 proprietary dual subwoofer cabinets, Bose 802, (4) EAW KF-300, (2) Turbosound TMS4, (12) Peavey 3020 HT. **Flying System Available:** Yes. **Monitor Loudspeakers:** (20) Crossroads bi-amp 15" slant w/JBL drivers, (4) Crossroads bi-amp 2 x 12 w/2" JBL drivers, (12) Crossroads 12" 3-way passive, (4) Crossroads C-1502 drum monitors. **House Consoles:** (2) Yamaha PM3000 40-ch, Peavey Mark B 35-channel, Yamaha MR1642. **Monitor Consoles:** Yamaha PM2800-32, Midas Pro 40 24 x 8, Yamaha MC2408, Soundtracs M 32 x 12. **Outboard Equipment:** (5) Yamaha SPX90, (2) Yamaha SPX900, Yamaha REV7, Lexicon PCM41, dbx 900 rack w/gates/limiters, (4) Brook-Siren FDS360 crossover, (4) Klark-Teknik DN300B EQ, (6) dbx 160X limiter, (2) Loft 3-way crossover, Audio Logic quad noise gate, (12) Yamaha Q2031 dual channel EQ, (50) Clear-Com beltpacks/main stations, (8) Teac or Technics cassette decks, (4) Technics CD player. **Power Amplifiers:** (36) QSC MX1500, (6) QSC MX700, (34) QSC 1400, (8) Peavey Deca 724, (2) Peavey Deca 1200. **Microphones:** (56) wireless from Telex, Vega and HME, (12) Shure Beta 58, (10) Shure Beta 57, (30) Shure SM58, (40) Shure SM57, (12) Audio-Technica AT857 Uniport, (10) Sennheiser 421, (10) AKG C-451E (8) Beyer M88, (60) Audio-Technica Pro 42L, most other popular models in stock. **Staging:** 20 x 30 sectional platform 2' high. **Lighting:** (2) 40' truss w/72kW PAR 64 (LECOs available), (2) Genie air trees w/24k PAR64, Celco "Baby" computer board. **Other Equipment:** (2) Ultra Arc spotlights, (8) CM Lodestar 1-ton chain hoist, (6) Genie Super Lift, 250-amp power isolation transformer, (2) 200-amp power distribution system, 400-amp power distribution system. **Rates:** On request. **REMOTE RECORDING. Vehicles:** GMC coach/Greyhound conversion w/7.5kW generator, A.C. kitchen, lounge, video, etc. **Control Room Dimensions:** 14 x 18. **Mixing Consoles:** Yamaha PM3000 40-channel. **Audio Recorders:** Tascam 3300, Tascam A3440, Sony Beta w/1 PCM

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SOUTHWEST

REMOTE RECORDING SOUND REINFORCEMENT

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encoder. **Noise Reduction Systems:** (2) dbx 150. **Outboard Equipment:** Yamaha REV7, (2) Yamaha SPX90, dbx 900 rack w/limiter/gate, Lexicon PCM41, Lexicon Prime Time. **Microphones:** See above. **Monitor Speakers:** (2) Yamaha NS-10M, (2) Minimus 7, (2) JBL Control 1. **Power Amplifiers:** QSC 1400, Technics SA424. **Video Monitors:** JVC 20" color, JVC 13" color, Panasonic 9" monochrome. **Cameras:** Sony Trinitron surveillance.

DALLAS BACKUP, INC.; *Sound Reinf., Lighting, Staging, Rental;* 12589 Perimeter Dr.; Dallas, TX 75228; (214) 686-4488. Contact: Charles Belcher.

DIGITAL SERVICES RECORDING STUDIOS; *Audio and Video Recording;* 5805 Chimney Rock; Houston, TX 77081; (713) 664-5258. Contact: John Moran. **REMOTE RECORDING. Vehicles:** Chevrolet C-60 truck. **Control Room Dimensions:** 18 x 8 x 9. **Mixing Consoles:** MCI 636 40 x 24, Neve 5442 8 x 2. **Audio Recorders:** Otari MTR-9011 24-track analog, (2) Sony PCM-3324 24-track digital, (2) Sony PCM-1610 2-track digital, (2) Otari MTR-122/4-track analog, (2) Sony/RTW F-1 2-track digital. **Noise Reduction Systems:** Digital. **Synchronization Systems:** TimeLine Lynx. **Outboard Equipment:** (2) Lexicon PCM70, (2) Lexicon LXP-1, (2) dbx 160X, (3) dbx 166, (4) Audio & Design compressor, (8) Audio & Design noise gate, (2) Audio & Design sweep EQ. **RTS intercom 2-ch. Microphones:** Neumann TLM180, U87, U89, U47 FET, U69, AKG 414, C-460, D-12, Sennheiser 421, 441, Electro-Voice RE20, RE15, Shure SM57, SM58, SM81, SM89, RCA 77-DX, Beyer, Crown PZM, G.L.M., Countryman DI. **Monitor Speakers:** JBL 4411, Yamaha NS-10M, Ed Long MDM-4. **Power Amplifiers:** QSC 3500, Crown D-75. **Video Recorders:** Sony BVU-800BD. **Video Monitors:** (2) Panasonic 1020M color. **Cameras:** Sony HVC-2200. **Other Major Equipment:** 60 x 45 x 20 soundstage, full A/V post-production facilities w/Solid State Logic console, 1" video sound screen computer, Fairlight CMI Series III.

ELECTRIC EAR PRODUCTIONS, INC.; *Sound Reinf., Lighting, Staging, Rental;* 1616 Ave. F; Lubbock, TX 79401; (806) 763-9794. Contact: Tom Prather, Woody Woodard. **SOUND REINFORCEMENT. Touring Radius:** National. **Maximum Venue Size:** 20,000. **Vehicles:** 1985 Peterbilt air-ride tractor w/4-man sleeper, 48' air-ride drop frame trailer, 1987 24' Ford L800 Bobtail truck. **House Loudspeakers:** Meyer Sound Labs MSL-3, Meyer Sound Labs 650 R-2, Meyer Sound Labs USW subs, Meyer Sound Labs UPA-1, Electro-Voice MTH-4 manifold, Electro-Voice DeltaMax DML 1152. **Flying System Available:** Yes. **Monitor Loudspeakers:** Meyer Sound Labs UM-1 and UP-1, Electro-Voice DeltaMax DML 1152, Electro-Voice FS-2112 and FM1201, JBL wedges. **House Consoles:** Yamaha PM3000 w/40 channels, Yamaha PM1800 w/40 channels, Soundcraft 800B w/32 channels. **Monitor Consoles:** Ramsa 840 w/40 channels, Yamaha 2800 w/32 channels, Yamaha 2408 w/24 channels. **Outboard Equipment:** Klark-Teknik DN360 EQ, Klark-Teknik DN500 compressor, Klark-Teknik DN510 noise gate, White Instruments 4650 1/3-octave EQ, Lexicon PM70, Yamaha REV70, Yamaha SPX900, Valley Audio comp/limiter. **Power Amplifiers:** Crest 4001, Crest 6001, Crest 7001, Crest 8001, Carver PM-1.5, Carver PM-2.0. **Microphones:** Shure Beta 57 and Beta 58, Shure SM81, SM57, SM58, Shure SM91 and SM98, Electro-Voice RE20, N-408, N-757, Sennheiser 441, 431, 421, Beyer M500, M88. **Staging:** Tomcat load-bearing 40 x 40 top expandable to 40 x 60, 40 x 60 w/soundwings, Nivoflex rsers. **Lighting:** Celco Major w/60 channels, Janes Precept 60, Janes 36 channels, Thomas and Tomcat droplight truss prrigriged, Celco and Avolite dimmers. **Other Equipment:** Lycian long-throw spotlights, Lycian truss spotlights, Phoebus UltraArc long-throw fog machines, backdrops, pyro effects, backline rentals. **Rates:** On request.

FITZCO SOUND, INC.; *Sound Reinf., Lighting;* 912 N. Midkiff; Midland, TX 79701; (800) 292-6877; FAX: (915) 689-8878. Contact: Mark Eichert, Milt Hathaway. **SOUND REINFORCEMENT. Touring Radius:** Regional. **Maximum Venue Size:** 15,000 seat. **House Loudspeakers:** (8) E-V MTH-4 high packs, (8) E-V MTL-4 low packs. (2) Renkus-Heinz M-1 stacks, (2)

Intersonics SDL-5 subwoofer. **Flying System Available:** Yes. **Monitor Loudspeakers:** (13) Renkus-Heinz wedge, (2) Renkus-Heinz SR-2, (2) Renkus-Heinz SR-1. **House Consoles:** Wheatstone MTX-80 40-channel, Audioarts/Wheatstone LM-80 24-channel, Audioarts M-44 16-channel. **Monitor Consoles:** Wheatstone M16 32 x 16. **Outboard Equipment:** (12) Audioarts 2700B graphic EQ, (12) Audioarts 1500B notch filter, Audioarts 1202B compressor, (5) Audioarts 1200 compressors, (2) Lexicon PCM60 reverb, Alesis Quadverb, DeltaLab digital delay, Nakamichi MR-1, Audioarts 2218B crossover, (4) E-V MX-4 crossover, (10) Renkus-Heinz Smart processor. **Power Amplifiers:** (9) BGW GTA, (4) BGW GTB, (16) BGW 750, (9) BGW 8000. **Microphones:** (8) E-V 757N/D and 408N/D, (11) Shure SM57 and SM58, (13) Sennheiser 421, 431, 441 and 409, (12) AKG 112, 414, 535 and 451, (2) Vega wireless. **Lighting:** (144) PAR 64 w/60 2.4kW dimmers and Leprecon LP-2000 48-channel console, (20) PAR 64 w/20 dimmers and Leprecon LM-850 console, (10) sections of Tomcat prrigriged truss, (4) Genie ST-24 towers. **Rates:** Competitive. Available upon request.

GARRISAN AUDIO; *Sound Reinf., Rental, Audio and Video Recording;* 6103 Kelly Elliott; Arlington, TX 76017; (817) 478-4368. Contact: Gary D. Hampton.



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L.D. SYSTEMS, INC.
Houston, TX

L.D. SYSTEMS, INC.; *Sound Reinf., Lighting;* 467 W. 38th; Houston, TX 77008; (713) 695-9400. Contact: Andy Diraddo, Charlie Burns. **SOUND REINFORCEMENT. Touring Radius:** Local, regional, national. **House Loudspeakers:** LD Systems 2 x 4 (2-box 4-way), LD Systems 1 x 3 (1-box 3-way), Turbosound TMS-3, Meyer UPA-1/US-W. **Flying System Available:** Yes. **Monitor Loudspeakers:** LD Systems bi-amp wedge, LD Systems 3-way sidefills and drum fills, Turbosound TMS-3 sidefills. **House Consoles:** Yamaha, Ramsa, Soundcraft. **Monitor Consoles:** Ramsa, Soundcraft. **Outboard Equipment:** Lexicon, dbx, Eventide, Yamaha, Klark-Teknik. **Power Amplifiers:** QSC, Crest. **Microphones:** Shure, E-V, Beyer, AKG, Sennheiser. **Lighting:** Thomas, upright and interlock trussing; Celco control; CAE, spectrum, digital dimmers. **Other Equipment:** CM Lodestar chain motors, Genie super towers. **Rates:** Negotiable. **Specialization & Credits:** Professional sound reinforcement and lighting systems available for local, regional and national touring. Systems capabilities include showcase venues, rock 'n' roll arenas, outdoor events and conventions. Services range from direct equipment rental to full systems with crews. Staff are experienced sound and lighting engineers. All services are supported by LD Systems' pro audio sales and manufacturing divisions, which are involved with full sound system, instrument system and recording system design, fabrication and installation. Lighting services include retail sales, systems design and installation. L.D. System's San Antonio division additionally provides television and video lighting, grip, camera support and generators to the region.

MAGNUM SOUND & LIGHTS; *Sound Reinf., Lighting;* 7522 E. Poinciana; Tucson, AZ 85730; (800) 678-2456. Contact: Mark, Tom.

PENNY L. MCDONNELL; *Sound Reinf.;* 6214 E. Mockingbird Ln.; Paradise Valley, AZ 85253; (602) 443-1635. Contact: Penny.

MIDCOM REMOTE SERVICES; *Audio Recording;* 3 Dallas Comm. Complex, Ste. 108; 6311 N. O'Connor Rd., LB-50; Irving, TX 75039; (214) 869-2144. Contact: Mike Simpson. **REMOTE RECORDING. Vehicles:** 1982 GMC 24' straight truck. **Control Room Dimensions:** 8 x 20. **Mixing Consoles:** Soundcraft TS-24 32-channel console w/custom, 8 stereo/16 mono submaster routing system, 32 x 24 x 16 x 2 x 1, Amek/TAC bullet 10 x 4 x 2. **Audio Recorders:** (2) Otari MTR-9011 24-track, Studer A810 2-track w/center-track time code, Nakamichi MR-1B, Panasonic SV-3500 DAT. **Noise Reduction Systems:** TTM 24-channel noise reduction will accept Dolby, dbx, Telcom. **Synchronization Systems:** Cipher Digital Shadow II w/Shadowpad, Cipher Digital "Cypher" time code generator/reader. **Outboard Equipment:** Lexicon 480L digital effects processor, Lexicon 224XL digital reverb, Lexicon



MIDCOM REMOTE SERVICES
Irving, TX

Model 95 Prime Time II, Eventide H910 Harmonizer, dbx Series 900 frames w/903 comp/limiters, 904 noise gates, MICMIX dynaflex/exciter cards, Lexicon PCM70 digital reverb, (2) dbx 160X compressor/limiter, Aphex stereo Compeller. **Microphones:** Neumann U89, Neumann TLM170, Neumann KM84, AKG C-414, AKG EBP-48, Schoeps CMC5, Schoeps MK5, Sennheiser MD-441, Sennheiser MD-421, Beyer M69, Beyer M88, Beyer M500, Beyer M201, Beyer MC734, Shure SM58, Shure SM57, Shure SM81, Shure SD85, Crown PZM GPB30, (2) Crown 2LV, Cetec Vega R42 handheld and lavalier wireless microphone systems available at extra charge. **Monitor Speakers:** JBL 4430 bi-radial monitors w/White 1/6-octave EQ, Westlake BBSM-6, Auratone 5C, Tannoy NFM8 near-field. **Power Amplifiers:** Hafler P-505, Hafler P-230 in a bi-amped mode. **Hafler P-505** for near-fields. **Video Recorders:** Sony VO-5800 3/4" U-matic, Panasonic AG-6800 1/2" VHS Hi-fi. **Video Monitors:** Sony CVM-1900 19" NTSC monitor/receiver, (3) Panasonic BMW5", **Switchers:** (2) Panasonic 12 x 1 routing switcher, (3) ADC Humbuckers, (8) external inputs. **Other Major Equipment:** Communications systems: RTS dual listen intercom, Clear-Com 2-channel intercom, both interfaced to full duplex FM onboard repeater system w/business band and motion picture service frequency synthesized remote radios. 10-line key telephone system. RCC and cellular mobile telephones. Benchmark distribution amplifiers. RTS 414 and 416 distribution amplifiers, custom 1 x 1 buffer/distribution amplifier capable of driving at 28 dBm, Telco interface via 48-pair ADC Ultrapatch to dedicated patch panel, each pair w/separate resistive termination and/or capacitive coupling, (4) RDL onboard for auto answer, standby program feeds, 400' power and 42-pair snake on CD motor-drum reels. **Specialization & Credits:** Past projects include: The Cure 1989 "Prayer" tour, Marcus Roberts "Deep in the Shed" music video, 1989 Miss USA Pageant Mobile, AL, for CBS TV; *Aida*, Nixon in China, *The Aspern Papers*, Great Performances Series for PBS; *Dolly ABC-TV* prime time; "The Texas Debates" presidential debates for American Public Radio; Metallica live broadcast for Z-Rock Radio Network; George Strait, MCA Home Video; 7th Van Cliburn Competition, American Public Radio; Benjamin Lees' *Memorial Candles*, American Public Radio; score for Texas, Dramafex production at Palo Duro Canyon; *Fashion Hit Revue*, Sanger Harris live TV special; Mary Kay Cosmetics seminars 1985-1990, League of Women Voters, 1984 *Democratic Presidential Candidates Debate*, PBS network special; Bob Banner Associates' *Face of the '80s* syndicated TV special; ACTS TV Network, *Country Crossroads*, two 13-week series; Bob Stivers Productions' *Stars Salute the U.S. Olympic Team*, NBC prime time special; Bugs Henderson live LP project: two live albums for The Vocal Majority; and more.

MP PRODUCTIONS, INC.; *Sound Reinf., Lighting, Staging, Rental;* 6301 Murray St.; Little Rock, AR 72209; (501) 562-7425. Contact: Mike Pope, Scott Thompson. **SOUND REINFORCEMENT. Touring Radius:** National. **Maximum Venue Size:** 80,000. **Vehicles:** 48' x 96' air-ride trailers w/Rollins and lend lease air-ride tractors—professional drivers. **House Loudspeakers:** (60) cabinets MP 2-box 4-way, (30) MP low-frequency enclosure w/4 JBL 15", (30) MP mid-high enclosure w/4 JBL 12" and (2) JBL 2445 on 2385 JBL horn, (2) 2405 tweeters, (8) MP full-range w/18" JBL, (2) JBL 10", 2445 on C.D. horn. **Flying System Available:** Yes. **Monitor Loudspeakers:** (24) wedge w/JBL 15" and JBL 2", (12) wedge w/ (2) JBL 12" and JBL 2", (20) side/drum fill box w/JBL 18", (2) JBL 10", JBL 2". **House Consoles:** (2) Yamaha PM3000-40C, Soundcraft 8000 40 x 8 x 2 w/8 x 8 matrix, Soundcraft 800B 32 x 8 x 2 w/8 x 8 matrix. **Monitor Consoles:** (2) Soundcraft 500M 40 x 12, Soundcraft 8000M 40 x 16. **Outboard Equipment:** (28) White 4000 EQ, (6) Klark-Teknik DN360, BSS FDS360 crossover, UREI 525 crossover, Lexicon 480L, 200, PCM70, Yamaha REV5, REV7, SPX901, Roland SRV-2000, SDE-3000, SDE-2500, 555, Eventide 949, 910, BSS 504 noise gate, Valley People Dyna-Mite noise gate, GateX noise gate, dbx 903 compressor, 904 gate, 905 para EQ, dbx 160 compressor, 160X compressor, 166 compressor, Klark-Teknik 410 parametric EQ. **Power Amplifiers:** Carver PM 1.5, PM 2.0 house, Crown PSAll, Carver 2.0 monitors. **Microphones:** Beyer M88, M69, TGX, 201, MCE10, AKG 451, D-112, 410, Sennheis-

er 421, 441, 431, Shure SM81, SM57, SM58, SM85, SM87, E-V RE20, C-ducer, Countryman Isomax, Crown PZM. **Staging:** Any size, any height, load-bearing tops. **Lighting:** Avo, Celco, Thomas to meet any plot. **Other Equipment:** (24) Loadstar 1-ton w/all rigging, backline gear, Yamaha drums, Hartke bass cabinets, GK, Ampex SVT, Fender Twin, Roland JC-120, Marshall, Yamaha DX7IIFD, Roland D-50, Korg M1, percussion. **Rates:** Reasonable and competitive.



OMEGA AUDIO AND PRODUCTIONS, INC.
Dallas, TX

OMEGA AUDIO AND PRODUCTIONS, INC.; *Audio Recording*; 8036 Aviation Pl.; Dallas, TX 75235; (214) 350-9066. **Contact:** Paul A. Christensen. **REMOTE RECORDING.** Vehicles: 1978 GMC Loadstar 35' w/crew sleeper and power tailgate. Refueling travel range: 850 miles. Power requirements: 220 VAC, 100 amp. Power isolation transformers w/center tap neutral. **Control Room Dimensions:** 20 x 8 x 10. **Mixing Consoles:** API 32 x 32 mixing console w/ API 550A EQ, Soundtracs 24 x 24, Hill 16 x 8 x 4 x 2, program buses w/8 stereo VCA groups. Additional inputs available on request. **Audio Recorders:** (2) Otari MTR-90 24-track, (2) Otari MTR-10 4-track 2/4-track w/center stripe TC, Mitsubishi X-80 2-track digital, (2) Technics 2-track cassette, Sony PCM-F1 2-track digital. **Noise Reduction Systems:** TTM Dolby/dbx rack 24 channels.

Synchronization Systems: BTX 4700 Shadow. **Outboard Equipment:** Teletronix LA-2A limiter, dbx 165 limiter, (7) dbx 160 limiter, ADR Vocal Stresser, (2) UREI 1176LN limiter, Lexicon 224XL digital reverb, MXR01a digital reverb, (2) Yamaha SPX90 special FX processor, (4) DeltaLab Super Time Line, (2) dbx 162 limiter, Kepex gate, Barcus-Berry Electronics exciter, Aphex Compellor, Eventide 949 Harmonizer. **Microphones:** (2) AKG C-12A tube, (8) AKG C-414EB, (4) AKG C-451EB, AKG D-12E, (6) Beyer 201, (4) Neumann U47, (2) Neumann U87, (2) Neumann KM84, (4) Shure SM81, (12) Shure SM58, (12) Shure SM57, (4) Shure SM53, (6) Crown PZM315, (7) Sennheiser 421, (5) Sennheiser 441, (3) Sony ECM-22P, (2) Sony ECM-50, (3) E-V RE20, (7) Countryman DI box, (10) Heider DI box, Audio-Technica ATM-5R. **Monitor Speakers:** (2) JBL 4430, (2) Auratone, (2) Yamaha NS-10, (2) Visonik. **Power Amplifiers:** (2) Yamaha P2200, Yamaha P1000, Shure 250. **Video Recorders:** JVC 6600U. **Video Monitors:** Sony Trinitron 14", RCA 26", Panasonic 19". **Other Major Equipment:** 600' 54-pair snake system w/54 stage splits, truck wired for 90 inputs, (3) wireless PL (interfaces to RTS), RTS com. system w/(3) belt packs/headsets. **Rates:** Call for rates. Varies with job requirements. **Specialization & Credits:** Omega has been supplying remote audio recording services to clients of the record, film and video industry since 1973. During that time, Omega Audio has worked with over 200 major recording artists, all major television networks and on numerous feature films. As a result of this vast and varied experience, Omega Audio is uniquely qualified to handle the challenging tasks that remote recording requires. Omega Audio has received two Platinum Records, five Gold Records, two Ampex Golden Reel Awards, three Grammy nominations and three Dove Awards. Partial credits include: U2, REM, Lynyrd Skynyrd, Amy Grant, B.B. King, Dizzy Gillespie, Joe Walsh, Fats Domino, Ray Charles, Paul Shaffer, Prince, Cameo, Johnny Cash, WNET-PBS Great Performances, Dick Clark Productions, Pat Benatar, Joe Jackson, Hall & Oates, Anne Murray, Art Garfunkel, Al Jarreau, Molly Hatchett, Neil Young, Ben Vereen, Bo Diddley, *The Big Easy*, *Baja Oklahoma*, Fabulous Thunderbirds, Gladys Knight, Pope John Paul II.

PEAK AUDIO; *Sound Reinf.*; 4636 McKinney #108; Dallas, TX 75205; (214) 520-0775. **Contact:** Creighton Curlee.

QUICKBEAM SYSTEMS, INC.; *Sound Reinf., Lighting*; 3716 High St. NE; Albuquerque, NM 87107; (505) 345-9230; FAX: (505) 345-4604. **Contact:** Gary Mathews. **SOUND REINFORCEMENT. Touring Radius:** Local, regional, national. **Maximum Venue Size:** 30,000 outdoors. **Vehicles:** Intl. Transtar, Fruehauf 40' w/air rde, Hertz/Penske, Ryder, Budget national accounts. **House Loudspeakers:** (16) Apogee 3 x 3, (8) Apogee

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QUICKBEAM SYSTEMS, INC.
Albuquerque, NM

AE-5, (16) QSI H-1 bass w/JBL 2240 18" driver, (16) QSI H-1 mid-bass horn w/JBL 2225 15" driver, (16) QSI H-1 hornpack w/JBL 2445/2385, (2) E-V ST350. **Flying System Available:** Yes. **Monitor Loudspeakers:** (10) QSI 2 x 12, (2) JBL E120, JBL 2425/2370 bi-amped, (6) QSI 1 x 15, JBL 2225, JBL 2425/2370 bi-amped, (6) QSI 1 x 12, JBL E120, JBL 2202 passive. **House Consoles:** Soundcraft 800B 32 x 8 plus (10) F/X, Soundcraft Delta 200 24 x 4, Yamaha 2404 24 x 4, Yamaha PM1000 16 x 4. **Monitor Consoles:** TAC Scorpion 40 x 12, Yamaha PM1000 32 x 6. **Outboard Equipment:** (2) Yamaha REV7, (4) dbx 903, (4) dbx 902, Lexicon PCM60, DeltaLab DL-4, (2) Lexicon LXP, Yamaha SPX90II, Yamaha KX900U dual cassette, Carver CD player, (3) Klark-Teknik DN27A, (2) Klark-Teknik DN360, (5) UREI 525 crossover, (3) dbx 162, (5) Klark-Teknik DN360 (monitors), (5) Rane AC22 (monitors). **Power Amplifiers:** (26) Carver PM 1.5 A, (5) Carver PM 350, (6) Crest 8001, (2) Crest 7001, (2) Crest 4801. **Microphones:** (18) SM58, (24) SM57, (8) Sennheiser 421, (8) AKG 451, (4) AKG C-747, (4) Beyer M88, (20) Isomax IIC, (12) Countryman DI, (4) Cetec/Ramer R42A/T-88 w/SM85-77 w/Sennheiser Mke-II, many other mics, DIs and pickups. **Staging:** Wenger staging available w/crew. **Lighting:** (300) PAR 64, all bulb sizes and ACLs.
—LISTING CONTINUED ON NEXT PAGE

ENGINEERS AND PRODUCERS OF THE BAY AREA:

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MIX THE
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SOUTHWEST

REMOTE RECORDING SOUND REINFORCEMENT

—LISTING CONTINUED FROM PREVIOUS PAGE

(148) 2.4K dimmers (Tectronics-CAE), Celco Series II. **Other Equipment:** Tomcat truss systems, QSI power bars, multicable, 6,000-watt "B" system, custom sound and light systems for extended rentals, Clear-Corn, Celtec, Motorola communications rentals. **Rates:** Negotiable. **Specialization & Credits:** Denver: (303) 571-1919, Albuquerque: (505) 345-9230, National: (800) 227-6239. 20,000-watt Carver or 25,000 watt Crest, 40 x 8 w/ patch bay house, 9,000 watt, 40 x 12 monitors, 300 can, two truss Tomcat stage lighting system. All gear fits easily into company-owned 40' air-ride van. Most complete and versatile quality-oriented rigs available in the Rocky Mountain states. Mains feature Apogee 3 x 3 and AE-5 systems. Also JBL component main and monitor enclosures designed and constructed in-house and individually tuned to maximum specs. State-of-the-art monitor system quality and performance. 52-channel transformer snake system. Systems flyable, sound in the round for medium-size (12,000 seat) arena. Quality, veteran house and monitor engineers and lighting designers available with or without systems for special events or touring. Extremely good references. Company specializing in outdoor festivals; New Orleans Jazz and Heritage Festival, Telluride Jazz Festival, outdoor concerts at Vail, Aspen, Breckenridge, CO, numerous outdoor events throughout the Rockies and Southwest. Call for complete referral list.

RAPA SOUND; *Sound Reinf., Audio Recording;* Box 1017; Jerome, AZ 86331; (602) 634-9607. Contact: Walter Rapaport.

REELSOUND RECORDING CO.; *Audio Recording;* 2304 Sheri Oak Ln.; Austin, TX 78748; (512) 282-0713. Contact: Malcolm H. Harper Jr.

SHOWCO, INC.; *Sound Reinf.;* 201 Regal Row; Dallas, TX 75247; (214) 630-1188. Contact: M.L. Prociase, Robin Magruder.

SOUND SOUTHWEST; *Sound Reinf., Lighting, Staging, Rental;* 2611 N. Beltline #117; Sunnyvale, TX 75182; (214) 226-3069. Contact: Richard Martinez. **SOUND REINFORCEMENT.** *Touring Radius:* Regional. **Maximum Venue Size:** 15,000. **Vehicles:** 1990 Kenworth Custom 26'. **House Loudspeakers:** Southwest 3-way (2-box system) JBL. **Flying System Available:** Yes. **Monitor Loudspeakers:** Southwest bi-amped 15" slant JBL, EAW bi-amped 12" (dual) stant JBL, Southwest bi-amped 15" (dual) drum fill JBL. **House Consoles:** Soundcraft 8000-40 VCA, Soundcraft Delta 200, Soundtracs MX40, Yamaha M1516. **Monitor Consoles:** Soundcraft 500, Soundcraft 400, Soundtracs MCX, Allen and Heath SRM. **Outboard Equipment:** Yamaha SPX90II, Yamaha SPX90, Yamaha REV5, Yamaha REV7, Lexicon PCM42, Roland SDE-3000, Loft 400B, dbx 160X, dbx 166, Alesis MIDverb II, Alesis MIDverb III, Alesis Quadverb, Klark-Teknik DN360, Ashly Audio 6Q-231, Brooke-Siren FDS-360, Drawmer DS-201X, UREI LA-4. **Power Amplifiers:** Crown Macro-Tech 1200, Crown Macro-Tech 2400. **Microphones:** Electro-Voice RE, Electro-Voice N/DYM, Sennheiser, AKG, Audio-Technica, Crown, Shure, Sony. **Staging:** As per request. **Lighting:** Tomcat, Laprecon, Lyon. **Other Equipment:** Genie SL-24 lifts, scaffolding, Tech-Pro/Clear-Corn systems, power distribution, stage gear: drums/percussion, guitar amps, keyboards. **Rates:** Upon request.

SPECTRATECH SOUND/LIGHTING SYSTEMS; *Sound Reinf., Lighting, Staging;* PO Box 13171; Austin, TX 78711; (512) 444-1990. Contact: Rusty Buckner.

NORTHWEST

Alaska, California, Colorado, Idaho, Montana, Nevada, Oregon, Utah, Washington, Wyoming

AKASH RECORDS GROUP; *Audio Recording;* PO Box 395; Danville, CA 94526; (415) 837-7959. Contact: Stephen Jarvis.

HANK ALRICH AUDIO SERVICES; *Sound Reinf., Audio Recording;* PO Box 869; Greenville, CA 95947; (916) 284-6929. Contact: Hank Alrich.

AMERICAN AUDIO SYSTEMS, LTD.; *Sound Reinf., Lighting, Rental;* 1417 Whitecliff Way; Walnut Creek, CA 94596; (415) 934-6151. Contact: Mark Sweet.

ARMADILLO PRODUCTION SERVICES; *Sound Reinf., Lighting, Staging, Rental;* 2496 S. Memphis Way; Aurora, CO 80013; (303) 755-5239. Contact: Waldo White. **SOUND REINFORCEMENT.** *Touring Radius:* Regional. **Maximum Venue Size:** Arena, theater, club, etc., and outdoor up to 10,000. **Vehicles:** 24' deisel International DT-466, 5+2. **House Loudspeakers:** (12) APS-1 trapezoid; slot tweet, JBL 2445, McCauley horn, (2) JBL 2204, each w/12" horn, full polyfoam grill; EP connectors each 3-way w/passive tweet, (8) JBL 2225 double 15" bass cabinet, (6) JBL 2240 W-151 18" bass cabinet. **Flying System Available:** Yes. **Monitor Loudspeakers:** (4) JBL 2225 15" w/1" compression driver and horn, (4) JBL 2225 15" w/1" compression driver and horn, JBL 2225 15" w/2" driver and horn (drums), JBL E-120 12" w/1" driver and horn. **House Consoles:** Wheatstone 8000 32 x 8 w/matrix. **Monitor Consoles:** Peavey Mark IV w/access to Soundcraft 400B. **Outboard Equipment:** (8) Audioarts 1/3-octave, DAX 1/3-octave real-time analyzer, (4) JBL 5234 2-way electronic crossover (monitor), Ashly Audio stereo 2-way electronic crossover (cue wedge), Yamaha REV7, Yamaha SPX90, Lexicon 93 Prime Time digital delay, Valley International GateX 4-channel gate, (2) Symetrix comp/limiter, Aphex Aural Exciter, dbx dynamic range expander, dbx subharmonic expander, Proverb delay/reverb/multi-effects. **Power Amplifiers:** (15) BGW/8000, (2) BGW GTA. **Microphones:** (10) 58, (15) 57, (4) 421, (4) Nakamichi CM-100 condenser, D-12E. **Staging:** Monroe sections 4' x 8' x 32"H, up to 60 x 60; WACO scaffolding, any size needed. **Lighting:** Celco controls, Spectrum dimming, Genie Superlifts, CM Hoist motors, box and triangle truss, follow spots. **Other Equipment:** Clear-Corn 2-channel system, drums, guitar amps, keyboards, etc., rentals. **Rates:** Call for quote.

ASR; *Sound Reinf., Rental;* 21169 West River Rd.; Stevenson, CA 95374; (209) 632-7098; (209) 521-8921. Contact: Raymond Dierra, Don Setaro.

DJ MUSIC; *Sound Reinf., Audio and Video Recording;* 3691 Edgfield Dr.; Santa Clara, CA 95054; (408) 727-7108. Contact: Dave Jasak.

DOG FISH SOUND; *Audio Recording;* 17385 NE Hillboro Hwy.; Newberg, OR 97132; (503) 538-5638. Contact: Drew Canulette.



PHIL EDWARDS RECORDING
Hayward, CA

PHIL EDWARDS RECORDING; *Audio Recording;* 1522 W. Winton Ave.; Hayward, CA 94545; (415) 784-1971. Contact: Phil Edwards. **REMOTE RECORDING.** **Vehicles:** 31' GMC 6500 bobtail w/lift gate, Ford van. **Control Room Dimensions:** Mobile II: 20 x 8 x 8. **Mixing Consoles:** API 40 x 24 x 24 w/ 550A EQ, API 1604 w/550A EQ. **Audio Recorders:** (2) 3M 79 24-track, (2) Sony DAT, (2) PCM-F1, MCI 110-B-2-track, Ampex 440C 2-track, (3) Denon cassette deck. **Noise Reduction Systems:** (4) Dolby A361 A/SR, Dolby M24 A. **Synchronization Systems:** Adams-Smith 605B 3-machine. **Outboard Equipment:** (5) UREI 1176LN limiter, (2) UREI LA-3A limiter, Orban dual parametric equalizer, Orban 3-channel de-esser, Lexicon PCM70 digital processor, Yamaha REV5 digital processor, Yamaha SPX90II, (2) Pultec MEQ-5, (4) Kexp noise gate. **Microphones:** (5) Neumann U87, (2) Neumann U47 FET, Neumann KM84, AKG 414, (2) AKG 451, (6) Sennheiser 421, (2) Shure SM85, (2) Shure SM87, (32) Shure SM56, Sony ECM-22P, (2) RCA 77-DX, (6) Countryman FET 85 DL, stereo C-Tape, (4) E-V RE15. **Monitor Speakers:** (2) UREI 811A Time Align, (4) Auratone. **Power Amplifiers:** Crown DC-300A, (2) McIntosh MC2100, McIntosh MC250. **Video Recorders:** (2) Sony SLO-323 Beta I, (2) Sony SLHF-1000 Beta, Panasonic PV-1363 VHS. **Video Monitors:** Sony KX-1901 Profecol color, Sony 12" B&W. **Cameras:** Sony 1900 color. **Other Major Equipment:** (34) line-isolated mic splits, (5) Clear-Corn stations, 200' 50-amp, 220-volt line, 300' 27 pair snake, 125' 19 pair snake, (150) mic cables. **Rates:** \$1,200-\$2,300 per day, mileage and expenses extra. **Specialization & Credits:** Complete packages for record production, video and radio broadcast taping, film

and commercial production. Simultaneous record and broadcast packaging a specialty. Experienced crew. Recent credits include: Concord Records/Mongo Santamaria—Seattle, WA, "Fulgums After Dinner"—KCTS, Seattle; "Bread and Roses"—NPR, "The Steven Banks Home Entertainment Center"—Showtime; "The Smithereens"—KOME; "Earthquake Relief"—Carlos Santana"—KQED; "Bammies—1990"—KFOG; "20th Reunion"—Edwin Hawkins—Pasadena. Call for brochure.

FRONT LINE SOUND AND LIGHTING; *Sound Reinf., Lighting, Rental;* 529 River View Dr.; San Jose, CA 95111; (408) 972-0787. Contact: Phil Hobden.

GOLDEN STATE SOUND, INC.; *Sound Reinf., Lighting, Staging, Rental;* 59A Maxwell Ct.; Santa Rosa, CA 95401; (707) 546-7540; (415) 243-8892. Contact: Don Lind. **SOUND REINFORCEMENT.** *Touring Radius:* Local, regional. **Maximum Venue Size:** 10,000 outdoors. **Vehicles:** IdealEase. **House Loudspeakers:** Apogee processor-controlled system, SPL servo drive sub-bass, BL 36 x 36 x 24 4-way tri-amped, plus various fill boxes. **Flying System Available:** Yes. **Monitor Loudspeakers:** Bi-amped single 15" w/horn, single 12" w/horn, various drum monitors, JBL tri-amped sidefills. **House Consoles:** Soundcraft 8000 40 inputs, 8 aux, 8 subgroups; Soundcraft 400 26 inputs; Soundcraft 800 18 inputs. **Monitor Consoles:** Soundcraft 500 40 inputs, 12 mixes; (2) Studiomas-ter 20 x 8, 20 inputs, 8 mixes. **Outboard Equipment:** Lexicon digital reverb/delay/processor, Yamaha digital reverb/delay/processor, Roland digital reverb/delay/processor, Yamaha 1/3-octave EQ, UREI 1/3-octave EQ, MXR 1/3-octave EQ, dbx comp/lim/gate, UREI comp/lim/gate, Symetrix comp/lim/gate, Brooke-Siren crossovers, Rane crossovers, BGW crossovers, JBL crossovers. **Power Amplifiers:** Carver PM 1.5, BGW 750, BGW 250, AB Systems. **Microphones:** Shure, Sennheiser, AKG, Audio-Technica, E-V. **Staging:** Stage risers, platforms. **Lighting:** (200) lamp system using 40' alum. box trusses, Genie Super Towers, motors, various consoles (manual/computer), Orbitor follow spots. **Other Equipment:** Motorola walkie-talkies, club systems, business meeting systems, wireless mics, paging systems, electronic keyboards, stage amps, drums, drapery.



HI-TECH AUDIO SYSTEMS, INC.
Half Moon Bay, CA

HI-TECH AUDIO SYSTEMS, INC.; *Sound Reinf., Rental;* 260 Grove St.; Half Moon Bay, CA 94019; (415) 726-2428; FAX: (415) 726-2655. Contact: Mark Herman, Louis Adamo. **SOUND REINFORCEMENT.** **Specialization & Credits:** Hi-Tech Audio Systems Inc. is strictly a national pro audio rental company catering to sound reinforcement, production and broadcasting companies.

HOLLICRAFT STUDIOS; *Audio Recording;* 1961 Rose Ln.; Pleasant Hill, CA 94523; (415) 689-3444. Contact: Carol Greenley.

HTS AUDIO AND CONCERT PRODUCTIONS; *Sound Reinf., Lighting, Rental;* 1025 Idylwood Dr. SW; Issaquah, WA 98027; (206) 392-6342. Contact: Steve Harris.

I.A.M.P.—INDEPENDENT AUDIO OF THE MONTEREY PENINSULA; *Sound Reinf., Rental;* PO Box 1018; Pacific Grove, CA 93940; (408) 649-4135. Contact: Anthony Nocita. **SOUND REINFORCEMENT.** **Specialization & Credits:** I.A.M.P. has provided quality sound reinforcement for touring professionals ranging from traditional big band to hard rock, from acoustic folk to modern funk. Concert and club dates for contemporary rock, country, reggae, jazz, bluegrass, dixieland and symphonic ensembles are handled by competent, experienced personnel. Civic and community special events and festivals, county fairs and musical productions are all within our expertise.

JACOBS AUDIO; *Sound Reinf., Lighting, Staging, Rental;* 26 Berthe Cir., Colorado Springs, CO 80906; 1850 Folsom #512; Boulder, CO 80302; (719) 635-5335 (Colorado Springs); (303) 442-1533 (Boulder); FAX: (303) 443-9184.

KINETIC SOUND & LITE; *Sound Reinf., Lighting;* 1415 NE 52nd St. #306; Seattle, WA 98105; (206) 527-5007.

KUSTOM SOUND SERVICES; *Sound Reinf., Lighting, Staging, Rental;* PO Box 4902; Missoula, MT 59806; (406) 728-6655. Contact: John Campbell.

LINEAR SOUND SYSTEMS; *Sound Reinf.;* 531 55th St.; Oakland, CA 94609; (415) 652-6048. Contact: Kaj Kline, Bob Paiz. **SOUND REINFORCEMENT. Touring Radius:** Local, regional and national. **Maximum Venue Size:** 20,000. **Vehicles:** 16' x 24' bobtains, air-ride tractor/trailer transportation. **House Loudspeakers:** (36) EAR M1000, (36) EAR M2000, (16) EAR M800. **Flying System Available:** Yes. **Monitor Loudspeakers:** (30) LSS M-150, Harbinger 524. **House Consoles:** TAC Scorpion 40 x 8 w/matrix, Yamaha PM3000. **Monitor Consoles:** Soundtracs 32 x 12, Ramsa WR-5 40 x 18. **Outboard Equipment:** Yamaha REV5, REV7 and SPX90, Lexicon Prime Time II, Roland SDE-3000, SRV-2000, Klark-Teknik DN360, BSS FDS-3600 crossovers, dbx compressor, Drawmer gates. **Power Amplifiers:** EAR M-2000. **Microphones:** Shure 58, 57, 56, 81, 94, Beyer 88, 69, 201, Sennheiser 421, 441, AKG 452, 414, E-V RE20, Countryman, Sescorm direct boxes. **Staging:** Referrals available. **Lighting:** Referrals available. **Other Equipment:** AC power distribution system, generators.

MIDNIGHT BLUE PRODUCTIONS; *Audio Recording;* PO Box 77013; Colorado Springs, CO 80970; (719) 599-0905. Contact: Ken Toal.

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MOBILE FIDELITY PRODUCTIONS OF NEVADA
Incline Village, NV

MOBILE FIDELITY PRODUCTIONS OF NEVADA; PO Box 8359; Incline Village, NV 89450; (702) 831-4459; FAX: (702) 831-4485. Contact: Brad S. Miller. **REMOTE RECORDING. Specialization & Credits:** Credits: founder, Mobile Fidelity Sound Lab, Mobile Fidelity Records and Productions; creator of the Mystic Moods Orchestra and producer/engineer of numerous special effects recordings. Principal in development of Colossus digital audio system with Louis Dorren. Services offered: location/studio recording where accurate archival of live performance or final mix is required. Production services include the Colossus (4-channel) PCM digital audio system with 1630 compact disc format compatibility; and/or 4-channel surround microphone (MS-4). We recommend that interested parties inquire as to latest compact disc samples in release by clients utilizing Colossus or MS-4 or both. Conversion of existing sound effects and music libraries into Colossus format and then to optical hard disk also available. Written information package available upon request.



PACIFIC MOBILE RECORDERS
Carmichael (Sacramento), CA

PACIFIC MOBILE RECORDERS; *Audio Recording;* 2616 Garfield Ave.; Carmichael (Sacramento), CA 95608; (916) 483-2340. **REMOTE RECORDING. Vehicles:** Chevy C50 w/20' box, air-conditioned, lift gate. **Control Room Dimensions:** 18' x 7'6" x 7'6". **Mixing Consoles:** Harrison MR-4 36 x 24 x 36 w/VCA grouping, A/B mic inputs. **Audio Recorders:** Otari

MTR-90 24-track w/autolocator, Sony/MCI JH-110B* 4 2-track, 3M M79 2-track, TEAC and Yamaha cassette decks. **Outboard Equipment:** Lexicon 200 digital reverb, UREI LA-4 limiters, USAudio gates, Lexicon PCM60 digital reverb, Yamaha SPX90, Ibanez digital delay, 27-band EQ, active direct boxes, Getner 2 x 8 DA. **Microphones:** Neumann, AKG, Sennheiser, E-V, Shure, Beyer, Crown, Audio-Technica. **Monitor Speakers:** E-V Sentry 500, JBL 4313, M&K close-field monitors, Auratone. **Power Amplifiers:** Yamaha P2201, Crown D-150A. **Video Monitors:** Sony color, Sanyo B&W. **Cameras:** Panasonic AG-155, Sanyo B&W. **Other Major Equipment:** 36-channel 3-way isolated split, 16-channel 2-way isolated split, 250' 36-pair snake, 65' subsnakes, intercom system and 2-way radio, 220/110V transformer-isolated, 100-amp AC distribution system, prewired for additional 24-track recorder. **Rates:** Starting at \$1,400 per day. Packages available, call for quote.

PERFORMANCE AUDIO; *Sound Reinf., Staging, Rental, Audio Recording;* 2358 S. Main; Salt Lake City, UT 84115; (801) 466-3196. Contact: Craig Hylton.



THE PLANT RECORDING STUDIOS
Sausalito, CA

THE PLANT RECORDING STUDIOS; *Audio Recording;* 2200 Bridgeway; Sausalito, CA 94965; (415) 332-6100. Contact: Rose Greenway. **REMOTE RECORDING. Specialization & Credits:** "Rover," The Plant's mobile recording unit, offers the finest in mobile acoustic environments and equipment for live concert recording, remote broadcast, audio for film and video, in-house recording and post-production/audio sweetening. Rover is a certified LEDE control room on wheels that features acoustic accuracy that surpasses many in-house studios. It has become one of the most popular live-to-2-track as well as multitrack mobiles because of its ability to deliver clean, accurate sound to the client with virtually no guesswork involved. Rover is available for everything from one-nighters to lengthy tours. If you are looking for more than just saturated tracks, or if you prefer recording and mixing at your place, Rover is the mobile to call. Some of our clients/projects include: John Denver, U2, Stanley Turrentine, Marty Bain, Jacques Cousteau, Judy Collins, NFL Films, Anita Baker, National Public Radio, Bobby McFerrin, Jimmy Smith, Todd Rundgren, Carmen McRae, Ronnie James Dio, Kenny Burrell, Billy Preston, Chick Corea, Harry Belafonte, Paul Williams, Peter, Paul and Mary, Al Jarreau, Les McCann, Robert Cray, Neil Young, Crosby, Stills & Nash, Hawkins Family, Huey Lewis and the News, Miles Davis, Exodus and more.

PRATT SOUND; *Sound Reinf., Rental;* 840 West 1700 South #15; Salt Lake City, UT 84104; (801) 973-4222. Contact: Ed Pratt.



PRO MEDIA
El Sobrante, CA

PRO MEDIA; *Sound Reinf., Rental;* 3563 San Pablo Dam Rd.; El Sobrante, CA 94803; (415) 222-0307. Contact: John Monito.

PROFESSIONAL SOUND AND RECORDING; *Audio Recording;* 3100 W. 71st Ave.; Westminster, CO 80030; (303) 426-7819. Contact: Phil Crumrine. **REMOTE RECORDING. Vehicles:** 1984 Winnebago Centauri van. **Control Room Dimensions:** 7 x 14. **Mixing Consoles:** Soundcraft 1624 24 x 16 x 24, Rowland Research 8 x 2 audiophile, Soundcraft 200B 16 x 4. **Audio Recorders:** (2) Stephens 821A 24/16-track 2", (2) Nakamichi DMP-100 PCM digital, Revox PR-99 1/2-track 1/4", (10) TEAC V2-FX 3-head cassette deck. **Outboard Equipment:** Lexicon PCM60, Yamaha REV7, Yamaha SPX90II, (2) Symetrix 501 comp/limiter, Symetrix 511 noise reduction unit, dbx 900 rack w/(4) compressor, (2) parametric and (3) gate, (2) Symetrix 522 comp/limiter, BBE 202R stereo processor, UREI LA-3 compressor. **Microphones:** (2) AKG C-414EB-P48, (2) AKG C-451 w/shotguns, AKG C-33 stereo, Schoeps CMTS 301 stereo, (4) Schoeps CMC-3, (2) Sennheiser MD-421U, E-V RE20, (3) Shure SM81, (2) pre-Crown PZM, (2) Countryman Lavalier. **Monitor Speakers:** Yamaha NS-10, B&W DM-100, E-V Sentry 100A, Spica TC-50. **Power Amplifiers:** Rowland Research Model 5, Hafler DH-200. **Video Recorders:** Panasonic AG-6400 VHS Hi-fi. **Video Monitors:** BMC 13" color.

GEORGE RELLES SOUND REINFORCEMENT; *Sound Reinf.;* 2021 Kincaid St.; Eugene, OR 97404; (503) 686-9325. **SOUND REINFORCEMENT. Touring Radius:** Regional. **Maximum Venue Size:** 6,000. **Vehicles:** 1988 GMC diesel W4 8 x 16 box. **House Loudspeakers:** (8) Meyer MSL-3, (6) Meyer 650-R2 subs, (6) Harbinger 508, (6) Harbinger 512, (2) Community Boxer, (8) Klipsch LaScala. **Monitor Loudspeakers:** (4) Meyer UM-1, (4) Meyer UPA-1A, Harbinger 514, (4) Harbinger 524, (2) EAW 202T, (2) Klipsch Heresy. **House Consoles:** Hill Concept 4400 40 x 8 x 2 w/(4) VCA groups, (12) aux sends, (6) mute groups and 8 x 8 matrix; Soundcraft 8000 40 x 8 x 2 w/(8) aux sends, 8 x 8 matrix and (4) VCA groups; Hill B3 24 x 4 x 2 w/(5) aux sends. **Monitor Consoles:** Soundcraft 500 32 x 12, Hill M3 16 x 6. **Outboard Equipment:** Lexicon 200 digital reverb, Lexicon PCM70, (2) Lexicon LXP-1, Lexicon LXP-5, Lexicon MRC, (2) Audio Digital ADD-2 DDL, DeltaLab ADM-512 DDL, (2) BBE 202, Aphex Type B Exciter, Valley PR-10, Valley PR-2, (2) Valley Maxi-Q, (4) Valley Commander, Valley DSP, Audio & Design Scamp rack, (2) S30 expander gates, S100 dual gates, (4) S31 comp/limiter, (3) S03 Sweep EQ, (4) S04 parametric EQ, (2) Drawmer M500 dynamics processor, Meyer CP-10 parametric, Klark-Teknik DN410 parametric, Klark-Teknik DN360 1/3-octave EQ, (2) Sundholm 2103 EQ, Panasonic SV350 R-DAT, Sony D-6C cassette recorder, Sony D-10 CD player, Lexicon LXP, (2) CDT FP-8 w/(5) com, (8) dbx 1531 1/3-octave, (2) Rane ME30 1/3-octave, (2) Rane PE15 parametric. **Power Amplifiers:** (8) Hill LC1200, (13) Hill DX1500, (3) Crown Micro-Tech, (3) Canver PM 1.5, (3) Hafler P-500, Crown DC-300, (3) BGW 250, BGW 500, Crown D-150. **Microphones:** (2) AKG C-480, (2) AKG C-414, (8) AKG C-451, (10) AKG C-535, (6) Neumann KM84, (2) Neumann KM100, (8) Shure SM81, (2) Countryman EM101, Shure SM85, (2) Beyer M260, Beyer M88, (4) Shure SM58, (8) Shure SM57, (7) Sennheiser 421, Sennheiser 431, (2) E-V RE20, (4) Shure SM53.



RANDALL SCHILLER PRODUCTIONS
San Francisco, CA

RANDALL SCHILLER PRODUCTIONS; *Sound Reinf., Rental, Audio Recording;* 1207 Fifth Ave.; San Francisco, CA 94122; (415) 661-7553. Contact: Randy Schiller. **SOUND REINFORCEMENT. Touring Radius:** Local, regional. **Maximum Venue Size:** 20,000 people. **House Loudspeakers:** (8) Eastern Acoustic Works KF-850 full-range systems, (8) Eastern Acoustic Works SB-850 sub-bass systems, (16) Harbinger 1208 horns w/JBL 2441 drivers, (6) Eastern Acoustic Works SR-115 bass bins, (8) Eastern Acoustic Works SR-215 double bass bins, (16) Cerwin-Vega B-36A/L-36PE low-frequency folded horns, (16) Gauss 1502 super tweeters. **Flying System Available:** Yes. **Monitor Loudspeakers:** (8) Harbinger 524, (2) Harbinger 514 (bi-amplified), (4) Gauss HF-4000 drivers on Gauss horns, (4) Altec 816 bass bin w/Gauss 5840 driver, (4) JBL 4628B speakers. **House Consoles:** Soundcraft 200B SEQ 24 x 4 x 2, Biamp 16 x 2 x 1, Biamp 883 8 x 2 x 1, Tapco 6100RB/6100EX 14 x 1. **Outboard Equipment:** Yamaha REV7 digital reverb, Yamaha SPX90 digital reverb, Eventide H910 Harmonizer, DeltaLab 2048 digital delay, DeltaLab DL-2 digital

—CONTINUED ON NEXT PAGE

NORTHWEST

REMOTE RECORDING SOUND REINFORCEMENT

—LISTING CONTINUED FROM PREVIOUS PAGE

delay, dbx 161, dbx 163 compressor/limiter, UREI 1178 stereo compressor/limiter, Orban 622B parametric equalizer, parametric equalizer, Fosgate DSM3602 360 digital space matrix. **Power Amplifiers:** (2) Crest 8001 750-watt/channel, (3) Carver M1.5T 360-watt/channel, (14) SAE A-501 250-watt/channel, (18) SAE A-201 100-watt/channel, (8) SAE A-1001 500-watt/channel, (2) Phase Linear 700B 350-watt/channel, Crown Micro-Tech 1200LX 275-watt/channel. **Microphones:** (2) E-V RE20, (4) E-V RE15, (4) Shure SM81, (12) Shure SM58, (16) Shure SM57, (2) Sennheiser MD-431, (4) Sennheiser MD-421, (2) AKG D-12, (2) Sony ECM-33P, (10) Countryman DI. **Lighting:** Phoebus Ultra Quartz. **Other Equipment:** (2) RTS 424 distribution amplifier, RTS 444 stereo buffer amplifier, (5) Crown VFX-2A stereo electronic crossover, (2) Rane AC-22 stereo 2-way electronic crossover, Rane AC-23 stereo 3-way elec. crossover, Uni-Sync MS-10 10 x 3 mic splitter, SA-3050 spectrum analyzer, Yamaha Q2031 1/3-octave stereo equalizer, (4) MXR dual 15-band stereo graphic EQ. **Rates:** Call for prices on equipment and equipment packages. **REMOTE RECORDING. Control Room Dimensions:** 12 x 15. **Mixing Consoles:** Soundcraft 200B SEQ 24-ch. TEAC M35EX, (4) TEAC Model 1. **Audio Recorders:** Otari 5050B, TEAC 80-8, Sony TC-8544S, Sony TC-8502T, Pioneer RT-707. **Noise Reduction Systems:** (2) dbx 154, (2) dbx 157. **Outboard Equipment:** (2) Sony TC-WR930 stereo double cassette deck, (2) Sony K-81 TC stereo cassette deck, Aiwa ADF-990 stereo cassette deck, Uni-Sync MS-10 10 x 3 microphone splitter, TEAC MB-20 meter bridge, (4) Technics SL-1200 MkII turntables, Sound Workshop 242 stereo reverb, Bozak CMA-102DL mixer, UREI 1620 mixer, Aphex Type C Aural Exciter. **Microphones:** Neumann U87, (2) AKG C-414, AKG D-12, (2) Sennheiser MD-431, (2) Shure SM91, Crown P2M 6LBP/PX-18B, (2) Shure SM81, (14) Shure SM57, (10) Shure SM58, Shure 520D "Green Bullet." **Monitor Speakers:** (2) JBL 4411, (2) JBL 4311, (4) JBL 4401, (2) Auratone. **Power Amplifiers:** BGW 100-1 30-watt/channel, SAE 2401 250-watt/channel. **Video Recorders:** JVC HRD-470U VHS Hi-Fi/HQ video deck, Sony SL-2700 Beta Hi-Fi video deck. **Video Monitors:** Sony KV-BAD10, Sony KV-1956B 19" monitor, Magnavox 13", Sony XRB 27". **Cameras:** Sony CDD-V110. **Rates:** Upon request. **Specialization & Credits:** We are a multifaceted company providing facilities and services in the areas of audio, video, film and theater. We are dedicated to providing the highest quality in a relaxed but professional environment. In addition to recording studio services and location recording services, we provide sound reinforcement for venues ranging from small clubs to large outdoor concerts, audio design and installation, film and video production and lighting services.

SELWYN CO.; *Sound Reinf., Lighting, Audio Recording;* PO Box 610786; San Jose, CA 95161; (415) 881-2738. Contact: Greg Gardner.

SHYNE SOUND; *Sound Reinf., Audio Recording;* Box 2280; San Rafael, CA 94912; (415) 459-2833. Contact: Leroy Shyne.

THIRD EAR SOUND COMPANY; *Sound Reinf., Rental;* 601 S. 8th St.; Richmond, CA 94804; (415) 233-2920. Contact: David Trinchero, Raul Suarez. **SOUND REINFORCEMENT. Touring Radius:** National. **Maximum Venue Size:** 20,000. **Vehicles:** GMC 18" bobtail (diesel), Ford 15" box van, cargo vans. **House Loudspeakers:** Harbinger 8283 3-way horn-loaded bass reflex system w/18" lows, 12" mids and 2" highs tri-amped, phase-aligned w/Brooke-Siren FDS-360 crossover, (40) stacks available, dual 18" subwoofer cabinets, dual 15" low/mid cabinets, 2" bradial horn pack, various one-box systems available. **Flying System Available:** Yes. **Monitor Loudspeakers:** 2-way floor wedge systems w/15" and compression driver sections w/JBL, E-V and PAS components, 2- or 3-way drum and side fills w/15" or 18" bass and 2" high-freq. sections. **House Consoles:** Soundcraft 800B 32 x 8, Soundcraft 400B 24 x 10, Soundtracs FM series 24 x 4, Soundtracs FM series 16 x 4, others by request. **Monitor Consoles:** Soundcraft 800B 32 x 10, Soundcraft 400B 24 x 10, Yamaha PM1000 modified 16 x 6, others by request. **Outboard Equipment:** White Instruments, Klark-Teknik, Audio Logic,



THIRD EAR SOUND COMPANY

THIRD EAR SOUND COMPANY
Richmond, CA

UREI, Orban and Audioarts equalizers; dbx 160x and 166 compressor/limiters, Gatec noise gate, Yamaha SPX90 and REV7, Roland SDE-3000 and SRV-2000, Eventide H910, Aphex Exciters, etc. **Power Amplifiers:** Carver PM-1.5, 1.5A and PM175. **Microphones:** Shure SM58, SM57, SM56, SM54, SM59, Sennheiser 421, AKG 451, Electro-Voice PL77, N/D 757 and RE20, Beyer M88, Audio-Technica ATM11, ATM2, ATM63, others available. **Other Equipment:** Clear-Corn intercom system, power distribution system. **Rates:** Superior service and best prices. Call for quote.

ULTRA SOUND; *Sound Reinf.;* PO Box 3625; San Rafael, CA 94912; (415) 459-0100. Contact: Mike Brady.

UNITED SOUND ASSOCIATES, INC.; *Sound Reinf.;* PO Box 9488; Yakima, WA 98909; (509) 452-8686. Contact: Mark Strosahl, Al Holman. **SOUND REINFORCEMENT. Touring Radius:** National. **Maximum Venue Size:** 40,000. **Vehicles:** 1985 Freightliner w/45" Great Dane. **House Loudspeakers:** (56) MS-1 4-way w/JBL components, house enclosures, (28) MS-2 subwoofer enclosure. **Flying System Available:** Yes. **Monitor Loudspeakers:** Gauss 115 15" w/JBL 1" horn, (2) JBL 212 12" w/JBL 2" horn, (2) Gauss 215 w/JBL 1" horn and biradial tweeter. **House Consoles:** Gamble HC40, Wheatstone/Audioarts MTX88, house console leased by request. **Monitor Consoles:** Ramsa WR-840, Wheatstone/Audioarts M-16, monitor console leased on request. **Outboard Equipment:** Lexicon reverbs, Eventide Harmonizers, Aphex Aural Exciters, Alesis XT digital, Brooke-Siren crossover, dbx 900 Series compressor/limiter, dbx 900 Series gates, Klark-Teknik EQs, CD players. **Power Amplifiers:** Crest 8001, 3000, Halfer P-500, Crest 4001, 2501. **Microphones:** Sennheiser MD-421, M-431, AKG D-12, C-460B, C-414, Beyer M300, M201, M422, M88, M260, E-V RE20, PL95, Shure SM58, SM57, SM85, Countryman Isomax, 2h, 2c, 2b, Countryman DI, others available upon request. **Staging:** Subcontracted. **Lighting:** Subcontracted.

XXXX AUDIO SYSTEMS; *Sound Reinf., Rental;* 6384 Freeport Blvd.; Sacramento, CA 95822; (916) 443-3535. Contact: Doug Pumpfrey.

SOUTHERN CAL/HAWAII

A-1 AUDIO, INC.; *Sound Reinf., Rental;* 6322 DeLongpre Ave.; Hollywood, CA 90028-8191; (213) 465-1101; (800) 446-4466; FAX: (213) 465-9467. Contact: Al Simscal, Bobby Ross, Bob Marshall, Gary Rivera. **SOUND REINFORCEMENT. Touring Radius:** International. **Maximum Venue Size:** Unlimited. **House Loudspeakers:** A-1 Audio fully integrated flying P.A. w/



A-1 AUDIO, INC.
Hollywood, CA

Meyer Sound Labs MLS-3, UPA-1, USW, 650. **Flying System Available:** Yes. **Monitor Loudspeakers:** Meyer Sound Labs UPA-1, UM-1, MSL-3, custom double 12" and single 15" slants. **House Consoles:** Yamaha PM3000, PM2000, PM1800, DMP7, Harrison Alive, Cadac, Soundcraft 800C. **Monitor Consoles:** Ramsa WR-840, Yamaha PM3000-40C, MC2408, Harrison, Soundcraft 800C. **Outboard Equipment:** Lexicon, Yamaha, Klark-Teknik, BSS, dbx, UREI. **Power Amplifiers:** Crest, BGW, Yamaha, Meyer Sound Labs. **Microphones:** Sennheiser, AKG, Shure, Beyer, Countryman. **Other Equipment:** Wireless systems by Sennheiser, Vega, Micron; tape systems: reel-to-reel, cart and DAT. **Specialization & Credits:** With its 20,000-sq-ft. headquarters centrally located in Hollywood, CA, and a facility in Las Vegas, NV, A-1 Audio, Inc. has provided superior equipment and services to the entire entertainment industry for over 20 years. Providing support and customized systems to international concert touring, television, film, theater, corporate events and showrooms with our extensive fabrication and technical departments. We maintain service and testing procedures to ensure the usefulness and safety of our systems, close manufacturer ties to help our clients fill their needs, and custom modification facilities to allow us to fulfill the diverse and specialized requirements of the industry.

ATM AUDIO/VISUAL; *Sound Reinf., Lighting, Rental, Audio Recording;* 17104 S. Figueroa St.; Gardena, CA 90248; (213) 538-2004. Contact: Andrew T. Martin, Ritchie R. Julian.

ATOMIC SOUND; *Sound Reinf., Lighting, Rental;* 2808 N. Naomi St.; Burbank, CA 91504; (818) 840-9119. Contact: Gloria, Bryan.

AUDIO HAWAII INC.; *Sound Reinf., Lighting, Staging, Rental, Audio Recording;* 981 Kalaunui Rd.; Honolulu, HI 96825; (808) 396-6503. Contact: Beth.

AUDIO WEST; *Sound Reinf.;* 670 S. Jefferson St.; Placentia, CA 92670; (714) 528-2285. Contact: Glenn Hatch. **SOUND REINFORCEMENT. Touring Radius:** National. **Maximum Venue Size:** 12-15,000 st. **Vehicles:** 45' drop-frame semi trailer air-ride. **House Loudspeakers:** (18) EAW KF-850, (18) EAW SB-850. **Flying System Available:** Yes. **Monitor Loudspeakers:** (14) custom bi-amped. **House Consoles:** Yamaha PM3000-40. **Monitor Consoles:** Ramsa WR-5840 40 x 18. **Outboard Equipment:** Lexicon 200, REV5, REV7, SPX90, dbx 166, dbx 900, Lexicon LXP-5, Power Amplifiers: Crest 8001, 7001, 4001, Crown MT-1200LX. **Microphones:** SM58, Beta 58, SM81, Sennheiser 409, 421, 431, AKG 451, 535. **Other Equipment:** 1/3-octave analyzer, Crown HF4 analyzer. **Rates:** Upon request.

BEST AUDIO; *Sound Reinf., Audio Recording;* 10640 Burbank Blvd.; North Hollywood, CA 91601; (818) 763-2378; FAX: (818) 505-9211. Contact: Larry Estrin. **SOUND REINFORCEMENT. Specialization & Credits:** Laurence Estrin and his company, Best Audio, specialize in sound reinforcement, production audio and telecommunications for "mega" events. The credits for the company include complete audio and communications facilities for the last five Superbowls, audio systems coordination for the last three presidential inaugurations, audio pool facilities for the Republican National Convention, technical direction for Liberty Weekend, audio direction for the Calgary Winter Olympics, complete audio design for Lotte World—Seoul, Korea. Best Audio maintains a very large inventory of RTS, Clear-Corn and Motorola equipment in its rental inventory. Best Audio features microphones and technology products from Audio-Technica.

CONCERT SOUND CONSULTANTS; *Sound Reinf.;* PO Box 831; Julian, CA 92036; (619) 765-2220; FAX: (619) 765-2520. Contact: David Scheirman.

DELICATE PRODUCTIONS, INC.; *Sound Reinf., Lighting, Staging;* 1390 Flynn Rd.; Unit A; Camarillo, CA 93010; (805) 388-1800. Contact: Spy Matthews.

ELECTROTEC PRODUCTIONS, INC.; *Sound Reinf.;* 6735 Eton Ave.; Canoga Park, CA 91303; (818) 888-8687. Contact: Pierre D'Astuges.

HG SOUND; *Sound Reinf., Rental;* PO Box 766; Manhattan Beach, CA 90266; (213) 834-6566. Contact: Harold Goodman.

LE MOBILE; *Audio Recording;* 11131 Weddington St.; North Hollywood, CA 91601; (818) 506-8481. Contact: David Roberts, Trish Kuhn. **REMOTE RECORDING. Vehicles:** GMC General. **Control Room Dimensions:** 25 x 8. **Mixing Consoles:** Neve 8058 32 inputs 32 monitors, custom-made additional 12-input mixer. **Audio Recorders:** (2) Studer A800 24-track, (2) Studer A810 2-track center-track time code, (2) Panasonic SV-3500 DAT, (2) Yamaha C200 cassette deck. **Noise Reduction Systems:** Dolby XP24 SR, (2) Dolby 361 w/SR card. **Synchronization Systems:** Studer TLS-2000. **Outboard Equipment:** EMT 250 digital reverb, Yamaha REV-1 digital reverb, Yamaha REV7 digital reverb, Lexicon 200 digital reverb, (2) TC Electronic TC-2290 delay/sampler, (2) Roland SDE-3000 DDL, (2) Roland SDE-2000 DDL, (2) Lexicon PCM4 1, Yamaha SPX90, Lexicon PCM70, (8) Valley People Dyna-Mite gate, (4) Drawmer gate, (6) dbx 160 compressor, (2) UREI LA-3A, UREI LA-2A, (2) UREI 1176, (4) Neve comp/limiter. **Microphones:** Neumann, AKG, Beyer, Sennheiser, Schoeps, Shure, etc. (more than 50). **Monitor Speakers:** (2) JBL custom main (tri-amp), (2) Yamaha

NS-10, (2) JBL 4401, (2) Meyer Sound Labs HD-1. **Power Amplifiers:** (2) Crown D-150 (bass mono), DC-300 (mid-range), D-75 (high), Yamaha P2100 near-field monitor, (6) Crown D-75 cue system. **Video Recorders:** Sony BVU-800. **Video Monitors:** Sony 19" color, Sony 12" color. **Cameras:** Panasonic WDV-5000 color, Sony CCD color. **Rates:** Available upon request.

MAUI SOUND SYSTEMS, INC.; *Sound Reinf., Rental;* 335 Hooehana St. Bay E/R; Kahului, Maui, HI 96732; (808) 871-8383. Contact: Joe Arias.



**PACIFIC
AUDIO-VISUAL
ENTERPRISES**

PACIFIC AUDIO-VISUAL ENTERPRISES
Monrovia, CA

PACIFIC AUDIO-VISUAL ENTERPRISES; *Sound Reinf., Audio Recording;* 545 Cloverleaf Way, Monrovia, CA 91016; (818) 359-8012; FAX: (818) 357-0602. Contact: Ron Streicher. **SOUND REINFORCEMENT.** Touring Radius: Worldwide. **Vehicles:** Consulting for any size project, equipment for small-scale reinforcement projects only. **House Loudspeakers:** JBL. **House Consoles:** Soundcraft 800B. **Outboard Equipment:** Lexicon, Yamaha, Aphex, dbx. **Power Amplifiers:** Hafler 200. **Microphones:** Schoeps, AKG, Neumann, Beyer, Shure, Sennheiser, RCM, Coles. **Rates:** Base rate: \$65/hr. variable, pending project requisites. **REMOTE RECORDING. Vehicles:** Dodge van. **Control Room Dimensions:** Per venue/setup on site. **Mixing Consoles:** Soundcraft 800B (custom-modified), Quantum 12A (custom-modified), custom-built 6 x 2, custom-built 3+2 x 2. **Audio Recorders:** Studer B67 (pair, custom-modified), (2) Sony PCM-F1 processors w/Apogee filters, R-DAT, Revox B77 (pair, custom-modified), Otari 5050BQII. **Noise Reduction Systems:** dbx Type I, Dolby A, Dolby SR. **Outboard Equipment:** Lexicon 200, Yamaha REV7, dbx 900, Aphex Type B, Aphex Compellor. **Microphones:** Schoeps Colette system, AKG 414/BTL, AKG 460, AKG 450, AKG C-422 stereo, AKG C-24 stereo, Calrec Soundfield system, Beyer, Sennheiser, RCA, Coles, Shure, Neumann TLM170, QM69. **Monitor Speakers:** Norberg BC-16, JBL 4612, KEF 103.3. **Power Amplifiers:** Hafler DH-200, Hafler DH-220. **Rates:** Base rate \$65/hr. variable pending project requisites. **Specialization & Credits:** Ron Streicher has an international reputation for "live-to-stereo" audio projects on location as well as in the studio. As owner of Pacific Audio-Visual Enterprises, he provides cost-effective, quality-oriented services by specializing in basic, time-proven production techniques—without unnecessary fuss or gimmickry. The result: a successful job...on time and within budget. With a lifelong background in music presentation, Ron is well-qualified to serve as a music consultant as well as engineer on any project: location or studio recording or broadcast; live concert sound reinforcement; music and performance coordination; audio systems design and consultation; lectures and seminars on recording techniques. Complete facilities are maintained ready to travel for in-studio or on-location projects across town or around the world. Credits: sound reinforcement for Mann Music Center productions of the Philadelphia Orchestra, the Metropolitan Opera, New York City Opera, many more credits.

P.P.A. INC.; *Sound Reinf., Staging;* 425 W. LaCadena Dr., Units 7 and 8; Riverside, CA 92501; (714) 682-3429. Contact: Henry Austin, Kevin Kelly. **SOUND REINFORCEMENT.** Touring Radius: National. **Maximum Venue Size:** 20,000 indoors, 30,000 outdoors. **Vehicles:** Ryder trucks, Rollins trucks, semis. **House Loudspeakers:** (16) Turbosound TMS-3, (44) Hill M4 4-way, (30) Vega horn-loaded 3-way, (8) Vega CVX 3-way, (8) Vega F horns 2 x 18". **Flying System Available:** Yes. **Monitor Loudspeakers:** (8) PPA/JBL 2 x 12" + 2", (8) PPA/JBL 1 x 15" + 1", (4) PPA/JBL 2 x 15" + 2", (10) Hill W4 2 x 12" + 10" + 2". **House Consoles:** Soundcraft Series 4 (Flaven) 40 x 16 x 2, Yamaha PM2000 32 x 8 x 8, Soundtracs M Series 24 x 8 x 2, Ramsa WR8716 16 x 4 x 2. **Monitor Consoles:** Soundtracs MC 32 x 12, Audioarts M8 32 x 8, Yamaha 2408 24 x 10. **Outboard Equipment:** (8) Klark-Teknik DN360 EQ, (14) Brooke-Siren FDS-340 crossover, (2) Clear-Cor 2-channel com system, (4) Lexicon LXP-1 w/(2) MIRC controller, Lexicon PCM60, Lexicon PCM42, Lexicon PCM41, (2) Yamaha REV7, (2) Yamaha REV5, Yamaha SPX90, Eventide H910, (2) Roland SDE-2500/1000, dbx 120X sub synth, (8) dbx 904 gate, (3) dbx 166 comp, (2) dbx 903 comp, ADR 1070 comp/limiter. **Power Amplifiers:** (12) Crest 8001, (12) SCS 2600A, (46) Hill TX1000

tri-amp, (12) Crown DC-300A, (12) Yamaha P2200, (8) Carver PM-1.5. **Microphones:** (16) Sennheiser 421, (4) Sennheiser 441, (24) Shure SM58, (30) Shure SM57, (8) AKG 451/CK5, (2) AKG 460/CK1, (4) E-V RE20, (2) P2M, (4) E-V PL80, (2) E-V PL77, (2) Beyer M500, (2) Beyer M201, Beyer M200, Beyer M300, HM Electronics FM w/87 cap, (2) Shure SM81, (4) AKG 535. **Staging:** (24) 2 x 4 x 8 risers w/Marley flooring, (28) 4 x 4 x 8 risers w/Marley flooring. **Lighting:** (4) Genie 20" airlift towers, (76) PAR 64, 18-channel/2-scene EDI controller w/(18) channel dimmer. **Other Equipment:** Roscoe smoke machine, EDI arena strobe light system, custom 16 x 4 sectional drape system, 40 x 22 traveler track w/shark's-tooth scrim drape, Fostex B-16 tape recorder, (2) TEAC 3340 4-track tape recorder, (16) Cerwin-Vega IR Earthquake subwoofer, (4) Cerwin-Vega PD-183-way bin. **Rates:** Varies upon show demands, call for bids.

RAT SOUND SYSTEMS; *Sound Reinf., Lighting, Staging;* 11800 Sheldon St. #D; Sun Valley, CA 91352; (818) 504-2930. Contact: Dave, Brian or Tom.



RECORD PLANT INC.
Los Angeles, CA

RECORD PLANT INC.; *Audio Recording;* 1032 N. Sycamore Ave.; Los Angeles, CA 90038; (213) 653-0240. Contact: Mark Eshelman. **REMOTE RECORDING. Vehicles:** (2) GMC bobtail w/full air cond. and heat, air-ride suspension; Mobile Unit II 292" x 84"; Mobile Unit III 344" x 84"; **Mixing Consoles:** Mobile Unit II: API 44 x 24 16-bus full patch bay, designed specially for live recording applications; Mobile Unit III: API 44 x 32, 24-bus full patch bay, designed for live recording applications. **Audio Recorders:** Otari MTR-90 24-track analog, Ampex ATR-102, Ampex ATR-104, Sony 3324/3348 digital, Mitsubishi 32-track digital. **Noise Reduction Systems:** Dolby A/SR. **Synchronization Systems:** Lynx. **Microphones:** Mics, outboard processing supplied according to production requirements. Stock includes most recording-quality mikes and models. **Monitor Speakers:** Mobile Unit II: JBL 4320; Mobile Unit III: Meyers ACD, Auratones, Yamaha NS-10s, Yamaha NS-20s, etc.

RSC/FUTURE POST; *Audio Recording;* 2414 W. Olive Ave.; Burbank, CA 91506; (818) 843-8200. Contact: Brent Kahien. **REMOTE RECORDING. Mixing Consoles:** Audiotronics 501 26 x 16 x 4, Soundcraft 200B 24 x 8 x 4, Yamaha PM180 6 x 2 custom submixer. **Audio Recorders:** (2) Otari MTR-90 24/16/8-track, Otari MX-70 16-track 1", Ampex 1200 8-track 1", Ampex ATR2/4-track 1/4" and 1/2", (3) Otari MX-5050 4-track 1/2", (2) Otari MX5050 8-track 1/2". **Noise Reduction Systems:** (48) Dolby SR, (48) Dolby A, (16) dbx K-9, TEAC DX-8. **Synchronization Systems:** TimeLine Lynx interface cables to most recorders), Cipher Digital Shadow, Ampex sync-lock resolvers. **Outboard Equipment:** Lexicon 224XL, Lexicon 200, Lexicon 97 Super Prime Time, dbx 160, Teletronix LA-2A tube limiter, UREI 1176 limiter, Aphex Compellor, UREI LA-3A, LA-4A limiters. **Other Major Equipment:** The RSC truck is always custom-configured to meet the customer's specific machine and outboard requirements. RSC provides machines in every format. RSC specializes in recording for television audio. **Specialization & Credits:** Warner Brothers *The Ten of Us*; *Circus of the Stars*; *KCAL Teletthon Planet Pictures Beastie Boys*; *Golden West Television Woodstock Twenty Years After*; *HKM Productions—Burger King commercial*; *Beachwood Services My Two Dads*; *Coast to Coast Video—Mrs. World Pageant*; *Dick Clark Productions Golden Globe Awards*; *Flying Tigers promotional meeting*; *Gerakl Zeinger—At Wits End*; *Scotty Vennege TV Together Again*; *Disney Windjammer Productions—"Carol and Friends."*

SCHUBERT SYSTEMS GROUP; *Sound Reinf.;* 7325 Hinds Ave., N. Hollywood, CA 91605; (818) 503-1234. Contact: Dirk Schubert.

SONIC SOUND PRODUCTIONS; *Sound Reinf., Lighting, Rental;* 19913 Beach Blvd. #257; Huntington Beach, CA 92648; (714) 722-9505; (213) 465-6509. Contact: Wayne Birkle.

Studio Design

A HOT TOPIC IN

August Mix

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Facility design and acoustics are on the blueprint for August *Mix*. *Mix* covers the art of designing for optimum sound reproduction, and the materials and techniques employed by ace designers. On the directory drawing board is a large-scale listing of Studio Designers and Suppliers.

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SOUTHERN CAL/HAWAII

REMOTE RECORDING

SOUND REINFORCEMENT

SPECTRUM STUDIO; *Audio Recording;* 664 Camino Campana; Santa Barbara, CA 93111; (805) 967-9494. Contact: Don Ollis.

SPEEDASOUND; *Sound Reinf., Rental;* 5617 W. San Madele; Fresno, CA 93722; (209) 275-7197; FAX: (209) 275-8694. Contact: Mike King, Carnot Pease.

STUDIO FIVE SOUND; *Sound Reinf., Rental, Audio Recording;* PO Box 4291; Point Mugu, CA 93042; (805) 485-7454. Contact: Jim Pearson. **REMOTE RECORDING. Specialization & Credits:** Studio Five Sound specializes in high-quality sound reinforcement for both indoor and outdoor situations, from conference rooms to football stadiums. Studio Five Sound also does complete sound system design and installation for new and upgraded systems. Rental equipment listings, prices and customer references are available on request. Our remote recording facilities include a Tascam M-70 recorder with dbx noise reduction. To complete your project, Studio Five also does cassette duplication in-house on our ten-station real-time duplication system. Prices are available on request.



STUDIO ON WHEELS
Glendale, CA



STUDIO ON WHEELS
Glendale, CA

STUDIO ON WHEELS; *Audio Recording;* 339 W. Windsor Rd., Ste. 6; Glendale, CA 91204; (818) 243-6165. Contact: John Falzarano.

THOMAS GREGOR AUDIO; *Sound Reinf.;* 6850 Vineland Ave., Unit D; North Hollywood, CA 91605; (818) 505-9544; FAX: (818) 505-9695. Contact: Greg Kirkland.

TR&M CO. (TRAM RECORDS); *Audio and Video Recording;* 8920 Limonite, Ste. 333; Riverside, CA 92509; (714) 783-2653. Contact: Dr. "J". **REMOTE RECORDING. Specialization & Credits:** TR&M Co. developed a new standard for the recording industry in live performance recording. "CDMT" (computer-augmented digital multitrack), which captures the "live effect" with the delineation of studio engineering costing hundreds of dollars per hour. The system is designed for minimal space requirements and any quality line-feed arrangement. The onboard mixdown capabilities permit production of "instant demo cassettes." The system offers MIDI interface for unlimited sequencing, editing, composition, arrangements. TR&M Co. can provide "CDMT" recording service at your performance and arrange the complete production of demos, albums, cassettes, compact discs or video production. Our pride is the marriage of your name with ours on the finished product. We may not be the right company to produce your product but we will direct you to someone who is. Serving California, Nevada, Arizona, Washington and Oregon. "CDMT"™ and TRAM Records™ of TR&M Co. A full-service production company.

WESTWOOD ONE COMPANIES; *Audio Recording;* 8966 Washington Blvd.; Culver City, CA 90232; (213) 840-4000. Contact: Richard Kimball.

OUTSIDE U.S.



ALLSTAR SOUND EQUIPMENT LTD.
Edmonton, Alberta, Canada

ALLSTAR SOUND EQUIPMENT LTD.; *Sound Reinf., Lighting, Rental;* 11212-143rd St.; Edmonton, Alberta, T5M 1V5 Canada; (403) 452-2546; FAX: (403) 454-6452. Contact: Clive Alcock. **SOUND REINFORCEMENT. Touring Radius:** Local, regional, national. **Maximum Venue Size:** 15,000. **Vehicles:** 22' and 24' vans. **House Loudspeakers:** (36) Martin B215, (24) Martin MH212, (24) JBL 2445, (36) tweeters. **Flying System Available:** Yes. **Monitor Loudspeakers:** Biamp 1 x 15" high-power wedges w/2" horns, Biamp medium-power wedges w/1" horns, Smart System fill boxes, heavy-duty drum monitoring. **House Consoles:** Soundcraft, TAC/Amek up to 40 channels by 16 groups. **Monitor Consoles:** Soundcraft 40 channels into 12 mixes. **Outboard Equipment:** BSS crossovers, Klark-Teknik graphs, dbx limiters, Yamaha, Lexicon, Roland, Valley processing. **Power Amplifiers:** QSC, Bryston. **Microphones:** Most common models by Shure, Sennheiser, AKG. **Lighting:** Thomas instruments, Altman instruments, compact folding truss system, Celco contro, Dilor dimmers. **Rates:** Phone for quotes. **Specialization & Credits:** Specializing in concert sound systems, touring production services, full concert lighting, remote recording, broadcast mixing and communications systems. **Credits include:** XVth Winter Olympic Games opening and closing ceremonies, Edmonton Folk Festival, Calgary Jazz Festival, Edmonton Jazz Festival (ten years), k.d. lang, Colin James, Blue Rodeo, David Lindley, Jeff Healy, David Foster, Randy Travis, Ricky Scaggs, Dwight Yoakam, John Hiatt, Nylons, Nazareth, Georgia Satellites, Edmonton Symphony Orchestra, Calgary Philharmonic Orchestra, Vancouver Philharmonic Orchestra and many more.

AUDIO CONCEPT; *Sound Reinf., Rental, Audio Recording;* #16-951 Denison St.; Markham, Ontario, L3R 3W9 Canada; (416) 940-1820. Contact: Matt Stoodo. **SOUND REINFORCEMENT. Touring Radius:** National. **Maximum Venue Size:** Arenas/small stadiums. **Vehicles:** 48' x 102' air-ride drop frame, 26' diesel tandem, 24' bobtail, cube and cargo vans. **House Loudspeakers:** (36) Meyer Sound Labs MSL-3, (18) Meyer Sound Labs 650R2, (12) Meyer Sound Labs UPA-1, (32) Martin RS-1200. **Flying System Available:** Yes. **Monitor Loudspeakers:** (6) Meyer Sound Labs Ultra, (50) Audio Concept 215, 115 w/2" JBL drivers biamped, Audio Concept 212 w/TAD TD-4001 bi-amped, (20) 2-way sidefills. **House Consoles:** Ramsa WRM-852 52 x 8 x 2, (2) Yamaha PM3000 40 x 8 x 2, Midas PR-40 32+4 x 8 x 2, (2) TAC Scorpion 32 x 8 x 2. **Monitor Consoles:** Ramsa 40 x 18, TAC 40 x 12, TAC 30 x 12, Amek 24 x

12. **Outboard Equipment:** Yamaha REV1, 5 and 7, SPX90, 9011 and 1000, Drawmer and BSS gates, dbx 900 Series, 166X, K-T EQs, reverbs and delays, Lexicon LXP-1, 480 and PCM70. **Power Amplifiers:** (40) Australian monitor, (24) Ashly Audio, (36) QSC. **Microphones:** (300) E-V, Shure, Countryman, Sennheiser, AKG, Neumann, Crown. **Rates:** Competitive. **REMOTE RECORDING. Vehicles:** (40) Fruehauf air-ride trailer. **Control Room Dimensions:** 25 x 8'. **Mixing Consoles:** Mitsubishi West-ar 8000 52-i/p, fully parametric, bar graph, DiskMix automation; Soundcraft 600 40-i/p. **Audio Recorders:** (2) MCI JH-24 w/14" reel capacity, MCI JH-110B 2-track 1/2" and 1/4"; MCI JH-140 2/4-track 1/2" and 1/4"; Otari MTR-102-track 1/4" time code, MCI JH-110C-3-LB 1" video layback. **Noise Reduction Systems:** (26) Dolby SR (max of 30 ch. possible), (26) Dolby A (max of 40 ch. possible). **Synchronization Systems:** BTX Softouch 4x. **Outboard Equipment:** UREI 1176LN, (2) UREI 1178, (2) UREI LA-4, (4) dbx 160, Aphex Compellor, ADR Scamp rack w/(2) conv/(7) gate, (3) Kexep II, Valley Audio Maxi.-O EQ, Aphex 612 stereo exp/gate, Lexicon 480, Lexicon PCM70, (2) Lexicon PCM60, Eventide H949, Roland SDE-3000, Ursa Major, Marshall time modulator, EXR SP-1, TC Electronic sampler. **Microphones:** Neumann U87, U47, KM84, AKG C-451, C-414, Shure SM57, Sennheiser MKS-416, MD-441, MD-421, E-V RE20. **Monitor Speakers:** Westlake BBSM-10, Studer 2706. **Power Amplifiers:** QSC, Studer. **Video Recorders:** JVC B250 3/4", Toshiba DX-900 1/2" w/PCM module for audio recording.

COMFORT SOUND; *Audio Recording;* 26 Soho St., Ste. 390; Toronto, Ontario, M5T 1Z7 Canada; (416) 593-7992. Contact: Kate Anthony. **REMOTE RECORDING. Vehicles:** GMC 5-ton w/22' box. **Control Room Dimensions:** 7' x 16'. **Mixing Consoles:** Neotek Elite w/50 mic inputs + 16 assignable line inputs. **Audio Recorders:** (2) Ampex MM1200 24-track, Panasonic R-DAT, TEAC C-3 cassette deck. **Outboard Equipment:** Lexicon PCM60 digital reverb, Yamaha REV7 digital reverb, Yamaha SPX90 digital effects processor, Yamaha D1500 DDL, Rane stereo 1/3-octave EQ, (2) Drawmer 201 dual channel noise gate, (8) dbx 160 compressor, 8-channel compressor, Symetrix 4-channel noise gate, SMPTE time code reader. **Microphones:** (4) AKG 451, (2) Shure SM81, (2) Crown PZM, (4) Sennheiser 421, (2) Sennheiser 441, (2) Countryman Isomax, (2) AKG CK9, AKG D-112, (2) Audio-Technica lavalier. **Monitor Speakers:** Tannoy NFM-8, Yamaha NS-10, Auratone. **Power Amplifiers:** QSC 1500, (2) BGW 100, (2) Amcron D60. **Video Recorders:** MTC VHS Hi-fi. **Video Monitors:** Panasonic 12" color. **Switchers:** Panasonic 12-channel. **Cameras:** Panasonic color. **Other Major Equipment:** 54-input 3-way transformer-isolated split, 500' 54-pair mic snake, Clear-Com 2-channel intercom system, sold 5Kvdc power regulator/cleaner. **Rates:** \$1,795/12-hr. day plus \$400 for second 24-track machine required.

EASTERN AUDIO; *Sound Reinf., Lighting, Rental;* 426 Water St.; St. John's, Newfoundland, A1C 2L8 Canada; (709) 722-0864. Contact: Rick Harris. **SOUND REINFORCEMENT. Touring Radius:** Regional. **Maximum Venue Size:** 5,000 indoor, 10,000 outdoor. **Vehicles:** Ford F350 box truck (2-ton), Ford F150 van, Ford Aerostar. **House Loudspeakers:** (20) Adamson (8 mid-high, 12 subs), (2) Martin (club system), (7) JBL (club system). **Flying System Available:** No. **Monitor Loudspeakers:** (6) Martin LE-200 (JBL components), (4) JBL cabinet wedges, (10) Peavey wedges, (2) JBL 4699 (drum fills), (4) JBL 4770. **House Consoles:** Soundcraft 8000 40 x 8 x 2, Soundcraft 400B 24 x 4 x 2, (3) Soundcraft 2000 24 x 4 x 2/16 x 4 x 2 w/Sweep EQ, (4) Soundcraft 200SR 24 x 4 x 2. **Monitor Consoles:** Soundcraft 500 40 x 12, Hill Stage Mix 12 x 6. **Outboard Equipment:** Brooke-Siren, Crown, dbx, Lexicon, Yamaha, Roland, Klark-Teknik, Audio Logic, Aphex, Samson, Nady, Tascam, TDM, UREI, Ashly Audio, Micro Audio, DigiTech. **Power Amplifiers:** (10) QSC MX2000, (10) QSC MX1500, (6) QSC 3500, (30) QSC 1400, (6) H&H V800, UREI 3299. **Microphones:** Shure, Sennheiser, AKG, Samson, Nady, Beyer. **Lighting:** (120) polished aluminum PAR 64, Thomas truss 50', Leprecon dimmers and consoles, (4) Lycian Super Arc 400, LDS dimmers and consoles, (2) Lycian Midget. **Other Equipment:** Large inventory of audio/visual equipment including Sony, Sharp, Zenith, JBL video projectors, Dove (AVL), Epson computer, translation services, also rent musical equipment: Pearl drum kit, Roland drum machines. **Rates:** Please call.

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FM SYSTEMS
Edmonton, Alberta, Canada

FM SYSTEMS; *Sound Reinf., Lighting, Staging, Rental;* 16423 117th Ave.; Edmonton, Alberta, Canada; (403) 451-1353; FAX: (403) 451-2868. Contact: Brian Thomas. **SOUND REINFORCEMENT.** Touring Radius: National. Maximum Venue Size: 12,000. Vehicles: 102' x 48' air-ride w/1990 Kenworth conventional air-ride, 102' x 24' 1987 International straight trucks. **House Loudspeakers:** 2-box, 4-way proprietary system, Martin/JBL systems. **Flying System Available:** Yes. **Monitor Loudspeakers:** JBL proprietary wedges 1 x 15 1/2" bi-amped, JBL proprietary fills 2 x 15 1/2" bi-amped. **House Consoles:** TAC, Soundcraft, Yamaha. **Monitor Consoles:** TAC, Soundcraft, Yamaha. **Outboard Equipment:** AMS, Valley International, Lexicon, Drawmer, dbx, BSS, UREI, Klark-Teknik, Roland, Korg, Yamaha. **Power Amplifiers:** Crest, QSC. **Microphones:** Shure, Sennheiser, AKG, E-V, Beyers. **Staging:** 40' x 36' stage, 40' x 32' roof. **Lighting:** LePreCon, Thomas, Altman, Lycian. **Contact:** Stage gear available upon request. **Rates:** Upon request.

J.L. SOUND SYSTEMS; *Sound Reinf., Lighting, Staging, Rental;* 250 King St. E.; Hamilton, Ontario, L8N 1B7 Canada; (416) 527-6863. Contact: Joe Sciamanna. **SOUND REINFORCEMENT.** Touring Radius: National. Maximum Venue Size: 20,000 seat. **Vehicles:** 18'. **House Loudspeakers:** CE SM-50 E-V loaded, 40 bottoms, 22 tops. **Flying System Available:** Yes. **Monitor Loudspeakers:** (25) SM-W-15 E-V loaded, (15) SM-W-12 E-V loaded. **House Consoles:** TAC 40-ch, Yamaha PM1800 32/40-ch, various Soundcraft. **Monitor Consoles:** TAC, Yamaha, Soundcraft. **Outboard Equipment:** Yamaha REV7, Lexicon, Symetrix, DeltaLab, Aphex, Brooker-Siren, Bryston crossovers, Barcus-Berry Electronics, Power Amplifiers: (60) Bryston, (12) Carver 1.5, (20) Yamaha, (20) various other makes. **Microphones:** (45) E-V, (70) Shure, (15) Sennheiser, (4) Cetec Vega. **Staging:** Smoke machines and effects, various modules available. **Lighting:** 240k avail. and LDS packs, follow spots, 48k ACLs.

KARISMA RECORDING, INC.; *Audio Recording;* 9 Kirkland Blvd., Ste. 102; Montreal, Quebec, H9J 1N2 Canada; (514) 522-0802. Contact: Marcel Gouin. **REMOTE RECORDING.** Vehicles: 40' x 8' x 13'. **Control Room Dimensions:** 25' x 8'. Lounge/iso booth: 10' x 8'. **Mixing Consoles:** Mitsubishi Westar 8000 52-input full parametric bar graph, DiskMix automation, Soundcraft 600 40 inputs for up to 92 mic inputs. **Audio Recorders:** (2) MCI JH-24 14" reels 48-track or 24 in-tandem, MCI JH-110B 2-track 1/2" and 1/4", MCI JH-110 4/2-track 1/2" and 1/4", Otari MTR-10-2TC 2-track 1/4" center-track code. **Noise Reduction Systems:** Dolby A 48 channels, Dolby SR 30 channels. **Synchronization Systems:** BTX Softouch 4-machine system. **Outboard Equipment:** UREI 1176LN, (2) UREI 1178, (2) UREI LA-4 compressor, (4) dbx 160 compressor, (2) Aphex stereo Compeller, ADR Scamp rack w/(2) compressor/(7) gate, (2) Valley Audio rack w/(2) Kepex II gate/Gain Brain/Maxi-Q, Aphex 612 stereo noise gate, Lexicon 480L digital reverb, Lexicon PCM70 digital reverb, Lexicon PCM60 digital reverb, Eventide H949 Harmonizer, Roland SDE-3000 delay, Ursa Major SSS-282 Space Station, TC Electronic 2290 sampler, Marshall 5002 time modulator, EXR SP-1 exciter. **Microphones:** Neumann U87, U47, KM84, AKG C-414EB, C-451, Sennheiser MKH-416, MD-441, MD-421, Electro-Voice RE20, Shure SM57, and more Schoeps. **Monitor Speakers:** (2) Westlake BB5M-10, (2) JBL 4906, (2) Auratone 5C, (2) Studer 2706 (lounge). **Power Amplifiers:** QSC 3500, Studer, (2) Brynton 3B/2B. **Video Recorders:** Sony/MCI JH-110C-3LB 1" video layback, JVC 8250U 3/4" VCR, Toshiba DX-900 Hi-fi VHS w/digital audio processing. **Video Monitors:** (2) Panasonic CT-1350 14", Toshiba 21". **Cameras:** Panasonic color. **Other Major Equipment:** (92) mic line, Jensen transformers 375', MTC computer AC regulator/filter (audio), MTC multilap AC line matching transformer, Focusrite, Eventide H300C, AKG The Tube available from our studio facility, second smaller remote packages available. **Rates:** 24 and 48 tracks, 2 tracks or direct-to-video, call.

KITSCH AUDIO LTD. MONTREAL CANADA; *Sound Reinf., Lighting, Rental;* 1565 Iberville, Montreal, Quebec, H2K 3B8 Canada; (514) 527-2323. Contact: Don Cote, Ron Monroni.

SOUND REINFORCEMENT. Touring Radius: National. Vehicles: Trailers 45' and 30', trucks 24'. **House Loudspeakers:** Hill M3/M4 4-way 100k, AB Systems 32k. **Flying System Available:** Yes. **Monitor Loudspeakers:** (32) custom 2-way wedges w/2 x 12 1/2" driver, (16) custom 2-way wedges w/1 x 15 1/2" driver, (16) custom 2-way sidefills. **House Consoles:** PM3000-40C w/patch bay, (2) Soundcraft 8000-40, (2) TAC Scorpion-32. **Monitor Consoles:** (2) TAC Scorpion-40, (2) Soundcraft 500-40. **Outboard Equipment:** (3) Lexicon PCM70, (20) Drawmer DS-201 gate, (16) dbx 160X/166 compressor, (4) LXP-1 w/MRC, (4) LXP-5 w/MRC, (48) Klark-Teknik EQ, (16) Roland delay/reverb, (4) Lexicon PCM60, (2) Aphex Exciter, (12) SPX90, (4) SPX90II, (2) SPX900, (3) Klark-Teknik DN-780, Lexicon PCM480XL. **Power Amplifiers:** (32) Hill DX-3000, (50) Hill DX-1500, (100) Hill TX-1000. **Microphones:** E-V 308, Sennheiser MD-421, 409, 441 wireless, Shure SM58, 57, AKG D-112, C-451, 535, Beyers M88/M69, Samson wireless SM87. **Lighting:** Ceico boards 30/00/90, TruSt/Orbiter/Voyager/Satellite/Leeko/Sky Cyc/Dilor dimmers/color pro/800K of PARs 64/ACL. **Other Equipment:** BSS crossovers, communication system, 3-way split snakes, TAC x-overs, Vanlite on request, other products can be acquired if not in stock. **Rates:** Upon request (quote).

L.R. LIGHT AND SOUND; *Sound Reinf., Lighting, Rental;* Box 7834; Drayton Valley, Alberta, T0E 0M0 Canada; (403) 542-5282. Contact: Lonnie Ross. **SOUND REINFORCEMENT.** Touring Radius: Local. Maximum Venue Size: 2,000. Vehicles: 3-ton w/22' van. **House Loudspeakers:** (4) Meyer Sound Labs UP1A-1A, (4) Meyer Sound Labs USW1. **Flying System Available:** No. **Monitor Loudspeakers:** (2) E-V FM1502, (2) Sonic M115N, (2) Cerwin-Vega 2-12-H, (5) assorted JBL, Yamaha, Cerwin-Vega. **House Consoles:** Hill J Series III 24 x 8 x 2 w/Multipin 200' snake. **Monitor Consoles:** Allen and Heath Brennel SRM 186 18 x 6 w/Multipin. **Outboard Equipment:** (2) Yamaha SPX90, ART Multiverb II, Roland SRV-2000, Roland SDE-3000, Roland DEP-3, (2) Loft 400 gate/limiter, (2) Klark-Teknik DN300, Aphex Type C Aural Exciter, Loft 410 comp/expander, Pulsar RTA150 real-time analyzer, Technics RSM270X cassette deck, (2) Audio Logic SC30 15-band graphic EQ, (2) Yamaha Q2031 31-band graphic EQ, (2) DOD Electronics R831A 30-band graphic EQ, Loft 400 gate/limiter. **Power Amplifiers:** (2) Carver PM-1.5, (4) HH Electronic V800 MOSFET, (2) HH Electronic V200 MOSFET. **Microphones:** (2) AKG D-330BT, (2) AKG D-310, (4) AKG D-125, D-1200, (2) AKG D-112, (2) AKG C-408, C-535, E-V 757 wireless Samson, E-V ND/308, (3) Shure SM58 wireless Rexer, (3) Sennheiser MKE-2040, MD-409, MD-421, Shure SM10 headset, SM57, SM58, (10) direct box. **Staging:** (2) 6 x 7 x 1 nser. **Lighting:** LDS 12-8 desk, 76' of trussing, (2) LDS DR1200 dimmer packs —24,000-watt 12 channels, follow spot, ACL, PAR 64, 56, 46, 36-3.5Q, Lampo ET, Optikinetics, smoke, fog. **Other Equipment:** Dry ice maker, (2) isolation transformers, (2) smaller systems for rent. **Rates:** Negotiable.

REELS IN MOTION; *Audio Recording;* PO Box 71; West Hill, Ontario, M1E 3K3 Canada; (416) 282-0655. Contact: Mark Jackson.

SHOW PRO; *Sound Reinf., Lighting;* 2005 Danforth Ave.; Toronto, Ontario, M4C 1J7 Canada; (416) 699-9699; FAX: (416) 698-8315. Contact: Richard Van Stieberg.

SOUND ART PRODUCTIONS; *Sound Reinf., Rental, Audio Recording;* 134 Brentford Rd.; Winnipeg, Manitoba, R2M 5B9 Canada; (204) 253-9420; FAX: (204) 257-4087. Contact: Dave Cousins.

TURTLE MOBILE RECORDING LTD.; *Audio Recording;* 316 E. 1st Ave.; Vancouver, BC, V5T 1A9 Canada; (604) 872-3447 (Vancouver); (206) 453-7875 (Seattle). Contact: Larry Anshell, Dave Trgovcic. **REMOTE RECORDING.** Vehicles: Mobile 1: GMC Vandura w/14" box, compact for limited-access venues, air-conditioned; Mobile 2: Dodge 1-ton van. **Control Room Dimensions:** Mobile 1: 12' x 7.5'. **Mixing Consoles:** Neotek 1E 24 x 8 w/36 mic modified in-line w/full parametric EQ, (12) Langevin all-discrete mic preamp, Rane and Tascam submixers, Tascam M15 22 x 8, Yamaha PM180 6 x 2 rack mixer. **Audio Recorders:** 3M 79 24-track w>Selectake locator (2nd M79 available), Tascam MS-16 16-track w/A065 locator, Sony DT-1000EX DAT, Otari MX-5050 B2 2-track, Tascam A-3440 4-track, Awa F-660 cassette. **Noise Reduction Systems:** Dolby A/SR available. **Synchronization Systems:** Adams-Smith Zeta-3, others available. **Outboard Equipment:** Lexicon PCM41, Yamaha REV7, (2) Yamaha SPX90, ART SGE, (2) Alessis Microverb, DeltaLab Super Time Line, Roland Dimension D, Roland SDE-1000, Aphex Aural Exciter, BBE Sonic Maximizer, (2) UREI 1176LN, (2) UREI LA-4, compressor/limiter by: dbx, Ashly Audio, Symetrix, Biamp Systems, noise gates by: Symetrix, Audio Logic, (2) dbx 1631 P dual 1/3-octave EQ, (2) Symetrix SE-400 dual parametric EQ, Yamaha 2031 dual 1/3-octave EQ, Biamp dual 10-band graphic EQ. **Microphones:** AKG, Beyers, Neumann, Sennheiser, Audio-Technica, Crown, Shure, Electro-Voice, Peavey, Boss, Whirlwind. **Monitor Speakers:** (2) Tannoy SGM-10B, (2) Yamaha NS-10M, (2) Auratone, (2) Realistic Minimus-7. **Power Amplifiers:** (4) Spectra Sonics 404RS/701. **Video Monitors:** Panasonic CT-1030M 12" color, SC 9" B/W. **Other Major Equipment:** Jensen 42-channel 3-way isolated split available up to 450', Jensen 24-channel 2-way isolated split, 30-pair 200' snake, (4) 50' sub-snake, Telex 4-channel communications system, 220/110 AC distribution system w/transformer isolation. **Specialization &**

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ULTRASTAGE, INC.; *Sound Reinf., Lighting, Rental;* 4917 Bridge St.; Niagara Falls, Ontario, L2E 2S2 Canada; (416) 356-0499. Contact: Robert McCustra.

WATTS—GUENETTE PRODUCTIONS; *Sound Reinf., Lighting, Rental;* 88 Guay Ave.; Winnipeg, Manitoba, R2M 0B9 Canada; (204) 233-4479. Contact: Rob Guenette. **SOUND REINFORCEMENT.** Touring Radius: National. Maximum Venue Size: 1,500-2,000. Vehicles: (3) 5-ton trucks available. **House Loudspeakers:** (4) Adamson MH212, (8) Adamson B218, (6) E-V 1810. **Flying System Available:** No. **Monitor Loudspeakers:** (10) Watts Guenette 15" w/E-V and Emilar horns. **House Consoles:** Yamaha PM1800 40-ch, Soundcraft 200SR 32-ch. **Monitor Consoles:** Peavey Mark IV 16 x 8, Yamaha 2408 24 x 8. **Outboard Equipment:** Lexicon PCM70, Eventide H3000, Lexicon PCM60, Roland DEP-5, Korg SDD-200, Roland SRV-2500, (2) Alessis MIDverb II, Korg DRV-2000, Yamaha SPX900, (3) Drawmer DS-201 gate, Ashly Audio SG-35 quad gate, Goldline Model 30 RTA, (2) ART Smart Curve I EQ/1/3-octave EQ, (5) Yamaha 2031 graphics, (2) BSS FDS-360 x-over w/Adamson EQ card, dbx 900 rack w/(5) 903 comp/(3) 905 para, 904 gate, BBE 822 Sonic Maximizer. **Power Amplifiers:** (8) QSC MX1500, (3) Crown MT-1200, (2) Carver PM-1.5, Yamaha 2200. **Microphones:** (4) E-V 457, (10) Shure 58, (6) Shure 57, (2) AKG D-112, (2) Sennheiser 421, (2) AKG 451, (4) Toa J1, (2) Countryman FET 8S DI, (5) Yamaha MZ204, (8) Whirlwind DI. **Lighting:** 96k of dimming available, PAR 64/SYS/ACL/Leikos/projectors/follow spots, (2) R2R0 foggers, (3) 24 chan desk. **Other Equipment:** Full range of stands, cloth, accessories and trussing, all cans barred w/multiplable, socapex, technicians: sound—Korex Sherwin, Gary Plouffe; lighting—Todd Hucll, Jim Rink. **Rates:** Call (\$350-\$1,200 per week).

WESTBURY NATIONAL SHOW SYSTEMS; *Sound Reinf., Lighting, Staging, Rental;* 36 Malley Rd.; Toronto, Ontario, Canada; (416) 752-1371. Contact: Ian Murray. **SOUND REINFORCEMENT.** Touring Radius: National. Maximum Venue Size: 25,000 capacity. **Vehicles:** Rental. **House Loudspeakers:** (64) Adamson Advanced Concert system, (48) Westbury Model 4, (12) Westbury Model 5, (16) E-V DeltaMax. **Flying System Available:** Yes. **Monitor Loudspeakers:** (28) Westbury WS212, (28) Westbury WS115, (4) Westbury WSSF3, (28) E-V DLX 2 x 12" c/w 1 x 2" E-V HD1A driver bi-amped, (18) E-V L 1 x 15" c/w 1 x 1" JBL driver bi-amped. **House Consoles:** (2) Yamaha PM3000/40, Yamaha PM1800/40, Yamaha PM2000/32. **Monitor Consoles:** (2) Yamaha PM2800 40 x 14, Soundtracs MC 32 x 12, Midas PRO-2 26 x 8. **Outboard Equipment:** Yamaha SPX1000, REV5, BSS noise gate, dbx comp/limiter, Yamaha and Klark-Teknik equalizers, Roland SDE-3000, Lexicon, Drawmer. **Power Amplifiers:** QSC, Yamaha, BGW, Crown. **Microphones:** E-V N/DYN, Shure Beta Series, AKG, Sennheiser, Samson and HME diversity wireless system. **Staging:** Festival, fashion show, concert and corporate. **Lighting:** Full department w/Thomas PAR 64, AVO QM500/9B, LMI CH200/48, select 48-36 consoles, LMI and Dilor dimmers, Ultra Arc follow spots, CM Lodestar chain hoists, Genie Super Towers, truss spots, special effects. **Other Equipment:** Sony 5600 3/4" U-matic video recorder, Sony 1040Q video projectors and screens, Sony 1032 video projectors and screens, Sony A/V switchers, Electro Sonics Pic Bloc-36 video walls effects, Sony DXC-M7A camera. **Rates:** Available on request. **Specialization & Credits:** 20,000 sq. ft. facility includes: lighting, sound and staging departments. Sales, rentals, installations, service. Video dark tunnels, rigging and scaffolding. Specialty equipment (media press desks, wireless microphones), Communication systems. Fully equipped wood/set construction shop. Fully equipped service department. Complete inventory of curtains, backdrops, rod and drape, 2,000 sq. ft. air-conditioned rehearsal studio complete with hardwall Cyclorama. Festival staging.

ART & ELECTRONICS; *Audio Recording;* Sadovaya-Triumphalnaya 12, Rm. 1; Moscow, 103006 USSR; 209-97-09; FAX: 200-22-32. Contact: Boris Tikhomirov.

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FM SYSTEMS; *Sound Reinf., Lighting, Staging, Rental;* 16423 117th Ave.; Edmonton, Alberta, Canada; (403) 451-1353; FAX: (403) 451-2868. Contact: Brian Thomas. **SOUND REINFORCEMENT.** Touring Radius: National. Maximum Venue Size: 12,000. Vehicles: 102" x 48" air-ride w/1990 Kenworth conventional air-ride, 102" x 24" 1987 International straight trucks. House Loudspeakers: 2-bus, 4-way proprietary system, Martin JBL systems. **Flying System Available:** Yes. **Monitor Loudspeakers:** JBL proprietary wedges 1 x 15"/2" bi-amped, JBL proprietary fills 2 x 15"/2" bi-amped. **House Consoles:** TAC, Soundcraft, Yamaha. **Monitor Consoles:** TAC, Soundcraft, Yamaha. **Outboard Equipment:** AMS, Valley International, Lexicon, Drawmer, dbx, BSS, UREI, Klark-Teknik, Roland, Korg, Yamaha. **Power Amplifiers:** Crest, QSC. **Microphones:** Shure, Sennheiser, AKG, E-V, Beyers. **Staging:** 40' x 36' stage, 40' x 32' roof. **Lighting:** Leprecon, Thomas, Altman, Lycian. **Other Equipment:** Stage gear available upon request. Rates: Upon request.

J.L. SOUND SYSTEMS; *Sound Reinf., Lighting, Staging, Rental;* 250 King St. E.; Hamilton, Ontario, L8N 1B7 Canada; (416) 527-6863. Contact: Joe Sciamanna. **SOUND REINFORCEMENT.** Touring Radius: National. Maximum Venue Size: 20,000 seat. Vehicles: 18'. House Loudspeakers: CE SM-50 E-V loaded, 40 bottoms, 22 tops. **Flying System Available:** Yes. **Monitor Loudspeakers:** (25) SM-W-15 E-V loaded, (15) SM-W-12 E-V loaded. **House Consoles:** TAC 40-ch, Yamaha PM1800 32/40-ch, various Soundcraft. **Monitor Consoles:** TAC, Yamaha, Soundcraft. **Outboard Equipment:** Yamaha REV7, Lexicon, Symetrix, DeltaLab, Aphex, Brooke-Siren, Bryston crossovers, Barcus-Berry Electronics, Power Amplifiers: (60) Bryston, (12) Carver 1.5, (20) Yamaha, (20) various other makes. **Microphones:** (45) E-V, (70) Shure, (15) Sennheiser, (4) Cetec Vega. **Staging:** Smoke machines and effects, various modules available. **Lighting:** 240k avail. and LDS packs, follow spots, 48k ACLs.

KARISMA RECORDING, INC.; *Audio Recording;* 9 Kirkland Blvd., Ste. 102; Montreal, Quebec, H9J 1N2 Canada; (514) 522-0802. Contact: Marcel Gouin. **REMOTE RECORDING.** Vehicles: 40' x 8' x 13'. **Control Room Dimensions:** 25' x 8'. Lounge/iso booth: 10' x 8'. **Mixing Consoles:** Mitsubishi Westar 8000 52-input full parametric bar graph, DiskMix automation, Soundcraft 600 40 inputs for up to 92 mic inputs. **Audio Recorders:** (2) MCI JH-24 1/4" reels 48-track or 24-in-tandem, MCI JH-110B2-track 1/2" and 1/4", MCI JH-110 4/2-track 1/2" and 1/4", Otari MTR-10-2TC 2-track 1/4" center-track code. **Noise Reduction Systems:** Dolby A 48 channels, Dolby SR 30 channels. **Synchronization Systems:** BTX Softouch 4-machine system. **Outboard Equipment:** UREI 1176LN, (2) UREI 1178, (2) UREI LA-4 compressor, (4) dbx 160 compressor, (2) Aphex stereo Compeller, ADR Scamp rack w/(2) compressor/(7) gate, (2) Valley Audio rack w/(2) Kepex II gate/Gain Brain/Maxi-Q, Aphex 612 stereo noise gate, Lexicon 480L digital reverb, Lexicon PCM70 digital reverb, Lexicon PCM60 digital reverb, Eventide H949 Harmonizer, Roland SDE-3000 delay, Ursa Major SS-282 Space Station, TC Electronic 2290 sampler, Marshall 5002 time modulator, EXR SP-1 exciter. **Microphones:** Neumann U87, U47, KM84, AKG C-414EB, C-451, Sennheiser MKH-416, MD-441, MD-421, Electro-Voice RE20, Shure SM57, and more Schoeps, Sony. **Monitor Speakers:** (2) Westlake BBSM-10, (2) JBL 4906, (2) Auratone SC, (2) Studer 2706 (lounge). **Power Amplifiers:** QSC 3500, Studer, (2) Bryston 3B/2B. **Video Recorders:** Sony/MCI JH-110C-3LB 1" video layback, JVC 8250U 3/4" VCR, Toshiba DX-900 Hi-Fi VHS w/digital audio processing. **Video Monitors:** (2) Parasonic CT-1350 14", Toshiba 21". **Cameras:** Panasonic color. **Other Major Equipment:** (92) mic line, Jensen transformers 375', MTC computer AC regulator/filter (audio), MTC multitap AC line matching transformer, Focusrite, Eventide H3000, AKG The Tube available from our studio facility, second smaller remote packages available. Rates: 24 and 48 tracks, 2 tracks or direct-to-video, call.

KITSCH AUDIO LTD. MONTREAL CANADA; *Sound Reinf., Lighting, Rental;* 1565 Iberville; Montreal, Quebec, H2K 3B8 Canada; (514) 527-2323. Contact: Don Cole, Ron Monrani.

SOUND REINFORCEMENT. Touring Radius: National. Vehicles: Trailers 45' and 30', trucks 24'. **House Loudspeakers:** Hill M3/M4 4-way 100k, AB Systems 32k. **Flying System Available:** Yes. **Monitor Loudspeakers:** (32) custom 2-way wedges w/2 x 12"/2" driver, (16) custom 2-way wedges w/1 x 15"/1" driver, (16) custom 2-way sidefills. **House Consoles:** PM3000-40C w/patch bay, (2) Soundcraft 8000-40, (2) TAC Scorpion-32. **Monitor Consoles:** (2) TAC Scorpion-40, (2) Soundcraft 500-40. **Outboard Equipment:** (3) Lexicon PCM70, (20) Drawmer DS-201 gate, (16) dbx 160X/166 compressor, (4) LXP-1 w/MRC, (4) LXP-5 w/MRC, (48) Klark-Teknik EQ, (16) Roland delay/reverb, (4) Lexicon PCM60, (2) Aphex Exciter, (12) SPX90, (4) SPX90II, (2) SPX900, (3) Klark-Teknik DN-780, Lexicon PCM480XL. **Power Amplifiers:** (32) Hill DX-3000, (50) Hill DX-1500, (100) Hill TX-1000. **Microphones:** E-V 308, Sennheiser MD-421, 409, 441 wireless, Shure SM58, 57, AKG D-112, C-451, 535, Beyers M88/M69, Samson wireless SM87. **Lighting:** Celco boards 30/00/90, Trust/Oribitter/Voyager/Satellite/Leeko/Sky Cyc/Dilor dimmers/color pro/800K of PARs 64/ACL. **Other Equipment:** BSS crossovers, communication system, 3-way split snakes, TAC x-overs, Vanille on request, other products can be acquired if not in stock. Rates: Upon request (quote).

L.R. LIGHT AND SOUND; *Sound Reinf., Lighting, Rental;* Box 7834; Drayton Valley, Alberta, T0E 0M0 Canada; (403) 542-5282. Contact: Lonnie Ross. **SOUND REINFORCEMENT.** Touring Radius: Local. Maximum Venue Size: 2,000. Vehicles: 3-ton w/22' van. **House Loudspeakers:** (4) Meyer Sound Labs UPA-1A, (4) Meyer Sound Labs USW1. **Flying System Available:** No. **Monitor Loudspeakers:** (2) E-V FM1502, (2) Sonic M115N, (2) Cerwin-Vega 2-12-H, (5) assorted JBL, Yamaha, Cerwin-Vega. **House Consoles:** Hill J Series III 24 x 8 x 2 w/Multiplan 200' snake. **Monitor Consoles:** Allen and Heath Brennel SRM 186 18 x 6 w/Multiplan. **Outboard Equipment:** (2) Yamaha SPX90, ART Multiverb II, Roland SRV-2000, Roland SDE-3000, Roland DEP-3, (2) Loft 400 gate/limiter, (2) Klark-Teknik DN300, Aphex Type C Aural Exciter, Loft 410 comp/expander, Pulsar RTA150 real-time analyzer, Technics RSM270X cassette deck, (2) Audio Logic SC30 15-band graphic EQ, (2) Yamaha Q2031 31-band graphic EQ, (2) DOD Electronics R831A 30-band graphic EQ, Loft 400 gate/limiter. **Power Amplifiers:** (2) Carver PM-1.5, (4) HH Electronic V800 MOSFET, (2) HH Electronic V200 MOSFET. **Microphones:** (2) AKG D-330BT, (2) AKG D-310, (4) AKG D-125, D-1200, (2) AKG D-112, (2) AKG C-408, C-535, E-V 755 wireless Samson, E-V ND/308, (3) Shure SM58 wireless SMX, (3) Sennheiser MKE-2040, MD-409, MD-421, Shure SM100 headset, SM57, SM58, (10) direct box. **Staging:** (2) 6 x 7 x 1 riser. **Lighting:** LDS 12-8 desk, 76' of trussing, (2) LDS DR1200 dimmer packs —24,000-watt 12 channels, follow spot, ACL, PAR 64, 56, 46, 36-3.50, Lampo ET, Optikinetics, smoke, fog. **Other Equipment:** Dry ice maker, (2) isolation transformers, (2) smaller systems for rent. Rates: Negotiable.

REELS IN MOTION; *Audio Recording;* PO Box 71; West Hill, Ontario, M1E 3K3 Canada; (416) 282-0655. Contact: Mark Jackson.

SHOW PRO; *Sound Reinf., Lighting;* 2005 Danforth Ave.; Toronto, Ontario, M4C 1J7 Canada; (416) 699-9699; FAX: (416) 698-8315. Contact: Richard Van Steenburg.

SOUND ART PRODUCTIONS; *Sound Reinf., Rental, Audio Recording;* 134 Brentford Rd.; Winnipeg, Manitoba, R2M 5B9 Canada; (204) 253-9420; FAX: (204) 257-4087. Contact: Dave Cousins.

TURTLE MOBILE RECORDING LTD.; *Audio Recording;* 316 E. 1st Ave.; Vancouver, BC, V5T 1A9 Canada; (604) 872-3447 (Vancouver); (206) 453-7875 (Seattle). Contact: Larry Ansheil, Dave Trgovcic. **REMOTE RECORDING.** Vehicles: Mobile 1: GMC Vandura w/14" box, compact for limited-access venues, air-conditioned; Mobile 2: Dodge 1-ton van. **Control Room Dimensions:** Mobile 1: 12' x 7.5'. **Mixing Consoles:** Neotek 1E 24 x 8 w/36 mic modified in-line w/full parametric EQ. (12) Langevin all-discrete mic preamp, Rane and Tascam submixers, Tascam M15 22 x 8, Yamaha PM180 6 x 2 rack mixer. **Audio Recorders:** 3M 79 24-track w/Selectac locator (2nd 3M79 available), Tascam MS-16 16-track w/AQ65 locator, Sony DTC-1000EX DAT, Otari MX-5050 B2 2-track, Tascam A-3440 4-track, Aiwa F-660 cassette. **Noise Reduction Systems:** Dolby A/SR available. **Synchronization Systems:** Adams-Smith Zeta-3, others available. **Outboard Equipment:** Lexicon PCM41, Yamaha REV7, (2) Yamaha SPX90, ART SGE, (2) Alesis Microverb, DeltaLab Super Time Line, Roland Dimension D, Roland SDE-1000, Aphex Aural Exciter, BBE Sonic Maximizer, (2) UREI 1176LN, (2) UREI LA-4, compression/limiter by: dbx, Ashley Audio, Symetrix, Biamp Systems, noise gates by: Symetrix, Audio Logic, (2) dbx 1631 P dual 1/3-octave EQ, (2) Symetrix SE-400 dual parametric EQ, Yamaha 2031 dual 1/3-octave EQ, Biamp dual 10-band graphic EQ. **Microphones:** AKG, Beyers, Neumann, Sennheiser, Audio-Technica, Crown, Shure, Electro-Voice, Peavey, Boss, Whirlwind. **Monitor Speakers:** (2) Tannoy SGM-10B, (2) Yamaha NS-10M, (2) Auratone, (2) Realistic Minimus-7. **Power Amplifiers:** (4) SpectraSonics 404RS/701. **Video Monitors:** Panasonic CT-1030M 12" color, SC 9" B/W. **Other Major Equipment:** Jensen 42-channel 3-way isolated split available up to 450', Jensen 24-channel 2-way isolated split, 30-pair 200' snake, (4) 50' sub-snake, Telex 4-channel communications system, 220/110 AC distribution system w/transformer isolation. **Specialization &**

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ULTRASTAGE, INC.; *Sound Reinf., Lighting, Rental;* 4917 Bridge St.; Niagara Falls, Ontario, L2E 2S2 Canada; (416) 356-0499. Contact: Robert McOustra.

WATTS—GUENETTE PRODUCTIONS; *Sound Reinf., Lighting, Rental;* 88 Guay Ave.; Winnipeg, Manitoba, R2M 0B9 Canada; (204) 233-4479. Contact: Rob Guenette. **SOUND REINFORCEMENT.** Touring Radius: National. Maximum Venue Size: 1,500-2,000. Vehicles: (3) 5-ton trucks available. **House Loudspeakers:** (4) Adamson MH212, (8) Adamson B218, (6) E-V 1810. **Flying System Available:** No. **Monitor Loudspeakers:** (10) Watts Guenette 15" w/E-V and Emilar horns. **House Consoles:** Yamaha PM1800 40-ch, Soundcraft 200SR 32-ch. **Monitor Consoles:** Peavey Mark IV 16 x 8, Yamaha 2408 24 x 8. **Outboard Equipment:** Lexicon PCM70, Eventide H3000, Lexicon PCM60, Roland DEP-5, Korg SDD-200, Roland SRV-2500, (2) Alesis MIDverb II, Korg DRV-2000, Yamaha SPX900, (3) Drawmer DS-201 gate, Ashley Audio SG-35 quad gate, Goldline MD30 RTA, (2) ART Smart Curve I EQ/1/3-octave EQ, (5) Yamaha 2031 graphics, (2) BSS FDS-360 x-over w/Adamson EQ card, dbx 900 rack w/(5) 903 comp/(3) 905 para, 904 gate, BBE E22 Sonic Maximizer. **Power Amplifiers:** (8) QSC MX1500, (3) Crown MT-1200, (2) Carver PM-1.5, Yamaha 2200. **Microphones:** (4) E-V 457, (10) Shure 58, (6) Shure 57, (2) AKG D-112, (2) Sennheiser 421, (2) AKG 451, (4) Toa J1, (2) Countryman FET 8S DI, (5) Yamaha MZ204, (8) Whirlwind DI. **Lighting:** 96k of dimming available, PAR 64/SYS/ACL Leikos/projectors/follow spots, (2) 2R20 foggers, (3) 24-chan. desk. **Other Equipment:** Full range of stands, cloth, accessories and trussing, all cans barred w/multicable, socapex, technicians: sound—Korex Sherwin, Gary Plouffe; lighting—Todd Hucul, Jim Rink. Rates: Call (\$350-\$1,200 per week).

WESTBURY NATIONAL SHOW SYSTEMS; *Sound Reinf., Lighting, Staging, Rental;* 36 Malley Rd.; Toronto, Ontario, Canada; (416) 752-1371. Contact: Ian Murray. **SOUND REINFORCEMENT.** Touring Radius: National. Maximum Venue Size: 25,000 capacity. Vehicles: Rental. **House Loudspeakers:** (64) Adamson Advanced Concert system, (48) Westbury Model 4, (12) Westbury Model 5, (16) E-V DeltaMax. **Flying System Available:** Yes. **Monitor Loudspeakers:** (28) Westbury WS212, (28) Westbury WS115, (4) Westbury WSSF3, (28) E-V DLX 2 x 12" c/w 1 x 2" E-V HD1A driver bi-amped, (18) E-V L 1 x 15" c/w 1 x 1" JBL driver bi-amped. **House Consoles:** (2) Yamaha PM3000/40, Yamaha PM1800/40, Yamaha PM2000/32. **Monitor Consoles:** (2) Yamaha PM2800 40 x 14, Soundtracs MC 32 x 12, Midas PRO-2 26 x 8. **Outboard Equipment:** Yamaha SPX1000, REV5, BSS noise gate, dbx comp/limiter, Yamaha and Klark-Teknik equalizers, Roland SDE-3000, Lexicon, Drawmer. **Power Amplifiers:** QSC, Yamaha, BGW, Crown. **Microphones:** E-V N/DYN, Shure Beta Series, AKG, Sennheiser, Samson and HME diversity wireless system. **Staging:** Festival, fashion show, concert and corporate. **Lighting:** Full department w/Thomas PAR 64, AVO QM500/9B, LMI CH200/48, select 48+36 consoles, LMI and Dilor dimmers, Ultra Arc follow spots, CM Lodestar chain hoists, Genie Super Towers, truss spots, special effects. **Other Equipment:** Sony 5600 3/4" U-matic video recorder, Sony 1040Q video projectors and screens, Sony 1032 video projectors and screens, Sony A/V switchers, ElectroSonics Pic Bloc-36 video walls effects, Sony DXC-M7A camera. Rates: Available on request. **Specialization & Credits:** 20,000 sq. ft. facility includes: lighting, sound and staging departments, sales, rentals, installations, service. Video dark tunnels, rigging and scaffolding. Specialty equipment (media press feeds, wireless microphones). Communication systems. Fully equipped wood/set construction shop. Fully equipped service department. Complete inventory of curtains, backdrops, rod and drape, 2,000 sq. ft. air-conditioned rehearsal studio complete with hardwall Cyclorama. Festival staging.

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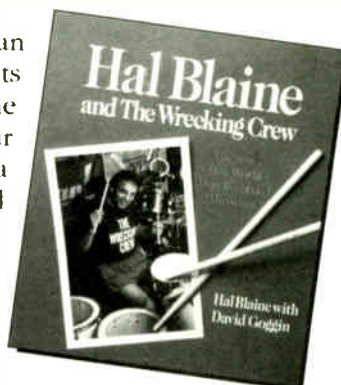
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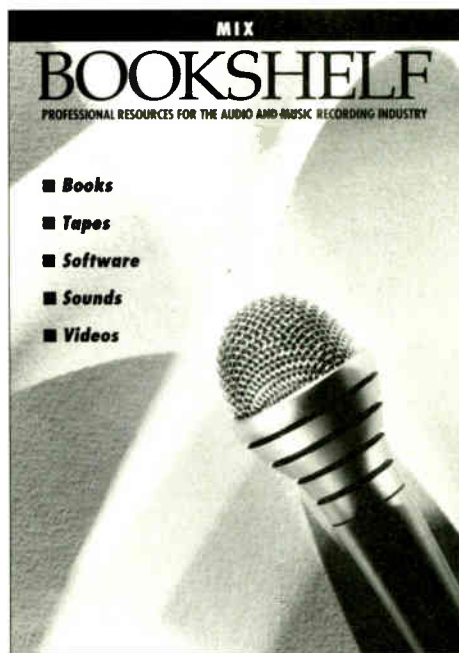
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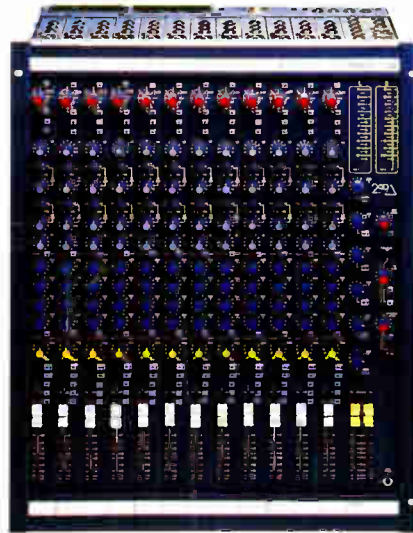
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