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**Directories: North Central
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THE RECORDING INDUSTRY MAGAZINE

**Consoles: What the
Big Studios Are Buying
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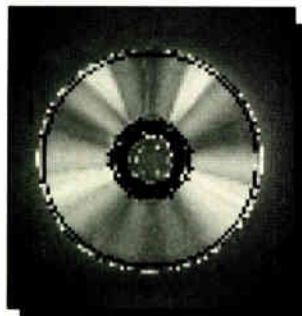
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MIX

NOVEMBER 1989

THE RECORDING INDUSTRY MAGAZINE

VOL. 13, NO. 11



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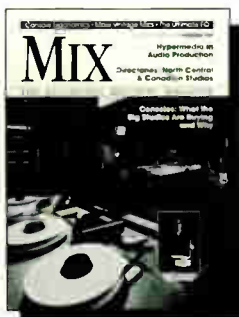
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FROM THE EDITOR

Founded 1977 by
David M. Schwartz and Penny Riker Jacob



Cover: The view from the Mitsubishi-equipped machine room of AD Productions shows a spacious control area with a Neve V Series 48-channel console. Steve Durr designed this new album tracking and audio post facility with windows that look out over Lake Michigan from the tenth floor of a Milwaukee high-rise. Photo: Greg Puza.

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Those of us who depend on our ears for our livelihood share a grave concern relating to the high sound levels prevalent in both studio monitoring and concert environments. Ever since high-power amplifiers and heavy-duty loudspeakers emerged, we have run the risk of damaging our ears through excessive monitoring levels. More and more we see the fulfilled prophecies of hearing loss among our fellow professionals who have exposed themselves to high sound levels throughout their careers.

Earlier this year, the Supreme Court ruled in favor of local government's ability to control concert sound levels in New York City, more to minimize the noise intrusion in neighborhoods than to protect concertgoers from ear damage. However, with the increasing evidence of hearing loss relating to high levels of sound and music exposure, it seems certain that legislation will evolve in the not-too-distant future to protect us from our sound sources.

But what kind of legislation could take into account the intricate nature of this problem and be understandable to and enforceable by those outside our industry? We know that two identical sound pressure levels can differ in their perceived loudness, fatigue level and even danger potential, depending on factors such as distortion content and dispersion characteristics.

Legislation that defines peak and average acceptable sound levels, such as in the Occupational Safety and Health Administration's guide for sound exposure in many other workplaces, would be impractical for the highly sophisticated environments of music monitoring and live sound production. This situation begs for clarification before any such legislation takes place.

We are curious to hear input from *Mix* readers on this subject. We also strongly encourage industry organizations, such as NARAS and AES, to form study groups in this area and recommend to our legislative representatives proper and well-considered means for dealing with this growing problem.

If we can develop these criteria from within the industry rather than from the governmental direction, we will be more likely to ensure that the subtle and critical concerns of sound professionals are not undermined in the wake of any well-intentioned but non-comprehensive legislative action. Let's hear from you.

Keep reading,

David Schwartz
Editor-in-Chief

Every sound engineer needs a silent partner.

An investment in a recording console represents a partnership you plan to live with for some time. Which is why the Sony MXP-3000 series console is a sound business decision.

Its design concept is based extensively on sonic performance. Boasting features such as low-noise hybrid amplifiers, gold-plated connectors and large crystal oxygen-free interconnect cables that produce unparalleled sound quality. These ingenious features tell the inside story as to why this console is so quiet. And countless installations tell the outside story as to why this console is so successful.

Of course, sonic performance isn't the only story behind our console. Flexibility is a necessity in the creative recording process, as well. Naturally, the MXP-3000 offers a host of flexible features at an unmatched value.

For instance, you have your choice of five distinct equalizers, and five different channel input modules. Plus, there are many other options available to suit your individual needs. All of which come housed in an ergonomically designed control surface.

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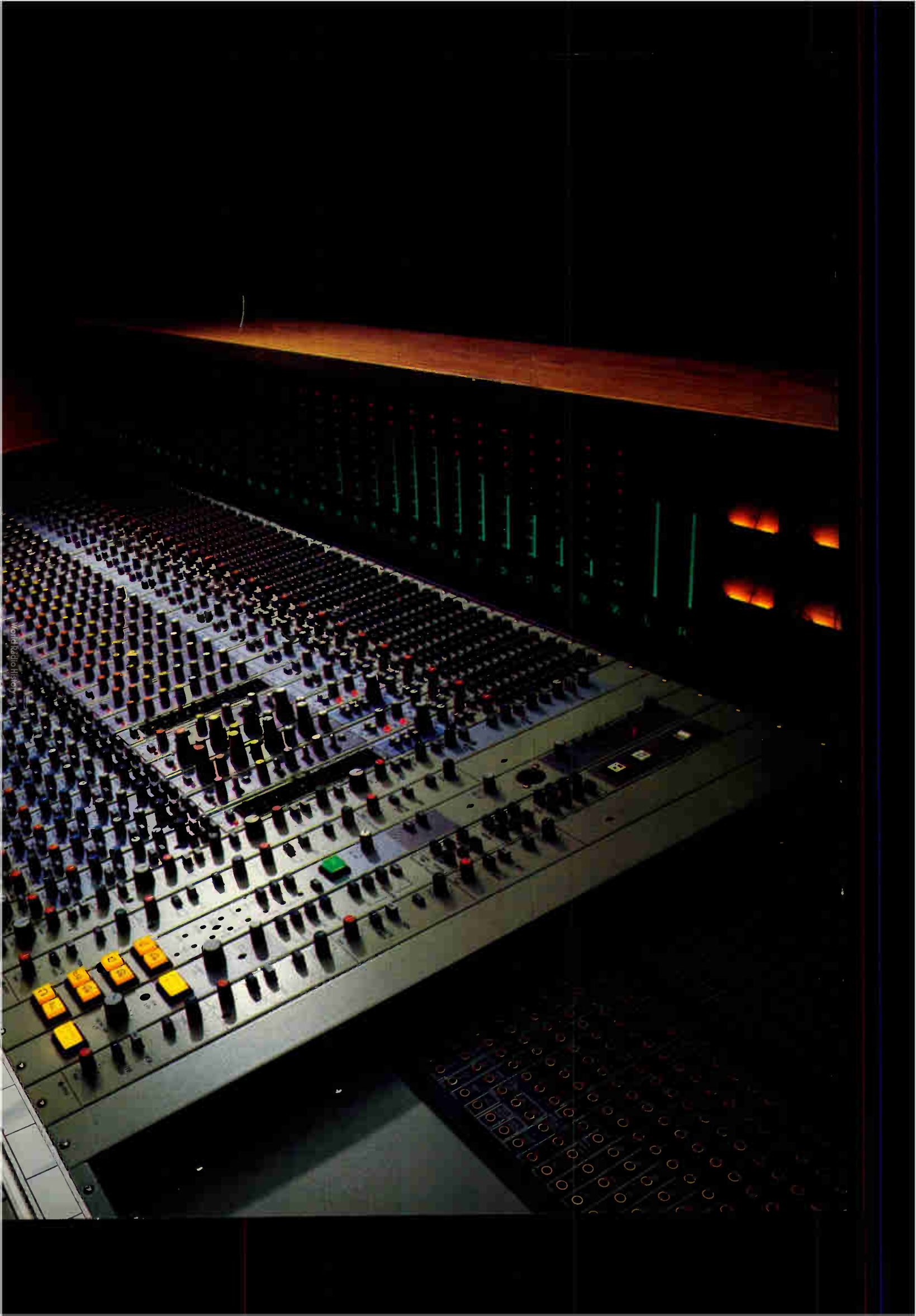
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CURRENT

SUMMER NAMM CHANGES DATES

The National Association of Music Merchants has announced a change of dates for its 1990 Summer Expo in Chicago due to scheduling problems with Chicago-area hotels. Originally scheduled for Friday, June 15, through Sunday, June 17, the Show is now set for Saturday, June 16, to Monday, June 18.

In light of concern expressed by manufacturers and a general dissatisfaction among exhibitors about poor attendance following the 1989 summer show (see September 1989 *Mix*, "Summer Lethargy at Summer NAMM"), the Trade Show Advisory Committee has agreed to redefine the focus of the summer exhibition to concentrate on the needs of dealers in the area of market development and promotional activities.

Responding to committee questions on the issue of exhibitors being required to participate at Summer Expo in order to protect their position at the Winter Market, NAMM executive vice president Larry Linkin re-emphasized the rule: "There is no requirement for exhibitors to participate in both shows. Each show is treated independently. Priority is only given to exhibitors based upon length of time they have been involved in that particular show."

Call NAMM toll-free at (800) 767-NAMM.

HDTV UPDATE

The executive committee of the U.S. Advanced Television Systems Committee has recommended a negotiating position for the State Department to carry to the table for the final meeting of Study Group 11 of the International Radio Consultative Committee (CCIR), an organiza-

tion under the United Nations International Telecommunications Union. The CCIR met in Geneva October 9-25, 1989, to consider standards for high-definition television production.

The ATSC recommendation contains a full set of Colorimetry and Transfer Characteristics, based on agreements reached by international colorimetry experts at a September meeting in Australia. "Never before have all countries been able to agree on such basic definitions of colors and other values that would assure all television viewers will see exactly the same video pictures regardless of where they are watching television," says James C. McKinney, ATSC chairman.

ATSC also provided an update to the State Department concerning scanning parameters. "The United States clearly wants to explore 'square pixels' based on 1,080 active lines," McKinney continues. "There is a very strong opinion within the ATSC that progressive scanning should be used in future HDTV production, while interlaced scanning will likely be used in the short run. It is clear that television stations in the U.S. will operate at 59.94 fields per second, and there also appears to be a need for 60 Hz in other production houses."

Contact ATSC at (202) 828-3130 for more information.

In related news, the Electronics Industries Association has become a member of the Advanced Television Test Center, the organization established to test proposed high-definition television transmission systems.

The Test Center was formed in 1988 by a coalition of television broadcasting companies and industry associations to evaluate proposed advanced

television systems under consideration as the transmission standard for high-definition television in North America.

For more information on EIA/CEG, call (202) 457-4919; for ATTC, call (703) 739-3850.

HIGH-QUALITY AM SOUND

The National Association of Broadcasters and the Electronic Industries Association/Consumer Electronics Group agreed recently to enter a joint program to promote high-quality AM sound using the NRSC (National Radio Systems Committee) standards in AM receivers.

The EIA/NAB goal is to establish a certification mark, or logo, to be used on the faceplate of high-quality AM receivers. Any receiver manufacturer could use this trademark in the promotion of receivers designed in accordance with NRSC standards. The joint program is still subject to approval by the EIA/CEG board of directors.

For more information, call EIA/CEG at (202) 457-4919.

KLIPSCH BUYS KLIPSCH

Fred S. Klipsch, an Indianapolis businessman, has purchased Klipsch & Associates, Inc., from his cousin, Paul Klipsch, and replaced the latter as chairman of the board. Paul Klipsch, who founded the Hope, Arkansas-based loudspeaker company in 1946, will remain with the company as a technical adviser.

CORRECTION

In "Meeting the Makers," page 101 of the September *Mix*, we incorrectly stated that Radio Systems, Inc., manufactures the CD-101 CD player. Radio Systems makes the RS-1000, a new auto-cueing DAT machine, which is advertised in the same issue. Our apologies. ■



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INDUSTRY NOTES

The **1989 International Computer Music Conference** will be held at Ohio State University (Columbus), November 2-5; for info: (614) 292-7837...In Long Island, NY, **Klark-Teknik** will distribute **Edge Technology's** Turbosound and BSS product lines...New Zealand-based **Perreaux Corp.** set up a U.S. subsidiary, Perreaux Corporation North America Inc., in Murrieta, CA...Engineer **John Sacchetti** joined **Symetrix's** DPR100 development team in Seattle, WA...**New England Digital** (White River Junction, VT) promoted **Ted Pine** to marketing manager...**Danny Mundhenk** is now **SSL's** Eastern region sales manager (NYC)...In Nashville, **Thomas J. Beld** was promoted to VP of **National Tape Corporation**...**Martin Audio Video Corp.** is now a subsidiary of **Video Services Corp.** in Northvale, NJ...**Jim Kurowski** joined **Studer Revox America** as director of technical operations (Nashville)...**Essential Marketing** (St. Joseph, MO) will represent **beyerdynamic** (Hicksville, NY) in the Midwest...**TimeLine** (NYC) found a new Midwest sales rep, **SG Audio** (Chicago)...**International Music Co.** sold **Biamp Systems** in Portland, OR; then **Rauland-Borg Corp.** of Skokie, IL, acquired a financial interest in **Biamp Systems Limited Partnership**...In Framingham, MA, **Bose** announced it is increasing production at plants in the U.S., Mexico and Ireland...**Sony** promoted **Robert Ott** to national business manager, microphone products, in Teaneck, NJ...**Aphex** moved to 11068 Randall St.,

Sun Valley, CA 91352... **Brian K. Scott** joined **Altec Lansing** (Oklahoma City, OK) as a district sales manager...**Pearson & Pearson** of Denver and **North Shore Marketing** of Seattle will handle factory rep duties for **Stewart Electronics** (Rancho Cordova, CA)...**Paul V. Hugo** joined **Gauss Loudspeakers** as national sales manager in Sun Valley, CA...24-track/video sweetening company **Pandemic Music** bought **Steele Productions** and relocated to 161 Ottawa Ave. NW, Grand Rapids, MI 49503...CD manufacturer **American Helix** named **Martin Audio Group** (Seattle) as its dealer in Washington state...**Phoenix Leasing** will supply leasing packages for various **Lexicon** products (Waltham, MA)...**Casio** promoted **Todd Ruhalter** to general manager, electronic musical instruments, in Dover, NJ...In L.A., **Andrew Brent** joined **Audio Intervisual Design** to organize the new service group...**VRI Scharff Rentals** (NYC) hired **Phil Vachon** as chief audio engineer and **Leo Rosenberg** as director of sales...**Mountain Representatives** (Denver) is the new rep for **Frazier** (Morrilton, AZ) in the Midwest...In Orlando, FL, **Digital Multi-Media Post** has a new VP and creative director, **Chris Coan**...**Richard Getz Productions** teamed up with **Target Productions** in Boston...**Boston Acoustics** (Lynnfield, MA) hired **Ira Friedman** to direct the new corporate marketing department. **Digital House** opened a new sales and service center at 101 West 57th St. in NYC. ■

SESSIONS AND STUDIO NEWS

SOUTHEAST

From The Land Down Under, **The Angels** were in Memphis at **Ardent** tracking their album for Chrysalis Records. **Terry Manning** produced and engineered... Yugoslavian rockers **Atomic Shelter** mixed their single "Chinese Bike" and "Believe Me" at **Cheshire Sound Studios** in Atlanta. **Dave Pensado** produced the project with **Thom Kidd** at the board and **Dale Abbott** assisting... In Nashville, Airborne artist **Mickey Gilley** was at **Music Mill** tracking vocals for his upcoming release. **Larry Butler** produced with help from engineers **Billy Sherrill**, **Paul Goldberg** and **George Clinton**... Up-and-coming country artist **Mark Pertain** was at both **Tree Recording Studios** and **County Q Recording Studios** in Nashville cutting demo tracks for Capitol Records and Sierra Management. **Chad Kramer** produced both sessions with **Paul Scholten** at the controls... Also in Nashville, producers **Gary Tallent** and **Mike Porter** were at **Sound Emporium** cutting tracks with **Who's Your Daddy**. **Mike Clute** ran the console... The soundstage at **Musiplex** in Atlanta saw **Nihilist** cutting live tracks with engineer **George Pappas** at the board. **Dale Abbott** assisted the sessions... In Miami, **10,000 Maniacs** were recently in **Criteria Recording Studios'** Studio E. Industry vet **Peter Asher** teamed with engineer **Eric Schilling** to record the band's next B-side. **Mike Spring** and **Andrew Roshberg** assisted... **Vern Gosdin** stopped by **The Bennett House Studios** in Franklin, TN, to cut tracks for CBS. **Bob Montgomery** produced and **Gene Eichelberger** engineered, assisted by **Shawn McLean** and **Roy Gamble**... The staff at **Strawberry Skys Recording Studio** in West Columbia, SC, has been working on many projects, including soundtrack work for the feature film *Katambochie*. **Ray Ruff** produced a number of acts, including **Bill Haney**, **Ronnie Reno** and **Trisha Lynn**. **Ron Hollins** handled engineering duties... Producer **Rob Fraboni** was at **Southlake Recording Studios** in Metairie, LA, working with the **Sundogs**

and the **Bluerunners**... **Nan Sudduth** and **Kurt Clayton** were at **New Memphis Music** in Memphis with **Niko** to cut a ballad they wrote for New Memphis Music Publishing. Clayton produced...

SOUTHWEST

Flotsam and Jetsam were in Tempe, AZ, at **Cereus Recording** working on their latest for Uni/MCA Records. **Alex Pericalas** produced and engineered... At **Fire Station Studios** in San Marcos, TX, country writer **Kent Finlay** mixed a couple of songs with engineer **Gary Hickinbotham**, and **Tom Sperry** cut a few country demos with **Augie Meyers** producing and **Hickinbotham** engineering... Producer/composer **Randy Wills** scored the soundtrack for the movie *Has Anybody Seen Phil?* at **Future Audio** in Dallas. **Doug Phelps** engineered the sessions, which combined Macintosh programming, live musicians and sound effects...

SOUTHERN CALIFORNIA

Guitar god **Yngwie Malmsteen** flashed into **The Enterprise Studio C** in Burbank to mix his upcoming PolyGram album recorded live in Leningrad. **Tony Platt** produced the project and **Tom Fletcher** engineered. **David Radin** assisted... **Michael Winslow** was at **Valley Center Studios** in Van Nuys completing tracks for his new album. **Gary Bell** produced, **Andre Jackson** engineered, and **Dave Bates** and **Wade Norton** assisted... The unstoppable team of **L.A. Reid** and **Babyface** were at **Larrabee Studios** in Los Angeles remixing **Babyface's** 12-inch single "Tender Lover." **David Bianco** engineered with assistance from **Sylvia Massy** for CBS Records. Of course, L.A. and Face co-produced... **George Winston** was at **Audio Resource Honolulu** recording and producing some of Hawaii's great slack key guitarists, including **Raymond Kane**, **Sonny Chillingworth** and **Leonard Kwan**. **Howard Johnston**, of Different Fur Recording in San Francisco, engineered, assisted by **Milan Bertosa**... PolyGram

artist **Michelle Shocked** was at **Soundcastle** in L.A. with **Don Murry** mixing and **Pete Anderson** producing her upcoming album. **Tracy Chisholm** assisted... At **Artisan Sound Recorders** in Hollywood, engineer **Greg Fulginiti** recently mastered LPs for **Duke Ellington**, **Chuck Berry**, **Bo Diddley** and **Muddy Waters**... **Gavin Christopher** and **Gary McLaughlin** were at **D.M.O. Productions Studios** in Van Nuys recording and mixing tunes for Christopher's new project. Also, Enigma artist **Hiroko** was in recording and rehearsing for her forthcoming American tour... **Bret Michaels** of **Poison** produced new artist **Suz. E. Hatten** at **Summa Music Group** in West Hollywood, with **Greg Price** engineering, and **Lori "Fu" Fumar** and **Kyle Bess** assisting... Existia/Capitol Records artist **Peter Canada** was working on his debut R&B/pop album *Entity* at **Fidelity Studios** in Studio City. **Dennis McKay** produced and engineered with **Dave Lopez** assisting... Producers **David Cole** and **Bruce Gaitsch** mixed **Timothy B. Schmit's** latest for MCA Records at **Lion Share Recording Studios** in L.A. Cole doubled as engineer, with assistance from **Laura Livingston**... In North Hollywood, **Jack Mack & The Heart Attack** were at **Kingsound Studios** working on their Taj Records album. **Eddie King** engineered with **Chris Winter** assisting... Post-production for Turner Broadcasting's ten-part series "Voice of the Planet," starring **William Shatner**, was handled at **Rock Solid Productions** in Burbank... PolyGram artist **Arsenio Hall** was at **Encore Studios** in Burbank tracking and overdubbing with producer **Larry Blackmon**. **Milton Chan** assisted engineer **Barney Perkins**...

NORTHWEST

Mixed up? Taj Motown act **The Mix** were at **Granny's House Recording Studios** in Reno, Nevada, mixing their album. **Jack Rouben** was mixing engineer, assisted by **Holly Sharpe** and **Bjorn Thorsrud**... At **Mobius Music** in San

—CONTINUED ON PAGE 15



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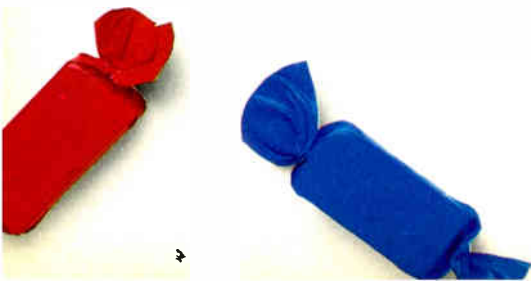
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—FROM PAGE 10

Francisco, **Molly** was working on her debut single for Stay Free Productions, with **Stanley Lippitt** and **Lady Bianca** producing. **Jane Scolieri** and **Oliver DiCicco** shared engineering duties... Also in San Francisco, **Poolside Studios** provided sound effects for *Rainforest Action!*, a video documentary on peoples indigenous to rainforests. Produced by **Tim Modok Pearson** of Big Picture Productions, the project was engineered by **David E. Nelson**... Christian rock artist **Connie Scott** finished recording her fifth album, *Forever Young*, at **Inside Trak Studios** in Burnaby, BC. **Roy Salmond** produced. **Gary Tole** engineered, and **Dave Slagter** and **Tole** mixed... At **The Plant's** newly remodeled Studio A in Sausalito, CA, **Narada Michael Walden** was in producing tracks for the next **Whitney Houston** LP, with **Dana Jon Chappelle** engineering...

NORTH CENTRAL

Sound Recorders recently completed a live-to-digital project celebrating Jazz Heritage Month in Kansas City. The recording featured an eclectic roster of 13 artists, including two big bands. **Ron**

Dabbs engineered the project... In Dayton, Ohio, **Steve Lynn** was at **Refract Recording Studio** recording his debut LP *Don't Want Control* for Chicago-based Sahara Records. **Ed DeMiles** produced, with **Gary King** and **John Hughes** at the controls... Engineer **Sean McMahon** has been busy at **Smith/Lee Productions** in St. Louis, MO, working with **Anacrusis** on their new album, *Reason*, for Active and Metal Blade. They are also remixing the band's first album, *Suffering Hour*... On their recent Steel Wheels Tour, the **Rolling Stones** dropped in at **Eastern Sound** in Toronto to edit and sweeten their video for the single "Mixed Emotions." Premiered on the MTV Music Video Awards show, the project was engineered by **Mike Jones** and **Tom Wilson**, with **Rick Jurgens** and **Jeff Ham** assisting... Optimism Records artist **Alexander Zonjic** was at **Studio A** in Dearborn Heights, MI, working on tracks for his next album with producer **Kirk Whalun**. **Eric Morgeson** and **Randy Poole** engineered... Two of the top winners in radio station Q107's Homegrown contest recorded their entries at Toronto's **Comfort Sound Recording Studio**. First-place winners **Wisconsin John-sins** recorded with engineers **Andrew St. George** and **Ken Shultz** and pro-

ducer **Gabe Lee**. St. George also produced and engineered third-place finishers **Shock Hazard**...

NORTHEAST

Epic Records artists **Living Colour** were at **Island Media Services** in West Babylon, NY, remixing their new singles "Funny Vibe" and "Buckle My Shoe." **Al Watts** engineered the sessions with producer **Prince Paul**... Los Angeles-based band **Babylon** crossed the country to record at **Chalet Sound** in Manasquan, NJ. The outlaw of comedy, **Sam Kinison**, appears on the Arista Records album... **Doctor Ice's** solo album, entitled *The Mic Stalker*, was completed at **Bayside Sound Recording Studios** in Bayside, NY, for Jive/RCA Records. **Lisa Lisa** and **Cheryl "Pepsi" Riley** contributed to the album, and **John Fig** engineered and mixed... First Warning Records went to **Barry Diament** at **Barry Diament Audio** to master its CDs by **Hex** and **The Jolly Boys**. Other recent projects include *The Ultimate Tommy Bolin* for Geffen... **Justin Strauss** was at **Prime Cuts** in New York City overdubbing **Gloria Estefan's** "Get On Your Feet" for Epic. **Tom Vercillo** engineered and **Eric Kupper** handled keyboards... Manhattan's **Power Play Studios** christened its

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SESSIONS & STUDIO NEWS

new SSL room with a session for Cold Chillin'/Warner Bros. artist **Bizmarkie**, with **Ivan "Doc" Rodriguez** engineering and **Dillip Harris** assisting... Breaking new ground in live recording, **Bob Bralove** and **Tom Stephenson** (of **Tekcom** in Philadelphia) used four Macintosh computers to record the **Grateful Dead's** summer stadium tour. All MIDI material was recorded live and synchronized to a four-camera video and audio remote truck run by **John Cutler**... RCA recording artist **Clyde Criner** was at **Pyramid Recording Studios** working on his latest album, with **Mark Plati** engineering and **Steve Wellner** assisting... **Tony Humphries** was in the SSL room at **Quantum Sound Studios** in Jersey City, New Jersey, producing a mix for Warner/Elektra Asylum artist **Ultra**, with **Doc Dougherty** at the console... Manhattan-based **Effanel Music** mobile recording was chosen for the tracking and live broadcast of **The Who's** performance of *Tommy* at the Universal Amphitheater in Los Angeles. **Bob Clearmountain** engineered with support from Effanel's **Randy Ezratty**, chief engineer **Mark Shane** and stage manager **Adam Pinch**... **The Smithereens** returned to **Crystal Sound Recording** in New York City to cut a version of "A Girl Like You," set to be the first single from their Capitol album. **Larry Buksbaum** engineered with assistance from **Beatrice Winkler**... **Chris Jasper** was back at **Sanctuary Recording** in New York remixing "Time Bomb" with engineer **Chris Bertolatti** at the controls. **Eric Hurtig** assisted. The first single from the album of the same name, also recorded at Sanctuary, hit the *Billboard* charts in September... The folks at **Alpha Audio** in Richmond, Virginia, wrote, produced and recorded the introduction music for the National Addy Awards presentation using the facility's NED Synclavier and Direct-To-Disk system. **Carlos Chafin** produced the session... **The Dharma Bums** were at **Baby Monster** in New York remixing their song "Infinite Mind" for release this month on the Visionary label... **Run-D.M.C.** were at **Chung King Recording Studios** (NYC) laying tracks for their upcoming album on Profile Records. The band is producing, with **Ted Sabety** at the controls... Also at Chung King, **Red Hot Chili Peppers** were in to remix their version of the Stevie Wonder classic "Higher Ground" for EMI. **Daddy-O** produced, with **Bob Coulter**, **Chuck Valle** and Sabety engineering...

STUDIO NEWS

Design FX in Los Angeles recently purchased a Sony PCM-3348 digital multitrack complete with an auxiliary meter bridge. The first scoring project on the machine was the latest John Candy film, *Uncle Buck*... **Polymusic** and the **Concept Company** have merged into the **Airwave Production Group**. The new **Steven Durr & Associates**-designed production facility in Nashville hosts a 24-track studio, Synclavier, MIDI suite and a 16-track post-production media studio... **Craig Harris Music** in Studio City, California, reports the addition of a Mac IIx to its Synclavier system. Other new additions include a Yamaha DMP7 digital mixer/processor, Sony TCD-D10 DAT and Oberheim Matrix-1000... In St. Louis, Missouri, **Smith/Lee Productions** added lots of equipment including an AKG "The Tube" mic, two Klark-Teknik DN410 parametric EQs and a Lexicon PCM70... **39th Street Music Productions** in New York City introduced a new 56-input SSL G Series console with Total Recall and a Studer A827 24-track recorder, giving the facility 48-track mix capability. Other new toys include a TC Electronic 2290 and a Publison :20 Update... Also in New York, **Foothill Productions** took delivery of the city's first Sonic Solutions hard disk digital editing and processing system... **Blank Productions** of Stamford, CT, accepted delivery of serial number 0001 of Digital Dynamics' Pro Disk 64, a direct-to-hard-disk multitrack recorder. The system will be used as an adjunct to the studio's Studer 24-track system... In San Francisco, **Soma Sync Studios** acquired a Yamaha C-3 6-foot baby grand piano fitted with Yamaha's new fiber optic MIDI interface... **Strawberry Skys Recording Studio** in West Columbia, SC, announced installation of an AKG ADR-68K digital effects processor with 32 seconds of 16-bit sampling, a Panasonic SV-3500 digital audio tape recorder and a Studio Technologies Mic Pre Eminence 2-channel mic preamp... **Trackworks Recording Studios** in New York City just completed installation of Sound Workshop consoles in two studios, and Lynx video sync systems are online... Washington Professional Systems delivered Dyaxis digital audio editing systems to **Peabody Institute**, **Omega Recording** and **Premier Recording** in the Baltimore/Washington area... **InnerVision Productions, Inc.**, in St. Louis, MO, took delivery of an AMS AudioFile digital audio recording/editing system with four hours of storage capability. ■

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THE LEGALITIES BEHIND THE HOME STUDIO WAR, PART I

Screams of protest. Furious fist-pounding in city hall. Suspicious neighbors. Fear and loathing in the establishment. The fire of rebellion in the eyes of the violators. Gang warfare in Los Angeles? No—studio warfare in Los Angeles. Who cares—you don't live in LA? Bad news—studio warfare will probably spread to your community. The gangs, too.

As you know if you've been following the news and reading *Mix*, home recording studios that offer "for hire" services have come under fire in Los Angeles. An organization of commercial studios called Hollywood Association of Recording Professionals (HARP) has argued that these home studios violate zoning laws and are thus illegal. By avoiding costly items

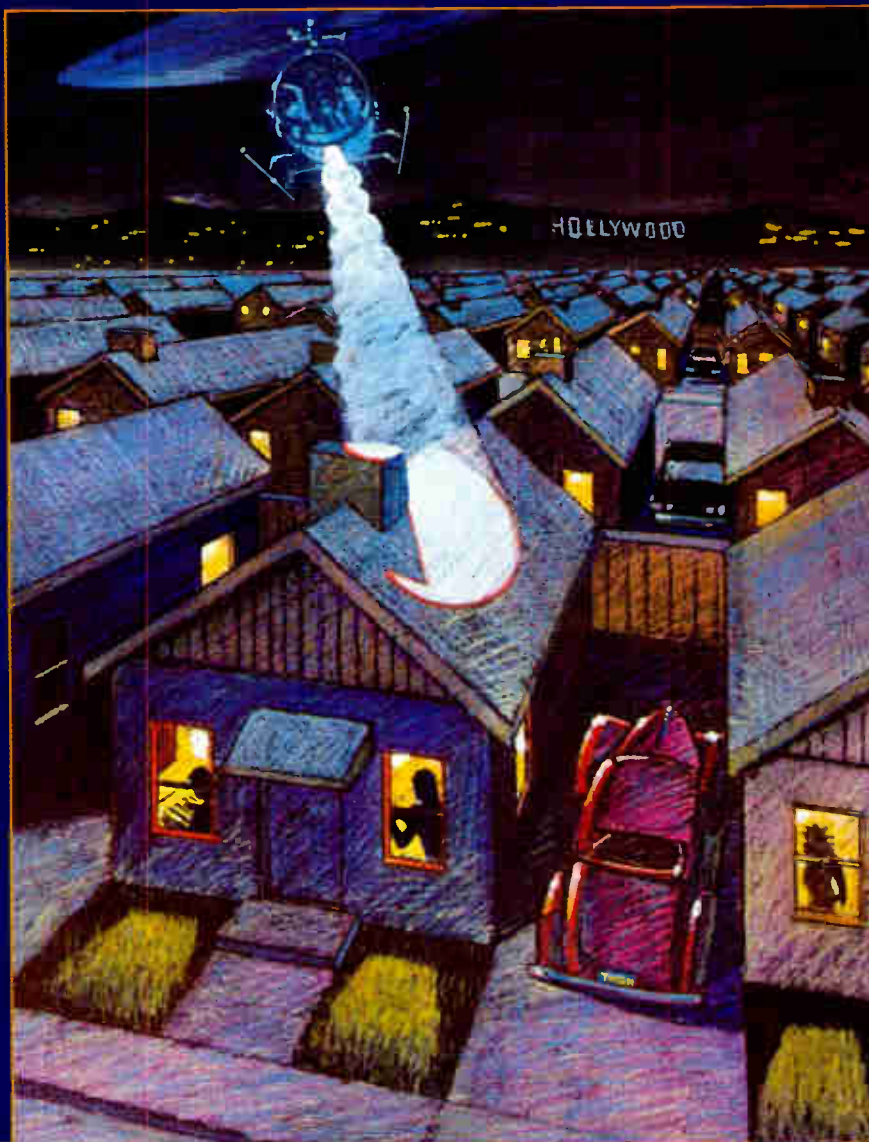


ILLUSTRATION: BUD THON

such as business property tax, regulated employee benefits, building code requirements and high commercial rent, they can lower rates and thus present unfair competition. Several home studios have already been closed: Secret Sound in Woodland Hills and NRG in North Hollywood were snagged on zoning violations.

Meanwhile, an organization of home studios, Homeworkers, has vowed to challenge zoning laws, enlisting allied clout from screenwriters, architects, songwriters and other professionals who work at home. If a property's value is not affected and neighbors are not disturbed, they argue, home studios should have a right to practice private, creative or hired work.

Is HARP's charge of unfair competition itself fair? And is shutting down a home studio fair? Exactly what constitutes a home studio? Is the MIDI keyboard in your bedroom illegal? What if your sister pays you to use it? What if there's an SSL in your bedroom and a producer pays you to use it? Exactly what defines a recording studio, and what laws apply to its operation? If

you own a studio, work for a studio or use a studio, this is a serious issue. Fewer and fewer studios can be run as mom and pop operations. Instead, the capital investment required to finance a comprehensive facility has brought them into the business mainstream, subject to all the rules and regulations of any business enterprise.

Is the MIDI keyboard in your bedroom illegal? What if your sister pays you to use it?

If you are thinking of starting a small studio in your spare bedroom and charging friends a few bucks to use it, read on.

The ongoing debate in the home studio controversy has necessitated improved awareness of all aspects of the legal operation of commercial re-

cording facilities, and perhaps suggested appropriate amendments to local building and zoning codes as well. These legal issues involve: business licensing, business taxes, sales taxes, property taxes, labor laws, unemployment insurance, worker's compensation insurance, liability insurance and, in some cases, income taxes. Obviously, the majority of these legal business requirements extend well beyond the home studio issue. The operation of any commercial recording business involves compliance with all federal, state and local requirements.

Each state determines the guidelines that regulate business activities in its particular political domain. Similarly, every city or county will define its own municipal laws governing businesses. Los Angeles, in addition to being the focal point of the recent home studio issue, is one of the major centers of the recording industry. The state and local laws governing businesses in the Los Angeles area will be used to illustrate the typical kinds of restrictions and guidelines placed on recording studios.

The forced closing of recording studios in Los Angeles came about be-



cause of violations of local zoning regulations that restrict the commercial use of residential property. The zoning of property refers to the classification of restrictions placed on the use of property in a specified area. In other words, zoning regulations state what you can or can't do on your property. Zoning laws determine the type and size of the building that can be constructed on your property, the use of the property, the required parking, the loading space (commercial zones only), minimum lot width, maximum height in feet and stories, and the number of yards (front, side and rear) surrounding your building.

The city of Los Angeles divides its zoning into several general classifications: agricultural, one-family residential, multiple residential, commercial, industrial and parking. These general categories are broken down further, in the case of commercial zoning, into as many as seven subcategories ranging from "limited commercial" (including banks, clubs, hotels, churches, schools, business and professional, and multiple residential) to "commercial manufacturing" (including wholesale business, storage buildings and limited manufacturing). Many of the

subcategories within the general classifications share similar combinations of restrictions, while others in the same general category share no common requirements. There are a few instances where crossovers between general categories occur. For example, limited commercial zoning areas clearly define the allowance of multiple

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in order?***

dwelling (multiple residential) use. Similarly, multiple dwelling zoning lists many of the same use restrictions as limited commercial zones (including churches, schools and child-care). One-family residential, on the other hand, shares no clearly defined category of usage with commercial zones.

According to the Los Angeles Zoning and Planning Codes, record and tape recording studios are zoned for three closely related "commercial zones," called C2, C4 and C5 by the zoning office. The only way to operate a recording studio in a different zone, without violating city zoning laws, is to get the property rezoned from residential to commercial use, or to obtain an approved zoning "variance." The guidelines regulating land use and city planning, as set forth by the Charter of the City of Los Angeles, make it difficult to get a complete zone change. The variance process, controlled by the same regulations and requirements of the city charter, is a possible alternative to rezoning. A zoning variance is a conditional use, not a rezoning. Before being granted an application for variance the applicant must prove: (1) unnecessary hardships due to the current zoning; (2) special circumstances that do not apply to other property in the same zone and vicinity; (3) that such a variance is necessary for preservation of a substantial property right or use possessed by other property in the same zone and vicinity; (4) that the variance will not be materially detri-



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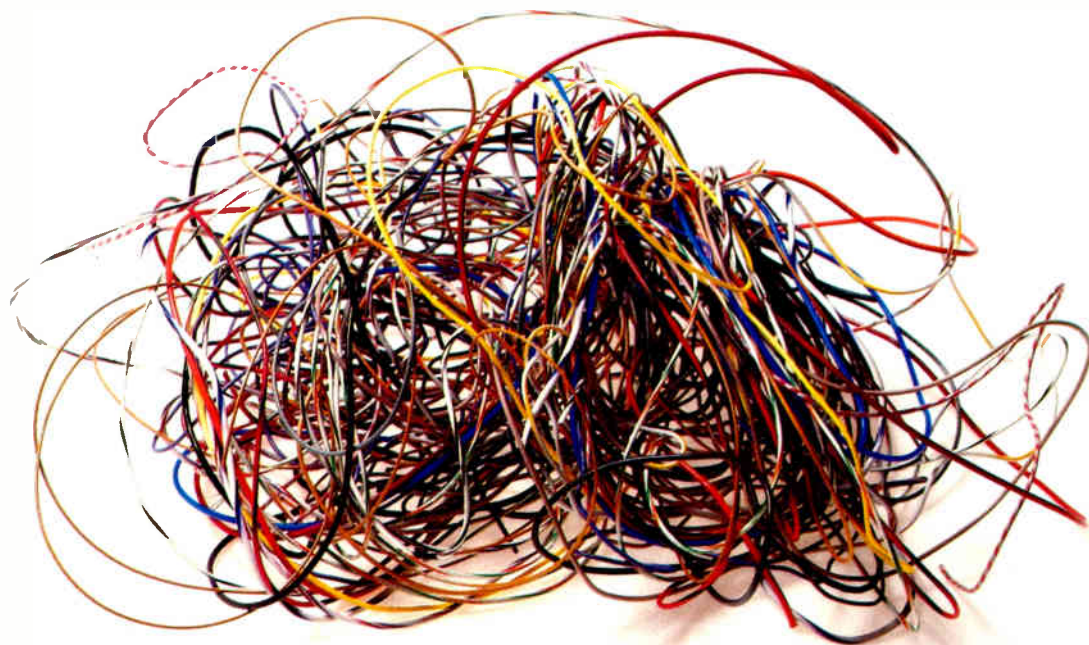
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mental to the public welfare, or injurious to the property in the same zone and vicinity; (5) that the granting of the variance will not adversely affect any element of the General Plan.

The General Plan is a comprehensive declaration of purposes and policies for the city's development. The Zoning Administration requires substantial evidence to prove that the requirements mentioned above have been met. In fact, the city charter specifically states that a variance shall not be used to grant a special privilege, nor to permit a use substantially inconsistent with the limitations upon other properties in the same zone and vicinity. The variance application process includes non-refundable fees of \$2,947 for the variance filing process and a \$728 fee for environmental clearance. An environmental assessment must be done to ensure that the studio's operation would not change the character or quality of the neighborhood. Approximately four months after the variance application is filed, a public hearing is held to allow the property owners of the adjacent properties (everyone within 300 feet is invited to the hearing) to voice their approval or disapproval of the proposed "rezoning." Following the hearing there is a 15-day appeal period during which either side can request that the issue be brought before the Board of Zoning Appeals.

Assisting the City Zoning Commission in enforcing zoning laws is the Department of Building and Safety. Building and Safety is also responsible for enforcing the ordinances and laws relating to the construction and alteration of buildings or structures. These laws include minimum building construction standards for electrical, plumbing and heating/cooling installations. To ensure that construction complies with these regulations, the city requires permits to be obtained prior to commencing construction. Permits are obtained at City Hall or from the district or branch office of the area in which the construction is planned. Building permits are required for all construction work valued at more than \$200. Electrical permits are required to install, alter, reconstruct or repair any electrical wiring. Plumbing and mechanical permits have similar requirements.

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If your plans for building a new studio involve hiring a professional studio design firm, much of the planning will be included in the designer's responsibility. If you want to do much of the design and planning yourself, Building and Safety provides a service for persons involved in the preparation of plans. This service includes: answering questions, reviewing preliminary plans and sketches, and advising on code provisions applicable to specific projects. Knowing the code requirements, individuals are then responsible for determining the degree of conformity of their proposals and incorporating applicable code provisions into their plans. The "preliminary review" service, offered through Building and Safety, is free.

Following this procedure, you can specifically determine if a studio is permitted in a home. Furthermore, the construction can be performed legitimately, according to local code. But before you load up a tape, are your business licenses in order? Are your books ready to account for local, state and federal taxes? Are you using a fictitious name? Since you're still waiting for your variance, we'll handle those problems next month. ■

Ken C. Pohlmann is director of Music Engineering at the University of Miami. Guy DeFazio is a graduate of the University of Miami and a technical engineer at Lion Share Recording Studios in Los Angeles.



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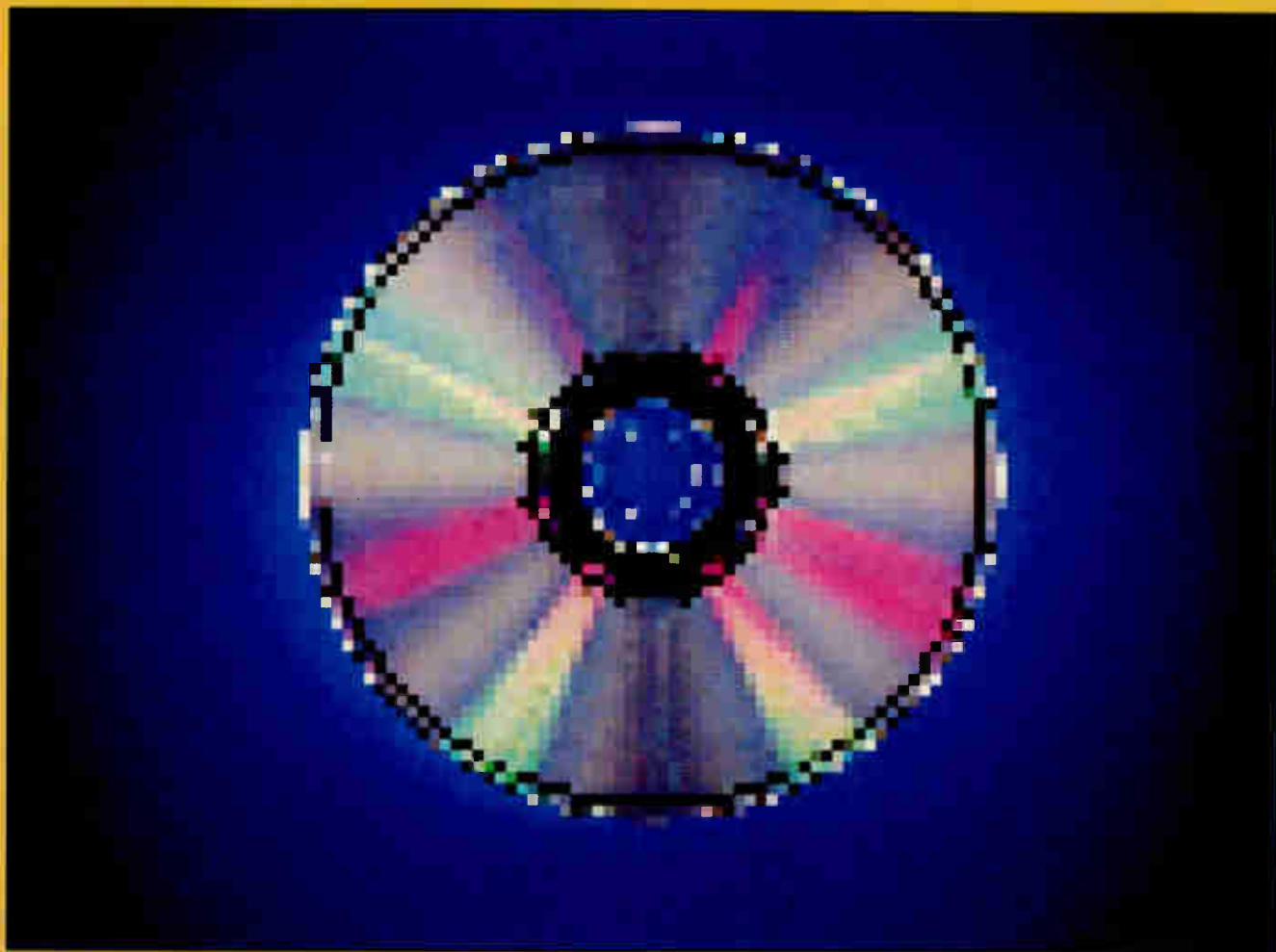


THE AUTOMATION STANDARD

7821 BURNET AVENUE, VAN NUYS, CALIFORNIA 91405, FAX 818-781-3828, TELEPHONE 818-781-1022

by Stephen St. Croix

SWEET & SOUR NOTES



First there was the Dreaded Sugar Weakness Syndrome. This guy with a true calling came over to see me about six years ago. He felt that it was his obligation in life to show the world how terrible *sugar* is.

Now all of us know today that sugar is not the best thing in the world. If we eat a bunch of sugar, a plethora of bad things take place. No real news. The proper (at least the usual) way to deal with this problem is to go ahead and eat the stuff, and immediately tell ourselves that we would have eaten more of it if we were not the aware, health-conscious individ-

uals that we are.

Anyway, this guy had an entirely different twist. It was his contention that sugar is so bad for you that you don't even have to eat it to suffer damage. He was selling the idea of guilt by association. Simple proximity was enough! He had this great demo that I'm sure some of you will remember: you get a friend to fully extend one arm and push up against your hand as hard as he can. Then you pour about two tablespoons of sugar into his other hand, and he repeats the exercise. The premise is that he will be considerably weaker due to the mere physical con-

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THE FAST LANE

tact with the sugar and therefore will exert much less force against you.

Really, now, folks—I'm not kidding.

Perhaps the most amazing part of this little "experiment" is that many people claimed to have felt a definite difference! I must admit that I actually felt a victim become instantly weak in this situation. There is no question that he exerted less lift while he was holding the sugar.

I leave it up to you, our intelligent reader, to determine for yourself what the most probable mechanism for the above-mentioned weakening could be.

Next came the guy who was running around a few years ago telling everyone that digitally recorded music caused stress to the listener. He definitely did.

Some of his followers went even further—they claimed that digitally recorded music actually caused weakening of the listener. They must have been old sugar guys, because they did essentially the same demo to make their point; you can imagine what it was. You guessed it—the old sugar demo, but instead of sugar in your hand, it was bits in your ear.

Well, that was then and this is now, again. Several of us have somehow managed to survive not only sugar, but digital recording to boot (and reboot).

Sure, sugar (or any other powder, for that matter) in the faders can still cause definite problems, and the Digital Stress Guy was targeting the areas of conversion, aliasing and other unnatural inharmonic artifacts that can come from poorly implemented quantization of our precious analog world. But all this is about problems that can come up on the way to becoming digital.

Now that we are actually in a digital world, what could possibly go wrong, you might ask?

Yes, that's it—what about *after* conversion, when all the scary black magic has been (more or less) successfully accomplished and the audio has been transformed into a stream of safe and stable bits? You know, the stuff that you can copy a thousand times with absolutely no change in the final sound, because it's *digital*?

Just how safe is the digital world? We tend to think of it as absolute; no noise can appear, no distortion, no anything bad as long as we stay in the

digital domain. But is this really true?

I recently got into a discussion with Glenn Meadows of Masterfonics, who was talking about his new stuff from Wadia Digital. He told me something that sounded so much like the sugar/stress stories that I was not too receptive. I was just interested enough, however, to break out my newest test gear to find out for myself if what he told me was possible. I found out that not only was it possible, but that it seems that it definitely *does* happen in real-world situations. Here it is:

One day some of the people from Wadia noticed that stereo SPDIF, and occasionally even AES/EBU, digital audio sometimes sounded a bit different after it had undergone a transfer or

Next came the guy who was running around a few years ago telling everyone that digitally recorded music caused stress to the listeners. He definitely did.

two. Further research revealed that this took place with any function involving long cable runs. This "difference" was a slurring and even a mild collapse of the stereo image. How can this be? One of the great promises of digital was that it was immune to hum, RF and all the other problems of long runs.

It turns out that RF *was*, in fact, interfering with the data. It was entering via the cables (as it has since the dawn of time code), and then slightly modulating the clock data in the digital stream. This in turn was causing random timing deltas in the l/r interleave—sorta. This in turn apparently confuses some machines, and they skip a word header for one channel until the next sample comes along, or some similar thing, causing a random phase jitter when it is all reconstituted as

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THE FAST LANE

analog later. This phase jitter results in slurred and damaged imaging. Like the sugar and the stress, I am not too sure I have a real handle on exactly what is going on, but unlike those, I definitely hear the result.

Wadia's solution? Blow the whole thing off and go optical. Granted, there is a lot to be said for it: no ground loops, tiny cables capable of multiple channels and extremely long runs, and zero connector corrosion. RF? It would take some pretty serious cosmic disruption to mess with enclosed *light*!

This in turn made me re-examine *all* the strange digital problem stories that I have heard.

I have known for some time that converters with bad differential linearity error (DLE) tend to steal reverb. For example, a mix with a total t-60 of two seconds on the final tail might suddenly end up with one-and-a-quarter seconds after digitization! Newer, better oversampling conversion is finally starting to overcome this rather obscure but serious problem.

What about multiple copies, or copies several generations away from the original? Impossible in analog, no problem in digital. True? Pick your favorite digital machines and make a digital copy of a good digital master until it is, say, 20 generations away. This should be no problem; we all know that digital-to-digital transfers are Absolutely Identical. Now compare your 20-gen-old dupe with the original. . .

I guess that error correction is still an art, not yet a science. Oh, well.

Data Rate conversion. Same test. Same results. Unacceptable assumptions, rounding errors and truncations in the conversion algorithms are the most likely culprits here. Come on! If you can't do the job, don't ship the box!

EQ. There is a lot of confusion here. Some people think that digital EQ is digital EQ: all noiseless, flawless, with no phase shift. Not true.

Two popular digital EQ approaches are currently in use—infinite impulse response and finite impulse response. IIR is actually a model of conventional analog EQ and has all the phase shift, group delay error and ringing of conventional, physical, analog filters! It is used by the vast majority of manufacturers because it is simple and requires minimal computer power to implement.

FIR, on the other hand, is a very different approach that has absolutely *no* phase shift, group delay error or ringing at all. This is actually the type of thing that most people think of when they imagine how digital EQ works. It is almost never used today, however, because it requires massive computer power and speed to fly in real time, and few manufacturers today are capable of designing the kind of hardware necessary.

Whether you are using IIR or FIR, you had better have 32 bits of internal processing power and full 32-bit data paths if you plan to do any EQ (or any other DSP, such as reverb, for that matter). If you have any less than that, you stand a real chance of running out of digital headroom. As you ask for more—that is, more radical EQ, more or even more dense or complex reverb, more digital compression, etc.—you stand a higher chance of running out of digital headroom. Trust me, you do not want this to happen.

See? You thought that once you were in, once you had converted to bytes, you were safe. But you still have internal digital "headroom" limits, and there is even a need to digitally "gain stage" or "level optimize" before certain functions. If these factors are not carefully monitored and controlled, you must truncate (throw away data), clip (that endearing digital splat) or suffer loss of resolution (digital noise).

The moral of this story is that while digital offers dramatic improvements to our industry, it does *not* automatically solve all problems. It has its own set of potential problems, and you must be aware of them so that you can make sure the digital machines that you purchase in the future have been designed with the proper solutions included.

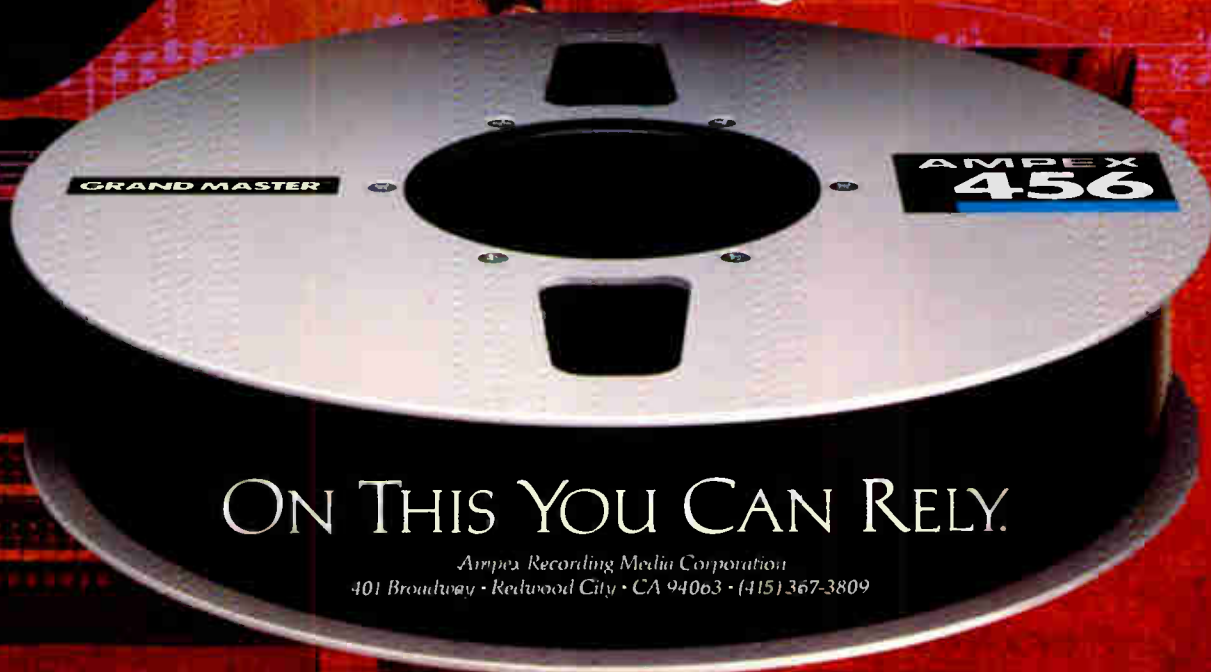
No matter how you feel about it, very, very soon it will be a totally digital industry. Lack of noise, media stability and DSP potential are only a few of the reasons this is inevitable. Sign up now for your future, but be sure that you are not trading in your old analog woes for new digital ones. When you do finally bite the bullet and go totally digital, maybe your bytes will end up on the charts with a bullet of their own. ■

Stephen St. Croix is a contributing editor whose clever bios for this space are occasionally censored by other editors.

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by Mel Lambert

CONSOLE ERGONOMICS

SMALL AND DIGITALLY CONTROLLED WILL BE BEAUTIFUL

As we begin to experience an accelerating emphasis on things digital for the studio, it's natural to re-examine the central role played by the recording or production console. Specifically, the ease with which it lets us control the myriad processing, routing and blending tasks asked of it. The science of console ergonomics is a thorny one. Aside from factors such as human anatomy (which dictate how far we can reach for the furthest controls or how high the control surface can be for optimum hand/eye coordination), with so much functionality now under the engineer's control, we must reas-

sess how the choices of action are presented to the engineer and how the resultant decisions are extracted via switch settings, fader moves, keyboard strokes and whatever.

Traditionally, an analog console is comprised of duplicate input/output modules, with a dedicated monitoring and communications section in the center, plus maybe automation controls with a CRT and keyboard. As multitrack technology enabled more creative decisions, most of which we refrain from making until it's time to remix those 24, 32 or 48 analog/digital tracks, the number of inputs and

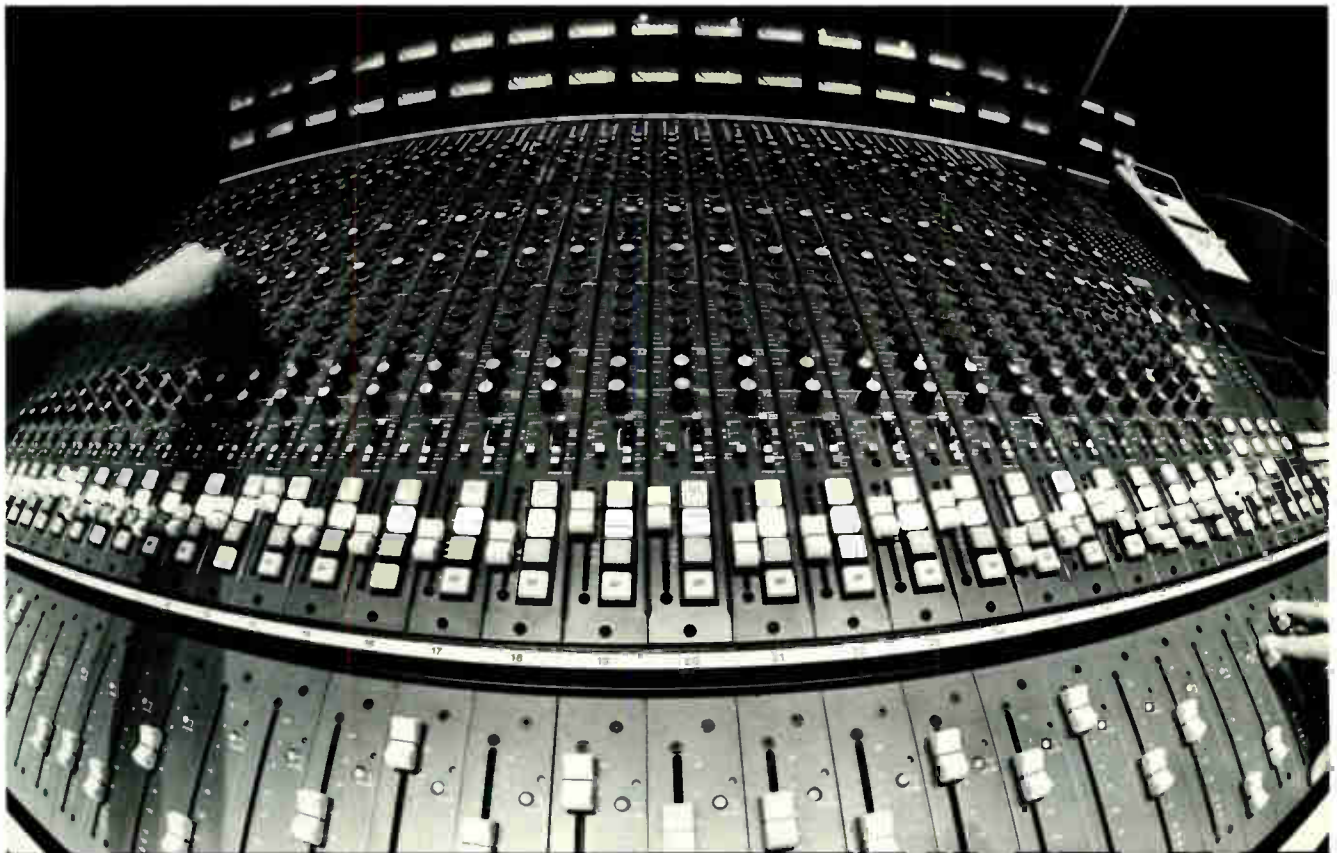


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outputs multiplied. Now we have analog boards as wide as 12 or 15 feet, with more pots, switches and faders than ever before. Automation and recall systems can help, to an extent, by allowing sections to be set up identically from date to date, but we have probably reached a limit in the number of analog controls that comfortably encompass us from our central mixing position.

And let's not forget that with few exceptions, the controls provided on a typical analog board alter just the signal's frequency content and relative/absolute levels. If we also want to effect complex dynamics changes, or alter the time-domain response with delay and reverb, the signals usually have to be off-loaded to a dedicated processor and returned from whence they came.

While we're on the subject, recording, broadcast and production engineers no longer content themselves with simply looking after audio events. Synchronizing sound to picture is a routine task in the majority of today's multimedia facilities, and keying in time code numbers, offsets, machine

configurations and even MIDI-controlled events is commonplace. The integration of these and other machine-control tasks—through dedicated time code-based synchronizers or, more reasonably, the console's auto-

More doesn't necessarily mean better

however, as we struggle to learn a new interrogation scheme for centralized signal routing.

mation system—makes an increasing amount of sense.

Of course, digitally controlled analog consoles allow more functionality to be packed into a smaller amount of

space, and throw in recall of every panel control. Linking that all-seeing automation computer through a synchronization system easily ties audio-to-video and even allows the triggering of external events through a parallel GPI or MIDI port. Add a multi-dialect serial interface that can communicate with tape machines and other RS-422-controllable devices, and we begin to see that additional demands are placed on both the operator and audio control surface.

With the introduction by year's end of an avalanche of digital workstations, the choice of how and where you can manipulate audio signals begins to become more than a touch complex. Early indicators of the types of VDU- and control surface-based ergonomics that these second- and third-generation systems will incorporate show that we're in for an interesting ride.

Let's pan back for a moment and consider the primary functions that an audio console should provide. In essence, we need to be able to select an input source, modify its frequency profile and route it to a multitrack or bus output, aux/cue sends and similar destinations, in addition to pro-

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4 Pots Too Many?

Quizzed at a press conference to introduce the new "Sweepable Frequency Dividing System," as the company calls it, BSS Managing Director Chas Brooke deflected all questions from the hysterical audio press with a terse prepared statement.

"There's been a lot of talk about this '4 POTS' thing," he announced to the buzzing throng, "but, typically, you are all missing the point.

"At BSS, we never OverDesign just to pile on the extra hardware," Brooke emphasized.

"In this case, we had to use 4 pots on each band of the FDS-310 because it was the *only* way to insure the precise 24 dB crossover slope at all frequencies for superior audio performance.

"We don't take these things for granted, even if our customers or competitors do. But they thank us in the end when they hear the difference OverDesign can make!"

OverDesign Pays Dividends

Having dispensed with the "controversy," Brooke went

on to point out a wealth of other OverDesign features that pay off in the superior performance of the FDS-310.

"Like our top-line, industry standard OverDesign FDS-360, our new economical FDS-310 variable crossover can be tailored to fit your needs," he gloated.

"The system uses a 24 dB/octave Linkwitz-Riley filter. The unit also has the built-in flexibility to be used in two-way stereo or three-way mono operation."

Chas also revealed that internal OverDesign features are, "money in the bank. Like CD Horn EQ, Mono Low Linking and, for

the Sub Bass, a special 'divide by 10' network allows a lower range of 18 Hz to 200 Hz.

"For greater user control, each frequency band has its own level control, a Polarity Reverse switch; Mute button; Signal Present LED and Peak Signal Warning LED. The rear panel features both 1/4" and balanced XLR connectors.

"The truly remarkable thing about the FDS-310 is its price," Brooke concluded. "Designed exclusively for the U.S. market, this is indeed a 'medium bucks' crossover that delivers anything but, 'medium sonic performance.'"



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viding some means of monitoring it at various points in the signal path. Traditionally, console designers simply duplicate a channel strip and provide simultaneous gain trim, EQ, aux sends, routing buttons and level control for each input. Connecting the monitor section across the bus outputs/multitrack sends allows the blending of new and previously recorded material for the monitor mix. Add an integrated solo system that provides fast access to individual inputs and groups, and we have the basis of a traditional analog board.

More doesn't necessarily mean better, however, as we struggle to reach additional remote console functions and learn a new interrogation scheme for centralized signal routing. The "bigger is better" philosophy also affects electronics designers who have to develop more complex grounding schemes to reduce crosstalk in some larger console topographies, along with dealing with automation data, tape-transport command logic and similar signals that all too easily make their way into the audio.

Digitally controlled or virtual con-

soles offer a more rational approach—the control surface can now be optimized for ergonomics rather than signal flow. In addition, we can reduce the number of duplicate control elements and replace them with centralized, assignable EQ, aux send, dynamics and routing sections. As long as the designers of such systems realize that for speed and accuracy we need a dedicated fader element per signal source (which can be live instruments during the basic tracking session, moving through live and recorded sources for the overdubs, and multitrack outputs during remix), then virtual analog consoles offer a realistic alternative to some of the larger, fixed-architecture designs currently gracing control rooms. (Check out the Trident Di-An, Harrison Series Ten, Novation International Alpha TDA, Euphonix Crescendo, Orion Research NewsMaker and other assignable designs for hands-on confirmation.)

Now, instead of reaching out and activating a switch or twisting a knob that's actually carrying the signal we want to turn off/on or adjust in EQ/level, that function can be brought to us through reassignment, while simple LED or LCD windows can provide

readouts of the signal source or destination. And if the local area network handling data exchange between the audio control chassis and the remappable control surface can also be interfaced with ESbus and/or emulate basic Sony P-2 and Ampex VPR-3 protocols, plug-in compatibility with serially controlled ATRs, VTRs and editing systems begins to open up even more creative possibilities.

Digital audio is going to coexist happily with analog for at least another decade. As we expect more from control consoles and their peripherals—and consider it extremely inefficient to load up the front panel with remote controllers for this, that and the other—system integration through assignable/virtual designs will become the wave of the immediate future. Digital will replace analog in the long term, but the types of topologies we're now seeing from the virtual console designers will bear a close resemblance to subsequent all-digital workstations.

As I have mentioned before in this column, production facilities equipped with properly implemented DAW designs, with their enhanced flexibility, sonic improvement and operator convenience, will be practically commonplace within two years. But good designs need to evolve through practical, hands-on experience in the field, with more than a passing consideration for the exacting demands of day-to-day life in the studio. To date, several innovative examples of state-of-the-workstation-art—including the AKG DSE-7000, AMS AudioFile, DAR SoundStation, IMS Dyaxis, Lexicon Opus, NED 3200/9600, Real Word Audio Tablet, SSL 01 and ScreenSound, Sonic Solutions Sonic System, Symetrix DPR-100 and WaveFrame AudioFrame—have started the ripple.

Just as long as we remember that these are high-power tools that must fit the user's hands and not demand that we perform mental and physical gymnastics to achieve the desired control task, we can all become more efficient at our jobs. ■

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

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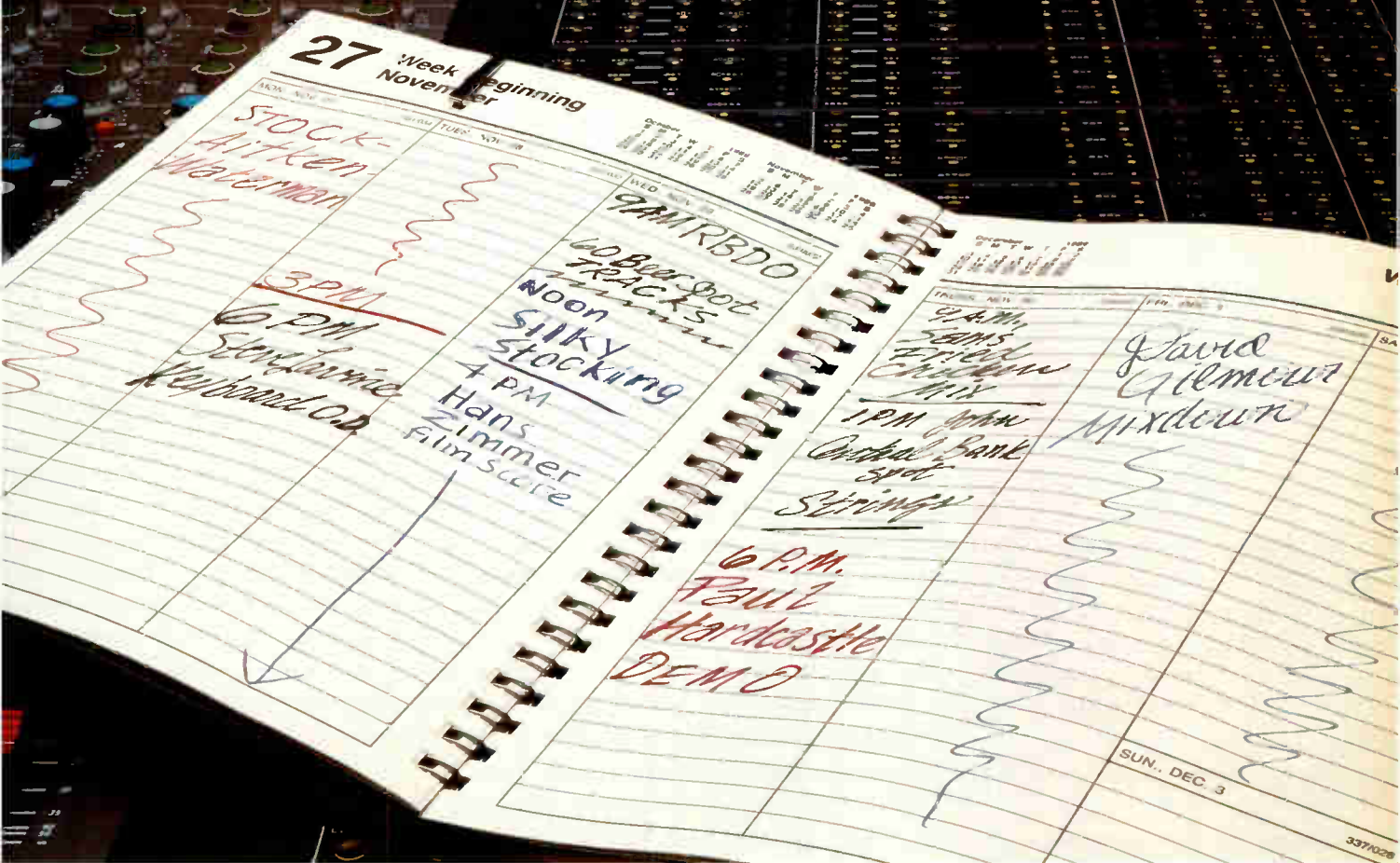
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As a tracking console, the AMR 24 consistently achieves superior results the *first time* — no re-recording required. With exceptionally low crosstalk and noise, and a total dynamic range of

100 dB, it is fully compatible with digital audio.

MIXDOWN

Configured for mixdown, the AMR 24 offers unrivaled flexibility. It handles all kinds of inputs — up to 84 of them in a standard format. Just push *one button* and the 24 Track Select switch changes the monitor returns to full-function line returns normalised to a second 24 track or to synchronized MIDI "virtual tracks." Simple switching creates an additional 24 inputs through the cue faders for effects returns.

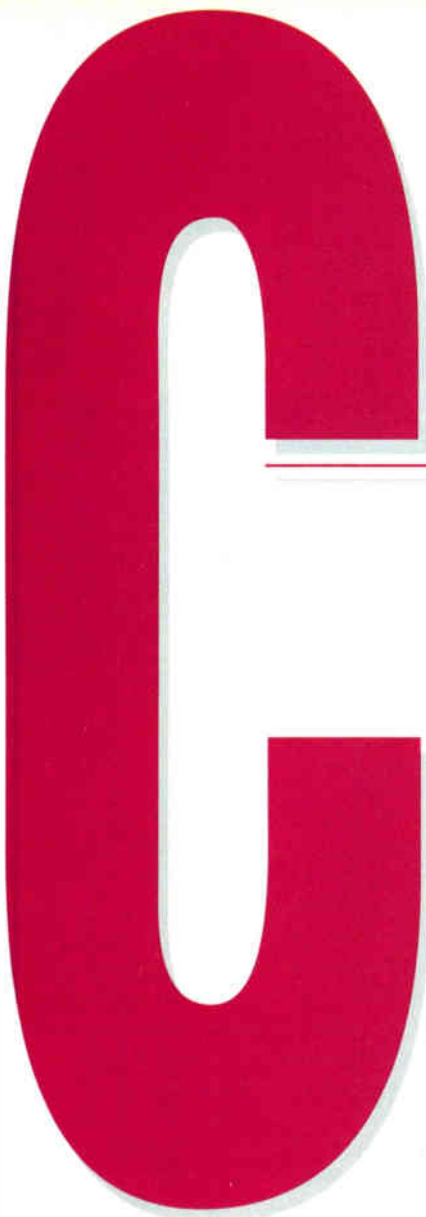
Up to 64 channels can be automated with a wide range of factory fitted systems available.

Of course, these DDA design innovations are complemented by the highest quality components and designs that *feel right*.

INVESTMENT

Studio owners know why the AMR 24's track record represents an impressive return on their creative and financial investment. If that news sounds interesting, write us on your letterhead for full information.

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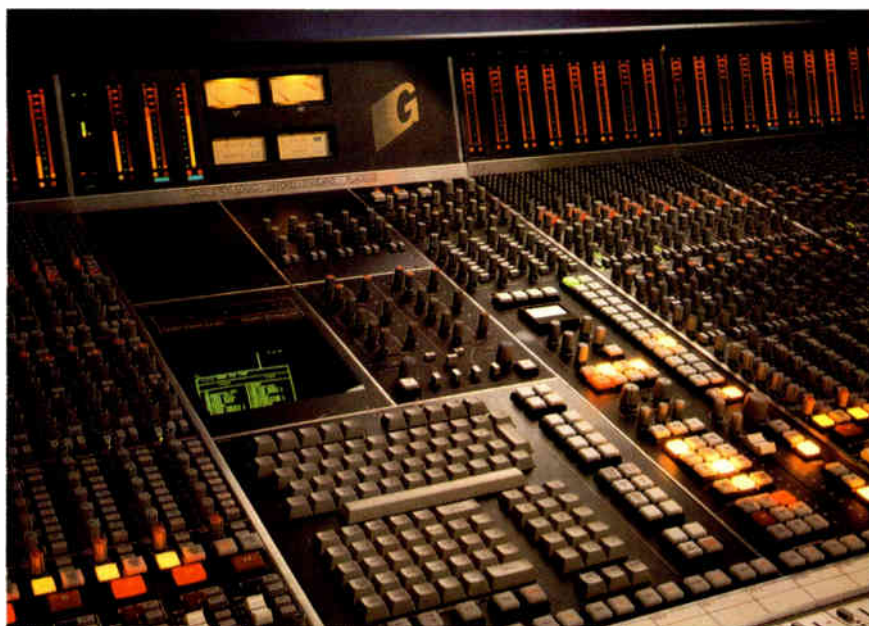


CONSOLE COMMENTS

Studios Tell Us Why They Buy a Recording Console

Without a doubt, the purchase of a mixing console is the single most important decision facing studio owners today: The myriad consoles available—representing an enormous variety of configurations, styles, design philosophies and price ranges—make the decision no easier.

We contacted a number of large and small facilities throughout the country that recently purchased consoles from different manufacturers, and inquired about the factors that influenced their decisions. Without further ado...



ALPHA STUDIOS

Burbank, California

With two audio studios, a CMX-equipped video edit suite and a shooting stage, Alpha Studios offers diversified production services ranging from industrials for IBM and NASA to record sessions for top artists such as Jermaine Jackson. Alpha recently upgraded its Studio A with Sony PCM-3324 and PCM-3402 digital recorders and a Calrec UA8000 console. According to Alpha's Gary Brandt:

"I was skeptical at first, but after getting that console in here and using it myself, I can say it's wonderful. We bought a 56-input UA8000: you can fold back the channels to the remix

BY GEORGE PETERSEN

The 72-input Neve VR at The Chicago Recording Company

(Photo facing page) SSL G Series Master Studio System

section, so you can double that to 112 inputs in remix. It's very much like an SSL in terms of its processing of channels and how the automation works. But the up side—and it's a big up side—is that it sounds so good. The VCAs sound great, too: punchy, musical and very bright.

"We measured the console when we brought it in, and on the monitor-in through remix it has a gain bandwidth product of 128 kHz—it's flat to 128 kHz! The UA8000 is a bells-and-whistles console with the capability of wide bandwidth and low noise at the same time. It gives the user the next generation of sound."

THE BAKERY

North Hollywood, California

This single-room, 24-track facility actually began as a home studio for Jon Baker, who outgrew that situation and formed a partnership five years ago with fellow engineer/producer Andy Waterman. The studio now handles projects ranging from jingles to records to TV shows. The duo recently upgraded to an Amek Mozart (the first delivered in the States) with 48 inputs and 12 stereo echo returns. However, the final decision of what board to buy proved difficult, says Waterman:



"In this town, a lot of your business can rise or fall depending on the name on your equipment. For example, if we put a Sony 3000 in here—which is approximately in the same price ballpark as the Amek we got—it would have been imbued with post-production thinking in L.A. If we had bought a vintage Neve, we'd have three echo sends and tri-band equalizers, which is not enough for the high-tech post projects we're involved with.

"We felt we needed an 'English' console. I have always been impressed with Amek consoles, and the people at Amek told us about the Mozart, a new console. It had a lot of the design features of Amek's APC Series, a third-party automation system and an off line computer to implement the automation. The Mozart combined this high-tech approach with the

equalizers and mic preamps we loved, so we decided on this console, sight unseen. It's brand new, but Amek is not a new company; they have a good reputation and we believe in them.

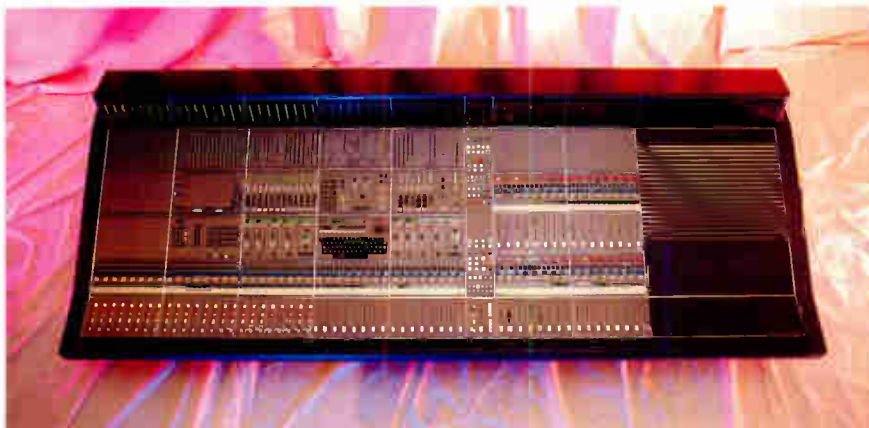
"For a medium-priced console, it has a lot of features. You can assign 16 sends—six on the in-line modules and eight on the input-only modules—so you almost can't run out of effects sends. And it has provisions for music-minus mixing, routing for 3-track and 4-track splits or to track simultaneously while taking a broadcast feed. All these things are shrewdly thought out, and you couldn't even get them in consoles at twice the price."

CHICAGO RECORDING COMPANY

Chicago, Illinois

This complex opened in 1975 with a single room and now offers 15 studios specializing in records, audio-for-video and post-production. Ten rooms are equipped for sync-to-picture; the facility also owns four AMS AudioFile workstations and a Mitsubishi digital 32-track. At press time, the studio had just taken delivery of a Neve VR Series console, fully loaded with 72 inputs and Flying Faders automation, for the totally remodeled Studio D. According to Hank Neuberger:

"All along, we've been impressed with the sonic qualities of the V Se-



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Soundcraft TS12 in-line console

ries. We thought it was the best-sounding console available, but we hesitated to buy it for two reasons: It didn't have any recall, and we never liked Neve, the previous automation system. However, the new Neve VR Series offers complete recall capability as well as Flying Faders, which we're excited about. Not only is it intuitive and sophisticated fader automation, but it's capable of EQ on/off, insert point on/off and small fader on/off, which elevates it above the popular SSL-style automation.

"We also have two new post-production studios with Sony MXP-3000s—both rooms also have AudioFiles and analog 24-tracks—and we're very happy with those consoles for that purpose. They have perfectly reliable automation and are quiet consoles. We also have an SSL room and some other big rooms that are popular.

"What's happened in the record business is that priorities have changed. The number of automated console inputs is the number one criterion for multitrack recording today, because artists and producers are doing double-24 and double-32 recording, or have a lot of MIDI gear running in sync with their tape system. And with all the signal processing that's required, it's astounding how quickly you require 72 inputs."

DIGITAL MULTIMEDIA & POST

Orlando, Florida

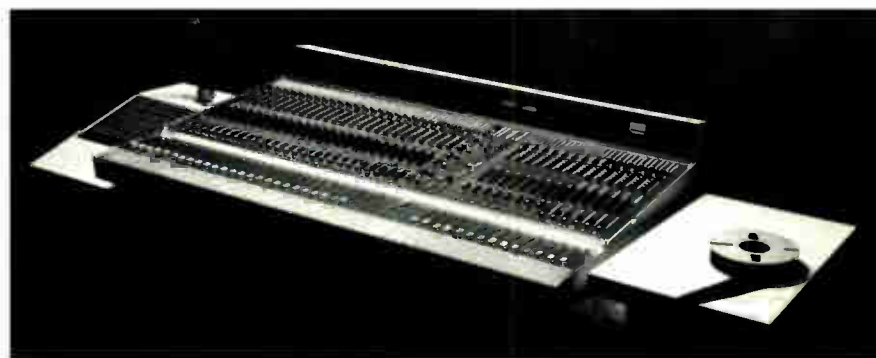
Located near the Universal and Disney complexes in bustling Orlando, this single-room facility has been on-

line for a scant seven months, yet has been busy with a variety of scoring, ADR, Foley and sound design projects, ranging from an ESPN special on breaking the land speed record to *Loot*, a PBS program about pre-Columbian grave robbers. The studio is equipped with a Neotek Elite console and the world's largest Synclavier and Direct-to-Disk™ system. According to owner Chris Coan:

"The Elite is really cool for film mixing, which takes a lot of inputs. We have 44 inputs—36 mono and eight stereo—and we can tap line and mic inputs at the same time with the extra faders, so we can have up to 88 inputs. Our Synclavier is arranged so 216 sequence tracks feed each of the 16 Direct-to-Disk tracks; that gives us a total of 3,456 tracks!

"I can't spend \$500,000 on a Neve, but I can spend \$100,000 or \$150,000 on a full-blown Neotek. I like the *sound* of the Elite; economically it was feasible and ergonomically it *works*. I like the creativity of the dual-

Neotek 340 Elite console



channel configuration: having 88 inputs from a board you don't have to roller-skate across to control. Using the Synclavier's automation aspects, one person can do it all. I like that."

DV PRODUCTIONS

Shorewood, Wisconsin

Just outside of Milwaukee is DV Productions, the private studio retreat of engineer/producer David Vartanian, perhaps best known for his association with Narada Records. Not one to be typecast, he also completed projects recently with the Violent Femmes and Jerry Harrison of Talking Heads. The 7-year-old facility has installed a 56-input Sony MXP-3056, the first to be delivered in the U.S., according to Vartanian:

"I'm now doing my first project on the board, and I'm just floored by what's coming back. It's unbelievable—I've never heard anything like this before. Nothing else comes close for the money, and sound was my ultimate criterion. One of my other considerations was getting a board large enough for 48 tracks—nowadays, they get eaten up fast, and 24 isn't enough. Since I rarely have anybody working here except myself, I didn't need to purchase a board that everybody else is 'used to' working on.

"I also felt it was important to have a good relationship with the company, and with Sony, I felt I'd get good customer support and backing. They've gone out of their way to make me happy. I like the EQs and the automation, but I was most impressed with the way the board was put together; if you pull a circuit board, you'll see that everything uses the finest components."

EASTSIDE SOUND

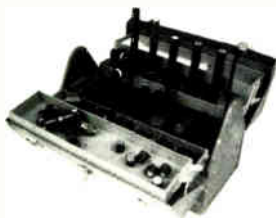
New York City

Founded in 1972, this 24-track studio (with MIDI room) caters to a variety of clients, from corporate and indus-

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trial projects to jazz albums and dance music. The facility has ordered a 32-input Harrison Series Ten console (64 inputs in stereo configuration), slated for installation last month, says president Lou Holtzman:

"The reason I bought the Series Ten was for its *total* automation, not pictures on a screen or pseudo-automation. It automates EQ, sends, headphones and everything. I've been a Macintosh maniac since the [Mac model] 128 days, and I love the board now that it can talk to a Mac. The Series Ten was slower to boot and load up with the DOS-based version. Dave Harrison made the commitment to do

a Mac version a year-and-a-half ago, and the guys at Harrison have been writing a lot of creative stuff: playlist editing from snapshots, the ability to snapshot mixes and merge. The ability to do things like that from a Macintosh interface is one of the reasons we decided on the Series Ten.

"I've always liked Harrison equipment—it *sounds* great. I like the fact that it is digital control of analog equipment, and I like the automation. A client can walk in here and have all the parameters back within two seconds; it makes life a lot easier for the engineer and client."

— CONTINUED ON NEXT PAGE

JOHN WORAM'S BASICS

THE IN-LINE CONSOLE

In redesigning the recording console to better meet the demands of contemporary multitrack recording, the in-line console was introduced in the early '70s by MCI (subsequently purchased by and absorbed into Sony Corp.). As the term suggests, the "in-line console" places all input, output and monitor controls for a single audio channel within a single, in-line console module.

Not all functions lend themselves to placement in the same module. For example, there must be a convenient, single location for certain master controls, for communication with the studio, and for the adjustment of control room and studio monitoring levels, etc. Accordingly, the in-line console usually contains the following types of modules:

MODULE I/O (input/output)

echo
communications

monitor

auxiliary

INCLUDES CONTROLS FOR
level, equalization, dynamics, monitoring for a single input and output line; for example, microphone line 12 and tape recorder track 12

master echo sends and returns
talkback to the studio, tape slating, signal generator

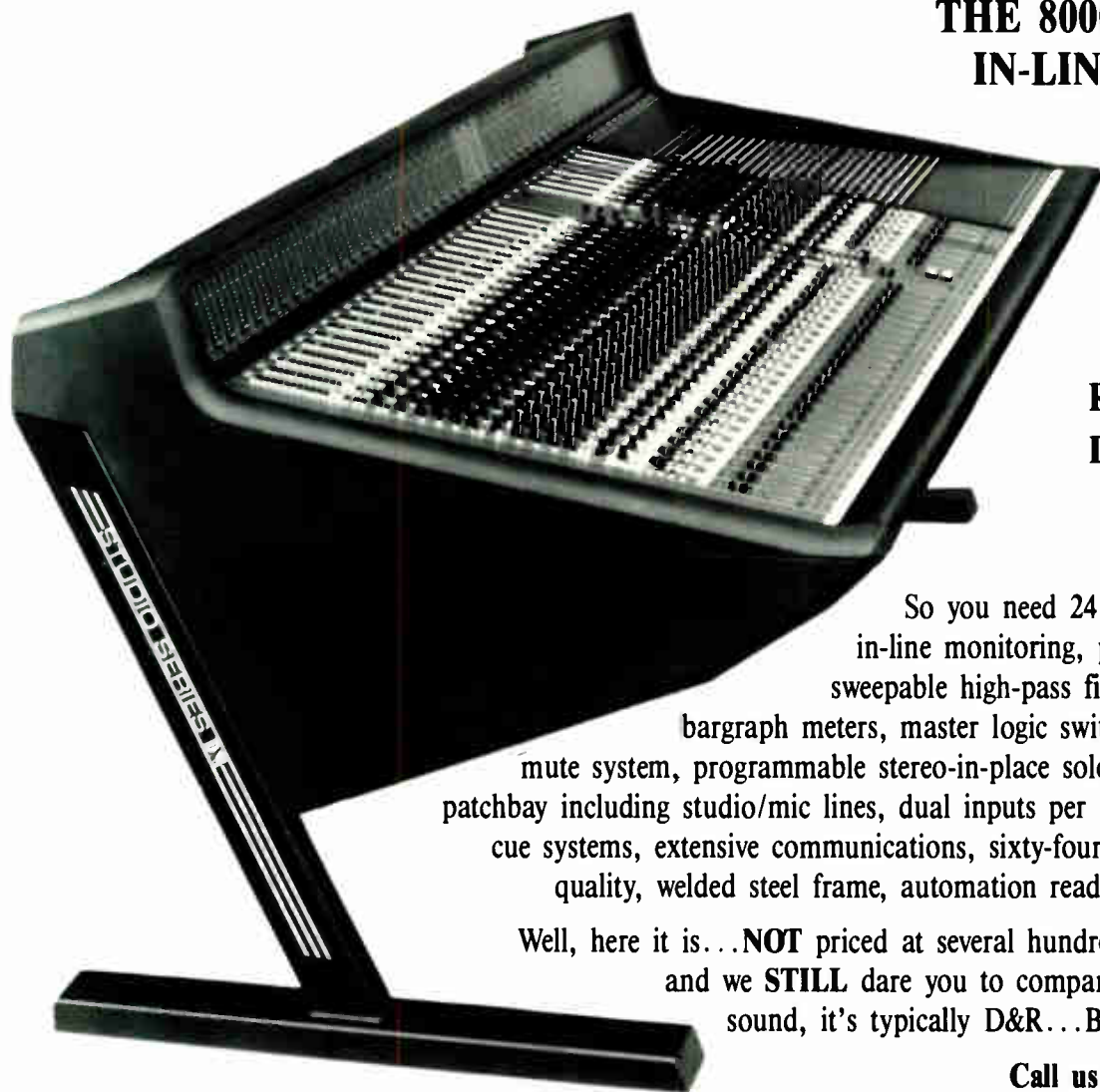
master fader, studio and control room monitor levels, speaker selection

various accessory functions, group faders, user options, computer controls, controls for an additional input not associated with a dedicated output line (e.g., a 25th microphone line on a 24-track console)

The console must have at least as many I/O modules as there are tracks on the control room multitrack recorder. As more modules are installed, the input and output capacities increase simultaneously (up to a point, beyond which the output capacity remains fixed).

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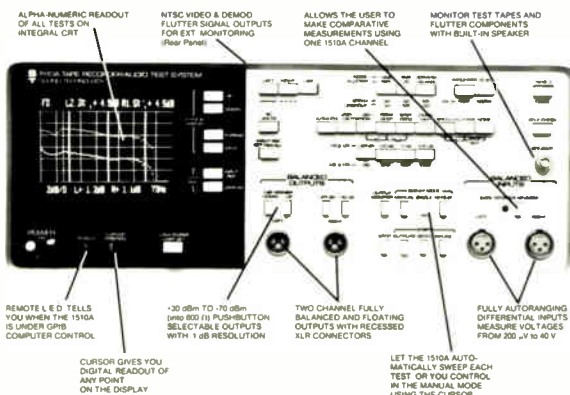
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FOURTH CREATION

Conroe, Texas

Founded eight years ago, this 24-track facility is located about 30 minutes north of Houston and specializes in gospel album production. The studio recently upgraded with a large-frame D&R Dayner Series console, according to Carey Wise:

"There are a lot of good boards on the market, but the Dayner is very flexible and has great sound quality for the price. Some bells and whistles have been left off to keep the price within the \$25,000 to \$35,000 bracket, but the electronics and sound quality are superb. It has a floating subgroup system and the ability to expand to 32 or 48 tracks, without having to parallel outputs or do a lot of patching. It's real flexible—that's what sold me.

"I had to do some recordings of children singing—where the board has to be cranked wide open. I thought I could cut back on the noise by using a better preamp, so I ordered a well-respected, high-end mic preamp. I was shocked at how good the Dayner sounded when I A/B-compared the two. The signal-to-noise ratio is really good."

SKIP HOLMAN SOUND & DESIGN

Katy, Texas

Like many other facilities, this composer/engineer/producer's project studio started off modestly nine years ago, but has developed into a thriving business with a steady mix of audio/visual, audio-for-video and music assignments. To augment its extensive MIDI complement (including an Emulator III), the facility has made the transition to 24 tracks, having added a Tascam ATR-80/24 multitrack and Tascam M-600 Series modular console, reports owner Skip Holman:

"In this day of MIDI, audio-for-film/video, audio effects and sound design, the maximum number of inputs has become one of the key factors in selecting a console. After an extensive comparison, I went for the most bang for the buck, with a Tascam M-600. Ours is set up with 32 mono modules, which allows 32 inputs and 32 monitors—in effect 64 inputs to mix, with eight effects sends. The work expands to meet the number of tracks you have available. I like the fact that I can buy a basic unit to get started, then add modules as I need them.

"In the larger studios, many manufacturer names or certain pieces of



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Tascam M-600 console

equipment become buzzwords, like the trendy hot-manufacturer-of-the-month club. That's why a lot of studios get in trouble and go under; that name game is not part of my operation."

HORIZON STUDIOS

Wilton, Connecticut

Built in 1978 by architect John Storyk for Kiss guitarist Ace Frehley, this facility was rebuilt last year as a residential-resort recording facility. Recent sessions include Mike Chapman

producing The Tami Show, keyboard legend Sly Stone and European recording artist Rory Block. For the renewed control room, an Allen & Heath Sigma (44x24) console was selected by co-owner Vic Steffens:

"My feeling about consoles is that there are Neves and SSLs—in terms of market value—and pretty much everything else, because I don't think any other consoles would do anything for me in that regard. I was interested in finding a good-sounding console that was easy to service, and I wanted a

good working relationship with the company. For instance, the console has a MIDI implementation on the muting; I use that a lot, and they've rewritten some of the codes based on my suggestions.

"The bottom line is that the Sigma is a very good-sounding console, and it offers a lot of flexibility in a small space. Since it's an in-line console, you can source 90 different things from 44 inputs—all with microprocessor-controlled muting. It's not a particularly well-known console, so I get a bit of client skepticism, but the people who use it have reacted very positively. We have some Focusrite gear, and that gives engineers a chance to A/B it. The Sigma doesn't sound 100 percent as good as the Focusrite, but most of the people who've used it feel it's in the ballpark."

LIGHTHOUSE RECORDERS

North Hollywood, California

Specializing in record tracking and mixing dates, this studio has hosted a wide variety of top artists over the years, ranging from Lionel Richie to Billy Idol, and Barbra Streisand to the *St. Elmo's Fire* soundtrack and Chica-

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go's Grammy-winning *Chicago 17* LP. Last year, studio owner Eduardo Fayad became involved with Studer on the design of the 62-input 905A console—featuring 88 inputs in remix, ten aux sends and GML moving fader automation—and took delivery of this first large Studer board to be installed in the U.S., according to engineer/studio traffic manager Kevin Becka:

"Buying the console was a big risk, because we had all our equipment paid off at one point. Eduardo took the chance because he wanted to turn this into a mix room—we still do a lot of tracking, but this is becoming a popular place to mix. A lot of the best engineers in town have been working here, and the Studer is becoming the preferred console. It's real clean, yet doesn't have a lot of bells and whistles. It's a straightforward board and everybody loves it.

"The gamble has paid off. It was an expensive proposition, especially since the price of studio time hasn't changed much in the past 15 years. We also have two new Studer A820 24-tracks with Dolby SR and can mix to 1/2-inch Studer 2-track with SR or Mitsubishi X-80 digital. We're concentrating on the clean analog sound,



The Soundtracs ERIC console at Lion & Fox Recording, Washington, D.C.

rather than the Mitsubishi or Sony digital multitrack, which is a popular way to go these days. Sometimes, it pays to be different."

LION & FOX RECORDING

Washington, D.C.

While the studio's name might sound like it came from Aesop's Fables, this

facility was formed by partners Jim Fox and Harold Lion in 1979 and now offers four rooms. With a constant stream of video sweetening, industrial and record projects—including steady bookings from reggae client Ras Records—Lion & Fox has just completed the renovation of Studio A with a Soundtracs Eric console, notes Jim Fox:

control and a new reverb algorithm that lets you design your own three-dimensional space. All controllable from its own optional dedicated remote.

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MOZART

BY AMEK



MOZART by AMEK is a significant step forward for console technology. No other combination of first-class audio signal paths and integrated computer control exists elsewhere, and in such an irresistible price category.

In the past few years the studio environment has become very complex. Not only more tracks, but the introduction of retriggered synths and the use of large amounts of effects has created a need for a console which far exceeds the capabilities of conventional mid-80's products.

MOZART's SUPERTRUE automation system allows real-time and off-line control not only of faders and mutes but of numerous switches per input module. Auxiliary sends, Eq, Insert and other functions can be switched in and out as the mix proceeds; or complex switching operations can be set up and triggered by SMPTE from

the Event Sheet. Some of the other events include a complete MIDI-triggering system and a facility for loading user-definable fades between two timecode points, however long or short. The advanced Mix Editor system includes Merge and Splice functions.

MOZART has 32 output busses and up to 16 auxiliary busses according to the choice of input module. All busses are balanced. The console has 12 stereo effects returns and frames are available for 40, 56 or 80 inputs. Equalization and sonic performance are to the standard set by AMEK.

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"We had a couple of basic needs: more sends—the Eric has eight—and more inputs. We bought a 40-input/24-subgroup console, which gives us 64 channels in mixdown. Feature-wise, the subgroups are identical to the inputs—as far as EQ and sends—so you have full channel operation in remix. The monitoring system is incredible. I've never seen one that's so easy to use and so versatile, with the ability to monitor *any* section of the board. It's a beautiful arrangement.

"I wasn't really shopping for a routing system like this, but I love it. The mic/line inputs, muting and channel assign are microprocessor-controlled, and you can store 99 snapshots of your routings in the microprocessor. It's the same with mutings: all the subgroups are soft-key mutable. You can preset your muting, routing, monitoring and input system, store them in banks and recall them—even within a song. It's a great system."

LOGOS PRODUCTIONS

Clayton, Ohio

Just outside the city of Dayton, and located within a 2,500-seat church complex, Logos provides 16- and 24-track production for the ministry as well as outside clients, handling advertising and audio/visual work. Their frequent combination of an extensive MIDI setup with multitrack playback required a larger console, and the facility eventually chose a 32-input Soundcraft TS 12 in a 36-mainframe chassis, according to chief engineer/producer Steve Mathews:

"We spent a lot of time looking for an affordable console. We went through a lot of other boards, and this is the console that always came out on top. We had to spend a little more to get it, but it was worth it. It's so much nicer than anything else in its price range. It's an in-line board, so you can double the number of inputs; it's flexible, clean and quiet.

"One thing I like is the fact that it has six auxiliaries, but you can actually access up to ten—it really works! Everybody who's used the board has liked it. It's very transparent—what you put down on tape is what you get—and really sounds natural."

MAGNETIC MEDIA PRODUCTIONS/STUDIO M

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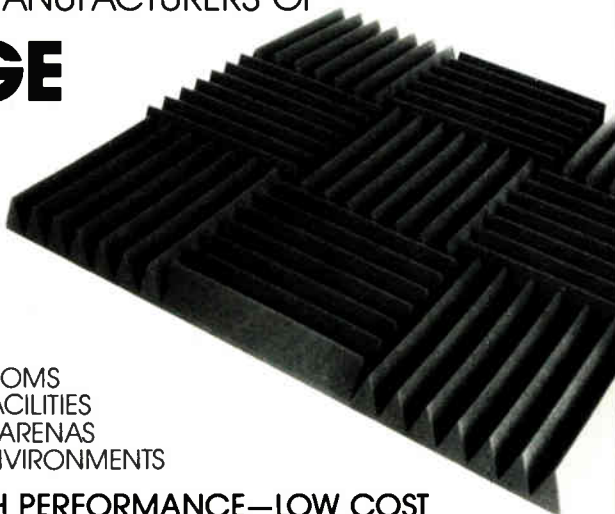
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ucator whose credits include teaching at the Sundance Institute, recording and mixing *Wild Horses of America* for PBS Nature, and winning an Emmy Award for mixing the TV series *Ning Yeh and the Art of Chinese Brush Painting*. An ever-increasing workload has necessitated the acquisition of new gear, such as an Adams-Smith Zeta-3 synchronizer, E-mu Emulator III, Digidesign *Sound Tools* and an Aries Apollo 32x8x16 console with MegaMix automation. Owner Masla reports:

"The Apollo was an upgrade from a 24x8 Aries console I had. I was impressed with how my direct-to-digital mixes held up when played in larger studios with much more expensive consoles. I think the Apollo is as good as anything that's five times its price.

"I was looking for a board with direct insert points for my outboard automation and as many *quiet* effects sends as I could get. As an extensive MIDI studio, I was also looking for quiet and musical equalization, because when you're mixing 32 channels of synthesizers and 16 channels of tape to digital, every dB of noise counts."

MESSINA MUSIC

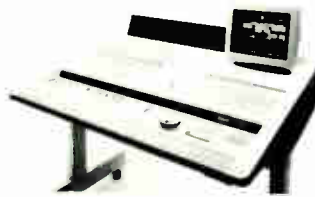
New York City

While perhaps best known as a top jingle company whose client roster includes K-Mart, Ivory Soap, Clorox and nearly every automobile manufacturer, this facility is also geared for 48-track rock production. Messina has ordered one of the first API 4848 consoles, delivered right after last month's New York AES show. The Fixx are slated to begin mixing their next LP on the board sometime this month, according to Messina's spokesman Geoff Daking:

"We're putting together a world-class mixing facility, with 48 tracks and an API console with GML automation. It's sort of the antithesis of SSL—short signal path, all-discrete, moving faders, no VCAs. It's not geared for audiophile jazz records or anything like that—this will be the audiophile rock'n'roll studio.

"I was sold on API in 1969, when I saw serial #1 on the AES show floor. Paul Wolfe [the current owner of API] keeps the tradition of: 'If it works fine, don't mess with it.' Other manufacturers have gone with integrated circuits and transformerless designs, and I'm always suspicious of companies that remove a \$50 transformer, replace it

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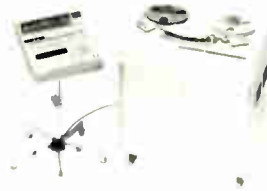


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with a 50-cent IC, and then call that 'progress.' APIs have a wonderful sound quality to them and don't pander to those alleged 'improvements.' This first-rate audio, wrapped up in a console with GML automation, will be a wonderful combination."

THE PLANT

Sausalito, California

Big things have been happening in this four-studio complex located in a waterside community just north of San Francisco. The Plant has completed major renovations of three rooms, with a 64-input SSL G Series fitted into Studio A, and the creation of a dedicated jingle facility and a Synclavier/Direct-to-Disk suite. The latter two were equipped with DDA AMR-24 consoles, according to producer/co-owner Arne Frager:

"The DDA console is the best value in terms of number of inputs and sound quality for the dollar. It may not be automated, but for doing things that are relevant to the 1990s—such as tracking electronic music with lots of synths and digital audio quality—I haven't seen anything that's competitive with it. We bought one for our Synclavier room—we're running the Synclavier outputs, the Direct-to-Disk outputs and other synths—and the AMR lived up to its advertisements as being super quiet and up to the requirements of digital audio.

"We also have an old Trident for people who want that sound—Jim Gaines and Carlos Santana are working in there now—and we have an SSL and have used that on Whitney Houston's album. We just bought another AMR-24 for Boomtown, our room for radio and television commercial production—a great application for the console. [Veteran engineer] Fred Catero works in Boomtown every day; he's got great ears and he told me it was the best-sounding console he's ever worked on."

POWER STATION

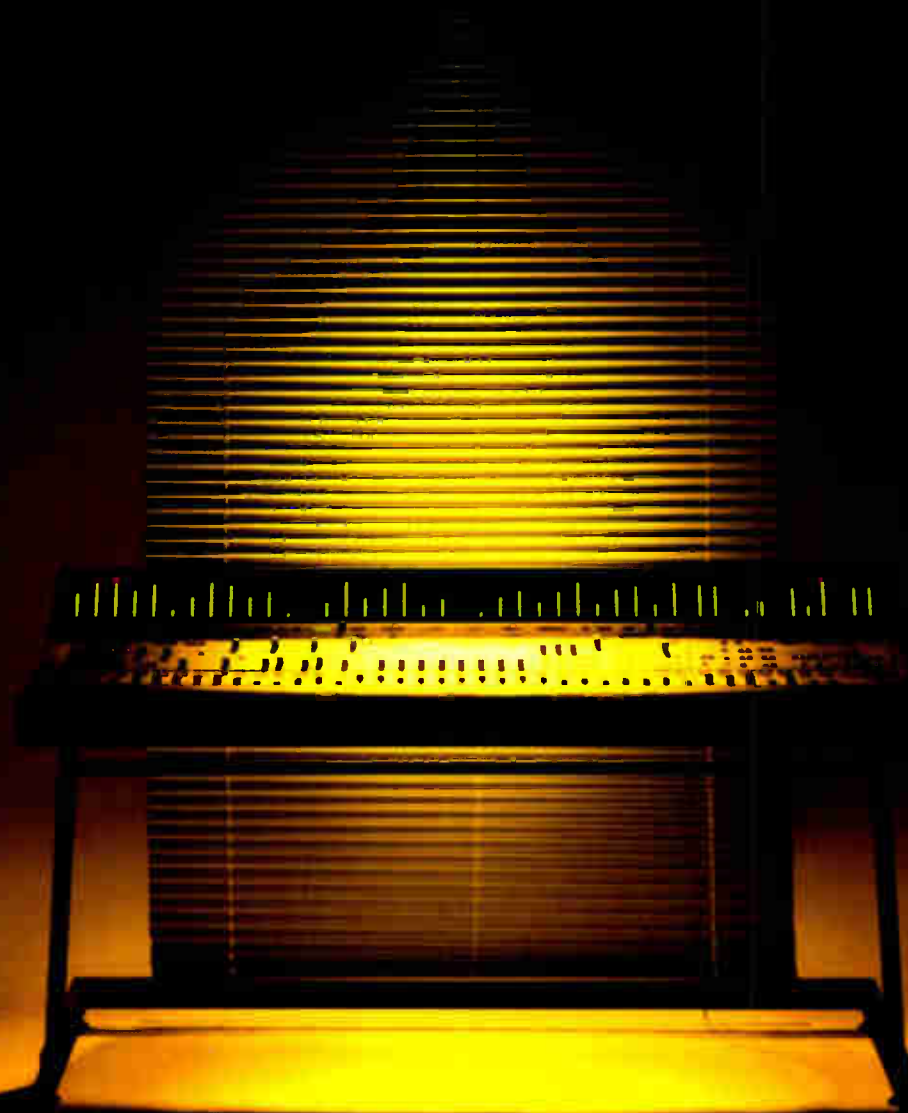
New York City

Unless you've been stranded on a desert island for years, the name Power Station should sound familiar, having become somewhat synonymous with chart-topping records by dozens of top artists. In fact, the facility has accomplished the unprecedented feat of being a three-time TEC Award winner as "Recording Studio of the Year," as selected by the readers of this magazine. Recently, the com-

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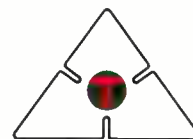
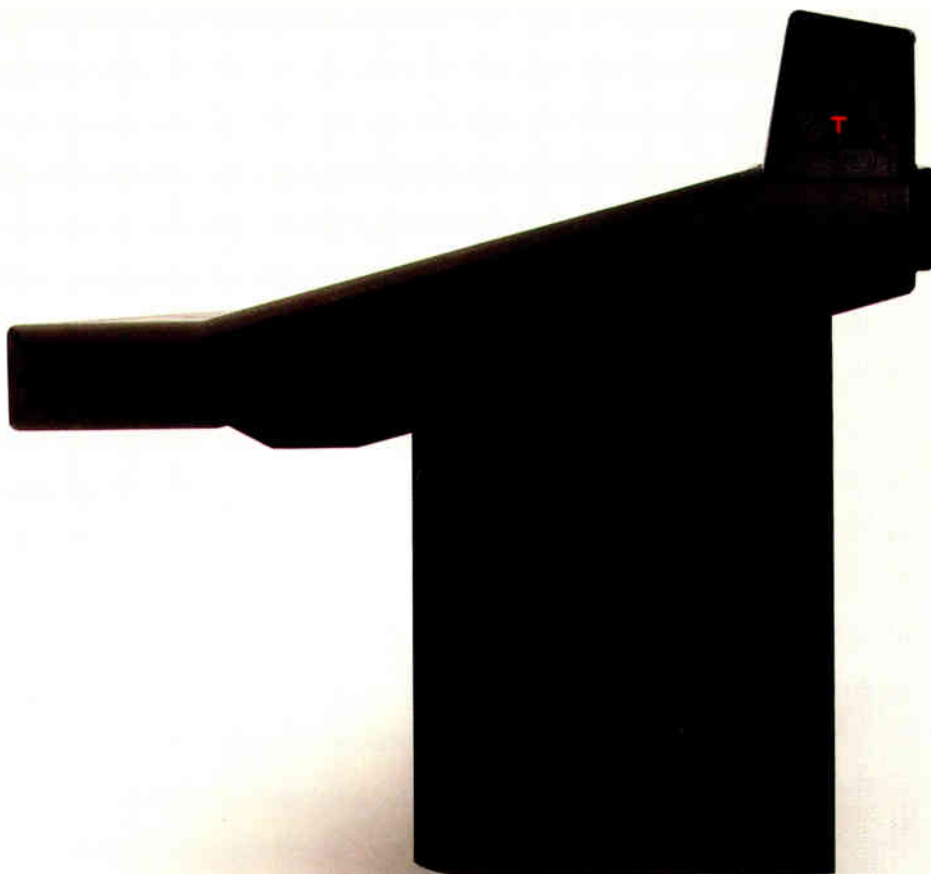
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TRIDENT

plex began construction of a new, large control room, equipped with a 72-input Solid State Logic G Series console, according to chief engineer Ed Evans:

"SSL is obviously a proven name in the business—it's almost a standard—and the new G Series is even better than the older E Series, with improved equalization, mic preamps, etc. Quality-wise, there aren't too many other consoles that come close to that.

"The automation, bus routing and master functions of the G Series console is the same [as the E Series]. It makes sense to be fluent on all the consoles, so its compatibility with a lot of other people's *modus operandi* is obviously a drawing card. Since we are going to be sharing a lot of work back and forth between our other two SSL rooms, the G Series console made a lot of sense for us."

—CONTINUED ON NEXT PAGE

THE FOCUSRITE CONSOLE COMES TO ELECTRIC LADY

The Focusrite Recording Console was designed by Rupert Neve after his Focusrite EQ modules became an industry success. Several major studios requested that Neve design a new superdesk for their biggest clients, but not one that would be common or become obsolete after a few years.

The console at Electric Lady Studios in New York [featured on the *Mix* cover, October 1989] is the result of these requests. It was completed in May of this year and is the second to be built (Master-Rock Studios in London has the first). The Electric Lady console has 64 modules, 32 groups, four stereo mix buses, 16 effects sends and six stereo effects returns. It is the showcase of an entirely redesigned George Augspurger room.

Based on his purist audio design approach, Rupert Neve has achieved noticeable improvements in all aspects of console performance. Some of these resulted from radical new designs in balanced input amps and ultra-low distortion VCAs, along with high-performance relays, drivers and output caps. For example, instead of FETs, the best-quality 5534s, 5532s and discrete output devices seem to be the design rule in audio pathways.

High-tech features, however, are only desirable as long as they are usable. Routing options are getting more complex on large consoles and often can be confusing. The Focusrite follows the Solid State Logic system of master status with record, mix/record and mix, because it is a good system and is familiar to most engineers today.

Focusrite took the approach of using LEDs to clearly indicate each function; in fact, there are about 170 of them on each channel.

The dynamics section uses the same circuits as the Focusrite ISA 130, but two VCAs are used, one for the compressor and one for the gate. Thus, they can be used in any order, or in separate paths. The expander/gate is another descendant of the ISA 130. The console EQ is comprised of four independent sections that can be used in four different paths. For example, the mid-high equalizer could be used in the channel or monitor, or side-chained in the expander or compressor paths. There are 12 aux sends, which with the two stereo cues add up to 16 effects sends. If that isn't enough, there are 32 with the small fader.

A computerized recall system wouldn't make the desk sound better, but would save some time. Perhaps this may be available as an option on future versions. Meanwhile, Electric Lady has developed a system of using a video camera with a macro lens to record console settings. The on-camera mic is used for verbal notes on the session, and playback on a VCR with freeze-frame and remote control completes the system.

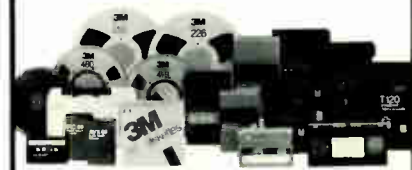
The only real disappointment is that at this time there are only two desks—one in the USA and one in the UK—and that makes it difficult to get in a session. But once you get the opportunity to try one, the learning process is fairly simple. The console and the automation are a powerful combination. They are expensive, but if the project or client is after the best-quality sound, they are certainly worth it.

—Craig "Hutch" Hutchinson

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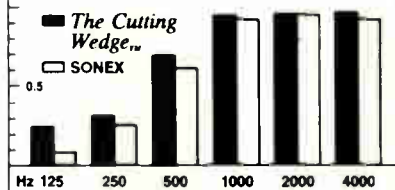
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THE RIVER

Fort Erie, Canada

Rising up from what was once a neglected jewel of an art deco movie palace is this album- and jingle-oriented studio located on the Canadian side of the Niagara River, just 20 minutes from Buffalo, N.Y. The complex has one 24-track studio, a MIDI room and another studio under construction. Recent sessions have included Helix, Sire and Blue Rodeo, as well as jingles for Empire Bank of America, Freezer Queen and Foster Grant. A 40x32 Trident Di-An console with Digital Creations moving faders has been ordered and should be online sometime next month, says co-owner John Adamo:

"I chose the Trident Di-An over any other console because it's the interim stage before a viable—that is, commercially viable for studios of our size—digital desk becomes available. Since the Di-An's computer aspects are upgradable through software, it will serve us well over the next several years. Besides that, I've loved the Trident EQ for years. I had my first introduction to Trident in the early '70s: I had a little 12-channel board for my in-house work and I fell in love with it.

"We feel that this was the right move for us to make, and it will serve us well over the next several years because of its update-ability."


SUPER DUPE

New York City

This company began 20 years ago as a tape duplication facility catering to the advertising industry, and grew into a complex with six 24-track studios designed for video sweetening and mixing. Super Dupe owns Sony, Neve and two Harrison consoles, and recently purchased its second Sound Workshop console, according to spokesman Tory Brainard:

"We bought an automated Sound Workshop 34C, used for video sweetening, radio and television commercials and shows. We were looking for simplicity of use, sonic excellence and minimal maintenance. We can't afford downtime: we have sessions booked from 9 in the morning to 6 or 7 at night—four or five sessions in that period of time, with no space in between—so if you have 15 minutes of downtime at the beginning of the day, you're in *bad* trouble. We needed reliability, and we were so pleased with

— CONTINUED ON PAGE 150, MI UPDATE



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NEW

TECHNOLOGIES

CHICAGO STUDIO OWNERS TALK TURKEY



PHOTO: PAUL POTYEN

Panel members Terry Fryer, Reid Hyams, Hank Neuberger, moderator David Schwartz, Jimmy Dolan and Murray Allen.

Those of you who operate a recording or production facility know that the technology you need to be aware of—and (perhaps) invest in—is staggering as far as cost and technical demands are concerned. To open a studio today you almost need to be a computer programmer, business wizard and marketing miracle worker to keep your studio afloat.

A few months back, SPARS and *Mix* co-sponsored a panel discussion in which Chicago-based industry luminaries shared their knowledge with other studio owners and operators. This article presents a brief excerpt of that discussion.

edited & compiled
by Linda Jacobson

The panel:

Murray Allen—president of Universal Recording, sound designer for the Grammy Awards telecast, musician (with Glenn Miller, Stevie Wonder, Frank Sinatra and more), and engineer (Steve Winwood, Quincy Jones, etc.).

Jimmy Dolan—president of Streeterville, engineer and producer (Chicago, Muddy Waters, Willie Dixon, etc.).

Terry Fryer—songwriter, veteran of more than 6,000 recording sessions, president of the always-hot music production company Terry Fryer Music, and president of a MIDI-related venture called Earworks.

Reid Hyams—president and co-founder of Chicago Trax Recording, faculty member of Columbia College (teaches record production and studio management), president and co-founder of the music production house Music Chicago Inc.

Hank Neuberger—Grammy-winning producer, operations manager of Chicago Recording Company, a 15-studio complex, and engineer (John Prine, Ramsey Lewis, many more).

Panel moderator David Schwartz (*Mix* editor-in-chief) introduced the precept: The operation or develop-

—CONTINUED ON PAGE 63

NEW

ALTERNATIVES

We called ten facilities in the North Central U.S. to query them on recent purchases, methods of payment and their philosophies of major equipment investment. A total of four tape machines, six consoles, one high-end synth/sampling system, two audio-for-video/film systems and two console automation systems were shipped to these facilities recently (and a couple of all-new studios were built). Cold cash sealed the transaction for five studio

This all-new Minneapolis facility officially "opened" in September (after working on Janet Jackson's latest), but you can't book time here; Flyte Tyme Productions is the private domain of producers Terry Lewis and Jimmy Jam.

operators; one business opted to lease new gear; two took out commercial bank loans or took advantage of their bank credit line;

and two would rather not say how they pay. You'll find the details sprinkled throughout these pages.

Flyte Tyme, Minneapolis area.
Last major purchase: New Westlake-designed facility with Otari MTR-90II tape machines and Harrison Series Ten console.

Financing: "I can't answer that — ask Terry Lewis or Jimmy Jam, who are the owners. But I don't think they would want to answer that type of question.

"We have four rooms, all for our own productions. We're not a public studio. We're just a production facility for Flyte Tyme Productions. When we bought the new equipment, our philosophy was to continue with the same product lines we

had at the original studio [Otari and Harrison]. [When considering new purchases], we bang our heads together, myself and our maintenance engineer Brad Yost, and with Jimmy and Terry if they hear about something they want.

"I also call my engineer friends in L.A., because sometimes you're a little isolated out here from the mainstream of technology, and you can't get *everything* out of *Mix* magazine. You need to make a few calls and see what people are using, and if new things are happening, then we get one up here and try it out, see if we like it. At this point, we don't have to please anybody but ourselves."

—Steve Hodge

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World Radio History

ment of a studio is equipment- and construction-intensive. "Nearly every studio owner has ongoing construction, whether they're adding a room, modifying or expanding an existing room, or trying to find ways to finance their operation and ascend to higher levels." With this in mind, he asked the panel to address the question: How does your studio find a balance between what you'd like your studio to become and what resources you have to get it there?

Murray Allen: Our business, like any business, is always in a state of flux. Whatever you did last year, you can be sure you'll do differently this year, and even more differently next year. Musical styles change, and how studios approach them changes.

Sometimes we try to jump the gun

and guess where it's going to go. Sometimes we're forced into change because it's what our clients want. Somewhere in the middle is what we do most of the time. As they say, the first one to go broke is the pioneer. So we watch what happens in New York, L.A. and even London, and at our competitors. Once you start seeing the movement, you put your own twist on it.

How do you pay for it? Hopefully, in business you're always trying to save some money, just like in your personal life. Money is actually put away toward purchases for further development. If you're going into high technology, you know you're getting into some expensive ideas. So rather than buying the next upgrade in analog, maybe back off for six months and put that money away to

Big Dog Productions, Wichita, Kansas.

Last major purchase: Soundstage was turned into a nightclub with live P.A.; completely interconnected with 24-track studio.

In studio, added Yamaha DMP7 digital mixer, Roland D-550, Roland MC-500 Microcomposer, Oberheim 1000, Adams-Smith Zeta-3 synchronizer and JVC 3/4-inch VTR for audio-for-video post.

Financing: Cash. "The owner [Sheldon Coleman, Jr.] made the investment. He's involved with Coleman Industries—Coleman coolers, Coleman tents, etc.

"Our philosophy was to upgrade the studio to a point where we could compete

on a national level with any other studio, without going overboard to where we couldn't make our monthly overhead. Wichita's not the thriving metropolis that L.A. or even Chicago is; we deal with a local four-state region and we're trying to branch out. Before, we were able to satisfy our clients in the Wichita area. With Sheldon's capital investment, we're able to do that, make our monthly overhead and still move out ahead."

—Steve Falke

Big Dog Productions (Wichita, Kansas), which is connected (literally) to Roxy's Nightclub & Soundstage, recently purchased a slew of MIDI and audio-for-video gear so they can compete on a national level.



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ward something down the road that's a little "higher tech." Sometimes it's the right decision, sometimes it's wrong, but if you start thinking that way, you're more prone to be prepared for what you have to get.

Nick Colleran, an officer in SPARS who's a CPA by trade, has a formula on how to equip your business: Whatever you spend in new equipment per year, you should increase your sales by that amount of money. If you buy a piece of equipment that costs \$100,000, you should increase your sales by \$100,000—not necessarily through the use of that equipment, but another part of your operation.

If you keep your books in order and can see what your total assets in equipment are, that should be about what your sales are. If it's less than that, you're probably losing money. If it's more than that, you're probably making money. It's a strange rule of thumb, but it seems to work relatively well.

When you're financing something, if you say, "If I buy this piece of gear, how will I pay for it?" pay cash, but increase your sales enough to warrant the expenditure.

There is another side of the coin.

People often will buy a piece of equipment not to increase sales, but just to keep up with the competition; to *save* their sales. This can sometimes be a disaster, but when somebody

buys six of this and four of that and learns they'll increase sales, sometimes it works. There is risk in everything one does.

Hank Neuberger: With the high-end

Mindscape Studios, Chicago.

Last major purchase: All-new studio complex with 32-input Neve 8068 in the A room (one of three all-discrete MkIIs in the world—originally from Electric Lady in New York).

Financing: Cash. "Siemens does financing? I'll be damned! I choked at buying this thing.

"This is a studio owned by a musician for musicians. I've bought everything in cash. I was assistant manager at a music store for a long time, so I built up a large arsenal of equipment while working there.

"I investigated leasing, but when I was talking to equipment brokers—who are very different from music instrument dealers—before they'd negotiate a price for, say, an Otari MTR-90 at 35 grand where I could say, 'Could you do it for 30?' first they'd ask, 'Do you have your

financing in order?' And if I said, 'No, I have cash saved for this purchase,' they'd keep calling me and faxing me. As soon as they heard I intended to purchase things outright, I was inundated with people trying to sell me equipment. But if I had to finance, I'd have nowhere near the purchasing power. On each piece of gear I saved money, because I was able to purchase with cash.

"I tried to capitalize myself with enough money here, through personal resources or through my partner, so I was able to own everything, including the facility. This way I can charge whatever I want, and my rates are going to be very reasonable. There's a Fairlight in here, an AMS, an incredible complement of synthesizers and computers, all included in the room rate. My partner and I are in this for good music, and if we make enough money to survive and to purchase outright the next SSL/Neve/Trident, that'll be good enough." —Thomas Lipnik

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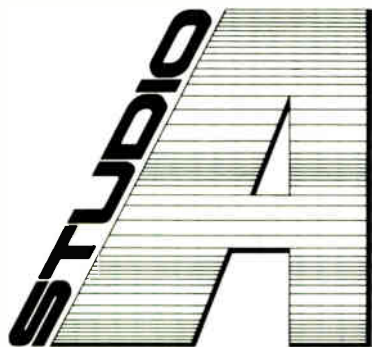
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Pearl Sound, Canton, Michigan.
Last major purchase: Neve V Series console (V-48).

Financing: Financed through Neve's parent company, Siemens.

"I own the studio and I am its major user, which makes it different because I buy stuff that I need. I know what I need and what I'm missing, and when I want something, I buy it. I don't always make great business decisions, but I balance it

off between what's a good business decision and what's a good creative decision to make the studio happening. Getting another reverb unit doesn't necessarily mean I'll draw more clients or get a higher hourly rate, but I may want it to get a sound I'm looking for. Or I can spend four grand on a good DAT machine because it's a convenience, a necessity, but I can't necessarily justify paying it back [through income]; it's just something everyone needs."
—Ben Grosse

technology that now has six-figure price tags, you bet your company with each roll of the dice. To begin to get your money back from this risk, you have to be able to charge a premium for the use of these devices. If you bill these devices into your room rate, or your customers expect you to provide high technology with your room rate, it will be hard to justify the expense.

If you can learn in advance that

your clients will pay a premium for a specific piece of high-technology equipment, you probably have a good chance of making it pay and, more than that, making it be profitable. We've had experience with this with a device that's become very popular in Chicago, the AMS AudioFile. The device itself has spun off additional services that our clients request we provide. It's provided additional profit

**Paisley Park Studios,
Minneapolis area.**

Last major purchase: Studer 2-track digital machine and GML automation system for Studio B's API/De Medio board.

Financing: "As much as I do not feel I want to disclose how we do our purchasing, we strive to come up with several possible solutions as to purchasing. One [solution] is a well-structured price in return for a rapid payment; this can be a hefty down-payment with payout terms over a pretty quick period. Two, if we find that we're in a fair market value-type situation where we can't move, then we try to get good terms. Our policy is to stay away from equipment leasing, because it's not best for our approach. But we're in a strange situation because we're an owner/operator-type facility.

"Basically, a purchasing decision is made after polling the client for specific needs prior to the start of a project, and sometimes the type of rate and rate structure we've developed with the client also is considered. If we're giving the clients a really good break, we might tell them that it's their decision whether they want to do without [a desired piece of equipment] or whether they want to eat the rental on it. If they want us to provide it,

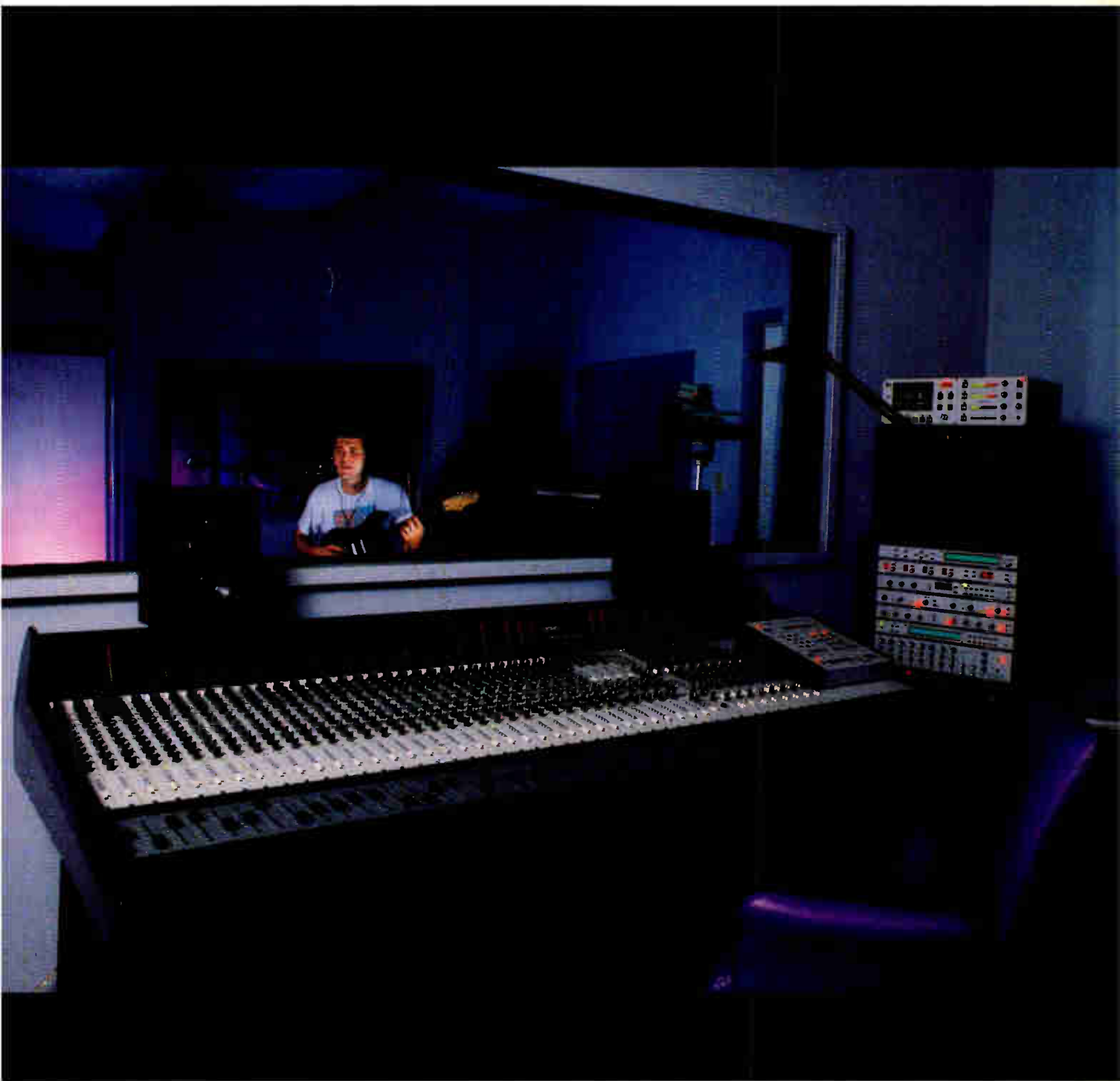
we might build it into the rate. But in most cases they do not provide enough rental back to justify an out-and-out purchase.

"The second polling is with our studio manager, John Dressel. We look at what people have requested, what we've sub-rented—rented back through different companies—and where we think the market's going.

"The third polling comes from Sal Greco, our chief engineer, who looks at whether [the desired equipment] is growing, new technology, or is something approaching obsolescence.

"Finally, we look at the numbers, where the business is at, what we've just purchased, and our annual budget, and see if it will plug in at that point.

"In some cases, even though three out of four conditions are good and your gut reaction is 'go buy it,' we've deferred it. We deferred on synchronizers for a period, even though we probably would have paid them off sooner, but we weren't sure what the trend was going to be or whether we'd go in the direction of film. Each room was already equipped with [different brands of] synchronization, but at one point we addressed whether we should buy secondary synchronizers, choosing one of the three brands, to provide more flexibility for the client. We opted to rent, and when we picked up the *Batman* project in January, we got a very hefty rental, then went back and purchased [the synchronizers]."
—Harry Grossman



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centers in addition to the premium we charge for the AudioFile, and that's been key in making the whole thing work and allowing us to add more AudioFiles. That rule of thumb can be applied to other high-tech equipment besides workstations.

Jimmy Dolan: When you judge what you should get involved in, with some of the higher technologies as well as the "boxes," you're talking about systems. You're talking about AudioFile, WaveFrame, NED, any high-power tools. You're investing in systems, and

I like to compare that with investing in people. You hire a staff of people and invest in them for a period of time. The industry's at a point where a lot of things are being redefined: technology, formats, techniques and people are in flux, with new ideas and new ways to handle the old and new technologies. You have to make an investment in something new, and you hope you'll make an investment in what is right and what makes sense for your client base, for your facility and for your organization.

Seagrape Recording, Chicago.

Last major purchase: Sony MCI JH-24 and JH-16 recorders, and MCI JH-48 synchronizer.

Financing: Cash.

"Buying new gear is a matter of marketing. There are 70-plus studios in Chicago: a strata of basement and home guys; lower-priced, 24-track studios you can get for \$35 an hour; and large, downtown studios that get between \$200 and \$300 an hour. We do a lot of 16-track work because there aren't a lot of studios like that. We're not trying to be the cheapie studio for budget-minded people. We obviously have to be budget-minded, but

want to provide the service they were getting downtown, at a price in between the budget guys and downtown rates. We're 80% original music production, so we made the decision to upgrade based on what our clients needed and what we wanted to be doing in the next couple of years as part of our business plan.

"A lot of studios in Chicago don't own their own buildings, and there's a dualism between whether to invest in our property, rather than deal with a lease and landlord, or to lease equipment with that same amount of money. Your payments can only go so many ways."

—Mike Konopka

You can't be a prophet, but you hope to place yourself in a position where you can react. You have to be able to let go of what you thought was right three, five, six months ago.

United Sound Studios, Detroit.

Last major purchase: Complete renovation of Studio A, built around a Neve 8048 bought from a major record company in L.A.

Financing: Cash; studio owner provided personal financing.

"What we found ourselves doing and *had* to get out of was saying, 'This other studio has this, and we don't think it's hot, but we'll get it too.' The bottom line now—you have to please the client. We try to have as much gear as possible so the visiting engineer or producer has a lot to choose from. Any engineer or producer who comes in here sees something he's used to working with, whether it's AMS, Yamaha, Roland, Lexicon. . . we try to cover almost all the bases. You can't cover them all or you'll go broke, because this gear costs so much money now. You get as much as you can and try to cut a little corner here, a little corner there."

—Mike Moore

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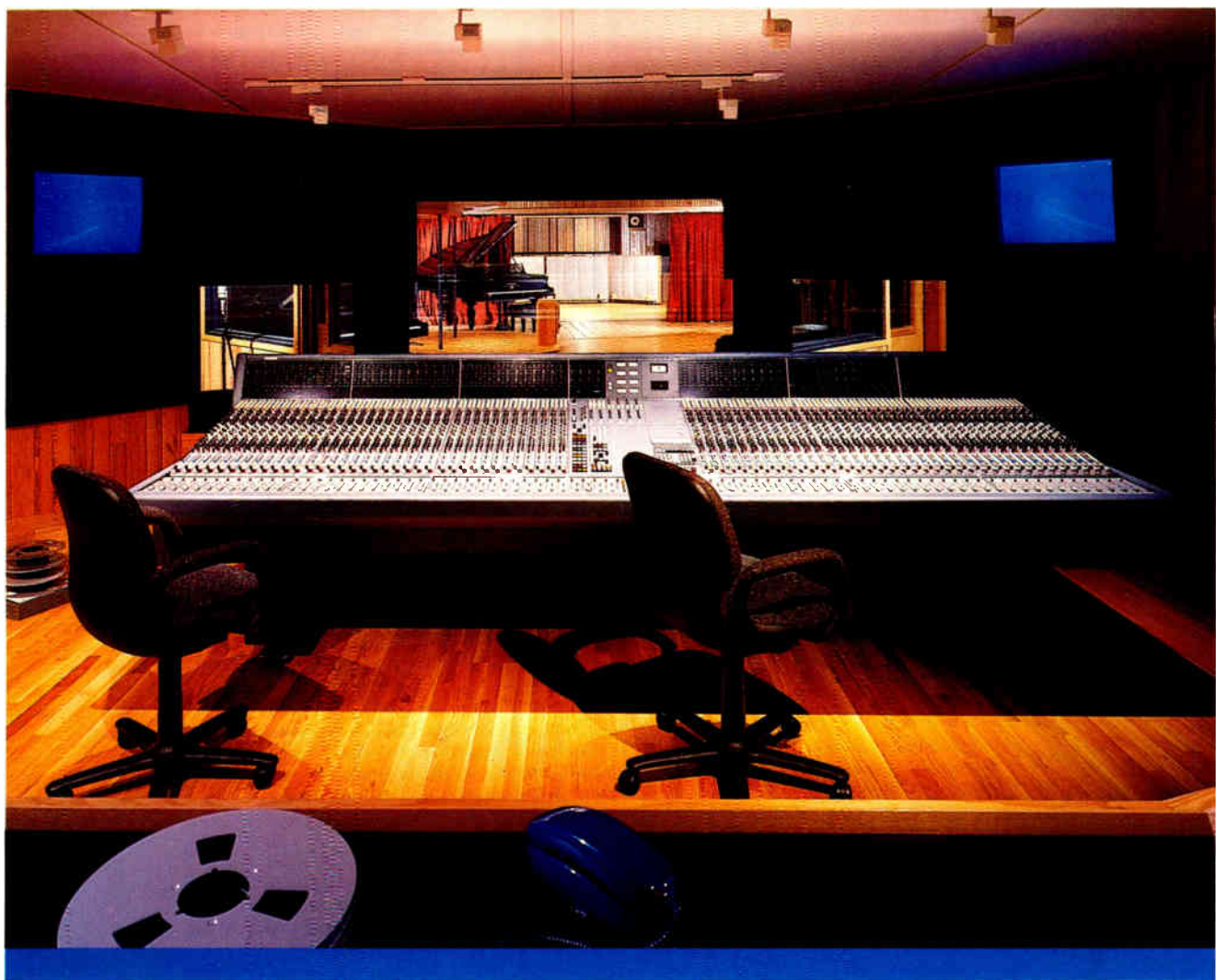
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There's going to be a constant update in what you do and how you do it. We've gotten heavily involved in digital workstations and didn't go from system to system, but a couple of years ago we knew that disk-based recording was something we as engineers wanted access to. We started positioning the facility and researching the ways we would edge toward that—which allowed us, when we did make our decision of what to do and how to do it, to be more comfortable doing it.

Buying multiple units of this sort of technology and integrating it into your company raises your vulnerability and raises questions about operator expertise, client interface, how people book time, how they're used to working with your facility from session to session, all the little things that are very real to the client. If they can't do with the new technology what they normally do in a half-hour, because they've got to stop and do something different because you're showing them something new, then you change their security base of knowledge. You have to give them a way to get involved with the new technology, in a way that says you really stayed the same but now can take advantage of a different technology.

And this doesn't always have to mean premium prices. Prices charged for using the technology have to support the cost of the items, but how you use the items can also create more speed, more efficiency and more options for the clients to get their jobs done in different ways.

When you're talking about what your facility is going to do about new technology, it depends on what's going on with your facility and how you have to think about your space. Every factor has to be customized for what is right for your company, your engineers and the people working with you.

Allen: We've bought a lot of digital multitrack equipment, 32-track machines, Otaris; the reason is we didn't want to compete against the home environment studio at the same level. If you're competing with the home studio with 24-track analog, you don't have a leg up on them. They can buy the same Otari, Sony, MCI or Studer that you can.

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They're going to use their facilities to do the job anyway, but then they can take their tracks into a full-time music studio and upgrade to digital—which is no loss at their level—and have eight more tracks to play around with. The basic concept is if you're a full-time recording studio, you should have something that sets you apart.

As a secondary reason, we felt that with the CD business booming, more and more people want those three D's—digital/digital/digital—on the end result. We felt that if we offered a facility in Chicago where you could make records in the digital domain and carry it all the way through, we'd attract business. Well, it's worked out even better than we expected, because there aren't enough digital machines around the country, so people can't get studio time in New York and they're flying to Chicago. We never expected that.

Dolan: We take a different approach from going all-digital. Top-of-the-line analog, in certain cases, might be more efficient for record projects. We purchased 60 channels of Dolby SR, and from our client base we haven't seen a need to have digital multitrack. We successfully have gotten access to that format from a renting standpoint.

We have taken a disk-based approach to the digital domain. We have seven AudioFiles and two more coming at the end of the year, all integrated with our nine studios. If a job is in-house, we can finish it in the digital domain, not in multitrack but from a post standpoint. It gives the ability to facilitate interfacing with the client in the way they run the sessions.

If we can be resourceful enough to make the transition from the way things were being done into new realms, with higher quality and quicker time frames, then we're offering a real path for clients to walk into new technologies.

Whether you're in recording or post-production, everybody's going to have to deal with new things and figure out how they can use those new things. That is a responsibility that a facility has, which translates—at this point—into having more than one way to do something.

Reid Hyams: Our studio doesn't have the luxury of buying every new item that comes out. Because of that we've gone to other facilities to use the AudioFile. Technology's always changing, and every time you pick up

—CONTINUED ON PAGE 185



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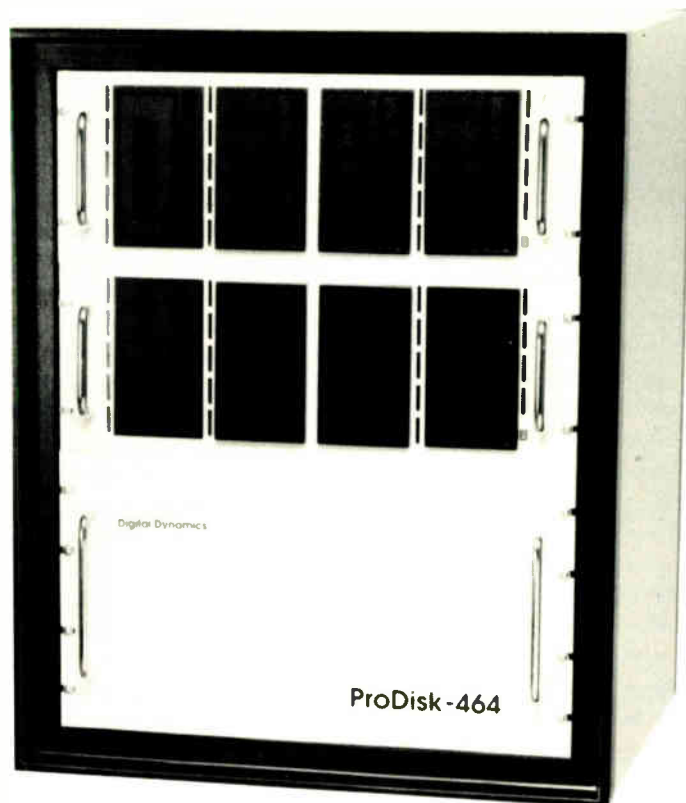
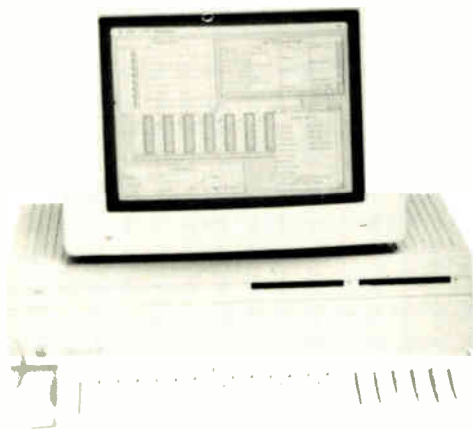
HYPERMEDIA IN AUDIO PRODUCTION

As the professional audio industry moves rapidly toward an all-digital future, we are beginning to see an acceleration in the integration of high-quality audio with video and multimedia production. Historically, the television production, film, video and corporate audio-video markets have considered audio to be an adjunct to their visuals. From a video or film producer's point of view, such a position is perfectly laudable; some of the more innovative producers of the past decade appreciate the importance of audio in providing important cues to the onscreen action. In traditional terms, however, hardware designed to record, edit and process visual images has been based on radically different technologies from those used to manipulate the accompanying

audio soundtracks. Although the use of time code enables these two disparate media to be linked together, there is no denying that there are better ways of producing a cohesive audio-visual product.

Developments in digital audio workstations are pivotal to the growing synergy of audio and video production; the advanced systems now coming to market can perform a host of audio production tasks. Most of the more powerful and ergonomically "interesting" new advances are coming from hardware manufacturers who are adopting a common design theme. First-generation workstations were configured around minicomputers that handled: the digitization of incoming audio sources; the vectoring of the resultant 16-bit data to hard disk or

New from Digital Dynamics is the ProDisk-464, a Macintosh-controlled digital recording and editing system.



optical storage; its retrieval for real-time edit location, mixing and/or processing; and replay of the manipulated audio from fixed storage media.

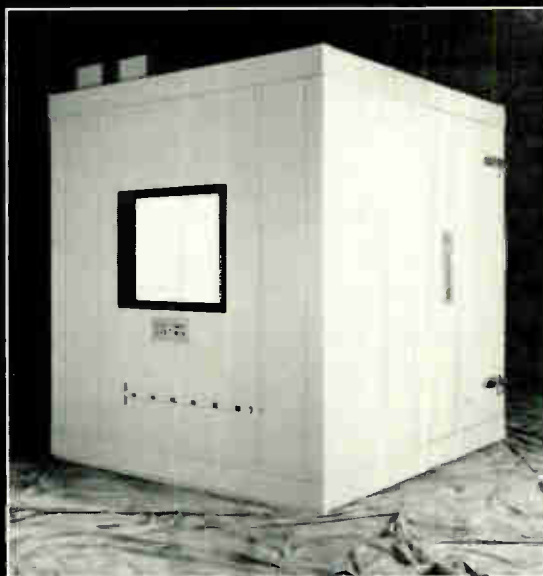
These days, however, because of the availability of rapidly evolving microprocessor and support chip sets, it makes more sense for desktop audio-video production systems to be configured as outboard digital processing "boxes" whose specialist functions are controlled and coordinated by a central workstation running customized, multitasking software. In this way the workstation controller can be optimized for graphics display of the various recording, mixing and editing functions, while a series of high-speed "sub-engines" can be optimized to perform real-time audio processing, manipulation and time code synchronization functions.

I'd like to consider some of the more innovative hardware and software elements that have been released during the past several months, and which are destined to find growing applications in the hypermedia production facility of the near future.

The workstation of choice for the more "user-friendly" systems I've come across is the Macintosh. The Mac's user interface, with its familiar icon-based menus and high-resolution screen displays, allows a large amount of data to be displayed simultaneously and controlled via SCSI, NuBus, RS-422, MIDI and other high-speed interface protocols.

One company that has been developing a variety of innovative software and hardware systems for the Mac is Digidesign. The firm's Sound Tools Digital Recording and Editing system comprises the Sound Accelerator digital processing card for the Mac SE/SE30/II; the AD IN analog-to-digital conversion unit for digitizing analog signals to hard disk; and *Sound Designer II* digital-audio editing software. Potential applications for Sound Tools, Digidesign suggests, include music recording/mastering, the creation of high-quality audio to complement audio-for-video and multimedia, sound analysis and desktop presentations.

Built around the powerful Motorola 56001 DSP microprocessor, the Sound Accelerator card offers real-time sound synthesis and signal process-



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ing of 16-bit stereo audio sampled at 44.1 kHz. The companion Sound Designer II software enables editing of entire audio segments—maybe a music track, music plus lyrics or even a composite soundtrack with effects and dialog—and rearranging of sections to match picture edits, to form repeats, or resequencing of a music album. Also offered is a Time Compression/Expansion function, which enables the overall length of a sound element to be shortened or extended without affecting its pitch or musical timbre.

Digidesign's newest hardware device, DAT I/O, allows Sound Tools users to record and transfer audio data exclusively in digital format, eliminating the need for analog conversion. DAT I/O supports both the AES/EBU and SPDIF formats for compatibility with most professional digital audio devices, including DAT recorders and CD players with digital outputs.

Integrated Media Systems [*Editor's note:* After this article was written, Studer International A.G. announced its acquisition of Integrated Media Systems. The new company is called

Historically, the television production, film, video and corporate audio-video markets have considered audio an adjunct of their visuals.

Studer Editech, and is headed by president and CEO Lee Cochran.] offers its Dyaxis system, which allows random-access, 2-track recording and playback from hard disk, multitrack offline sound file assembly and digital format conversion. Sound sampling can be set to 44.1 kHz, 48 kHz or one of 200 other user-selectable frequencies. Audio can enter the system via conventional analog inputs or digital AES/EBU, SDIF-2, SPDIF, Yamaha Stereo, PD format or Sony PCM-601 format. The new Yamaha Stereo ports allow direct connection to any Yamaha digital console or signal processor, with-

out the need for an additional interface, while the PD format enables direct connection to the DUB "C" ports of Mitsubishi and Otari PD-format stereo and 32-track machines.

The company's *MacMix v2.3* controller software now offers enhanced mixing capabilities, independent fade-in/out profiles, full time code slaving and dynamic real-time offset control, scrub editing, and custom-developed keyboard macros for dialog editing, along with new enhancements for radio production. Dyaxis will also accommodate other sound editing and processing software, including Blank Software's *Alchemy* and Soundsmiths' *SoundBase*.

A new interface allows Dyaxis to be used with an Abekas A60/A62/A64 digital videodisc system for enhanced audio-follows-video control from the master Abekas controller panel and trackball. Enhancements include VPR-3 interface protocols, which allow the unit to be slaved to a conventional video-editing system, as well as to a digital processing card built around the Motorola 56000 microprocessor for extended mixing and DSP capabilities. Offline functions include sampling-frequency conversion, pitch change



and dynamics control. Multiple simultaneous digital and/or analog outputs are available, together with a full-function LTC/VITC and MIDI interface card with master clock and synchronization capabilities.

Of the "big guys" that dominate the audio workstation market, New England Digital offers a repackaged Macintosh front-end controller for its Synclavier 3200 and 9600 systems. Intended to help streamline the manipulation of sound files within the Synclavier mainframe, and also offer a window-based desktop presentation of the recording and editing assignments, the new graphics and keyboard controller should extend the power of these already impressive and extremely flexible digital audio workstations.

The "entry-level" Synclavier 3200 features a maximum of 32 megabytes of internal storage, 32 monophonic voices, 720 megabytes of hard disk storage, plus full MIDI and external time code control. The larger Synclavier 9600 incorporates 96 megabytes of RAM, 96 stereo polyphonic voices and 3 gigabytes of storage, as well as additive FM synthesis and resynthesis. The 9600 system can also

Digital audio workstations are pivotal to the growing synergy of audio and video production. Advanced systems perform a host of tasks.

be used with various multiple-user interfaces, including the Mac II, a 76-note pressure/velocity-sensitive keyboard and the company's Direct-to-Disk™ recording/editing systems.

The Canadian firm Post Logic Systems is attracting attention with its Digital Audio Computer System, which consists of a self-contained processor rack with SCSI hard disk drives that can be set up as a digital multitrack recorder or networked together in a multi-user editing environment. A companion Digital Audio Control Console features dedicated transport controls for the digital multitrack,

various input/output assignments, time code control and editing of digital sounds. Inputs to and outputs from the system can be analog and/or digital (Yamaha DMP7D-format plus AES/EBU).

Another relatively new entrant to the market is Digital Dynamics, whose Macintosh-controlled ProDisk-464 system is available in various formats between four simultaneous inputs/outputs and 32-input/64-output configurations. Sampling frequency can be set to 32, 44.1 or 48 kHz, with full time code interlock; each 4-track hard disk recording unit is capable of holding up to 120 track-minutes of digital audio. Editing features include auto punch-in/out, visual cut/copy/paste, track time alignment, digital crossfade, and rock-and-roll scrubbing. Digital I/O, real-time EQ and compression is expected by press time.

As an adjunct to the firm's well-established NoNOISE system for removing unwanted noise and certain distortion products from digitized audio samples, Sonic Solutions has developed a Macintosh-based recording, signal processing and editing unit. Known as the Sonic System, it contains a Mac II, SCSI hard disk drives

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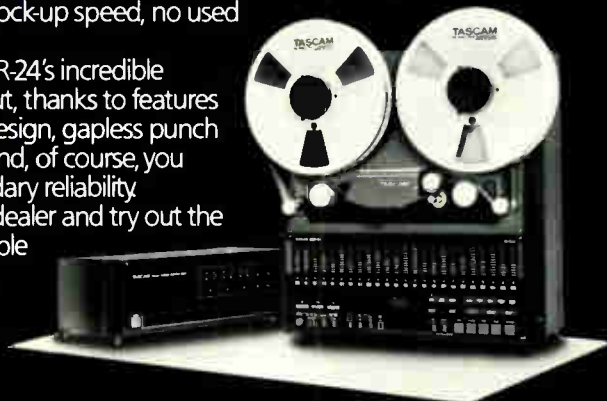
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for data storage, custom controller software and SSP (Sonic Solutions Processor) plug-in cards for the Mac. Ins/outs to the SSP cards can be analog, digital AES/EBU or SDIF-2 format, with a choice of 44.1 or 48kHz sampling frequencies.

The firm's first software release, *CD Pre-Mastering Desktop*, enables digital editing, mixing, EQ and dynamics control, plus NoNOISE processing. Full MIDI and time code compatibility for audio-follows-video editing is featured, too.

Developed in West Germany, Steinberg Digital Audio's Topaz includes a rack-mount hard disk recorder and editing system controlled by a Mac II. Eight units can be connected together for a maximum multitrack system of 16 channels with time code sync. An optional remote control unit incorporates a pair of servo-driven level-controller faders and assignable, software-definable keys for editing and mixing functions.

Each rack-mounted Topaz system includes a 360-megabyte hard drive and analog-to-digital plus digital-to-analog cards that are user-selectable

These days it makes more sense for desktop audio-video production systems to be configured as outboard digital processing "boxes."

for 48, 44.1 and 32kHz sampling rates. A total of 65 minutes of mono storage at 48kHz rates is available from each rack system. The Mac II controller can run a variety of customized software that enables in/out assignments, channel level, pan between left and right master outputs, a 3-band digital EQ section, lowpass and highpass filters, replay speed, pitch and time correction parameters to be controlled from the Mac keyboard, mouse or trackball. All editing, signal-processing and mixing functions are under full time code

control.

Symetrix is also developing a Macintosh-controlled system, which was scheduled for formal unveiling at this fall's AES show. Described as a second-generation workstation system, the DPR-100 Digital Processing Recorder contains a high-speed (over 50 MIPS) input/output and signal-processing frame that connects to a Macintosh II/Hx/Icx for system control. The basic version includes eight simultaneous inputs and outputs and records in multiples of eight track blocks.

Fully automated DSP tasks that can be achieved in real time include level adjustment, pan, mute and solo, 4-band overlapping parametric and FIR EQ, multiple gates, compressors and limiters for each channel. In addition, four effects sends and returns plus eight PFIs (prefader inserts) are provided, both analog and digital. All functions can be addressed to MIDI events as well as external video sync, LTC and VITC time code sources, for full audio-for-video post-production and mix-to-picture applications.

Symetrix says the DPR-100 uses multiple SCSI hard disk drives as one "virtual disk." This configuration



enables eight tracks, for example, to be output, simultaneously, regardless of which drive the digital data is stored, thereby ensuring instantaneous playback. Audio ins/outs and destinations can be analog and/or SDIF-2 and AES/EBU digital formats. Other features include a dedicated controller console with digital faders, pan, solo, mute software-definable keys and multi-track recorder controls.

Slightly more down-market is the MacRecorder Sound System from Farallon Computing. Consisting of a small unit that plugs into the serial port (printer or modem) of a Macintosh and a companion sound-editing software package, the system enables mic- or line-level audio signals to be digitized into internal RAM (and stored to hard disk) at a sampling frequency of 22 kHz and edited on the Mac screen. Despite the fact that the resultant bandwidth of just under 11 kHz might restrict MacRecorder's potential applications in pro audio facilities, Farallon predicts a high degree of interest from business users. Used with on-screen graphics displays, typical applications include employee orientation and training, sales presentations and computer-driven "slide" shows.

A series of high-speed "sub-engines" can be optimized to perform real-time audio processing, manipulation and time code synchronization.

Mono or stereo channels of audio can be sampled using two MacRecorder modules, with mixing and editing of up to four audio channels within the Macintosh controller. Mono output is available from Mac Plus and SE machines, while Mac II and SE/30 units are capable of producing two simultaneous outputs from their analog audio ports. Up to 45 seconds of mono audio can be stored per megabyte of free memory in the Mac host computer; data compression software allows increased storage capacity on

certain material.

Sound can be edited using two software modules. *SoundEdit* allows sounds to be edited onscreen using familiar cut-and-paste functions with a mouse or trackball. Individual tracks can also be combined onto a new track, freeing up space for additional recordings. *HyperSound* is a HyperCard stack that automatically creates a button that replays the digitized sound; these buttons are then freely available for use within other HyperCard stacks. Audio data can be saved in a variety of formats, including Mac disk files, HyperCard stacks or as files that can be accessed by *StudioSession*, *JamSession*, *SoundCap* or *VideoWorks* software. At less than \$200 per input module and companion software, MacRecorder offers a very attractive and cost-effective entry to hypermedia programming and audio-plus-graphics integration. ■

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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by Bruce C. Pilato

DAVID Z. & BOBBY Z.

**THESE MINNESOTA BROTHERS—NOT TWINS—
ARE BURNING UP THE CHARTS**

Every decade has its “golden boy” producers. In the '60s it was Phil Spector, Tom Dowd and George Martin. The '70s had Todd Rundgren and Phil Ramone, and in the '80s there was Nile Rodgers and a handful of others. With a track record ranging

from Fine Young Cannibals to Prince, and others such as Jody Watley and The Jets in between, Minneapolis mainstay David Z. just may be in the running for the Golden Boy title in the 1990s. And his brother, longtime Prince drummer Bobby Z., may not

**Bobby Z. and
David Z. in the
studio (L to R).**



PHOTO: JIM STEINFELDT

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be far behind—his recent production credits include Boy George's comeback album, a Wendy & Lisa project and his own new solo album.

Born David and Robert Rivkin (they have another brother, Steve, who has a successful film acting career underway), the brothers have spent many years trying to establish music and production careers based in the unlikely locale of Minneapolis.

"Before Prince, no one was ever signed out of here—ever!" says David, while relaxing in his suburban Minneapolis home. "I mean, Dylan moved. Al Jarreau moved. Other great players like Bill Lorde [Robin Trower, Sly & The Family Stone] and Willie Weeks [George Harrison] had to move. And I'm just scratching the surface. The main thing that Prince did was have the guts to stay here. He did open the gate; he's responsible for that. He's the one responsible for everyone else's success, although I think others set the tone for that."

Of course, Prince brought recognition to the Midwestern city through his stylized brand of funk-rock that spawned several other musical offshoots, including Sheila E., The Time, Jill Jones, Mazzerati and The Family. But today, others from the area are branching out.

"That was a certain era and a certain sound, but I think now there's more to it than just those few producers who were involved—Prince, Jam & Lewis, Jessie Johnson, Monte Moir, myself," David says. "It's branching out even more, and it's not just black music. We're getting more acts coming out of here such as The Replacements, Vixen and Information Society.

Though David and Bobby have built the cornerstones of their careers through their association with rock's favorite Batboy, both have firmly established themselves well outside of Prince's royal domain.

For David, it began three years ago with the unexpected success of the first Jody Watley and The Jets albums. And it's peaking right now with the runaway smash of 1989, Fine Young Cannibals' *The Raw & The Cooked*. As of this writing, the record had yielded four hit singles. "That was unbelievable," he says of FYC's success. "No one had any idea it was going to do that."

David has also been busy producing or doing remixes for a variety of other projects, including new albums or tracks on albums for Jermaine Jackson, Paul Shaffer, The Jets and Deon Estus. He also was involved in some of the mixes for Prince's *Batman* soundtrack, although he remains uncredited on the record.

In the past he has worked as either producer or mixdown engineer for a number of Prince records (including the *Purple Rain* soundtrack and the hit single "Kiss"), the debut LPs of Jody Watley and Tyka Nelson, various songs for Hall & Oates, Boz Scaggs, Nu Shooz, as well as other albums for

Prince-related projects such as Jill Jones, The Family and Shiela E.

He began as a musician in the early 1960s. "I performed in a lot of regional bands, nothing national," he says. "Then I went to L.A. and co-wrote songs with Graham Parsons." From there he became a guitarist for Billy Preston and a staff songwriter for A&M Records.

His first engineering credit was a mid-'70s disco hit, "Funky Town," by Lipps, Inc. He had actually taught himself how to run a recording console a few years earlier when a tired engineer walked off a lengthy recording session.

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"The lines between mixing, producing and engineering are vague ones in Minneapolis," he notes. "I've ghost-produced many, many records."

In 1977 David Z. worked on the demo that got Prince signed. It must have been pretty good, too, since Prince reportedly received one of the highest advances ever from Warner Bros. Records. A few years later, Prince would repay the favor.

"Prince was the first person to recognize that I was a producer and not just an engineer," says David, whose first official production credit under the name David Z. was *The*

I've been involved with these projects of his. But I was recording around Minneapolis long before Prince. I'm 42; I'm a lot older than he is." He adds, "I get involved when he wants me to, because we're friends. It's an ongoing situation."

One reason David Z. remains in such close contact with The Purple One is that he uses Prince's famed Paisley Park Studio Complex as his base of operations.

"It's huge," David says. "It's like a shopping mall; in fact, I call it 'Princedale.' It's one of the best studios I've ever used. I used to always have to go to L.A. to mix, but since Prince built this place—and he spared no expense

—I can now work where I live.

"I made some suggestions, the biggest of which was to make sure the room was accurate. That's the most important thing for a producer and an engineer. They both need a room that is totally accurate. Prince did a great job. He made sure he had the right people designing and tuning the room."

But is there enough work in the area, or the industry itself, to keep Paisley Park busy? According to David Z., the answer is unquestionably yes.

"I think there is. I have Studio B almost exclusively; I'm pretty much locked in there. Prince uses

Studio A a lot. Between the two of us, that fills up a lot of the business. Plus, there are other clients fighting for the room."

Even with the solid reputation that David has attained as a producer, he still gets (and accepts) many projects as a mixdown engineer. "I really prefer to be a producer," he admits. "The reason I've remained an engineer is

"I really wanted to use other musicians and have other influences [on the album]. Not that I wanted to keep Prince off the record. But in this case, I really felt it was important to live or die by the sword. I wanted to experience what Prince went through when he made his first album."

—Bobby Z.

Family LP, a power-funk Prince spin-off. "Prince came to me and said, 'Hey, you're a producer; don't fool yourself. That's what you do. I want you to produce this group for me and I'm going to call you David Z.' And I said, 'Fine.'"

"At the same time, I've always tried to distance myself from Prince. I just happen to be linked with him because

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that there is no one around here I can tell to do it the way I want it. There weren't any engineers around when I started, although now there are some good ones. But engineering is still a big part of what I do."

Though David Z. is fast becoming a well-known name within the music industry, his younger brother Bobby has long had such recognition. Beginning in 1976 and continuing for a decade, he was the drummer for Prince's band, The Revolution. In 1984 he made his big screen debut in *Purple Rain*, and the following year he per-

formed with Prince in a concert at Syracuse's Carrier Dome that was beamed via satellite to more than 50 million viewers.

More recently, Bobby Z. has branched out into record production. While still under contract to Prince, he produced a new wave act, The Suburbs, under the name Robert Brent. But after his production work with fellow Revolution alumni Wendy & Lisa (he also wrote their hit, "Waterfall"), Virgin Records president Gordon Harris met with him and offered him the gig of producing Boy George's highly anticipated comeback album. Though ultimately Bobby feels that LP

was loaded down with too many R&B tracks, effectively killing its crossover potential, the project helped open the door for his solo album, which is also on Virgin.

"I really enjoy producing," he says, "but before I got labeled a producer for life, I really wanted to do an album. It's a little more straight-ahead than the music I made with Prince." Bobby made the album mostly with friends and studio aces from the Minneapolis area. Longtime Prince keyboard man Dr. Matt Fink appears on the LP, as does Paula Abdul.

Bobby says he consciously made his solo album without any help from Prince. "I really wanted to use other musicians and have other influences," he says. "Not that I wanted to keep Prince off the record. You'd have to be crazy to want to keep Prince off your record. But in this case, I really felt it was important to live or die by the sword. I wanted to experience what Prince went through when he made his first album.

"While I was a member of his band, our relationship was only bad for two minutes, and that always happens when you're in bands. It's like permanently being in high school. But I don't ever think we'll stop being friends. I'm probably the closest thing to a best friend that he has, and vice versa. I've been with him since 1976 and we've been through some heavy changes together. Prince is a great leader. I learned a tremendous amount about recording and show business from him."

Bobby is also quick to give recognition to his brother. "David taught me a lot about songs and records. He's got a real sixth sense about what's going on in the studio." The two have even begun producing some projects together. They recently cut the dance hit "Beauty Is Only Skin Deep" for the Jamaican reggae band Aswad and are planning other projects for the future.

Despite their age difference (David is eight years older than Bobby), the two have remained extremely close and have always been able to work well together. Their relationship in the studio is really no different from what it was when both were living at home with their parents. As Bobby notes, "David still has a tendency to tell me when I'm doing something wrong!" ■

Bruce Pilato is a Mix contributing editor based in upstate New York.



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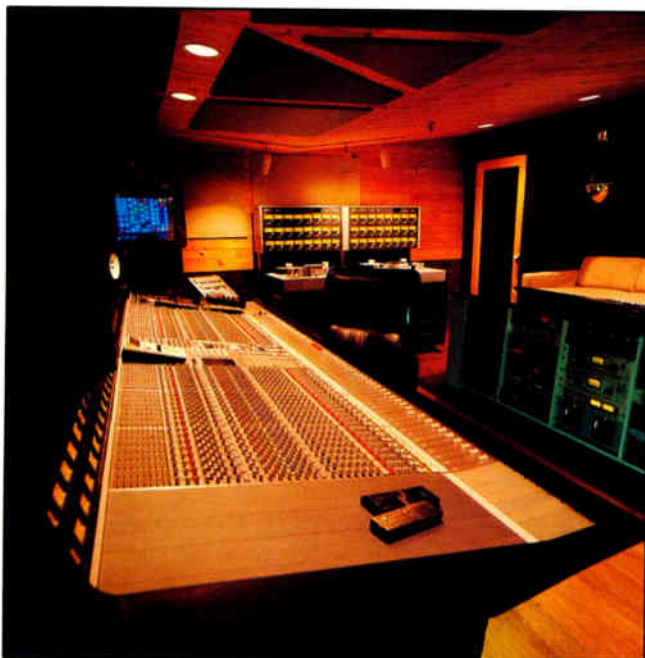
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World Radio History

by Paul Potyen

CANADIAN STUDIOS

CONTINUE TO EXPAND THEIR HORIZONS



Major studios located in Canada's two biggest audio production centers, Toronto and Vancouver, continue to file healthy reports. Among the many active rooms in Toronto are Comfort Sound, Manta Music, Magnetic North, Sounds Interchange, Eastern Sound and Studio 306.

Metalworks' Andy Holland says, "Vancouver boasts two of the hottest producers around in Bruce Fairbairn and Bob Rock, who work almost exclusively at Little Mountain." Other oft-named rooms include Pinewood Studios and Mushroom Studios.

While some facilities are quite specialized, like Toronto's post-production Film House, or Ottawa's video post studio Pinnacle Production House, it is more common to see Canadian studios broadening their base to encompass more than one kind of recording work.

Terry Medwedyk of Group One Acoustics of Toronto is a studio designer whose recent projects include Eastern Sound, Sound Ideas, Metalworks and ongoing work for Masters Workshop. "Nobody is building a fa-

cility dedicated to a single purpose in Canada," he says. "The bottom line is people want larger rooms, and they want to be able to do everything from music recording to voice-over work for video and film to TV mixes. To do all three requires a sizable space, but when people look at the amount of work that comes in, the extra cost of building a facility that can handle all three is justified."

Another trend finds studios looking outside Canada for work. Vancouver's Mushroom Studios attracts a number of international clients, including El Grupo Experimental from Costa Rica and Kin-Lalat, a Guatemalan folk quintet who live in Nicaragua. And outside Montreal, Richard Ealey, general manager of Le Studio Morin Heights, says, "I'm trying to concentrate on the New York market now. Canada is a great place to record for tax reasons. In the U.S. there is a holding tax, which means they hold back 30 percent of your income, and at the end of the year you have to go through the process of getting that back. Canada doesn't have any of those kind of things."

Andy Holland of Metalworks, Toronto, reports that some major steps have been taken in the last year to transform the facility from an "artist's studio" (it's owned by Triumph drummer Gil Moore) to a full-fledged commer-

Left: One of two main rooms at Toronto's Metalworks, Studio 1 features a 48 x 32 SSL 4056 G Series console with Total Recall.

Below: Phoenix Recorders is one of Vancouver's newest studios and is equipped with a Neve 8088 console and a Sony 48-track digital machine.



cial facility for music recording. It's always been open to the public, but they are now interested in attracting more commercial business. To that end they upgraded the original room and built a second room earlier this year. Now one is equipped with an SSL 4000 48-input board and the other with a Neve console. In addition, each studio has its own private lounge. Holland says the room is as well-equipped as top-notch British or U.S. rooms, and any gear they don't have is available on a 24-hour basis from a number of local rental companies. The result: So far this year three top Canadian artists

the U.S. dollar. Another reason is that it's easy to come to Canada to record because you don't need immigration permits. British artists who have U.S. work visas for a set amount of time can spend that time touring the U.S. instead of recording there."

Holland says that the support system in Toronto for outboard rental gear now matches what clients in New York and L.A. have come to expect. "There have been a number of good suppliers here for some time, but until recently they were only open 9 to 5.

er, according to spokeswoman Lisa Dooher, "We book only about a third of our time for our in-house work. Most of our work is for local advertising agencies."

This fall, Toronto's Studio 306 celebrates its tenth anniversary. As part of a major facelift, the studio brought in Terry Medwedek to handle the acoustic design and Peter Cummins of the Design Unit to take care of interior design, which included the reception, lounge and kitchen areas.

The new control room is 18x23 feet, and the studio has been split into a 35x22-foot area with 200 square feet



Studio Spotlight:

Le Studio Morin Heights

Celebrating its 15th year of operation, Le Studio has completed a major upgrade that includes the installation of an SSL 4056 G Series

with Total Recall and G Series Automation Computer, and a Quested 412 Mark 2 monitoring system. Carpets were also removed in the 1,600-square-foot main recording room to create a more live environment.

The studio has long played host

to major recording projects, including *Ghost in the Machine* by **The Police**, *Dream of the Blue Turtles* by **Sting**, *Talk Is Cheap* by **Keith Richards** and *Tonight* by **David Bowie**. As part of a renewed effort to focus on audio production, the facility has recently recorded debut albums for the San Francisco-based group **Vain** on Island Records and **The Front** from Kansas City on CBS. Other recent projects include **Rush**, in with producer **Rupert Hine** for their sixth album.

Located on 225 acres overlooking a private lake, Le Studio offers guest accommodations in a separate house for up to eight people, as well as a cottage for two more guests. Breakfast and maid service is included in the price. The surrounding environment offers a variety of recreational activities, as well as over 70 local restaurants.

All video work at the facility takes place in a separate Synclavier suite, which also houses a 24-track recorder and a 40-channel Yamaha console.

have done projects in the studio. "Our studio was built by a musician, and we want to continue to keep it comfortable for musicians," Holland notes.

"Now we're entering into a marketing campaign to attract U.S. and British artists," he continues. "We're putting together a new brochure that is going to go out to A&R people at the major record companies, artist managers, and managers of producers and engineers. There are real advantages to recording in Canada—for one, the exchange rate is favorable right now. It's 15 percent cheaper compared to

As the industry has grown, they have gone on 24-hour call."

Sound Ideas is another Toronto-area studio that has experienced recent significant changes, including a move from downtown Toronto to a much larger location in suburban Richmond Hill. The new facility is equipped with a 36x24 Mitsubishi Westar console and a Studer A80 24-track machine. The new studio also has a Synclavier and a full post-production facility.

The company is best-known for its Sound Ideas *Sound Effects Library*, which is produced in-house. Howev-

of skylight, a 15x22-foot isolation room and two voice booths. A 64-input Mitsubishi Westar console with 36 channels of Diskmix automation was installed in the control room, which ties into a 12-channel Neve side console.

Says Studio 306's Brian Mitchell, "Since resuming operation about mid-July, we've been doing mostly jingle work and television program production. Our work has been generated locally due to the fact that we do mostly TV or video post, rather than film post, which more often comes from

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the U.S. We have been relying on repeat business, although we have plans to attract new business. We haven't done any promotional work yet. We've found that the reception to the new studio has been excellent—so good that it's hard to finish what we're trying to do."

Another Toronto studio is VTR Eastern Sounds, owned by Standard Broadcasting. Eastern recently renovated its three original studios to three 24-track rooms and installed Canada's first 48-track Sony digital machine. The big room also contains a Neve V60 Series 3 with Necam 96. All three rooms have

"People want larger rooms, and they want to be able to do everything from music recording to voice-over work to TV mixes."

Studer A820s. The second room is fitted with a Neve 8068, and the third is equipped with a Neve 8058.

But even more changes are anticipated. Eastern's Kevin Evans says, "We've been in this location for more than 20 years. We just bought a brand new 117,000-square-foot building that we are now renovating. In early 1991 we'll be moving our television post-production and shooting stages as well as all our audio recording studios there. In addition we'll be building ADR, Foley and other rooms on that site. Current plans include using Tom Hidley to help us with room design.

"We pride ourselves at VTR Eastern because we have this television facil-

ity that allows clients to go in the back door, do their video shooting and post-production, move to the front of the building through our audio department and walk out the front door with a finished product ready for air," Evans continues. "That happened on the new Jim Henson special aired last August on NBC. We expect to do even more of that when we move into our new building.

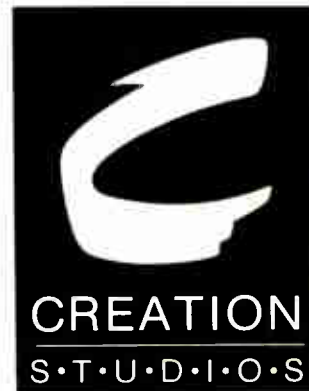
"I think we do have to have a bigger profile in the U.S. especially, and internationally as well. At this point 80 to 85 percent of our business is Canadian. Occasionally, we'll get an American TV series or album, or even a commercial.

"We try very hard to offer a lower evening rate to the album people, thus leaving our daytime hours open for commercial production, which pays the bills. That allows us to do what we all love, which is to record albums. Currently, that comprises about 25 percent of our work. We want to expand the album side of our business, but not at the expense of the daytime business. To that end, there's talk of having Standard Broadcasting represented in New York, L.A. and Nashville to help get our name associated with some of the big record companies."

The first phase of a two-room redesign at Toronto's Manta Sound was completed in January. Studio I, one of the original two rooms at the five-studio complex, was fitted with a 56-channel Amek APC1000, automated with GML moving faders. One of Manta's three Mitsubishi X-850 multitrack machines is located in an attendant machine room, along with a Studer A827. Although Studio I has been a dedicated mixing room, its adjacent 260-square-foot recording area also makes it well-suited for tracking.

After completing phase one, work was begun on Studio II, Manta's largest studio, with a 60x44-foot recording area. A 52-input Neve V Series 3 was installed in that control room to go with another Mitsubishi 32-track X-850 and Studer A820 recorder. All the acoustic design work was done by Vincent Von Haff of the Waterland Group. Manta vice president Sy Potma comments, "We do a broad spectrum of work, from records to audio scoring for local and international commercials. We're also a first-call film scoring facility in Toronto. We've always done records, film scoring and

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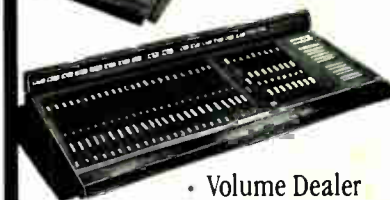
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INTERNATIONAL UPDATE

commercial work. We're known for our music production, but we're not as well-known as a post-production place." Potma estimates that records and albums account for 30% of the work, with commercial scoring and post production another 60%, and film work about 10%. Among the recent projects at Manta were the mixing of the new Lizzy Borden LP, the recording and mixing of the Portland Brothers' second album for Capitol Records, and a video with Anne Murray and Kenny Rogers to promote his latest release.

"We're looking to attract more film post work," Potma states. "There are many things that can be done to accomplish that. The facilities that do that kind of work do a lot of advertising, so we're heading in that direction, in our local industry papers as well as international magazines, listings in *Mix* and other film guides."

Marty Hasselbach is co-manager of Phoenix Recorders, the first commercial digital studio in Vancouver. Phoenix's parent company also owns Vancouver's Columbia Academy, which has its own recording studio. Open

for business for a little more than a year, the room is a Chips Davis LEDE® design. "We have a Neve 8088 console with Necam 96, and a Sony 48-track digital recorder. We use the Soundmaster audio-for-video post-production system," Hasselbach says.

Forty percent of Phoenix's work is album-oriented. They recently did an album with John Denver, and a couple of local jazz artists. They are also involved in the commercial business (40%), doing jingle work for several different local production houses. In addition, they do A/V and multimedia projects (20%), such as OmniMax and Expo.

"When Phoenix first came online we had to deal with a stigma in that, unlike Toronto, digital was not yet accepted by the local client base. People weren't used to it; they didn't know what its advantages were. The other fear expressed by clients was, 'What if I get started on a project, where can I go to complete it if I can't get back in here?' We successfully overcame these problems with our clients.

"In terms of record production, Little Mountain Studios has the producers who bring in the major rock cli-

ents. We don't really see ourselves as a major rock room; it's better suited for jazz, new age and fusion. That's an area that we want to expand into. To that end, we're in the process of developing our own record label, putting together a situation where we would not only be involved in the technical side of things from a recording point of view, but from the production and marketing and management of artists as well. Right now we are looking on a regional and national level, although the larger scheme is to do that on an international level."

Manuel Alviar, a graduate of Vancouver's Columbia Music Academy, manages Creation Studios, a 24-track facility that opened for business in the Vancouver area in March 1989. Equipment includes a Studer A880 Mark IV multitrack, and plans call for upgrading from the current Soundtracs PC board to a Neve 8000 Series console. So far most of the clients at the new facility have been bands coming in to record albums and demos. "One of our target markets is the home studio; we want to offer them a step up from what they can do at their facility," Alviar says. "We're also interested in servicing the Christian music mar-

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Sound Ideas recently relocated to a new facility in Richmond Hill, just outside Toronto, which is set up with a 36 x 24 Mitsubishi Westar console and a Studer 24-track recorder.

ket, as well as audio post, jingles and the commercial end of things.”

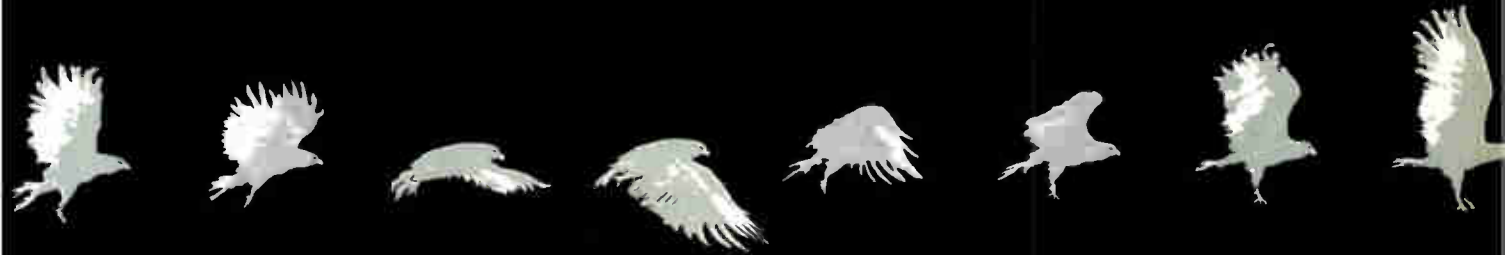
Located in Burnaby, B.C., Vancouver Studios opened for business in March 1988. In January, owners Stuart and Bruce Levin installed a 66-frame SSL 4000 G console into an existing room,

which was equipped with two Otari MTR 100s and TimeLine Lynx. Recent projects included the tracking and mixing of k.d. lang's new album. Studio manager Anne Marie Damjanovic says, “About 80 percent of our business is international major label work, and

the remainder is with independents, both locally and internationally.” ■

Associate editor Paul Potyten has traveled to many foreign lands, but none quite so beautiful as Canada and Berkeley.

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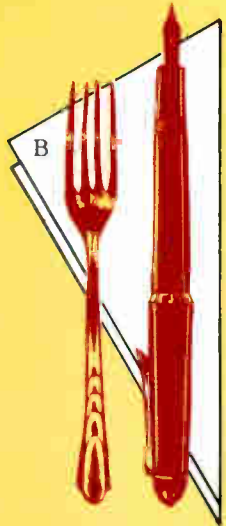
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in Springsteenology, we prepared for a quiet lunch with Max Weinberg, Bruce's drummer for the past 15 years. He and I sipped some cold sake as Mrs. Bonzai laid out a meal of ingen (a wild mountain vegetable), chikuwa (fish cake) stuffed with cucumber, and soba (buckwheat) noodles with cold



LUNCHING WITH BONZAI

soup. Please excuse the crunching and slurping.

Bonzai: Let's start with how you got into the E Street Band—can you recount the exact day?

Weinberg: Yeah, I sure can. In 1974, to give you a little background on the situation, I was doing a lot of local gigs, club dates—anything that I could do to make it as a drummer. I came out to California in June of that year, looking for fame and fortune. Needless to say, I didn't find it, so I ended up back in New Jersey playing in a club band. For about a year I had also been doing a Broadway show called *Godspell* as a substitute drummer. In July I got the gig full time, so I was playing eight shows a week and playing in the clubs after the shows. One of the keyboard players in our band came in one night and said, "Well, I gotta leave—I'm joining Bruce Springsteen's band."

Bonzai: Was Bruce well known then?

Weinberg: He was locally known, had a regional following and was popular in some other places, like

Texas. He had two records out, both of which I believe had sold about 50,000 copies; he was a cult figure. Anyway, the keyboard player said he was going to play with Bruce Springsteen, but it was the first I had heard of him. We were all upset because he was leaving—or so we thought.

It turned out that he had auditioned and had assumed that he would be chosen. He wasn't chosen, so the other keyboard player auditioned and came back telling me, "Max, you know they're looking for drummers, too." I was really committed to our band, because it was a good band and I thought it would work. Suddenly, everybody starts auditioning and then I saw the ad: "Wanted: Drummer. No junior Ginger Bakers." This immediately told me that he wanted an accompanist. I went down on a Monday night when the Broadway show was dark. I didn't want to bring all my drums, so I just brought a bass drum, a snare drum, hi hat and cymbal to the audition. I figured I could get by with that.

As it turned out, it was one of the most impressive things I could have done, because the guy who auditioned before me came in with six toms, eight

cymbals—a big set of drums—and played like Carmine Appice. He could play, but it wasn't what they wanted. I sat down to play, and immediately it felt right—from the first note.

Bonzai: Did you know the material?

Weinberg: No, I didn't know any of the material. All I knew about Bruce Springsteen was that he had a band and he was on Columbia Records. I figured if he had a record contract, he was doing a lot better than I was. At that point I was doing anything I could to keep playing the drums, trying to make my way up the ladder. You name it, I did it. I had played for the circus, on cruise ships, in the Borscht Belt up in the Catskills. I'd even backed up strippers. So it was no problem for me to play cold to back up somebody. It was something I knew how to do.

The very first song we played was a straight-ahead rocker. In the middle of the song, Bruce cut the band, stopped us. Then he threw his arm out—and I hit the snare drum, just picking up the action, which is something you do all the time in a Broadway show because it's written in. I always paid attention to that kind of stuff, and it blew his mind. I had just met the guy and I was picking up his



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extemporaneous cues. He told me later that was the moment when he decided he wanted me in the band.

So it was down to me and one other drummer. We played for about three hours that Monday night. Afterwards, I went up to Bruce and told him it was a lot of fun and I would love to play with the band. I told him I would play for nothing, which was almost the truth. But the musical experience with Bruce was so strong—I had never experienced anything like it. This guy was the real thing and I wanted in.

A week later I went back for the final audition, and I thought I did terribly. I was real nervous because I wanted the gig. But I got a call the next day to come down and join the band. That was August 23, 1974.

We started rehearsing the next week and rehearsed for ten days straight. He had all these gigs booked, and you didn't cancel gigs or postpone them when you needed the work. We would rehearse for four hours, take an hour break and then go for four more hours. It was that disciplined and regimented.

Bonzai: And Bruce was the drill sergeant?

Weinberg: Well, Bruce is the leader.

When he would stop, everyone would stop, and there was no fiddling around between songs. Even now when we rehearse, Bruce will play, and when he stops, everyone knows to stop. He doesn't even give a cue. It's very, very organized.

Bonzai: After all these years, has it become intuitive working with him?

Weinberg: Absolutely, and it actually became intuitive early on. We're street musicians, schooled in the bars and the joints of New Jersey where there is not a lot of technical prowess. You could find better players—more technically proficient players—but you would never find any musicians who play with more feeling, or who believe as strongly in the music they are playing. That's what comes across. The rehearsals in Bruce's living room are as intense as it is onstage. Nobody lays back in this band. It's a band about heat.

With Bruce you never know what he's going to do. It's still that way. He is always reaching for new things, and you have to work to keep up because he is moving fast.

Bonzai: It's interesting that you mentioned that first audition when you hit the snare on his cue. I've been

studying the ten-year, three-CD history of the band, and it's amazing how important the drama of the drumming is. There are many times when everything stops completely and then it's you coming in, or changing tempo—lots of theatrical dynamics.

Weinberg: He's never been afraid to go for the drama, and I'm not afraid to go for it, for a cue, or pick up on a physical thing that he's doing. If he's telling a story and says that there was a knock on the door, I'll use that to cue me. Especially in the early days that was very important, because it was very theatrical. If you listen to "Saint in the City," there's a fill that comes out of a long buildup. Every time I play that fill I think of Bruce playing air drums and showing me exactly what he wanted. It ends with a hi hat—shhhhhmmmm—and then comes down quiet; builds up and then comes down real quiet. The establishment of tension and then the release of tension in all music is important. In Bruce's music, it's critical. That's what it's all based on, especially in the live shows.

He's also told me that if we play ten songs they should add up to something more than just those ten songs. When you leave our show you



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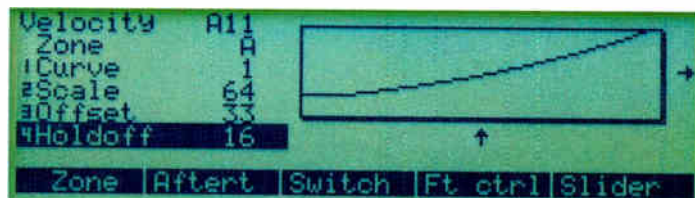
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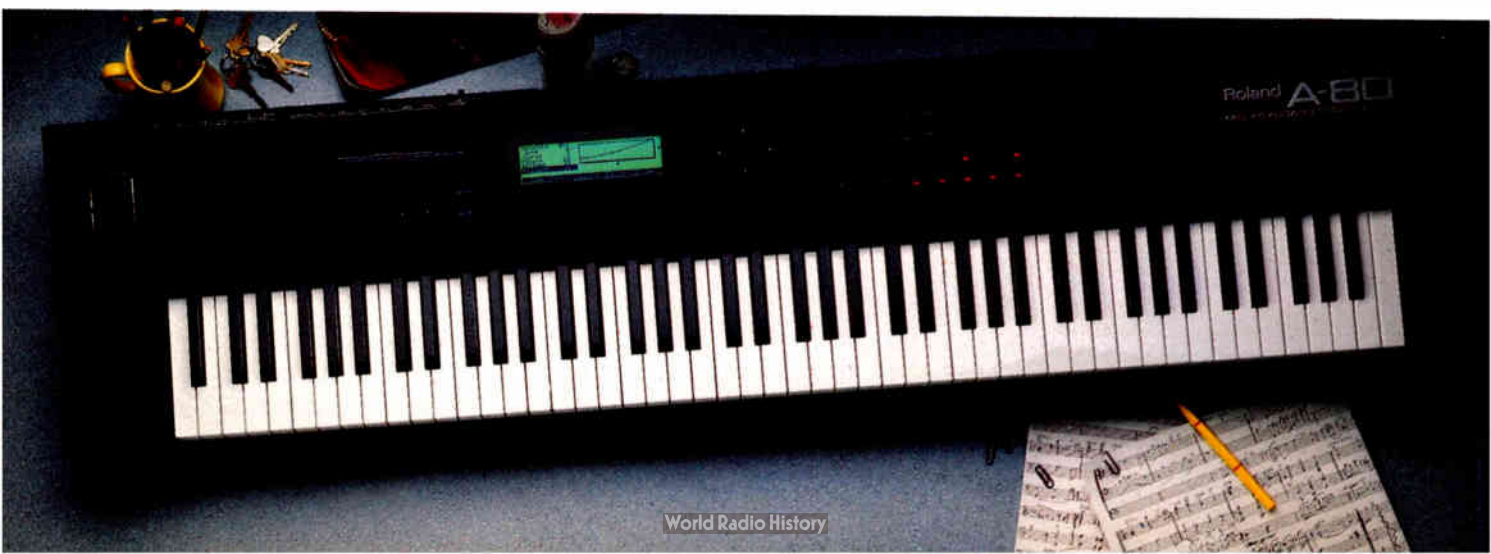
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have been taken through an entire story.

Bonzai: How tough was it for the band in the early days?

Weinberg: It was tough on the road, but we always had a great band. All my life I wanted to be in a great band, a band that left people blown away.

When I first went on the road with Bruce I was 23—I'm 38 now—and the only thing I had was a set of drums. No car, no place to live. For me, it was the greatest life in the world. I was getting 50 to 75 bucks every week, playing six shows a week. I loved it. We rode the buses for ten years—long rides. Eight or ten hours on the bus was nothing to me. But it was tough, because physically you got worn down.

Now, I feel privileged to have gone through such an experience, because if you make it today you don't do that kind of thing anymore. There are still bands on the road, but not like it was then. For instance, the college market has seriously dried up, and that was one of our main markets, along with the small theaters. Now you make your first record, and if you're successful you go straight to the arenas. We played for six years before we played an arena show.

We did every kind of gig imaginable, but I never thought of it as hard. I never lost sight of the fact that I was very lucky to have joined the band at that particular time, to experience everything from driving ourselves around, playing small clubs to riding the hottest jets going to the biggest stadiums. It was a progression, and every night I was able to get up there and blow it completely out. I never had any trouble sleeping.

Bonzai: Is it different for a drummer than for other musicians?

Weinberg: The drummer has traditionally had a lot of pressure. But today, in a session, you can no longer automatically single out the drummer if it doesn't feel right. Technology has changed all that—you can go back and fix mistakes on the drums; records are cut to pulses. Up until 1982 you couldn't do that. Whatever you got on the drums, you got. There is no other instrument in recording that calls for that type of responsibility. For instance, you couldn't do an edit on cymbals then. Today you can do it electronically and there are a lot fewer mis-

takes on records.

But some of the coolest moments I've had on records were when I got lost and I did something that didn't quite fit—there was a certain personality to it, an emotion, a human thing happening. People respond to that.

I like a well-crafted dance record as much as anyone else, and I am not someone who hates machines, because they are there to use. But in the old days, even ten years ago, the responsibilities placed on the drummer were much heavier than they are now.

Bonzai: You wrote a successful book about drummers, *The Big Beat*, where you talked to some great drummers. How do drummers age? What is the lifespan? What is required to survive?



PHOTO: ©1988 RON DELANY

Weinberg: Well, I'll tell you, last week I was in Atlantic City and I had lunch with Irv Cotler. [Editor's note: Irv Cotler passed away shortly after this interview.] He's been Frank Sinatra's drummer since 1956. He's up there in age, past 70, and he plays incredibly and he's always worked. But drum machines have hurt the drummer's livelihood—where ten used to work, now maybe three work. That's a problem, but being a musician is a lifelong thing. You can never stop getting better. You never stop finding out things about your instrument. If you have the right temperament and the right amount of drive, there's no reason why you can't continually work. This is what all drummers struggle with. I may be in a big band, but I am only in a big band when that band is working. And the

bigger you get, the less you tend to work.

Bonzai: Has that limited your aspirations, by being so locked into the E Street Band?

Weinberg: No, quite the opposite. Being in the E Street Band has given me everything I ever wanted to do with my drums. I don't want to stop, but I could stop playing drums forever and say I did it. Bruce has given me the opportunity over the past 15 years to have my big dream come true. Now, I am focusing on what more I can do. Playing with Bruce is like having Haagen-Daz chocolate ice cream all the time.

Bonzai: How do you handle it?

Weinberg: Well, I do sessions and I have a successful lecture circuit where

I go around to colleges with a program called "Growing up on E Street." I talk about what it's like being in the band, how I came up, the mistakes I made, and how I turned the mistakes into positive things for myself.

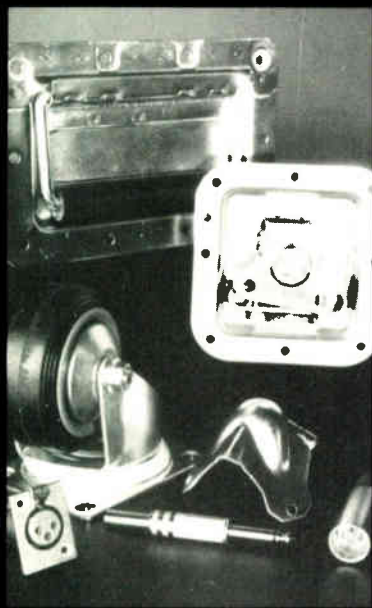
Bonzai: What mistakes have you made?

Weinberg: Well, in the early days I had a lot of excitement as a drummer, but the excitement would sometimes mess up my self-control. It became obvious on some tracks. We would do many takes in those days. A good example is "Out on the Street." We'd done several takes and we couldn't get a really great drum track. I had a time problem caused by lack of experience and not really focusing in on what time was all about.

In 1979 Bruce sat me down and

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LUNCHING WITH BONZAI

said, "This is a problem that must be addressed." I've talked about this before in interviews, because it was a life-changing experience for me. I hadn't really worked hard at the drums. I didn't practice, I'd show up for the session and the drums were set up. I sat down and played. When I was young, I was playing all the time so I wasn't in the "woodshed" practicing. I became good almost in spite of myself. I had a natural talent, but at a certain point I had to move into a world-class situation and compete. Alongside regional drummers I was fine, but then I found myself competing with the Keltners, the Gadds and the people who expanded the parameters of drumming virtuosity. I may never reach that, but you have to try. You have to work at it.

At the time of that meeting with Bruce I was 27, and maybe a little too big for my britches. It really became a question of self-discovery. I got a drum teacher and went back to the beginning with rudiments and learning to control my limbs—and not letting my excitement and the adrenaline rush take over. I woodshedded for three years, like a bandit, six hours a day. I revamped my entire drumming technique.

Bonzai: Did you have to unlearn some things?

Weinberg: Almost everything. But the one thing I had in my favor was that I could "hear" the music. I wasn't a great drummer, but I was a great musician. I believe I am a great drummer now, but then I was just a very talented amateur. Pushing myself like Bruce made the difference. He taught me how to work hard. If he hadn't been the *mensch* he is, he might have said that the drummer was not making it and brought somebody else in. He gave me the room to develop. When you think about the lack of loyalty in the music business, this was an incredible thing to do.

After three years I had turned myself into the drummer that I wanted to be, which coincided with the recording of *Born in the USA*. When I talk about growing up on E Street, those are the trials by fire I had to go through.

Bonzai: Speaking of E Street, what is this New Jersey mystique—what's different about New Jersey?

Weinberg: Some good musicians have come out of New Jersey because

there is nothing to do there. Out here in California you rehearse a band on Santa Monica Boulevard, and two weeks later you move a block over and you're playing on Sunset. There is nothing like that in New Jersey. We grew in isolation. New York is a million miles away from New Jersey. When we were learning how to play rock'n'roll, there was nothing else to do but play rock'n'roll.

Jersey's unique. You have to drive long distances. To drive two or three hours in New Jersey is no big deal. And again, there is nothing to do in the suburbs of New Jersey. People are out in their garages learning to play, and they do it for a long time.

Bonzai: You guys have brought a lot of respect to New Jersey...

Weinberg: There have always been good people in New Jersey. It's a great place to learn how to play rock'n'roll; there are no distractions. In Los Angeles there are a million excuses not to do something. The New Jersey club scene wasn't mellow—you had to play hard and work long hours to survive. Jon Bon Jovi was playing small clubs in 1977 with his band, Atlantic City Expressway. He learned how to do it.

Bonzai: Let's go back to some early dates that are on the CD collection. You played the Roxy in Los Angeles, 1978...

Weinberg: Yes, at the beginning of the *Darkness at the Edge of Town* tour. That was very exciting because it was the first time we went out after a long hiatus, due to Bruce's lawsuit with his former manager. We had just finished the *Darkness* album. In those days we were playing mostly municipal auditoriums, but the night before we had played the Forum. The place to see us in those days was definitely in a smaller club, because things weren't as planned. The band was really smokin'—the shows were just a torrent of energy.

Bonzai: The L.A. Coliseum show in 1985—tell me about that day and the song "War," which was a real show-stopper.

Weinberg: Well, we got there in the afternoon for the soundcheck. In Bruce's dressing room, he asked, "Everybody remember that song 'War,' by Edwin Starr?" We all said sure, went over the song a little in the dressing room and then went out to the stage. We ran it down and it immediately sounded solid, because we could all

play the parts we remembered from the record. Jon Landau was standing nearby on the stage, and he suggested the bass drum continue during the third and fourth verses. So we ran it down for that night's show.

Bonzai: Pretty gutsy, don't you think, to play a new song for 75,000 people?

Weinberg: That's Bruce. He's done that without even rehearsing. He's turned to us onstage and pulled out songs we had never played before. In our band you have to know how to do it. He used to do it all the time in the early days, now not so often.

You learn how to play everything growing up in the bars, so it's not that hard for us to do. We grew up with Top 40 hits.

Anyway, we went to play it that night, but he didn't tell us that he was going to do this long rap about war before the song. I was being swept away by what he was saying, and right before we went into the song he came back to the drums—he realized he hadn't told anyone how we were going to get into the song. He came back and leaned over the bass drum and whispered, "When I say, 'What I'm talkin' about is...' just watch my arm." This is the take that is on the record.

We all were watching him and came right in on the money when he brought his arm down. That's the kind of thing the E Street Band pulls off.

Bonzai: What's been going on lately?

Weinberg: Well, last year was an incredible year for me, with the *Tunnel of Love* tour and being on the Amnesty tour. Lots of long traveling, but it was great being up there with Bruce, Sting and the others, and going to Africa, India. Actually, it was another life-changing experience, and a really grueling tour.

Since then we've been on hiatus, a reflective time because we've got so many miles behind us. We've been so busy the last five years that I'm looking forward to doing some guest shots on other people's records. I'm on Carole King's new record, *City Streets*. So anyone who needs a little East Coast muscle should give me a call.

You know, it's nice working with Bruce, because we work real hard and then we take a lot of time off to recharge. I like to keep drumming. As a band we hardly ever get together and just play for the hell of it. It's a work situation, as it should be.

Bonzai: What is your strangest characteristic as a drummer—the odd twist

in your style?

Weinberg: I can hold a single-stroke roll longer than just about anybody—right-left, right-left, as fast as you can go. Miami Steve [Van Zandt, Bruce's former lead guitarist] always insisted that the drummer follow through to the downbeat. It isn't used very often, but Bruce calls it the "Weinberg Roll." I guess my strongest point is my feeling for rock'n'roll.

Bonzai: Do you think you were a drummer in a previous life?

Weinberg: If I was, I was probably the guy in the Revolutionary War with the snare drum marching the troops. I try to be a motivating drummer; I help people around play better 'cause I push. I learned that from Bruce. He makes people play better. After 15 years with him, I've learned to inspire people to play better, especially younger musicians.

Bonzai: What do you tell the young drummers who want to make it? What's the secret?

Weinberg: There is no secret. The only thing you can do is keep playing and never give up. You have to have a belief in yourself that one day you will get what you want. You have to

—CONTINUED ON NEXT PAGE

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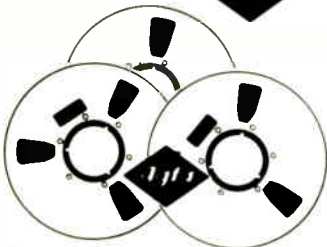
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LUNCHING WITH BONZAI

—CONTINUED FROM PREVIOUS PAGE

make every note count, and that's a life lesson, not just a drumming lesson. Keep working and always try to get better. People like Jim Keltner are always pushing the envelope of what they know. Young drummers want to go from one to ten without the middle steps because they're in a hurry. It's hard to tell someone to slow down—I was in a hurry, too. But you have to be detail-oriented, and you have to do it right. It's harder to erase the mistakes; it's much better to have people remember you and say, "Yeah, he gets the job done."

Bonzai: Do you study the drums of other cultures much?

Weinberg: A little, but the roots that I go for are at Broadway and 48th Street—Tin Pan Alley.

Bonzai: Hal Blaine is probably the most recorded drummer in history. What is the key to his success?

Weinberg: Hal had everything—sound, feel and style. Some drummers have a lot of one, or not too much of another. To me, he had it perfectly proportioned, and he had a very driving style that wasn't obtrusive. He played lightly; he didn't play very hard. You can hear it on the Mamas and the Papas records—you hear a lot of very subtle stuff. He had great ideas and execution and what seemed to be the confidence to be able to say to everyone around him, "This is right," whether he was saying it verbally or through his drums. And he also got lucky. He got into a situation where someone was needed to do the job. There are no Hal Blaines today.

But there are a lot of great drummers out there now. People like Dave Weckl, who does a lot of session work and came out of the Steve Gadd school of drumming. Steve Gadd was probably the Hal Blaine of the '70s. He played on everything.

Bonzai: Isn't there hope for drummers?

Weinberg: Well, there is a trend back to using live drummers in conjunction with machines. There is a discernible difference between a songwriter getting together with a band and a guy sitting in his bedroom. I hear a lot of bedroom records on the radio today—the writer has a drum machine, a DX7, programs a drum pattern, pads on the DX7, starts layering it and pretty soon you've got a record.

You go to a club and they put on an old Motown record, and the audience just sits there. They won't dance. Put on a modern dance record and everybody is up on their feet. Some people don't seem to know how to dance to a real drummer anymore! Is it good or bad? I don't know—it just is. When they invented the bass drum pedal and the hi hat pedal, they put two guys out of work. One guy could play the bass drum and the cymbals at the same time.

But I think there is a trend toward live drumming on records. I'd rather hear pathetic drumming than pathetic drum programming. I'd rather hear a lousy drummer than a drum programmed by a keyboard player. Drummers are drummers for particular reasons. When I play a song, I'm not playing something to strictly complement the bass player. I'm playing to complement the singer and the song. That's my approach and that's my job.

The best thing that a drummer can do is find the groove that works for that song. This is what the masters of drumming do. I play acoustic drums. That's how I've chosen to express myself. But like many modern drummers I went through all the expected anxieties that all drummers went through when the machines first came on the scene. The LinnDrum? I wanted to torch that thing!

Bonzai: I guess it's up to the drummers to change things...

Weinberg: Yes, by playing better. I'm lucky enough to be in a position to play *drums*. I may lose some jobs to someone who can program a machine, but I spent 34 years of my life learning how to take two sticks and play.

Bonzai: Thirty-four years? How old were you when you started?

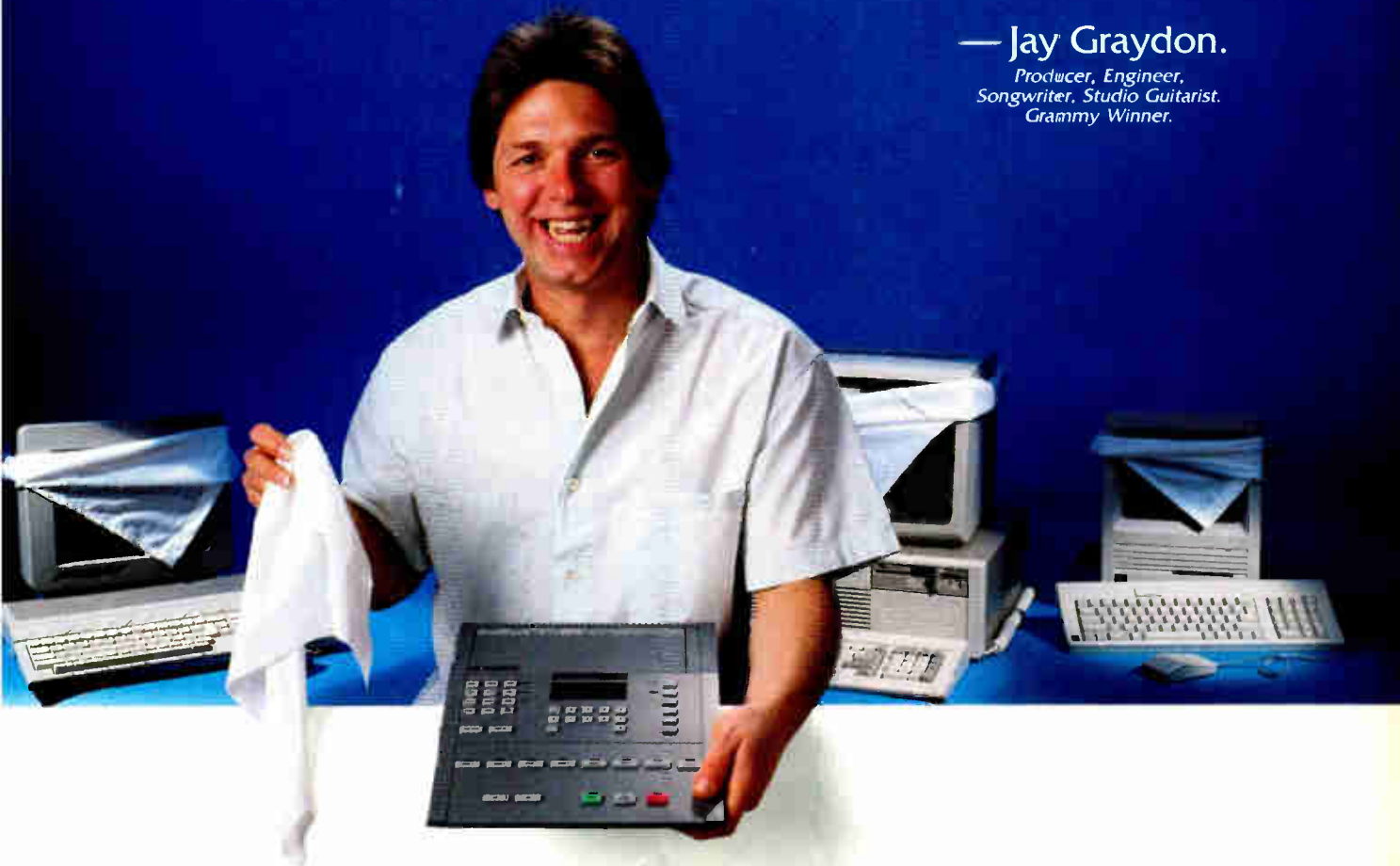
Weinberg: Four years old—a cousin gave me an old drum and one stick, and I was good on that thing. I could bang on that drum and get rhythms going. At 4 you are able to do that kind of thing. My daughter is 2, and she can do it now. I could play the drums from the first time I picked up a pair of sticks, and I started taking drum lessons when I was 7 years old. I got paid to play when I was 8, and since then I've considered myself a professional drummer. ■

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world radio history

by Robyn Flans

HENRY LEE SUMMER

STAYING LOOSE AT HOME

It was one of those projects where engineer Bill Deaton had to roll with the creative punches. And he loved every minute of it. Henry Lee Summer wasn't interested in making *I've Got Everything* a precision, state-of-the-art record; he simply wanted to capture on tape the rock'n'roll spirit that pervades his every thought and keeps him bouncing off walls.

"I wanted to get a recording situation that was as close to a natural environment as possible, and putting it in my house and just doing it when I felt like it was definitely the way to go,"

explains Summer. "It's not like my music has complicated time signatures and cool solos. It's just real simple three-chord, three-minute songs, and if the vibe's not there, it's not even worth listening to."

In the Summer ranch house, just beyond the cardboard cutouts of Elvis and Bill Cosby in the living room, lies a Soundcraft TS 12 console. At the very end of the house, the wall next to the garage was knocked out and replaced with sliding glass doors. The garage has been insulated, and the now-slanted walls have been acoustically treated. To the right is the kitchen, which has a walkway that goes both into the living room and studio area.

"We would open the doors into the kitchen and into the family room and set up room mics in there," Deaton describes. "It really gave it a cool crunch sound. You could almost get this AMS reverb sound just from the room mics." Summer's studio holds an Otari MX-80 tape machine and an array of outboard gear, including a bunch of modified tube microphone preamps (primarily Langevin), Pultec, ITI and API EQs, Focusrite modules, a modified Sontec limiter, Roland SRV reverb, Yamaha REV7s and REV5s, and some RCA BA6A and Gates limiters. A modified AKG C-24 stereo tube was used on the *I've Got Everything* sessions for Summer's vocals and drum overheads.

"We did a lot more than some studios simply because in a lot of studios you work in, there's no place you can use except the actual place where the instruments are set up," Deaton says. "The main thing we made use of was a lot of house ambience. There are some percussion things we did in the kitchen because there's a tile floor. On one song—I think it was 'Don't Leave'—Henry took some brushes



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and actually played the tile floor, and we miked it, compressed it and EQ'd it. Henry did a lot of the percussion, including a lot of tambourine.

"In fact," Deaton recalls, "I remember one night he was just beating his hands to death, and they were actually getting bruised and a little bloody. I had just bought my new sampler, and I said, 'Man, just let me sample the tambourine. I can fire it off the kick and snare and there won't be any problem. No one will ever know.' And Henry said, 'Absolutely not. I want to play it all the way through,' so he found some heavy gloves and finished it. He didn't want any of that on the record—no flying vocals around or flying instruments around with a sampler. He sang everything on it. He hates the process where you do a chorus and fly that chorus into every other chorus so they all sound identical. He wants them all to sound different, so that's what we did."

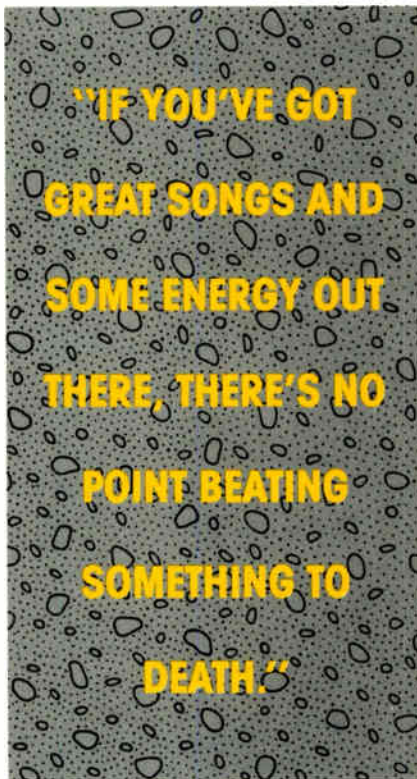
Summer likes it to be so real that, if you listen closely, you can hear the phone ring in "Close Enough For Me," as well as drummer Mike Organ dropping a drumstick, which Summer says creates a perfect tension.

"In 'My Turn Train,' we started out and [bassist Mike] Wanchic comes in early, and it's on the tape, me going, 'Not yet, not yet,' and finally I count him into the song," Summer recounts. "You can hear it plain as day on the record. The record company couldn't believe it, but after a while they saw what I was going for and they love it now. We didn't leave in the bad mistakes—there's a difference between playing a song sloppy and playing it loose. In the title track, all I had was the chorus and the idea I was singing about, so I sang it right off the cuff. The only things I re-sang were the choruses, because they were so flat, but the verses are as you hear them. I knew the idea of what the song was talking about, and I had phrases in my mind, but putting them together was all spontaneous."

Spontaneity was the single most crucial factor in the recording of *I've Got Everything*. "I knew beforehand that Bill knew what he was doing, so I wouldn't give him time to do things," Summer says. "The idea of testing for whatever mic to use for my vocal was whichever mic was the closest. I was doing a song on piano, and all of a

sudden I got a vibe that I wanted to record the song, so I said, 'Hurry, give me a mic, I want to play this. Mike beat the piano.' He started to bring over some stereo mics, but I didn't want to lose the vibe by taking the time to experiment by hitting the keys, so he stuck a mic over the piano and put a mic on my face and we recorded 'What's a Poor Boy To Do' just the way you hear it."

While most engineers would cringe at the thought, Deaton says, for him, it



was a blast working like that. "On a lot of sessions, everything is so super critical because you've spent days setting up and listening to this and to that," says Deaton, who recalls the many times he drove from his home in Gallatin, Tennessee, right outside of Nashville, to Summer's home in Indiana. He would get there at 4 p.m. and they'd be cutting by 6 p.m.

"We'd stick mics up in front of the drums and get some really good sounds, because a lot of the instruments those guys were using sound incredible anyway, and to me, it's impossible to get a bad sound when you're in a house. A lot of those tracks on that record are first, or at most, second takes, and the same way with Henry's vocals. If I had my setup patched in for the vocal, by the time I got the EQ set, we were ready to keep the vocal. He's incredibly fast and a

really good singer. It was kind of a new experience for me, because I learned real quick that if you've got great songs and some energy out there, there's no point beating something to death. It seemed to flow real natural, and it was a breath of fresh air for me. We had to hang by the seat of our pants and just go for it."

Summer says Frank Filipetti, who mixed the album in New York (except for "Close Enough For Me," which Deaton mixed in Indiana) wanted to meet this Bill Deaton.

"He could not believe how it was recorded," Summer laughs. "A lot of the tracks would have things going on for a little bit and then not going on anymore, something new would come in and sometimes there would be three things going on in one track."

"Most contemporary projects these days either have two 24-track machines locked together or a digital machine or two," Deaton says, "so you've got tons of open tracks. We were a little bit more limited on space, and actually we only had 23 tracks since we had a track dedicated to SMPTE. So there were a couple of instances where we might have had to stick a background vocal line on the guitar track that wasn't playing at the time."

Other than that limitation, Deaton says he found no others, except maybe the furnace he had to turn off occasionally. If it got too noisy, they'd just use the "drown-out" syndrome and simply turn everything louder, Summer says laughingly. Not exactly the recording norm.

"On a lot of records you listen to nowadays, the prime objective is drum machine synchronization, etc.," Deaton states. "You listen to that and there are cool sounds, but when I listen to so many of the dance or even pop records, it's like, 'Oh yeah, that's the D-50 patch that so and so uses and, yeah, there's the new Akai drum machine,' and you can sit and pick out every sound, every 'verb and each delay; it's like a NAMM show. I'm not putting those guys down, because that can be great music and I listen to some of it myself, but it's certainly more fun in the long run to hear folks having fun playing rock'n'roll." ■

Robyn Flans is a Los Angeles-based freelance writer. She's also conducted interviews for radio and TV, and has authored three rock books.

Vintage Microphones

In last month's issue, we started off our series with an in-depth look at the famous Neumann U47, one of the most celebrated of the tube condenser microphones. We also covered a lot of ground on the operation of pressure gradient mics in general, and if you missed that issue...too bad. But seriously folks, I am, from this point on, going to assume that you have at least a rudimentary understanding of the principles of physics involved in the construction of pressure and pressure gradient microphones. We also discussed the construction of the single backplate condenser capsule as made by Neumann since the late '30s. In this installment we will also be calling upon that knowledge, so sharpen your pencils—there will be a quiz after the show.

The stars of the show this time around will be the M49 (with a brief word about the M50), the U67, and its contemporary sister, still in production after 20 years, the U87.

They say old mics never die, they just get more expensive, but at least there are pockets of resistance to their demise here and there. Like in every major studio in the world, and a lot of minor ones, too! It is a fascinating fact that as microphones get more and more advanced in their physical construction, the old ones shine more and more in their very imperfection. We mentioned last month that all mics are echo chambers to some degree, and there are good ones and there are bad ones. Well, this fact bears repeating, that's why I just did.

Keep it in mind as we explore the offerings from Neumann that kept the recording world simmering through the '50s and '60s. In our final debacle next month, we will look at the heavy-hitters from AKG that set the tracks of

Ampex 300 Series machines on fire during that same era.

The M49 debuted in 1949 and was an instant success in German broadcasting. The microphone was designed on contract for the IRT, the governmental regulating arm of the German broadcast system. The salient feature of the M49 was that it was the first condenser microphone capable of remote pattern control, achieved through electronic means. By varying the rear-diaphragm voltage against the backplate reference, a full range of patterns, from omni to cardioid to figure eight, was accomplished. A Dr. Grosskopf held the patent on this method of pattern selection, and Neumann was con-

PART 2

THE NEUMANN M49, M50, U67 and U87

by Stephen Paul





Pictured here is the extremely rare Telefunken U67.

Photos facing page: Neumann M49 with grille and with grille removed. The mic uses a miniature triode tube developed specifically for microphone applications.

PHOTO ILLUSTRATION BY DAVE MARRS

tracted to build the resulting design.

The 49 had several other interesting features, including one of the first attempts to limit the effect of grille resonance on the response. Because the grille is slanted and presents a continuously varying profile to the capsule, there are fewer standing waves generated. It is also an interesting microphone because it was one of the first to incorporate a special ultra-miniature triode tube specifically designed for microphones. This was the MSC2, which was later refined and further miniaturized before seeing mass production as the AC701. It was a cute li'l bugger! It was de-

signed to have a long life, low current consumption, high input impedance, and low microphonic and capacitance characteristics. In fact, this became the only tube permitted in a microphone that was going to be used on the German airwaves. It became understandably popular in Europe.

CORVETTES AND CADILLACS

The M49 used the same capsule as our old friend the 47, and yet, because of the completely different housing and the triode electronics, the sound of the mics bears few similarities. Both of them are superb vocal

mics, though neither were designed for the purpose of close-miking. However, those crazy Americans, with their Corvettes and their Cadillacs, their loud ways and their rude rock'n'roll, discovered the magic of blasting into a Neumann at close range, and thus began a love affair with proximity effect and large-diaphragm capsules that has endured to this day. One could even say that a love affair implies romance, and that is a good description on an artistic level of what it is about these magic microphones that makes us music and engineering types so crazy. We *recognize* that sound. And we love it. All the more 'cause those days are gone. But the mics aren't. Thank God.

As we have pointed out before, today's offerings from the Mighty Manufacturers Over There are light years ahead of these crusty old dinosaurs in terms of specmanship and thinkology; but the fact is, for some reason these new starships just can't seem to shake the oldies. It's kind of like having the Red Baron on your tail. Naturally, new classics like the TLM170 and the Sanken CU-44x are bound to prove themselves over time, and in some arenas they will doubtless prove superior not only in specifications, but in performance under certain conditions. However, the pure thrill of belting a ballad into a 47 tube will never die.

The 49 is especially good on female vocals. Not having quite the "nasality" that the 47 is known for, it has a smoother high-frequency range, and the size of the grille forms a larger-volume enclosure giving the capsule more breathing room and contributing to its "openness." Many female singers, including Barbra Streisand, use this microphone. It has a way of rendering the female vocal with an immediacy and presence not found in any other design. No, this is not a Neumann brochure. The damn thing works!

GREAT BALLS OF FIRE

Because there was also a demand for a microphone that would compensate for the loss in high-frequency response incurred by long distances, the M50 was born. High frequencies roll off as the square of the reciprocal of the distance from the sound source due to frictional effects. This means that the viscosity of the air is sufficient to dissipate sound energy in the form of heat, and as there is less power in

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A.



B.



C.



D.

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the treble range, it suffers the most from this effect. Therefore, when a mic is hung high above an orchestra in an auditorium, a boost in the response above 5 kHz is desirable. Even today, these microphones still make some of the most wonderful orchestral recordings in the world. We have successfully modified this model with a one-micron diaphragm and they sound quite wonderful.

We will touch on them briefly, but as they were omnidirectional only and not often used on vocals, they are beyond the scope of this diatribe. Just for the archives, we have included a photograph of one without its grille, so the vastly different construction (and the meaning of this subhead) from the 49 can be seen easily. It confuses a lot of people that these two mics are almost identical on the exterior. You can tell a 50, as it always has a white jewel or dot on the front, and the 49 has a red one.

So much for the 49. We now turn to a singularly difficult microphone to pin down, the famous (or infamous if you prefer) U67.

SO, YOU WANT A CLOSE-UP MIC?

Sometime in the mid-'60s, someone at Neumann had a great idea—"Hey, let's build a close-up microphone! Yeah!" And so, into the pages of history was written the 67. Now this mic set the stage for Neumann's entrance into the future. In fact, an original brochure for this mic proclaimed, "U67. Sound of Tomorrow!"

In a way, it did turn out to be somewhat prophetic. The U67 was a real turning point for Neumann and for recording in general. The 67 was a genuine attempt to create a tube mic that could withstand sufficient levels to really allow close-miking a voice or loud instrument without some of the problems that could occur.

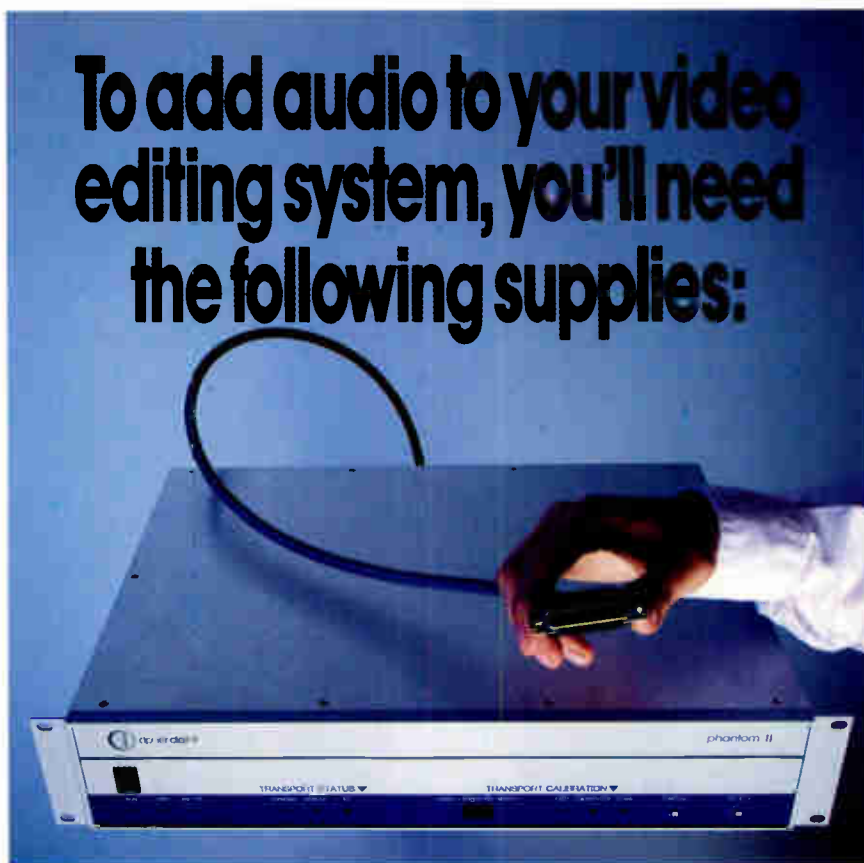
First and foremost, the 67 was designed with a low-frequency roll-off that was always active, a sort of electronic rumble and pop filter. It also had a high-frequency roll-off built into the amplifier and a boost built into the capsule. This was a sort of acoustic pre-emphasis and electronic de-emphasis curve. The idea was that by using lots of feedback and feedforward, they could control the dynamic range and signal-to-noise of the mic, enabling it to handle high levels at close range. (Feedback means taking a portion of the output and mixing it back into the input out of phase, and

Those crazy Americans discovered the magic of blasting into a Neumann at close range.

feedforward means mixing it back to the input in phase.) This had the added benefit of making the mic quieter and less subject to sibilance.

However, there are some who feel that this did not do a whole lot to make the mic sound "open," and the heinous crime of negative feedback is enough to make today's audiophiles keel over their Conrad-Johnson tube amps. Oh well, since when have we pros cared a hoot about what the audiophiles think?

The fact is that there are some who feel that the mic is perfect for vocals where a smoother sound is desired. We do build a version of the 67 with a one-micron diaphragm and some of this feedforward-back adjusted for more top end, and it has been used on artists such as Linda Ronstadt with



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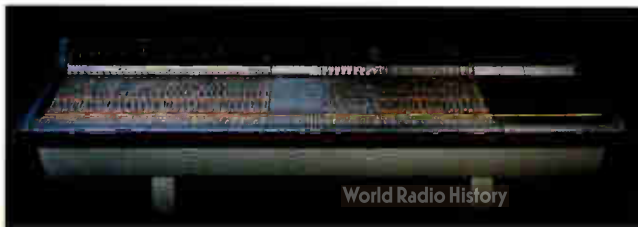
Other consoles have fader and mute automation and perhaps even reset or recall (manual reset) type capabilities, but the Harrison SeriesTen is more than snapshots, it has dynamically...

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The two parts of the U67's dual backplate.

and the added feature of reliability.

Newer mic designs attempt to address this off-axis problem, and though they have certainly succeeded, for some strange reason an awful lot of artists prefer the old chestnuts, which are loaded with flaws. I guess there's just something about these poor, old-fashioned, outmoded designs that people just plain like better! (Well, on some vocals, anyway.)

Certainly, the cardioid/omni approach is a big, fat compromise at best, but on the viscerality index, big is beautiful. We like those 32mm diameter mics. The only way to correct the problem is to build a smaller capsule, and many have been so manufactured. But in the end, it's these older, larger, less-perfect systems that have garnered the huge following of the vocalist crowd. Surely this cannot just be ignorance on the part of all these artists and producers.

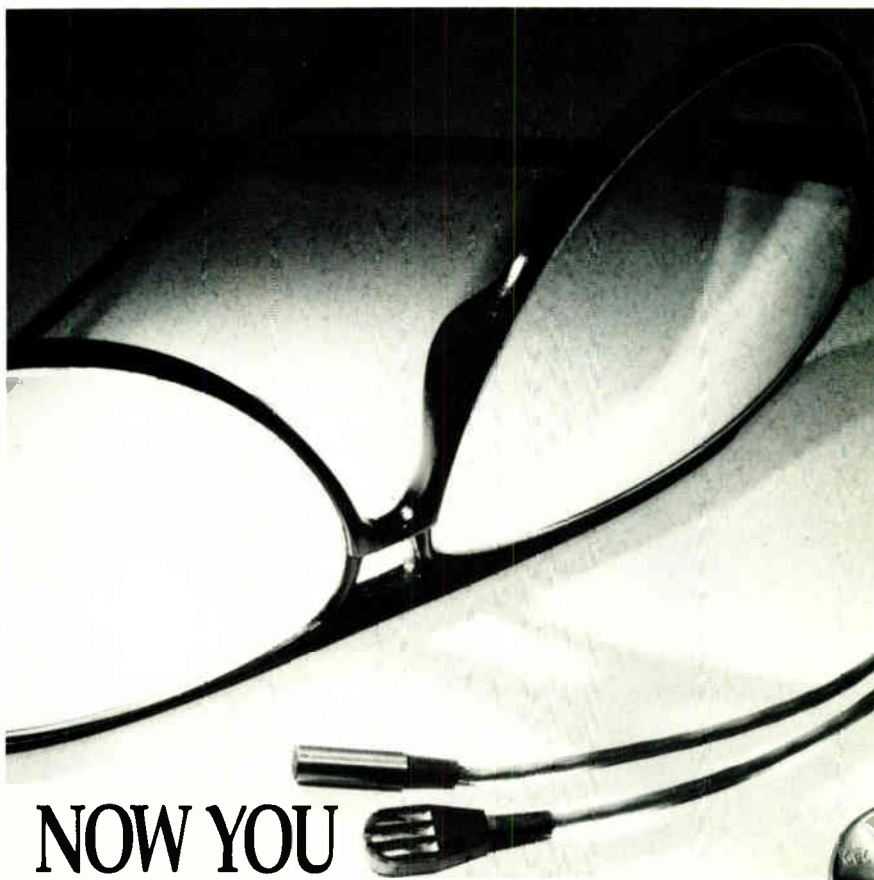
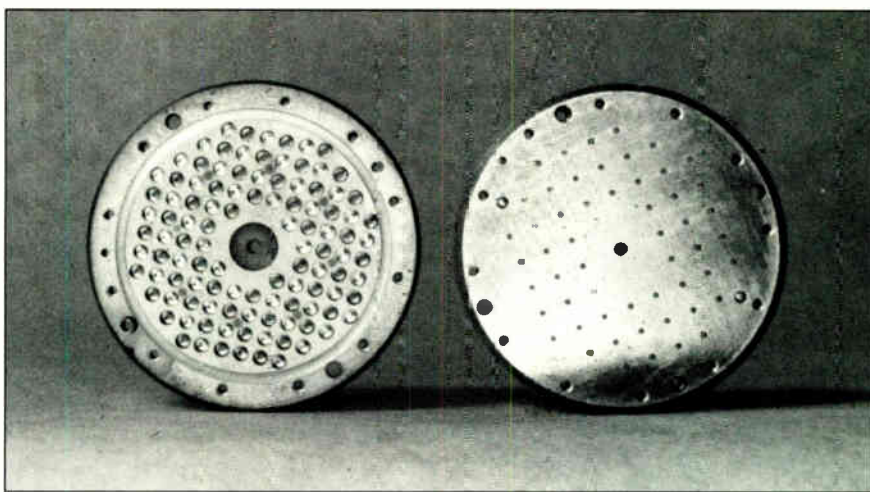
In this series we have tried to get a rare glimpse of the secret insides of these sensitive devices and explore the subjective aspect of the almost fanatical devotion that many recordists have to these older mics. The shapes of the mics themselves have a lot to do with their responses, and the various types of amplifiers and tubes contribute to our impressions of them.

We can see that in some cases these devices may be looked at as "colors" that the engineer can use, as though having a magic paintbox from which to select the perfect "tone" to capture a sound. When we do a modification to any of these classics, we are not trying to change the character the mic possesses, but simply trying to bring the system to the pinnacle of performance that its particular shape and hardware underpinnings render it capable of.

In the end, the most successful of us have allowed our ears to be the judge, and when the artist says "Wow!" you know you got a good one.

So, until next month, when we delve into the mysteries and some of the history of the AKG series of classic vocal mics, may all your vocals be colored and crystalline; yes, and unashamedly so. ■

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by George Petersen

MEYER HD-1

HIGH DEFINITION MONITORS



D*eja vu*: You've probably seen these speakers somewhere before. Perhaps it was in the Meyer demo room where they debuted at last month's AES Convention in New York, or maybe you noticed a prototype sitting atop Rumbo Recorders' Neve console on the cover of September *Mix*.

Hardly a rush job by anybody's standards, development of the HD-1 High Definition Monitors began nearly five years ago with John Meyer's desire to build a small, highly accurate reproducer for in-house testing and calibration purposes. Such a speaker would be entirely suitable for studio monitoring purposes, so earlier this year Meyer Sound decided to market the HD-1 as a commercial product.

The HD-1 is a bi-amplified system comprised of a proprietary 8-inch woofer and 1-inch dome tweeter in a vented enclosure. Active crossovers, frequency and phase response correction circuitry, driver protection circuitry, and amplifiers are built into the cabinet. The internal amplifiers—160 watts driving the LF driver, 70 watts into the HF driver—can provide a

maximum SPL of 110 dB (at a half-meter distance), with a burst capability of 118 dB for fast transients. An LED on the front panel glows green during normal operation and changes to red to indicate any non-linear condition, such as amplitude distortion, that can occur when overdriving the system.

One advantage of self-powered monitors is their consistency, particularly for independents who tote their favorite speakers from studio to studio. Since amplifiers can greatly affect the coloring of a speaker's sound, I've often wondered about engineers who insist on using certain monitors but often pay no attention to the amplifiers driving the system. Thus, the self-powered monitor makes a lot of sense: the amplifiers themselves can be specifically tailored to the particular monitors, but perhaps more importantly, the use of the same amplifiers brings consistency to the monitoring environment, especially when moving from one control room to another, which is often the case on long-term



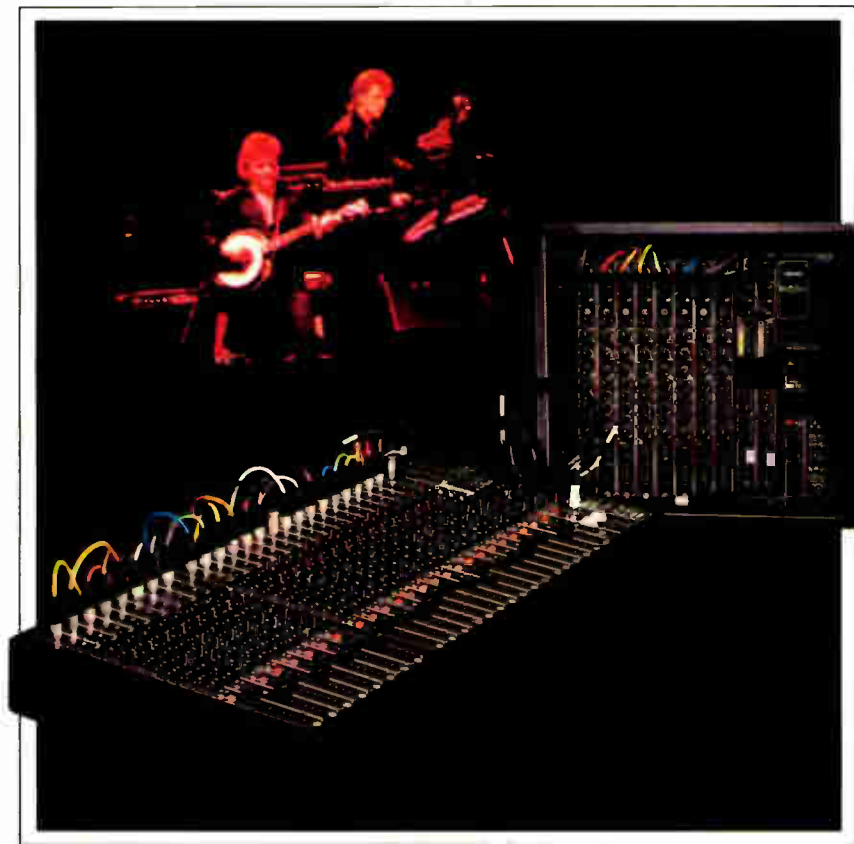
The Studiomaster Mixdown consoles are specifically for today's smaller studios; studios which are using more and more sequenced instruments, and need many inputs for them.

The 16.4.8 and 16.8.16 Mixdown consoles have 26 and 34 inputs at stereo mixdown, respectively. Put into perspective, other similarly priced 16.4.2 and 16.8.2 consoles would need to be in 24.4.2 or 32.8.2 formats before they could match this capability.

The main benefits of this are that re-patching during a session is considerably reduced, if not eliminated, and a smaller multitrack tape machine can be used. This is because only the 'live' instruments need to go on tape, since MIDI sequenced drum machines, keyboards and effects can simply be monitored during the recording, then added at the stereo mixdown.

Few consoles rival the Mixdown's features, and fewer still match specifications like a T.E.I.N. of -129dB and cross talk between subgroups (at 1kHz) of -88dB . And with these features and specifications, none can match the price.

Key features of Mixdown include balanced inputs, 3-band sweep EQ, 6 auxiliaries, 'auxiliary line inputs' (8 on 16.4.8, 16 on 16.8.16), upper AL inputs have 2-band EQ, DIRECT OUTS, 48V Phantom Power, effects AND foldback sends on subgroups/AL inputs, fader reverse, stereo aux return, 100mm faders, expandable inputs to 40.



The Studiomaster Session Mix stereo consoles are ideal for P.A., club installations and keyboard and drum machine submixing. They are available in THREE formats: 8.2, 16.2 and 12.2R.

Though not expensive, the Session Mix range does offer features you may only expect on more costly alternatives. All models have electronically balanced inputs, 3-band EQ, 4 auxiliaries, 2 auxiliary returns, 5-pin DIN Record/Playback socket and 12 segment LED output meters. 12.2R and 16.2 versions have stereo returns. The 16.2 has in addition to the features above, a sweep on the Midrange EQ, EQ on the outputs (switchable to aux returns), pre-fade SOLO, 100mm faders, post-fade DIRECT OUT sockets on inputs and channel mute buttons.

The 8.2 can be rack mounted (in 2 positions) occupying 10U, stood flat or wall mounted due to its special endcheeks. It can also be expanded to a 16.2. The 16.2 can be expanded to 24.2. The 12.2R is rack mount only and occupies 10U.

Note New Address

For detailed color literature, contact Jim Giordano, Paul Reeve or Tony Allen at STUDIOMASTER, INC., 3941 East Miraloma, Anaheim, CA 92807 Tel (714) 524-2227 FAX (714) 524-5096

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The back panel of each speaker includes an XLR input with +4dBu/-10dBv sensitivity switching, a detachable AC cord and power select for 100/120/220/240-volt operation—a handy feature for intercontinental engineers and producers. A 25-pin "D" connector on the rear panel is provided for factory calibration purposes and for connection to an accessory preamp that Meyer Sound intends to market next year.

Front grilles (you know, those things that come with most speakers that are immediately removed, then stored in studio "back rooms") are not included or even optional. Since the tweeter protrudes outward from the monitor's front panel, care should be taken to avoid damaging the fragile dome when moving or transporting the speaker. With this in mind, Meyer plans to offer optional hard cases for the traveling user.

After a quick setup, I was anxious to put the HD-1s through the paces. Starting out by listening to a few favorite compact discs, what I noticed first was their superb imaging, offering an eminently well-focused soundstage; I've never heard such accurate, well-defined, spatial perception in a close-field monitor. While the HD-1s incorporate a substantial amount of control circuitry, I never felt I was listening to a "processed" signal. What I heard was natural reproduction with exceptional clarity and sonic transparency.

Frequency response was equally impressive. Specifications state a bandwidth of 40 to 20k Hz (± 1 dB), and based on my listening tests, I have no reason to doubt such claims. One main drawback in small studio monitors is bass response, yet the HD-1s proved to be an exception to this rule. The stated 3dB down-point is 32 Hz, and I was surprised to hear this little 8-inch driver in a 12x14x16-inch cabinet reproduce a solid 30Hz sine wave.

From a volume standpoint, I was entirely satisfied by the HD-1's ability to deliver an adequate sound pressure level. Since I normally do most of my monitoring ranging from 80 to 95 dB, the Meyer monitors provided from 23 to 38 dB of headroom at my average listening levels. This was more than sufficient for my purposes, but best of all, musical balance remained constant at just about any playback level.



Announcing the ZMC-10. With a difference that's patently clear.



Developed after two years' experience on the road with the acclaimed ZMC-1 system, the ZMC-10 brings you the same revolutionary cymbal miking concept, at a price most serious drummers can afford. The ZMC-10 retains all the essential features of the original: most importantly, the same innovative ZMC microphones—so unique that a patent on their exclusive design has just been granted in the United States.

Dedicated to amplification alone, the ZMC-10 gives you the same cymbal sound quality as the ZMC-1—the system used by top professionals like Neil Peart, Gregg Bissonette and Tommy Aldridge—in a mono unit. Featuring a newly designed hi-hat channel and a superior master EQ control, the ZMC-10 gives you all the close control you need.

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If you're someone who likes listening *loud*—say, averaging 98 to 103 dB—the system delivers plenty of punch, yet still allows another 15 to 20 dB for headroom. Above 118 dB, the system's driver protection circuits kick in, with amplitude limiting, ensuring that the speaker components are not damaged by overdriving or clipping.

Having listened to the HD-1s for a couple of days, I felt secure about using them to mix a live concert from a multitrack master. On this tape the levels from the bassist's stage rig were so high they bled into nearly all the other tracks, making this session more of a salvage job than a creative effort. I became accustomed to the HD-1s in no time at all, and soon began to appreciate their gutsy low-frequency response.

More fun than this gig was a MIDI tracking and mixing session, which really brought the monitor's imaging to task. Aside from side-to-side synth effects and stereo sampling, most of the stereo imaging from electronic instruments themselves actually comes from a combination of creative pan-potting and judicious use of stereo signal processing. Thanks to the HD-1's accurate stereo imaging, I was acutely aware of even the smallest changes in panpot positions.

Certainly one of the most important considerations in any monitoring system is its ability to translate, which refers to how mixes made on a particular system sound when played back on other systems. The HD-1s scored extremely well in this regard. I played mixes on systems ranging from boom boxes and portable headphone tape players to large audiophile-type speakers and auto stereos, and was quite pleased by the consistent results.

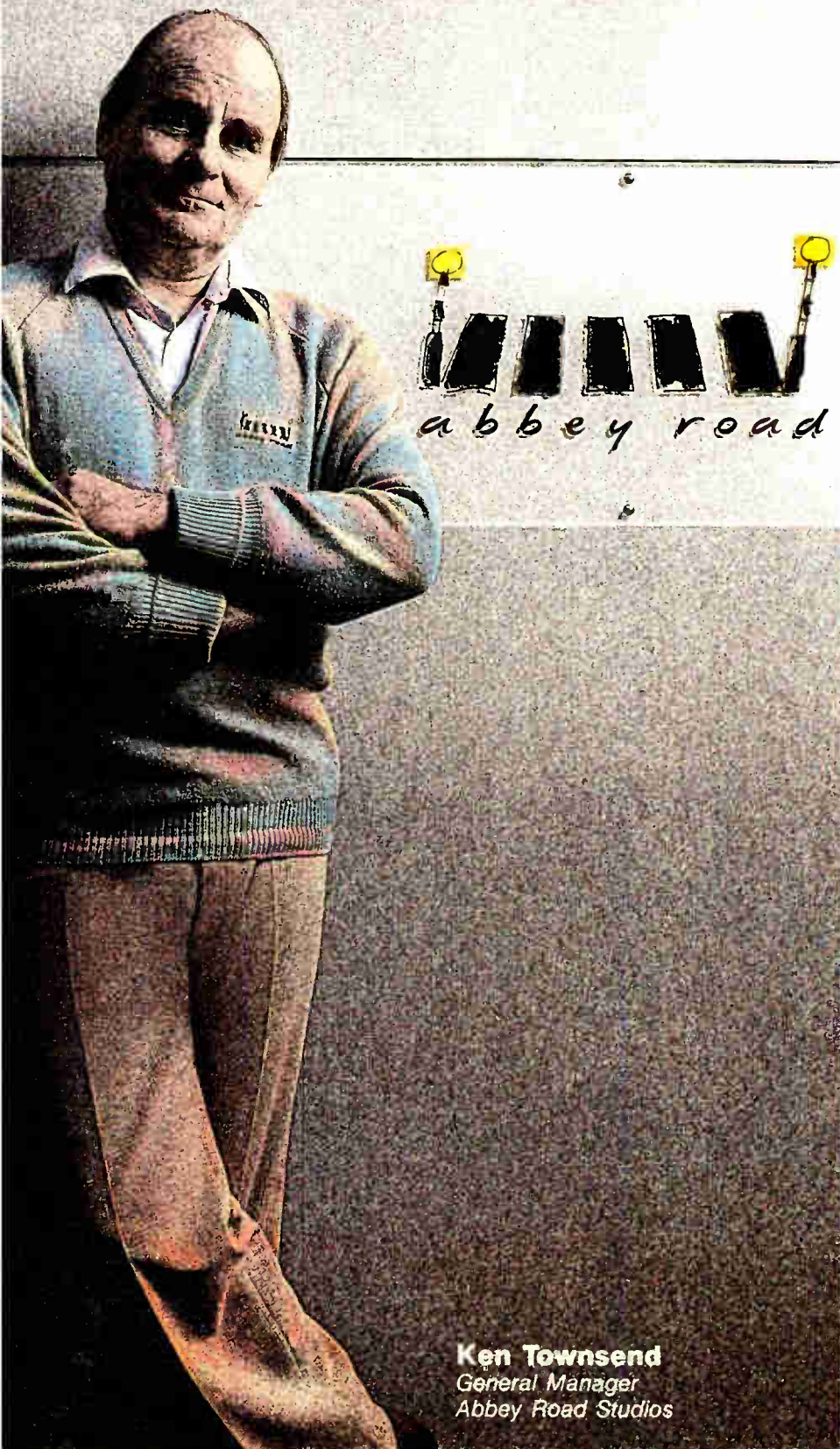
The Meyer HD-1 High Definition Monitors are an accurate, high-performance monitoring system that would be equally at home in control rooms of any size, remote recording vans, mastering suites, and video film post-production and broadcast facilities. At \$4,135 per pair (professional net, factory direct), they are not inexpensive, but are worthy of consideration by the serious listener or anyone seeking a reliable reference monitoring system.

Meyer Sound Laboratories, Inc.,
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W E C A R E

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by George Petersen

PRODUCT CRITIQUES AND COMMENTS



CELESTION SR COMPACT SPEAKERS

CI liked these speakers the first time I saw and heard them. At a mere seven pounds apiece, this combination of a single 5-inch driver in a ported, injection-molded cabinet delivered surprising performance from a truly compact cabinet.

The Celestion SR Compact uses the

same driver design as the larger speakers in the SR Series, with a large, egg-shaped aluminum dome that extends high-frequency response. The speaker has a sensitivity rating of 91 dB (1 watt at one meter) and a power handling rating of 100 watts program material, and is able to provide maximum sound pressure level of 111 dB, a respectable amount of sound from a

small enclosure. Five-way binding posts in a recessed panel on the back surface accept bare wire, spade lug or banana connectors.

The front grille can be removed (and the driver masked off) so the enclosure can be painted to blend unobtrusively into any background. With a wide variety of optional mounting hardware that attaches to the two threaded metal inserts under its cabinet, the speaker seems like it would be equally at home in fixed installation applications (churches, clubs, restaurants, bars, theaters, etc.), on-stage (as a mic stand monitor, front fill, etc.), keyboard monitor in a MIDI studio or as the basis for a small P.A. system to cover meetings, conventions and the like.

The SR Compact offers clear, punchy reproduction of high and midrange material. Due to the size limitations of the driver and enclosure, bass reproduction is restricted to a lower limit of 80 Hz, after which it falls off dramatically. However, this is certainly adequate for many applications, particularly speech reproduction and background music installations. If you require more bottom end, a subwoofer can be employed and hidden some-

where in the room. On one occasion, I added a bass cabinet with a JBL 15-

With the ability to handle many audio tasks, Celestion's SR Compact speaker is a jack-of-all-trades, and at \$199 each, is a real problem-solver in any number of sound reinforcement



inch woofer (fed through a separate mono amp) to the SR Compacts and was quite pleased with the results.

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E-MU PROTEUS

Here's an example of a great concept turned to reality. Take a compact, one rack-space chassis, fill it with 192 sounds and true 16-bit sample playback quality, add six assignable audio outputs and 32-voice multitimbral operation, and you've got the E-mu Proteus, an amazing performer at an affordable \$995.

Obviously, the folks at E-mu did their homework in researching what the market is really looking for in a

MIDI sound module. One example is the configuration of Proteus' three pairs of programmable stereo outputs. The tip of each jack in the "sub 1/sub 2" groups carries the left or right output of each group when a standard 1/4-inch plug is inserted; if a stereo TRS plug is inserted, the ring connection serves as an effects return. Selected instruments can then be "looped" through external signal processing devices and routed back to Proteus' main stereo outputs. This affords plenty of flexibility to the user, yet reduces the need to tie up additional console inputs and effects buses, which always seem to be in short sup-

ply when doing a complex mix of MIDI instruments.

I was impressed with Proteus' straightforward user interface, especially considering its enormous complexity. The front panel is simply laid out, and operation soon becomes intuitive. The continuously rotating data entry control allows scrolling through all 192 presets with a couple of quick spins, while its detented action permits extremely precise entry of parameter values. The manual, by Riley Smith, is quite good, with plenty of practical application tips, clear graphics and even a patch sheet for storing favorite settings manually.

One of Proteus' coolest features, hands-down, is its two-minute, on-board demo sequence, which does an exemplary job of showing off the versatility of the instrument. However, the usefulness of the demo sequence does not end after you leave the store with a Proteus under your arm, since this feature also provides a quick method of testing the audio outputs—especially handy when setting up your MIDI system in the studio or at a soundcheck. Equally handy is the front panel "MIDI Activity" LED, which flashes whenever data is received at the MIDI input jack. It's an inexpensive but appreciated touch.

Sixty-four user-locations are provided, and new sounds can be created by layering up to three presets and/or combining parts of one sound with another, or from a selection of on-board digital waveforms. The unit's depth of programming is almost exhaustive; in fact, several companies have already announced patch editor librarian programs for the Proteus, among them Opcode Systems (Atari ST and Macintosh) and Turtle Beach's IBM version.

A wide variety of factory presets are offered, ranging from keyboards, strings, choirs, brass, bass, synthesizers, percussion, drums and sound effects. There's something for just about everyone. I felt the pianos were somewhat "thin"—fine when mixed into an ensemble, but a little lacking for a solo piece. I especially liked the brass and reed sounds, acoustic guitars and tuned percussion samples. Preset #78, "Native Power," really showed off the unit's ability to deliver ample amounts of solid low frequencies, while the crisp, twangy acoustic guitars spotlighted the 16-bit sample resolution. If you're the type who always wants

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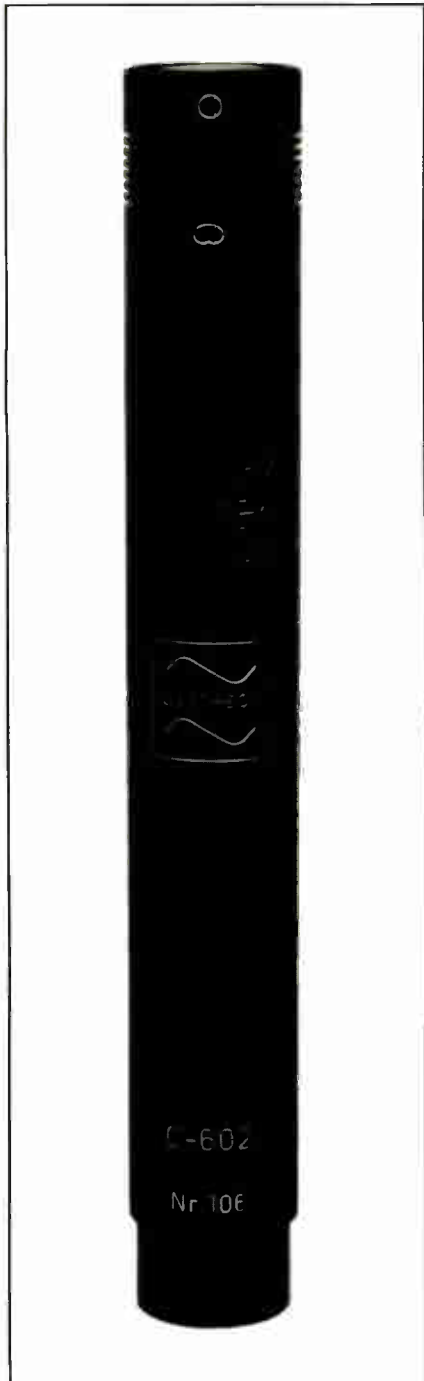
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World Radio History

AUDITIONS

more sounds, don't despair: E-mu expects to be offering memory expansion boards (doubling the on-board sample capacity) in the months



to come.

In designing the Proteus, E-mu has done a fine job of addressing the needs of the MIDI user: plenty of outputs, plenty of voices and a bevy of useful sounds in one compact box. Versatile, flexible and affordably priced, the Proteus would be a welcome addition to just about any MIDI

production/performance system.

E-mu Systems, Inc., 1600 Green Hills Road, Scotts Valley, CA 95066; (408) 438-1921.

JOSEPHSON ENGINEERING C-602 CONDENSER MICROPHONES

Josephson Engineering is probably not the first name that comes to mind whenever the subject of high-quality studio condenser microphones is discussed. And there are several valid reasons. First of all, Josephson Engineering is the name under which the MB (a German brand better known in the European broadcasting and studio communities) line of microphones is

marketed in the United States. Secondly, recording engineers tend to be fairly conservative when it comes to microphone preference, so the acceptance of new microphone products often takes a fair amount of time.

The Josephson C-602 is a dual-pattern (omni/cardioid), small-diaphragm, true condenser microphone requiring 48V phantom power. (A similar model—the C-600—offers the same specs and performance in a battery-powered version.) The C-602 converts from an omnidirectional to a cardioid pattern via a lever that opens acoustical ports behind the capsule. The mic also includes a three-position

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switch, with settings for flat response, highpass filter (bass roll-off), and "off" (sometimes referred to as a no-pass filter). The C-602 is a compact 21mm in diameter by 150mm long and includes a small, lined case.

My first test for the mics was as a stereo X-Y pair on drum overheads for a live-to-2-track session featuring legendary blues guitarist Danny Kalb. Danny wanted to capture the band's tight, ensemble feel with live vocals and all the performers in the same room. We started with the C-602s set on omni, which sounded great when the drums were alone, although it was soon obvious that the omnidirectional approach wasn't going to work when the rest of this hot ensemble started cranking it up. Since the mics can easily handle sound levels in excess of 130 dB, overload distortion was totally absent, and the mics reproduced extreme transients with no problems.

On this session, the C-602's switchable cardioid pattern really came in handy. I would have preferred a slightly more positive locking action in the mic's pattern change lever, but a quick bit of gaffer's tape gave me a little

security. Also the on/off/roll-off switch moves quite easily and could be accidentally changed when adjusting the mic, so placement requires a bit of extra care.

The cardioid setting also came to the rescue on my next session, tracking digital basics for a country record. On this date, this fairly loud band wanted to lay down an acoustic guitar part along with the rhythm section, and the cardioid C-602 sounded great: punchy and clean, with plenty of isolation. The C-602 has a reasonably flat response in the cardioid setting, with a gently rising presence boost that peaks at approximately +5 dB at 10 kHz, adding just the right amount of zing to the guitar track without having to resort to outboard or console equalization. In the omni setting, the presence boost is more subtle, peaking about +3 dB at 8 kHz.

Next up was lead vocal overdubs on the country project, with the mic set on omni and placed behind a stocking pop filter, about a foot from the female vocalist. Perhaps this was an unfair test—I don't usually use small-diaphragm condensers on lead vocals, but decided to give the C-602 a try anyway. The effect was a bit

harsh: the artist didn't like it, and neither did I or the other engineer. We ended up using a large-diaphragm dynamic on the session.

We had much better vocal results about a week later using two C-602s as an ORTF omni pair to record a madrigal group singing an album of Renaissance songs. The result was much better: a smooth, very natural sound with the pair about three feet above and in front of the ensemble. Off-axis coloration was minimal, imaging was open and very nice, and everyone was pleased with the sound quality. Listening to the digital playbacks confirmed the C-602's extremely low noise floor, given by the manufacturer as an "A" weighted, equivalent noise level of 14 dB.

The Josephson Engineering C-602s are flexible, fine-sounding condenser microphones, providing a respectable price/performance ratio at \$400/each.

Josephson Engineering, 3729 Corkerhill Way, San Jose, CA 95121; (408) 238-6062. ■

When not reviewing new products for Mix, George Petersen occasionally finds time to write music and produce records.

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NEW PRODUCTS

CAD MAXCOM MIXER

After two years in R&D, the Maxcom "Multiple Application Mixing System" makes its debut as a multiformat console developed by Conneaut Audio Devices of Conneaut, OH. Available in styles from 16x8x16 rack-mount (32x2 mix) to 48x8x48 mainframe (96x2 mix), the Maxcom can be shortloaded from eight to 48 channels. Its servo circuitry eliminates coupling capacitors in the signal path, resulting in low distortion and broad bandwidth (3 Hz-150 kHz). A special global function allows single-button switching between channel and tape monitoring. Each channel features onboard regulation, individual switching (phantom) power supply, 3-band constant-Q sweepable EQ, six mono aux sends, stereo aux I/O tape return and switchable LED ladder.

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FERROGRAPH SERIES 9 DIGITAL CARTRIDGE RECORDER

Watch out, NAB cartridge... the Ferrograph 9500 digital recorder is out to replace you. Featuring 16-bit digital performance, the 9500 boasts a removable, hard-shell, 5.25-inch



cartridge that delivers 88dB S/N with a lifetime of over 5,000 plays per disk. Each disk can contain any number of individual recordings, up to 7.5 minutes of stereo at 15 kHz or 18 minutes at limited bandwidth (double that for mono). The stand-alone, rack-mount recorder features VU and peak LED metering, three cue tones, looping, separate gain controls, balanced ins and outs, parallel remote and SCSI port. Optionally, the 9500 can work with the operator's IBM PC or Macintosh computer to access advanced functions such as titling and assembly or cut-and-paste editing. Ferrograph is distributed in North America by Gotham Audio of NYC.

Circle #148 on Reader Service Card



AURATONE TWO-WAY SYSTEM

The classic little box has a new buddy: the 5CTV Super-Sound-Cube Two-Way System from Auratone (Coronado, CA). Shielded for use next to TV moni-



tors and CRTs, the new reference monitor features exceptionally high fidelity, a low-resonance enclosure finished in wood-grain or textured black vinyl (with removable fabric grille) and incorporates a 5-inch polypropylene cone woofer with foam suspension and 1-inch aluminum voice coil, and a 10mm dome tweeter with ferrofluid voice-coil coolant. Price is \$165 per pair.

Circle #149 on Reader Service Card

TRIDENT VECTOR CONSOLE

The Vector from Trident Audio USA (Torrance, CA) is an in-line console available in 32-, 40-, 48- and 56-input versions. Features include 44 VU meters (32 group outs, four stereo buses, two main outs, two switchable to aux, foldback or external sources), Penny & Giles faders, 4-band quasi-parametric input EQ, eight aux sends (pre/post switchable). An extensive muting system controls channels, auxiliaries and monitors that are assignable to one or more of the 16 automute groups that can be triggered manually or under SMPTE or MIDI control. The center facilities section provides master electronic switching of console

modes, along with other amenities such as phase metering, three tape machine remotes and a compressor/limiter on each stereo bus output.

Circle #150 on Reader Service Card

PERREAUX POWER AMPLIFIERS

From the land of the kiwi comes the E Series, the latest line of high-power MOSFET power amps from Perreux (distributed by Perreux NA in Murrieta, CA). Engineered and hand-

crafted for stability and reliability in the studio or on the road, the E Series includes the E1000 and E2000 dual-channel amps (100 and 200 watts continuous per channel into 8 ohms). Input can be via XLR and 1/4-inch jacks, with balanced inputs optional. These two-unit rack-mount amps feature toroidal transformer, clipping indicators, rail fuses, external heatsinks, light weight (18 and 28 pounds, respectively) and choice of black or aluminum finish. Suggested retail prices are \$1,099 for E1000 and \$1,399 for E2000.

Circle #151 on Reader Service Card

MCS MUSIC CREATOR

Computer Music Supply (Walnut, CA) now offers the *Music Creator* "automatic composer" program for the IBM PC. A simplified version of the \$25,000 music composition system sold by Just For You Inc., of Long Beach, CA, Music Creator lets the user combine different musical genres to create original compositions. It offers a library with up to 300 basic music styles (from Arab folk dance to blues) that can be combined in more than 27 million ways. The program analyzes each style's melodic, harmonic and rhythmic structures and lets the user recombine the components into a composition with the desired mood. Musical knowledge isn't required, but musicians can change any note, instrument or section. Priced from \$495, it needs a PC, MIDI interface and MIDI synth or other sound-generating device.

Circle #152 on Reader Service Card

CROWN SASS-P MICROPHONE

Here's a new twist on PZM technology: Crown International (Elkhart, IN) presents a stereo (mono-compatible) condenser mic configured in a near-coincident array, with two PZM mics mounted on boundaries, making each mic directional. A foam barrier divides the mic capsules, reducing the chance of phase cancellation. Controlled polar patterns along with the space between the capsules—



measuring about the same size as your head—contribute to the mic's focused, natural stereo imaging. The SASS-P (Stereo Ambient Sampling System) is geared toward situations requiring tight, realistic placement of

sound images in an ambient field (as opposed to a standard stereo wash), such as ENG, stereo sampling, classical music recording, sports and film ambience, and televised theater. Finished in black and charcoal gray with a tough, plastic outer shell, the SASS-P provides a four-position switch to choose between battery or phantom power, or flat or low-cut response. It weighs just 17 ounces and retails at \$799.

Circle #153 on Reader Service Card

HOT OFF THE SHELF

Solid State Logic's Network Directory is a free, 125-page, pocket-sized guide to SSL-equipped studios, post houses, broadcast facilities and mobile units around the world; call (212) 315-1111. . .

Adams-Smith's Zeta-3 and Zeta-Remote software programs have been updated to include more MIDI power; call (508) 562-3801. . .

Techron's TEF® XFR software update for TEF audio analyzers allows the transfer of TDS and ETC measurements from the TEF analyzer to any computer capable of RS-232/ASCII communications; call (219) 294-8300. . .

Key Connection's Guided Tour (\$49.95) is a complete step-by-step tutorial (with workbook and four audio cassettes) on the use and programming of Kurzweil 1000 Series synthesizers, including the K1000 and rack-mount modules; call (415) 530-8064. . .

BASF's C-100 Audio Cassette, available

in Chrome Extra II (\$3.29 retail) and Ferro Extra I (\$1.89) formats, accommodates CD-length recordings; call (617) 271-4064. . .

Graphic Notes' Music Publisher Version 2.0 is an update of the company's music notation and publishing program for the Macintosh; call (408) 476-0147. . .

Denecke's TC-MAXI and TC-MIX time-code reader/display features a 4-inch LED readout with remote intensity control, priced at \$1,650 and \$1,040, respectively; call (818) 766-3525. . .

JRF's Ampex Center-Track Time Code Retrofit kit is now available for the Ampex ATR-100; call (201) 579-5773. . .

New Ears: A Guide to Education in Audio & the Recording Sciences is a 208-page paperback (\$11.95) packed with details about 70 audio and audio-related programs, among other info; call (315) 425-0048. . .

Castalia Publications'

MIDI Poster is a full-color, 2 ft. x 3 ft., MIDI reference source including MIDI note numbers, corresponding keyboard notes, controller numbers and more, all for \$6.95 (\$14.95 laminated); call (707) 778-7635. . .

Stewart Electronics' BPS-1 Phantom Power Supply is a single-channel, battery-powered, +48V supply for field recording and broadcast remotes; call (916) 635-3011. . .

Tascam's DAT Update adds a third sampling rate—44.1 kHz—to the 32k and 48k rates already available on its DA-50 R-DAT recorder; call (213) 388-5200. . .

Selco Products' Control Knobs 1989-90 is the definitive source of information for design engineers who spec control knobs; call toll-free for your free copy of the 16-page color guide, (714) 521-8673 or (800) 25-SELCO. ■



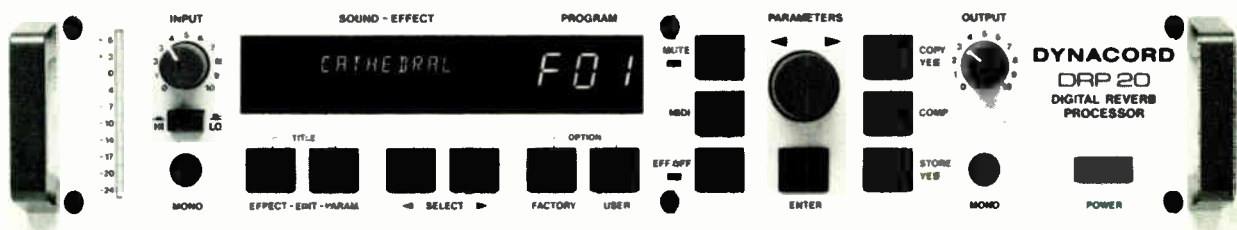
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World Radio History
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by Mike Joseph

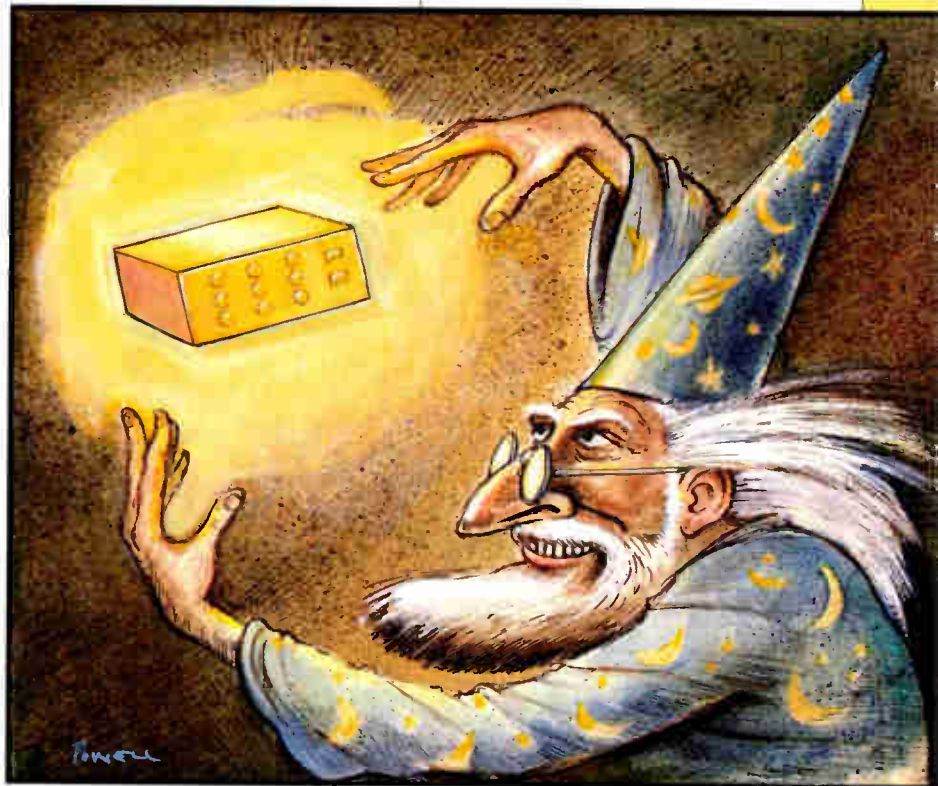
THE ULTIMATE EQUALIZER

Something funny always seems to happen whenever a group of road-weary mixing engineers and manufacturing folk get together. It's usually back at the hotel bar over the local brew-on-tap. The scenario is always the same. Someone asks: "When is someone going to bring out the Ultimate EQ?"

Having personally been on both sides of the question, I can readily recall for you all the responses that seemingly harmless question begs. Typical is: "You mean our fifth-generation, firmware-driven, surface-mount technology, hyper-compact, software pre-datable, parametric, MIDI-interfaced, AutoCAD-designed, overhead-shelving, under-sprung, fully sweeping, NiCad battery-backed, multi-memory, cold-storage, constantly reciprocating, ultra-interlocked, symmetrically IQ'd, double half-time triple A/D-to-D/A 16MHz clock-rated, quadruply over-sampled, undercooked, glow-in-the-dark, dual single-channel, 33 1/3-dB/octave, auto-unbalancing, high slow-rate, low nerd-factor, single rack-spaced, lighter-than-ozone, UL-approved, *manually operated* Wonder-Q? The one almost in Beta release?"

No. The other one.

The *automatic* one. The one that lets you hit the power switch, twiddle a knob or two for no more than 12.5 seconds (the amount of time typically available to do something important between assaults by the headliner's manager), and makes the latest Knopfler CD sound *totally amazing, dude*, at 135dB SPL as soon as the system is potted up. Immediately. That one.



And what are the 5,000 most asked-for features on this as-yet mythical beast? As a special service to *Mix* sound reinforcement readers, and ignoring the fact that I normally sell this kind of information to marketing departments of small, progressive manufacturers in weird, obscure, out-of-the-way states for large sums of universally negotiables, I will endeavor to share several of them. Features, that is.

What the mixers of America want is, well, everything. But mostly perfection. A gadget that always sounds good, is never noticeable, fixes room acoustics (now don't anyone throw *physics* at me and say you can't do that!), is so easy to work that it works itself, talks to comput-

ers, has mucho macho memory storage and is completely, totally flexibly infallible. And expandable. Shrinkable. Scalable. Affordable. Viewable. But is it describable?

The EQ box that the live sound world wants is this: a microprocessor-controlled stereo equalizer/real-time frequency analyzer with video monitor that uses live performance program material as the control vehicle to automatically adjust response curves of the acoustic sound emitted by speaker stacks, variably matching room sound to the electrical output of the signal chain. In other words, a unit that compares room sound and the electrical program signal, and does something about it, ulti-

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- Len Feldman, db Magazine

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Power Station Studios, N.Y.

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mately negating (in some magical, mystical way) the effect of room acoustics.

There are lots of ideas out there on how it should work: The actual EQ would be accomplished with variable center frequency, variable Q and variable-state multiband filter circuitry realized in either the digital or analog domain. This is variable, of course. The EQ system would update itself to match programmed memory settings such as the curves from the night before, same venue; last year's July 12 Juice Newton date, same venue; or last week, different venue; as well as drawn-in curves; theoretical "perfect" curves; house curves; mixer-preferred curves; band's guitarist's mother's favorite curves; record company A&R department curves; road manager's curves; etc. Recallable programs could track event cues: The bass solo in "Your Love Is Like a Ripe Mango" could be patch 08, the tubular synth intro to the grand finale, patch 88. Punch a button or move the mouse to start off the sound-check with a curve from, say, second set, 11:35 p.m., November 2 the year before, ignoring that the speaker system configuration is different, the gain staging has changed, the band lineup was altered and the room is 35 degrees cooler now, on a rainy day. The Ultimate EQ will track and compensate.

System sampling would involve feeds from the low-level signal chain at points such as board output, an earlier in-line manual EQ out, processor rack out, or some other common juncture, and input from multiple mics out in the acoustic field, maybe fed wirelessly and multiplexed together, with appropriate delays to align arrival times on each mic leg. Additionally, intelligent curves or processing could be inserted into each mic leg to compensate for things such as one physical mic location being further out in the indirect reverberant field than another, or high-frequency air/

humidity absorption with distance (you don't want an overly bright signal compensation now, do you?). This could all be calibrated in during an initial auto cal setup phase, using pulsed pink shots to automatically assign delay times and read empty room response and RT60.

A separate rack-mount or freestanding monitor display could show each wireless mic's response, the sum combine, delay times on each leg, program response curves from the

source and difference "makeup" (inserted EQ). The resulting traces could, of course, be averaged over any amount of time constant, from instant/peak to infinite time-lapsed accumulate, with the ultimate function of the device being the insertion of makeup EQ averaged over some variable length of time. The makeup EQ could be offset or modified to taste.

You ask: How does one automatically EQ music that ranges from full power thrust to solo flute to bass solo to drum solo to

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five minutes of between-song patter? Variable sample accumulate times, program-dependent, of course. A "smart" function could allow different time constants or the bypass of delta functions (change in control parameter status) during certain types of input. Call it intelligent gated variable hold, or IGVH (can I coin that?).

MIDI control would enable interfacing the device to any gadget that deals in a sequence of events, calling up EQ changes or event parameter changes (control function presets or actual EQ curve presets) to tape code stripes, sequencers, manual bump buttons or other time-tracking or stating devices and systems. One hundred user-memory RAM slots should handle most requirements. An internal 3.5-inch disk drive would give importable memory capabilities.

Having two independently controllable EQ channels would be a plus in all parameter functions. And let's not forget manual and default override, auto average gain makeup, soft level ceilings, mushy compression, and control-function freeze-in-place. Also, the 3.5-inch floppy disk-based memory save should be DOS'd to some common (read: Mac) standard, so disk program titles (at the very least) could be read, renamed and reviewed offline. Actual functions like cue order or MIDI location/data channel number assignments should also be editable via an outriding software package that would allow EQ curve control or control parameter control offline, like on the bus riding to the next gig, or on the plane with your Mac laptop. The next show could be loaded, or custom show-specific floppies could be created and backed up away from the Ultimate EQ.

The ability of the UEQ to plug directly into a Macintosh SCSI bus would allow remote control of any number of units, as well

as status indication and the option to play Sega's Super Hang-On motorcycle race simulation while mixing the opening act. I'm sure this exact capability wasn't overlooked when Crown International chose the icon-intensive Mac environment for its groundbreaking IQ System 2000 remote amplifier controller.

Practically, a calibration setup

You ask: How does one automatically EQ music that ranges from full power thrust to solo flute to bass solo to drum solo to between-song patter?

procedure would probably preface the operation of the system, during which time the previously mentioned mic time delays, direct/indirect field and distance processing could be inserted, mics "ideally" placed about the sound field and the system "pink pulsed" to get the auto EQ into a base starting position. This would be a manual or semiautomatic response flattening procedure, functionally using the UEQ's built-in spectrum analyzer and noise generator, done as it is today. Pre-Auto-Cruise Normalization (ACN), as it were.

The beauty of the Ultimate EQ device is it represents nuts-and-bolts handling of the "architectural" room equalization work, having no detrimental effect on whatever tonality the mixer or artist may determine sounds good for them. A separate, up-stream, "aesthetic" EQ, whose output the Ultimate EQ autobot (automatic robot) follows and matches, would let the operator determine the "sound" of the system manually.

The UEQ would merely keep you there via derived transfer functions, closely tweaked to the ideal gain-before-feedback, maximum intelligibility or "flat/flavored" system response that you have set up. It will let you get or remember that tuning quickly and hold that curve as the crowd comes in and starts making noise, heating up the room, introducing smoke and humidity (breath), stirring up dust and otherwise changing absorption coefficients by the sheer mass of fuzzy bodies.

That, in a nutshell, is the UEQ. That's what the folks want. Keep your eyes open to see who will arrive with the first ads offering our little auto-beast for less than \$995. Will it be Apogee Sound, which is almost there with its CORREQT system? Meyer Sound Labs, with its rather sophisticated, multi-inclusive approach? Rane, via MIDI control?

Orban? A spin-off from Microaudio's EQ Pod system? ART, which has the remote IEQ Satellite unit, video display and software drive down cold? Digital-intensive Yamaha? Cutting-edge Roland? K-T? A long shot, perhaps from a firm such as Toa? A synth outgrowth company, like New England Digital? Or maybe one of the manufacturer-cum-sound system design software people, such as Bose or JBL, building an EQ system directly into a computer via an interface card or external box? Stay tuned-up.

All you concert road mixers can leave me alone now. Sure, feel free to front me a beer back at the hotel, but lay off on the "When is someone gonna make..." scenario. I said I'd tell the world, and so I did. Now let's all just stand back and see who listened. ■

When not doing live sound mixing and system design, author Mike Joseph spends his time as a prognosticator of future socio-techno possibilities.

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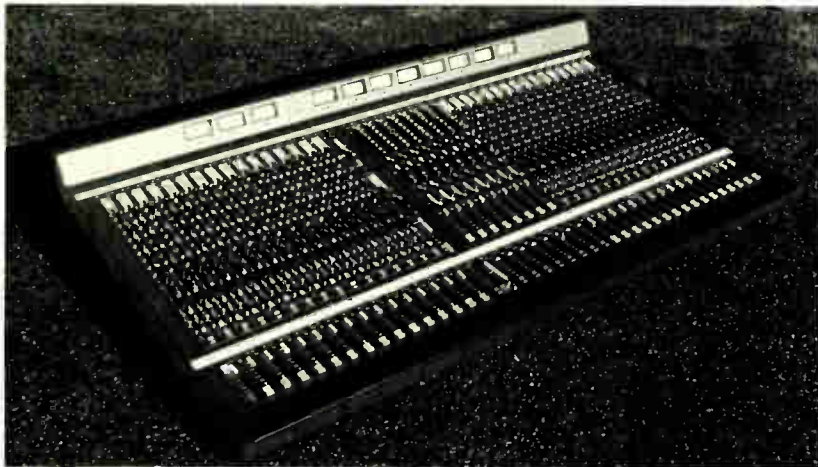
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SOUNDTRACS SPA ▲

Distributed by Samson Technologies (Hicksville, NY), the Soundtracs SPA console was launched at the Hamburg AES Show and comes in 32- and 48-channel versions. Two SPA boards can be interlinked (including all VCA, mute and audio buses), providing up to 96 inputs, and while designed as a front-of-house board, a single switch on each group can reconfigure the desk as a monitor console. Features include 4-band input equalization, eight pre/post-fader switchable aux sends (a ninth, local aux send, is also provided on each input), eight VCA groups, eight matrix outputs, 20-segment LED input meters next to each fader, 11 VU output meters (left, right, PFL/AFL, and eight switchable between output groups, aux outs and matrix outs), and electronically balanced inputs, outputs, inserts and aux buses (transformers optional)

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NADY 650 VHF WIRELESS ►

New from Nady Systems (Oakland, CA) is the 650 VHF, a mid-priced, rack-mountable wireless system featuring true diversity reception and patented noise reduction with a stated dynamic range of 120 dB. The system operates on VHF highband (151-216 MHz), with a wide choice of channels; newly developed filter-

ing circuitry allows up to ten 650 units to function together onstage. Three models are available: 650 GT instrument system (\$599), 650 LT lavalier system (\$639) and 650 HT hand-held system (\$659).

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ALTEC ALPHA 700

Altec Lansing of Oklahoma City, OK, has announced the Alpha 700 system. Combining a 515B-8G driving a vented bass horn and 909-8A compression driver on an MR994A Mantaray horn, the Alpha A700 offers high output and precise directivity control. The A700XLF low-frequency system—with two 15-inch woofers in a similarly sized cabinet—is designed to complement the A700 by extending the system's bass response down to 43 Hz. Both the A700 and A700XLF are supplied in unfinished birch plywood cabinets, so they can be stained or painted to suit any environment. An accessory suspension kit supports up to three cabinets in a vertical array.

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YAMAHA PM2800M MONITOR BOARDS

The result of over two years of R&D, Yamaha's long-awaited PM2800M onstage monitor consoles are now being delivered. The PM2800M boards were developed as companions to the PM3000 and PM1800 consoles, and are available in 32- and 40-channel versions (priced at \$31,500 and \$36,000, respectively). Features include: eight mix buses (with four additional buses from the aux sends), eight master mute groups, four matrix mixes, 4-band sweepable input EQs, electronically balanced XLR inputs and outputs, and 16 VU meters that are switchable to monitor any console bus.

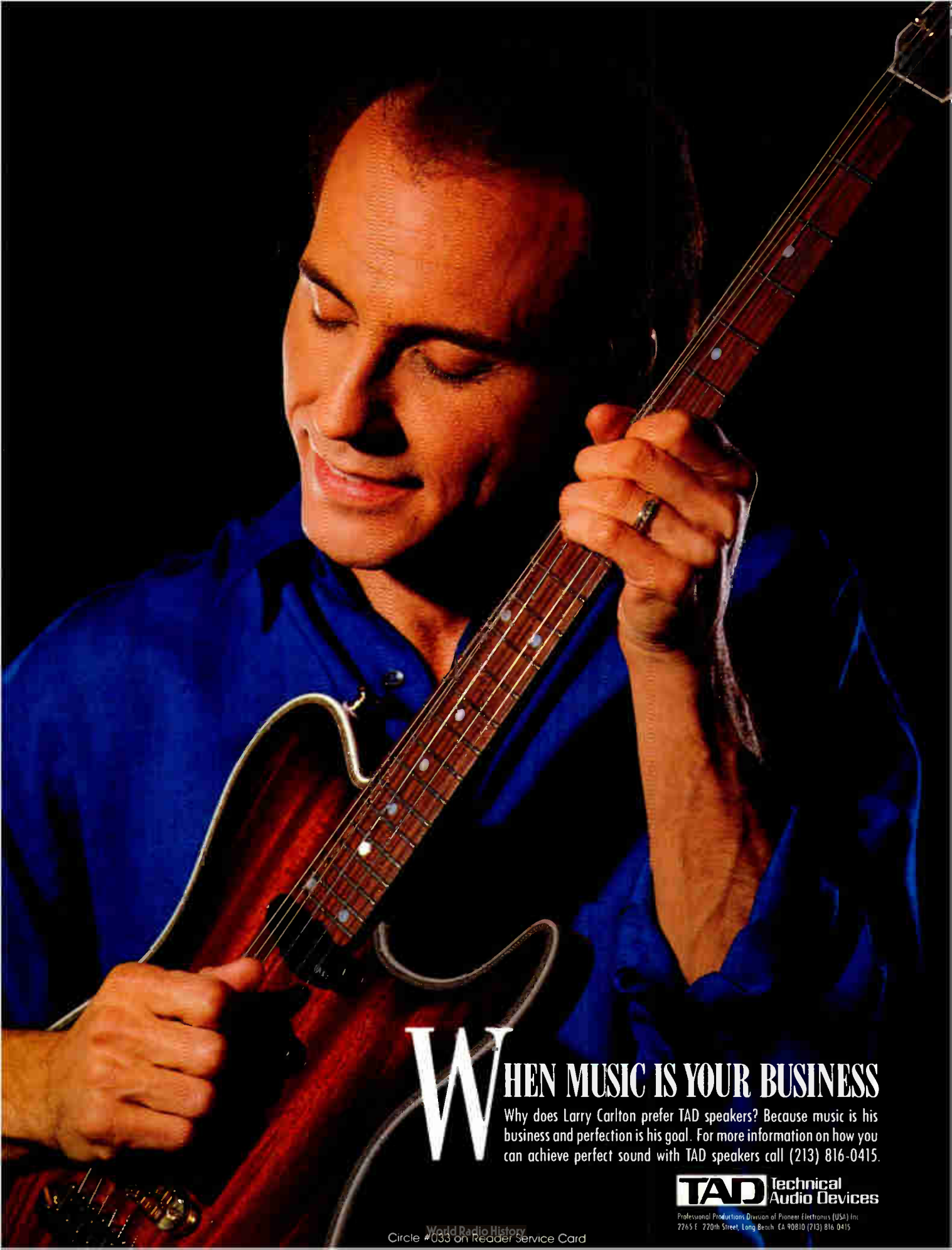
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World Radio History
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by Craig Anderton

THE CASE OF THE INVISIBLE SIGNAL PROCESSORS

There was no mistaking the lush, full sound of digitally generated reverb; the synthesized violin pad fairly oozed ambience. Yet there wasn't a reverb unit anywhere in sight—unless you looked inside the synthesizer generating that violin pad. Tucked deep within the instrument's microprocessor-driven innards was the kind of signal processing horsepower, with 16-bit fidelity and extensive programmability, we've come to expect in rack-mount units costing hundreds or even thousands of dollars.

These days, keyboards are a lot more than just keyboards. Many include sequencers that can serve as MIDI "sketch pads" or help supplement a main sequencer, but the trend toward built-in signal processing may be even more significant in the long run. Here are four main reasons why internal signal processing has become a fact of life:

- The rise of virtual tracks. With tape-based multitrack recording, you could often get by with one or two signal processors. The device that provided

gated reverb for a drum part could be tweaked into an echo unit when doing a keyboard overdub, or provide hall ambience when doing mixdown. But with the increasing use of virtual tracks, where instruments are driven by a sequencer and feed the master tape in real time, each sound requires its own signal processor. That's a lot of rack-mount gear, unless the sound sources themselves have built-in signal processing.

- The need for better in-store demos. It is a sad fact of life that many musicians buy a keyboard by going into a store, flipping through the factory presets, and then make their purchasing decision based on those presets. If the presets include reverb, stereo delay and other effects, the sound is far more impressive and much more likely to result in a sale.

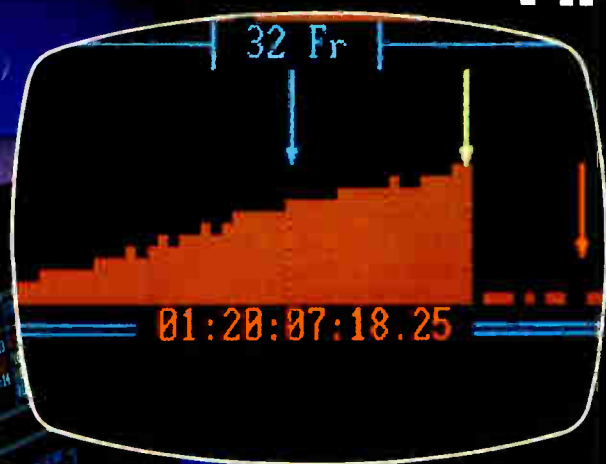
- Competition. The keyboard synthesizer market is very competitive, and built-in signal processing provides the kind of value-added feature that can give one unit a competitive edge over another.

Ensoniq's new VFX^{SD} combines 21-voice synthesis, drum sounds, dynamically controlled signal processing, four outputs and 24-track sequencing in a single package.



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Fairlight ESP Pty Ltd, 30 Bay Street, Broadway, Sydney, Australia, 2007

• Custom chip integration. By shrinking signal processing functions onto a custom chip, it's possible to add a great deal of effects at a relatively low cost.

Built-in signal processing is not a new concept. Guitar amps have included reverb, tremolo and equalization for decades, and synthesizer envelope generators can be adjusted to provide pseudo-ambience effects. Samplers, by definition, let you sample sounds that already include ambience (this is particularly the case with drums), and it's often easy to create flanging and chorusing by copying a sample within the sampler, detuning the copy and layering it along with the original sample. But the modern era of integrated signal processing really began with Roland's D-50 L/A (linear arithmetic) synthesizer.

The D-50 gets my award for the "smoke and mirrors" synthesizer of

By shrinking signal processing functions onto a custom chip, it's possible to add a great deal of effects at a low cost.

all time. Far from being derogatory, I mean this as a sincere compliment: the individual sampled sounds aren't really all that great and as a synthesizer, many other keyboards do a better job. However, Roland cleverly included signal processing (primarily reverb) that accomplished several things. It improved the overall sound quality by smoothing the transition from sampled attack to synthesized loop. It ensured that any musician walking up to the keyboard and tickling a few keys would be greeted with some awesome effects. Plus, D-50's signal processing offered an extra edge in cost-effectiveness that allowed it to grab a foothold in the crowded, FM-dominated keyboard market. Knowing a good thing when it saw one, Roland now includes signal processing in a variety of instruments—even "budget" models like the MT 32 ex-

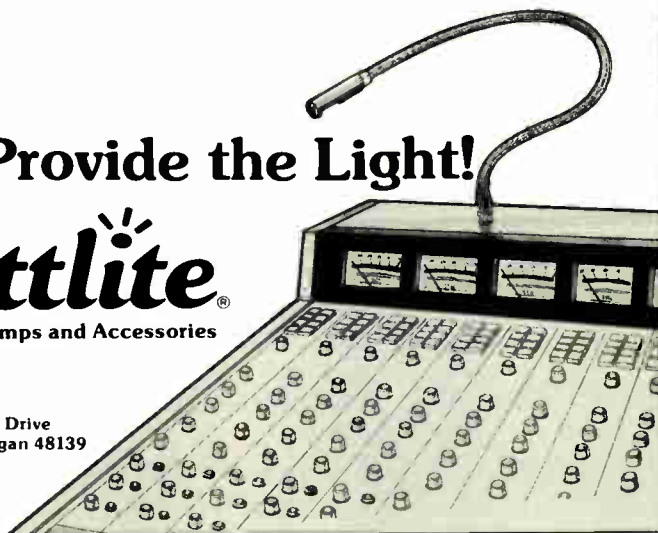
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pander module.

It's no wonder that Korg took a page from the Roland book when developing the M1, which eventually unseated the D-50 as the "hot" keyboard *du jour*. Offering not only reverb and delay, the M1 also provides distortion, chorusing, phase shifting, tremolo and primitive equalization. More significantly, the signal processing elements can be arranged in various configurations, including sending the effects to four different outputs. With the M1, signal processing ceased to be an add-on and moved into being an integral part of the sound of the instrument.

These days, keyboards

are a lot more than

just keyboards. Many

include sequencers

that can serve as MIDI

“sketch pads.”

Now with Ensoniq's VFX synthesizer, onboard signal processing has taken another leap forward. The VFX has multiple configurations and various buses *a la* M1, and many parameters can be modulated by aftertouch, velocity, LFO and other such generators in the synth. Effects include four types of reverb and 8-voice chorus; effects that can be modulated (with controllable parameters indicated in parentheses) include: dynamic reverb (decay time), chorus + reverb (chorus rate and depth), flanger + reverb (high and low notch frequency), delay + reverb (initial delay and regeneration) and rotating speaker + delay (rate). There's even a triple effect—flanging + delay + reverb.

The output bus structure is unusually flexible. Each voice in the synth can play dry or go to one of two stereo effects buses. With single effects (e.g., reverb or 8-voice chorus), the mix levels for the two effects buses act as send controls, thus providing different voices with different amounts of processing. This is a big improvement over "global" signal processing

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- Includes one year of software updates to help protect your investment.

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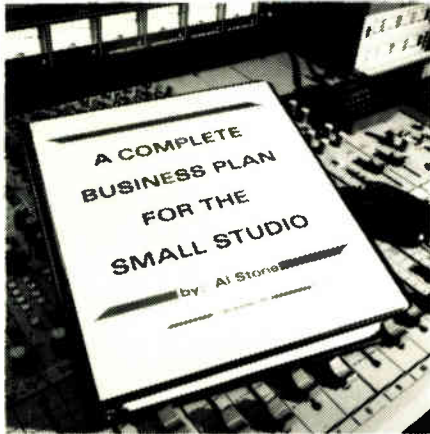
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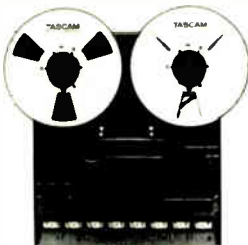
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that affects all voices similarly. If desired, the second effects bus can control the wet/dry mix, which is also eligible for real-time control.

With combination effects (e.g., delay + reverb), one effects bus feeds the first effect and the other feeds the second. What's more, the mix level for the first bus determines how much of its signal goes to the second bus and how much goes directly to the stereo outputs. This provides a limited way to choose different series and parallel processing configurations.

All this goes well beyond just throwing a little reverb on a sound to beef it up; having modulation affect both the initial timbre produced by the synth and the related signal processing is impressive, to say the least. And by not trying to mate a synth to an outboard unit, you don't have to worry about mapping signal processing programs to synth programs, assigning MIDI controllers or poring over both units' MIDI implementation sheets.

What's on the horizon? As in so many aspects of musical electronics, lines of differentiation are blurring. Drum machines include built-in mixers, synthesizers include their own signal processing, and samplers can serve as digital recorders. Slowly but surely, the inexpensive mega-instrument is evolving—one that has all the facilities needed to record, generate, process, mix and sequence sounds. ■

Craig Anderton writes books, composes music, produces records, and edits Electronic Musician, our sister publication.

— FROM PAGE 58, CONSOLES

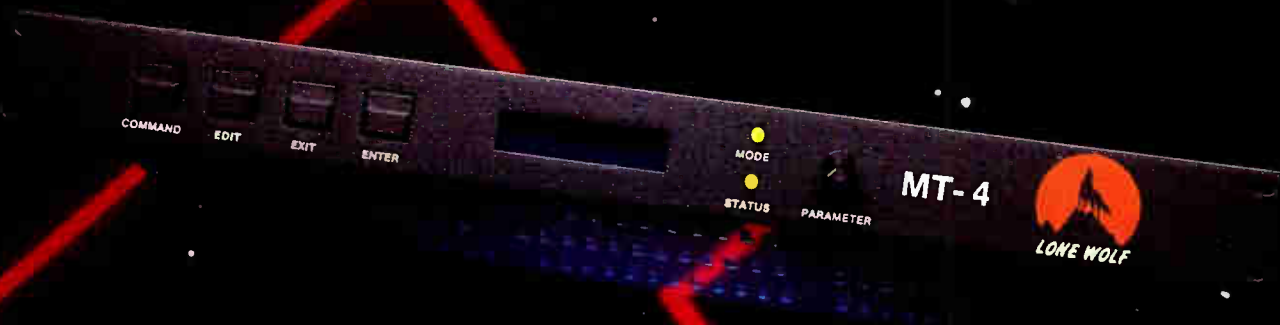
the first 34C that we purchased another.

"It's also compact and easy to use. You don't need railroad tracks to get from one end to the other. There's more and more automation being done, particularly with video mixing, and with the ARMS/Diskmix combination you can come back and recall a mix six months later and do a slight modification, or put a different tag on and have everything else the same. It's a well-thought-out board." ■

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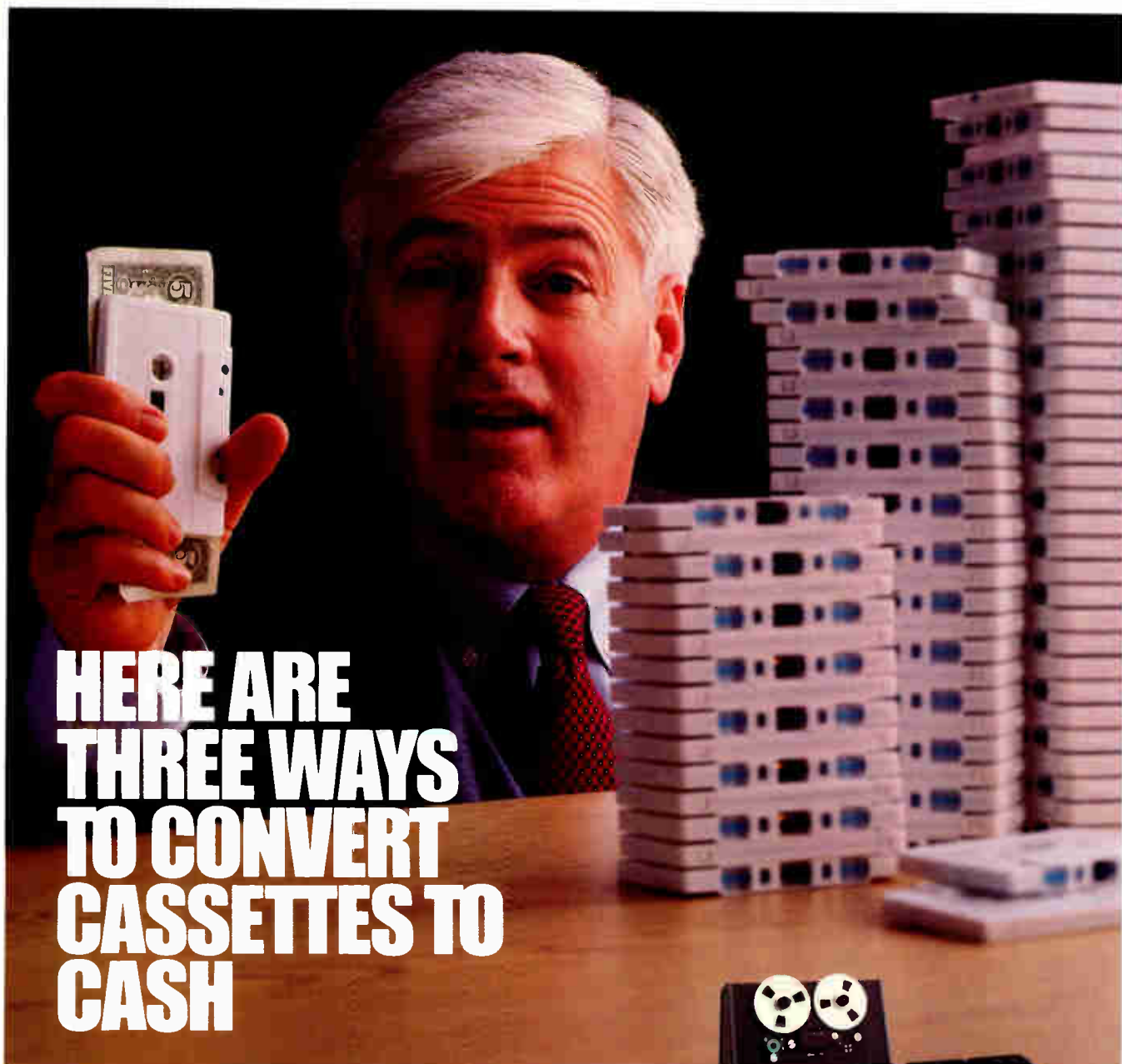
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THE DIRTY DOZEN'S BRASS ATTACKS

They could be called "throwbacks" for keeping alive the spirit and sound of New Orleans street music. But the word "traditionalist" has too strong a ring for the Dirty Dozen Brass Band, which covers Stevie Wonder, plays bebop with Diz and Branford, even throws Latin and pop elements into their third album, *Voodoo*. "We don't try to beat anybody to death to show them how difficult the music can be sometimes. We don't try to blues them to death or rock them to death," says band trumpeter and spokesman Gregory Davis. "One of the biggest-selling packs of cereal is the variety pack, because it has something in it for

everybody."

They are not really a dozen—eight of them play on *Voodoo*, from a cast of 16 musicians who have hung around rehearsal bands in New Orleans. The band is two trumpets, a tenor saxman, a bari and soprano saxman who sometimes plays both at once, a trombonist, an earth-shaking sousaphonist, a snare drummer and a bass drummer. For a recording engineer, the Dozen's different instrumentation, emotions and approach prove a welcome and delightful challenge.

"There's a lot of room for improvising in that band," says David Farrell, staff engineer at Southlake Studios, located just outside of New Orleans in Metairie. "I could safely say that no two takes were identical, by no means. For that style of play-

ing, there's no right and wrong. You go for what feels good, and they didn't like to dwell on songs for a long time. If something didn't come together in a few takes, we'd move on to something else and come back to it."

The group was in the studio for a total of four days cutting tracks. "They had just gotten back from a pretty extensive tour," Farrell says. "The first day was mostly sound-check, everybody cooling out and resting and feeling back at home. Everything pretty much came together in those next two days."

Six songs on *Voodoo* were recorded at Southlake; the Gillespie and Marsalis tunes were done in New York for scheduling reasons, according to Farrell. At both places, the band preferred to record as

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"live" as possible, as close together as possible. "When we do a set we're pretty close together, so that's how we like to record," says Davis. "You can see and almost touch the next guy. For us, the eye contact is a lot of what goes on. On 'Voodoo,' [bari and soprano saxman] Roger [Lewis] didn't have a set number of choruses to play, and neither did I. But the drums were right there with the soloists because they could see what was going on."

The main recording space at Southlake is 35 x 25 feet. "I divided it in two," says Farrell. "The room's kind of like a live end-dead end situation. I put the horn section on the bright side with all the wood. And I would have put the drummers on the bright side, but I had to put them on the carpeted side. It still came out fairly live, because everything went down at the same time. There were almost no overdubs. We had the horn section in a line, kind of a front-line style, and had partitions separating them from the drummers, who were ten or 12 feet away. The partitions have glass in them, so they watched each other and it came together very well."

It is often amazing on *Voodoo* how much drummers Jennell Marshall and Lionel Batiste think alike, how much it sounds like one mind at work. "It would sound like chaos with both of them trying to play their hardest and best lick every time. So they have to be supportive of whatever soloist is playing and versatile enough to step out sometimes," Davis says.

The loose, swinging, parade-like drumming of the New Orleans street groups is sometimes referred to as "front-line." "We've never set it up to follow the guidelines or make it the stereotypical brass band," Davis says. (In fact, the typical marching band in New Orleans would have a clarinet and tenor sax. The members of the Dirty Dozen like the sound of tenor and baritone sax.) "A lot of people say, 'Well, you're using Afro-Cuban beats. . . .' No, we're just using what we thought would sound good. We needed drummers that were mobile. This probably could have only happened here in New Orleans, because in New York or Chicago or Los Angeles you don't have the parade."

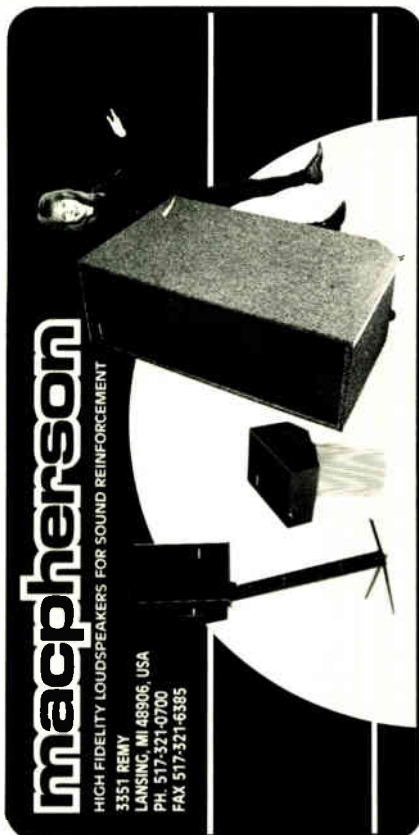
Farrell decided to use two mics on bass drummer Batiste, a Neumann 89 and Sennheiser 421. "The 21 gave the real punch of the sound, and the 89 gave me the depth," the engineer says. "He also plays a cymbal mounted on top of the drum, and plays it with a little wire. It's there more for accent, just kind of an upbeat feel."

"The other drummer plays a snare drum on a stand and another snare that's been modified into a tom tom that sits in front of him. He has one ride cymbal that doubles as a crash cymbal. I used the traditional type of miking—an SM57 on the snare and a condenser mic like a 451 [AKG] on the tom toms. And then a couple of 451s for overheads for the cymbals."

There are no drum machines or easy opportunities to "punch in" in the Dirty Dozen's music. "For us, each note is manual," Davis says. "And it's more of a challenge to go in and do it without any electric things happening, without any synthesizers. I'd rather work with a thinking drummer. I'd rather play it 20 times with somebody making a mistake, because that person has some feeling."

Farrell used AKG 414s on the tenor sax and the trombone, and Beyer 201 dynamic mics on the trumpets. He used a Sennheiser 421 on the bari sax. "He also played a curved soprano sax, and I used a Neumann on that," says the engineer. "Sometimes he'd switch up within a song. A couple times he played two at the same time, two instruments in his mouth playing each with one hand. I had two different mics up there for that."

The sousaphone, or bass tuba, is a large, awkward instrument. To Kirk Joseph it's a toy, and he makes it rock, adding a driving bottom end during the most frenetic DD groove. "I used a Neumann M49 tube mic, and Kirk was very good about staying where he needed to be," Farrell says. "He didn't dance around a whole lot where the sound would be going in and out. I put the mic up high, about a foot or so in front of the bell. Their mic technique was very good—I didn't have any problems with them being off mic at all. Occasionally, I might have to ride some levels going to tape on a solo if they lean into the mic a little and really go for something."



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Nor did Farrell have problems with an overload of low horn sounds from the sousaphone, bari sax and trombone. "I tried to keep the sousaphone in the middle and the bari and trombone a little out of center, so I didn't have a low-end buildup in the middle there. That panning helps break things up a little bit. And they're good musicians and don't step on one another, so to speak. When they get close to each other in the lower end, they let the other guy have some room."

At Southlake, Farrell used an MCI 600 Series console and a Studer A80 24-track tape machine, a Mark IV. "It was the last version they made before they discontinued the machine," he says. "I don't remember using a lot of effects. No compression whatsoever. I was trying to keep the dynamic of the band true. Two reverbs probably covered the band completely. I just tried to use good mics and put them in the right places, and it came together pretty well."

Producer Scott Billington was instrumental in getting Rounder Records' permission to let the group sign with CBS for *Voodoo*, and was also a helpful audience in the studio. "He provided that fresh ear, a fresh opinion," Davis says. "The sessions we did in New York were okay, but I think we were more relaxed and had a better time in New Orleans. We could go home and go to bed. It's an adventure to ride in a New York cab. And then from the cab to the front door of the studio is another adventure."

The folks at Southlake avoid high-pressure situations. "We try to maintain a pretty easy, flowing atmosphere," Farrell says. "Most of the time I try to give the bands the studio for the day, regardless of whether they block the place out or not. It just comes out better-sounding overall, and it's going to be a better reflection on the band as well as the studio when it does that."

Davis often tries to get across the idea that the Dirty Dozen is a party band. They do earnestly love to party, but listening to the sly step of "Voodoo," with its pumped-up chaotic bridge sections, this is obviously also a player's band. "While the bass and the rhythm are playing straight, the soloist is near the chord, but not necessarily always on it," Davis says.

"To do that you have to think. The idea was to play off-color. Not to play a B-7th chord, but to try to play something close to it, something not exactly there.

"On 'Voodoo' we had some takes that were maybe more musically correct, but the fire was not there. So we decided to go with the one that had more life in it. When I hear someone perform, I judge it on, 'Did I feel captivated from beginning to end?' I would want my performance to be the same."

When not on the road with the Dozen or gigging at the Glass House in New Orleans (where they've held forth on Monday nights for the last six years), Davis takes his daughter to school and then heads over to Jackson Park to sit in with the other "park" players and "make some good money." The Dozen still play parades, and you might be able to catch them for an occasional funeral. Says Davis, "The only thing about a funeral is, you can't book it in advance." —Robin Tolleson

FOSTER & LLOYD: NO COMPROMISE

"Country-rock's become a dirty word," says Bill Lloyd, "but, I think it's all in how you look at it. To me, country-rock is The Band, the Everly Brothers, Rockpile, those kinds of acts, who mix country in with rock. To other people, it's Charlie Daniels and The Marshall Tucker Band."

The Rickenbacker-slinging half of Nashville's rockabilly-flecked Foster & Lloyd may be splitting hairs, but he's got a point. And once he gets started on the topic, he's a hard one to slow down.

"Look at Elvis," he says, picking up steam. "He may have been the king of rock'n'roll, but he was really singing country music interjected with rhythm and blues. He was, above all, a hillbilly singer."

If Lloyd seems a bit defensive, he has good cause. Since the duo's self-titled RCA debut scored a Top 3 country single with "Crazy Over You," Lloyd and partner Radney Foster have found themselves inadvertently caught in a battle as trying as the one between good and evil: are they country, or are they rock?

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radio warmed up to their Beatles/Byrds/Rockpile overtones, just as country radio embraced Foster's warm, twangy Texas vocals and the pair's shuffling backbeat. But Nashville's never been fond of acts that cross over—and that's where the trouble begins for this act that's played the last two New Music Seminars.

"I don't think there's anything wrong with those two worlds colliding," Foster says flatly. "I mean, I'm certainly not going to deny one part of who I am to make anybody happy—be they country radio programmers or college radio disc jockeys.

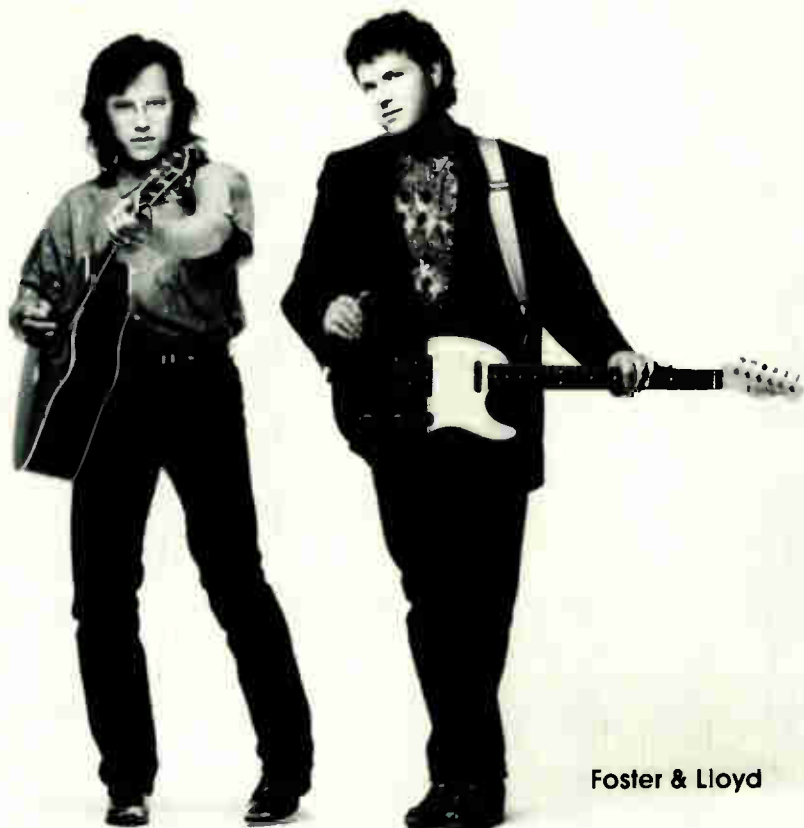
"I grew up in Del Rio, Texas, so country's a very large part of what I listened to. Listen to me talk—I'm never gonna be anything *but* a country artist; but, there's a lot to country music that rockers can relate to. Hell, a lot of the Beatles' harmonies were basically country harmonies."

Foster's point is there's always been overlap. It's just that at no other time has music been so stratified, nor has country music had such an unwarranted image problem. While most people equate it with *Hee-Haw*, hay bales and a night of Porter Wagoner braying in his sequined suit (while believing Dwight Yoakam is the exception, not the rule, as far as hillbilly cool) Foster & Lloyd have been able to navigate between the two camps so far.

There have been problems, though. A few country radio stations have balked at their recent singles, fearing Foster & Lloyd have become "a rock'n'roll band." But, even as the pair plays the College Media Journal confab, they've also been nominated for Vocal Duo of the Year by the Country Music Association.

Not bad for the pair who originally got together as songwriters at Nashville's MTM Music because, as Lloyd recalls, "We were the youngest writers they had and the only ones who didn't have anything else going on." It was a fortuitous teaming, producing "Since I Have You," the first Top 5 record for the equally rollicking Sweethearts of the Rodeo.

Though the pair never intended to become an act, RCA Records' Randy Goodman heard a stack of their demos and presented the idea of signing the pair. Label head Joe



Foster & Lloyd

Galante recognized the infectiousness of their songs and the pair's Everly-esque vocal blend. Voila! A recording entity was born.

Signing the pair showed solid judgment. Allowing them to produce themselves, however, was a bit more unprecedented.

"It helped that we went in there with pretty full-blown demos," Lloyd concedes. "They had a good idea what we were going to do. In fact, Joe told us that to him the demos were like black and white drawings that we should color in. So, that's what we did."

Recorded in Nashville with the help of engineer Ed Seay, Foster & Lloyd stood out from the country pack for their fairly austere production values. There were no syrupy string sections, gooey backup singers or cheesy horns, just taut guitar lines, crisp backbeats and an overall innocence and simplicity that was endearing.

"I'm not sure whether the fact that I'd put out a pop album [*Feeling the Elephant*] on a small independent label helped," Lloyd says, "but at least they knew I'd done this before. And talking to us, they knew Rodney and I had definite ideas about how our music should sound. They had enough faith in our being able to get

it that all they asked was that we use a good engineer."

Critical response was immediate, as was country and college radio. Fans turned out to be everyone from Marshall Crenshaw, alternative radio sweetheart Peter Holsapple and the godmother of neo-traditionalism, Emmylou Harris.

If *Faster and Louder* was a bit more complex than its predecessor, it still maintains its crossbreeding. Granted, the Velvet Underground influence in the darkly swirling "Happy for a While" and "Fat Lady Sings" are slightly more psychedelic than your average Waylon Jennings single, but even these influences are filtered through a strong Southern sensibility.

"The thing about growing up in the South is that it becomes part of your soul," Lloyd says. "Whether you're listening to that music aggressively or not, it takes root and it leaves an indelible mark."

"It's true," Foster concurs. "No matter what else we listen to, there's a part of us that will always come back to the country music, the bluegrass. And maybe the reason we're able to combine these things with pop is because it's so natural for us, it's so much a part of who we are."

—Holly Gleason

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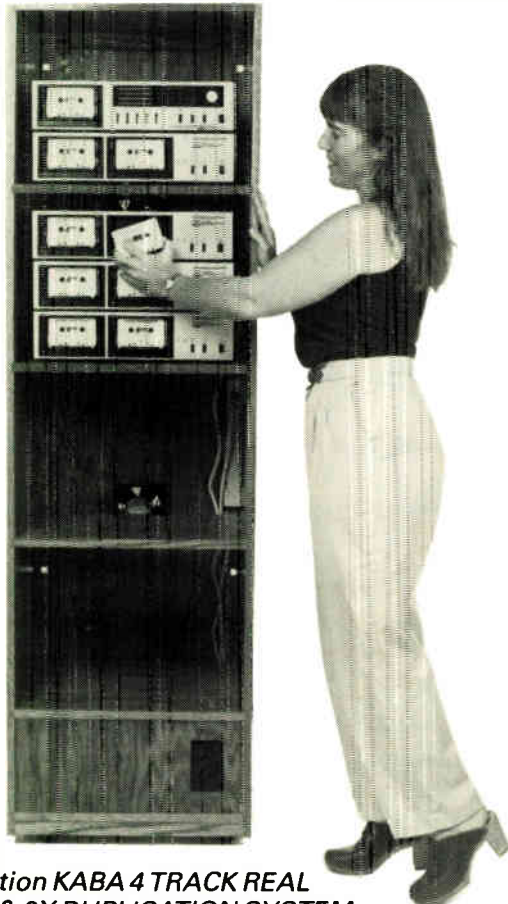
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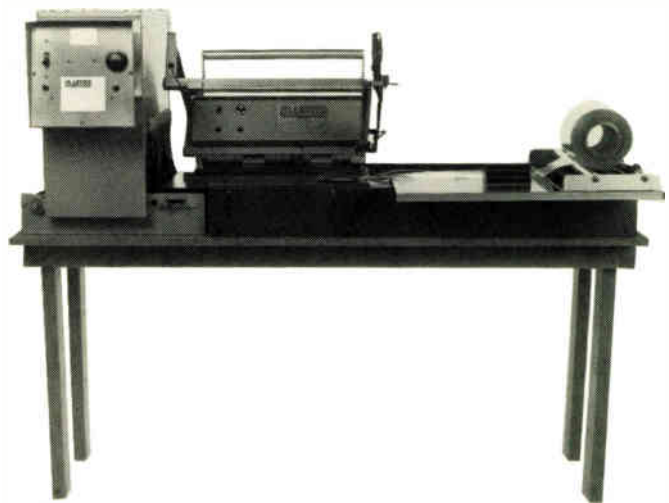
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DAT DEAL DOUBTS

RIAA'S ROSEN RESPONDS

After years of acrimonious quarreling over home taping issues, DAT manufacturers and the record industry have arrived at a resolution of sorts in the Memorandum of Understanding announced in late July. The accord, at once anticlimactic and controversial, has since been hailed as a breakthrough by participants and decried as a farce by detractors. Is it an important step toward accommodating the needs of both copyright holders and consumers? Or is it a face-saving retreat for a powerless record industry whose bluff was about to be called by hardware makers? In truth, it's probably a bit of both.

In terms of specific provisions, both sides have committed to supporting legislation worldwide requiring that DAT recorders be equipped with a Philips-developed digital copy limitation system dubbed Serial Copy Management System, or SCMS. Further, the parties have agreed to ongoing dialog on copyright-related issues such as recordable and erasable CDs, application of SCMS in the analog domain and a hardware-based royalty collection system, though no acceptance of any concept or principle can be inferred from participation in such discussions.

Long-range considerations aside, the immediate practical effect of the agreement in this country, once legislation is passed, would be to remove the real and illusory obstacles that the record industry has placed in the way of consumer DAT importation. That's not just a matter of the Recording Industry Association of America (RIAA) lifting its threat of a suit—which it probably has slim chance of winning—against companies bringing in recorders that don't incorporate a "copyright protection" system. The important is-

sue from the hardware perspective is to get record companies to release software on DAT so consumers will have something to play on their spiffy new machines. Companies that make



hardware, like Sony (CBS) and Philips (PolyGram), will surely oblige now that DAT has been de-vilified by the Memorandum. If consumers respond, even anti-DAT stalwarts like RCA should eventually come around,

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AFTER MIX

citing "competitive reasons."

In return for allowing DAT to don the mantle of respectability, the RIAA and its international counterpart, IFPI, have gotten the manufacturers to accept SCMS. Will the system do much to prevent home taping, or are its limitations such that their practical effect will be nil? SCMS assumes that future DAT machines will be able to record at a 44.1kHz sampling rate, allowing copying of CDs (and prerecorded DATs) directly through digital inputs, which is not currently possible. If the digital subcode of the source includes a "copyright flag," the subcode of copies made digitally from that source will include a specific "identification code." DAT machines will recognize this code and prohibit digital copying from these copies. When program is recorded on DAT through analog inputs, the resultant tape will subsequently be treated as if it were a copyright-protected original. That is, copies may be made digitally from that particular tape, but digital copying of those copies is prevented.

Perhaps the most remarkable thing about SCMS, especially in light of the lengthy struggle from which it was born, is how little it is actually designed to do. The system has no effect on analog cassette taping from CDs or any other source. It prevents unlimited generations of digital-to-digital DAT copying, but at the cost of allowing digital copying of CDs, which was previously prohibited. The bottom line is that SCMS places a lone limitation on home taping: DAT tapers would be able to use digital inputs only on every other generation when making successive generations of copies from a copyright-flagged source. That may be some disincentive to the digital purist, but hardly enough to placate all whose livelihood depends on copyright royalties. As reported in *Billboard*, the National Music Publishers' Association (NMPA) has "pledged to fight the DAT pact." And Britain's Mechanical Copyright Protection Society has threatened to seek compensation from record companies for "smoothing the way for the hardware manufacturers." Even the Japan Phonograph Record Association has misgivings, expressing regret that a royalty scheme was not included and that CD-R was not covered. Evidently, a lot of people are wondering what, if any-

thing, has really been accomplished.

One answer is that while SCMS is at best a modest achievement, the record industry's more than three-year battle against DAT has been a spectacular success anyway. It's easy to forget that in 1986 the CD, despite its phenomenal growth rate, was far less firmly established than it is today. As a competing digital format with the added virtue of record capability, DAT threatened to nip the CD blossom in the bud. Having bet substantial resources on the success of CDs, record companies had little incentive to embrace a new configuration. By now, however, the CD seems far enough along that it can withstand any challenge posed by DAT.

We'll probably never know for sure if the CD's survival was the underlying motivation for the record industry's anti-DAT crusade. The RIAA's senior vice president for government and business affairs, Hilary Rosen, was given the opportunity in a recent conversation to claim credit on behalf of that organization for saving the CD from DAT. She declined. But Rosen, who has worked on the DAT issue for years and participated in the Athens meetings that yielded the Memorandum of Understanding, was happy to provide a record industry perspective on the agreement and its likely effect.

Mix: Does the Athens Memorandum actually bind anybody to do anything beyond endorsing legislation to require SCMS?

Rosen: Under antitrust laws around the world, private parties cannot get together and make decisions about technical standards or consumer access to new technologies. So the negotiations were only held in the context of legislative proposals. Nobody is bound to implement the technical standards [SCMS] unless legislation is passed. There is a commitment to future negotiations, which is not something that will be legislated.

Mix: What steps are being taken to secure legislation in the U.S.?

Rosen: We have lawyers writing up draft proposals for circulation. We hope to see some hearings by mid-fall, and I'm hopeful that the legislation will be passed by next summer.

Mix: How would the RIAA respond if hardware manufacturers were to import machines without SCMS before legislation is in effect?

Rosen: We have promised to sue any

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manufacturer who imports machines without copyright protection. It is our hope not to have to do that. We'd rather spend our money legislating than litigating.

Mix: What if they bring in machines that have SCMS?

Rosen: Then I'm not going to have any complaints.

Mix: What was the strength of each side's bargaining position going into these negotiations?

Rosen: Frankly, I don't think we had a whole lot of leverage. Once you take this issue to the general public, the

hardware manufacturers have the easy argument. All they have to do is say, "Don't tax my tape and don't stop my right to tape." To explain intricacies like "songwriters only get paid a few cents per sale" and "only 15 percent of all records make back their costs" takes a lot of time, and these are arguments we haven't been able to win over the years.

Mix: What about the leverage of withholding software on DAT?

Rosen: I have no idea whether or not individual hardware companies were motivated to come to the table by the issue of prerecorded music. But the record industry has never used that as

leverage, because it would be illegal to do so under antitrust laws. That's not a decision that's been made *en masse*. That's been individual companies assessing their own needs.

Mix: What did each side gain and give up in agreeing to the Memorandum?

Rosen: What the record industry gained was a significant level of present and future participation in the development of audio recording technology as it affects music and copyrights. We gained a commitment from hardware manufacturers that the next time there is a product to be marketed we will have consultations in the initial stages of development to consider the copyright issues involved, instead of having to come in after the fact and kick and scream and whine. That's what makes us appear to be anti-technology, as opposed to pro-copyright, which is what we are. This new approach will allow us to be active in the development of new technologies without worrying about them as threats.

I don't think we have given up a whole lot. Some might argue that we have given up a long-held principle against private copying. As far as I am concerned, though, the principle hasn't gotten us very far. We have lived for many years with home copying on analog, losing billions of dollars a year, and the fact that we have maintained our principles hasn't changed that situation.

Mix: What about gains and losses from the hardware side's perspective?

Rosen: It's hard for me to assess. I could only speculate as to what they think they have gained. There is nothing in the agreement that dictates the marketing of DAT. There is no commitment by any record company to release their product on DAT. So, as individual companies, I don't know what the hardware manufacturers have gained. As an industry, they have gained the beginnings of a trusting relationship with the music industry, which presumably will make their products better received in the future.

I think they have given up what they held as a long-standing principle, that home taping simply does not have any impact on the music industry, and that there is therefore no need for either a technical limitation or a royalty. With this deal they concede that there are copyright issues that need to be addressed, and that is something, I believe, that they will not be able to



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reclaim.

Mix: Will you be able to reclaim the principle that home taping is copy-right infringement?

Rosen: There is nothing we can do about it. It exists. In the current environment, hardware manufacturers are profiting from it, while record companies, artists, songwriters and publishers are losing.

Mix: How will this Memorandum shift the situation in favor of the current losers?

Rosen: The technical limitation on DAT, albeit limited, is a first step. DAT represents two threats. The first is original copying, where there is a qualitative difference from analog copying. DAT makes a better copy, but it's not as if a damn good first copy can't be produced on analog. The second threat is a quantitative difference, because it's not just the first copy that is perfect, but the fifteenth or the hundredth. SCMS addresses that second threat.

Mix: Many are upset that the first threat you mention hasn't been addressed at all. In fact, the Memorandum assumes that consumer DAT machines will be able to record digitally

directly from CDs, which they cannot currently do because they don't record at a 44.1kHz sampling rate. Can the accord be interpreted as saying: "It's now okay to copy from an original for personal use"?

Rosen: No. There is a call for royalties for those copies that are made. In Europe, royalties as an adjunct to this technical solution are a top priority of the organizations working to implement SCMS as a legislated standard. The European hardware manufacturers have committed not to oppose royalties.

The situation in the U.S. is different, not in terms of principle, but politically. The American market is Japanese-dominated, and those companies are unwilling to make the same concession of not opposing royalties. At the RIAA we made the political assessment that we would not be able to get anything if we tried to combine a royalty provision with legislation on the technical standard. So we decided to join with the manufacturers in this first step of proposing a technical standard, while never saying that this will solve the home taping issue. We will deal with the problem incrementally,

and the next step will hopefully be a royalty.

Regarding the record sampling rate, it's true that copying will be easier. The only way to implement the prohibition on future copying is to transfer information on whether a recording is copyrighted or not. So the DAT digital interface needs to be compatible with the output of the CD player. In some respects we may have allowed better recordings to be made, but it was the only way to limit multiple copying. I don't think the difference in sampling rates was much of an inhibition in the past, anyway, because you could go digital to analog to digital and only lose 2dB or 3dB signal-to-noise ratio, which we would contend is not much of a loss. So I don't see it as a big difference.

Mix: If there is no significant loss suffered by copying through the analog rather than the digital interface, what is accomplished by SCMS, which only places limits on copies made digitally?

Rosen: You still have to go through the circumvention process [digital-analog-digital] to get your second-generation copy. We would hope that under this system that would repre-

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AFTER MIX

sent some inconvenience. I think that people are going to want to have the digital-to-digital copies. We are heading toward a digital world, and I think the precedent of limiting in the digital domain is significant. But if it's not an issue for some people, they will circumvent the limitations by going through analog.

I agree that SCMS will have limited effect in the real world, but for a different reason. We know that significantly more copies are made from originals than from copies. To the extent that you don't stop copying from originals, you are not stopping the bulk of the copying that exists. But we weren't stopping any copying before, so we are not going from 100 percent to 10 percent, we are going from 0 percent to 10 percent.

SCMS is an imperfect compromise, but it has to be viewed in the context of what is feasible with current technology. The only reason the system can be circumvented via analog is that we don't have an analog method of identifying copyrighted material. When we have one, the issue will be reconsidered.

Mix: Recognizing the imperfection of the compromise, did you anticipate the degree of negative response that the pact seems to be generating?

Rosen: I think negative reports are exaggerated. People say that record companies have opposed the deal. The fact is that one label, RCA, is saying that the deal isn't enough because we didn't get royalties. But they certainly aren't fighting the deal, and they are still active, supportive members of RIAA. So the press sort of amplifies the negative.

As far as the music publishers, it gets back to some people being willing to compromise to make incremental progress, while others sit back and then criticize after the fact. I don't believe that all music publishers feel the way NMPA does. There are many issues that arise in the music industry where there are natural differences between record companies, writers, artists and publishers, but I don't think this is one of them. These groups have all been consistently consulted before and throughout the negotiations. The American publishers were invited to participate in Athens and declined. But the international association did participate, and its president ulti-

mately encouraged us to approve the agreement.

Mix: How does the RIAA react to some of the specific objections that have been raised? For instance, it's been said that legislative action on royalties will become harder to obtain because politicians will be able to avoid further action by maintaining that this proposed legislation solves the problem.

Rosen: I've had contact with the European Commission, the U.S. administration and Congress, and nobody views this as the end-all solution to home taping. Rather, they accept it for what it is, which is a step toward progress, a precedent for negotiation. I think the royalty battle is a separate but important one, and I believe that governments will view it that way as well.

Mix: What about the restrictions SCMS would put on digitally copying digital recordings of non-copyrighted material? As the RIAA has pointed out, most songwriters have a rough time financially. Consumer DAT places high-quality recording within their reach. But SCMS would restrict their ability to make unlimited digital copies of their own music, unless they have one of the much more expensive professional DAT machines.

Rosen: If you record through the analog inputs, or even the digital input if you have a non-copyrighted source like a synthesizer, you can make unlimited first-generation digital copies from that recording, so you can do editing and make copies of your work to send to record companies. This was specifically allowed for non-infringing uses. To make copies from those copies, you would have to go through analog and suffer that loss. You have to keep in mind that without a way to identify copyrighted material in the analog domain, we had three choices: we could limit all copying, pretending that everything is copyrighted; we could limit no copying; or we could go somewhere in the middle, allowing some copying but imposing a reasonable limitation once the first round of mixing and editing uses were accomplished. I think that in practice this limitation won't affect the quality of the product.

Mix: Regarding the problem of infringing uses, what explanation can you offer to those who complain that the agreement does nothing to restrict the existing problem of home taping on

analog cassettes?

Rosen: We had to make a political judgment. There are 90 million to 120 million analog recorders out there, and governments around the world, particularly the U.S. Congress, are not about to prohibit something that people are already doing every day.

Mix: Another concern is the ease with which determined home tapers might be able to thwart SCMS by stripping the subcode data out of the digital signal.

Rosen: The legislation contemplates that black boxes and circumvention devices would be illegal. There will always be a percentage of people who are willing to open up their machines and tear apart their circuitry, but I think it will be a small percentage. And the incentive to do it will be low under this system, because we allow such a significant amount of copying.

Mix: You've emphasized that SCMS is a first step, one that you hope to augment with a royalty scheme of some kind. What are some of the proposals under consideration as longer range solutions to the copyright/home taping conflict?

Rosen: We need to have a system that identifies music as copyrighted in the

analog domain. That is not an easy task. There are a number of systems being evaluated, but we are also think-



"I agree that SCMS will have a limited effect in the real world. It is an imperfect compromise, but it has to be viewed in the context of what is feasible with current technology."



ing about starting from scratch. It's part of the agreement with the hardware manufacturers that we are going to pursue discussions on the concept

of a debit card. It's very much in the concept stage, but it would provide automatic revenue accounting and collection for each specific incident of home copying. A consumer could go into a record store and buy a taping card of a given value, and every time they wanted to tape, their recorder would ask for the card and decrement a set amount for each selection. It would be a very targeted system, so it would address many of the objections people have about the unfairness of royalties on recorders or blank tape.

Mix: Do you think that further technical limitations have a chance of winning cooperation from the hardware manufacturers, or are they likely to feel that the Memorandum satisfies whatever obligation they had to acknowledge the record industry's concerns?

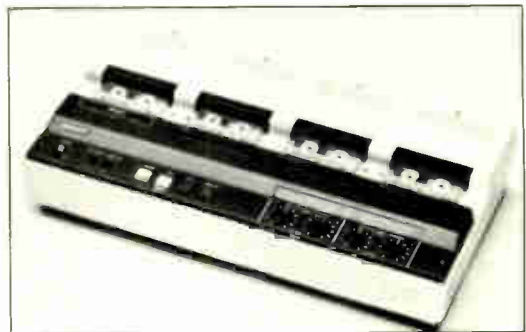
Rosen: I think they believe what we believe, that this is the beginning of a process, not the end. ■

Phil De Lancie, a mastering engineer at Fantasy Studios in Berkeley, Calif., is our resident voice on formats, trends and technologies in the world of prerecorded music mastering and manufacturing

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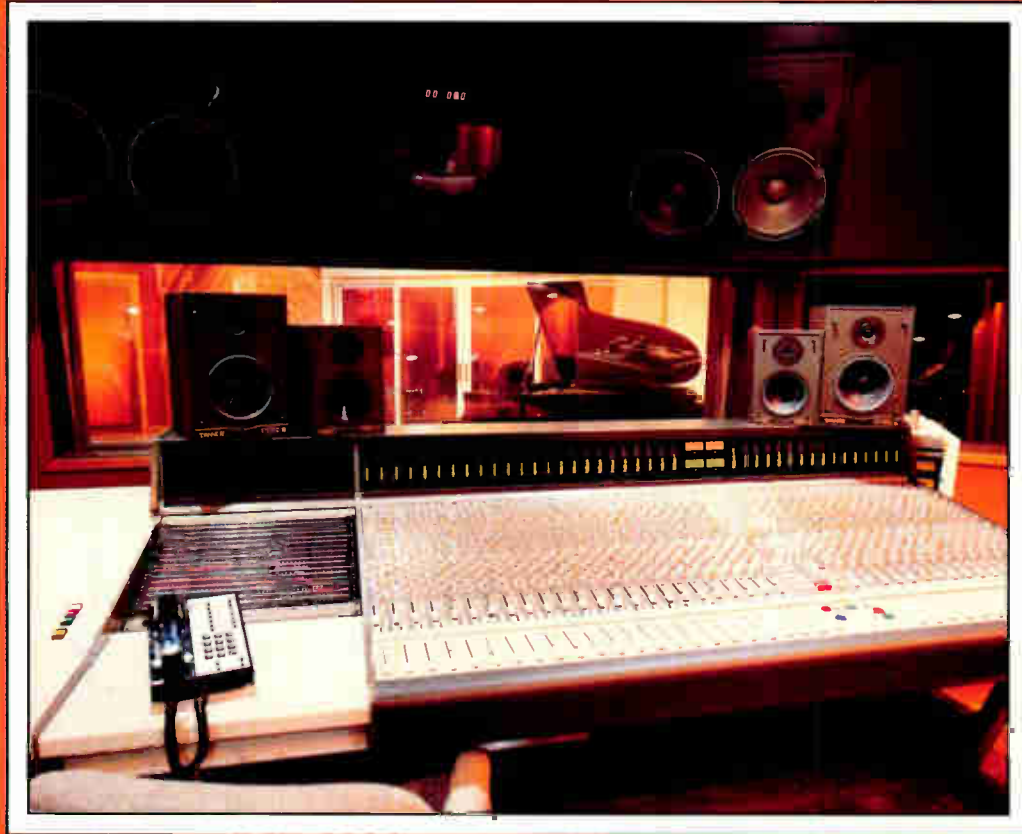
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Studio 1 at Soundtrek, Inc., in Kansas City, Mo., is the largest of three rooms at that location and is used primarily for radio and TV production. A Tascam M700 console and a custom speaker system designed by Steven Durr & Associates highlight the control room. The main recording area and a separate vocal booth can be seen in the background. Photo Jim Goss

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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 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!

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A.D. PRODUCTIONS, INC.
Milwaukee, WI

[24+] **A.D. PRODUCTIONS, INC.**, also *REMOTE RECORDING*; 411 E. Wisconsin Ave., Ste. 1001, Milwaukee, WI 53202; (414) 278-7999; FAX: (414) 278-1159. Owner: Partnership Manager: Michael M. Henszey Engineers: David G. Henszey, Jay Mark, Larry Hinds Dimensions: Room 1 studio 720 sq ft., control room 314 x 30 Room 2: control room 12 x 12 Mixing Consoles: Neve V Series 48 w/Necam 96 automation, (2) Yamaha DMP7-8 x 2 digital mixer/FX Audio Recorders: Mitsubishi X-850 multitrack, Mitsubishi X-86 2-track Tascam ATR-60 center track Cassette Recorders/Duplicators: TEAC W990 Synchronization Systems: Adams-Smith Syst-m 2600, Adams-Smith compact controller, Sigma C B G Echo, Reverb & Delay Systems: (2) Lexicon 480L w/LARC, Lexicon 224X w/LARC, Eventide HD3000B, Publison Internal 90+ (3) Lexicon PCM42 delay, AMS S-DMx delay, Roland Dimension D, Roland 501 chorus echo Other Outboard Equipment: BBE 822 SonicMax (3) Focusrite ISA 110 EQ, Massenburg stereo parametric EQ, (2) Klark-Teknik 1/2-octave EQ, Aphex 250 Exciter, (2) Focusrite ISA 130, Drawmer M500, Drawmer DL-231, Korg A3, Korg DT-1 digital tuner Microphones: Calrec Sound Field MkIV (2) Neumann U87, (2) Neumann KM84, (2) AKG 414, (6) Sennheiser MDM-421, (3) Shure SM58, Crown PZM, Shure SM97, AKG D-12E Monitor Amplifiers: (2) QSC MC-1400, (2) Ramsa W P94Q, Ramsa W P9055 Monitor Speakers: Tannoy FSM, Tannoy NFM-8, Tannoy PBM-8, Yamaha NS-100M Musical Instruments: Emulator III w 300MB HD Emulator Proteus, Emax HD SE, Emax, Kurzweil PX-1000, Oberheim Matrix-6, Roland D-50, Roland D-110 (ESQ VFX), Kurzweil MIDIboard, Mac II w/19" screen, Mac II SX w/full page screen, Ensoniq VFX Other MIDI Equipment: (2) J.L. Cooper MSB+MUP, Performer 3.0 software, D-50 and other editor/librarians Professional Composer software, Alchemy E111, Digidesign Emax Video Equipment: Sony PVM-2530, Sony PVM-1371Q, Sony SP-9600 3/4" U-matic, VITC time piece, Q-Sheet AV software, Sony PCM-2500 R-DAT prof recorder w/DIF Other: Dyaxis 2-track editor Rates: \$150 per hour, \$2,000 per day Specialization & Credits: A.D. Productions, Inc. is a full-service professional recording studio located in Milwaukee, Wisconsin Steven Durr created a fresh concept in audio production by uniting the most advanced recording technology, audio ingenuity and studio aesthetics The studio's high-rise location, extensive use of glass and windows, large control room with a view of Lake Michigan, and unique triangular main studio breed comfort and relaxation A.D.'s integrated synchronizing system utilizes Mac II with Performer phase-locked to digital tape machines, video recorder, MIDI equipment, console automation, and all controllable from Adams-Smith compact controller Staff technician MIDI technician and house engineer are always available and intimately familiar with the studio's operation In addition to the main studio, A.D. has opened a powerful MIDI suite for music composition, music-to-video, sound sampling and editing with over 120 voices and the latest keyboards and samplers The famed dance mixer Jay Mark and recording and jingle engineer Larry Hinds are on call at A.D. Please contact Warner Bros. artist and producer Jerry Harrison for a personal recommendation

[24+] **AIRE BORN, INC.**, 4700 Northwest Plaza, W. Dr., Zionsville, IN 46077; (317) 876-1556. Owner: John Bolt, Mike Wilson Manager: Mike Wilson Engineers: John Bolt, Mike Wilson Dimensions: Room 1 studio 48 x 38, control room 21 x 21 Room 2 studio 24 x 38, control room 24 x 38 Mixing Consoles: Audtronic 740 36 x 24, Soundcraft 2400 28 x 24 Audio Recorders: Ampex ATR-124 24-track, 3M M79 24-track Sony 2-track MCI 2-track, Fostex 2-track, Revox 2-track Noise Reduction Equipment: (4) Dolby A, (2) dbx Synchronization Systems: EECOMSQ 103 Echo, Reverb & Delay Systems: (4) Lexicon reverb, (2) Yamaha reverb, Eventide reverb Microphones: Many Monitor Speakers: UREI 813, JBL Musical Instruments: Yamaha C7E7 grand piano Other MIDI Equipment: Various MIDI gear

[24+] **ALLIANCE RECORDING COMPANY**, also *REMOTE RECORDING*; 8449 Parshallville Rd., Fenton, MI 48430; (313) 632-5653. Owner: Al Hirschman, M. Farner Manager: A. Hirschman Engineers: Al Hirschman, Dee Hirschman, Don Pushies, Jacques Mersereau Dimensions: Room 1 studio 36 x 40, control room 20 x 24 Room 2 control room 18 x 20 Mixing Consoles: Neotek IIC 56 x 24 Audio Recorders: MCI JH-114 24-track, (2) MCI 110 2-track, Scully 280B 2-track Noise Reduction Equipment: (30) dbx Pro all tracks Synchronization Systems: AMR sync controller, Echo, Reverb & Delay Systems: Lexicon 224XL, EMT 140 TS, Sound Workshop 262, Eventide Harmonizer, Lexicon LXP-1, Lexicon LXP-5, TC Electronic 2290 DDL, UltraVerb Yamaha SPX900, DelatLab DL-2 Dynacord tape delay, Marshall time modulator Other Outboard Equipment: (2) UREI 1176, (2) dbx 165, (2) Scamp rack w/limiter, (8) Scamp rack w/gate, Scamp rack w/EQ, Orban 418A, Teletronix LA-2A, Valley People dual Dyna-Mite, Omni Craft noise gate, EXR Exciter Microphones: (2) Neumann U89, (3) Neumann U87, (2) Neumann KM84, (2) Neumann KM56 tube, (2) Neumann U47 tube, (2) AKG 414 (2) AKG 452, (2) AKG C-28 tube, AKG 190, (4) E-V RE20, (2) E-V CS15, (4) E-V RE15, E-V RE666, (2) Sennheiser 421, (2) Sennheiser 441, (2) Beyer 500, (2) Beyer 260, (2) Beyer 101, (2) Shure SM81 (6) Shure SM57, (2) Altec M-30 tube, Crown PZM, (2) Peavey PVM-45 Monitor Amplifiers: AB Systems, (3) SAE, (2) Crown McIntosh Monitor Speakers: (2) UREI 813B (2) JBL 4311, (2) JBL 4301, (2) Yamaha NS-10M, (2) Auraltone Musical Instruments: Ensoniq Mirage, Yamaha DX7, Yamaha RX5 Ludwig drums, Oberheim Matrix-6, (7) Instrument amp Other MIDI Equipment: (2) Macintosh Plus, (2) Southworth Jam Box/4+ Video Equipment: 3/4" video setup

[24+] **AMBIENCE RECORDINGS**; 27920 Orchard Lake; Farmington Hills, MI 48018; (313) 851-9766. Owner: Charles Schenck Manager: Dennis Forbes

[24+] **ARC RECORDS, INC.**, 2844 W. Eastwood Ave., Chicago, IL 60625-3710; (312) 478-3008. Owner: Andy Cohn Dimensions: Studio 1 24 x 15 Studio 2 21 x 18 Musical Instruments: Steinway 1985 Model B ebony 6 10 5", Bechstein 1986 Model C polished ebony 7 4 semi-concert

[24+] **ARS RECORDING & TAPE DUPLICATION**, also *REMOTE RECORDING*; 11626 S. Pulaski Rd., Alsip, IL 60658; (312) 371-8424. Owner: ARS Enterprises Manager: Allen L. Keilman

[24+] **ATTICA RECORDING STUDIO**; 2614 5th Ave., Rock Island, IL 61201; (309) 786-9832. Owner: Greg Ballard Manager: Greg Ballard

[24+] **AUDIO GRAPH PRODUCTIONS, INC.**, also *REMOTE RECORDING*; 2810 Bennett Rd., Okemos, MI 48864; (517) 332-3272. Owner: Glenn Brown, Doug Monson Manager: Jerome Fox

[24+] **AUDIO RECORDING UNLIMITED, INC.**, 400 N. Michigan Ave., Ste. 1900, Chicago, IL 60611; (312) 527-7000. Owner: Mike King Manager: Betty J. Rake

[24+] **BEACHWOOD STUDIOS**, also *REMOTE RECORDING*; 23330 Commerce Park Rd., Beachwood, OH 44122; (216) 292-7300. Owner: EDR Corporation Manager: Joel M. Solloway Engineers: George A. Siph—creative director, Joel M. Solloway, Steve Simmons, Martha Nacht Dimensions: Room A live room 26 x 29, control room 27 x 27 Room B studio 31 x 30, control room 24 x 20. Rhythm 35 x 29 Mixing Consoles: Sony MXP-3036 w/hard disk automation, Sony

JH-636 36 x 24 automated, Tascam M-512 Audio Recorders: (2) MCI JH-24 24-track, (6) MCI 110B 2-track, (3) Sony APR-5002 2-track, (3) Otari MX-5050 2-track, (2) Tascam 440B 4-track, Otari MTR-10 2-track Cassette Recorders/Duplicators: KABA duplication system w/(10) slave, (2) Tascam 133B 3-track Noise Reduction Equipment: Dolby Type A 36 channels, Dynaflex open-ended 2 channels Synchronization Systems: Adams-Smith 2600, New England Digital Direct-Disk system PostPro 16 tracks Echo, Reverb & Delay Systems: Lexicon 224XL w/LARC, Lexicon 224 Yamaha SPX90, Klark-Teknik DN780, (2) Ecoplate, Lexicon PCM41, Lexicon PCM42 Other Outboard Equipment: (2) Teletronix tube limiter, (2) UREI LA-2 limiter, (5) UREI 1176 limiter, AMS pitch shifter Eventide H969 Harmonizer, (2) Aphex Aural Exciter, (2) Klark-Teknik 36-band graphic EQ, (2) Valley People Gain Brain II Kepex II, (16) Scamp 100 noise gate compressor, Sony PCM-501, Symetrix telephone TI-101 Technics SL-1200 CD player, Technics SP-25 turntable, Panasonic SLA-300 CD player, Microphones: Sennheiser MKH-416, (8) Neumann U87, Shure, Beyer, AKG, (4) Samson "TD Concert" series wireless w/dbx chip Monitor Amplifiers: BGW 750 Crown D-75, Crown DC-300, McIntosh 2300 Hafler 125, Hafler 225 Monitor Speakers: UREI 813 Time Align Musical Instruments: Yamaha 9' concert grand piano, Yamaha 7' grand piano, Hammond organ w/Leslie, Emulator II+ keyboard, Yamaha DX7 keyboard LinnDrum, Korg DSM-1 sampling module Other MIDI Equipment: Macintosh Plus computer Video Equipment: (2) JVC 850CR 3/4", Sony VO5850 3/4", (3) Sony 25" monitor, RCA 25" monitor Rates: Call for all video and audio rates



BIG DOG STUDIOS, INC.
Wichita, KS

[24+] **BIG DOG STUDIOS, INC.**, also *REMOTE RECORDING*; 412 1/2 E. Douglas, Wichita, KS 67202; (316) 263-4464. Owner: Sheldon Coleman Manager: Steve Falke Engineers: Steve Falke, John Salem Dimensions: Room 1 studio 135 x 35, control room 20 x 18 Room 2 studio 15 x 25 Room 3 studio 16 x 16 Room 4 studio 16 x 8 Mixing Consoles: Aemek Angela 28 x 24 w/new Linear Technology upgrade, Yamaha DMP7 digital, Carvin 16 x 8 x 2 Audio Recorders: Studer A80 MkIV 24-track, Sony APR-5000 2-track 1/4" and 1/2", Otari MX-5050B 2-track, (2) Sony PCM-2500 DAT Cassette Recorders/Duplicators: (2) Tascam 122 MkII Noise Reduction Equipment: dbx 180A 24 channels, (2) Rocktron Hush II 2 channels Synchronization Systems: Adams-Smith Zeta-3 audio-video-MIDI Echo, Reverb & Delay Systems: Lexicon PCM70 (2) Yamaha REV7, (4) Yamaha SPX90 Lexicon PCM42, Lexicon PCM41 Live Chamber (95 x 35) Other Outboard Equipment: Aphex Type B Aural Exciter, (4) dbx 166 comp/lim/gate, dbx 160 comp/limiter, (2) Orban 536A dynamic balance controller, Symetrix 544 4-channel noise gate, Jensen DC Twin Servo stereo simulator, Studio Technologies AN2 stereo simulator, (8) Stewart active direct box, Scholz Rockman rack module, Countryman DI, Yamaha MLA7 mic/line amp Microphones: (2) AKG C-414EB, (4) Shure SM81, Stephen Paul 3 Micron diaphragm U-87A, Neumann U87, (4) E-V N/Dym 308, (4) E-V N/Dym 408, E-V N/Dym 747, (8) Sennheiser 421, (12) Shure SM57, Beyer M88, (6) Shure SM58, E-V RE20 Monitor Amplifiers: (2) Hafler P-500, Crown DC-75, Biamp 2400 QSC Model 1200 Monitor Speakers: (2) Tannoy SGM-3000, (2) Yamaha NS-10, (2) JBL 4411, (2) E-V Sentry 100, (10) AKG K-240D headphones Musical Instruments: Yamaha C7 7 4" concert grand piano (1985), Gretsch 4-piece drum set w/various cymbals and percussion, Roland PM-16 w drum pads, Roland D-550 L/A synthesizer, Roland S-50 sampler, Roland JX-10 synthesizer, Roland R-8 human rhythm composer, Yamaha DX7, Yamaha RX11 drum machine, Linn LM-1 drum machine, Yamaha CP-70 electric grand, Ensoniq ESQ-1, Ensoniq Mirage, Marshall JCM-800 guitar amp, Roland JC-120 guitar amp, Mesa/Boogie guitar amp, Oberheim Matrix-1000 Other MIDI Equipment: Roland MC-500 MkII micro-composer, Roland PG-1000 synth programmer Video Equipment: JVC CR-850U 3/4" VTR Rates: \$70/hr, \$100/hr with soundstage Call for blackout rates Specialization & Credits: Big Dog Studios is now under new management

—CONTINUED ON NEXT PAGE

best possible creative environment. We are now able to do 48-track recording. We have a separate edit/MIDI room for MIDI productions and editing or duplications. Credits include, "One Way" produced by Deodato (MCI), "Atomic Dog" by George Clinton (Capitol), "Michele Goulet" (Island), "Ready for the World" by Ready for the World (MCA), "Bert Robinson" (Capitol), "Heard it Through the Grapevine" Roger Troutman (Warner Bros.) and most recently "One Way" for Capitol. We are also licensed by the state of Michigan to teach recording engineering classes under the name The Recording Institute of Detroit.

[24+] **DRESS REHEARSALS LTD.**; 1840 W. Hubbard; Chicago, IL 60622; (312) 829-2213. Owner: Don Grayless. Manager: Don Grayless.

[24+] **FAST TRAX RECORDING STUDIO**; also *REMOTE RECORDING*; 2737 Baldwin St.; Jenison, MI 49428; (616) 669-3400. Owner: Robert B. Reister. Manager: Colleen M. Horgan.



Genesis
DIGITAL

GENESIS DIGITAL
Clayton, OH

[24+] **GENESIS DIGITAL**, also *REMOTE RECORDING*; 6500 Southway Rd.; Clayton, OH 45315-9757; (513) 832-3723. Owner: Stephen Mathews. Engineers: Jim Hazelwood, Steve Mathews. Musical Instruments: Emulator EllI w/CD ROM, Yamaha HX88, Kurzweil 1000PX, Yamaha TX802, Roland D-110, Yamaha TX516, Yamaha DX7, Yamaha RX5, Ensoniq Mirage. Other MIDI Equipment: Mac Plus w/20MB hard drive, Mark of the Unicorn Performer Ver. III. Rates: Call for quotes. Specialization & Credits: Genesis Digital strives to meet all of your corporate audio/video pre/post-production needs. Combining the absolute highest sound quality, incredible prices and a product when you need it. Featuring the Emulator EllI as our main production tool allows you such options as digital EQ, digital splicing and compression. All projects can be mastered digitally or using Dolby SR analog. Production credits include Ball Corp., Ball Jars, national AV, Country Folks Restaurants, regional AV, WTJC TV26 and TV54 annual telethon, regional AV, Dayton Children's Medical Center Telethon, regional AV, Chapter 1 Elementary Reading Program, Springfield, OH local AV, AVA Barber, national audio.

[24+] **HARTWOOD RECORDING**, also *REMOTE RECORDING*; 4607 Jeffers Rd., Eau Claire, WI 54703; (715) 834-5122. Owner: John E. Hartzell. Manager: Ruth E. Hartzell.

[24+] **HIT CITY RECORDING**, also *REMOTE RECORDING*; 707 E. 54th St., Indianapolis, IN 46220; (317) 257-0764. Owner: Dave Langlitt, Tim Brickley. Manager: Dean Lozow. Engineers: Paul C. Mahern, Jon Quest, Brad Rector. Dimensions: Room 1 studio 28 x 22, control room 19 x 15. Room 2 studio 12 x 15, control room 15 x 13. Mixing Consoles: Soundcraft 1600 24 x 24, Ramsa Audio Recorders: Studer A80 MkIV 24-track, Scully 280 16-track, Tascam 80-8 8-track, (2) Otari 5050B 2-track. Cassette Recorders/Duplicators: (3) JVC KD-V6 Noise Reduction Equipment; (2) Dolby SR, (2) Dynaflex, (2) Symetrix 511 Synchronization Systems; Fostex Echo, Reverb & Delay Systems: AMS RMX, Lexicon PCM70, Lexicon PCM60, Yamaha REV7, Yamaha SPX90, Roland SDE-1000, Eventide H910 Harmonizer, Klark-Teknik DN780, Korg DRV-3000. Other Outboard Equipment: Akai S900 sampler, (2) Aphex Compeller, (2) Aphex Aural Exciter, (2) UREI 1176LN, (2) dbx 160, (2) dbx 162, (2) Valley People Dynamite (8) Kepex, (8) Galax, Goldline Model 30 RTA Microphones; (2) AKG C-451, AKG D-224E, AKG C-414, Neumann U47, Neumann U87, (2) Neumann KM84, (6) Sennheiser MD-421, (10) Shure SM57, (2) Crown PZM. Monitor Amplifiers: Crown DC-300, Crown D-150, Haller Monitor Speakers: (2) UREI 809B, (2) JBL 4313B, (2) Polk 5A, (2) Auratone Musical Instruments: Linn 9000 SMPTE full sampling update, Yamaha DX7IIFD, Oberheim Matrix-6R, Yamaha TX7, Ensoniq Mirage, Yamaha CP70, (2) Stratacaster, P-Bass, Rickenbacker 12-st., Emmons D12 pedal steel, Roland D-550, Korg DSS-1,

Korg EX-8000. Other MIDI Equipment: SBX80, Macintosh Plus. Video Equipment: 3/4" and 1/2" VCR. Other: Fender Deluxe, Roland JC-120. Rates: Studio A \$65, studio B \$50, block call.

[24+] **JOR-DAN RECORDING, INC.**; also *REMOTE RECORDING*; 1100 Wheaton Oaks Ct.; Wheaton, IL 60187; (312) 653-1919. Owner: Grace R. Jordan. Manager: Mal Davis.

[24+] **JUNIOR'S MOTEL**; Rte. 1, Box 138; Otho, IA 50569; (515) 972-4475. Owner: Kirk Kaufman. Manager: Kirk Kaufman.

[24+] **LAKE RECORDING STUDIOS**; 418 Lake St.; Maywood, IL 60153; (708) 344-8760. Owner: Bob Kaider. Manager: Bob Kaider.

[24+] **LAKESITY RECORDING STUDIO**; 2554 Boone Ave. S.; St. Louis Park, MN 55426; (612) 546-8331. Owner: Les Walstein. Manager: Rob Genadek. Les Walstein.



Logos
The Christian Alternative

LOGOS PRODUCTIONS
Clayton, OH

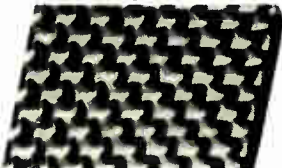
[24+] **LOGOS PRODUCTIONS**, also *REMOTE RECORDING*; 6500 Southway Rd.; Clayton, OH 45315; (513) 832-3723. Owner: James K. Hazelwood, Lisa Hazelwood. Manager: Steve Mathews. Engineers: Steve Mathews, Jim Hazelwood, Brent Harshbarger. Dimensions: Room 1 studio 39 x 28, control room 12 x 9. Room 2 studio 112 x 120. Room 3 studio 6 x 5. Room 4 studio 59 x 28. Mixing Consoles: Soundcraft TS 12 32 x 24. Audio Recorders: Otari MX-80 24-track, Fostex B-16D 16-track, Revox PR99 2-track. Cassette Recorders/Duplicators: Nakamichi MR-1, Yamaha K1020, JVC KD-W100 dual, Telex 6120 Noise Reduction Equipment: Dolby SR 361, Dolby C onboard B-16, Symetrix C11, dbx 128 Synchronization Systems: Fostex 4050 w/ SMPTE time code, Echo, Reverb & Delay Systems: Eventide H3000 Ultra-Harmonizer, TC Electronic TC-2290 digital delay and effects processor. (2) Yamaha REV7, Lexicon PCM60, Yamaha SPX90, Master-Room XL-210, Ibanez HD-1500 ADA 64i. Other Outboard Equipment: dbx 160X, Orban 422A, Symetrix quad noise gate, Aphex Aural Exciter, Yamaha PBI preamp, Scholz Rockman stereo chorus/delay/sustainer rack-mount. Microphones: AKG 414, AKG 451, AKG D-12E, AKG 452EB, AKG C-747, Neumann KM84, Crown PZM, Shure SM81, Shure SM58, Shure SM57, E-V PL77. Monitor Amplifiers: Haller 500, Yamaha P2050, Yamaha P2200. Monitor Speakers: UREI 809, Yamaha NS-10M, Realistic Minimus-7, MCM high-definition monitor. Musical Instruments: Emulator EllI w/CD ROM, Yamaha DX7, 360 Systems digital keyboard, Ensoniq Mirage, Kurzweil 1000PX, Yamaha TX516, Yamaha TX802, Yamaha RX5, Roland D-110, Kawai 8' grand piano, Young Chang 6' grand piano, Acoustic OUD electric guitars. Other MIDI Equipment: Yamaha KX88 controller, Mac Plus w/20MB hard drive, Mark of the Unicorn Performer III and Composer. Other: Commodore 128 w/ various sequence and voice libraries. Rates: 16-track \$35/hr., MIDI production \$45/hr., 24-track \$75/hr. Specialization & Credits: Logos Productions Recording Studio strives to produce the highest quality recordings while offering clients an opportunity to creatively work in a Christian environment. Making use of state-of-the-art audio technology, Logos can produce today's sounds at yesterday's prices. Logos Productions Recording Studio is located at Salem Church of God, 6500 Southway Road, in Clayton, Ohio. It is easily accessible from Interstate 70 and Interstate 75. From eastbound I-70, exit Route 49 south (Salem Avenue) and turn right on Southway. From westbound I-70, exit at Hoke Road. Turn left on Hoke, right on Route 49 (Salem Avenue) and then left on Southway. Salem Church of God is located 1/4-mile west on Southway Road.

[24+] **MASTERPIECE SOUND STUDIO**, also *REMOTE RECORDING*; 1611 Webb St.; Detroit, MI 48206; (313) 867-7874. Manager: Sylvia Moy.

[24+] **METRO MOBILE LOCATION RECORDING**, also *REMOTE RECORDING*; 2097 John's Ct.; Glenview, IL 60025; —CONTINUED ON NEXT PAGE

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THE RECORDING WORKSHOP
Chillicothe, OH

MKS-20, Ensoniq ESQ-1. Other MIDI Equipment: (2) Atari 1040ST computer, (2) Hybrid Arts MIDI track ST/SMPT, 360 Systems MIDI patcher. Video Equipment: JVC VEP-2 video editing system, JVC CR-850U. Rates: Available upon request. **Specialization & Credits:** The Recording Workshop offers a 7-week, 300-hour training program designed to prepare assistant recording engineers—the original “hands-on” training program for students seeking a concentrated, short-term course of study. 205 hours are spent in-studio. Our students get experience in recording, mixing, song production, commercial and TV audio production, editing, and equipment maintenance. In lecture, students receive a broader study of audio engineering and music business practices. Our six-studio recording complex features two automated 24-track studios, two 16-track studios, a commercial production studio, a DAT mastering hard disk editing studio, and a tape editing lab. Our equipment emphasizes the hardware that is most popular in the job market, including MIDI and digital technology. In-studio class size is three to six students, and lecture class size is 48. We provide internship and job placement services. We offer low-cost, on-campus housing. Financial aid is available. The Workshop is a TEC Award nominee and is licensed by the Ohio State Board of School and College Registration. Please call for a brochure.

[24+] **REFRAZE STUDIOS, INC.**, 2727 Gaylord Ave., Dayton, OH 45419; (513) 298-2727. Owner: Mark A. Frazee, Jane Frazee. Manager: Gary D. King. Engineers: Gary King—chief eng., John Hughes, Mark Frazee. Dimensions: Studio 40 x 30, control room 13 x 15. Mixing Consoles: Trident Series 80B/30 x 24 w/Digital Creations DiskMix automation. Audio Recorders: Otari MTR-90 MkII 24-track, Otari MTR-12 2-track 1/2", Otari MTR-12 2-track 1/4". Cassette Recorders/Duplicators: Nakamichi BX-425, Sony TC-WR950, (2) Sony TC-K555. Synchronization Systems: E-mu SP1200 SMPTE-to-MIDI Echo, Reverb & Delay Systems: AMS RMX 16 digital reverb, Quantec QRS stereo in/out, Lexicon 200, Lexicon 480L, Lexicon Super Prime Time delay, Eventide H949 Harmonizer, (2) Lexicon PCM41, DeltaLab harmonic computer, Yamaha SPX90II, Valley People Gain Brain, (3) Valley People Kexex limiter, dbx 160X, dbx 165, Orban 2-channel compressor/limiter/decompressor, (2) UREI 1176 peak limiter, UREI 535 dual channel 10-band EQ, Kark-Teknik DN30 30 EQ, UREI 545 dual channel parametric EQ, Aphex Type B Aural Exciter. Microphones: (2) Neumann U87, (2) Neumann U48, AKG 414HB, (2) AKG C-451EB, Sennheiser 441, (6) Sennheiser 421, (5) Shure SM57, (3) Shure SM58. Monitor Amplifiers: UREI 6500, (2) Crown DC-300A, Crown DC-50. Monitor Speakers: UREI 813B Time Aligned, (2) Yamaha NS-10M, Auratone 5C, Hitachi HS-01, (6) AKG 240 headphones. Musical Instruments: E-mu SP1200 sampling drum machine, Baldwin 9' grand piano, Roland S-50, Yamaha DX7IIFD, Roland W-30 MIDI workstation, Moog Mirrimoog, Music Man Stingray Bass. Other MIDI Equipment: IBM PC compact computer w/Cakewalk software. Other: KABA audiophile-quality cassette duplication. Rates: Call for reasonable rates. Packages available.

[24+] **RIVER NORTH RECORDERS**, 610 N. Fairbanks Ct., Chicago, IL 60611; (312) 944-1107. Owner: Joe Thomas. Manager: Mara Potje.

[24+] **ROME RECORDING CO.**, also *REMOTE RECORDING*; 1414 E. Broad St., Columbus, OH 54205; (614) 253-4418. Owner: Jack Casey. Manager: Jack Casey.

[24+] **RON ROSE PRODUCTIONS LTD.**, also *REMOTE RECORDING*; 29277 Southfield Rd., Southfield, MI 48076; (313) 424-8400. Owner: Ron Rose. Manager: Don Wooster.

[24+] **ROYAL RECORDERS**, c/o Americana Resort, Lake Geneva, WI 53147; (414) 248-9100. Owner: Ron Fajerstein. Manager: Jeff Schroeder. Engineers: Rich Denhart, Dan Harjung, Dave Kent. Dimensions: Studio 35 x 24, control room 21 x 20. Mixing Consoles: Solid State Logic 4072E w/G Series computer 64 mono, 8 stereo, 80-input. Audio Recorders: (2) Studer A800 MkIII 24-track, Studer A80 1/2" 2-track, Studer

A80 1/4" 2-track, (2) Mitsubishi X850 32-track digital, Mitsubishi X86 2-track digital. Synchronization Systems: Adams-Smith 2600SP Echo, Reverb & Delay Systems: Publison Internal 90 (20.9 sec stereo sampling and SMPT), (2) AMS DMX 15-80S (dual lock-in 6.515 secs.), (2) AMS RMX 16 digital reverb, Ecoplate I reverb, EMT 140 T plate reverb (tube), Lexicon 224XL w/LARC, Lexicon PCM70 digital reverb, Lexicon Super Prime Time DDL, Lexicon 200 digital reverb, (2) Yamaha REV7 reverb, (4) Roland SDE-3000DDL. Other Outboard Equipment: (8) Focusrite ISA 110 EQ, (2) GML parametric EQ, (2) Pultec EQP-1A EQ, (6) Pultec EQH-2 EQ, (9) API 550A EQ, (4) Orban 622B parametric EQ, (5) Teletronix LA-2A tube limiter, (4) dbx 160X limiter, (2) UREI LA-4 limiter, (8) Drawmer DS-201 dual noise gate. Microphones: (2) AKG C-24 tube, (7) AKG C-12 tube, Telefunken M251 tube, (2) Schoeps 221B tube, (3) Neumann M250 tube, (2) Neumann M269 tube, (2) Neumann KM254 tube, (5) AKG 451E, (4) AKG C-12A, (6) Sennheiser MD-421, (7) Shure SM57. Monitor Amplifiers: (3) Times One, (2) Yamaha PCM2002, (2) Crown DC-300A. Monitor Speakers: Lakeside custom, (2) Yamaha NS-10M Studio, Yamaha NS-10M, Fostex RP80, Visonik David 9000, Auratone, (2) Tannoy NFM8. Musical Instruments: Roland D-50 w/PG-1000 programmer, Roland Super JX-10 w/PG-800 programmer, E-mu Emulator II+, Yamaha DX7, Sonor 5-pc. drum kit, E-mu SP-12, Fender Precision bass, Yamaha C7 grand piano. Other: Marshall 100-watt stack, Hammond B-3 organ w/Leslie, Roland Jazz Chorus 120, Traco Elliot bass rig. Rates: Negotiable. **Specialization & Credits:** Royal Recorders offers one of the finest recording environments in the world, combined with the beauty and amenities of the Americana Resort in Lake Geneva, Wisconsin. In addition to the studio's 80-input SSL 4072E console with G Series computer and Mitsubishi 64-track digital/Studer 48-track analog capabilities, Royal offers a full complement of outboard



ROYAL RECORDERS
Lake Geneva, WI

gear and one of the largest vintage tube microphone collections in the world. Royal is dedicated to recording music and soundtrack albums. Having just completed its third year in business, Royal has had the privilege of working with the following artists: The Bears, Adrian Belew, The Bodeans, Bon Jovi, Skid Row, Cheap Trick, Red Hot Chili Peppers, Enuff Z Nuff, Jerry Harrison, Robert Plant, Survivor, and T'Pau. Soundtrack albums "Rocky IV" and "Top Gun."

[24+] **RTG MUSIC**, 130 E. 6th St., Cincinnati, OH 45202; (513) 381-0506. Owner: Ed O'Donnell. Manager: Robin Jenney.

[24+] **SEAGRAPE RECORDING STUDIOS**, also *REMOTE RECORDING*; 5740 N. Western Ave., Chicago, IL 60659; (312) 784-0773. Owner: Corporate. Manager: Audrey Haban. Engineers: Tom Haban, Mike Konopka, Herb Fields, Loudon Fassl, Specks, David Trumfio. Dimensions: Studio 50 x 25, control room 20 x 20. Mixing Consoles: Neotek Series III 50 x 24. Audio Recorders: MCI JH-24 24-track, MCI JH-16 16-track Otari MTR-10 1/4" and 1/2", Sony PCM F1 digital. Cassette Recorders/Duplicators: Otari DP-4050, Nakamichi BX-100. Synchronization Systems: MCI JH-48 Autolock for 40-track recording. Echo, Reverb & Delay Systems: Lexicon 200, Lexicon Super Prime Time, Lexicon PCM60, TC Electronic 2290, Eventide 949, MICMIX 515, Ecoplate II, MXR digital delay MICMIX 305, MICMIX 121. Other Outboard Equipment: (2) UREI 1176, Commodore 64 w/MIDI software, (2) Tapco 27-band graphic, (2) Symetrix gate, (2) Symetrix limiter, dbx 166 limiter, Aphex Type B Mini-Doc, Onni Craft gate 4-channel. Microphones: (3) Neumann U87, Neumann U67, (2) Neumann U47 FET, Neumann KM86, Neumann KM84, (4) AKG 451EB, (4) Sennheiser MD-421U5, RCA 44, (3) E-V RE20, (2) Crown PZM 30-GP-3, (10) Shure various models, (7) E-V various models, Beyer M120N. Monitor Amplifiers: (2) McIntosh MC2205. Monitor Speakers: JBL 4430, JBL 4311, Yamaha NS-10, Auratone Sound Cubes. Musical Instruments: Chickering grand piano, Hammond B-3, Ensoniq Mirage, Casio CZ-101, Oberheim DMX, Roland GR-300 guitar synth, Roland Alpha Juno-II, Stingerland drum set, Taurus bass pedal, St. Blues guitar, Fender guitar, Harmony guitar, Gibson

guitar. Other: Yamaha SBX90, 6710 Vocorder, TEAC A2300 1/4-track, Heath real-time analyzer. Rates: 40-track \$110/hr., 24-track \$80/hr., 16-track \$65/hr., 2-track \$50/hr.

[24+] **SEPTEMBER RECORDING**; 5210 E. 65th St., Indianapolis, IN 46220; (317) 842-4955. Owner: Bob Arris, John Strong, Rich Arris. Manager: Bill Mallers.



SISAPA STUDIOS
Columbus, OH

[24+] **SISAPA STUDIOS**, 394 Mt. Vernon, Columbus, OH 43215; (614) 228-2228. Owner: Sisapa Record Co., Inc. Manager: J.D. Blackfoot. Engineers: Dave Egan, Jim Dutt, Tom Johnson. Dimensions: Studio 57 x 36, control room 21 x 20. Mixing Consoles: Neve V Series MkIII 60 x 48 w/60-ch GML automation. Audio Recorders: (2) Studer A820 48-track, Studer A820 2-track 1/2", Studer A820 2-track 1/4". Cassette Recorders/Duplicators: (2) Studer A721. Noise Reduction Equipment: Dolby SR 48-ch. Synchronization Systems: (2) Time-Line Lynx SAL module. Echo, Reverb & Delay Systems: 8' echo plate, Lexicon 480L, AMS RMX 16, Yamaha REV7, Klark-Teknik DN780, Eventide H3000, AMS SDMX digital audio processor, TC Electronic 2290, Lexicon PCM70. Other Outboard Equipment: Panscan, (2) Drawmer dual ch. gate, Drawmer M500, (2) Summit Audio tube compressor, ADR Vocal Stresser Summit Audio tube EQ, Aphex Type III Exciter, Groove Tube guitar preamp. Microphones: Neumann, AKG, Sennheiser Shure, Fostex, B&K Beyer, Sanken Calrec. Monitor Amplifiers: (3) Haller P-500A, (2) Genelec 1025A, (2) Genelec 1024B, (2) Genelec 1019A. Monitor Speakers: (2) Genelec 1025A control room main, (2) Genelec 1024B control room, (2) Genelec 1019A, (2) Yamaha NS-10M. Musical Instruments: Yamaha C7 grand, E-mu Emulator II modified, (2) Pearl drums, Roland D-50, Yamaha DX7IIFD, (3) Martin acoustics, Marshall combo amp, Fender amp, Leslie cabinet, (4) Marshall stack, Harke speaker system, (2) 115B bass module, (2) 410B bass module, Korg M-1, Yamaha RX5, MacIntosh SE Paul Reed Smith guitar and bass, Ampeg SVT-II. Other MIDI Equipment: As needed. Rates: Per project. **Specialization & Credits:** Directed toward major label and independent record companies' album projects.

[24+] **SMITH LEE PRODUCTIONS, INC.**, also *REMOTE RECORDING*; 7420 Manchester Rd., St. Louis, MO 63143; (314) 647-3900. Owner: David Smith, Barry Lee. Manager: David Smith.

[24+] **SOLID SOUND, INC.**, PO Box 7611, Ann Arbor, MI 48107-7611; (313) 662-0667. Owner: R.G. Martens, J.W. Spencer. Manager: R.G. Martens, J.W. Spencer.

[24+] **SOLID SOUND RECORDING STUDIO, INC.**, 2400 W. Hassell Rd., Ste. 430, Hoffman Estates, IL 60195; (312) 882-7446. Owner: Judd Sager. Manager: John Townner, Phil Bonnet.

[24+] **SOUND IMAGES, INC.**, 602 Main St., Cincinnati, OH 45202; (513) 241-7475. Owner: Jack Streitmarter. Manager: Terri Leedy.

[24+] **SOUND IMPRESSIONS**, also *REMOTE RECORDING*; 110 River Rd., Des Plaines, IL 60016; (312) 297-4360. Owner: Bill Hollane.

[24+] **SOUND RECORDERS, INC.**, also *REMOTE RECORDING*; 206 S. 44th St., Omaha, NE 68131; (402) 553-1164. Owner: John M. Boyd. Manager: Marty Boyd.

[24+] **SOUND RECORDERS, INC.**, also *REMOTE RECORDING*; 3947 Stateline Rd., Kansas City, MO 64111; (816) 931-8642. Owner: Rob Dabbs, John Boyd. Manager: Rob Dabbs. Stacey Mings. Engineers: Jim Schrader, Mike Wieser, Lisette Clark, Ron Dabbs. Dimensions: Room 1 studio 32 x 35, control room 22 x 18. Room 2 studio 20 x 14, control room 16 x 14. Room 3 studio 8 x 7, control room 9 x 12. Mixing Consoles: Audirtronic 501, MCI JH-636. Audio Recorders:

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24+ TRACK

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Sony/MCI JH-110 1" layback, Sony APR-5003 2-track w/center track time code, (2) MCI JH-116 24-track, Sony 2500 digital, Sony 1610/30 digital mastering system, (3) Scully 280B mono, Sony F-1 PCM digital, (2) Nagra IV-L, (3) Scully 280B 2-track Cassette Recorders/Duplicators: (4) Sony TC-K555ES stereo, (2) TEAC V-285CHX stereo, Nakamichi 1000 stereo Noise Reduction Equipment: (6) dbx 150, (2) Dolby A Model 361 w/case Synchronization Systems: RCA EECO SMPTE Synchronizer, Adams-Smith 2600SY Echo, Reverb & Delay Systems: Moog MPKH 12-stage phaser, dbx 902 de-esser, (2) Yamaha SPX90 digital processor, (3) Lexicon PCM60 digital reverb, (2) Eventide H949 Harmonizer, Eventide H910 Harmonizer, Phase Linear 1000 N/R/dynamic expander, (2) dbx 904 noise gate, EXR SP-11 Psycho Acoustic project, Lexicon PCM42 digital delay Other Outboard Equipment: (7) UREI 1176LN limiter/compressor, UREI 545 parametric EQ, (2) Ashly Audio SC-66 parametric EQ Microphones: (8) AKG 451, AKG C-12A, (2) Crown PZM 30GPG, (2) Neumann KM84, (3) Neumann U87, (2) Neumann U47 FET, (4) RCA 77-DX, (2) RCA 44, (6) Sennheiser MD-421 U5, (10) Shure SM57, (4) Telefunken 250, (3) Sennheiser MKH-405 Monitor Amplifiers: Crown 700B, Phase Linear 400, Phase Linear 300 Monitor Speakers: (2) JBL 4350, (6) JBL 4311, (2) JBL 4320, (2) JBL 4301, (2) Yamaha NS-10M Musical Instruments: Steinway 7' grand piano, Kawai R-100 drum machine, Tama Superstar drums, Korg M1R music workstation, Kimball 1911 piano, Akai S950 sampler, Sequential Circuits Prophet-5 synthesizer, Roland D-550 linear synthesizer, Roland D-110 sound module, Kurzweil 1000 PX Plus expander, Yamaha TX802 FM tone generator, Yamaha DX7 synthesizer Other MIDI Equipment: Akai ME35T audio/MIDI trigger, (2) Southworth Jam Box/4 MIDI interface Video Equipment: (3) JVC CR8250U recorder Other: (2) UREI 962 digital metronome, ECO reverb plate, (2) Macintosh Plus w/2.5MB, Mark of the Unicorn Performer software ver. 3.1

[24+] **SOUNDSTAGE I PRODUCTIONS**; also **REMOTE RECORDING**; 1800 S. 35th St.; Galesburg, MI 49053; (616) 979-1532. Owner: J.R. Cummings Manager: Kim Parker



STREETERVILLE

STREETERVILLE STUDIOS
Chicago, IL

[24+] **STREETERVILLE STUDIOS**; 161 E. Grand Ave.; Chicago, IL 60611; (312) 644-1666. Owner: James C Dolan Manager: Bob Dolan Engineers: Steve Kuscicel, Justin Nebank, Fred Breitberg, Gary Elghammer, David Axelbaum, Steve Frisk, Bob Kruger, Todd Von Ohlen, Bob Miller Dimensions: Studios (1) 47 x 27 x 14, (2) 37 x 27 x 12, (The Suite) 14 x 15 x 12, (5) 14 x 13 x 8.75, (6) 14 x 10 x 8.75, (7) 10 x 10.5 x 8.75, Control rooms (1) 25 x 16.5 x 11.5, (2) 24 x 18 x 10, (Suite) 21 x 22 x 10, (5) 20 x 16 x 8.75, (6) 17 x 14 x 8.75, (7) 18 x 13.5 x 8.22 Mixing Consoles: Neve VR 48 x 48 x 48 w/Flying Faders, Neve VR 48 x 48 x 60 w/Flying Fader automation and recall, SSL 6048E 48 x 48 w/Total Recall and programming EQ, SSL 4040E 40 x 32 w/Total Recall, Neve 8128 48 x 32 x 48 w/Necam II, (2) Harrison 4032 32 x 32 x 40 w/Autoset I, Neve 2118 6 x 4 x 2 w/custom discrete circuitry Audio Recorders: (3) Otari MTR-90 24-track, (5) MCI JH-24 24-track, (2) Studer A80 4-track, (2) Otari MTR-10 4-track, Otari MTR-12 4-track, (4) Otari MTR-10 2-track cttc, (17) Studer B67 2-track, (2) Studer B77 2-track Echo, Reverb & Delay Systems: (3) Lexicon 480L w/LARC, (3) Lexicon 224X w/LARC, (5) Lexicon PCM60, (2) Lexicon Prime Time, Lexicon 92, (3) EMT 140, (2) EMT 240 Gold Foil, (2) MXR digital delay, Eventide 1745, (2) Korg SDD-2000, (3) Yamaha REV7. (3)

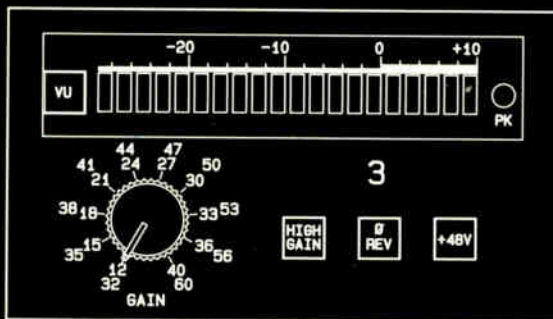
Yamaha SPX90, TC Electronic 2290, (4) AMS SDMX delay/sampler, (2) Yamaha 1500, AMS RMX 16 Other Outboard Equipment: UREI 962 digital metronome, (4) UREI LA-4, UREI LA-2A (6) UREI 1176LN, Allison Gain Brain, Kepex, Orban/Parasound 516C dynamic sibilance controller, Orban 622B parametric EQ, Pultec EQP-15 EQ, Lang PEO-1 program EQ, White 1/3-octave EQ, EXR Exciters, Aphex Aural Exciter, MXR Pitch Transposer, Eventide Harmonizer, Dolby SR 52-ch noise reduction, (8) Focusrite EQ/mic pre, Hardy M-1 mic pre, (2) Wendel jr., (3) Drawmer gate, (4) Aphex Studio Dominator, (12) dbx 463X gate, (9) dbx 263X de-esser. Microphones: Over 100 new and vintage Monitor Amplifiers: UREI, Haller, BGW, Crown Monitor Speakers: All rooms UREI Time Align 813, 811, 809, Yamaha NS-10, Auratone, Rogers, JBL, Tannoy, MDM-4, E-V 100, others Musical Instruments: Synclavier digital music system, Steinway 6'4" grand, Yamaha 7'4" grand, Hammond B-3 organ w/Leslie, Musser "One-Niter" vibes, Ludwig 25"/27"/28"/29" (2) Sonor Signature drum set, E-mu Emulator II, large complement of MIDI instruments. Video Equipment: Complete audio-for-video services available, (7) TimeLine Lynx time code module, Synclavier, Adams-Smith 2600 5-machine, Adams-Smith 2600 3-machine synchronizer, Audio Kinetics Q Lock 3 10, BTX 4600 synchronizer, BTX 4500 controller, Sony/MCI Type C 1" layback machine, Sony BVU-800 3/4" VCR, JVC CR850 3/4" VCR, (6) Sony 5800 VCR Rates: Negotiable Specialization & Credits: Streeterville offers AMS AudioFile II systems in all studios for pre-production, in-session manipulation and processing, as well as for mixdown and mastering Synclavier digital music system with 100K sampling and optical hard disk create a digital "Foley Stage" for SFX creation Stereo digital satellite recording services for domestic and international sessions Custom audio duplication with guaranteed overnight, nationwide distribution Records—Robert Cray/Albert Collins/Johnny Copeland (Grammy), Steve Goodman (Grammy), Dave Mason, Dennis De Young, Robert Plant, Ramsay Lewis, Lonnie Mack, Richie Havens, Koko Taylor, Johnny Winter, Roy Buchanan, Lonnie Brooks, Michael Martin Murphy, Butch Stewart, Jonathon Brandmeier, Commercials (national)—Michalob, Old Style, Bud Light, Budweiser, McDonald's, 7-Up, United Airlines, Cherry 7-Up, Michelob Light, Molson, Twx Streeterville continues to grow with the addition of five new studios for music and post-production. These new facilities, added to the already effective blend of people and technical processes, place Streeterville in the forefront for entertainment and media needs of the '90s

[24+] **STUDIO A RECORDING, INC.**; 5619 N. Beech Daly, Dearborn Heights, MI 48127; (313) 561-7489; FAX: (313) 561-6736. Owner: Eric and Marilyn Morgeson Manager: Marilyn Morgeson Engineers: John Jaszcz, Randy Poole Dimensions: Room 1 studio 40 x 30, control room 25 x 22 (a John Storyk design) Room 2 MIDI room Mixing Consoles: MCI JH-528 28 x 28 w/JH-50 automation, Soundcraft 200B 32 x 4 Audio Recorders: (2) MCI JH-114 24-track, Studer B67 2-track 1/4", Sony APR-5003 2-track 1/2" and 1/4", Mitsubishi X-80 2-track 1/4" Cassette Recorders/Duplicators: Sony 2500 R-DAT, (5) Sony TC-K555 Noise Reduction Equipment: (24) dbx Synchronization Systems: Audio Kinetics Pacer, Roland SBX-80 Echo, Reverb & Delay Systems: Klark-Teknik DN70, AMS RMX 16, Lexicon 200, Ursa Major 8 x 32, Yamaha REV7, DeltaLab CompuEffectron, Lexicon PCM42, (5) Yamaha SPX90 Other Outboard Equipment: (4) dbx 160X, (2) Valley People Dyna-Mite, (7) Valley People Kepex gate, (2) Focusrite 110 module, Aphex Compeller, Eventide Harmonizer, (3) dbx 263X, (2) Valley People Maxi-Q, (2) dbx 160, Aphex Exciter Microphones: AKG tube, (2) Neumann U87, AKG 414EB, Neumann U47, (4) Sennheiser 421, Crown PZM, (5) Shure SM57, Shure SM58, Neumann KM84, AKG 451F Monitor Amplifiers: Haller P-225, Crown SPSA-2, Crown D-150A Monitor Speakers: (2) UREI 813, (4) Tannoy NFM-8, (2) Yamaha NS-10M, Auratone Musical Instruments: Synclavier system w/32 poly voices, 16 FM voices, 160MB Winchester sample-to-disk option, 8 multichannel out, SMPTE and MIDI options, Steinway 1898 7' grand piano, Roland D-50, Roland R-8 drum machine, Yamaha DX7IIIFD, Sequential Circuits Prophet-2002, Korg EX-8000, Yamaha TX802, Oberheim Matrix-6, Roland Octapad, Roland JX-8P w/programmer, Ludwig drums, Fender amps, Yamaha amps Other MIDI Equipment: Roland GM-70 guitar interface Video Equipment: JVC CR8250U 3/4" deck w/remote, Mitsubishi 19" monitor, Sony 9" monitor Other: Sound Ideas sound effects library on CD (Vol 1 and 2), Sound Ideas sampler library on CD Rates: Call

[24+] **STUDIO DELUX**, Sunnycrest Dr., West Bloomfield, MI 48033; (313) 855-2942. Owner: Rick Stawinski Manager: Rick or Rob Stawinski Specialization & Credits: Studio Delux offers our limited clientele an effective alternative to high-cost, high-anxiety recording environments. Whether you require our in-house group of composers and producers or you bring in your own personal staff, our state-of-the-art, 24-track and 3-track analog or 2-track digital recording and audio/video sync capabilities allow our clients to fulfill their musical production needs in a comfortable, relaxed atmosphere. Studio Delux is the perfect setting for cutting tracks, overdubbing, layering synth tracks utilizing our Mac-based MIDI lab, and mixing both commercial and record projects in what our clients claim is one of the most accurate and least fatiguing monitor/control room combinations in our market. So, if you're looking for a way to reduce stress and increase productivity at the same time, give us a call and we'll be happy to offer further information.

M-1

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STUDIO M/WORLD THEATER
Saint Paul, MN

[24+] **STUDIO M/WORLD THEATER**; 45 E. 7th St., 10 E. Exchange; Saint Paul, MN 55101; (612) 290-1500; (612) 240-1453. Owner: Minnesota Public Radio. Manager: Tom Mudge. Engineers: Tom Mudge, Tom Voegel, John Scherf, Scott Riwald, Preston Smith, Craig Thorson. Dimensions: Room 1 studio 45 x 35 x 30, control room 23 x 17. Room 2 studio 15 x 18, control room 12 x 14. World stage 36 x 35, World control room 14 x 10. Mixing Consoles: Neve V Series 36 x 36 x 36, MCI JH-636 36 x 24 x 36 w/automation, Neve 51 Series 36 x 12 x 2. Audio Recorders: 3M 32-track digital mastering system, Otari MTR-90II, Otari MTR-12 w/SMPTE center stripe, MCI 110B 4-track 1/2", [4] Otari MTR-10, [3] Studer A810 Cassette Recorders/Duplicators: [4] Nakamichi MR-1, [2] Revox B215 Noise Reduction Equipment: Dolby A 34-ch, Dolby SR 4-ch Synchronization Systems: BXT Cipher Digital Softouch Shadow interlock w/JVC CR8250 3/4" video recorder Echo, Reverb & Delay Systems: Lexicon 480L w/LARC, Lexicon 224X w/LARC, Lexicon 200, EMT 140, Ecoplate I, Ecoplate II, [2] Lexicon PCM42 digital delay, [2] Eventide 969 Harmonizer. Other Outboard Equipment: [4] Trident parametric EQ, [4] UREI LA-4 limiter, ADR Scamp major rack w/17 mods, [2] Marshall Time Modulator. Microphones: [6] Neumann U87, [6] Neumann KM84, [4] Neumann KM88, Neumann SM69, [4] Bruel & Kjaer 4006, [2] Bruel & Kjaer 4C11, [2] Schoeps CMT56, [6] AKG C-452EB, [4] AKG 414, [4] Sennheiser 421 Shure SM57, Shure SM58, Shure SM81 Monitor Amplifiers: 384/SR200 programmable, JBL 6290 Monitor Speakers: Genelec 1022A tri-amped, Sendor Sp-1, Yamaha NS-10, Auratone Musical Instruments: Steinway 9' grand w/Alpha Acoustic Fender Rhodes 88 elec. piano, Pearl drums w/Parasite cymbals, Fender Twin Reverb guitar amp, Kustom bass amp. Video Equipment: BXT Cipher Digital Soft-touch interlock, JVC 4200 3/4" video recorder, audio sweetening w/sync-to-video-recording, audio recording w/sync-to-video, audio mixing and editing. Rates: Analog \$125/hr., digital \$140/hr., video/audio interlock and World Theater rates upon request. Specialization & Credits: As host location for the Disney Channel's "Prairie Home Companion" cable series, Studio M/World Theater has earned a reputation as a state-of-the-art facility for live performance video, simultaneous multitrack recording, synchronized audio post-production and live national satellite distribution of radio and television in a uniquely inspiring facility. The World Theater, opened in 1910 as a "two balcony dramatic house," was completely renovated in 1986 to its original elegance. The interior offers a sense of intimacy with no seat further than 87 feet from the stage. The fully staffed theater is complemented by an exceptional sound reinforcement system and a dedicated audio recording/broadcast control room having direct hardware multitrack interconnect to Studio M. In addition to six dressing rooms, a green room and rehearsal room, the theater includes a sufficient lighting system to accomplish demanding video lighting designs.

[24+] **TECHNIMEDIA STUDIOS**; only **REMOTE RECORDING**; 124-126 S. Fifth St., Steubenville, OH 43952; (614) 282-5315. Owner: Frank DeFede, Mike Peraltozzi. Manager: Frank DeFede.

[24+] **ZONE RECORDING**; also **REMOTE RECORDING**; 1316 N. Clybourn; Chicago, IL 60610; (312) 664-5353. Owner: JPUSA. Manager: Roger Heiss. Engineers: Roger Heiss, Ed Bialach, Roy Monroy, Dan Pinault, independents welcome. Dimensions: Studio 40 x 20, control room 18 x 16. Mixing Consoles: Solid State Logic SSL 4032 G Series Audio Recorders: Otari MTR-90II 24-track, Otari MTR-12 2-track 1/2" and 1/4", Otari MX-5050BII 2-track. Cassette Recorders/Duplicators: [3] Tascam 122B. Echo, Reverb & Delay Systems: Lexicon 480L digital effects system, Quantec room simulator, Lexicon 200 digital reverb, Lexicon PCM60 digital reverb, Studio Technologies Ecoplate, [4] EMT 140 plate reverb, TC Electronic 2290 dynamic digital delay, Lexicon 92 digital delay, Lexicon Prime Time, Eventide H3000 Ultra-Harmonizer, Eventide 949 Harmonizer, DeltaLab DL-4, Roland SDE-3000 digital delay, Yamaha SPX90. Other Outboard Equipment: Tubetech CL-1A compressor, Tubetech PE-1B program equalizer, [2] dbx 160X, [2] dbx 165A, UREI 1176 compressor, Drawmer DS-201 noise gate, Symetrix 522 noise gate, [2] Omni Craft GT-4 noise gate, Roland DEP-5 digital effects processor, Studio Technologies AN-2 stereo simulator, Ashly Audio SC-66A EQ, Orban 622B EQ, UREI 964 metronome, UREI 1122 preamp. Microphones: [2] Neumann KM53, [2] Neumann KM54, [3] Neumann KM84, Neumann M-249b, Neumann SM2, Neumann U47, Neumann U67, [2] Neumann U87, [3] AKG 451, AKG 460, [2] AKG 414, [2] AKG C-12A, AKG C-24, [2] AKG C-61, AKG C-535, [4] Sennheiser MD-421, Sennheiser MD-409, Sony ECM-50, Sony C-500, AKG D-12, Crown PZM, [4] Shure SM57, Shure SM81 Monitor Amplifiers: [2] UREI 6500, Haller 500, [2] Haller 220 Monitor Speakers: [2] UREI 813B, [2] UREI 813 (studio playback), [4] Yamaha NS-10, [2] Auratone Cubes. Musical Instruments: Yamaha C7 grand piano, Sonor rosewood drum kit, Linn drum machine, Roland JX-10/Super JX, Yamaha TX802, Roland D-550, Akai S900 sampler.

[24+] **TRC MID AMERICA RECORDING CENTER**; also **REMOTE RECORDING**; 5761 Park Plaza Ct.; Indianapolis, IN 46220; (317) 845-1980. Owner: TRC Corp. Manager: George Schatzlein. Engineers: Andrew Symons, Alan Johnson, Steve McQueary, Kevin Van Wyke. Dimensions: Room 1 studio 34 x 43, control room 19 x 22. Room 2 studio 30 x 33, control room 17 x 17. Mixing Consoles: Trident 80B 30 x 24 w/Digital Creations Moving Faders, Sound Workshop 34B 32 x 24 w/Digital Creation Disk Mix. Audio Recorders: [2] Sony JH-24 w/A2 III, [2] MCI JH-110B w/1/2" and 1/4" heads, MCI JH-110B w/center track time code, MCI JH-110B 1" video layback machine, [2] Otari MX-5050B Cassette Recorders/Duplicators: [3] Aiwa GX-9 3-head w/matchbox Noise Reduction Equipment: [6] Dolby 361 w/Dolby SR, [2] Dolby A cards, [2] Dolby SR XPSR 24. Synchronization Systems: Audio Kinetics Pacer, Adams-Smith 2600 w/remote Echo, Reverb & Delay Systems: [2] Klark-Teknik DN780, [2] Yamaha REV7, EMT 140 TS plate, [4] Yamaha SPX90, Lexicon PCM60, Alessis MIDVerb II, Alessis Microverb, Lexicon Super Prime Time, TC Electronic 2290 sampler/delay, Audio Digital TC-2, DeltaLab DL-2, DeltaLab DL-4, DeltaLab 1040. Other Outboard Equipment: [4] UREI 1176, [2] UREI LA-4, Barcus-Berry 202 exciter, [2] Eventide 910 Harmonizer, Eventide flanger, Eventide phaser, TC Electronic 2240 stereo parametric EQ, UREI metronome, Garfield electronic metronome, ADR Scamp rack w/gate/lim/comp/de-esser etc., Valley Arts rack w/KepeX II/Gain Brain II/Maxi-Q/de-esser, Valley Arts 2-unit power supply. Microphones: [6] Neumann U87, [3] Neumann U47, [4] Neumann KM84, [2] Neumann KM85, Neumann KM86, Neumann KM88, Neumann TLM170, [6] Sennheiser 421, [2] Sennheiser 441, [2] AKG 414EB, [2] AKG 452EB, [2] E-V RE20, [6] Shure SM57, [4] Crown PCM, [2] Schoeps CMT 55 Monitor Amplifiers: Crown PSA-2, Crown DC-300A, [6] Crown D-150, Acoustat Twin 200 MOSFET, [2] Crown D-60, Crown D-40 Monitor Speakers: [4] JBL 4435, [4] Yamaha NS-10M studio, [4] Yamaha NS-10-10, [6] JBL 4311, [6] Auratone 5C Musical Instruments: Roland S-50, [2] Roland D-50, [2] Alessis HR-16 drum machine, [2] Akai S900 sampler, EM-SP12 turbo disk drive, MIDI kazoo.

[24+] **TRIAD STUDIOS**; also **REMOTE RECORDING**; 1910 Ingersoll Ave.; Des Moines, IA 50309; (515) 243-2125. Owner: Richard Trump, Bill Synhorst, Joe Borg. Manager: Richard Trump. Engineers: Rick Condon, Tony Schmitt, Greg Tracy. Dimensions: Room 1 studio 38 x 24, control room 22 x 21. Room 2 studio 18 x 21, control room 18 x 13. Room 3 studio 5 x 10, control room 10 x 10. Mixing Consoles: MCI JH-528B 24 x 24 w/automation, Tascam 520 20 x 8, Tascam 512 12 x 8. Audio Recorders: Otari MTR-90 MkII 24-track, Tascam ART-60/8 8-track, Tascam 44-OB 4-track, Panasonic SV-3500 R-DAT, Panasonic SV-250 R-DAT, Tascam ART-60-2T 2-track w/center track TC, Otari MX-55T-M 2-track w/center track TC, Otari MX-55N 2-track, MCI JH-110B 2-track, [2] Revox PR99 2-track, Tascam 52 2-track, Technics 1500 2-track, Nakamichi DMP-100 (F-1 processor) Cassette Recorders/Duplicators: Eumig FL1000, Tascam 122 MkII, Tascam 122B, Tascam T-2640 duplicator. Synchronization Systems: Adams-Smith Zeta-3 Echo, Reverb & Delay Systems: Lexicon 224XL, EMT 240, UREI 927 delay, Yamaha SPX90, Lexicon PCM60, Alessis QuadraVerb, Eventide H949 Harmonizer. Other Outboard Equipment: [2] UREI 1176, [4] UREI LA-3A. —CONTINUED ON NEXT PAGE

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—CONTINUED FROM PREVIOUS PAGE

(2) UREI LA-4, UREI 546 parametric EQ, (2) Symetrix SX-201 parametric EQ, Symetrix TI-101 telephone interface. Microphones: Neumann U47 FET, Neumann U48, (2) Neumann U67, (4) Neumann U87, (4) Neumann KM84, (2) AKG D-12E, (2) AKG C-414, AKG C-452, (4) Shure SM57, (2) Shure SM81, Shure SM5B, (2) Crown PZM, E-V RE16, Beyer M500 Monitor Amplifiers: UREI 6500, UREI 6250, (2) Crown D-150, QSC 1200 Monitor Speakers: UREI 813, MDM-TA3, MDM-4, JBL 4412, JBL 4612, Fostex RM 765, K&H OY, (4) Auratone 5C Musical Instruments: Yamaha 7 ft. grand piano, Fender Rhodes, Rogers drums. Video Equipment: Proton 19" monitor, Sony VO-9850 U-matic SP, Sony SLO-1800 Beta, JVC BR-7000UR VHS. Rates: Available upon request.

[24+] **UNDERGROUND PRODUCTIONS**; also *REMOTE RECORDING*; 28407 Gilbert, Warren, MI 48093; (313) 775-4670. Owner: Kevin Holevar. Manager: Kevin Holevar.

[24+] **UNITED SOUND SYSTEMS**; 5840 Second Blvd., Detroit, MI 48202; (313) 832-3313. Owner: Don Davis. Engineers: Michael Iacopelli, Rufus Harris, Michael Moore. Dimensions: Room A studio 35 x 28 x 25, control room 15 x 12 x 10. Room B studio 21 x 11 x 7, control room 16 x 14. Mixing Consoles: Neve 8084 32 x 16 x 24, Neve 8108 32 x 24 w/Necam Audio Recorders: Studer A800 24-track, Ampex MM-1200 24-track, (2) Ampex ATR-102 2-track, Studer A80VU 2-track 1/2" Noise Reduction Equipment: dbx, Dolby, Echo, Reverb & Delay Systems: Yamaha PCM70, Yamaha SPX90II, Lexicon 224, AKG BX-20, EMT 140, AMS, Lexicon PCM42, Ibanez SDR-1000, Roland SRV-2000. Other Outboard Equipment: Scamp noise gates, dbx, UREI, Teletronix limiters, Lang, Pultec, Flickinger EQs. Microphones: Neumann U87, Neumann U47, Neumann U67, Neumann KM84, AKG 451, AKG 414, Shure SM56, Shure SM7, Sennheiser MD-421, Crown PZM, E-V RE20. Monitor Amplifiers: Haller, McIntosh, Crown. Monitor Speakers: UREI 813, Auratone, Yamaha NS-10M, Tannoy. Musical Instruments: Baldwin SD-10 grand, Fender Rhodes, Pearl drums, Ludwig drums and Remo toms, vibes, glockenspiel, clavinet, Hammond B-3 w/Leslie, Fender 300 bass amps, Fender Vibrolux guitar amp, LinnDrums, Yamaha DX7, Oberheim Matrix-12, E-mu Emulator, Yamaha RX5, Roland Super-JX. Other MIDI Equipment: Yamaha SBX80 SMPTE-to-MIDI sync, MIDI Studio C MIDI exclusive. Video Equipment: On request. Rates: On request.

[24+] **UNIVERSAL RECORDING CORPORATION**; 46 E. Walton; Chicago, IL 60611; 32 W. Randolph; Chicago, IL 60601; (312) 642-6465; FAX: (312) 642-7126. Owner: Murray



UNIVERSAL RECORDING CORPORATION

UNIVERSAL RECORDING CORPORATION
Chicago, IL

R. Allen. Manager: Foote Kirkpatrick. Engineers: Bill Bradley, Danny Leake, Bob Bennett, Mike Mason, Tom Miller, Bill Reis, Ed Golya, Dave Lewis, Steve Wilke, Rich Chojnowski, Matt Gruber, Dave Gerbosi, Dave Mitchell. Dimensions: Room A: studio 45 x 60, control room 30 x 25. Room B: studio 20 x 40, control room 30 x 25. Room C: 15 x 20, control room 20 x 8. "Backroom" studio 9 x 12, control room 20 x 12. Mixing Consoles: Neve 8078 32 x 32, SSL 6000 32 x 32, MCI 628 28 x 24, (2) ADM film 16 x 8, Harrison Raven 32 x 24. Audio Recorders: (2) Mitsubishi X-850 32-track, Otari DTR-900, (2) Mitsubishi X-80 2-track digital, (2) Mitsubishi X-86 2-track, (4) MCI 24-track analog, (8) Ampex ATR 2/4-track analog, (16) Ampex 440 1/2/4-track analog, (4) Scully 1/2/4-track analog, Ampex 1200 16/24-track analog, Otari MTR-90 24-track, (3) Synclavier, (3) direct-to-disk, (7) DAT recorder, AMS Audio-File, Echo, Reverb & Delay Systems: Quantec, Lexicon 200, (6) EMT plate (four rooms), (3) Lexicon 224X, Eventide 2016, (3) 949 Harmonizer, Lexicon, Eventide, Lexicon 480X, AMS RMX-16, (3) AMSDMX 15-80S, Lexicon 480. Other Outboard Equipment: dbx, Dolby, UREI 1/3-octave, Orban parametrics, UREI LA-2A, -3A, 1176, AMS, Roland, Yamaha. Microphones:

Neumann U47, Neumann U67, Neumann U87, Neumann KM83, Neumann KM84, AKG 414, AKG 451, AKG 421, AKG 441, AKG C-12, AKG C-24, over 200 mics to choose from. Musical Instruments: Bosendorfer 9'5" Imperial grand piano, (3) Steinway grand, (3) Fender Rhodes, celeste, timpani, (2) Sonor drum kit, Ludwig, Slingerland, tack piano, synthesizers, Hammond B-3. Synclavier 32-out. Video Equipment: (2) C Format, BTX Softouch, BTX multimachine sync, controllers, Shadow T, Jam sync generators, house sync 1", 3/4", 2" audio, BVH-2000 digital C format. Rates: A: \$250/hr., B: \$235/hr.; backroom: \$150/hr., Softouch and digital: \$50/hr. Specialization & Credits: Universal, located in the heart of the hotel, restaurant, nightclub area of Chicago, has an "in-house" Cantonese restaurant delivering to all studios. We arrange hotels and limousine service. Universal is one of the largest, full-service audio facilities in the world. With two film mixing theaters, a video-sweetening facility, a cassette duplicating factory and a location film crew, Universal offers the most complete audio service in the country. Among our most recent recording projects are albums by Manowar, Mannheim Steamroller, Duran Duran, Daryl Tookes.

[24+] **WHEELER AUDIO ASSOCIATES**; also *REMOTE RECORDING*; 4024 State Line, Kansas City, KS 66103; (913) 362-2500. Owner: Jim Wheeler, Mark Weddle, Rose Gills. Manager: Jim Wheeler.

[24+] **ZEM RECORDING STUDIO**; 3709 S. 60th Ct.; Cicero, IL 60650; (312) 656-1544. Owner: Ed Zajda. Manager: Sue Zajda. Engineers: Ed Zem. Dimensions: Studio 20 x 22, control room 14 x 11. Mixing Consoles: Harrison MR-4 28 x 24. Audio Recorders: Otari MTR-90 MkII 24-track, Ampex ATR-102 2-track, Otari MX-5050 2-track. Cassette Recorders / Duplicators: (2) Akai GX-F91 Noise Reduction Equipment: Dolby SR/A 2 channels. Echo, Reverb & Delay Systems: Lexicon 480L digital effects system, Lexicon Model 200 digital reverb, Eventide MOD3000 Ultra-Harmonizer, Yamaha SPX90 digital effects. Other Outboard Equipment: Aphex Compellor compressor/limiter, (2) dbx 165A compressor/limiter, dbx 900 gate/compressor/de-esser. Microphones: (2) Neumann U87, (2) Neumann U89, (3) AKG 414, many Shure, Electro-Voice, Beyer. Monitor Amplifiers: (2) Bryston 4B, Crown D-75. Monitor Speakers: B&W 801, Yamaha NS-10, Auratone 5C Cube. Musical Instruments: Kurzweil 250 digital synth, E-mu SP-12 sampling percussion. Specialization & Credits: Zem Recording Studio is a full-service 24-track recording facility. We have over 15 years of experience in all aspects of audio recording. We try to offer maximum service at reasonable rates remembering that customer satisfaction comes first.

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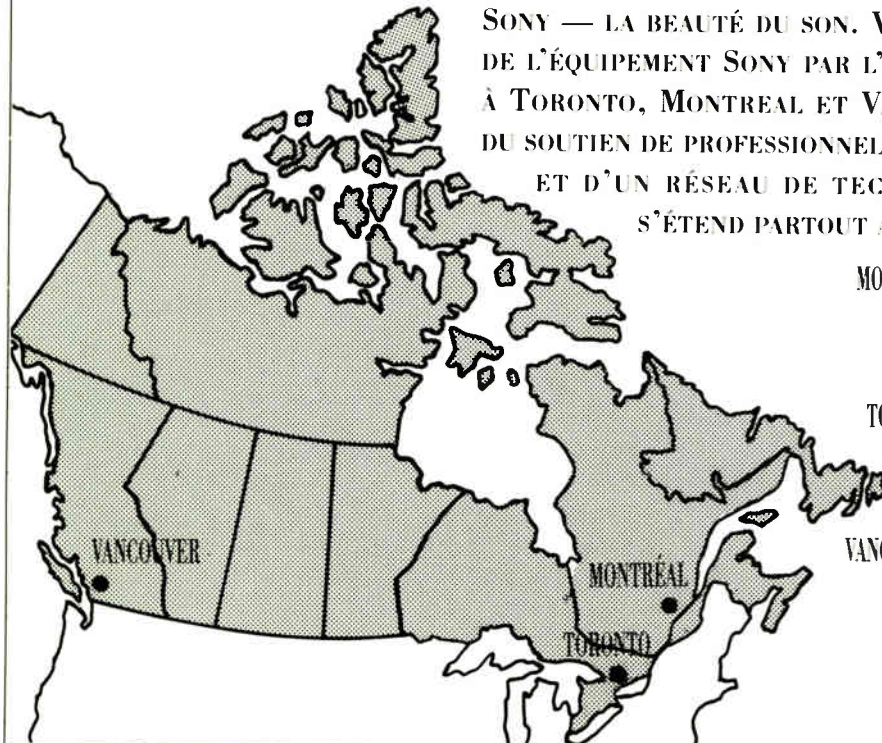
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16 TRACK

STUDIOS

[16] **ACE MOBILE RECORDING**; also *REMOTE RECORDING*; 21 Gage Ave., Elkhart, IN 46516; (219) 293-3913. Owner: George E. Compton, Jr. Manager: George E. Compton, Jr. Engineers: George E. Compton, Jr. Dimensions: Studio 20 x 30, control room 10 x 30. Mixing Consoles: Tapco Panjo 7416 16 x 16, Tapco 8201 B 8 x 8, Tapco 8201 REB 8 x 8. Audio Recorders: Itam 1610 16-track w/dbx, Otari MX-5050B 2-track w/dbx, Crown CX 822 2-track w/dbx, Technics SV-100 F-1 PCM processor. Cassette Recorders/Duplicators: (2) Nakamichi LX-3, (4) Sanyo RD 520, (2) NAD 6050 C, (2) Sony WM-D6C (Professional "Walkman"), (2) Yamaha KX-1200UF. Noise Reduction Equipment: (10) dbx 150. Echo, Reverb & Delay Systems: ART MultiVerb II processor, Brick plate reverb, Tapco 4400 reverb, Lexicon Super Prime Time digital delay. Other Outboard Equipment: Aphex Type B Aural Exciter, (3) Countryman DI. Microphones: (2) Neumann U87, (2) Neumann KM84, (2) Sennheiser 441, (2) Sennheiser 421, (2) PML F92, (2) Shure SM57, (2) Crown PZM 30GPS, (2) Crown PZM 31, (2) Sony ECM-22, (2) E-V 1751, (2) AKG 451, (2) Sony C-37A tube. Monitor Amplifiers: Crown PSA-2, Carver M-1.5, Carver M-400. Monitor Speakers: (2) JUREI 813, (2) Dahlquist PQM9, (2) Dahlquist PQM5. Musical Instruments: Kawai "Tone Customized" upright piano. Other: dbx computerized 20/20 analyzer/equalizer. Rates: Available upon request.

Alesis sequencer. Other: Rane headphone amp, (10) Fostex T-20 headphones, (4) Crown DC-300, (2) Crown D-150. Rates: \$35 per hour, \$27 per hour w/8-hour block. Cassette duplication, depends on quantity ordered.



AJAX RECORDING TEAM
Fort Wayne, IN

[16] **AJAX RECORDING TEAM**; also *REMOTE RECORDING*; 902 W. Wayne St.; Fort Wayne, IN 46802; (219) 426-0591. Owner: Craig Harding. Manager: Jane Harding.

[16] **A.L.B.O. FOUNDATION ENTERPRISES**; 5246 Plainfield NE; Grand Rapids, MI 49505; (616) 364-9273. Owner: Keith David Gill, Kathleen Gill. Manager: Kathleen Gill.

[16] **AUDIO ART RECORDING STUDIOS, INC.**; also *REMOTE RECORDING*; 403 SW 8th St.; Des Moines, IA 50309; (515) 282-3223. Owner: Dr. James Skinner, Patrick McManus. Manager: Keith Brown.

[16] **AUTHENTIC AUDIO LAB**; also *REMOTE RECORDING*; 5147 Pine St., PO Box 6063; Omaha, NE 68106; (402) 553-5334. Owner: Joseph D. Slezak. Manager: Joseph D. Slezak.

[16] **AVATAR PRODUCTIONS**; 515 28th St., Ste. 106; Des Moines, IA 50312; (515) 282-9746. Owner: Michael Meacham. Manager: Michael Meacham.

[16] **AXSTUDIOS**; 911 Robinwood Ave., Unit E; Columbus, OH 43213; (614) 848-5232; (614) 272-8452. Owner: Steve Campbell, Randy Adkins. Manager: Kevin Borrowman. Engineers: Steve Campbell, Randy Adkins, Kevin Borrowman, Kevin Campbell, Rich Stillion, Joe Francis. Dimensions: Control room 18W x 24L x 10H. Main room 19W x 23L x 10H. Drum room 15W x 14L x 9H. Vocals 7W x 18L x 8H. Mixing Consoles: Ramsa WRT 820 20 x 16 x 2, Hill Concept 8400 40 x 24 x 2 w/custom Deane/Jensen front end. Audio Recorders: MS-16 16-track w/AQ65 full autolocator, Tascam 38 2-track w/remote, Tascam 22-2 2-track w/remote. Cassette Recorders/Duplicators: Tascam 122 MKII w/remote, (2) JVC TD-W330 stereo duplicator. Noise Reduction Equipment: (2) dbx 160 compressor, (4) dbx 463 noise gate, dbx DX-805 16-channel, Audio Logic MT44 quad noise gate, dbx 166 stereo gate/comp/limiter, Orban 428A stereo comp/limiter/de-esser/gate. Synchronization Systems: Yamaha YME8 Echo, Reverb & Delay Systems: Roland SVR-2000, Yamaha D1500, Ibanez HD-1000 reverb, Ibanez SDR-2000 reverb, (2) Yamaha SPX90 effects, Lexicon PCM70, Aphex Type C Aural Exciter, Eventide Clockworks 910 Harmonizer, SAE stereo parametric EQ, DOD Electronics 1/8-octave mono EQ. Microphones: (2) Neumann U87, (2) Sennheiser 421U5, (2) Sennheiser 409U3, (2) Shure SM98, (2) Shure SM94, (2) Shure SM87, (6) Shure SM57, (2) Shure SM58, (2) E-V BK1, E-V ND308. Monitor Amplifiers: Crown PSA-2 (control room), Crown DC-60 (headphone system), Crown DC-300 (main room). Monitor Speakers: (2) JUREI 809A (control room), (2) Yamaha NS-10M (control room), (2) E-V 3-way TL box. Musical Instruments: Ensoniq Mirage DSK-1 sampling keyboard, Marshall 1969 half-stack, Marshall 1974 half-stack, Peavey Back Stage ampli-

fier, Leslie Tone cabinet, Yamaha DX100 keyboard, Korg K-2 mini synthesizer, (2) Alesis HR-16 sample drum machine, Acoustic 370 bass amp. Other MIDI Equipment: IBM PC w/Cakewalk Pro sequencer w/SMPTE, Roland TM-16 pad-to-MIDI converter, (16) pad for TM-16, OX5 sequencer. Other: (8) Koss headphones, Conquest QPB headphone system, rental P.A. systems, Stax electrostatic headphone system—mix desk, custom crossovers (low-high power) built and sold. Rates: Block time rates, call for quote.

[16] **BARKER RECORDING STUDIO**; 117 S. Rockford Ave.; Rockford, IL 61104; (815) 399-2929. Owner: Dwayne and Pam Barker. Manager: Dwayne and Pam Barker.

[16] **BLUE HEARTS RECORDING**; 6450 N. Mozart; Chicago, IL 60659; (312) 764-8735. Owner: Joseph Ivanoff. Manager: Joseph Ivanoff.

[16] **THE BROOKWOOD STUDIO, INC.**; also *REMOTE RECORDING*; 1155 Rosewood, Ste. A; Ann Arbor, MI 48104; (313) 994-4992. Owner: David Lau. Manager: Matt Hanson.

[16] **CREATIVE ARTWORKS INC./B/W PRODUCTIONS INTERNATIONAL RECORDING**; 705 Taywood Rd.; Englewood, OH 45322; (513) 832-1785. Owner: Mark Herres. Manager: Mark Herres, Don Herres. Engineers: Mark Herres. Dimensions: Studio 15 x 15, control room 40 x 15. Mixing Consoles: Ramsa WRT-820, Fostex Model 250 20 x 8 x 2, Roland M-160 rack-mount mixer. Audio Recorders: Tascam MS-16 w/autolocator AQ-65, RC-65 linked to Roland MC-500 digital MIDI recorder, 16 analog tracks and 16 digital tracks, Fostex M-80 2-track, Fostex M-20 2-track, Mitsubishi Hi-fi VCR w/digital processor. Cassette Recorders/Duplicators: Nakamichi, JVC, Technics Echo, Reverb & Delay Systems: Yamaha REV7, Yamaha SPX90, Ibanez SDR-1000, Aphex Type C, DeltaLab ADM-256, DeltaLab ADM-1024, Roland DEP-5, Scholz Rockman rack-mount, Roland MKS-100 sampler w/full sound library, dbx 166 noise gate compressor, Yamaha REV5. Microphones: E-V PL20, E-V PL10, E-V PL6, AKG D-1000E, Shure SM58. Monitor Amplifiers: Yamaha, Crown DC-300A, Micro-Tech 1200. Monitor Speakers: JBL Time Align, Yamaha NS-10M. Musical Instruments: Keyboards: Roland Juno-106, Yamaha DX7, Oberheim Matrix-6, Korg Poly-6, Korg organ, Kustom 88 elec. piano; guitars: Roland GR-707 MIDI synth, Aria, Vox, Gibson, Chapman Stick; drums: E-mu Drumulator, Roland TR-707, Roland R-8 drum machine; amps: Fender Dual Showman (100W), Marshall stack, Scholz Rockman rack-mount, Roland D-550, Roland S-50. Video Equipment: RCA camcorder, MGA Hi-fi VCR. Specialization & Credits: Creative Artworks, Inc. is a rapidly growing independent record company, with many talented international recording artists. Our facilities are currently working in conjunction with James (Basim) Blunt of Fudge Factory Records, N.Y. Fudge Factory has a hit-making history for writing and producing dance clubs acts around N.Y. City. Such artists consist of Tarvonty & Jomanda who are currently achieving success on the Billboard charts. Creative Artworks is producing such talented writers such as Daryl Thomas and female vocal group Cliche. Mark Herres, lead vocalist, producer and writer, is currently working on a new solo album since the 1986 breakup of former group Nothing Definite. For correspondence: currently looking for new acts to sign and produce if interested. Please send tapes or letters to: A&R Dept.; Creative Artworks Records, 705 Taywood Rd., Englewood, OH 45322, (513) 832-1785.

[16] **DIAMOND MINE RECORDING STUDIO**; also *REMOTE RECORDING*; 3115 Bremen Dr.; Columbus, OH 43224; (614) 268-4792. Owner: Bright Moon Productions Manager: Chris Nye.

[16] **DOMAIN COMMUNICATIONS**; also *REMOTE RECORDING*; 289 Main Pl.; Carol Stream, IL 60188; (312) 668-5300. Owner: Edward Elliott. Manager: Timothy R. Hollinger.

[16] **DUCK ANKLES PRODUCTIONS INC.**; 6515 Hough Rd.; Almont, MI 48003; (313) 798-3256. Owner: Tim Lemke, Vicki Krings, Arden Cooper, Chris Hansen. Manager: Tim Lemke.

[16] **THE HAIR BEAR STUDIO**; 4817 W. 129th St.; Alsip, IL 60658; (708) 389-3373. Owner: Jeffrey A. Islinger. Manager: Jeffrey A. Islinger. Engineers: Jeffrey A. Islinger. Dimensions: Studio 34 x 14, studio 14 x 14, control room 20 x 18. Mixing Consoles: Tascam 600 32 x 16, Tascam 320 20 x 4. Audio Recorders: Tascam MS-16 16-track 1" 30 ips, Otari MX-55NM 2-track 1/4" 30-15 ips, Ampex 4408 2-track 1/4" 15-7.5 ips. Cassette Recorders/Duplicators: (2) Scott 645-D, (6) TEAC V-285. Noise Reduction Equipment: (2) dbx DC-8DS Type I 16 channels, Dolby SR 2 channels stereo. Echo, Reverb & Delay Systems: (3) Yamaha SPX90, (2) Yamaha SPX90II, MIDIFlex, MIDIVerb II, Korg DRV-1000 reverb, Digitech RDS-1900 delay, Ibanez HD-1000 delay, Boss stereo flanger. Other Outboard Equipment: Aphex Type C Aural Exciter, (2) BBE 402 enhancer, (3) Boss RCL-10 compression/gate, (6) dbx 463X noise gate, dbx 166 stereo compression/gate, Aphex Compeller stereo compressor/leveler, DOD Electronics R-825 compressor/limiter/de-esser, TEAC 10-band graphic EQ w/cisplay, (3) Alesis Micro-EQ 3-band parametric. Microphones: Neumann U87 condenser, Beyers M500 ribbon, Beyers M200, Sennheiser 918, (4) Sennheiser 409, (2) AKG D-112, E-V RE20, (4) Shure 57, (2) Shure 58

—CONTINUED ON NEXT PAGE

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N O R T H C E N T R A L

16 TRACK

—CONTINUED FROM PREVIOUS PAGE

Monitor Amplifiers: Biamp 1200, McIntosh MC240 tube, Tascam PA20B, Rane HC-6 headphone amp. Monitor Speakers: (2) PSM 1250 3-way, (2) JBL Control-5 2-way, (2) Toa near-field. Musical Instruments: Slingerland 5-piece drum set, Roland TR-707 drum machine, Casio FZ-1 16-bit sampling keyboard, BIT-99 digital synth, Roland 303 acid bassline, Fender Strat electric guitar, Lotus electric bass, Legend guitar amp, Peavey bass amp, Scholz Rockman A-100 guitar module. Other MIDI Equipment: Yamaha OX5 sequencer. Other: Mr. Coffee—strongest coffee in town! Rates: Starting at \$30 per hour recording and mixing.

[16] **HATCHERY STUDIOS**; 2175 Michael, Warren, MI 48091; (313) 754-8200. Owner: David Sell. Manager: David Sell.

[16] **HG STUDIO**; also REMOTE RECORDING; 21332 7 Mile Rd., Franksville, WI 53126; (414) 425-3885. Owner: Don Hunjadi, Gordon Hartmann. Manager: Don Hunjadi.

[16] **ICON STUDIO**; also REMOTE RECORDING; 5089 Waterman Blvd.; St. Louis, MO 63108; (314) 367-3121. Owner: Perry Emge. Manager: Billy Hope. Engineers: Perry Emge, Dougg Franks, Hunter Springer. Dimensions: Studio 20 x 24 x 19H. Control room 22 x 29, MIDI room 15 x 19. Mixing Consoles: Soundcraft 6000 44 x 24 w/automation (44 channels), Yamaha RM1608. Audio Recorders: Tascam TRS16, Tascam 58 8-track 1/2", Tascam 42 2-track 1/4", Tascam 34 4-track. Cassette Recorders/Duplicators: (2) Nakamichi MR-2 TEAC Noise Reduction Equipment; (4) dbx 150 2 channels. Synchronization Systems: PPS-1 Echo, Reverb & Delay Systems: (2) LXP-1, (2) SPX90II, PCM42, ADA stereo tape DDL, Yamaha R1000, dbx 160, dbx 166, LXP-5, more available. Microphones: (2) AKG 414, (8) Shure SM57, (3) Shure SM85, (2) Neumann KM84. Monitor Amplifiers: Haller, Crest. Monitor Speakers: JBL 4408, UREI 813. Musical Instruments: EPS-M, TX81Z, FBO-1, DX7, Poly-6 MIDI, Prophet-5, Juno-106, CZ101 and more modules available. Other MIDI Equipment: MX8 MIDI P.B., Steinberg Pro 24 software, C-Lab software. Other: New equipment acquisitions arriving in winter '89. Control room A designed by Jon Storyk.

[16] **IMAGITRAX RECORDING CO.**; also REMOTE RECORDING; 7420 Manchester Rd., Saint Louis, MO 63143, (314) 647-9272. Owner: Bob Gleason. Manager: Bob Gleason.

[16] **LAUGHING CAT STUDIO**; also REMOTE RECORDING; Rte. 4, 256 Walnut, Fort Atkinson, WI 53538; (414) 563-9935; FAX: (414) 563-8342. Owner: Al Jewer. Manager: Al Jewer.

[16] **MENDEL-RITCHIE STUDIOS**; 2920 W. Eastwood; Chicago, IL 60625; (312) 588-0100. Owner: Tom Medel, Russ Ritchie.

[16] **MIDI MAGIC**; PO Box 4443; Northbrook, IL 60065; (708) 498-1180. Owner: Ron Jacobson. Manager: Ron Jacobson.

[16] **MIDI PRODUCTIONS**; also REMOTE RECORDING; 3418 Main St.; Skokie, IL 60076; (312) 677-3550. Owner: HRP Enterprises, Inc. Manager: Mike Polakoff. Engineers: Peter Mokran, Ken Bensch, Mike Polakoff. Dimensions: Studio 20 x 30, control room 15 x 25. Mixing Consoles: Soundtracs MRX Series 24 x 16, (3) Yamaha DMP7 24 x 2 Audio Recorders: Otari MX-70 16-track w/remote, Tascam 32 2-track, (2) Sony DTC-1000ES R-DAT Cassette Recorders/Duplicators: Akai GX912 Noise Reduction Equipment; Tascam DX-2D (dbx) Synchronization Systems: E-mu SP1200, Opcode Studio 3, Otari EC-201 Echo, Reverb & Delay Systems: TC Electronic 2290 11-sec. memory, Lexicon PCM70, Roland DEP-5, Yamaha REV7, Roland SDE-3000, (2) Lexicon LXP-1, Rockman sustainer, Rockman stereo chorus/delay, (3) Yamaha DMP7. Other Outboard Equipment: BBE 402, Aphex Compellor, Symetrix 522, (2) dbx 166, dbx 263X, (2) dbx 463X, (2) dbx 563X, Tascam M-18 line mixer, Rane HC6, Klark-Teknik DN360 graphic EQ. Microphones: Neumann U89, B&K 4007, (4) Shure SM57, Sennheiser 421, Audio-Technica ATM63, Electro-Voice RE20, AKG D-112, (2) AKG 451, (2) Shure SM81. Monitor Amplifiers: Carver PM-350. Monitor Speakers: UREI 809, Yamaha NS-10M. Musical Instruments: E-mu Emulator II+, Yamaha DX7, Yamaha DX7IFD, Roland D-50, Roland S-50, Roland RD-1000, Roland MKS-70, Oberheim Matrix-6R, Ensoniq Mirage rack, E-mu SP1200, Roland Octapad, (6) Roland drum pad, Simmons bass drum pad, Charvel Model 4 bass, tambourine. Other MIDI Equipment: (2) J.L. Cooper MSB+ MIDI patch bay, Lexicon MIDI remote control. Other: (2) Macintosh Plus computer, Vision 1.03 sequencing software, extensive sound library, Pioneer PD-6050 CD player. Rates: Available upon request.

[16] **MONKEY'S UNCLE STUDIO**; also REMOTE RECORDING; 434 W. Harrison Rd., Lombard, IL 60148; (312) 620-5338. Owner: Jeff and Penny Perry. Manager: Jeff and Penny Perry.

[16] **NEW HORIZONS SINGERS RECORDING STUDIO**; also REMOTE RECORDING; 7722 W. National Ave.; West Allis (Milwaukee), WI 53214; (414) 774-8000. Owner: New Horizons Singers, Inc. Manager: Jim Griffith, Jim Schmidt.

[16] **THE PADDED CELL RECORDING STUDIO**; 1567 S. Cora St.; Des Plaines, IL 60018; (708) 803-4832. Owner: Tom Schafer, Jim Bebarski. Manager: Tom Schafer.

[16] **PIECES OF EIGHT RECORDING STUDIO**; 2144 E. Prairie Ave.; Decatur, IL 62521; (217) 429-0295. Owner: Barry Billman. Manager: Susan Billman.

[16] **SONG SKETCHES RECORDING PRODUCTIONS**; also REMOTE RECORDING; PO Box 36483; Detroit, MI 48236; (313) 886-3757. Manager: Robert Payne. Engineers: Robert Payne. Dimensions: Studio 16 x 18, control room 13 x 10. Mixing Consoles: Allen and Heath 1821 18 x 2, TAC Scorpion 28 x 16. Audio Recorders: Tascam 38 8-track 1/2", 15 ips), Tascam 32 2-track 1/4", 15 ips). Cassette Recorders/Duplicators: Technics M228X w/Dolby and dbx, Magnavox VCR (VHS w/Dolby) Noise Reduction Equipment: Rocktron 180A 8-channel Echo, Reverb & Delay Systems: Aphex B Aural Exciter, DeltaLab 1024 digital delay, DeltaLab 1030 digital delay, DeltaLab 4096 digital delay, Roland SRV-2000 digital delay, Yamaha SPX90II digital reverb and effects, Alesis QuadraVerb digital reverb and effects, DigiTech 128 digital reverb and effects, Korg DRV-2000 digital reverb. Other Outboard Equipment: (2) Symetrix 544 quad noise gate, Valley GateX quad noise gates, (7) Symetrix 501-01 compressor/limiter. Microphones: Neumann U89, Neumann U47, Neumann KM84, (4) AKG C-414EB, AKG C-451EB, (2) Crown PZM GPB, (2) Beyer M201, Sennheiser 441, (6) Sennheiser 421, (2) Sennheiser 409, (6) Shure SM57. Monitor Amplifiers: QSC 41, Furman HA-6. Monitor Speakers: (2) JBL Control 1, (2) Yamaha NS-10M, (2) Auratone Cubes, (4) E-VS15-3 Musical Instruments: Korg DW-8000 keyboard, Yamaha RX11 digital rhythm programmer, Pearl drum kit w/Zildjian cymbals, (2) Marshall 100W amps w/1960 bottoms, (2) AKG K-240 headphones, (6) Koss LV-10 headphones. Other MIDI Equipment: Macintosh SE computer w/MIDI software. Rates: Please call for rate card and other interests.

[16] **SOTO SOUND STUDIO**; 1215 W. Belmont; Chicago, IL 60657; (312) 549-8664. Owner: Jerry Soto. Manager: Jerry Soto.

[16] **SPARROW SOUND DESIGN**; 3501 N. Southport; Chicago, IL 60657; (312) 281-8510. Owner: Sparrow, Joan Pallatio. Manager: Liz Dziwski.

[16] **STUDIO Bb**; also REMOTE RECORDING; 9400 E. Lincoln #220; Wichita, KS 67207; (316) 687-5694. Owner: Kingcraft Audio-Video. Manager: Sammie L. King.

[16] **SYNDICATE SOUND**; 311 Poland Ave.; Struthers, OH 44471; (216) 755-1331. Owner: Jeff Wormley. Manager: Jeff Wormley.

[16] **TOBY'S TUNES, INC.**; 2325 Girard Ave. S.; Minneapolis, MN 55405; (612) 377-0690. Owner: Harley Toberman. Manager: Ms Piggly Specialization & Credits: Twenty-seven music libraries on master tapes and CDs. Eight sound effects libraries on records and CDs. Toby's Tunes has the most extensive music libraries in the Midwest for all your scoring needs. Video sweetening with the Q Lock Eclipse system locking a JVC U-matic with the 16-track Otari MX-70 and Otari 1/4" with center track time code. Also have a MIDI room with Performer software, Roland S-50 sampler, MT-32, Poly-800 and FB-01 sound modules.

[16] **TOMSICK BROTHERS PRODUCTIONS**; also REMOTE RECORDING; 21271 Chardon Rd.; Euclid, OH 44117; (216) 481-8380. Owner: Ken Tomsick. Manager: Ken Tomsick.

[16] **VIDEO ARTS STUDIOS**; also REMOTE RECORDING; 1440 4th Ave. N.; Fargo, ND 58102; (701) 232-3393. Owner: Art Phillips. Manager: Steve Germaine.

[16] **WEST BANK SOUND**; also REMOTE RECORDING; 1413 Washington Ave. S.; Minneapolis, MN 55454; (612) 370-0098. Owner: Lawrence Fried. Manager: Ezra Gold.

[16] **WOODEN NICKEL SOUND STUDIO**; 6844 Dickson Cemetery Rd.; Dunlap, IL 61525; (309) 243-7658. Owner: Donald Rosser. Manager: Donald Rosser.

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2-8 TRACK

STUDIOS

[8] **A&F MUSIC SERVICES**; also *REMOTE RECORDING*; 2834 Otsego; Pontiac, MI 48054; (313) 682-9025. Owner: Frank C Merwin.

[8] **ALPHA MUSIC PRODUCTIONS, INC.**; PO Box 14701; Lenexa, KS 66215; (913) 441-8618. Owner: Glenn Major. Manager: Glenn Major.

[8] **AL'S AUDIO DINER**; 670 Airport Blvd., Ste. 1; Ann Arbor, MI 48108; (313) 662-0667. Owner: Geoff Michael, Bob Martens. Manager: Geoff Michael.

[8] **CLOUD 10 RECORDING**; also *REMOTE RECORDING*; 1450 Coler, Ann Arbor, MI 48104; (313) 663-0222. Owner: Mike Gould. Manager: Mike Gould.

[8] **D.L. CORBET AUDIO SYSTEMS**; also *REMOTE RECORDING*; 2723 Highland Village Ln.; Miamisburg, OH 45342; (513) 435-3049. Owner: Donald Corbet. Manager: Julie Corbet.

[4] **EMC PRODUCTIONS**; also *REMOTE RECORDING*; 300 York Ave.; Saint Paul, MN 55101; (612) 771-1555. Owner: EMC Corporation. Manager: Bruce Kennedy.

[8] **FIDDLESTRING PRODUCTIONS**; also *REMOTE RECORDING*; HCR 89, Box 46; Hermosa, SD 57744; (605) 255-4235. Owner: Stringbean Svenson. Manager: Stringbean Svenson.

[8] **LAND RECORDING STUDIO**; also *REMOTE RECORDING*; 1912 Heriford Rd.; Columbia, MO 65202; (314) 474-8141. Owner: Bob Pruitt. Manager: Bob Pruitt.

[8] **LOST NATION SOUND RECORDING STUDIO**; 6941 State Route 329; Guysville, OH 45735; (614) 662-5701. Owner: Dave Aiken. Manager: Nancy Aiken.

[4] **MCIC VIDEO SERVICES**; 231 Bethesda Ave., Mail Loc. 574; Cincinnati, OH 45267; (513) 558-5676. Owner: University of Cincinnati. Manager: Dan Reeder.

[8] **NEW DIMENSIONS**; 265 Florawood; Pontiac, MI 48054; (313) 682-9626. Owner: Victor Borowiec. Manager: Victor Borowiec.

[8] **PANTHER RECORDING STUDIO**; also *REMOTE RECORDING*; 2350 N. 81st St.; Wauwatosa, WI 53213; (414) 259-3975. Owner: David R. Barwick. Manager: Brian Bussewitz.

[8] **PRaise PRODUCTIONS, INC.**; only *REMOTE RECORDING*; 15032 S. Minerva; Dolton, IL 60419; (312) 841-7126. Owner: Marcellus E. Lanfair. Manager: Marcellus E. Lanfair.

[8] **PRIME TIME STUDIOS**; PO Box 11449; Saint Paul, MN 55111; (612) 454-7673. Owner: Jim Barker. Manager: Jim Barker. Dimensions: Studio 35 x 15, control room 12 x 12, MIDI room 35 x 15. Mixing Consoles: (3) Tascam, Sony, Ross (audio-for-video). Audio Recorders: Tascam 8-track, Otari 2-track 1/4", Sony PCM-2500 R-DAT, Studer/Revox 2-track 1/4", Pioneer 2-track 1/4" Cassette Recorders/Duplicators: Nakamichi MR-1, Tascam 122. Noise Reduction Equipment: dbx for all R-to-R decks. Synchronization Systems: Passport MIDI transport (also for video) Echo, Reverb & Delay Systems: Lexicon Prime Time digital delay, (2) UREI LA-4 comp/limiter, (2) Yamaha SPX90 digital effects, Pioneer graphic EQ, Yamaha REV5 digital effects, (5) Alesis MIDVerb II, (2) Orban IIB reverb. Microphones: (24) Neumann, RCA, AKG Pro mics. Monitor Amplifiers: Crown D-75, Symetrix, Pioneer Spec-2. Monitor Speakers: E-V Sentry III, JBL 4311B, Altec Lansing VOT, Cerwin-Vega, Auratone Sound Cube. Musical Instruments: Kurzweil MIDIboard, Kurzweil 1000PX, Roland D-550, Prophet-VS, Yamaha DX7IIDF, Yamaha TX81Z, Ensoniq ESQ-1, Ensoniq Mirage, Alesis HR-16, Yamaha RX5, Roland TR-727. Other MIDI Equipment: (2) Atari 1040ST w/20MB HD, Master Tracks Pro sequencer, KCS sequencer. Video Equipment: (2) Sony VO9800 SP U-matic 3/4" deck, Sony VO9850 SP U-matic 3/4", A/B Roll edit system w/digital effects, Panasonic 3CCD camera, Sony VO8800 SP U-matic 3/4" portable deck, (6) various VHS decks, (4) Sony high-res monitor, Amiga 2500 w/high-res graphics and titling programs. Other: (2) Technics studio-quality CD player, (3) various turntables, on-site satellite C-band downlink, complete still photography

studio and darkroom—35mm through 4 x 5. Rates: Package rates on request for multitrack recording, video production and post, audio-for-video synchronization and photography.

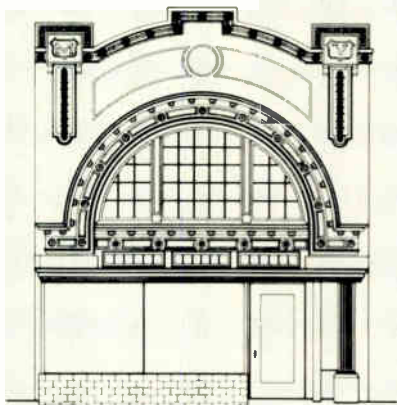
[4] **SECOND ESTATE PRODUCTIONS**; also *REMOTE RECORDING*; 9133 Barth Dr.; Big Lake, MN 55309; (612) 263-3797. Owner: Michael J. Langford. Manager: Michael J. Langford. Engineers: Michael J. Langford. Dimensions: Studio 10 x 12, control room 10 x 12. Mixing Consoles: Akai 6 x 2, Tascam 8 x 2, Tascam 4 x 2, Fostex 8 x 2, (2) DOD Electronics 4 x 2. Audio Recorders: Akai MG-614 4-track w/SMPTE, Tascam 244 4-track, Fostex 20 2-track w/sync. Cassette Recorders/Duplicators: Yamaha C300, Tascam 122. Akai 101, Telex CD-4 (7 stations) Noise Reduction Equipment: dbx Integral, Dolby B/C/NR/HX. Synchronization Systems: Fostex 4050 Echo, Reverb & Delay Systems: Alesis XTic, Alesis MIDVerb. Other Outboard Equipment: Yamaha GC2020B comp/limiter, Yamaha CD2000 studio CD, IOTA Systems MIDI-fader Microphones: Sennheiser MD-441U, Sennheiser MD-431U, E-V 644, E-V D535, Shure 5655D. Monitor Amplifiers: QSC 1400 (and house), Roland SRA-200, (2) Kawai KM-60. Monitor Speakers: (2) JBL Cabaret (and house), Yamaha NS-10M, (2) Custom Musical Instruments: (2) Casio CZ-1, (2) Casio CA-101, Akai YX-90 rack, E-mu Emax SE rack, Kawai R-100. Other MIDI Equipment: (2) Macintosh Plus (4MB, 2MB), (2) Opcode Studio Plus interface, 360 Systems MIDI Merge+, (2) J.L. Cooper MSB+ Other: LaserWriter II NTX w/Sonata, Opcode CZ editor/librarian, Opcode Vision, Mark of the Unicorn Performer 5.0, Mark of the Unicorn Composer 2.3, Electronic Arts DMCS, Digidesign Sound Designer, Emax, Upbeat, Dimension SFX library. Rates: \$45/hr.

[8] **SOUND SHOP RECORDING STUDIO**; 9250 N. Sleepy Hollow Ln.; Bayside, WI 53217; (414) 352-7766. Owner: Roger A. Roth. Manager: Roger A. Roth.

[8] **VICTORY SOUND**; 1815 N. 7th St.; Terre Haute, IN 47804; (812) 238-9731. Owner: Dave Myers.

[8] **VIKING SOUND AND RECORDING**; only *REMOTE RECORDING*; PO Box 349, 124 Pine St.; Edna, KS 67342; (316) 922-3827. Owner: Richard C. Erickson. Manager: Richard D. Erickson.

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[24+] **INSIDE TRAK STUDIOS LTD.**; also *REMOTE RECORDING*; 7490 Edmonds St.; Burnaby, BC, V3N 1B4 Canada; (604) 525-3422. Owner: Rick Picard, Gordon A. Ross. Manager: Lisa Barton

[24+] **LE STUDIO MORIN HEIGHTS**; 201 Perry Rd.; Morin Heights, PQ, J0R 1H0 Canada; (514) 226-2419. Owner: Groupe Andre Perry. Manager: Richard Ealey. Specialization & Credits: Le Studio is a residential studio, equipped with an SSL 4056 G console and Synclavier suite, located in Quebec's Laurentian Mountain resort area. On 225 acres of land, overlooking a private lake, Le Studio offers a tranquil working environment, perfect for the creative processes necessary in recording an album. Le Studio is only a 45-minute drive from downtown Montreal, or a one-hour flight from New York City. Across the lake from the studio is the guest house sleeping eight, having six luxury bedrooms, four of which have private bathrooms (one with a jacuzzi). The house is equipped with a complete VCR, stereo system and 5' Yamaha grand piano. Major albums recorded at Le Studio: The Police *Ghost in the Machine*, Synchronicity, Sting *Dream of the Blue Turtles*, Keith Richards *Talk Is Cheap*, Rush total of six albums, David Bowie *Tonight*, Chicago XII, Glass Tiger *Thin Red Line*, Diamond Sun, Queensryche *Operation Mindcrime*



MAGNETIC FAX
Toronto, Ontario

eo spoilance controller, (2) Klark-Teknik DN27 13-band graphic EQ, (2) Aphex Aural Exciter, Microphones: (3) Neumann U87, (2) Neumann KM84, (2) AKG 414, (2) AKG 452, Sennheiser 421, Beyer 500, (5) Shure SM57, E-V RE20, (2) Crown PZM Monitor Amplifiers: Bryston 4B, Bryston 2B, Quad 303 Monitor Speakers: (2) JBL 4430, (2) Yamaha NS-10M, (2) Auratone 5B, (2) E-V 100A, (2) Rogers L53/5A Musical Instruments: Casio FZ-1 16-bit sampler. Other MIDI Equipment: Mac II w/Opcode MIDI interface, PPI, MIDI time code, Q-Sheet Video Equipment: JVC CR850U editing recorder, Sony KV-25XBR2, (2) Sony KV-20XBR2, (2) Sony 3000 1" VTR, (3) Sony BVW-75 Betacam SP, (2) Sony BVU-950 SP, (2) Sony BVU-870 SP, (3) Grass Valley VPE-151 edit controller, (2) Intergroup 9600 switcher, Grass Valley 100 switcher, (2) Abekas A53-B digital video effects, (2) Time Arts computer graphics animation system, Crystal 3-D animation software, Luma 2-D paint software, Motion Control art table (4-axis), Sony DXC-325 CCD graphics camera, Sony DVR-10 D2 digital VTR



MANTA SOUND
Toronto, Ontario

[24+] **MANTA SOUND**; 311 Adelaide St. E.; Toronto, Ontario, M5A 1N2 Canada; (416) 863-9316. Manager: Lu Ann Leonard. Engineers: Gary Gray, John Nasier, Ron Searies, Rick Starks, Mark Baldi. Dimensions: Room 1 studio 30 x 13, control room 26 x 20, Room 2 studio 60 x 44, control room 26 x 20, Room 3 studio 24 x 23, control room 20 x 15, Room 4 studio 12 x 10, control room 20 x 13. Mixing Consoles: Artek APC 1000/56 w/ GML Moving Fader automation, Neve V Series 52 w/ GML automation, Westar 36 w/ Compumix PC automation on Audio Recorders: (3) Mitsubishi X-850 32-track digital, (3) Studer A80 24-track, Studer AB27 24-track, AMS AudioFile hard disk recorder, various Studer A80 and AB10 2-track Synchronization Systems: Soundmaster and Synchro systems in all rooms. Microphones: (1-20) various, including Neumann, Schoeps, AKG, Sennheiser w/ many vintage tube condensers. Rates: Please contact our studio manager, Lu Ann Leonard

[24+] **MASTER'S WORKSHOP**; 306 Rexdale Blvd. Units 1-9; Resdale, Ontario, M9W 1R6 Canada; (416) 741-1312. Owner: Selkirk Communications Ltd. Manager: Jim Frank

[24+] **MASTERTRACK LTD.**; 35A Hazelton Ave.; Toronto, Ontario, M5R 2E3 Canada; (416) 922-4004. Owner: Ken Burgess. Manager: Andy Condon

[24+] **MCCLEAR PLACE RECORDING & MASTERING STUDIOS**; also *REMOTE RECORDING*; 225 Mutual St.; Toronto,

Ontario, M5B 2B4 Canada; (416) 977-9740; FAX: (416) 977-7147. Owner: Bob Richards. Manager: Jane Rowan



METALWORKS RECORDING STUDIOS, INC.
Mississauga, Ontario

[24+] **METALWORKS RECORDING STUDIOS, INC.**; 3611 Mavis Rd., Unit 5, Mississauga, Ontario, L5C 1T7 Canada; (416) 279-4008. Owner: Gil Moore of Triumph Manager: Alex Andronache. Engineers: Hugh Cooper, Robert DiGioia, Dave Dickson (technical engineer), L. Stuart Young, Noel Golden (available through Steve Mor Co). Dimensions: Room 1 studio 22 x 50, control room 22.5 x 19, Room 2 studio 15 x 20, control room 22 x 24, Room 3 studio 50 x 70. Mixing Consoles: SSL 4056 G Series 48 x 32 w/ Total Recall, Neve Spiffire 24 x 16 x 24 w/1073 EQ and 2254 limiter. Audio Recorders: (2) Studer A800 III 24-track, (3) Studer A820 2-track, Otari MTR-90 II 24-track, Sony PCM 2500A digital Cassette Recorders/Duplicators: (2) TEAC 122 MkII, (2) Tascam 122B Noise Reduction Equipment: (2) Dolby A, (2) Dolby SR Synchronization Systems: Adams-Smith 2600 Echo, Reverb & Delay Systems: Lexicon 480L reverb, Lexicon Prime Time II digital delay, AMS OMX 15-80S digital delay processor w/ stereo sampling, (2) Lexicon PCM70, Lexicon PCM42 delay, (2) Lexicon LXP-1 w/MRC remote, Sony DRE-2000 digital reverb, EMT 140 tube plate reverb, EMT 140 solid-state plate reverb, Yamaha REV-1, Yamaha REV7, Klark-Teknik DN-780 digital reverb, AKG ADR-68K multieffects processor, Yamaha SPX90 Series 2, Roland SRV-2000 MIDI digital reverb, Roland SDE-3000 digital delay, (16) Neve outboard 1064 EQ, Summit Audio dual program EQ, Eventide H3000 Harmonizer, Bercus-Berry 422 Sonic Maximizer, (2) Focusrite ISA 110 EQ strips, (2) Aphex Aural Exciter (Band C), (4) Pultec tube EQ, (2) API 5502 EQ, UREI 1178 stereo limiter, (2) UREI LA-2A limiter, (2) Drawmer DS-201 noise gate, Brooker-Siren compressor/limiter/de-esser, (4) Aphex expander/gate, (4) UREI LA-4 limiter, (4) dbx 160X limiter, (2) UREI 1176N limiter, (2) Altec 1591A solid-state compressor. Other Outboard Equipment: Summit Audio dual tube preamp, (2) Summit Audio tube leveling amplifier. Microphones: (3) Neumann U87, (2) Neumann U67 tube and others, (2) AKG tube, (6) AKG C-414 EB-P48 and others, (5) Shure SM57 and others, Electro-Voice RE20 and others, (2) Crown PZM, (6) Sennheiser 421 and others, Beyer M500. Monitor Amplifiers: Crown, QSC. Monitor Speakers: (4) JBL 4350 and customized 4350, (2) JBL 4410, (2) JBL 4312, (6) Yamaha NS-10M, (4) Auratone Musical Instruments: Akai S1000 sampler, Akai S612 sampler, Yamaha G3 grand piano, Hammond organ w/ Leslie, Roland D-50 keyboard, Roland Super Jupiter. Video Equipment: JVC 6650 3/4" recorder. Rates: Available upon request. Specialization & Credits: Created by a musician, for musicians. Metalworks offers the perfect combination of atmosphere, comfort and the latest in recording technology, all just 20 minutes from downtown Toronto, and only ten minutes from the airport. Metalworks One features the SSL 4056 G Series console making it the ultimate mixing facility in Canada. Recent clients include Triumph, Glass Tiger, Tom Cochrane, Gowan and Kim Mitchell. Mix engineers Brian Foraker, Steve Rinkoff and Noel Golden along with producers Eddie Kramer, David Tickle, Terry Brown and Mike Howlett have all chosen Metalworks in recent months. Metalworks Two features an adjacent 3,500-square-foot soundstage providing the ultimate ambient environment for live tracking. Separate lounge and kitchen facilities for each studio offer the artist and their guests the utmost in comfort and privacy. Adjacent to each lounge is a games room with billiard tables, video games and pinball—table tennis and basketball are also available.

[24+] **METROMEDIA PRODUCTIONS**; #306-822 11th Ave. SW; Calgary, AB, T2R 0E5 Canada; (403) 265-0258. Owner: Lanny Williamson. Manager: Chris McIntosh

[24+] **MONTREAL SOUND STUDIOS**; also *REMOTE RECORDING*; 5000 Buchan St., Ste. 601; Montreal, Quebec, H4P 1T2 Canada; (514) 738-1300. Owner: Lorne Carrier. Manager: Don Richards

—CONTINUED ON NEXT PAGE

Le Tube

LE TUBE
Montreal, Quebec

[24+] **LE TUBE**; 225 Rue Roy, Montreal, Quebec, H2W 2N6 Canada; (514) 481-2048. Owner: Pierre-Daniel Rheault, Georges Coulombe. Manager: Roger Guerin. Engineers: Richard Pelletier, Roger Guerin, Claude Champagne, Pierre-Daniel Rheault, Arun Majumdar. Dimensions: Room 1 studio 12 x 16, control room 20 x 23, Room 2 studio 10 x 8, control room 15 x 19, 17 x 19, 15 x 18. Mixing Consoles: SSL 4032, Soundtracs IL-4832, Soundtracs CMX-3824. Audio Recorders: Sony APR-24, Tascam ATR 80-24, Tascam MS-16, Otari MTR-10, Tascam 52, NED PostPro 8-track. Noise Reduction Equipment: Dolby SR SP24, (2) Dolby SR 363. Synchronization Systems: Audio Kinetics Eclipse, Soundmaster Echo, Reverb & Delay Systems: Lexicon 480L, (3) Lexicon PCM70, (6) Lexicon LXP-1, (6) Lexicon LXP-5, (3) Yamaha SPX1000, Eventide H3000, (2) Sony MUR-201, (2) Yamaha REV7, (2) Aphex Aural Exciter Model C, (2) Aphex Compellor. Monitor Amplifiers: (4) Quedest DX300E, (4) Quedest AM900E, (3) SCS 2450. Monitor Speakers: (2) Quedest 412, (2) Quedest 212, (6) Quedest 405. Musical Instruments: NED 9600 Synclavier, (2) E-mu II, Roland S-50, Roland S-550, Roland D-50, Roland D-550, Yamaha DX7IID, Yamaha DX7, Korg DW-6000, Akai S900, E-mu SP-12, (2) E-mu III, Prophet VS, Yamaha CS80, Roland Super Jupiter, Rhodes Chroma. Video Equipment: (3) JVC 6650 VTR, Sony BVH-1100. Rates: \$90-\$125 (Can. funds)

[24+] **THE LITTLE MOUNTAIN SOUND STUDIOS LTD.**; 201 W. 7th Ave.; Vancouver, BC, V5Y 1L9 Canada; (604) 873-4711. Owner: Bob Brooks. Manager: Alison Glass

[24+] **MAGDER ENTERTAINMENT CORP.**; 189 Church St.; Toronto, Ontario, M5B 1Y7 Canada; (416) 866-2121. Manager: Ricky Magder

[24+] **MAGNETIC FAX**; 550 Queen St. E., Ste. 205; Toronto, Ontario, M5A 1V2 Canada; (416) 367-8477. Manager: Bill Mather. Engineers: Bill Mather, Willard Bond, Brian McGuire. Dimensions: Studio 10 x 14, control room 22 x 33. Mixing Consoles: MCI 636 28 x 28 automated. Audio Recorders: MCI JH-24 24-track, Otari MTR-12 4-track, Studer A820 2-track w/center track time code, Ampex ATR-102 2-track, PCM-601 2-track digital, MCI layback machine. Noise Reduction Equipment: (24) dbx 150X. Synchronization Systems: Adams-Smith 2600 w/compact controller, 5-machine tape lock. Echo, Reverb & Delay Systems: Lexicon 224X w/LARC digital reverb, Roland DEP-5 digital reverb, Lexicon PCM41 digital delay, DeltaLab Electron II digital delay, Eventide 3000 Harmonizer w/ time squeeze. Other Outboard Equipment: (8) Scamp 100 noise gate, (2) UREI LA-4A compressor, dbx 162 stereo compressor, Valley People Leveler, Orban 536A ster-

Coming in Mix:
December 1989

Tape & Disc Technology

- **Special Feature:** Digital Editing, Part 1, by Bob Clearmountain
- **Mastering Forum:** Trends in Mastering, by Linda Jacobson; Yamaha's PDS System
- **Duplication Spotlight:** Duplication Specialization, by Larry Henry
- **Equipment Feature:** Vintage Mics, Part 3, by Stephen Paul—AKG Classics
- **Computer Report:** Apple Music, by Larry Oppenheimer; Digidesign's Sound Tools
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MIX

THE RECORDING INDUSTRY MAGAZINE

16 TRACK STUDIOS

[16] **BULLFROG RECORDING STUDIOS;** also *REMOTE RECORDING*; 2475 Dunbar St.; Vancouver, BC, V6R 3N2 Canada; (604) 734-4617. Owner: Bullfrog Recording Company Ltd. Manager: Maggie Scherf. Engineers: Alan Rempel, Bart Gurr, Gerry Gagnon, Ian Tarasoff, Gord Booth. Dimensions: Main studio 17 x 20, isolation booth 10 x 12, MIDI studio 12 x 20, control room 13 x 16. Mixing Consoles: Soundcraft 1624 16 x 16 x 2. Audio Recorders: Ampex MM-1100 16-track 2"; (2) Otari MX-5050 8-track ½"; Sony ATR-5002 2-track, Otari MX-5050 2-track, TEAC 25-5 2-track, (2) Sony PCM-F1 2-track. Echo, Reverb & Delay Systems: Roland R-880 digital reverb, (2) Roland SRV-2000 digital reverb, AKG BX10 (modified), Lexicon Prime Time, Roland SDE-2500 digital delay, (2) Yamaha SPX90. Other Outboard Equipment: Roland Compu-Editor w/30 channels of automated level control, Audio & Design Recording Scamp system, UREI 1176 limiters, dbx 160 compressors, Orange County EQs, comp/limiters, Vocal Stresser/de-esser, Nova Systems Aural Exciter, Omni-Q TL2 tape lock system for time code synchronization, Roland SBX-80 MIDI/SMPTE sync box. Microphones: Neumann U87, AKG C-34 stereo, Sennheiser 421, Sennheiser 441, AKG 414. Sony C-37, Shure, Fostex, E-V. Monitor Amplifiers: Phase Linear/Quad tri-amplification w/Crown cross-overs. Monitor Speakers: JBL custom-designed 4-way, Tannoy NFM-8. Yamaha NS-10, E-V Sentry 100, Auratone. Musical Instruments: Yamaha grand piano, Roland HP-400 electric piano, Fender Rhodes, Hammond M-3, Pearl drums. Rates: From \$35 to \$60/hr. Discounts available for block bookings.

[16] **LOWE-KEY PRODUCTIONS;** 2550 E. Pender St.; Vancouver, BC, V5K 2B5 Canada; (604) 253-2096. Owner: Edward A. Lowe. Manager: Paul Evad.

[16] **POWER LINES RECORDING FACILITY;** also *REMOTE RECORDING*; 51 Kingspark Blvd.; Toronto, Ontario, Canada; (416) 466-6517. Owner: Fred Duval. Manager: Fred Duval.

[16] **RIDGE ROAD STUDIOS;** 7186 205 St.; Langley, BC, V3A 4P7 Canada; (604) 534-3415. Owner: Saul Pressman. Manager: Saul Pressman. Engineers: Aaron Pressman. Dimensions: Studio 24 x 30, control room 21 x 24. Mixing Consoles: (2) Yamaha DMP-7. Audio Recorders: Sony PCM-601ESD, Sony SL-HF860D. Cassette Recorders/Duplicators: Sony TC-K81. Echo, Reverb & Delay Systems: Aphex Aural Exciter, Barcus-Berry 802, DigiTech IPS-33 Smart Shift, Korg DRV-2000, DigiTech DSP-128. Other Outboard Equipment: (2) Yamaha DMP-11. Microphones: (2) Shure SM58. Monitor Amplifiers: Carver, Yamaha. Monitor Speakers: UREI 813C, Yamaha NS-10M. Musical Instruments: Emax SE, Korg DW-8000, Korg EX-8000, Oberheim Matrix-6R, Kawai K-3M, Roland D-50, Roland JX-10, Roland MT-32, Oberheim DPX-1, (2) Simmons SDS-9, Simmons SDS-1000, Korg DRM-1, Simmons SPM-8-2, Fender Stratocaster, Ovation custom Legend 12-string, (2) Marshall amp, Roland GR-77B bass guitar synth, Rickenbacker 4001, (2) Taurus I and II bass pedals.

[16] **RIGHT TRACKS PRODUCTIONS LTD.;** also *REMOTE RECORDING*; 226 B Portage Ave.; Saskatoon, Saskatchewan, Canada; (306) 933-4949. Owner: Lyndon Smith, Tim Wachowicz. Manager: Lyndon Smith.

[16] **SHAG SOUND STUDIO;** also *REMOTE RECORDING*; PO Box 518, Postal Station "W"; Toronto, Ontario, M6M 5C2 Canada; (416) 531-5919. Owner: Dennis Brunet. Manager: Dennis Brunet.

[16] **STUDIO PLEX PRODUCTION SERVICES LTD.;** 4429 Juneau St.; Burnaby, BC, V5C 4C4 Canada; (604) 294-6887. Owner: Studio Plex Production Services Ltd. Manager: Dan Cowan, Terry Gray, Ian Warner.

[16] **STUDIO SEQUENCE;** also *REMOTE RECORDING*; 43 Cote de la Canoterie; Quebec, Quebec, G1K 3X5 Canada; (418) 694-0111. Owner: Simon Carpentier. Manager: Marie-Pierre Lapointe.

[16] **STUDIO 270;** 270 Outremont Ave.; Montreal, Quebec, H2V 3M1 Canada; (514) 270-4918. Owner: 270 Corporation. Manager: Robert Langlois. Engineers: Robert Langlois, Daniel Benoit, Luciano Arcarese, Stephane Martin, Francois Hamel.

[16] **STUDIO 303-B;** also *REMOTE RECORDING*; Box 184, Isle Aux Morts; Newfoundland, A0M 1J0 Canada; (709) 698-3874. Owner: Barry Coleman. Manager: Barry Coleman.

Maurice Beausejour. Dimensions: Room 1: studio 12 x 20, control room 12 x 12. Room 2: studio 10 x 10. Mixing Consoles: Soundcraft 6000 52 x 24. Audio Recorders: Tascam MS-16 16-track w/dbx, Otari MTR-12II-CT 2-track w/center track, Ampex ATR-800 2-track, Otari MX-5050IIB 2-track, Sony PCM-601 2-track digital. Cassette Recorders/Duplicators: (2) Nakamichi MR-1. Noise Reduction Equipment: (2) Dolby 361 Type A and Type SR. Synchronization Systems: (2) Fostex 4030, J.L. Cooper PPS-100, Fostex 4035. Echo, Reverb & Delay Systems: Lexicon PCM60, Lexicon PCM70, Lexicon Prime Time, Eventide H3000, Klark-Teknik DN780, Roland DEP-5, Yamaha SPX90, Alesis MIDiverb II, Alesis XTC, (2) Yamaha REV7, Orban III, DeltaLab DL-4, MXR Delay System II. Other Outboard Equipment: (3) Drawmer DS-201, (2) Loft 401, (4) dbx 160X, Symetrix 522, Loft 400B, (2) UREI 1176LN, Orban 536A de-esser, Aphex Type B Exciter, Barcus-Berry 802, (2) Rane GE30 EQ, Drawmer 1960 tube, Orban 642B EQ. Microphones: Neumann U87, (2) AKG 414EB, AKG 414EB-P48, (2) AKG 451/CK1/CK3, AKG D-12E, AKG D-112, (2) AKG C-535EB, Beyer DN740N, Crown GLM-200, Electro-Voice PL20, (6) Sennheiser MD-421, Sennheiser MD-441, (4) Shure SM57, SM58, SM7. Monitor Amplifiers: Bryston 2B, Bryston 3B, Bryston 4B, Crown DC-300A. Monitor Speakers: (2) UREI 802, (2) Yamaha NS-10M, (2) Tannoy PBM 6.5, (2) EAW MS-30, (2) Auratone 5C. Musical Instruments: Alesis HR-16 drum machine, Yamaha KX-88 controller, Yamaha DX7, Prophet-5, Kurzweil 1000PX, Ensoniq Mirage, Roland MKS-80. Video Equipment: (2) Sony 20" monitor, Sony SL-300 Beta ½", JVC BR8600U ½" Pro VHS. Rates: Available upon request.

8 TRACK

[8] **AIRBOURNE AUDIO;** also *REMOTE RECORDING*; 50 Abbeywood Cres.; Bowmanville, Ontario, L1E 1N8 Canada; (416) 436-0771. Owner: Mel Kay. Manager: Mel Kay.

[8] **COW & HEN PRODUCTIONS (EDDY BALTIMORE STUDIOS);** also *REMOTE RECORDING*; 439 King St. E. #5; Toronto, Ontario, M5A 1L5 Canada; (416) 364-9813; (416) 532-5297. Owner: Edward Hutchison, Phil Strong. Manager: Eddy Baltimore.

[8] **MONSTER SOUND;** also *REMOTE RECORDING*; 151 Lippincott St.; Toronto, Ontario, M5S 2P3 Canada; (416) 921-7698. Owner: Bradley K. Ledden. Manager: Michael Poliwoda, Trudy Binder, Chris Hegge.

[8] **MUSIC GALLERY;** also *REMOTE RECORDING*; 1087 Queen St. W.; Toronto, Ontario, M6J 1H3 Canada; (416) 534-6311. Manager: Paul Hodge.

[8] **REEL NORTH RECORDING STUDIOS;** 741 McEvoy St.; Fredericton, NB, E3A 3B8 Canada; (506) 450-3299. Owner: Lloyd Hanson. Manager: Lloyd Hanson.

[8] **REEL TIME RECORDERS LTD.;** also *REMOTE RECORDING*; 1489 Hollis St.; Halifax, Nova Scotia, B3J 3M5 Canada; (902) 422-8567. Owner: Chuck and Mary O'Hara. Manager: Chuck O'Hara.

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Mix magazine you see something that you want to buy, but you have to buy something that makes sense for your business.

At our facility, with its growth pattern, we've decided what makes sense for our clients. Being a music facility, we put our money into new consoles, based on clients' needs. That's what we look at. You always want to attract new business, but if you don't keep up with the technology, you're going to lose business to the facilities down the street.

We make our purchasing decisions based on what our engineers feel is necessary, what the producers feel is necessary and our financial situation. Also, we finance a lot of things—when you're dealing with six-figure prices, I don't see how you can play out-of-pocket all the time.

Neuberger: Murray mentioned that when you invest in expensive items, you want to do it at the point where you can provide new services. What happens when you wait? If you don't provide the services, are you going to lose the client? If you have an opportunity to create a new market for yourself by investing heavily in high tech, yes, you're risking a sizable investment, but the rewards are greater in that the potential for new profits and new profit centers is there.

If you wait until you risk losing the business to invest in high technology, now you're really risking your entire company, and the reward potential is minimal—you're just saving your existing level of business.

There may be a good argument made for biting the bullet and finding a way to provide new services in advance of your client's holding a gun to your head.

Terry Fryer: I'm basically a music producer and my facilities are occupied with producing music and putting things out the door. When I de-

Zenith/db Studios, Chicago.

Last major purchase: Soundmaster synchronizer system for video and film post work.

Financing: Cash.

"The majority of our financing is through lease. Equipment's coming in and out all the time, much to our dismay. The rationale for putting in the Soundmaster was [to achieve] a higher-quality product, which is always the major concern, but also cost-effectiveness that we can offer the client through a piece of equipment.

"We also have to see a strong need for new equipment from the client. For years

we tried to lead the client toward new technology, but they need to see a need first. Our obligation is to keep them in new technology and to know that the highest-tech piece of equipment isn't always the best solution. So you consider the quality of hardware and the kind of support you'll get from the manufacturer. If you spend more than \$50,000, you're investing in that company. You're saying that you believe in them and the support they're going to give you. We need manufacturer support, and the Soundmaster people go unchallenged."

—Ric Coken

decide on equipment to buy, my concern is what resources to devote to that equipment. [Addresses the panel] You, gentlemen—I've used all your facilities, and you're in a different position than I am—you're forced to

ever price it is. Every piece of equipment that I've bought has increased that power and has been worth the price.

Neuberger: We're excited about the two new Neves that just came into the

Creation Audio Recording, Minneapolis.

Last major purchase: For one of three studios, a late-model, used, Sony MXP-3000 console, purchased for 50 cents on the dollar from a studio that went out of business.

Financing: Bank credit line.

"I look around for stuff like that. We bought our building that way, too, from another studio that decided they didn't want to use this location. We tend to work our way into situations.

"I've made mistakes and taken my lumps for them, but in the past few years I've watched the late-model used market and tried to not be the first guy into something as opposed to the second or third. I tend to do that instead of going into large new purchases. We try to have the money to cover it ahead of time, finance about half of what we buy out of cash, and the other half out of our banking resources from my local bank line. But one of our Sony digital multitracks is on a Sony finance arrangement, and that's worked out fine."

—Terry Grant

buy equipment and to allocate resources based upon what you *think* will attract business. I allocate resources and decide upon equipment I want and need based upon, "Will it help me to realize my musical ideas? Will it help me get more product out the door?" So my rule of thumb is always "get more out." If the technology will speed up what I do and allow me to get my ideas out of my head into a fixed medium, then it's worth what-

facility. In the multitrack area, we have 32-track and 2-track Mitsubishi, and since we got ours about six months ago and use them on record projects, our record clients praise it, require it, enjoy it, can hear the difference, and want the eight more tracks. More than the fact that it's digital is its specific value to clients doing original music.

Any of you who work in audio post know regular commercials take a surprisingly long time to produce. With people who've been producing radio commercials for 20 years, the first time they use the AudioFile they do their job twice as well in half the time. And younger people in the advertising business, in their first year of producing commercials on line, find they've worked great—you can't put them in a room *without* an AudioFile.

The devices have evolved to the point where once you show your clients how to use them in post you'll have a hard time getting them back on the farm! ■

Sisapa Studios, Columbus, Ohio.

Last major purchase: Totally rebuilt Studio A last year, with 60-input MkIII Neve V Series, two Studer A820s, GML automation and Dolby SR.

Financing: Commercial bank loan.

"You either do a low-budget demo room or go all the way to the top. Any studio that's stuck in the middle ground, in my opinion, is doomed to failure.

"We invest in equipment because cli-

ents want it. We're negotiating now with Neve for another console and a Mitsubishi 32-track digital, since Neve now has American distributorship of Mitsubishi. Between being a record company with our own acts and serving outside clients from New York and L.A., as well as signed Midwestern acts, we now have enough use that we need another studio. We've turned down \$200,000 worth of business since January—that was the sign that we needed another studio."

—J.D. Blackfoot

CLASSIFIEDS

Acoustic Consulting

Professional studio carpenter. References include: AD Productions (on the cover of November *Mix*) and several others. For more information, contact Dave Mattingly, (615) 672-5075, White House, TN.

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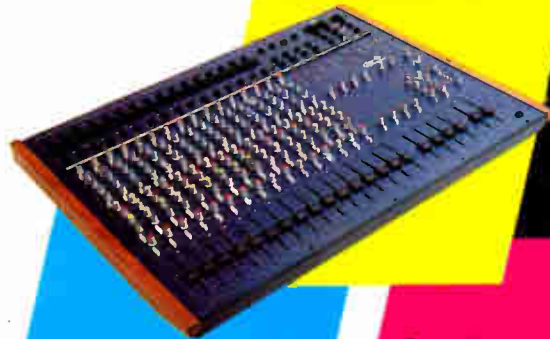
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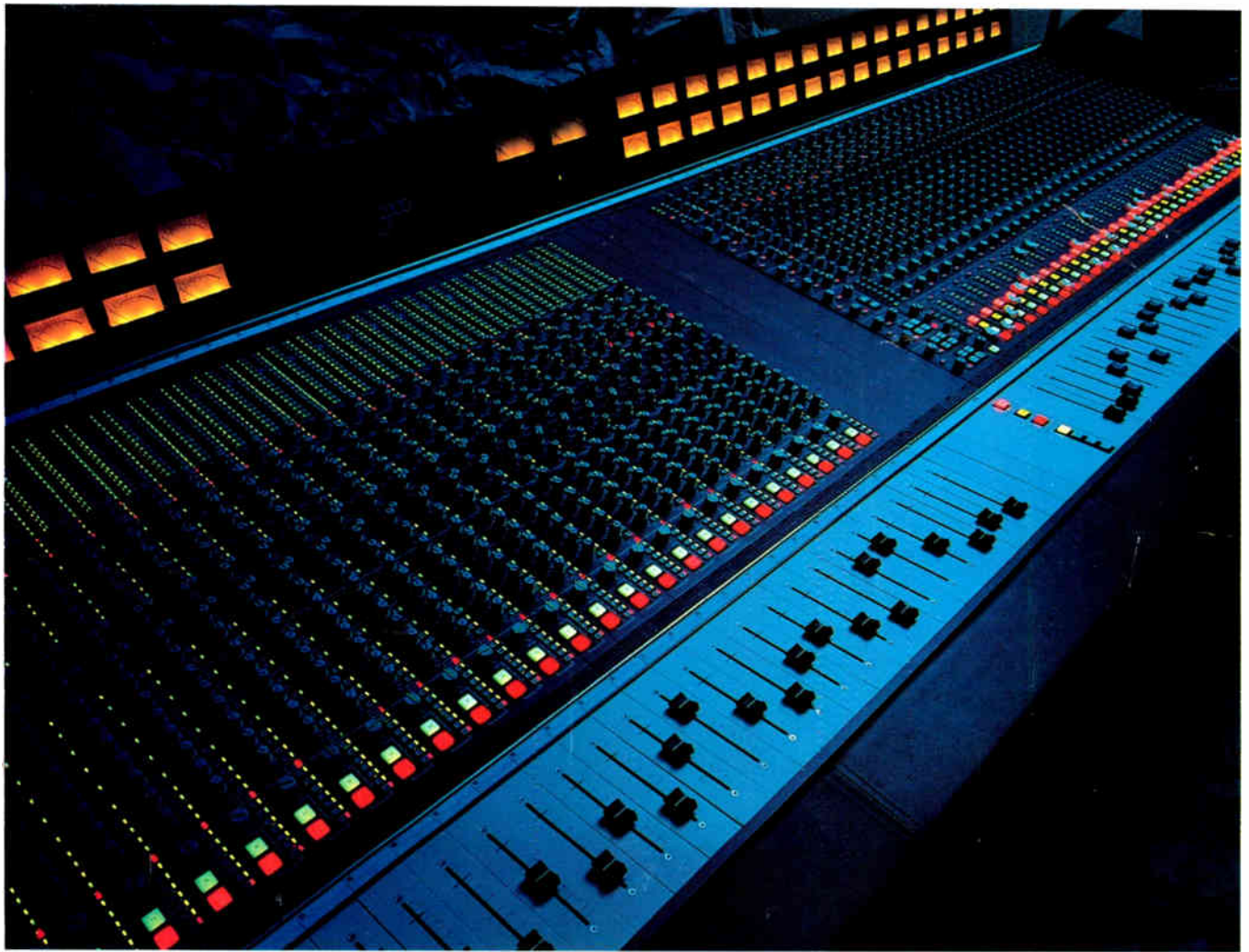
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