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THE RECORDING INDUSTRY MAGAZINE

INTERVIEW: PAUL SHAFFER

Directory: Northwest Recording Studios

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Founded 1977 by
David M. Schwartz and Penny Riker Jacob

Cover: The audio suite at One Pass Video in San Francisco, designed by Randy Sparks of RLS Acoustics, was completed in July 1989. The room incorporates a Sony 3000 series console with Diskmix automation, and can easily integrate audio and video in a wide variety of formats. **Photo:** Phil Bray.

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BPA

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FROM THE EDITOR

Ah, the first issue of a new decade. It may be just another small step for man, but somehow new decades seem to imply quantum leaps in our cultural evolution. What will mark the identity of the 1990s in terms of professional audio, music and media production? Will the era of information navigation continue to revolutionize our techniques and productions, or will we blow the whistle on the technological excesses and put creativity more back into the hands of the artist? Will it be this, or will it be that?

Every time somebody tells me, "There are two kinds of people in this world..." I think to myself, yeah, those who think there are two kinds of people in this world, and those who have a degree of intelligence. Predicting the future brings out both the best and worst of social observation, mostly because there is the risk of taking it seriously. Nonetheless, it is hard not to use this as a vista point, a "whether" forecast for the road ahead.

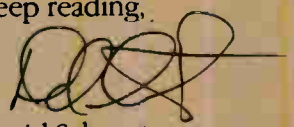
What the '90s brings will only be clear in hindsight, so let's get into it with real certainty in about ten years. In the meantime, we'd like to observe with you what is going on in today's industry, with some new perspectives.

We plan to spend some time in the coming months on topics relating to storage technology. With the '80s legacy of a computer-dominated recording industry, we have all but kissed vinyl goodbye and set the stage for high-capacity, rewritable, multimedia digital storage devices. Record manufacturing ain't what it used to be, folks, and this history is being made right in our own backyards. To keep an eye on it, we have reoriented our "After-Mix" column into a new section of the magazine called "Tape and Disc," which will follow the news, views and megachanges in this area. Phil De Lancie will moderate this section, and we urge you to check it out and send him any of your ideas and insights in this field.

Another change we'll be watching closely is the activity in the smaller studios. The '80s rolled in with a pretty clear distinction between the pro and semipro operations, but this is certainly no longer the case. MIDI rooms, special-purpose production houses, and artist-oriented creative centers are among the indicators of a new generation of facilities: totally professional but defying any current means of categorization. While not a new section in the magazine, this will certainly be a topic of much discussion in issues to come. In this issue, for example, George Petersen surveys a number of studio suppliers, soliciting their advice on equipping some of these lower-cost professional environments, where surprising audio capability is possible from a relatively meager budget.

So welcome to the 1990s, friends, The Age of Something or Other. We hope it's good for you.

Keep reading,



David Schwartz
Editor-in-Chief

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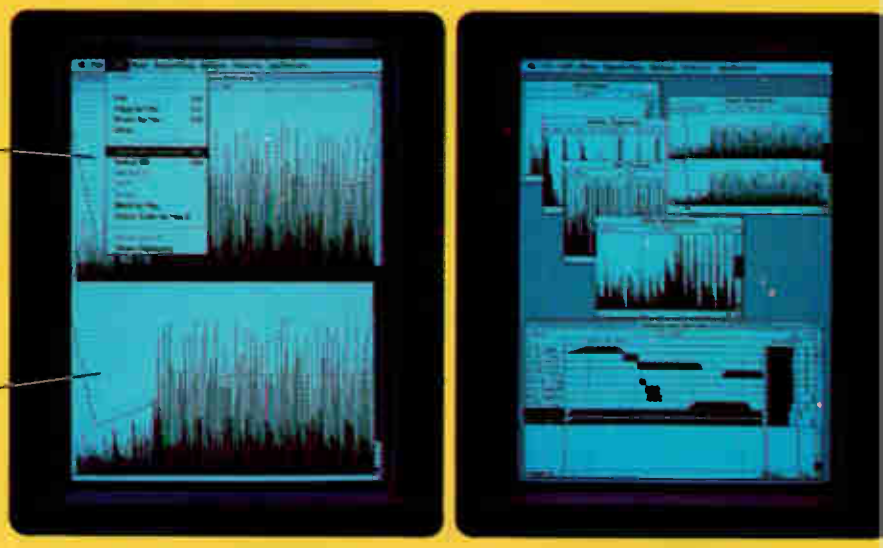

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CURRENT

CD-ROM CONFERENCE THEME FOR 1990

Microsoft Corporation has announced that the theme for its Fifth International CD-ROM Conference & Exposition, to be held February 27 to March 1 at the San Francisco Hilton, will be "Ideas in Motion," with an emphasis on the frontiers of interactive multimedia and application-ready concepts.

Individual sessions, based on case studies of real-world situations, will cover applications such as games and entertainment, encyclopedias and databases, catalogs and kiosks, training and education, technical documentation, in-house development and more.

More than 1,500 people are expected to attend the three-day event. For more information, contact Mark LoGiurato, Cahners Exposition Group, at (203) 352-8224.

SMPTE STANDARDS

The Society of Motion Picture and Television Engineers has formed a President's Task Force on SMPTE Standards Policy in an effort to review and make recommendations on the society's standardization activities relative to other organizations and standards bodies, both nationally and internationally.

Following the organizational meeting in September, the Task Force submitted a report to SMPTE president Maurice French and the Board of Governors. White papers on relevant topics were assigned to individual members, with meetings to review proposals scheduled for November and December. A full Task Force report to the Board of Governors is to be ready this month for the board's meeting in Orlando, Florida. For more specific information, contact Nancy T. Engel at (914) 761-1100.

APRS SETS DATES

Britain's Association of Professional Recording Studios has decided on June 6 to 8, 1990, as the dates for next year's show. The 23rd annual exhibition will be held once again at Olympia 2 in London, with a whole new floor being added to the completely renovated exhibition areas.

Show organizers are pushing for greater attendance by non-UK representatives, and they've decided to add some emphasis to the broadcasting sector while retaining the focus on music and recording. Details are available from APRS: (0923) 772907; FAX: (0923) 773079. International callers, dial (011) 44-923-772907.

SPARS ELECTS 1989-90 OFFICERS

The Society of Professional Audio Recording Services elected new officers and board of directors at the general membership meeting during October's AES Convention. David Porter, founder and president of Music Annex in the San Francisco Bay Area, was elected president. (See photo below.)

Pictured below left to right: first vice president, Pete Caldwell (Doppler Recording, Atlanta); chairman of the board, Bruce Merley (Clinton Recording, NYC); Tom Kobayashi (Skywalker Sound, division of Lucasfilms, San Rafael, CA); treasurer, Dick Trump (Triad Productions, Des Moines, Iowa); secretary, Dwight Cook (Cook Sound and Picture Works, Houston); Howard Schwartz (Howard Schwartz Recording, NYC); executive director, Shirley Kaye; president, David Porter (Music Annex, San Francisco); Steve Lawson (Steve Lawson Productions, Seattle); Charles Comelli (Capitol Records, L.A.); John Fry (Ardent Recording, Memphis). Not pictured: John Rosen (Fanta Professional Services, Nashville); Charles Benanty (Soundworks, NYC); Northeast coordinator, David Tieg.

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Because compromise is out of the question

Whoever said, "compromise is the oil that lubricates the business process" apparently wasn't in the studio business. To the contrary, in this unique world where art and business meet, and clients expect the best, compromise may be the fastest way *not* to stay in business.

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For example, if you're involved in audio post, you'll appreciate a capstan motor that is *designed* to be speed-slewed, plus external control connectors for easy interface to any SMPTE/EBU time-code based synchronizer, editor or machine controller.

For *whatever* you do in audio, both machines share constant tension transport technology for high performance, yet gentle tape handling. You'll also get digitally timed, gapless, seamless, punch-in, punch-out. On the "80," an autolocator with search zero and three cue memories comes built-in. And if you're a purist looking for the highest quality sound possible, you'll appreciate the transformerless balanced inputs and outputs.

Otari's proprietary integrated circuitry provides superior reliability and reduces service time.

The MX-80 and MTR-90 were designed from the beginning to lock to external controllers, and therefore provide exceptional performance under these conditions. Pictured is the MTR-90's advanced EC-101 chase synchronizer.

And to keep everything where it belongs as you move from one studio to another, something else you have to look beneath the surface to see—a 2" thick, cast alloy deck plate.

It's not that we don't have our imitators. We do. But to coin an old phrase, beauty is more than skin deep. And someday when you're under pressure to get that track out, and you lock a "90" to your video machine and things happen exactly the way they should . . . Or some early morning after the talent has gone, you sit back and listen to what you've put together, you'll be glad you decided that "compromise is out of the question."

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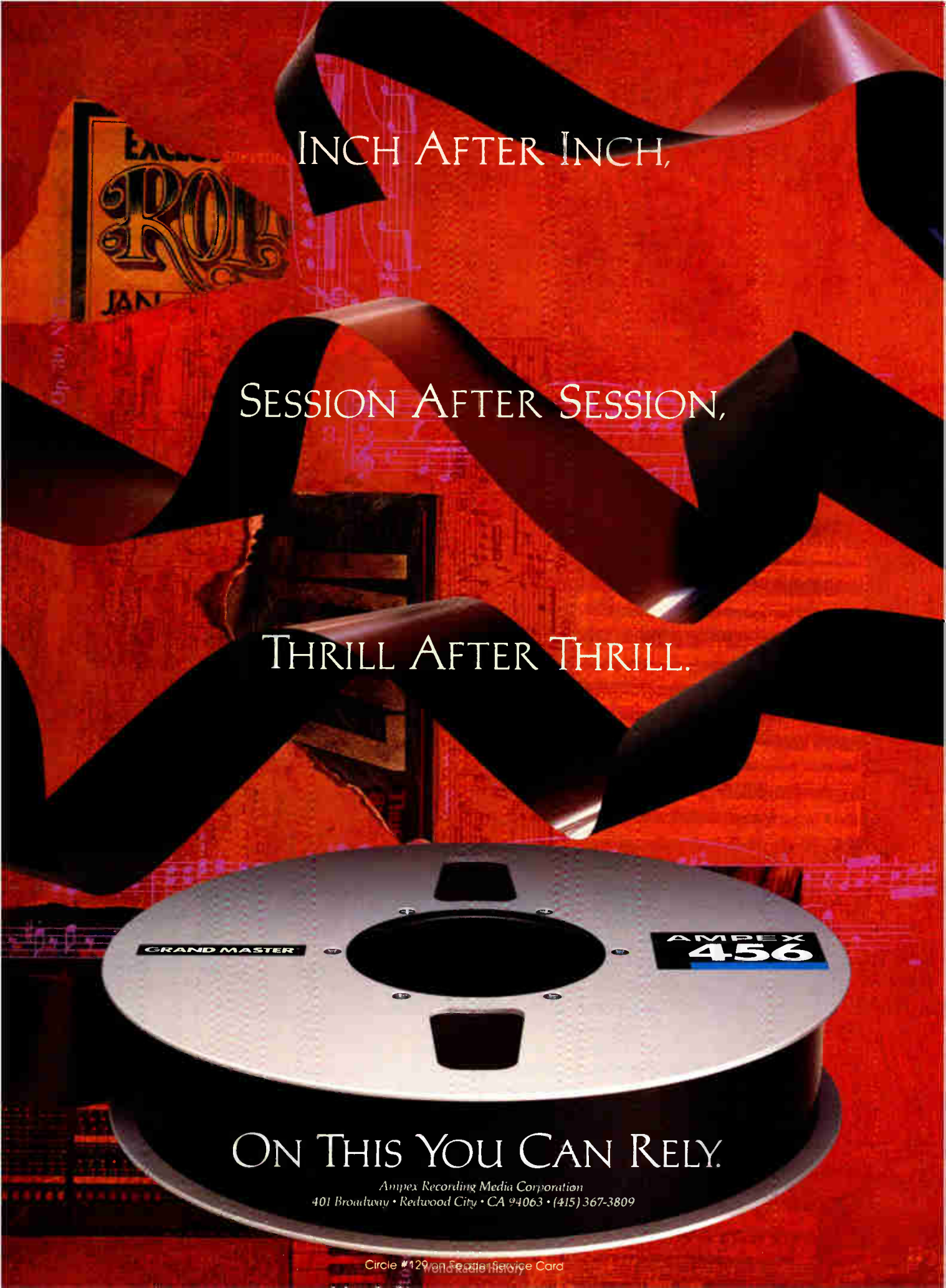

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INDUSTRY NOTES

SSL's former NY sales rep, **Danny Mundhenk**, moved up to Eastern region sales manager. . .**Jan Hebel** now works out of NYC as New York regional sales manager for **Studer Revox America**, and **Jim Philips** joined as the company's Nashville-area rep. . . In Menlo Park, CA, **Digidesign** announced it will work with **Otari Corp.** (Foster City, CA) to develop a high-end hard disk recording system, based on the Sound Tools system. Digidesign opened a Midwest office: 30 E. Huron, Suite 3804, Chicago, IL 60611. . .**Digital Audio Research** brought aboard **John Emmas, Ian Dodd** and **Rupert Ford** to its SoundStation II sales and customer support team in Chessington, Surrey, UK. In Hollywood, CA, **Bob McNabb** will represent DAR in the U.S. as regional manager. . . In Redwood City, CA, **Dr. Ronald Lambert** joined **Ampex** as vice president, engineering, and **John Ostertag** is now product manager, industrial audio tape. . .**Music Annex Duplication** moved its plant to 42650 Christy St., Fremont, CA. . .**Karl Seglins** now holds the title of international director of sales and marketing at **Fairlight ESP**, Sydney, Australia. . .**Lone Wolf** opened a field office at the Center for Electronic Music, 432 Park Avenue South, New York, NY. . .**American Interactive Media** (LA.) hired **Carol Rudisill** to handle East Coast production manager duties out of Washington, DC. . .**TLW** moved to The Little Warehouse, 5505 Valley Belt Rd., Suite F, Independence, OH 44131. . . In Boston, MA, Grammy-nominated composer **Suzanne Ciani** will headline the Feb. 10, 1990, 3rd Annual Music and Computers Concert at Mass Art. . .**James Goodman** is now the national sales manager at **Otari**; **Jorge Fuentealba** is Latin American regional sales manager. . . Contact **Monster Cable** at 274 Wattis Way, South San Francisco, CA 94080. . . **JBL/UREI** brought aboard **Cal Perkins** as product research specialist in Northridge, CA. . . Post-production company **Todd-AO** (NYC) promoted **Eric Albertson** to vice president, operations. . . During the AES Convention, the NARAS **National Archival and Preservation Committee** (NAPC) met for the first time. . . **Opcode**, now at 3641 Haven Dr., Suite A, Menlo Park, CA 94025, hired former Apple-ite **Mark Lentczner** as director of R&D. . . **SMPTE** presented a Presidential Proclamation award, posthumously, to **Joseph Roizen**. . . In Boston, **Daniel D. Roberts** was appointed vice president, sales and marketing operations, at **Lexicon**. . . **TimeLine** appointed **Nick Balsamo** as national sales manager in NYC. . . **Soundmaster** (NYC) named **Martin Audio Video** as its NY-area distributor for the Soundmaster Synchronizing System. . . **E-mu** of Scotts Valley, CA, completed a licensing agreement with **Matsushita Electric Industrial Co.** of Osaka, Japan. . . No need to change the letterhead. **AV Concepts Inc.** has joined with **Advance Concepts Inc.** of Tyson's Corner, VA. . . **B&B Systems** of Valencia, CA, has named **A/Z Technology International Inc.** (Newton Centre, MA) as its exclusive distributor, domestic and international. . . **Stage America Inc.** has moved from Ft. Lauderdale to Orlando, FL. . . **Emil Miller** has joined **Production Masters, Inc.**, of Phoenix as director of audio services. . . There will be five more years of music director **Chuck Butler** at Philadelphia's **Baker Sound Studios**. He signed a new contract. . . **AES** regrets the death of **Ann Marie Smyth**, a valued member of the convention and administrative staff in NYC. . . **VRI Scharff Rentals** in NYC appointed **Michael Mueller** to director of audio rentals. **Martin Audio**'s rental division will merge with VRI Scharff and move into the latter's address. . . In Malvern, PA, **Ensoniq** has a new customer service rep: **Wm. David McMahan**. . . **New England Digital** (White River Junction, VT) promoted **Colin Stewart** to vice president, Western division. ■

World Radio History

SESSIONS
AND STUDIO NEWS

NORTHEAST

Producer **R.O.N.** completed mixing **Pryme Tyme**'s new R&B dance album at **Ready or Not Productions** in New York City...Producer/guitarist **Joe Taylor** was at NYC's **Magic Shop** recording the score for the late-night spook show *Monsters*, and producing singer/songwriter **Michael Formica**. **Steve Rosenthal** engineered with assistance from **Sam Smith**...Also in Manhattan, at **Prime Cuts**, **Tuta Aquino** produced and mixed tracks for rappers **West & Will** for Do-Re-Mix Productions. Aquino handled all engineering and programming ...**Antoinette** was at **Power Play Studios** in Long Island City mixing her next release, "This Girl's Off on Her Own." **Jay Ellis** produced, **Ivan "Doc" Rodriguez** engineered and **Dilip Harris** and **Joey "Ghost" LaChiana** assisted...**The Walkers** were at **White Crow Audio** in Burlington, VT, cutting tracks for their debut LP for Atlantic Records. **Kevin Killen**, who co-produced with **Tom Dube** and **Mike Denneen**, was at the Neve desk...**The Valerie Naranjo Sextet** recorded several compositions at **Crystal Sound Recording** in New York City. The group's South American groove was captured on tape by engineer **Steve Vavagiakis**, assisted by **Beatrice Winkler** and **Johnny Byrne**...At **Red Rock Recording** in the Pocono Mountains, **The George Young Quartet** recently completed a direct-to-digital 2-track album. Also underway was a project by EMI songwriter **Mark Radice**...At **Brielle Music**'s new Manhattan facility, **Jon Brielle** produced industrial spots for Mobil Oil. The spots feature **Gladys Knight** and **Dick Clark**, and were produced at the facility's new Amek Mozart console, with **Bill Emmons** assisting...Russian rockers **Gorky Park** recorded and mixed their PolyGram debut LP at **Kajem Victory** in Philly. **Mitch Goldfarb** engineered and co-produced the project with **Bruce Fairbairn**...New England's pop rock ensemble **The Instagators** recorded three songs at **Inner City Studios** in Boston. **Joe Viglione** produced the sessions...Real Live Records artist **Melissa Hood** was at **Acme Recording Studios** in Mamaroneck, NY, co-producing her debut album with **Joe Ferry** and **Billy Masters**. Masters engineered...**Shakedown Sound** (NYC) hosted famed producer **Quincy Jones** for a mix of his single "I'll Be Good to You." The track was engineered by **Mark Plati** with assistance from **Steve Wellner**, and featured **Ray Charles** and **Chaka Khan** on vocals...**Paul Shaffer** was seen at **Krypton Studio** in the Village working on promos for his Capitol album *Coast to Coast*...At **Barry Diament Audio** in Riverdale, NY, **Barry Diament** mastered **Simply Red**'s new CD single, "You've Got It," for Elektra and remastered four CDs by **Hanoi Rocks**...**Gordon Gano** was at **Home Base Sound Studios** in New York working on **Violent Femmes**' new release for Warner Bros. **Warren Burliegh** engineered and produced...**A Tribe Called Quest** finished up their album for Jive/RCA at **Calliope Productions** in Manhattan. **Bob Power** and **Shane Faber** were at the console ...**TV Post** of NYC completed the sound recording for a 90-minute special for American Movie Classics entitled *John Ford's America*. **John Martin** engineered, and **Marino Amoruso** directed and produced the project...**Penny Lane Studios** in midtown Manhattan hosted a 24-piece orchestra to record the 30-second "horror movie" soundtrack for the U.S. Postal Service's dinosaur stamp promo...Also in NYC, Score Productions was at **Giant Sound** working on the music for a new TV game show, *Trump Card*. **Roger Rhodes** engineered and **Gary Anderson** produced...At **Eastside Sound** in NYC, **Bart Adams** and **Mitch Moses** worked on **Sandie Morgan**'s new single, "Your Love," for Select Records. Work was enhanced by the new Harrison Series Ten console and Quested monitor system (tuned by Roger Quested himself)...

NORTH CENTRAL

Motown Records artist **Ada Dyer** was at **Studio A** in Dearborn Heights, MI, laying down vocals for her next album, with **Eric Morgeson** producing and **John Jaszcz** engineering... **Souled American** was at **Chicago Trax Recording** tracking songs for their third album on Rough Trade Records. **Brian Deck** and **Jeff Hammond** engineered the project...Talking Heads keyboardist **Jerry Harrison** and his group **Casual Gods** recorded and produced a second album, *Walk on Water*, for Warner Bros./Sire Records. **Jay Mark** engineered the project at **A.D. Productions** in Milwaukee... While in Cleveland for the world premiere of his opera, *Holy Blood & Crescent Moon*, **Stewart Copeland** blocked time at **Audio Recording Studios** to mix his score for the upcoming **Emilio Estevez/Charlie Sheen** film, *Men at Work*. **Jeff Seitz** and **Bruce Gigax** handled the console and **Peter Carlstedt** and **Reed Wheeler** assisted... **Junior Walker** returned to **Brown & Brown Recording** in Portage, MI, to work on new material ...**Billy Engel** produced and engineered his first solo album, *Anything You Want*, for Talespin Records at **Maritz Communications** in St. Louis...Phonogram Records artist **Electribe 101** mixed at **Seagrape Recording Studios** in Chi-in Chicago. **Larry Heard** produced and **Mike Konopka** engineered...

NORTHWEST

At **Lawson Productions** in Seattle, engineer **Brett Eliason** worked with **Sir Mix Alot** in remixes for single release, and a four-song demo for **Whisky Fixx** with **Ted Pilot** and **Ed Archer** producing...Also in Seattle, engineer **Jay Follette** was busy working with folk artist **Linda Waterfall** at **Ironwood Studio**...At **Dave Wellhausen Studios** in San Francisco, **Field Trip** recorded their new album for Slash Records. **Bill Nolan** produced and **Gary Mankin** engineered...On her first solo endeavor apart from Legal Reins, bassist **Eden Unger** co-produced her debut EP with engineer **Oliver DiCicco**.

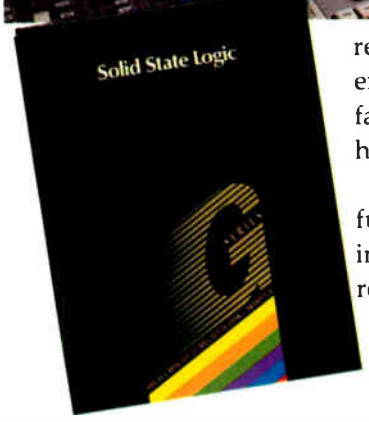
World Radio History

"No one will ever buy a console with a television in it"

Visitor to AES, 1977

It is hard to believe that a modest VDU could attract much attention. Today, even effects processors use visual displays. Why have they become so necessary?

Quite simply, the greater the number of functions in a system, the more flexibility there must be in showing its status. In the recording studio the central piece of creative hardware is the console. To unlock its full potential, Solid State Logic gave engineers digital control of its facilities. The VDU was a side effect of this plan.



In the intervening years our designs were enhanced, incorporating the suggestions of the many leading studios who had adopted our system. Ultimately, the G Series Master Studio System evolved.

G Series offers the fastest execution of complex commands by storing the entire operating program in 2Mbytes of on-board RAM. Its removable Data Cartridges preserve mobility of data, without the capacity limitations of floppy disks. Each cartridge holds 20Mbytes of removable RAM–the equivalent of 80 floppy disks.

Because G Series software represents over ten years of evolution in some of the busiest recording studios in the world, it incorporates an unparalleled degree of user experience. Advanced facilities like Selective Rollback and Group Set make mixing faster. Rapid comparison can be made between mixes. Large or complex mixes can be handled effortlessly on or off-line.

Throughout, SSL has preserved compatibility with earlier systems, creating a functional standard for the industry. By providing a realistic upgrade path, the investment of studio owners has also been protected. Most importantly, G Series remains at the forefront of audio production technology.

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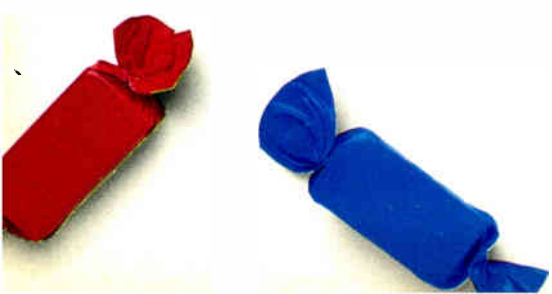

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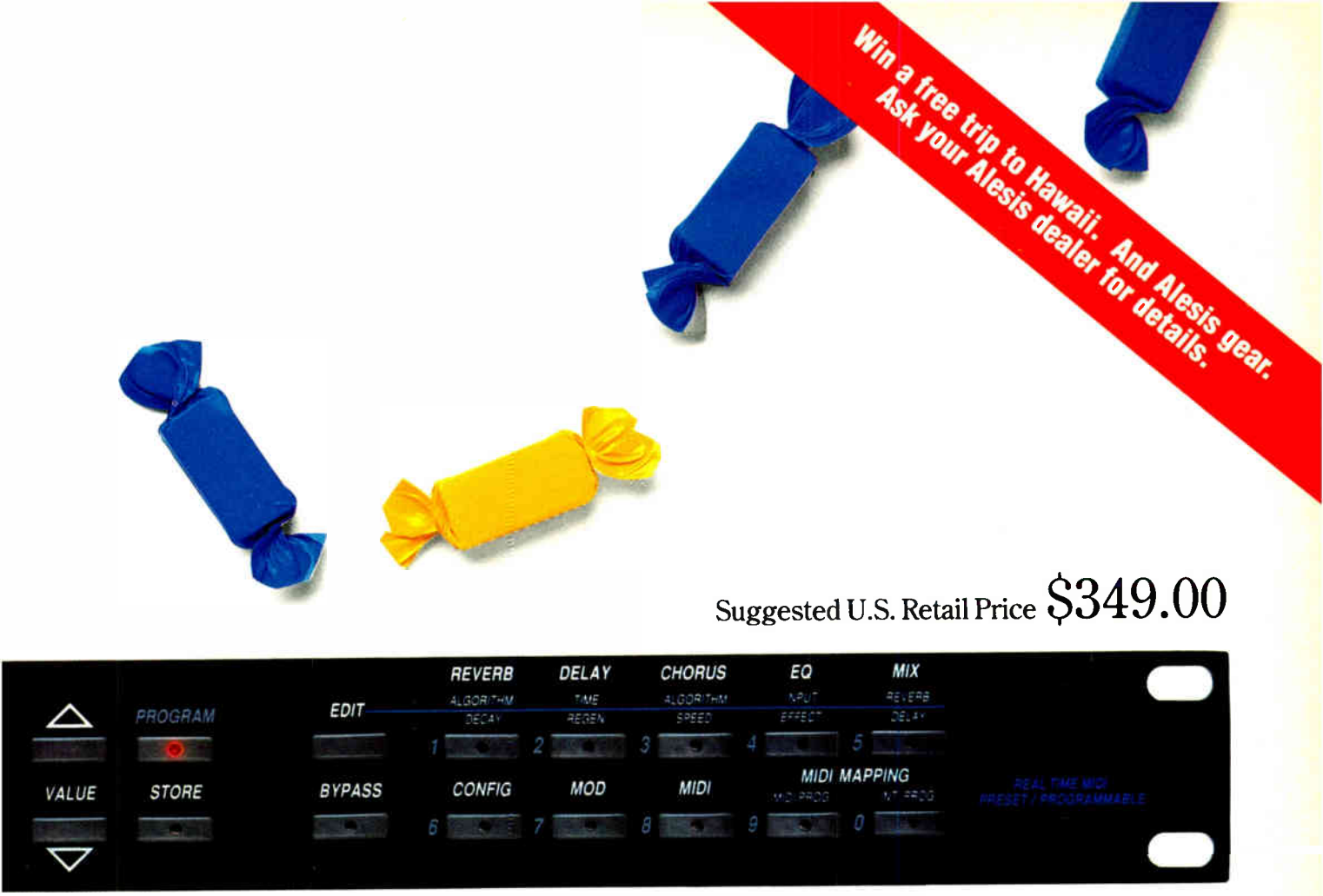

That's 200 programs in all: 100 of ours and 100 of yours.

15kHz bandwidth, real time MIDI control, and programmable reverb and delay levels complete the package.

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Shane Sponagle assisted on the sessions, which were recorded at Mobius Music in San Francisco... Stargate Studio in Carson City, NV, was the site for the completion of the new Mr. Buzzsaw rock album, produced by Lee Watters and engineered by Scott Peterson... Watters was also busy at Castle Rock in Lake Tahoe with guitarist Ian Cooper, cutting tracks for his upcoming record. Holly Sharpe was at the controls... At Sound & Vision Studios in San Francisco, artist/producers Michael Molenda and Neal Brighton recorded song demos for Rob Reiner's upcoming film of Stephen King's novel *Misery*. The duo prepared two songs, "Misery" and "Washed Away," to be considered for use under the final credits... Will Harvey mixed Dolby surround audio for a theatrical short, *Imagine*, at Sound Recording Organization in San Francisco. The 15-minute program is a lyrical look at the process of fostering creativity in children... The soundtrack for *The Money Tree*, an independent film, was recorded at Poolside Studios in San Francisco with engineer David E. Nelson. The score was composed by Lorin Richards Rowan...

SOUTHERN CALIFORNIA

The new age music team of Hans, Vladimir & Jakovich were at Chicago Soundworks in Universal City (formerly WEC Recording) tracking for their upcoming album with Darryl Coit at the controls... At Bernie Grundman Mastering in Hollywood, mastering engineer Brian Gardner completed new singles by Cheryl Lynn ("Whatever It Takes") and Janet Jackson ("Come Back to Me"), and Chris Bellman mastered Rickie Lee Jones' new LP, *Flying Cowboys*... Clark Datchler stopped by Lion Share Recording Studios in Los Angeles to record overdubs on his Virgin Records album. Humberto Gatica produced and engineered with assistance from Laura Livingston... Jimmy "J.J." Walker was at Paramount Recording Studios in Hollywood recording his debut album with producer Kurtis Blow. Mike Schlesinger handled the controls ... Chameleon Recording artists Precious Metal were at Galaxy Sound Studios working on their new album. Toby Wright handled engineering duties with assistance from Bill Zalin ... MCA artist Bernadette Cooper was at Skip Saylor Recording in L.A. cutting tracks for her next album with engineer Stephen Sheldon... At Genetic Music in North Hollywood, Jack Jones recorded "Give a Little Love," the theme for the annual Arthritis Research Institute National Telethon. Written and produced by Carol Connors and Paul Weston, the song was engineered and mixed by Richard Rosing... David Kershenbaum and Paul McKenna were at Scream Studios in Studio City recording and mixing albums for Marshall Crenshaw and Loey Nelson, both on Warner Bros. Records... Maurice White and Philip Bailey, along with the other members of Earth, Wind & Fire, recorded vocals and overdubs at Control Center Studios in Hollywood for an upcoming release on CBS Records. Frankie Blue and Les Pierce produced... Atlantic Records artist Stevie Nicks was at Summa Music Group mixing with producer Rupert Hine, engineer Tom Lord-Alge and assistant Lori "Fu" Fumar ... Ryuichi Sakamoto was at Larrabee Studios in Los Angeles producing his next album for Virgin Records. Engineer Carmen Rizzo mixed and overdubbed a couple of songs with assistance from Sylvia Massy... Executive producer Beau Hill brought Angry Anderson to Devonshire Studios in North Hollywood to record guitar overdubs. Mike Slaymer produced, Tom Fletcher engineered and Mike Bosley assisted... Bobby Vale recorded at Hit City West in L.A. for an album project to aid homeless children of the Philippines. Gloria Jones produced the sessions, with engineer Kevin "KVOC" O'Connor and assistant Karen Shellenberger... Jim Duncan and assistant Jeff Park were at Salty Dog Recording Studio in Van Nuys mixing the Bellamy Brothers for Westwood One. Other recent mixes include Restless Heart, Lyle Lovett and Hank Williams Jr. ... At Artisan Sound Recorders in Hollywood, engineer Greg Fulginiti mastered projects for Aerosmith for producer Bruce Fairbairn, Elton John for producer Chris Thomas, and Ann Wilson and Nancy Wilson for producer Richie Zito... A&M artist Randy Jackson remixed the single "Perpetrators" at Ameraycan Studios in North Hollywood with Cornelius Mims helping out in production, Conley Abrams engineering and Shuana Stobbe assisting... Music West Recording artist The Telling worked with producer Frosty Horton and engineer Paul Brown at Amigo Studios in North Hollywood. Pianist George Winston is featured on various tracks... Anita Baker was at Encore Studios in Burbank tracking her new album for Elektra with producer Michael Powell and engineer Barney Perkins. Milton Chan assisted...

SOUTHWEST

In Houston, Kellye Grey was at Sugar Hill Studios recording a jazz album for Justice Records, with Andy Bradley engineering and Randall Jamail producing... Debby Kay (Glen Campbell's daughter) began her recording career at Chaton Recordings in Scottsdale, AZ. Marie Ravenscroft was executive producer and Steven Escallier acted as producer/engineer... Wynton Marsalis stopped by Goodnight Dallas to record four original songs for an upcoming feature movie release. Members of Marsalis' touring group performed with him on the sessions and Ruben Ayala engineered ... Texas rockers Shock Tu went to Planet Dallas Studio between their shows with Bad English to work with engineer Rick Rooney... Engineer/producer Clarke Rigsby of Tempest Recording in Tempe, AZ, completed a live-to-digital recording of L.A.'s Monkey Meet for release in the near future ... The Austin report: at Cedar Creek Recording, The WayOuts, Bouffant and Jellyfish; at Mars, Bechtol and McBride, Bob Childers and Betty Elders; at VMD & D Studio, Little Miss Dangerous and Cattle Crossing...

SOUTHEAST

Suzy Bogguss went to Sound Emporium in Nashville to record overdubs for her Capitol album project, with Wendy Waldman producing and Dennis Richey engineering... Also in Nashville, Daniele Alexander mixed a project for PolyGram at Music Mill, with Harold Shedd producing and Jim Cotton, Joe Scaife and George Clinton engineering... TH Rodven Records artist Ricardo Montaner was at New River Studios in Fort Lauderdale, FL, mixing his LP. The record was produced by Pablo Manavello, engineered by Nucho Belomo and assisted by Jim Thomas... Marti Jones was at Reflection Sound Studios in Char-

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lotte, NC, working with producer **Don Dixon** and engineer **Mark Williams**. The RCA Records project features a host of session players, including **Bruce Hornsby** on piano and **Jamie Hoover** on guitars...CBS recording artists **Warrant** stopped by **Criteria Recording Studios** in Miami to work on demos for the follow-up to their platinum debut LP. **Bo Hill** produced with **Mike Couzzi** engineering. **Mike Spring** assisted...Newcomer **Brenda Carruthers** completed a four-song master for G.R. Productions at **Master Sound Studio** in Atlanta. The dual 24-track project was produced by **Auvil Gilchrist** and engineered by **Carlos Glover** and **Jeff Tomei**...Recent recording activity at **Airwave Production Studios** in Birmingham, AL, included **Jay Willoughby and the New Boys** cutting tracks for an upcoming release, with **Marc Phillips** co-producing and **Michael Panepento** engineering... **Lana Puckett** and **Kim Penson** finished a Christmas album entitled *Christmas Love* at **Wisteria Recording Studio** in Yorkstown, VA. Penson produced...**Dexter Haygood** started work on an album for the Gordy Company at **New Memphis Music** (in Memphis). **Nikos Lyras** produced...

STUDIO NEWS

Henninger Video in Arlington, VA, recently added the Lexicon Opus random access digital audio production center, and now offers all-digital production throughout the production stage. Wheaton, MD-based **Washington Professional Systems** was intimately involved in the project...**Encore Studios** in Burbank, CA, purchased SSL's SL 4000 G Series console with Total Recall™...**Flood Zone Studios** in Richmond, VA, installed a Trident 80B console and added a Steinway Model D concert grand piano ...**The Plant** in Sausalito, CA, opened **Boomtown**, a new 24-track media production studio, featuring a 36-input DDA AMR-24 console that can accommodate up to 84 inputs for remix, a Studer A80 MkII 24-track recorder and a Sony APR-5003 2-track recorder with center-track time code...There's a new studio in New York City—**Battery Studios**. Affiliated with London's Battery Studios and **Dream Hire** rental company, the studio features a 64-input SSL SL 4064 G Series console. ■

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THE DOOBIE BROTHERS
RODNEY MILLS
VERNON REID (LIVING COLOUR)
WALTER "BABYLOVE" AFANASIEFF
TONY LE MANS
HUEY LEWIS AND THE NEWS
JOE SATRIANI
STARSHIP
HANK WILLIAMS, JR.
MARK KELLER
JIM GAINES
JEFFREY COHEN
TODD RUNDGREN
WAYNE SHORTER
BOBBY WOMACK
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The Aphex Aural Exciter® is a *patented* audio process that will recreate and restore missing harmonics. When added, they restore *natural* brightness, clarity and presence, and actually extend audio bandwidth. All without adding any appreciable power to the signal.

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Other "brightness enhancers" only boost existing high frequencies, pumping as much as an additional 12dB, which can distort the amp or even blow your speakers... in addition to sounding unnatural. In fact, you could probably achieve the same effect more flexibly and economically by using any equalizer.

Don't be confused by hype. Listen to any device claiming to do what only an Aphex Aural Exciter does, then listen to the real thing. Your ears will hear the difference.

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World Radio History

by Ken C. Pohlmann and Guy DeFazio

L.A. Law & the Home Studio

Part 3

It's a dog-eat-dog world out there. The little dogs are eaten by the big dogs. Then the big dogs are eaten by the even bigger dogs. Finally, the biggest dogs are socked by an antitrust suit by the government.

The recording studio business works the same way. Owners, employees and clients are all caught in the revolving door of costs, regulation and taxes, each searching the other guy's pockets to make a nickel of profit from the deal. Meanwhile, your hard-working and dedicated elected officials are making things even more thorny by endlessly debating helpful legislation, such as whether consoles should be equipped with air bags.

One thing is for sure. When creativity, profit and government collide, the aftermath is awful to behold. The latest collision involves the debate over home studios and whether they represent unfair competition to legitimate studios. As we've seen in previous columns, issues such as zoning, permits, licensing, taxation and labor law all pertain and must be considered when deciding whether a studio

ILLUSTRATION: ERIC JOYNER

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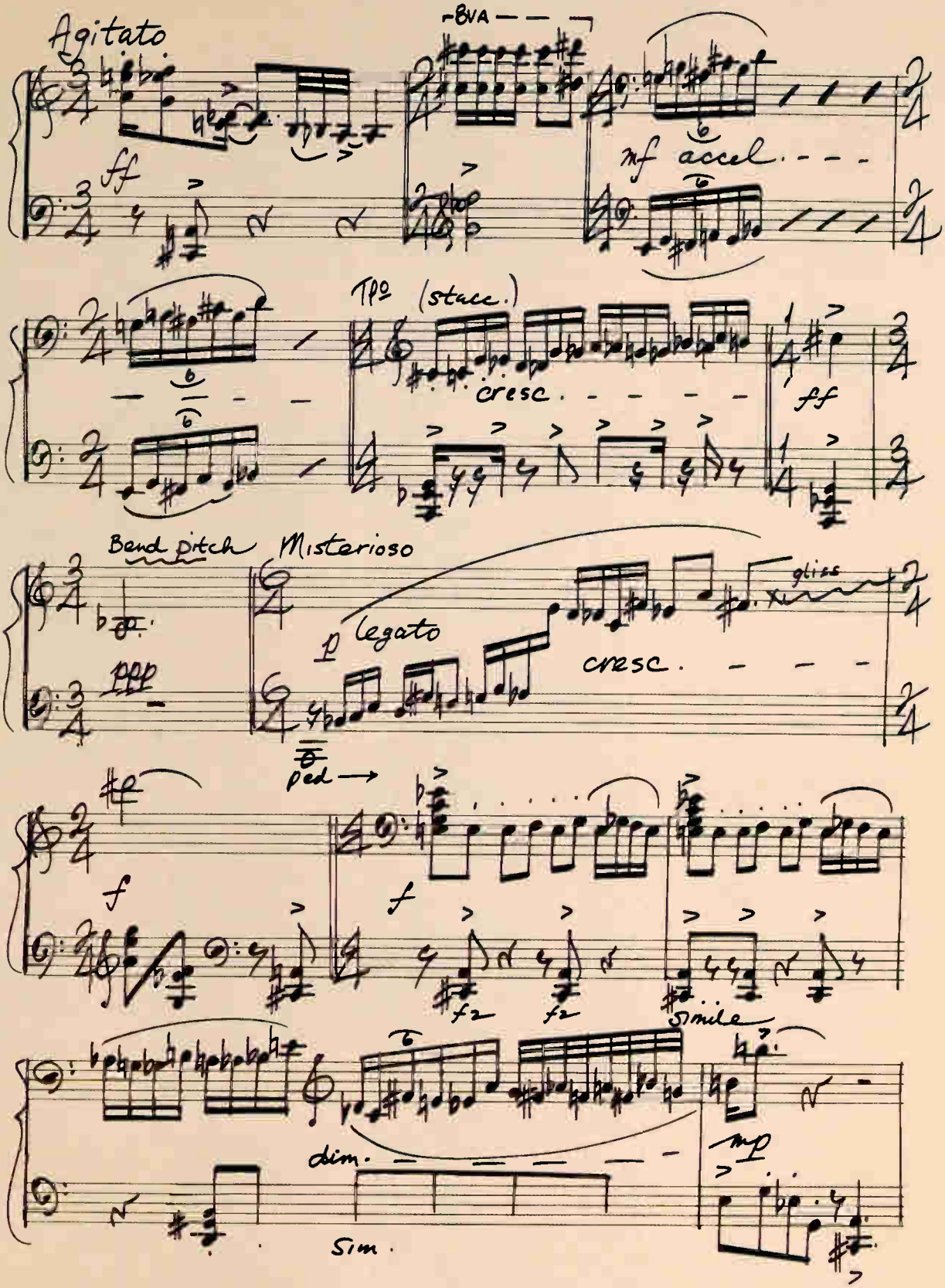
The better you read this page, the more you'll appreciate our new keyboard.



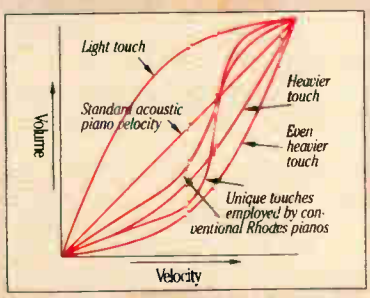
World Radio History

Ditto.

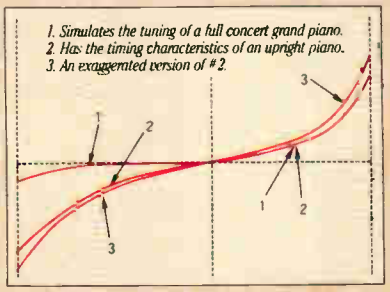
If you want to read the other side first, go right ahead. You're exactly the kind of person we're looking for, so we're more than happy to wait for you.

Now that you're back, get ready to find out all about the new Rhodes MK-80. Or as we like to think of it, your next keyboard.

What makes us so confident that you're going to want this keyboard? Two things, really. The fact that our ingenious stretch tuning method accurately duplicates the inharmonicity of an acoustical piano. And the equally remarkable fact that our Advanced Structured Adaptive synthesis actually allows you to modify the harmonic content of your sounds.



It's one thing for a keyboard to have a nice feel. It's quite another for a keyboard to have six, all of which can be stored as parameters in the user memory.



These are the stretched tuning curves that give the new Rhodes its unique sound. If you want to find out hour they work, read the ad.

Either one of those is quite a technological breakthrough. Together, they're only slightly less impressive than cold-fusion.

The MK-80 comes standard with perfected digital versions of the sounds Harold Rhodes himself pursued as "ideal": The classic tone, with its thick sustain and sharp attack; a modified sound with a higher harmonic content; a blended sound that's a combination of the first two; and a contemporary sound with bell-like qualities of synthesizer-based Rhodes sounds. Add to those four other extraordinary sounds — concert grand piano, electric grand piano, clavi, and vibraphone — and you've got an instrument that's ideal for performing.

As extraordinary as these sounds are, however, you may only want to use them as starting points. Which is fine. The MK-80 is equipped with chorus, phaser, and tremolo, as well as a three-band equalizer with parametric mid-range for advanced tonal adjustments. You can even edit the harmonics of the tones using a Macro Edit function on the ASA Operator level. And an Auto-Bend parameter allows you to apply a velocity-sensitive pitch envelope to your sounds.

What this means is that you can create all the legendary Rhodes sounds of the past 20 years, as well as new sounds you never imagined possible.

Then, once you've sculpted the sound you want, you can save it, along with 55 of its comrades, in the user memory. With variations on everything from Macro Edit, parameter settings and effects on/off switching to MIDI messages.

As if that weren't enough, the MK-80 is also a formidable MIDI controller.

There's plenty more. For example, we didn't even begin to tell you about the smaller, yet equally impressive, MK-60. (Just to whet your appetite: We packed many of the same features into a 64-note keyboard that uses an octave shift to play the complete 88-note range.)

But since you've read this far, it's fair to assume that you're interested in seeing the new Rhodes firsthand. In fact, you're no doubt already wondering who in their right mind is going to take your old keyboard off your hands.

Probably someone who wasn't lucky enough to read this ad.

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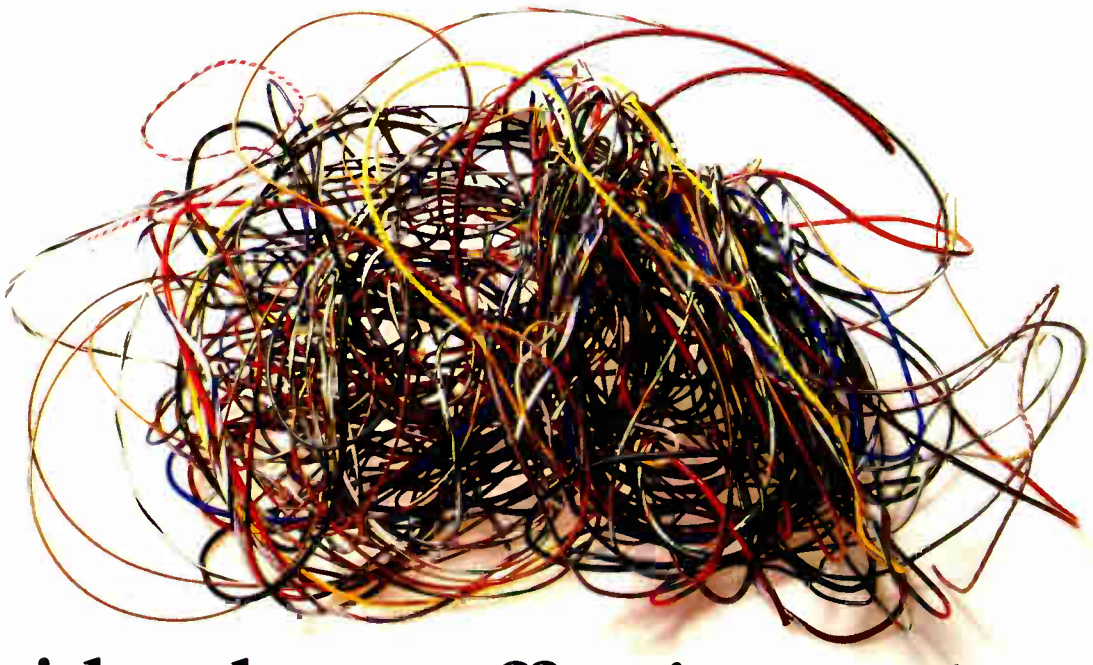

with a hot coffee in one hand.

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World Radio History

is within the letter of the law. This month, let's conclude our discussion with issues such as employee compensation, insurance, another look at zoning, and HARP and Homeworker's position in the home studio controversy. As before, we'll use laws and regulations applicable in Los Angeles as our model.

The Industrial Welfare Commission (IWC) adopted industry and occupation orders in 1980 that cover most employers and employees in California. The orders set minimum wages, regulate hours and establish working conditions. In California, state wage

Home Occupations Ordinance

The City of Los Angeles Home Occupations Ordinance proposal, when approved, will define a set of operational standards designed to regulate home occupations in the Los Angeles area. The proposed ordinance is an attempt by local zoning officials to accommodate the variety of home-based work, so that there is enough flexibility to adapt to technological advances in the modern workplace.

Affordable technologies are enabling adventurous entrepreneurs to operate sophisticated audio production environments in their homes. Because of the rapid increase in the number and size of home studios, their impact on the surrounding community has become an issue of concern for local zoning officials. Although it is not likely that home studios will replace commercial studios, their numbers will increase, creating concern among studio owners operating facilities in commercial areas. Commercial recording studios argue that allowing home studios to operate commercially would be economic discrimination. These employers claim that they, too, would be able to contain costs if they could work out of their homes.

The primary concern of the framers of the Home Occupations Ordinance is to maintain the character and quality of the surrounding neighborhood in which a home occupation operates. Neighborhood life, especially in exclusive, residential areas, is seen by most as a retreat from the working world. The last thing that some residents want is a business on the block—especially if the business is going to generate traffic, parking problems, noise, excessive use of public utilities, or an alteration of the residential appearance of the premises.

Some of the issues that must be considered in designing a home occupations ordinance that successfully accommodates the operation of home recording studios are: What type of short- or long-term impact could a recording studio have on a neighborhood? Can a home studio business be compatible with the neighborhood? What operational standards must be included to effectively regulate home recording studios? Can a zoning ordinance that restricts commercial home studios be flexible enough to accommodate personal-use home studios? There are economic and social impact arguments on both sides of the home occupations issue, but the bottom-line concern of the zoning ordinance is neighborhood impact.

By way of its zoning power, local government has the authority to prohibit entirely all business enterprises from operating in residential districts. In fact, courts have consistently prohibited home occupations when commercial activity became the dominant use of the dwelling. Some communities limit the amount of floor space that can be used for the home occupation, limit the number of non-resident employees, or limit the storage and/or sale of merchandise on the premises.

A national survey of nearly 600 home occupation ordinances found that the ordinances typically contain: a definition of home occupations; the history preceding the ordinance enactment or amendment; an intent and purpose statement describing why home occupations were being regulated in the community; a listing of permitted and prohibited home occupations; a set of performance standards that home occupations must meet; a statement of review procedures applied to home occupations; and enforcement procedures.

The Los Angeles Home Occupations Ordinance is attempting to combine historically effective policies, from existing ordinances, with criteria designed to ensure the compatibility of home occupations in today's (and tomorrow's) technologically driven workplace.

A survey conducted by AT&T found that approximately 23 million Americans produce some work out of their homes. Fifty-six percent of the survey's respondents reported that they do some home-based work related to their main employment outside the home (e.g., in an office). Those working strictly at home are estimated at 10 to 12 million (10.5% of the total work force) — a figure very close to that reported by the U.S. Chamber of Commerce, but almost 8 million more than the U.S. Census Bureau reported in 1980.

These figures indicate an amazing change in the way Americans work, or at least where they work. While the home studio issue has raised a great deal of controversy and publicity within the audio industry, it is still only a small part of the larger home occupations issue. Concerned members of the Los Angeles audio community who wish to see that appropriate consideration is given to home recording studios during the planning of the Los Angeles Home Occupations Ordinance can send their proposals to local zoning administrators. They may also voice their opinions directly during the public hearings, which will be held as part of the normal municipal ordinance process.

Home recording studios can operate legally, competitively and fairly under the conditions of a home occupations ordinance that provides the proper guidance for both administrators and home-based workers. *Mix* will be keeping its readers informed on the progress of the L.A. Home Occupations Ordinance and of the dates and times of public hearings concerning this "hot" topic.

—Guy DeFazio

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and hour rules always take precedence over federal wage and hour rules.

IWC rules covering working hours and overtime state that an employer must pay adult workers at their regular wage rates for the first eight hours in each working day up to 40 hours per week. Any work over eight hours in a day must be paid at one-and-a-half times the employee's regular pay for hours nine through 12. All hours worked beyond the first 12 hours must be paid at double the employee's regular pay. Employers are permitted to schedule four ten-hour work days in a week in specific circumstances, causing overtime to be calculated differently. No employee subject to IWC regulations can be terminated or otherwise disciplined for refusing to work more than 72 hours in one work week, except in an emergency.

IWC regulations can become quite complex for the employer who must schedule employees during weekends and holidays or assign work hours other than 8 a.m. to 4 p.m. The basic rule is simple: The employer must pay straight time for eight hours or less per day, or 40 hours or less per week. Once the employee exceeds the limits, the law requires overtime pay. The Division of Labor Standards Enforcement is the state agency that interprets this law outside of the courts.

California provides unemployment compensation benefits to reduce the impact of economic fluctuations and subsidize the purchasing power of the unemployed. The Employment Development Department (EDD) administers all unemployment insurance programs, including tax matters. All employers are responsible for paying unemployment insurance taxes. In any calendar year an employer must pay an unemployment tax to the Unemployment Fund on the first $7,000 of each employee's wages. Also, every employer must pay into the Employment Training Fund at a rate equal to 0.1% of wages. If an employer becomes delinquent to the state in the payment of unemployment insurance tax, or penalties and interest, EDD is empowered to collect the delinquency.

The California constitution requires that all employers provide (some form of) worker's compensation insurance to protect the general welfare of employees and their families. Worker's

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The power transistors used in all Bryston amplifiers are 100% tested for safe operating area, both before and after installation in the circuit. They are then taken to a "burn-in" table where they are given a capacitor load, a square-wave input signal, and set at slightly under clipping for a period of 100 hours. During this time. the input signal is cycled three hours on to one hour off, to exert additional thermal stress.

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compensation basically limits the liability on employers for employment-related injuries. In exchange, employees and their dependents relinquish the right to sue for potentially greater damages arising from employer negligence. Employers must provide for payment of potential worker's compensation claims. The Labor Code requires employers to either carry authorized worker's compensation insurance or become self-insured under a certificate from the Director of Industrial Relations. Employers who fail to provide worker's compensation insurance will be served a stop order by the Director that prohibits the use of employee labor until the employer complies. Employers who fail to provide security against compensation liability expose themselves to suit by the injured employee or his/her dependents.

The California Insurance Code requires that household insurance policies, known as comprehensive personal liability, include coverage for domestic employees, but this coverage does not apply to persons employed by the insured's business. It is advisable for anyone operating a commercial recording studio to retain and meet with an insurance consultant regarding fire, accident, liability, theft and other types of commercial insurance.

Caught in the midst of the home studio/home business issue are the local planning and zoning officials who are attempting diligently to amend, while at the same time enforce, outdated municipal codes. In Los Angeles the allowance of greater business use in the home is a particularly attractive proposition. The city's motivation is driven (pun intended) by an overwhelming need to cut down on traffic and air pollution. The impact of liberalized residential zoning restrictions is being studied closely to ensure that commercial facilities do not adversely affect the character or quality of the neighborhoods in which they operate. Any zoning amendments will need to be flexible, yet clearly defined, so as to conform to the requirements of all the organizations involved in this complicated issue.

The Los Angeles Office of Zoning Administration is currently formulating a "Home Occupations Ordinance," which addresses operational standards for home occupations. The preliminary draft of the ordinance introduces the need for setting up performance standards for home business operation, instead of the current yes/no use categories of the zoning codes. The proposal recommends that amendments be made to uses permitted by right and not through a variance. The proposed operational criteria will apply to every home business in Los Angeles. Approval of a citywide issue such as this is obtained only after the proposal has been presented to the public, through organized public hearings, and reviewed by several agencies of the city government. Public hearings are held during the time the proposal travels through the normal channels of municipal bureaucracy from Zoning Administration to City Council. The proposal is open to amendment or revision at any time during that process.

In an effort to aid local officials in their attempts to reform zoning codes, a group of independent producers and freelance writers formed Homeworkers. The local Homeowners Association is also actively involved and may ultimately be assisting in the regulation of the proposed standards. Regular readers of this column are already aware of The Hollywood Association of Recording Professionals, a group equally concerned about the rezoning controversy, which is acting as liaison between professional recording studios.

HARP is a California non-profit corporation whose membership includes large and small commercial recording studios in Los Angeles County. HARP's formation in April 1989 coincided with the inception of the home studio issue. Their staunch support for the actions of local zoning officials (closing illegally operated home studios) brought on the majority of the rebuttal from home studio owners. Shortly after HARP stated its position, SPARS released an official statement strongly advising all members of the recording community to conform to federal, state and local ordinances and regulations. SPARS' support of HARP's stance on the home studio issue strengthened HARP's already secure position as an organization representing the interests of the entire recording industry.

The home studio issue has introduced a national controversy that is challenging the American system of free enterprise by creating a need for government intervention into home business zoning laws. It also brings to light an obvious dichotomy between the federal government, which encourages home business by offering extensive tax deductions for home business use, and local zoning offices, which place prohibitive restrictions on that same home business. In the recording industry, the overhead incurred by observing all of the applicable business and zoning laws and regulations plays a significant role in the setting of industry-standard rates for studio time. A continuing, unregulated violation of the American ideal of fair competition would eventually jeopardize the entire professional recording community. SPARS, representing the national recording industry, and HARP, representing the interests of the major recording market of Los Angeles, have both stated their commitment to fair competition and free enterprise within the industry.

In the meantime, every studio client must decide whether a commercial or home studio best serves their needs. Surely, home studios are ideal for many types of recording projects. Low rates, informal setting, flexible booking arrangements, proximity and many other factors may help your project proceed smoothly and at reduced cost.

Now, consider the possibility of a home studio being shut down because of tax or labor law violations, and picture your master tapes sitting in the studio's tape vault—sealed by investigators until the state sorts everything out. Ask yourself, how long does oxide last before it crumbles into dust?

One thing is certain. When you choose a studio, you cast a vote either for or against home studios, and you help determine the future economic condition of the recording studio business.

[A final note: The authors take no responsibility for the accuracy of the information described in this article. Owners should consult professional tax advisers, local and state agencies, and other services for specific advice. The authors are, after all, just working out of their homes.] ■

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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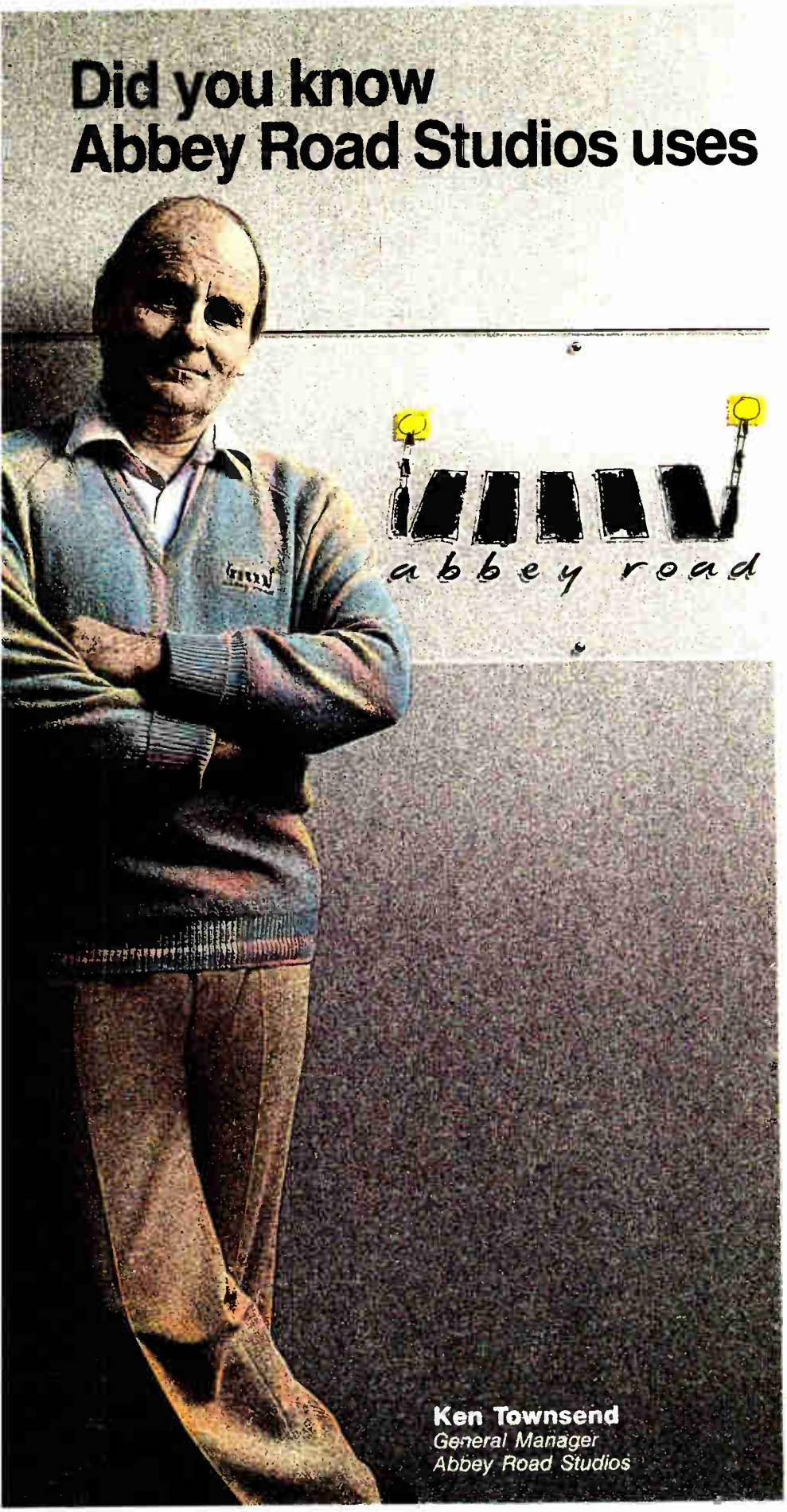

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by Stephen St. Croix

AES CONVENTION
HIT OR MYTH?

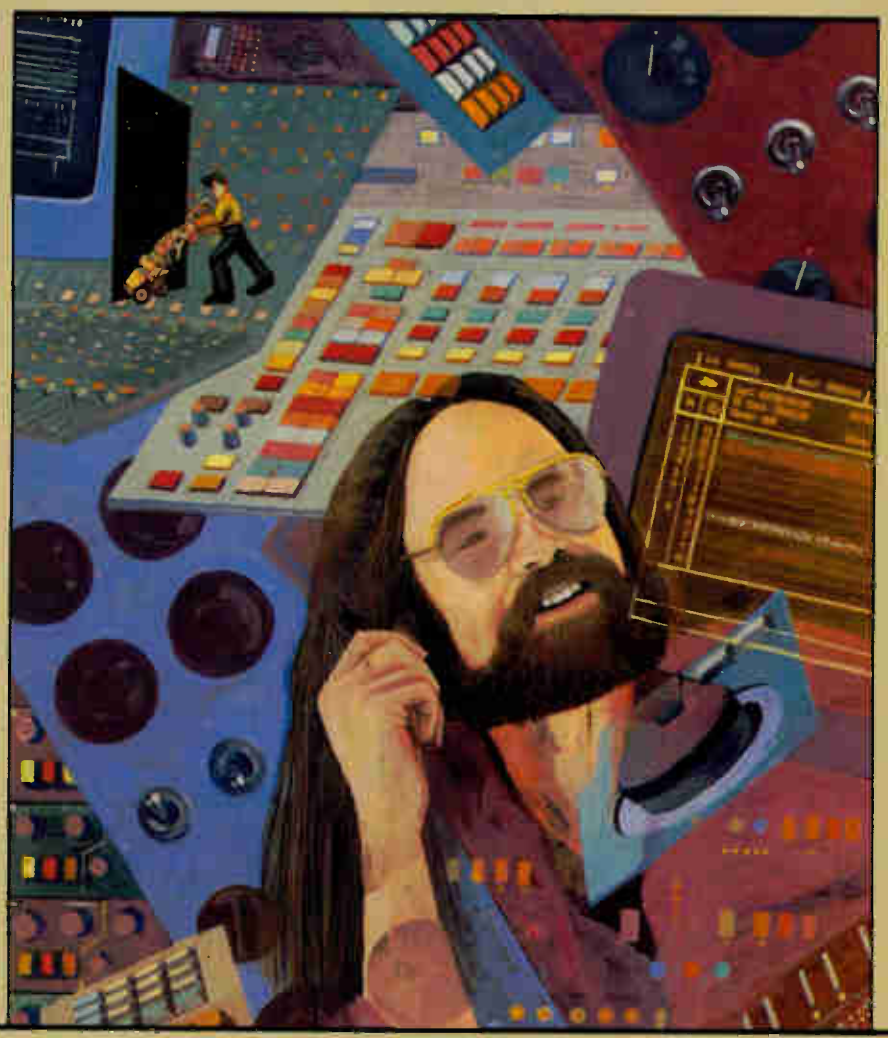
I went to the AES Convention in New York last October. Obviously, a lot of you did too. In fact, I go to *every* AES, and I usually don't have very much to say about them. This time I do.

I see these shows through the eyes of a manufacturer—we show there. I also see it as the targeted end-user, as I operate a 40-track studio. I see it as a *Mix* editor, as a technically interested guy and as a player. The player part is important, because it is that filter which often kills my interest in products that look promising initially, but were designed by engineers with zero real-world musical application experience. This means they are not cooperative when you attempt to use them to make or edit music. Oh, well.

Here are the events that led to the development of the official attitude I took to the show:

I worked the traditional 30 days of pre-show crunch that most exhibitors with new products are obliged to go through. That's 30 days, eight days a week, 45 hours a day. Then, after four hours of simultaneously packing equipment and writing code, we got

—CONTINUED ON PAGE 178



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World Radio History

by Mel Lambert

COMMUNICATIONS IN THE STUDIO

PART ONE: MUSICAL EMPATHY

For those of us involved in recording and producing commercial audio, knowing how the gleaming hardware works is only part of the story. A more-than-passing acquaintance with the topographies of a production console, tape machine and outboard signal-processing rack will stand you in good stead, but without those all-essential, interpersonal skills, technical dexterity at the faders and buttons will be for naught.

So, in the next three "Juxtapositions" columns I'll consider the ways in which we can maximize the creative interplay between sound people in the studio or in a live-performance situation. This first installment highlights the specific needs of musicians. Part 2 will highlight engineers and technical staff; Part 3 will target producers and the pivotal role they play in initiating and corralling the creative and technical processes.

There are various approaches that I could take in presenting this mate-

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Getting MIDI under control

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The MRC MIDI Remote Controller is a powerful and efficient tool for control and data input with virtually any hardware or software-based sequencing environment.

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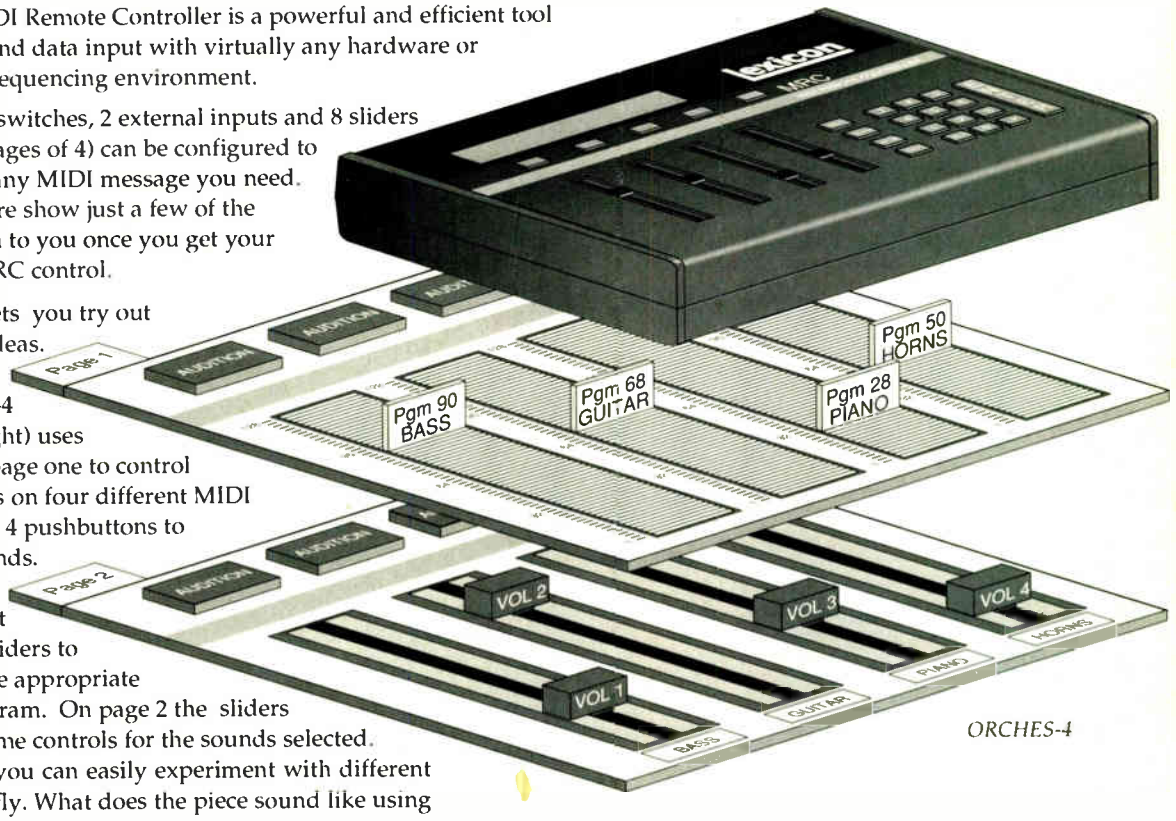
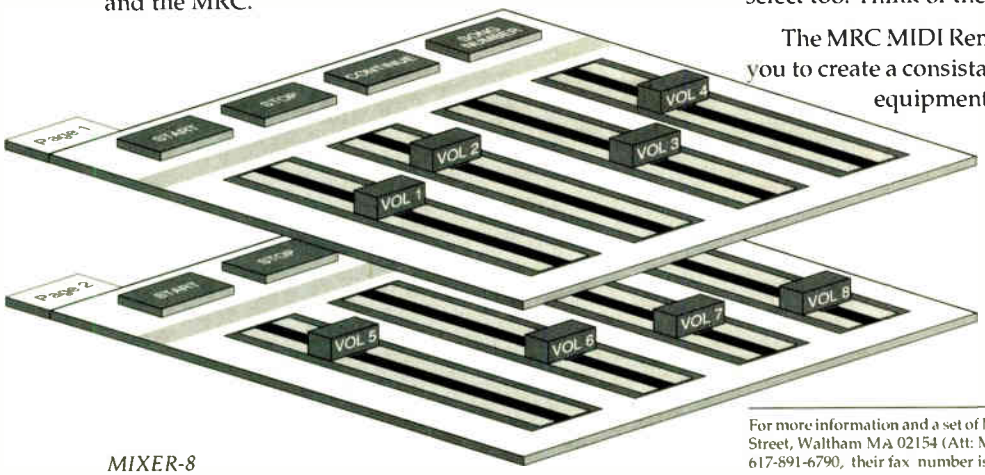
Sequencing lets you try out many different ideas. An MRC preset called ORCHES-4 (shown to the right) uses the 4 sliders on page one to control program changes on four different MIDI channels and the 4 pushbuttons to audition the sounds. Select any voicing you want by moving the sliders to correspond to the appropriate synthesizer program. On page 2 the sliders are used as volume controls for the sounds selected. With this setup you can easily experiment with different voicings on-the-fly. What does the piece sound like using steel drums in place of pizzicato cellos? It could be great!



ORCHES-4

Another useful setup included in MRC V3.0 software is MIXER-8 (shown below). It uses both pages of sliders to control 8 MIDI volumes. The 4 pushbuttons are assigned to Stop, Start, Continue and note C4 (on ch1). Automated mixing can easily be accomplished with your sequencer and the MRC.



MIXER-8

Did you ever want to cross fade one sound into another? Its easy, you can even assign it to one fader. Grouping — no problem – up to four controls can be slaved together. Mutes — once again, easily accomplished with the MRC. You can have remote Start, Stop, Continue and Song Number select too. Think of the possibilities!

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For more information and a set of MRC application notes, contact Lexicon at 100 Beaver Street, Waltham MA 02154 (Att: MRC application notes). Their phone number is 617-891-6790, their fax number is 617-891-0340.

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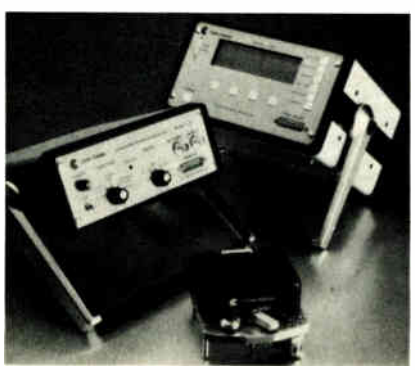

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rial. I have decided to consider the complementary focus that each of these three players brings to the synergistic process of making music. In conventional terms, the musician or artist creates the performance; the engineering staff captures it on tape or delivers the audio to its intended audience; and the producer invariably acts as the catalyst and ultimate mediator in the creative endeavor.

Remember, however, that these roles are not hard-fast and inflexible. With today's MIDI-based sequencers and keyboards, the music creator often serves as the recording engineer; a remix engineer can be as artistically creative as a performing artist. With the continuing trend toward self-production, more people are coming to terms with the holistic approach to recording required when we initiate, develop and complete a "solo" recording or live-performance project.

But we need to start somewhere, so I'll address most of my comments to the archetypical *Mix* reader—a staff or self-employed engineer or engineer/producer familiar with the technical process of recording and producing sound. Against this background, let's examine the specific needs of musicians and the ways we can enhance the creative process by developing a synergistic atmosphere in the studio or on stage.

STARTING THE SESSION

Before you begin a session or live date, be prepared for anything! Determine the instrumentation to be used on the production and the size of the group or ensemble. If it's a new studio or venue, try to determine ahead of time what the acoustics are like and what additional parameters—such as ambience miking, vocal booths and alternate spaces for sections—might affect the recording or mixing process.

As the session or rehearsal begins, leave it up to the primary producer—if that person is not you—to liaise with the band or performers. Even if the project involves seasoned musicians, all of us need time to become adjusted to a new situation, so ensure that you diplomatically make your presence known.

ESTABLISHING YOUR IDENTITY

When the time comes to ease yourself closer to the center of things, let there be no doubts about who you are and the role you play. Even if you are acting as second engineer or cable assistant, introduce yourself and make sure everyone involved understands why you are there.

Show by example that you are there as a part of a cooperative team, and that there also are certain protocols. If you are the session engineer or running the house board, the band or performers should work through you, rather than expect a second or assistant to act directly on their instructions. As the session progresses, however, it might work out that way, so ensure that everyone is aware of an informal "chain of command," which person in the control room (or technical nerve center) is the session focus, and who (initially) delegates support functions to assistants.

—CONTINUED ON NEXT PAGE

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World Radio History

–FROM PAGE 33

SESSION DIPLOMACY

It helps enormously if from the get-go you take the time to learn everybody's name. If you're working with a large orchestral section or hastily assembled pickup band, this may not be possible, but you can at least identify the primary leaders and address them by their first names.

Once the session begins to kick into higher gear, avoid excessive use of the talkback or intercom systems. Nothing hangs up everyone faster than a relentless barrage of questions, time-outs and general banter from the console to the studio or stage area. If things are going so badly that constant communication seems necessary, go into the area or delegate a trusted assistant to work closer with the band to head off some of the problems at the source.

While you should be prepared to answer technical questions, remember that a growing number of musicians have access to some sort of home-recording or performance hardware, and always are looking for help and ideas. Nevertheless, a detailed explanation of the console's moving fader automation system or the pros and cons of one DAT machine vs. another might be more appropriate after the session has ended, on *your* time, rather than during the session.

PERSONAL OPINIONS

Be sympathetic to the creative process and resist the temptation to speak out too early. By keeping your opinions to yourself, you can determine whether active involvement is appropriate and who likes to hear opinions. If you are musically competent, your input may or may not be welcome; it is wise to proceed diplomatically rather than simply barge in with an opinion.

A COLLECTIVE EFFORT

Try to keep everybody informed about what is happening from minute to minute and why the proceedings might have come to a temporary creative halt. During breaks, remember that working on the other end of a pair of headphones or monitor speakers often means that a musician feels cut off from the technical side of things, so maintain a succinct, accurate, running commentary. Don't lie or make up excuses, however. If the producer wants another take or run-through, and the band or soloist looks fit to mutiny, don't side with anybody, just for the sake of peace.

Creativity, on both sides of the figurative "glass," should be a seamless transfer of musical expression from studio or stage to the attentive audience. The engineer's role is to capture that sonic performance and transfer it to a medium capable of carrying the audio information to the listener's ears. In Part 2, I'll consider the complementary needs in the studio of the technical staff and how they are sometimes in oblique regard to the creative disciplines. Stay tuned. ■

With more than 12 years of active involvement with pro audio on both sides of the Atlantic, Mel Lambert heads Media&Marketing, a high-tech consulting and marketing service for pro audio businesses.

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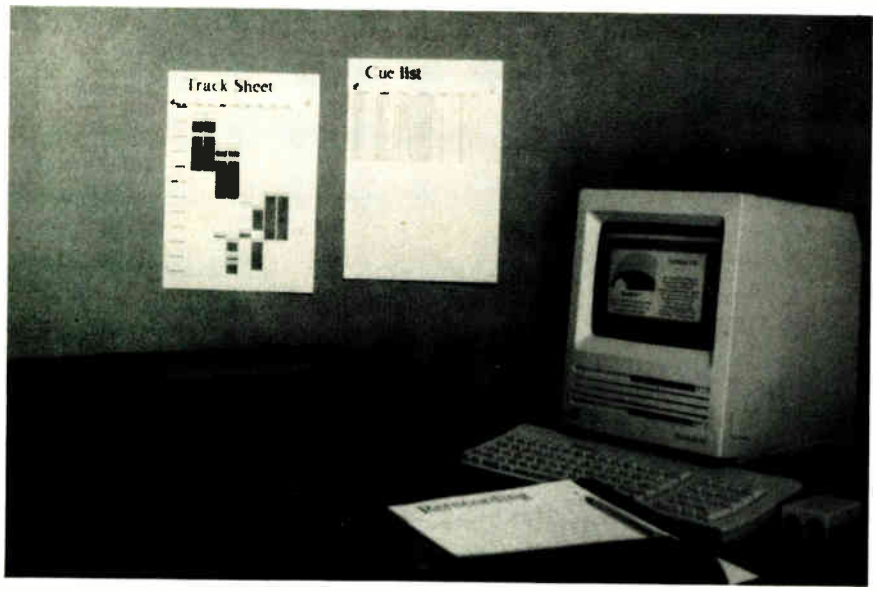

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That Ol' Black Magic

PHOTO: RICHARD CASH

TIPS & TECHNIQUES

FOR RECORDING ACOUSTIC INSTRUMENTS

by Linda Jacobson

In bygone days, the young studio employee learned the recording ropes by spending hour upon hour setting up mics and routing cables. Through trial and tribulation this sorcerer's apprentice discovered how to ferret out the "right" blend of mic selection and placement and outboard effects. That every instrument and voice was different and required a different approach to getting it on tape was Lesson #1 (actually, Lesson #2; Lesson #1 involved commitment to memory of the chief engineer's preferred pizza toppings).

The art of recording acoustic instruments is a long way from being lost, and as many of you tell us, it's enjoying a revival. For those of you who came of engineering age in the '80s, and those who spend more time deciphering MIDI slop than choosing and placing mics, and even those who've been around the block a few times and want to compare notes with other accomplished sorcerers, this one's for you. After all, you never know when you might find yourself in the studio with a recalcitrant clavichord, melody-carrying mandolin or even Bobby McFerrin.

Quest: Record mandolin in a bluegrass band's live studio session.

Bruce Kaphan engineering at the Music Annex Recording Studios in Menlo Park, California

Sorcerer: Ed Brooks, engineer at Steve Lawson Productions, Seattle.

Magic Potion: "I've done lot of work with the band Marley's Ghost, which plays on the bluegrass circuit and is making big waves locally. We're working on their third CD release and we like to cut live when we can. People in bands that do acoustic music generally like to play together when they record, and they tend to be very conscious about their instrument sounding large and kind of thick. So I like tube microphones or the new transformerless-type condensers, specifically Neumann TLM170s, for mandolins, fiddles and dobros. The mic is very fast without having a transformer, so you get attack and presence without having to add high end.

"A mandolin doesn't have a large soundhole that resonates in the middle of it, and it's a very bright instrument with a lot of attack and a tiny

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little fingerboard—acoustic players don't want to hear finger noise; they think it sounds sloppy. So I place the mic a bit behind the bridge, just behind the player's hand, kind of low and aimed up toward the bridge, for a thinner pattern. It makes it sound bigger and thicker. A mandolin's resonance is high and it kind of rings, so that positioning picks it up well and takes out a lot of pick and finger noise. Then I'll twist the players' bodies a bit, 20 degrees off a straight line to eliminate as much bleed as possible. I ask them to move their bodies rather than going out there to move microphones.

"A mandolin is quite often used as the backbeat in this kind of music; so if you give the player a meaty sound and they're playing a chunk pattern with little bits of fills, they can feel like they're laying into it and really carving up a big groove. It just makes them play better."

Quest: Record 12-string and steel-body blues guitar, without letting the artist—John Lee Hooker—know you're there.

Sorcerer: Sam Lehmer, engineer at Russian Hill Recording, San Francisco.

The Secret: "We recently finished John Lee Hooker's album *The Healer*, which is mainly acoustic guitar and was produced by Bay Area-based blues guitarist Roy Rogers, who paired John Lee with a variety of blues greats. John Lee doesn't like to spend a lot of time in the studio, so I had to be prepared. I had to have the mics set up before he got here, which I try to do anyway, have them on the stands and ready to go.

"Roy wanted John Lee to return to the simplicity of his older roots, while still benefiting from modern recording technology. John Lee was real excited to perform on 12-string acoustic and on Roy's steel-body National. Basically, my job was to let John Lee feel comfortable in the studio and stay out of the way while trying to capture his performance. I tried to not go out and move the mics a lot, so I just put up what I generally like to use.

"The mic I favor most for guitar is an old tube Neumann, the KM253 small-diaphragm, omni condenser. It's like the KM84 except in a tube version. I placed one near the neck of the 12-string and one near the body, sort of in the lower corner. If you put the mic right over the soundhole, you get a lot of boom, so to get a nice stereo spread it works to put one up near the neck and one pointing down low, pointing straight in at the soundboard.

"For the steel body I used a big-diaphragm AKG tube and went for a warm sound. Roy told me what he wanted John to play and left. I basically didn't want John to feel like he

Banquet Sound Studios in Santa Rosa, California

was being pressured to sit or play a certain way—that goes against the whole blues thing. I think acoustic instruments are some of the most enjoyable things to record, and I tried to get a good realistic sound that worked well in the context of the overall recording."

Quest: To combine acoustic and synthesized material in a movie score in such a way that the synthetic sounds like the natural—without benefit of a full-blown mixing console.

Sorcerer: Danny Kopelson, longtime Fantasy Studios staff engineer, on an orchestral project called "The Prince" (first of a six-part PBS documentary series using Baroque pieces for the narrative), with composer Mark Adler.

The Spell: "Mark Adler had developed the orchestration through synthesizers and played all the parts on synthesizers, but the client requested an authentic-sounding period piece. This meant that synthesizers couldn't be noticed at all in producing and mixing the material.

"Mark did a mock-up with synthesizer first, because he needed a final blueprint of the piece to be able to write it correctly and score it with SMPTE. So we did that initially, then recorded the real instruments acoustically. We recorded a brass quintet at Lucasfilm's Skywalker Ranch, which Mark chose for its large room and its natural, Renaissance-like acoustic properties.

"For the acoustic recording I used several room mics in addition to kind of near/mid-miking; there was no close-miking except on a tuba. We used a stereo Neumann U69, two C-12s, the classic RCA D-77 and two Neumann 67s.

"The control room wasn't finished at that point and didn't have a console for recording. [It now has a Neve V 60 with GML automation.] I simply went from the mic preamps to the tape machine, Otari 24-track Dolby SR.

Spectrum Sound Studios of Portland was designed by Russ Berger of the Joiner-Rose Group. The 38 x 30-foot Studio A is extremely live and ultra-quiet, with a noise level of NC-8, making it ideal for acoustic recording. The facility recently hosted The Kicks Band, an 18-piece brass jazz group on the Monster Music label. The control room pictured here features an SSL 6056E 40 x 32 console with Total Recall. Two Otari MTR-90 24-track recorders, a Mitsubishi X-86a digital 2-track and a Hybrid Arts ADAP I workstation store the sounds.

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kind of thin, because their low-end pickup is not that great unless you mount them on a large surface. So I added a third mic, a large-diaphragm condenser mic like an AKG 414 or Neumann U87. Using either a cardioid or omni pattern for that third mic, I could pick up all the low-frequency aspects of these instruments. I placed it a couple of feet back from the whole group of instruments. Between the two PZMs overhead and the one more non-directional, low-frequency condenser pickup, I got all the instruments in a stereo perspective. The recording had the full frequency range and the widest stereo you could imagine."

Quest: Record acoustic guitar.

Sorcerer: Rick Henry, chief engineer at R.O. Recording Studios, Concord, California.

Bewitchment: "This works really well on almost all acoustic guitars. Take either a U87 mic or a 414, run it into an 1176 limiter and set the settings for the attack time at 9 o'clock, then put the release time on 3 o'clock. That gives you a nice, really up-front, brilliant sound, really smooths it out. My favorite thing is to put a mic really close to the bridge, as close as you can without getting in the player's way, and aim it toward the hole at just a little bit of an angle. Dr. Ritchie Moore, who helped design our studio, showed us this trick; he picked it up while working in the studio with the Beatles."

Quest: Make a sitar sing out from a group of instruments.

Sorcerer: Bruce Kaphan, freelancer who often works at the Music Annex Recording Studios in Menlo Park, California.

Bag o' Tricks: "One of the more challenging acoustic instrument recordings I made recently was 'Edge of a Memory' on Ancient Future's last album, *Dream Chaser*, which we recorded at the Music Annex. Because this piece was a combination of acoustic and electric instruments, the concern was to make sure the acoustic instruments came off the tape with as much power and directness as the electric instruments, which were recorded direct.

"Electric violin and sitar shared the melody against a backdrop of tamboura, synth, acoustic guitar, acoustic piano, African talking drum and cymbals. The big concern was the sitar. Although it's incredibly dynamic within its own loudness range, its overall loudness might be characterized as approximately half that of an average acoustic, steel-string guitar. Also, within its own loudness range, there are very high transients when strings are plucked, ranging almost to the inaudible when vibrato is applied to a melody string with the sympathetic string sustained.

"In this case we wanted a sound completely different from that of a solo sitar. In addition to making sure the sitar would cut through the rhythm tracks, we wanted to make sure its dynamics worked with the dynamics of the electric violin, a Zeta, which seems to put out a more consistent dynamic range than an acoustic violin. The Zeta sound is right up in your face, clear and direct, so we essentially had two dynamic extremes to blend together as one voice.

"So I placed an AKG C-12A about an inch away from the bridge, slightly angled toward the tailpiece, and an AKG C-61 about an inch from the first fret at about a 30-degree angle toward the nut. This gave me as direct and strong a sound as I could find and seemed to present a workable attack relative to the violin's.

"Unfortunately, within the melody every fourth bar was a whole note where the violin would sustain at its average level, but the sitar would quickly fade out. The solution to that was to use an ART 01A in one of its dynamic reverb modes. This is where the reverb level increases as the incoming signal decreases. *Voila!* I remember soloing the sitar with its signal processing during the mix and thinking then how unusable its sound would be as a classical sitar sound. But it was also clear that a classical sitar sound would have been all but lost in this particular piece."

Quest: How to record the "human sampler," Bobby McFerrin.

Sorcerer: Howard Johnston, co-owner and chief engineer, Different Fur Recording Studios, San Francisco.

Illusion: "Bobby McFerrin is challenging to record from an engineering perspective because his body sounds, freedom of movement and dynamic range are as important to his music as what he sings. Bobby can be on mic, off mic, whispering or loud. He sings in a way to get a certain sound from his body—he's not stationary, but he doesn't have wild motion, just a lot of integrated movement.

"Actually, I have two setups for him:

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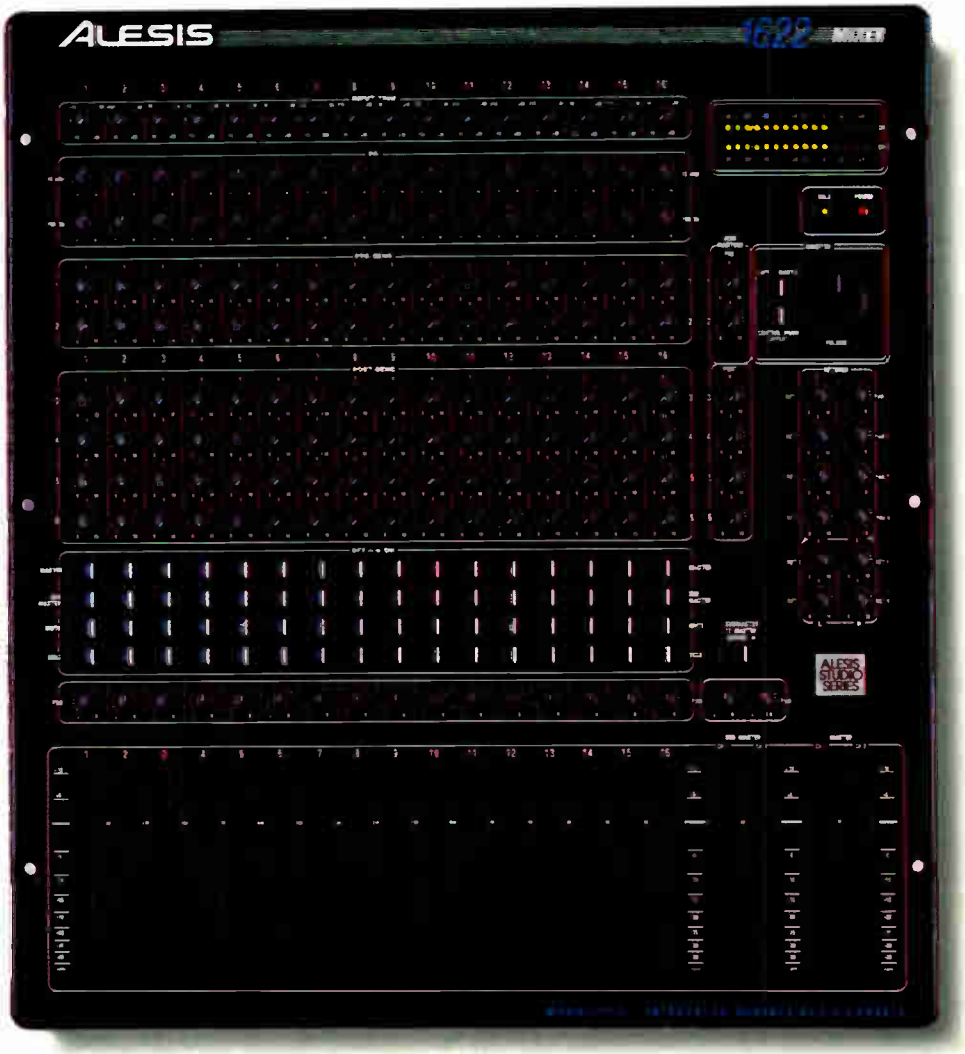

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sitting down and standing up. I usually use tube mics on his voices—I mean voice—a stereo Neumann SM69 and a Neumann 269. I try to achieve a little sound field to record him in; once I get the mics placed right, it's done and I don't have to go out to make adjustments. Depending on what he's doing, I mix either the mono mic or the stereo mic more prominent. You have to go through and check phase to make sure everything's mono-compatible, so if later you have to collapse it down to mono, it will still work. If he's singing a part that seems like it should be stereo, or if it's more of a stereo performance—he may be moving left to right a bit or keeping time on his body on one side—then I make the stereo mic more dominant.

"Other parts are clearly mono, so I'll bring the mono mic up. I'll bring the mic up for higher, more breathy parts, or if he's not doing anything with his body. Some stuff, like percussive mouth sounds, I'll do specifically mono. If it's a part you think of as a point source that you want control over, rather than a broad panorama, I do it in mono, like if it's something we want to pan left to right.

"When Bobby sings, he sits on our drum riser or stands facing the control room. The sound field I set up takes care of things he does with his upper body, like chest-thumping, but when he's sitting, he plays parts on the riser with his hands, and by thumping his foot, he gets this little bass thing happening. So I also mike his hands and his bare foot. I use a 414 on the foot and a pair of 452s on the hands. You can get a fatter sound when you have lots of microphones, but you have to make sure the microphones are in phase with each other and that you're not getting *bad* cancellation.

"I start out with a generic reverb setting, with the Lexicon 480, 224, the EMT plate and AMS 1530. It's a complex reverb sound combining long, medium and short programs. When we mix we might not use them specifically, but it's a start! Bobby likes to hear effects on his voice because he sings freer that way. I usually give him my mix in the headphones, so we're both talking about the same thing. His headphone mixes are really important. He uses them to perceive where he is relative to the mic and relative to the music.

"For recording, I'll make the three mouth mics (considering the stereo as two) a stereo pair of tracks; the left is the stereo mic, the right is the stereo mic, and in the middle is the mono mic. I'll put the foot mic in with the left- and right-hand mics. Basically, it comes out to being four tracks recorded to 24-track. You have to have room, and we use the digital Sony 3324, which offers more latitude for putting individual mics on their own tracks. With Bobby, sometimes there are many parts, so you walk a fine line between the number of *tracks* you use versus the number of *parts* he has."

Quest: Achieve a natural, intimate-sounding clavichord.

Sorcerer: Allen Sudduth, a freelancer who works at Prairie Sun Recording in Cotati, California.

Wily Ways: "I did an album session at Prairie Sun that was produced by Lonnie Turner of the Steve Miller Band. It was his wife, Gail Turner, playing clavichord pieces on a hand-built clavichord. We wanted a sound that was natural but intimate, rather than sounding like the clavichord was in a large hall. I started with two KM54 Neumanns, right at the edge of the upturned lid in an X-Y configuration.

"That gave us the presence we wanted, but what I hadn't encountered before is that the clavichord has real small strings, like a harpsichord. We had the presence in the top end that we wanted to hear from those mics, but there was an incredible mechanical 'thump,' because every time you press a key, in addition to this crystalline note on top, you get this annoying mechanical noise. We had to eliminate that, or tone it down. At that point I used an M49 and then just walked around the room until I found the spot where that was canceling out the most.

"The whole thing with acoustic instruments is finding the place in the room where the instrument sounds good, and using my ears to find the spot where it sounds best before I place the microphone. So to the stereo X-Y pair I added the Neumann about six feet up in the air and six feet back, at a spot that was real sweet, and assigned that to both channels and filled in the middle of the stereo with it. And it was beautiful. Came out just great." ■

Linda Jacobson lives and works in San Francisco, where she runs a writing and editing service, Wordswork. And they do.

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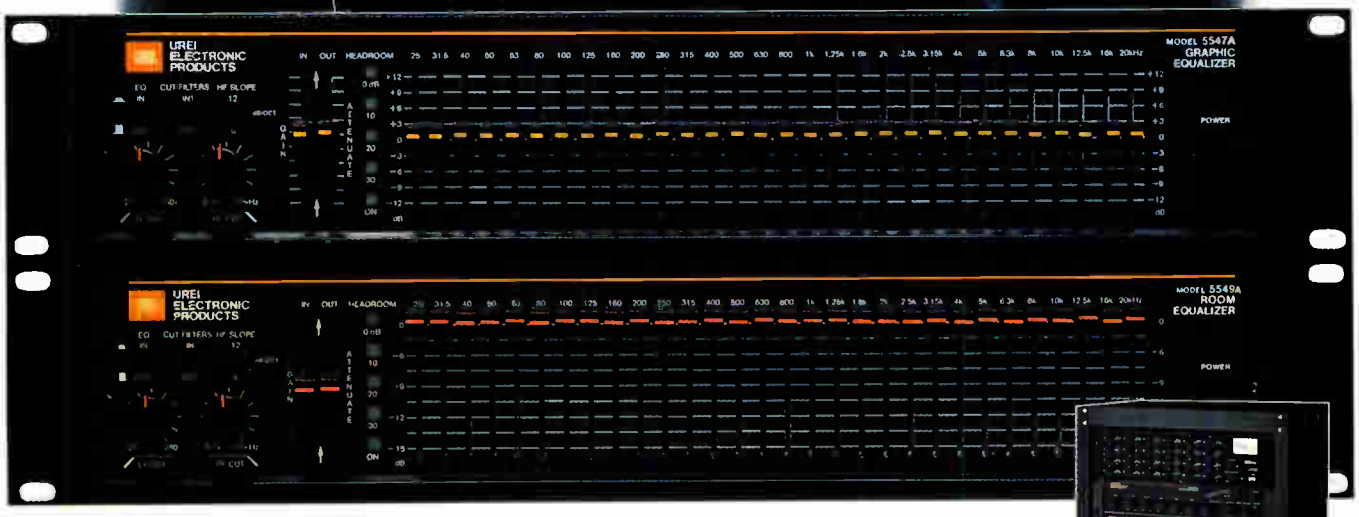

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HISTORY OF A BAY AREA RECORDING INSTITUTION

The story of the Plant is exciting, not only for the history–the cottages on the hillside, the purple limos and speedboats for visiting bands, the federal marshals, Sly's studio and Slick Rick's bedroom–but also because it has weathered the rough days and taken positive steps to again become an audio leader in the San Francisco Bay Area.

BY ROBIN TOLLESON

The story wasn't completed with Fleetwood Mac's *Rumours*, Stevie Wonder's *Songs in the Key of Life*, Pablo Cruise's *Worlds Away* or Huey Lewis' *Sports*. It's still being written today by Starship, Whitney Houston, Carlos Santana, Sheila E., Bruce Hornsby and others. New owners Bob Skye and Arne Frager have made needed upgrades to make the studio a force in the '90s.

Had there been MTV in the early '70s, they'd have loved this Sausalito facility. "This was the resort studio of Los Angeles at one point," says producer/engineer Jim Gaines. "People who wanted to get out of town came here to work, brought their entourages here, and it was a getaway from the L.A. scene. They took care of you, catered to you." Perhaps Wally Heider's was the first multitrack studio in the Bay Area, but the Plant was the first to take the "living room" approach. The term "lockout" became common at the time. "We were renting the studio by the week or by the month, the house along with it, for a flat price," says Chris Stone, co-founder and studio visionary.

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With its swirling paisley and leaf patterns, Studio B is the last of the original Kellgren/Hidley rooms at The Plant; it is still popular with many artists, including Huey Lewis and the Doobie Brothers.

Stone and Gary Kellgren were already highly successful with their New York and Los Angeles Record Plants. For Sausalito they used the local color. It's like walking through an art gallery. Hallways are made of sculptured redwood, designed after the Trident Restaurant, once a favorite local hang. "We treated it like a country studio," Stone says. "It was a very warm, Marin place. Eight bedrooms in one and six in the other, and there was always a party going on. So it became famous for that. We advertised it as being 20 minutes from downtown San Francisco, but in the country.

"What made Record Plant what it was in Sausalito, New York and L.A. was the combination of Tom Hidley's acoustical design and Gary Kellgren's engineering capability and genius in terms of creating environments. I was kind of the cohesive factor. I got the money and paid the bills and marketed it. And it worked very well. It still is working."

Kellgren had worked in one of New York's few independent studios before opening the original Record Plant. Most of the studios at that time were owned by the record companies. "It was usually a union situation and very strict. That, and [the fact that] the record company was always right there made a lot of artists uncomfortable, so Gary had the idea to make a studio for the artists and producers," says Tom Flye, the first chief engineer at the Plant. "When a band goes in to make an album, that should be the highlight of its year."

Opening night in Sausalito in 1972 was definitely *the* Halloween bash to be at. "John and Yoko came dressed as trees, and Buddy Miles was the opening act," Stone says. "He had opened our studios in Los Angeles, and it was Buddy and Tom Donahue, Mr. Underground Radio, who convinced us to go up to Sausalito, because they were tired of having to come down to Los Angeles to record. So part of our selling was, you go to Sausalito, cut your tracks, come down to the same-sounding room in Los Angeles [they were all designed by Hidley], do your overdubs and use the studio musicians who were not available in Sausalito in those days. Then go back up to Sausalito to mix."

For a time in Sausalito, the Plant represented a particular way of life. "Kellgren had a purple Rolls Royce with the license plate 'GREED,' " recalls Stone, whose own license plate read "DEDUCT." "That was the studio limo. He also had a speedboat tied up at Gate 5 so that you could pop over to Tiburon or Fisherman's Wharf for lunch, or ride in the wakes of freighters as they were going out the Golden Gate."

Sly Stone and Rick James are the only two musicians known to have completely moved into the Plant. Sly did all his work there in the early '70s, and his name alone brought in other business. "First we built him an office. Then we built him a studio, then a bedroom and a bathroom and a little lounge area. He spent the majority of his life there for a few years," Stone says.

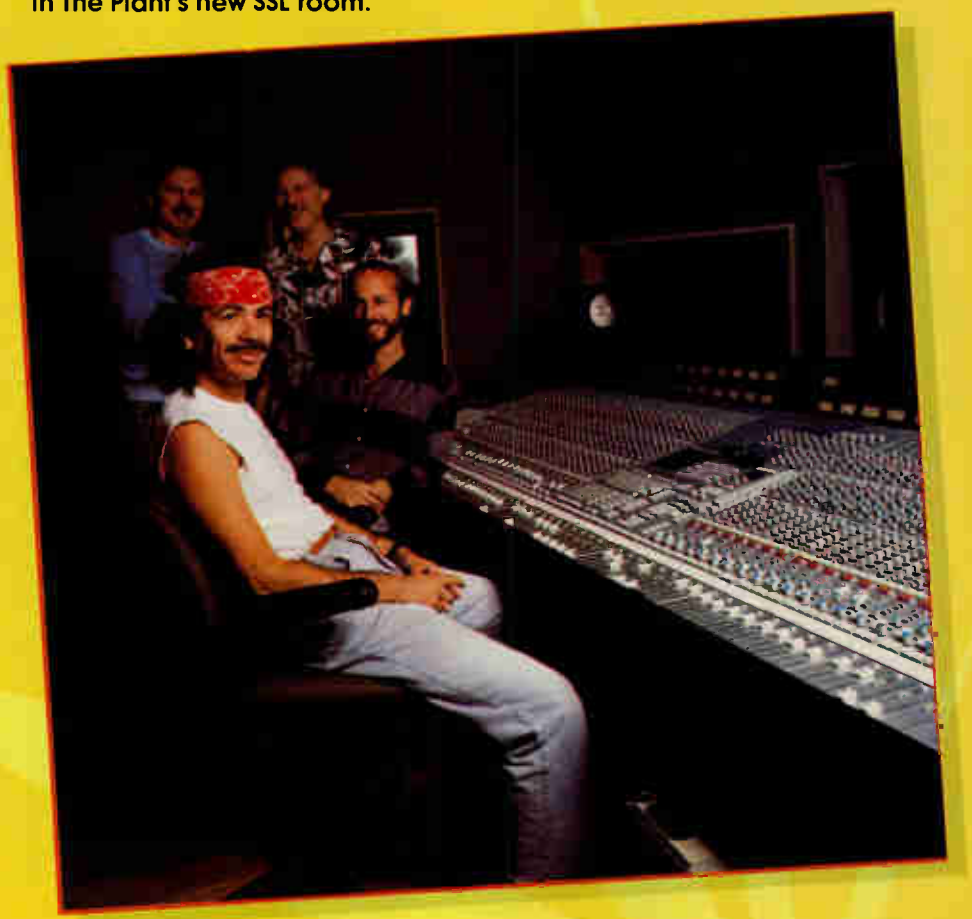
Sly's studio, dubbed "The Pit," consisted of one room with a sunken area in the middle where the equipment and engineer sat, and a walkway all around the sides—a kind of studio-in-the-round. It wasn't the most practical setup, although sessions were done there, including an album by Rolling Stones bassist Bill Wyman.

"Sly always recorded everything in the control room anyhow," says Flye. "I used to do the horns just standing in the doorway. That's the way he liked to work. He did his vocals all in the control room. One day he said, 'Let's move the drums in here.' I said, 'The drums *have* to stay out there. Give me *one* thing.' In those sessions I was the one who wore the earphones. It was the only way I could hear what I was doing. I used to record Sly in his mother's basement near Stonestown in San Francisco with my portable board."

Co-owner Arne Frager's office was once Rick James' bedroom. "At one point it was the waterbed room, then it became an office, then it became Rick's bedroom," Gaines recalls. "It was wild times. Rick would casually get up in the morning and all he would have on was his white towel, and he'd be walking around talking to people."

Among the artists parading through during the Plant's early days were America, Stephen Stills, Commander Cody, Fleetwood Mac, Stevie Wonder,

Jim Gaines, Carlos Santana, Arne Frager and Bob Skye take a break in The Plant's new SSL room.



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Yes, John Lennon, Marvin Gaye and Sly Stone. "Marvin was three days late, which wasn't unusual in those days," Stone says. "Fleetwood Mac, or Sly, in those days didn't have a budget. They would spend as much as they needed to spend to get their record out, and the record company would gladly pay it. It's just that most of them have gotten smart and don't throw their money away anymore. They didn't really get smart until the crash of '79, when everybody pulled in their belts."

Kellgren died in a swimming pool accident in 1977, and Stone lost some of his verve for the studio. "Without Gary's creative genius it just didn't make sense anymore," Stone says. He sold the studio to Laurie Necochea in 1981, a wealthy rock fan, who he says bought the Plant so she could "hang with the stars."

Necochea made several improvements to the studio during her three-year stay—acoustical redesign of Studio A, Trident TSM consoles for A and B—and the studio was very busy. Her trust administrators, however, thought she was mishandling her money and stepped in, forcing her to sell the studio.

The Plant was bought by Stanley Jacox in early 1984, who immediately hired Jim Gaines as general manager. Jacox rebuilt the kitchen, put new carpeting in the studio, purchased the area's first Kurzweil 250 synthesizer, and changed Studio C from a rehearsal room into a small, functional recording room. The first music cut there was John Fogerty's comeback LP, *Centerfield*. "John called me, and we got to talking about rooms," Gaines says. "He played all the instruments himself so he really didn't need a big setup. He'd just do one thing at a time, so that little room worked exactly the way he wanted."

Business was booming; the music industry recession was apparently over. Heart's big comeback album was recorded at The Plant with Ron Nevison at the helm. At one point they had Journey, Starship and Huey Lewis in A, B and C. Then one morning Gaines drove to work and noticed federal DEA officers standing guard in front of the studio. Stanley Jacox was indicted on charges of tax evasion and drug trafficking, and put in jail.

"They came in the morning before any of the bands got in," Gaines says. "We just called the artists and said don't even come down. We had to get the tapes out of the building, and fortunately the marshals knew that they had no right to hold those tapes because they didn't belong to the studio. Once things had calmed down after the first few hours, we called the bands and told them to come in and get their gear."

PHOTO: DANNY LEE

In "The Pit," circa 1974: Chris Stone, Gary Kellgren, Van Morrison, Stu Levine (back), Bob Krasnow.

Federal guards lived on the premises for several weeks, even after the government hired a skeleton crew to continue running the Plant. "They were looking for a drug factory or big stashes of money in the walls. Well, they didn't even find a joint. And once

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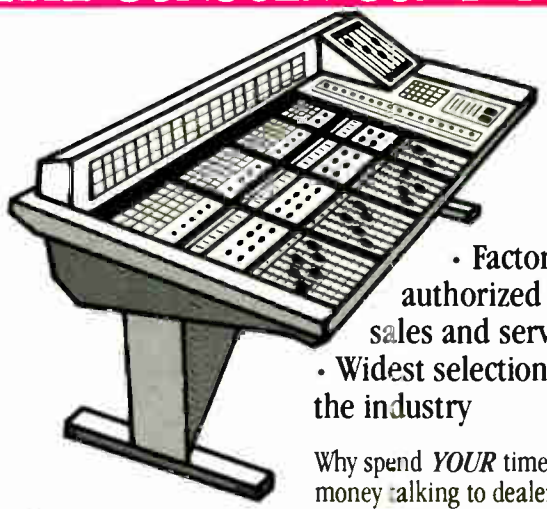

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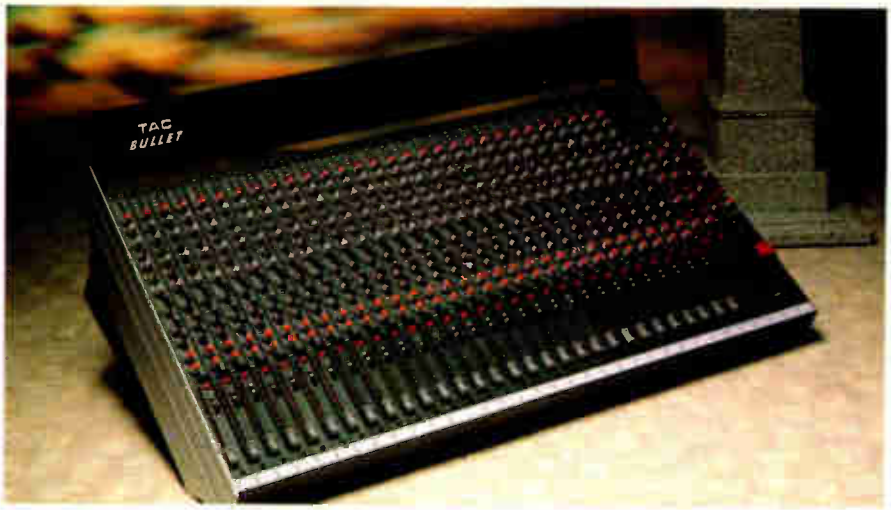

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Like all TAC products, the BULLET has redefined industry standards for sonic performance and construction quality. BULLET is perfect for many demanding professional applications, including sound reinforcement, broadcast production, video post-production and location recording.

The options available on this outstanding mixer are continually being expanded. The new large chassis is configured 28/8/2 and 30/4/2. The small frame, which can be rack-mounted, is configured either as 10/4/2 or as an all-input 12/2. Up to 8 stereo line input modules, which include Remote Start switches and an RIAA equalized preamp, can be fitted to any format. Eight subgroup formats also have 6 stereo effects returns, whilst four subgroup formats have 4 stereo returns.

The BULLET AFV is a version of the 10/4/2 designed to work in conjunction with the Sony BVE900 video editor. The audio signal can 'follow' video edit operations, enabling audio crossfades to be made under editor control.

Electronically-balanced outputs are now an option on all group, auxiliary and stereo buss outputs and VU meters may be fitted instead of the proprietary 15-segment LED meters.

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they realized that we were just people here working that happened to be caught up in this because of the owner, then everybody backed off," Gaines says. "After a while we were busy again and the guards disappeared and the marshals just showed up once every two weeks to go over the books."

In May of 1986 U.S. Marshals made plans to auction off the Plant to the highest bidder. Bay Area-native Bob Skye, with credits as a producer, acoustical designer and radio DJ, heard about the sale from Dover, Delaware, where he based his successful mobile recording bus, Skyelabs. His bid for the Plant was accepted, and he became owner of the studio on August 15, 1986. Skye joined forces with Arne Frager in 1988—Frager selling his succesful Los Angeles facility, Hollywood Central, to become co-owner of the Plant. Frager's recent engineering credits include Prince, Robert Palmer and Paul McCartney. He and Skye share a similar vision of the Plant's future.

"Obviously, we look carefully at recording budgets because we want to survive as a business," Frager says. "But we'd like to be involved with the really exciting new people as well." Frager hopes that young bands with smaller record album budgets will still contact the Plant. They recently worked out a deal with local blues guitarist Roy Rogers for his independent project. "We're not a record company, but we have A&R ears," Frager says. "Ten years from now, groups that have been here since the '60s aren't going to be making new albums. We want to be involved with some hot young talent, too, from the beginning, so they'll think, 'Gee, the Plant helped us.' "

Studio A recently underwent major changes, as Skye and Frager added an SSL 4064 G Series console, with a 64-input mainframe and G Series computer. They redid the monitoring system, and Skye and Carl Yanchar (of Lakeside Associates) redesigned and rebuilt the room. "We have music rooms," Skye says. "We set up Studio A as a mixing room, and it's connected to a good-sounding live studio."

Studio B is also set up for mix-to-picture, although to many it's the best room for doing sessions. A multicolored, swirling set of fabric clouds covers the ceiling of the studio, the last of the original Record Plant rooms designed and built by Gary Kellgren and Tom Hidley. "My favorite room is B," Gaines says. "The one with the hippie stuff on the wall. We cut Journey's record there, Huey's stuff, Pablo Cruise, lots of great music," says Skye. "The ceiling does some very interesting things that were not planned as much as they just happened. There's a definite uniform frequency response to the room."

Studio B still has the automated Trident TSM Console, and Frager says he "can't keep it empty. If B is important because it's got a great old console that sounds good and has a vibe that people love, we would rather resurrect it than replace it. We're rebuilding the patch bay row by row, because in the process of putting the jacks in and out over the last ten years, they've actually worn out. I'd like to walk in there and be dazzled by the glare coming off the console even though it's ten years old, and have four tube EMTs, and a few new toys. We don't have to turn it into a museum. It's just that in a way it is a museum of recording history."

Studio C at the Plant has been renamed Studi 01, "the digital room," centered around a large Synclavier and Direct-to-Disk™ provided by Synclavierist/composer Greg Shaw. "Like

—CONTINUED ON PAGE 117

SIMPLY THE BEST!

Simon Systems™ is setting a new standard of excellence in professional audio signal processing equipment. It began with the **DB-1A Active Direct Box.** Boldly designed and independently powered*, the DB-1A delivers performance that blows *every* other DI away. The DB-1A's unique design is based on totally active (transformerless) circuitry with no insertion loss. With features like line level output, rechargeable battery capability, and automatic power system check, it's easy to understand why so many professionals refer to it as simply the best direct box money can buy!

Then came the **CB-4 Headphone Cue Box.** With four outputs independently controlled by conductive plastic stereo power controls, the CB-4 allows up to four headphones to be driven from the same amplifier. A three-position switch selects left mono, right mono, or stereo mix, and XLR input/output connectors are provided for paralleling additional cue boxes. It's no wonder why the CB-4 has become a standard in the industry.

The tradition of excellence continues with the **RDB-400 Integrated Direct Box.** Based on the same design technique which made the DB-1A the premier direct box of the industry, the AC powered RDB-400 is four direct boxes in one. It can be rack or floor mounted and has countless uses. It features line level output mode with infinitely variable trim, attenuation mode with stepped variable trim, input overload LED,speaker level input pad,balanced and unbalanced buffered outputs with front and rear XLR connectors, ground isolation switch, and a toroidal power transformer.

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World Radio History

by Paul Potyen

I Just Don't Know How I've Managed Up to Now

Unless I'm byting off more than I can chew, this will mark the debut of a regular monthly column about new software applications for the professional audio and music production industry. Each month I'll review one or two new software products of particular interest, and I'll also include a section that briefly describes other new products as well as new versions of existing products for the Macintosh, PC-compatible, Amiga and Atari platforms.

This month, let's take a look at the new and improved versions of two programs for the Mac, *Alchemy 2.0* from Blank Software and *Archie 2.0* from Words & Deeds, Inc. If your studio environment is anything like mine, you can use all the organizational help you can get. These two programs help you achieve that end, each in its own way.

BLACKMAC MAGIC

If you use any more than one or two sampling devices on a regular basis (or worse yet, on an irregular basis!), you don't need me to tell you that keeping track of each device's idiosyncracies is a challenge. And if you don't have dedicated software to simplify your editing and archiving tasks, your problems get even hairier. (Potyen's axiom #23: The number of profanities uttered per hour increases exponentially as the number of samplers increase.) If this sounds familiar, maybe Alchemy is for you. The big bonus is that once you get hooked up correctly, exchanging files between different samplers becomes a breeze.

Alchemy is an advanced waveform editing and storage tool for the Macintosh. It acts as the "brain" for sharing a common sound library that you create for your particular network of sampling machines. Version 2.0 supports the Ensoniq Mirage and EPS; Emu Systems Emulator III, Emax and SP1200; Akai S900 and S1000; Casio FZ-1/FZ-10; Roland S-50 and S-330/550; and Studer Editech (formerly IMS) Dyaxis sample-to-disk system. Also supported, via sample dump standard (SDS), are the Sequential

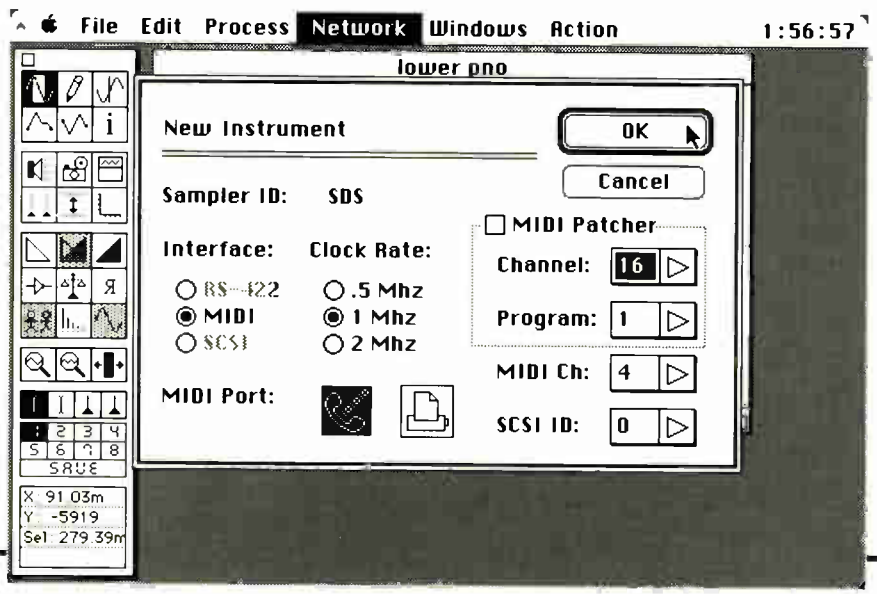

Figure 1

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Prophet-2000/2002 and 3000; Oberheim DPX-1; and Yamaha TX16W. Alchemy also reads and writes several file formats, including Audio IFF, SND Resource, Sound Designer, Sound Lab and Dyaxis.

Another of the program's advantages lies in its ability to manipulate 16-bit stereo sounds. However, playback of stereo sound depends on your computer and samplers. At this time, only Macs with Digidesign's Sound Accelerator card can play back sounds in stereo. If both channels are selected, on any other Mac, only the left one plays.

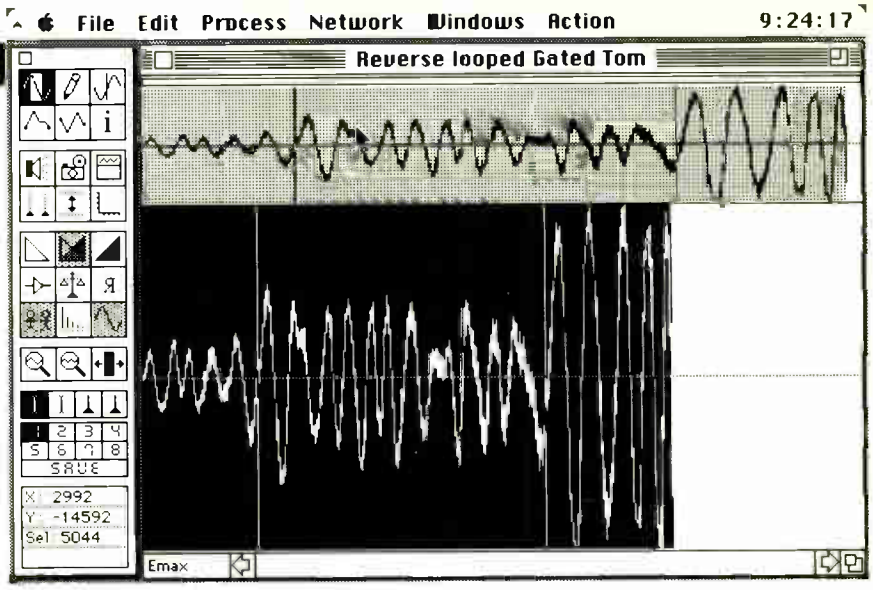

Figure 2: Waveform window with Overview

THE DAN

The first step in using the program is to set up and personalize your Distributed Audio Network (DAN). For my evaluation of the program I used a Mirage, EPS and Prophet-3000, which I connected to a Mac SE via Opcode's Studio 3 MIDI interface. One of the trickiest aspects of this whole process was figuring out how to connect and configure the various pieces of equipment. It took several hours to determine the proper settings on each sampler (and within the Alchemy software) to get all elements online.

Each new instrument is defined in Alchemy from the New Instrument dialog box on the Network menu (Fig. 1). Some samplers make use of the SCSI interface, while most communicate via MIDI. The manual contains a section with specific sampler setup and connection information, which definitely helps minimize confusion. Only one instrument at a time can be addressed via SDS, and in my case it was the Prophet-3000.

Having accomplished that task, I was able to transfer files to and from each of the samplers simply by selecting a sampler from the Network menu and then choosing either Send Sound or Get Sound from the same menu. When you send a sound to a given

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sampler, a keyboard dialog box first appears, providing a way of selecting a range of notes for that sound. With the EPS the task is a little more complex, because you are given a number of options for layering sounds as well.

To familiarize myself with the basics of the game, I loaded a piano sound into the Prophet-3000 from one of that system's disks. Then I sent the file to Alchemy, where I performed some gymnastics with it (more about that later) and sent it to the Mirage. I sent it back into Alchemy and saved it as another file, manipulated it some more and then sent the new sound to the EPS. I repeated the process once more, sending the now seriously bruised piano sound back to the 3000. While I can't say that the process was effortless, I was impressed by the potential of the system.

WAVEFORM EDITING

Whenever you start up Alchemy or open a sound file you will be presented with a Waveform window (Fig. 2). The program offers an array of tools for locating, viewing and navigating the waveform area; a set of editing tools for the manipulation of sound is accessible from the palette (located to the right of the waveform). Besides the basic cut and paste functions, you can accomplish adjustable fades and crossfades, amplitude scaling, inverting, reversing, and a Waveform Draw mode, which allows you to use the mouse to draw new wave shapes and redraw existing ones.

Amplitude Enveloping mode allows you to adjust or trace the amplitude envelope of any sampled sound. Traced envelopes can be copied and superimposed over other sampled sounds. Frequency Enveloping mode makes it possible to modulate the frequency of any sound by drawing in a modulation envelope, or by pasting in any waveform to act as a modulation envelope. Alchemy does not distinguish between envelopes and normal waveform information, so either may be used as the modulator. Both modes are extremely powerful and useful.

Finally, looping is one of the most important highlights of Alchemy, and once you become familiar with this way of manipulating your sounds, you'll never want to look at the front panel of your sampler again. It's a simple task to locate seamless edit points using Loop Splice mode, and a flexible Crossfade Looping command offers yet another way to accomplish smooth edits.

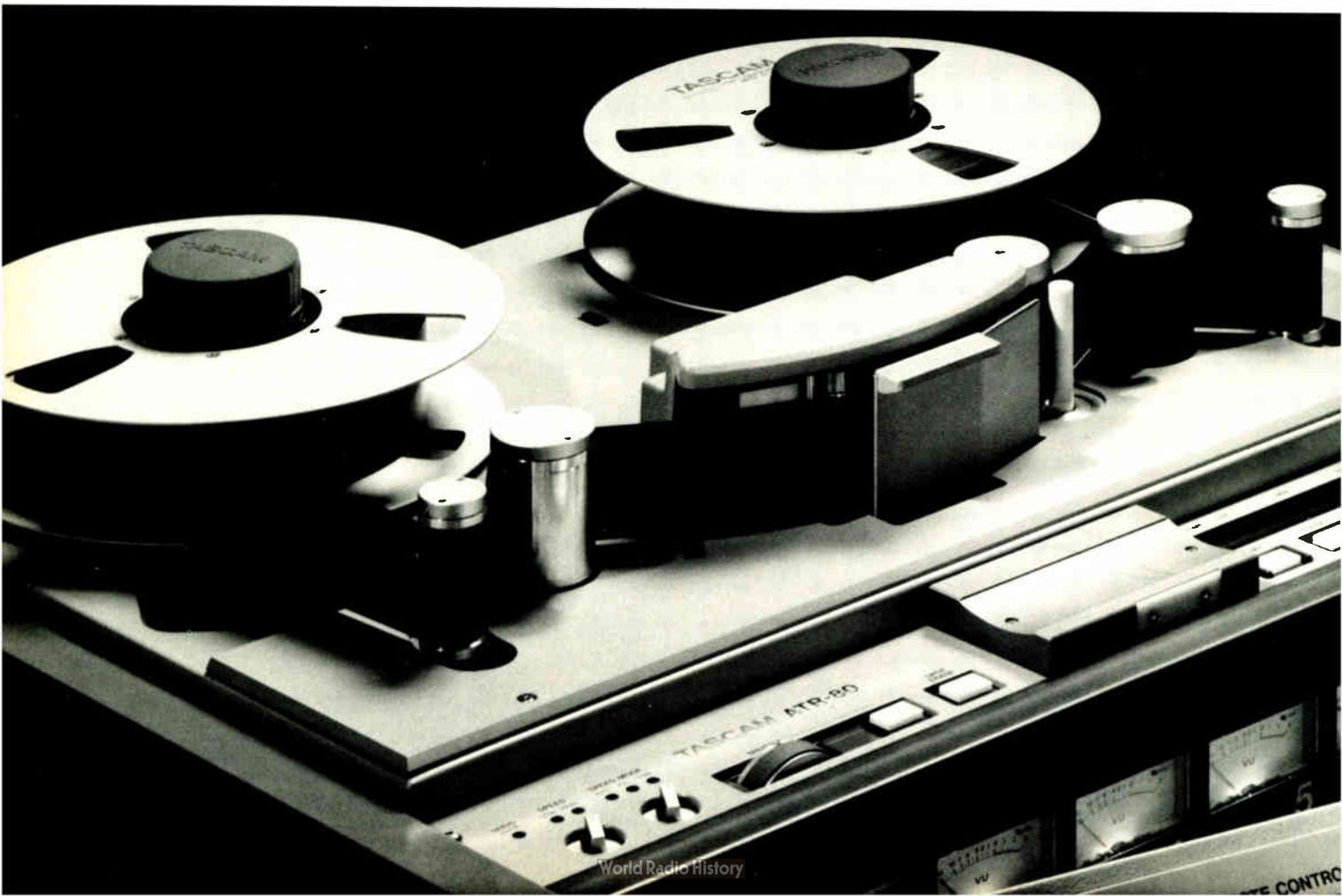
HARMONIC ANALYSIS

Clicking on the analyze icon brings up an editable Harmonic Spectrum window. One or more of the 32,768 harmonics can be selected, cut, copied and pasted, and the value of each can be changed by dragging on the square handle of the active harmonic. The resynthesize icon recalculates the modified waveform display.

Alchemy's digital processing tools include sample rate conversion (the key to breaking the communications barrier between different sampling units), digital EQ and pitch shifting.

BETTER THAN EXCEDRIN

All in all, the program is powerful—and undeniably complex to the beginning user. The manual states that the software runs on a Macintosh Plus, SE, II or IIx. A hard disk and 2 megabytes of memory are "highly suggested." My experience using it on my SE with 1 MB was sometimes frustrating: I could work only with short files and a limit-



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ed number of open windows. Also, Blank Software confirmed that there are sometimes problems using Alchemy with certain control devices and init programs in the system folder. A powerful product such as this really deserves a less constrained system in which to run. If you already have a bunch of samplers and a healthy Mac, Alchemy is a real good headache remedy.

Blank Software, San Francisco, CA; (415) 863-9224.

ARCHIE

The world has been blessed with a mere handful of famous Archies. There was the hero of the comic strip, friend of Jughead and Veronica. *Mix*'s commander-in-chief Norman Lear brought us Archie Bunker, the surly patriarch of *All in the Family*. And, of course, my personal favorite was Archie Bleyer, musical director of *The Arthur Godfrey Show*, who later went on to make his mark in the world as a record producer and founder of Cadence Records. Add to that mushrooming list the name of *Archie*, the recording studio management program.

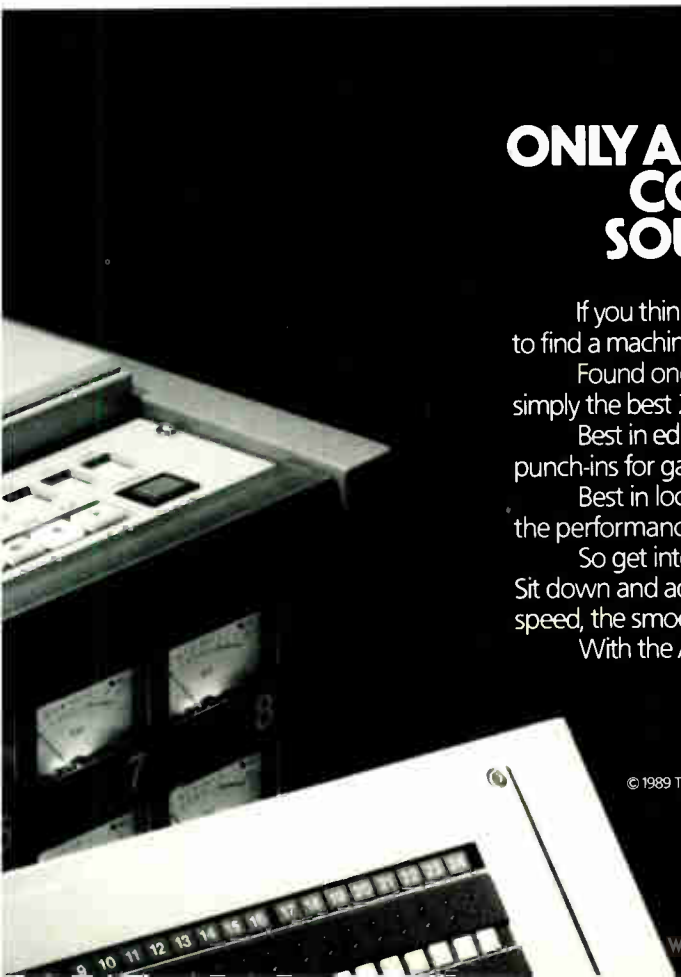
My method of studio management has always been, shall we say, haphazard. I have been known to forget to invoice clients for months. And I'm sometimes troubled by questions like, "Did they ever pay me?" or, "Don't they still owe me some money?" I really try, but to be honest I'd rather be writing music, or this article.

I know of others who have called in programmers to design custom packages, and one engineer friend of mine has been working for some time on a custom *HyperCard* version of a management program. Well, studio guys and gals, not only is this the most comprehensive program of its kind for the Mac that I've seen, it's fun! The single-user version does everything except automatically empty the ashtrays, and it comes with an excellent, light-hearted manual. (The Intro tells you, "If all else fails, take a deep breath and call our technical support expert at [805] 523-8701.") And an extra bonus is the "Archie Occasional Newsletter." The feature story of the issue I received was, "A Kinder, Gentler Archie 2.0."

The latest version of Archie was announced at last October's AES Show. It's available for $995, only $75 to registered users. Among Archie's improvements are increased speed (more than four times faster than previous versions), maintenance scheduling, bigger and more detailed track sheets, MultiFinder compatibility and much more.

After installation (Archie is not copy-protected) you are asked to select a user name and a password. Selecting Studio Manager gives you access to all levels of the program and allows you to enter initial information specific to your facility prior to its normal daily use. There are eight levels of access protection, depending on your job—studio manager, engineer, stock/ordering department, etc., and each user has a unique password.

Once this initial information is entered (a potentially time-consuming task), you are ready to roll. You want to know how many hours your Yamaha SPX1000 was used last month? Archie's got the answer. You want to mail Christmas cards to all clients who spent more than $2,000 in your facility last year? Archie can give you the list and do a mail merge, but the manual warns that Archie does not lick stamps. You want some help maintaining your checkbook? Archie enters and prints your checks, tracks deposits and creates flexible reports.



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Here are a couple of examples of the program's features. Archie provides a way for you to import or create a graphic image for invoices and other forms that will be generated—a swell touch. To set up a session you select a Tracksheet from the Session menu. If you don't fill out certain essential items, the program is intelligent enough to call attention to your mistake (and explain it if you ask) before presenting you with any subsequent forms. Online help is generous without being condescending.

A multi-user version of Archie is also available. Call Words & Deeds for more information. The manual says the program requires at least a Mac Plus and 2 megabytes of memory, but I was able to evaluate it on my 1MB SE, probably because it had not been inflated with much data. The manual also warns you that "Archie will grow in size quite rapidly as you enter data."

So I got my memory upgrade in the mail today.

Words & Deeds, Inc., Los Angeles, CA; (213) 255-2887.

CHIP SHOTS

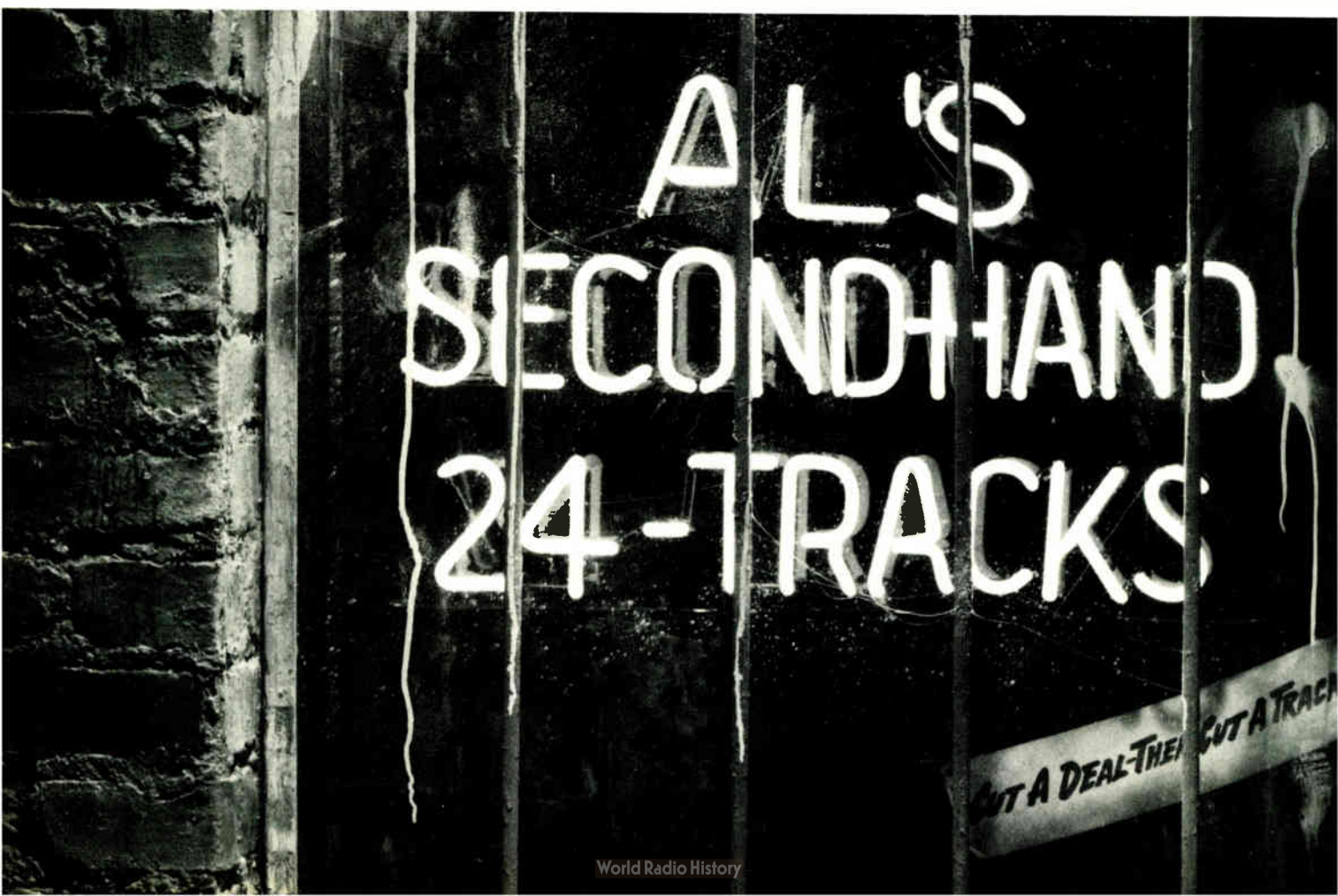
Finale 2.0 is the newest version of the highly touted music notation and sequencing program from Coda Music Software, and is now available in the Macintosh format. The IBM version is scheduled for release "in early 1990." Enhancements include: the replacement of numerous dialog boxes with menu-driven options and commands; faster page recalculation and fewer screen redraws; improved printing and screen display options; a MIDI tool that allows you to edit key velocities, note durations, controllers and other MIDI data directly in the score; and a completely rewritten and expanded manual.

Also shipping is *MusicProse*, based on the same software technology as Finale. Oriented toward those musicians who write lead sheets and small ensemble pieces, it has many of the most-used features of Finale but omits some of its high-end, professional publishing features. The suggested retail price of Finale 2.0 is $749, with an upgrade path from earlier versions of the program available for $75. MusicProse has a suggested retail price of $249. Coda Music Software, Bloomington, MN; (612) 854-1288.

Turbosynth 2.0, a modular synthesis program with additional synthesis and signal processing features, is shipping now from Digidesign. This version includes three new modules (noise oscillator, time compressor and pitch envelope), a complete set of sample-editing tools and recording via Digidesign's AD IN Analog to Digital Converter. The Mac package retails for $349, with upgrades for users of earlier versions available for $35.

Other noteworthy products from Digidesign include *Softsynth* and *Sound Designer Universal* for the Mac and Atari, *Turbosynth* for the Atari, and *Q-Sheet* and Sound Tools (see last month's "Field Test") for the Mac. Digidesign, Menlo Park, CA; (415) 327-8811.

Oview Synth Programmer is a new



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release from Turtle Beach Softworks, the company that brought you *SampleVision*, a digital sampler editor for the PC. Oview is designed for use with Proteus, the popular new sample player made by E-mu Systems. Used with an IBM-compatible with 640K RAM and a mouse, Oview is a versatile graphics-based editor that allows you to define and save up to ten different "views" of the Proteus' parameters, making optimization for a particular editing task easy. Oview retails for $149. Turtle Beach Softworks, York, PA; (717) 757-2348.

Proteus Editor/Librarian is Opcode Systems' answer to the need for a Mac-based editing system for the Proteus. It includes a Preset Editor for changing aspects of the timbre, a Master Parameter Editor, a Program Map Editor and a Tuning Editor. Also included in the Opcode package is a patch librarian that allows storing thousands of sounds on a single floppy disk. The E-mu Proteus Editor/Librarian has a list price of $199.

Opcode is best known for its family of editor/librarian programs for a wide variety of MIDI equipment, as well as for its recent full-featured sequencer, *Vision*. Opcode Systems, Menlo Park, CA; (415) 321-8977.

Cakewalk Professional 3.0 is the latest version of Twelve Tone Systems' sequencer for the IBM family of computers. New features include: a built-in programming language that enables users to write their own editing commands; support for SMPTE 30 drop-frame as well as non-drop format; and an extensively rewritten "User's Guide" with many cross-references and expanded tutorials. The program is available for the IBM for $249, and for the Yamaha C1 computer for $349.

Twelve Tone also has released upgrades of two other products: *Cakewalk 3.0* and *Cakewalk LIVE 3.0*. Twelve Tone Systems, Watertown, MA; (617) 273-4437.

Sequencer Plus 3.0 is Voyetra Technologies' latest entry in the sequencer wars for the IBM PC. The company actually markets its sequencer in three different packages. SP3 is the most professional of them, and the new version integrates *Patch Master Plus* (a universal librarian/MIDI data analyzer program) and *Conversion Plus* (an SP to *Personal Composer Songfile* converter), with its enhanced sequencer capabilities. Other features include mouse support, MIDI file compatibility and Trackscan, which allows the number of sequencer tracks (up to 3,000) to be defined when the program boots. SP3 Version 3.0 retails for $349, with updates from earlier versions available at a nominal cost. Voyetra Technologies, Pelham, NY; (914) 738-4500.

The Sweetwater *K250 Editor/Librarian* permits Macintosh-based editing of Kurzweil K-250 keyboard setups and instruments as well as visual editing of the digitizer's waveforms. The program retails for $395 and is available from Sweetwater Sound, Inc., Fort Wayne, IN; (219) 432-8176.

ST RAM (STandard Real-time Applications Manager) is a desk accessory developed by Intelligent Music for the Atari ST family of computers. It supports up to six applications at once and includes complete MIDI drivers, allowing synchronization among multiple MIDI applications using MIDI Time Code (MTC), MIDI Timing Clock or Internal Timing. Intelligent Music, Albany, NY; (518) 434-4110. ■

Paul Potyen is associate editor of Mix, *and a recovering musician.*

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World Radio History

A BYTE OF FRESH APPLE

Music at Apple Computer

by Larry Oppenheimer

This article is fondly dedicated to the memory of Keith Worsley: a friend, colleague and mentor—in that order—who shared generously with me his lust for life, love of audio and knowledge of the industry. For many, "Uncle Keith" was the first to bring them into the brave new world of digital audio.

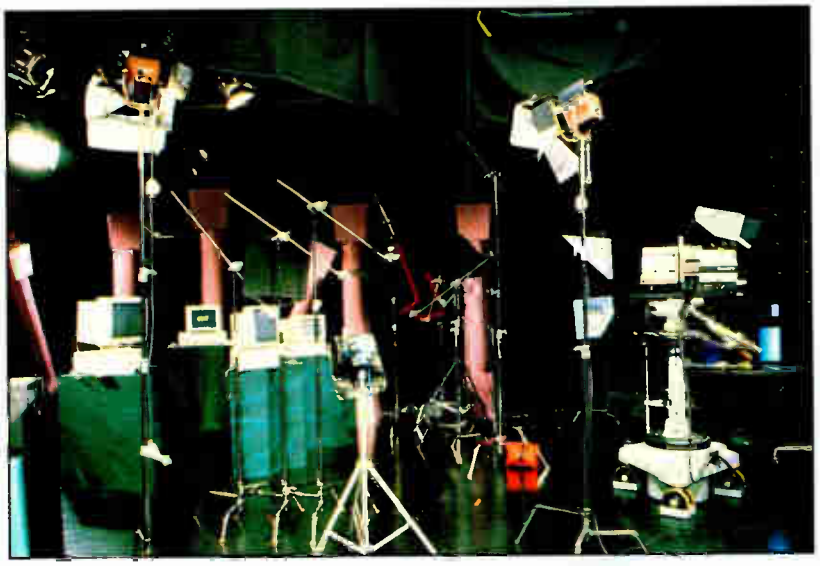
For an increasing number of us, personal computers are a daily part of our work, and our choice of machines is based (hopefully) on the relative facility of different brands and models and available software to perform the needed jobs. The reasons that computers differ are greater than the choices of CPU chip and amount of onboard RAM, but they do pretty much boil down to the combination of hardware and software choices made by the computer's designers.

In the U.S., the current machine of choice for sound and music work is the Apple Macintosh (although the Atari ST has risen dramatically in popularity in the last few years). Mac's elegant, graphically oriented user interface is certainly the biggest reason for this, as it is beaten in many other areas (not the least of which is cost) by other machines. In Europe, for example, the cost and availability factors have made the Atari ST line far more popular than the Mac.

Lately there has been a lot of talk about a newcomer in the computer world, a much-touted machine that holds a lot of promise for sound and music work. This is the NeXT machine from Steve Jobs, who steered Macintosh into reality. Apple and NeXT are located only a few miles from each other in the San Francisco Bay Area's world-renowned technology belt known as Silicon Valley. *Mix* decided to take a look at how these two companies turn a dedication to sound and music into a solid platform for developers (and, eventually, users) in this area. This month we look at recent developments at Apple's Sound and Music (S&M—sorry, can't pass up an opportunity like this) group. A glance NeXT door will follow soon.

APPLE AND THE BIRTH OF MIDI

Apple is the Henry Ford of the personal computer business: not the first to create a personal computer, but certainly the first to widely popularize the idea and demonstrate its viability beyond games and hackers. The Apple II computer produced by Steve Jobs and Steve Wozniak rocked the world, even moving computer-world Goliath



And Now...Apple TV

The opening of Apple TV is one of the most important steps that Apple Computer has taken in bringing "Desktop Media" from the ephemeral to the concrete. Apple TV is a real, live, functioning broadcast television facility on Apple's Cupertino, California, campus, serving Apple employees and its clients. Its designers and engineers have avoided making major investments in technologies that are perishable because of their impending replacement by Macintosh computer-based equivalents (i.e., computer graphics, digital video, etc.). The result is a facility that has everything needed to produce high-quality broadcast work and serve as a platform for future product de-

—CONTINUED ON PAGE 59

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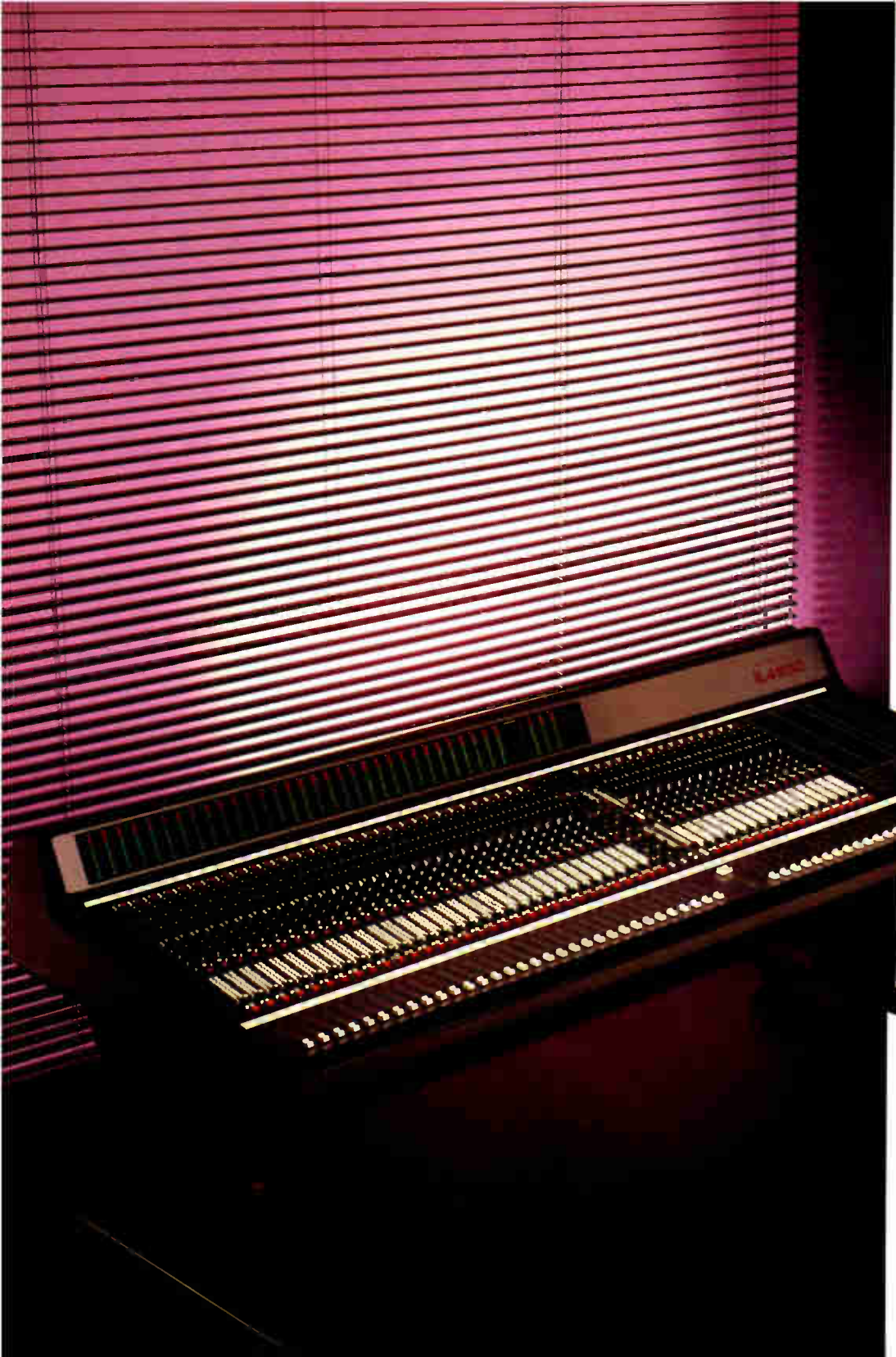

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IBM to enter the personal computer market. In the late '70s, Mountain Computer produced a plug-in card for the Apple II that provided digital oscillators, and music on personal computers was off and running.

But it was the introduction of Macintosh on the heels of the birth of MIDI that really launched Apple into the music market. Despite the fact that neither the Apple II nor Macintosh had very impressive sound capabilities built in (the Commodore 64 was the first personal computer with a truly useful sound chip), it was clear only a year-and-a-half after its introduction that Macintosh was a popular platform for working with sound and music. By the beginning of 1988, Mac had become so heavily used in those areas that Apple finally formally acknowledged it as a market meriting its direct attention with the introduction of the Apple MIDI Interface.

Mix recently talked to Mark Lentczner, former manager of Apple's S&M group. (Since this interview, Lentczner has moved over to Opcode Systems, a major player in the Mac music software and hardware arena. Apple representatives confirmed that the views expressed by Lentczner remain consistent with current Apple policy.) Apple is now well aware of its presence in professional and home studios and, as new products are designed, is considering the demands of that work and the needs of the developers who have established Apple products' viability in those areas. In fact, claims Lentczner, the general-purpose nature of Apple computers is achieved by specificity: considering the needs of each major area of use in the design phase.

MACWORKSTATION

But Mac's place in sound and music work is as a part (often the hub) of a system of components that make up

—FROM PAGE 57, APPLE TV

velopment.

Apple TV head Jack Kavanaugh, studio manager Steven Swan, and the Apple TV staff and consultants have created Macintosh multimedia heaven. From digital audio and video editing suites to satellite master control and on-site earth stations, the complex is extremely well-positioned to showcase Macintosh technology and execute Apple corporate video and broadcast requirements.

The Apple TV studio is a $1.5 million production center that includes a network of about 50 permanent U.S. satellite downlink locations, with plans to expand to international locations in France, Canada, Australia, Asia, and Central America during 1990. Apple TV aired its first broadcast in October 1988, and currently produces an average of 20 hours of programming per quarter. There is a full-time staff of eight, supported by freelancers from the broadcast industry.

The Apple TV studio is designed to use the Macintosh as the primary interface between the production team and the television process. Apple TV uses *HyperCard* stacks to control a video routing system that can quickly and easily change a broadcast studio configuration.

Studio equipment is Mac-controlled via *AppleTalk*, allowing an engineer, producer or editor to reroute the video and audio signals in the studio, the audio room or an edit room with the click of a HyperCard button. The Apple TV facility also makes use of a wide variety of available Macintosh-based third-party video technology.

According to Apple TV management, the division's mission is to empower Apple employees, business partners and customers by providing access to information about Apple Computer and its products through the use of video technology. At the same time, the facilities and resources will serve as the global link for Apple branches: communication, delivery of cost-effective business television to the company and its clients and suppliers, and showcase for the Apple Macintosh computer in a broadcast environment. The direct video experience needed to better position the Macintosh in the video environment is now part of the day-to-day corporate reality at Apple. This means that Apple TV works with various departments at Apple as "clients"—booking time, working to specific budgets and using commercial studio techniques to get the most out of the facility.

—Lou CasaBianca

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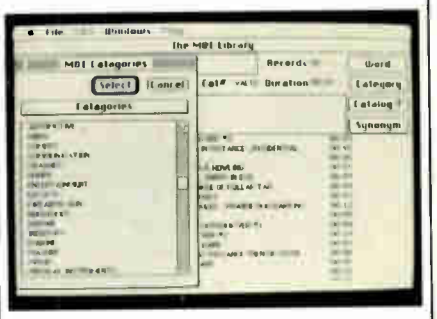

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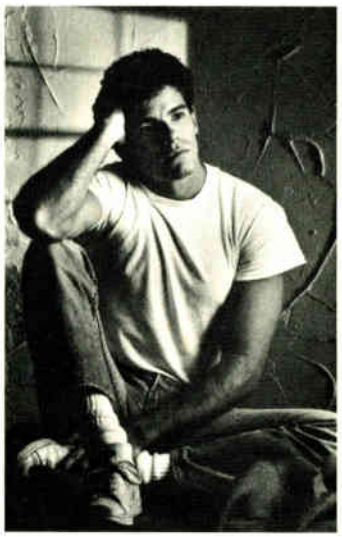

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the modern studio. Lentczner's energetic exegesis of Apple's place in an integrated studio reflects his strong personal belief in this issue and the need to pursue it to the most down-and-dirty level of design:

"We feel that you have to look at the whole music workstation as a single environment. Our end-users can tell the difference between the components, but when they sit down and work, either the whole thing works together as a system or it doesn't. If the lighting's not good in the room or if something's wrong with the music equipment, it's not going to work. And if something's wrong with the computer, it's not going to work, either.

"I feel that you must approach the design of a computer with that perspective. If you do that, you then have to begin to look at many more aspects of the computer with that in the back of your mind than most people would probably imagine. 'If this thing is going to have MIDI connected into it, that means that we have to do the following such-and-such things for the disk drives, and the interrupt structure ...' Each and every one of those horrible little engineering details. That's one thing that Apple wants to make very clear we are doing.

"Integration is a really important concept as far as we're concerned. We're not New England Digital; we don't make huge all-in-one boxes, not in the music market, not in any market. We make boxes that are fabulous and great and wonderful because people add third-party devices and software to them—that's Apple's forte. How is it that Macintosh made it? Was it because we wrote millions of applications? No, it's because we understood how to make sure that millions of applications got written for it.

"In the markets at which I think Apple is best, we're interested in the other kind of integration, where it means that it works together with other components and people can begin to not worry so much about how it's working and start to worry about what they're doing. The fact that it comes from five or six different vendors is fine. You buy the computer from us, the software from someone else, a plug-in card, even an external device—a synthesizer and keyboard—from someone else. There can still be integration across all of that. We are seeing products that are beginning to move in that direction, and that's very encouraging. One example, although

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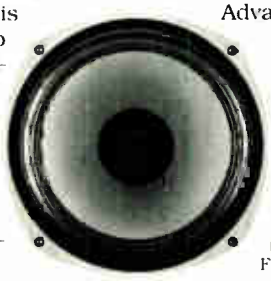

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.....tools of the trade

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I don't want to single out too many of our developers, is the Sound Tools concept from Digidesign.

"The classic example of what I want, which doesn't exist yet, is that when I'm working my sequencer, and I click on a track, I go straight to editing parameters for that voice on my synthesizer. I shouldn't have to think, 'Oh, that thing is over MIDI and it's my Yamaha device so I have to go to my Yamaha editor.' That doesn't mean that it's all in one program, but the feel should be easy and direct. It sounds

Apple's MIDI Manager for the Macintosh

MIDI Manager is a "toolkit" for developers that contains a number of system software routines for MIDI work, including drivers, a timing discipline, and even a "Mac-friendly" user interface for directing MIDI data among serial ports and applications. It runs on any Macintosh from a Plus on up with at least 1 MB of memory. The user need only drop the MIDI Manager system document into his or her System Folder to make it available to any application written to access those routines. "Previously in Macintosh, up until MIDI Manager, Apple provided tools to developers for graphics, serial ports, networking...but we never provided tools for MIDI," former Apple Sound and Music Group manager Mark Lentczner points out. With Apple's fresh commitment to the music market and full-time S&M programmers on staff it seemed like the logical time to create these tools—what Lentczner refers to as, "the original canonical drivers for MIDI." It also seemed logical to consult ten of the key developers in the field and get their input before finalizing the design.

"In talking with these developers and among ourselves," Lentczner explains, "we began to see a system that actually had far more flexibility than simply allowing programs to run simultaneously without crashing. We created an environment where every application has a virtual MIDI port connected to it. In fact, the user literally sees little MIDI in and out ports on the screen for every application. We call it the PatchBay, and it's an electronic patch bay for MIDI information. Instead of just saying that all MIDI goes out the serial port and all MIDI that comes in goes to everybody, we said, 'User, here's a virtual electronic soldering iron. Wire them up any way that you want and we will automatically transfer all the MIDI information inside the computer to and from the applications.'" With the PatchBay, familiar click-and-drag operations are all that is required to create arbitrary MIDI signal flow in Macintosh. MIDI Manager will even do any merging or splitting of data streams that is necessary to realize the "patch" the user creates.

"There are a number of advantages to this," Lentczner elaborates. "Obviously, first and foremost is the ability to run all of your music programs all the time. You can easily move data in real time between them. You can, for example, run your favorite sequencer and your favorite cue sheet program simultaneously, subject to the limitations of MIDI. Of course, you can route them out to separate serial ports."

A developer does have to rewrite software to take advantage of MIDI Manager, but most of the rewriting is easy: removing the old drivers and substituting calls to the new ones. And the new independence of applications from drivers means that both Apple and the developer can improve their software without affecting the other. But the bigger mess was in the area of timing.

"One of the things that we did was to create a unified concept of time synchronization in the system," Lentczner says. "We found from our experiences and from talking to users and developers that the concepts involved in synchronization varied wildly from program to program and that synchronization was one of the most difficult things that people had to deal with. Programs used different terms for the same thing and had different sets of features that were not necessarily compatible with each other. So we created a new model

—CONTINUED ON PAGE 68

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And you can do all of this in either a predetermined way, in which case you use the "Groove" mode. Or in an unexpected way, in which you use the "Random" mode. (Just because we call it "random" doesn't mean you take what it gives. Once again, you can control everything.)

Nor does the "human" touch end here. We've also made the 16 pads velocity- and pressure-sensitive, so that the sounds end up feeling vibrant instead of clinical.

The Roland R-8 has eight patches where these "Human Feel" settings can be stored, and each of these patches functions as an "overlay" for any of the patterns in the R-8.

Of course, all of this wizardry would be lost if the sound quality wasn't what it should be. It is. The R-8 features 16-bit drum and percussion sounds sampled at a CD-quality 44.1 kHz. And even better, both the eight individual outputs as well as the stereo outputs are available for routing those CD-quality sounds to a mixer for individual processing.

Approximately 2,600 notes, or 10 songs, can be stored in the R-8's internal memory. And up to 100 patterns with up to 99 measures each, can be programmed in the unit. The R-8 has 68 internal sounds. And when you combine these with the two ROM/RAM cards, each of which contains 26 sounds, you have a total of 120 different drum and percussion sounds.

One more thing. If you record a particular pattern on an R-8, you can always go in after it's been recorded and assign panning, tuning, nuance and volume for each instrument for every single event in the pattern. The result can be something totally different than you'd expect from a drum machine.

As you've gathered, our Human Rhythm Composer is a truly remarkable and essential piece of equipment. Or as *Keyboard Magazine* put it, "If you're serious about making electronic music with the depth and expressiveness that used to require real live musicians, you owe it to yourself to get a demo of the R-8."

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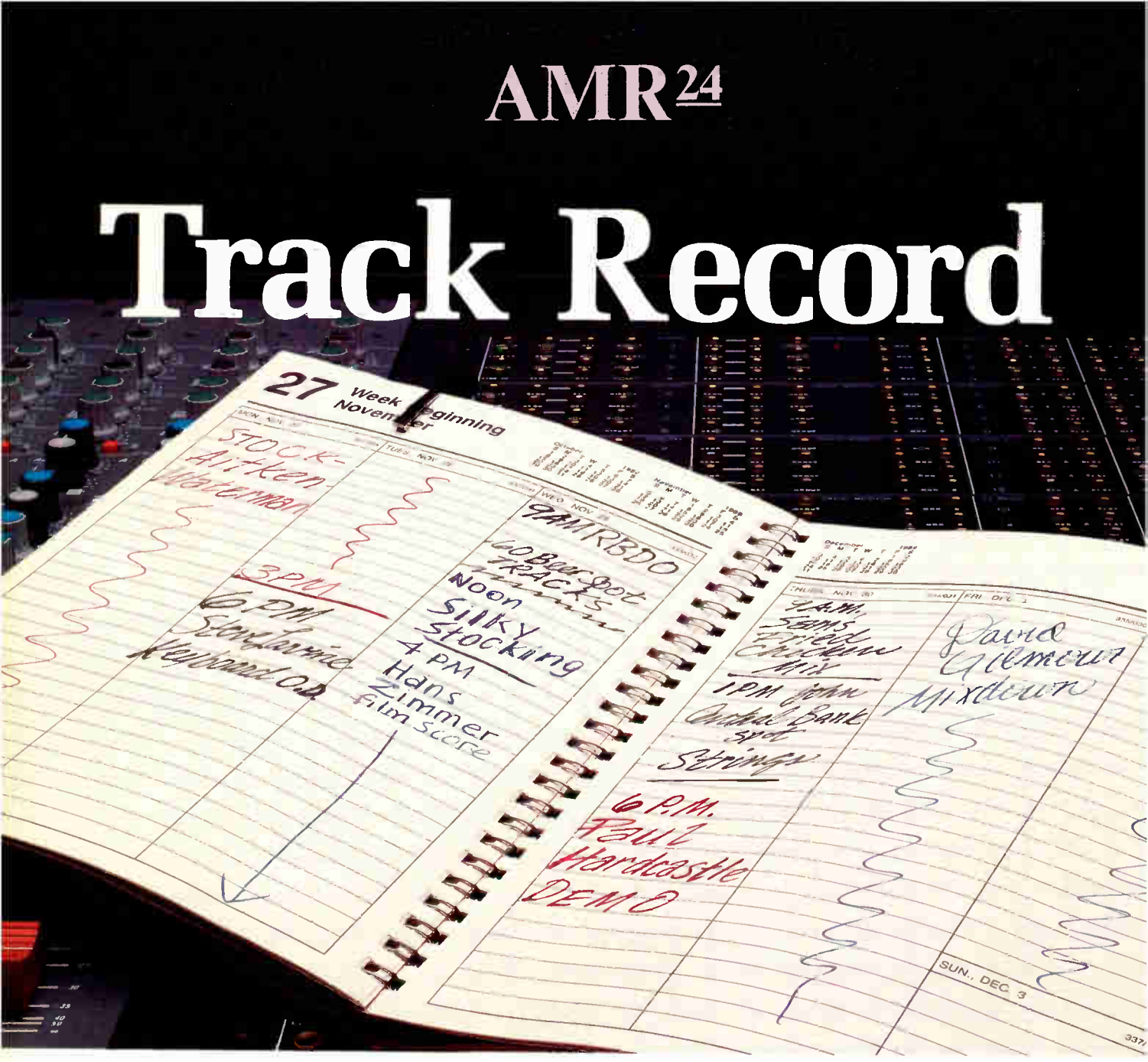

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great and easy to you, but getting it to happen inside the computer is not going to happen in the next six months. But we'd like to do that and that's the direction we'd like to see the world go."

A BROADER VIEW

At the same time that Lentczner portrays the need for Apple to draw sound into a holistic view of the user's environment, he also points out the need to analyze and separate the uses of sound in that environment. "I know that your readers are interested, in particular, in the professional music and recording industries," Lentczner acknowledges, "but Apple takes a slightly broader view of sound. For us, sound essentially falls into two categories. One is sound for the system's sake, like the beep that it makes [on power up, etc.], in the same sense as windows or graphics for the system's sake: Windows aren't there because they're pretty to look at; windows are there because as graphics they make accessing what the rest of any user is doing easier. We feel that the same is true of sound.

"The other category is sound for sound's sake. Many things are simply voice work, for example the products from Farallon, which are used extensively for voice work. There's sound as part of the grand concept of 'multimedia,' and then there is, of course, sound for music.

"We feel that we have to look at all of those; they're all part of our vision and what we have to be aware of when we build a computer in order to build it right. I think that's a great strength of Apple."

Lentczner was an Apple employee four years ago when he published a paper at the International Computer Music Conference on a music system he was developing based on the Smalltalk language. At the time, several employees, including John Worthington, worked on sound at Apple part time, but no group was dedicated to this area. The paper stirred enough interest for Apple to ask Lentczner if he had any idea who they might hire to do sound research full time. Lentczner and Dave Wilson soon became Apple's first two full-time sound employees.

THE GROWING APPETITE FOR CHIPS

Apple's first manifestation of its newly stated interest in sound was hardware:

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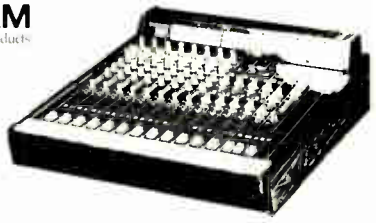

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the sound chip in the IIGS. The sound chip in the original Macintosh could produce only a single 8-bit voice at a 22.25kHz sample rate. Not so good. Fortunately, enough processor power was available to do at least four voices of wavetable synthesis, and sometimes even more (as in Bogas Productions' *Studio Session*, which milks six voices out of the Mac), in software. For the IIGS, Apple struck a deal with Ensoniq for one of its chips, which enabled Apple to include the capability of doing up to 16 voices of 8-bit wavetable and/or sampled sound playback with amplitude control over each voice at about a 30kHz sampling rate. Plug-in cards could add stereo outputs and a sample input.

But Macintosh is the machine that is used for most professional and intensive sound applications. Mac II was being designed and, at the same time, *HyperCard* was being developed and showing signs of making heavy use of sound. The old Macintosh sound hardware might have been able to fake it, but it wasn't really powerful enough to cut the mustard. It was decided that a new sound chip would have to be designed in-house for Mac II. Lentczner, Wilson and Pete Foley set out to do the deed.

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—FROM PAGE 62, MIDI MANAGER

of timing in which the user, in addition to being able to connect MIDI ports, can now connect time clocks, that is, the clocks of each individual application. The serial port itself provides a clock that is the incoming MIDI Time Code or MIDI Clock stream. The serial port, remember, is just an icon in the patch bay. One of the plugs represents the time for that unit, or application, or, in this case, serial device. If you're feeding MIDI Time Code, the clock represents the MTC you're feeding into the computer. If you're running a drum machine, it presents the MIDI Clock information. You want to synchronize an application to the incoming time code? Just drag a connection from one clock to the other. You want to synchronize in the other direction? 'Wire' it the other way!

"Furthermore, we do all conversions between different time code formats, so you never have to worry. This one's in 30 fps time code and that one's in 30 drop frame? Who cares? This one's in beats and that one's in milliseconds? Who cares? This is one of the stumbling blocks that people come across: 'Gee, my tape is striped with 30 drop and my sequencer only handles 30.' We do all that conversion, and you don't even have to think about it.

"In fact, I think that one of the cutest things about it is in the driver for the serial ports. You can actually tell our driver what format of time code you might want to work with. If it receives a time code format that's not the one you set, it puts up a little dialog box that says, 'Oh yeah, by the way, the incoming time format's different from what you specified. I switched it to the new one.' We feel that if our computer is going to be involved in this kind of work—synchronization—we need to do what we can from our perspective to make it as simple and easy—read painless—as possible. If you're a high-paid Hollywood recording engineer and you're sitting in the studio at $75 an hour, you want it to switch the time code for you.

"One of the services that MIDI Manager provides to applications is timing services that are of the style

World Radio History

required by music and multimedia applications. Macintosh actually already has several different mechanisms for doing time-related work. However, they're not best suited to what most music people were doing, and many music applications were taking advantage of certain hardware features in order to do that. We said, 'You can't do that anymore, because what if the hardware features go away?' This is low-level stuff, not things users will see, but users won't understand why their programs won't work. So, after consulting with people, we provided the kind of timing services that we realized developers would require. For example, our timing services can be easily and instantly based on the incoming time code. If time code comes in and starts slowing down, the application doesn't even have to think about it; everything we do for it will slow down at once. We provide interrupts and wakeups and the whole range of time-related services for that."

— Larry Oppenheimer

took a fairly huge amount of effort, as you might imagine," Lentczner recalls. "It was one of the more complicated chips that Apple had designed to date. The first thing the chip does is off-load the processor significantly. In the old Mac hardware, you have to spend a lot of the CPU's time just monitoring the hardware that makes sound to make sure that everything was hunky-dory. It takes a lot of programming time to deal with it, a lot of computing power, and it doesn't leave you a lot to work with. Our new sound chip is completely FIFO-buffered; its final output sections are completely decoupled from the computing engine. It's sort of a sound co-handler: It takes care of all the bookkeeping and all the nitty-gritty details of getting samples out on time evenly, which we know is very important for us to observe carefully in digital music systems."

The Mac II sound chip is also connected directly to the computer's bus, eliminating the need for peripheral communications hardware. The cost savings to Apple from this feature is significant in the context of a machine that is compatible with, but not dedicated to, S&M work. The chip features 2-channel, 8-bit D/A conversion at 22.25 (the original Mac sampling rate) or 44.1 kHz, with a four-voice wavetable synthesis option, which is "a bit cruder than the Ensoniq chip," according to Lentczner. "Its intention is to allow quick and easy building of sounds."

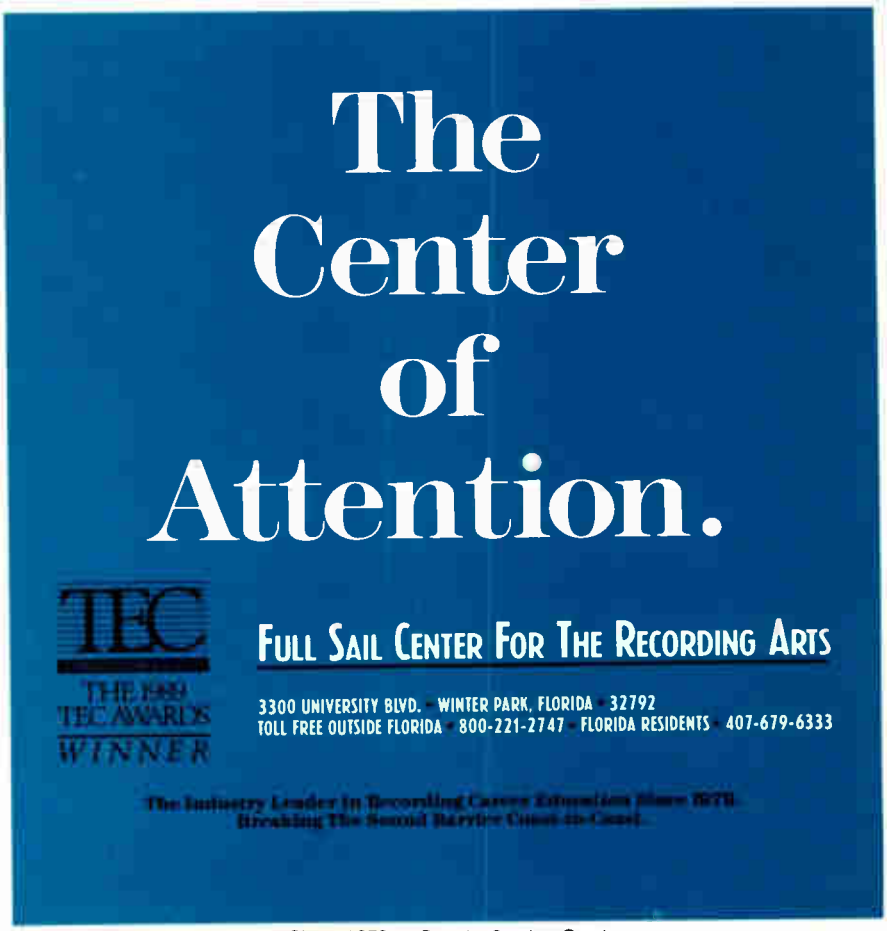
A COMMITMENT TO BETTER SOLUTIONS

The MIDI Manager (see sidebar) is perhaps the most significant contribution to come out of the S&M group at Apple. Although its user interface has made it extremely attractive to S&M professionals, the Mac is a difficult machine to program in general, and especially so for some S&M applications.

One point of contention in this regard was timing—a problem because Macintosh's CPU dealt with video I/O as well as everything else, meaning that video interrupts were generated every time the screen needed to be refreshed or redrawn. This made life particularly difficult for writing real-time applications like sequencing.

A second point of contention had to do with low-level software for driving the serial ports with MIDI data—a problem because Macintosh's system software was created only a year after MIDI's appearance, before the level of demand for that application made itself apparent. This meant that every Mac MIDI software house had to write its own set of MIDI device drivers (small, low-level software modules that deal with the specific needs of a particular peripheral device connected to a computer's port), which they would then provide with each copy of their program. Using one program at a time, this isn't much of a problem. When MultiFinder, Macintosh's multitasking environment, appeared, things got more confusing. MIDI Manager addresses both of these sticky wickets that have, in the past, separated the hackers from the casual coders among developers (see sidebar).

"It's not just a matter of simplification," Lentczner emphasizes, "It's to make it straightforward, transparent. Optimally, you don't even want to see the computer. The fact that the computer is there doing anything should be ancillary, like a pencil. You don't



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see pencils, you just use them. I just want to pick it up and sync with it, I don't care about the formats!"

To facilitate S&M research, Apple has constructed a dedicated laboratory (see sidebar). Although designed for R&D rather than production, Apple made a substantial financial commitment to proper construction and equipment. "It seems ironic," muses Lentczner in reply to the obvious unspoken question. "We build computers with 8-bit sound systems and we have this fabulous listening room. Why is that? Because if you produce hundreds of thousands of these things, your 8-bit system better be damn perfect.

"In the end," Lentczner says, "I can tell you that there is no single sound group at Apple. We're a computer company; we have people who deal with the sound and music aspects for each area of our work in computers that warrants it. System Software has a small sound group that is doing some wonderful things; the CPU hardware folks have some people, like one of the chip designers, who do sound stuff; there's our group, which is looking at what we call 'extensions,' like the MIDI Manager. There are also three separate research groups: one dealing with speech recognition, one dealing with sound connected with multimedia, and one working on really far-out stuff for ten years from now."

With the aid of computers, the changes in the way we work with music and sound over the last 25 years boggles the mind. And if Apple fully builds on its running start over other personal computers in S&M, ten years from now music and sound work could be even easier and more exciting than it is today. ■

Larry the O is a musician whose San Francisco-based company, Toys in the Attic, provides sound engineering and consulting services. He is not his brother.

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In the Belly of the Beast:

Apple's Sound and Music Research Studio

Grinning at technical excellence with the feverish delight that only an engineer can muster, Mark Lentczner proudly displays the well-built research complex where he and the Sound and Music Group work their particular alchemy. Two long rooms on opposite sides of the facility contain a dozen individual workstations, each with a small Yamaha or Korg submixer that feeds each room's set of Rane summing mixers. The outputs of the Ranes feed the room's pair of substantial, self-powered, tri-amped Klein and Hummel speakers. With each station having its own volume control feeding the main system, "it's volume wars all the way," Lentczner admits with a grin. Even though the submixers have headphone outputs, it was Lentczner's adamant insistence that the loudspeaker setup exist in those rooms.

"If you're doing sound work you need to be able to listen to it at a variety of volumes and without headphones. As an engineer you just can't sit all day with headphones over your head; that's one of the things that I abhor and rebelled against. The workrooms are set up so that people can work without headphones and get stuff done and have it be all right to make noise. You're not in an environment

—CONTINUED ON PAGE 90

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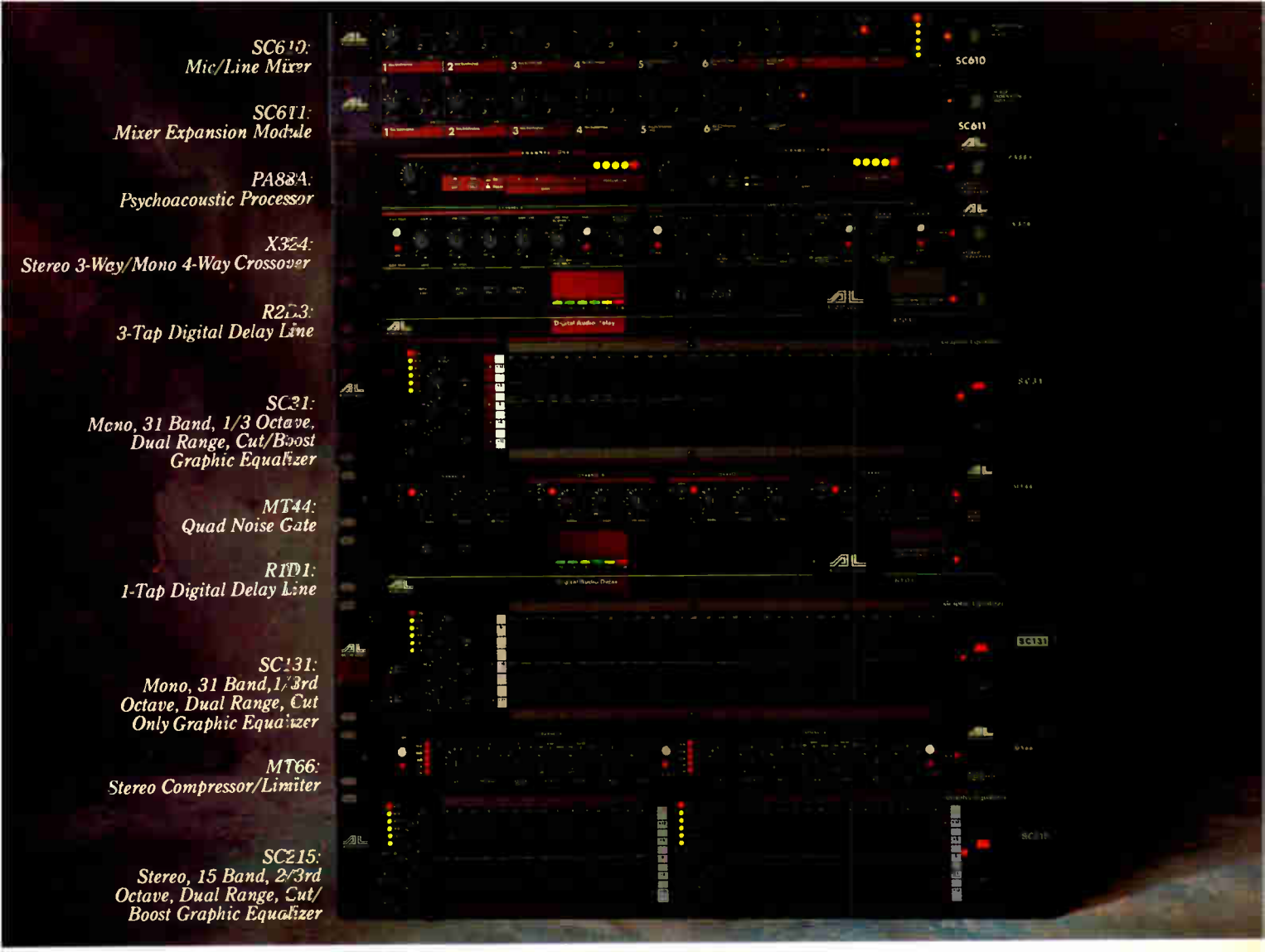

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This chart profiles the four best-selling Audio Logic products. But that's only the beginning. For a hands-on demonstration of the entire Audio Logic line, visit your professional audio dealer or sound contractor. Or write for additional information: Audio Logic, 5639 So. Riley Lane, Salt Lake City, Utah 84107. Or call (801) 268-8400.

AUDIO LOGIC

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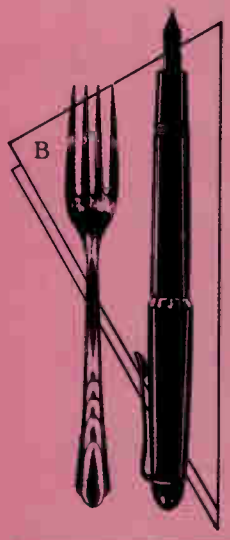
World Radio History

by Mr. Bonzai

PAUL SHAFFER:
THE WORLD'S MOST DANGEROUS BANDLEADER



Paul Shaffer throws a party every night as the affable, adaptable maestro of The World's Most Dangerous Band, those boys in the pit who keep vaudeville alive as David Letterman does the insomniac's delight. And can you imagine *Saturday Night Live* without the Shaffer touch? This guy has worked out with everyone from James Brown to Brian Wilson in the sweatshop of live TV.

Paul called on many friends for his "Coast to Coast" album tour of the United States of Music. Here's just a few of the folks: Dion, Carole King and The Fresh Prince in New York; Allen Toussaint in New Orleans; Wilson Pickett, Bobby Womack, Ben E. King and Don Covay in Memphis; K.C. in Miami; Eric Burdon and Koko Taylor in Chicago; Valerie Simpson in Detroit; Brian Wilson in L.A.; and even "Louie, Louie" in Minneapolis. The complete list of distinctively tasteful musical heavyweights is weighty indeed. We gotta show some respect for this late-night leprechaun who has charmed so many so well.

For our offstage conversation I had prepared some stupid pet questions, but I quickly cooled out to get on his wavelength. I sensed I was meeting a musician from the old school of pros. First of all, he inquired, "What's this Mr. Bonzai stuff?"

"A blend of the art of miniaturization with a gung-ho attitude," I improvised. Since we have to compress his life story into just a few back pages, let's go with that...

Bonzai: Just finished watching a tape of last night's *Letterman* show so that I could get in the mood.
Shaffer: Oh, good, I'm in the mood, having just finished taping tonight's show.
Bonzai: What do we have to look forward to tonight?
Shaffer: Oh, not much this evening. A nude modeling thing, where from behind we got to see a naked girl with huge, huge breasts. The audience just saw her back covered by a sheet.
Bonzai: How do you keep the energy at such a high level on a nightly basis?
Shaffer: Well, it's what I do. All of us have to come in and give a good performance. We do it at 5:30 p.m. and try to make it feel like after midnight.
Bonzai: When I heard about your new album being recorded in so many cities with so many styles, I thought it would be a wild jukebox ride, but actually, it holds together well as a unified piece.
Shaffer: I'm thrilled to hear you say that. Of course, everyone knows that

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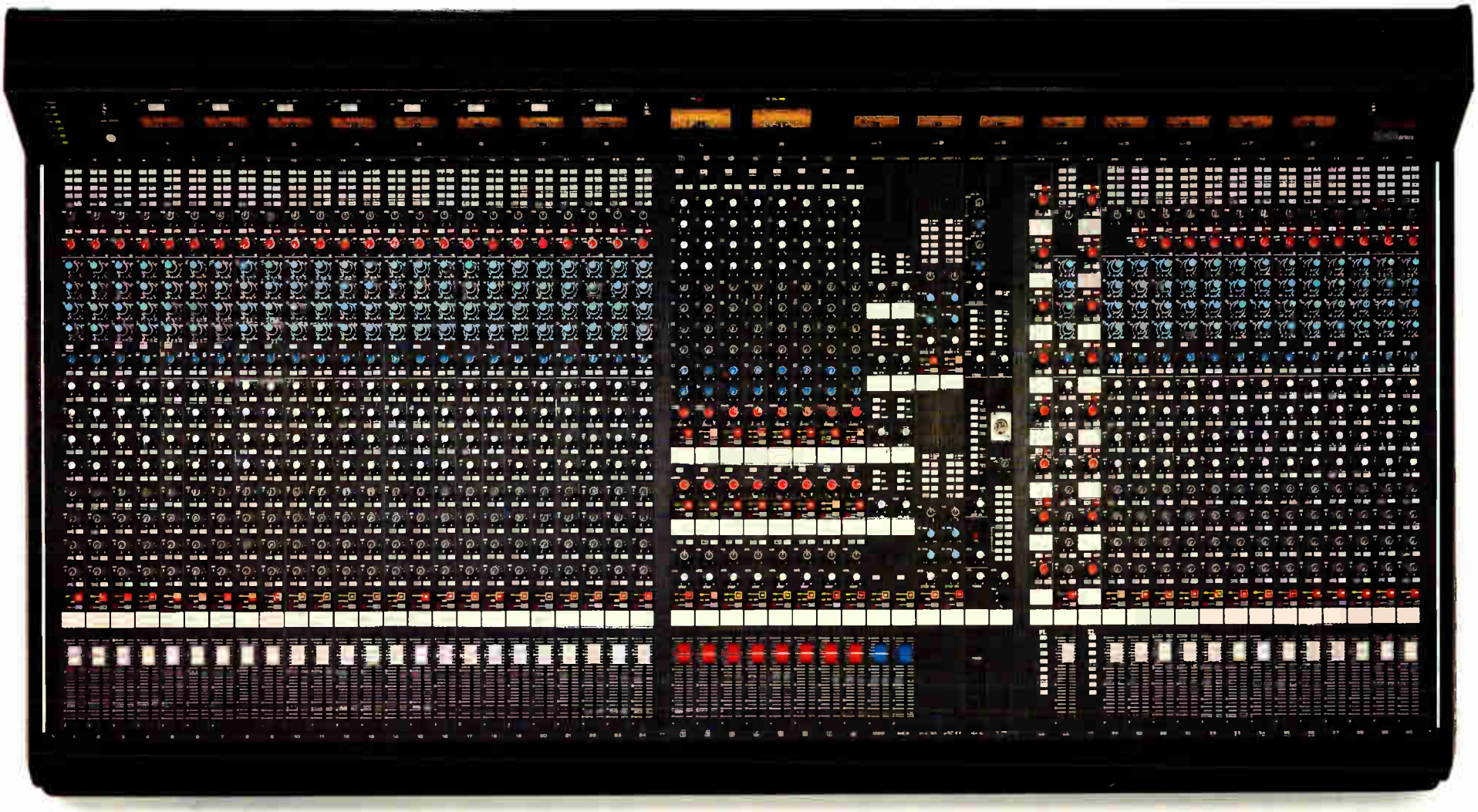

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an album is supposed to have continuity—anybody who reads *People* magazine knows that. I just decided, what the hell, I'm going to do this concept. It has the people and the places that mean a great deal to me. I went to the various cities and collaborated with these people and paid tribute to them. I was just hoping that it would show different aspects of what makes up my musical personality. If you say that it holds together, then I think that it worked for you. It has my sense of humor, and it's got what I got from the people I was working with in those places.

Bonzai: Fine job of singing "One Cup of Coffee." Has anyone told you that you sound like Dr. John's younger brother?

Shaffer: To tell you the truth, I asked Dr. John to sing a duet with me, and he wanted to do it but scheduling did not work out. He's really a lovely guy, and he very much wanted to do it. In the studio, Allen Toussaint just told me to go in and sing it—sell it. I was thinking of what Dr. John might have done.

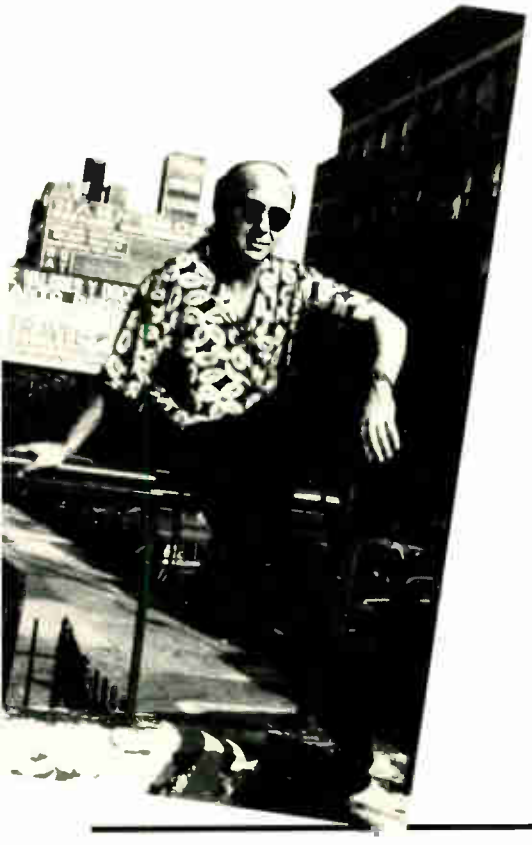
Bonzai: He's become a busy, busy guy these days, hasn't he?

Shaffer: Yes, but it was up to him to want to do it. He's one of the greats, and people will always want to hear him. He's a classic.

Bonzai: Can we rewind to your early childhood and your first musical memories?

Shaffer: My parents had music on in the house, probably to get me to listen. I remember hearing Broadway show tunes, and Tchaikovsky's "Waltz of the Flowers" comes to mind. I remember "Mr. Sandman," and "A Hundred Pounds of Clay" by Gene McDaniels—that was one of the first songs that made me sit up straight and start to listen carefully.

"I'm not a guru, I'm not a tyrant. I'm pretty loose with this band. But they know that I am a stickler for detail and authenticity when it comes to the songs that we play."



Bonzai: I read in *The New Yorker* about your college thesis...

Shaffer: I discovered some interesting things in my field studies. It was during my third year, and I had started playing in a jazz group with a guy named Munoz, a brilliant Coltrane-influenced guitarist. I wanted to learn from him how to play modally, and how to appreciate Coltrane.

I had to go to school as well, but I managed to combine the two by writing a sociological thesis about the deviant subculture of Toronto jazz musicians. They had a status system, just the same as any other culture, but a little bit off. I studied these brilliant jazz musicians who were not making much money playing their kind of jazz. They had to support themselves doing other things. For myself, as a rock 'n' roll fan, I figured there were some gigs that weren't so bad—a crazy show band gig with a tight rhythm section doing James Brown stuff. How bad could that be? Not a bad way of making a living.

But these jazz musicians would only play bar mitzvahs, weddings or what we used to call bad "jobbing" gigs; here they call them "casual" engagements. They would choose to play in the worst Irish pub band so that their "work" couldn't be confused with playing real music. If they had joined

PHOTOS: EBET ROBERTS/1989

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that's where we get in trouble businesswise.

Bonzai: Let's talk about some of the songs on your album—"When the Radio Is On"...

Shaffer: It honors the New York street sound. When I got to New York, I just got in on the very end of that Tin Pan Alley scene that we've heard about from the '60s, where Don Kirshner had writers in cubicles turning out hits and publishers were getting songs to artists. I managed to participate in some sessions, like with Ellie Greenwich and people like The Tokens, who I met around the Kirshner office.

There were two terms they revered in those days of cutting hits in the '60s. One was "dumb." By being dumb, they meant expressing an emotion in a simple and honest way, as a teenager would. A dumb lyric was what they were really looking for—well written, but dumb. Dumb was to be aspired to. Say it direct, say it "dumb." Or just play it "dumb." We want a solo that's dumb. Simple, state the melody.

"Street" was the other word, as an adjective. If you talk about a singer like Darlene Love, the best thing you could say about her is that she is "street," meaning that she sings with the conviction and puts across the simple yet soulful values of the New York street. There is an urban soulfulness there, which The Ronettes had, The Drifters had. I picked up on this stuff, and this song is me trying to be street—but with a lot of help.

I assembled a choir of the greatest street singers to do the doo-wop aspect, and two great rappers to do the hip hop. I figured that street music in the '60s was singing, *a cappella* harmonizing, and street is still happening musically in New York, but now it's hip hop, break dancing, rapping in the street. I set out to combine those things. I was able to call these people because I had worked with most of them on the *Letterman* show.

Carole King and Ellie Greenwich joined us. Between them they wrote every song—Carole with "Will You Still Love Me Tomorrow," "Locomotion," "Natural Woman"—so many of my favorites. Ellie with "Be My Baby," "Da Doo Ron Ron," "Chapel of Love." Putting these two babes together in the studio was history. The male singers were the greatest—each a great doo-wop voice. Jay Siegel, lead singer of The Tokens, he sang the high falsetto voice in "The Lion Sleeps Tonight." They call him "The WeeDee-DeeDee Man," 'cause it went [sings] "wee-dee-dee-dee." Johnny Maestro, the great singer from The Crests, the first integrated doo-wop group—they sang "Sixteen Candles," and then he came back with a second career in The Brooklyn Bridge and "The Worst That Could Happen." A great *bel canto* doo-wop voice. Dion, king of the New York street—a thrill to work with him. He was a big influence on me. Ronnie Bright, the bass singer who sang "Mr. Bassman." The rappers: The Fresh Prince, from D.J. Jazzy Jeff and The Fresh Prince. The first rap is done by Ecstasy from the rap group Whodini.

Bonzai: It sounds like you could teach a college course in modern music.

Shaffer: This album was a course. It really was.

Bonzai: Then you went down to New Orleans for "One Cup of Coffee."

Shaffer: Yes, I first met Allen Toussaint about four years ago. I was in New Orleans doing a Cinemax show with Fats Domino, Jerry Lee Lewis and Ray Charles. It was called "Fats and Friends," and I was musical director and host. I met Allen, and he took care of me and showed me New Orleans. He was one of my childhood idols—songs like "Mother-in-Law," "Workin' in a Coal Mine," were some of the early rock 'n' roll songs that first got me. Hangin' out with him and jammin' in clubs gave me the idea of doing a record like this. Imagine it—partying in New Orleans with Toussaint and being able to do this in other cities with the people I knew. That's how this record came to be. Toussaint is a gentleman, the classiest guy I've ever met. A wonderful pianist and scholar, as is Dr. John. Both students of Prof. Longhair.

Bonzai: Then out to California to go surfin' with Brian Wilson.

Shaffer: That was a big thrill, too. I am a big Brian Wilson and Beach Boys fan. The first time I met them was at Live Aid. I became friends with Billy Hinsche, who plays keyboards with their band. He was Billy of Dino, Desi and Billy. It was through him that I got to sit in with the Beach Boys a few times. They flew me out to Honolulu to be in their television special. A great place to meet Brian Wilson.

When he did his solo album, I so

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wanted to be on it as a studio musician that I stooped so low as to "drop by to say hello" at the studio when he was working in New York. I didn't get on the record, but he did stop and play me some things he was working on, including a little rock 'n' roll vamp that he hadn't finished yet. It was just a little one chord thing that intrigued me, because it was like the "Little Deuce Coupe" side of Brian Wilson, the rockin' side, which is also brilliant. Anyway, his album came out and this tune wasn't on it.

When he came on the *Letterman* show, I asked him what happened to the little rock 'n' roll thing, and he asked if I wanted to finish it with him. Just like that. I asked if we could do it for my record, and a conversation ensued with his partner, Dr. Eugene Landy. So we did it—another thrill. Brian and I expanded on the vamp to make the surf instrumental that it became, with Dick Dale, Joe Satriani and Joe Walsh on guitars. All of that multilayered vocal stuff that Brian does is so great, but we decided to do a surf instrumental. What the heck.

Bonzai: Eric Burdon. We don't hear too much about him these days.

Shaffer: No, but he is one of my favorites. He and The Animals were a big influence on me. We hit it off when he did the *Letterman* show to such a degree that I had the nerve to call him. He was interested in doing something live, which is what we did. We recorded in front of a Chicago club audience. He brought in the song "Room With a View," which a fan had given to him. He, of course, is an English guy so influenced by the blues—one of the British invasion kids who came here handing us back our own blues music. I think it was quite fitting to bring him to Chicago with my rhythm section and some authentic blues cats, Buddy Guy and Sugar Blue.

Bonzai: And you have the theme "Late Night" on the album, an instrumental that instantly conjures up a mood, images...

Shaffer: Well, I met Booker T. for the first time during the rehearsals for the Atlantic Records 40th Anniversary show last year. I was musical director, and that was close to being part of history. I was onstage for almost 12 hours and got to play with all the Atlantic acts. Booker T. was going to play, but got food poisoning at the last minute and didn't make the gig. But we rehearsed together and he played me the *Letterman* theme, which he had learned on organ. This confirmed to me that it was a real instrumental, so I put it on the album.

Bonzai: One of the other songs on the album, "Wang Dang Doodle," I've wondered about this for so many years. How does one Wang Dang Doodle?

Shaffer: How does one pitch a wang dang doodle? To me, it means to have a helluva time. I would hope that there is some sort of sexual innuendo involved as well.

Bonzai: Of all the people you've worked with, who was the most fun?

Shaffer: The biggest charge was working with James Brown. I'll never get over his first appearance on the *Letterman* show.

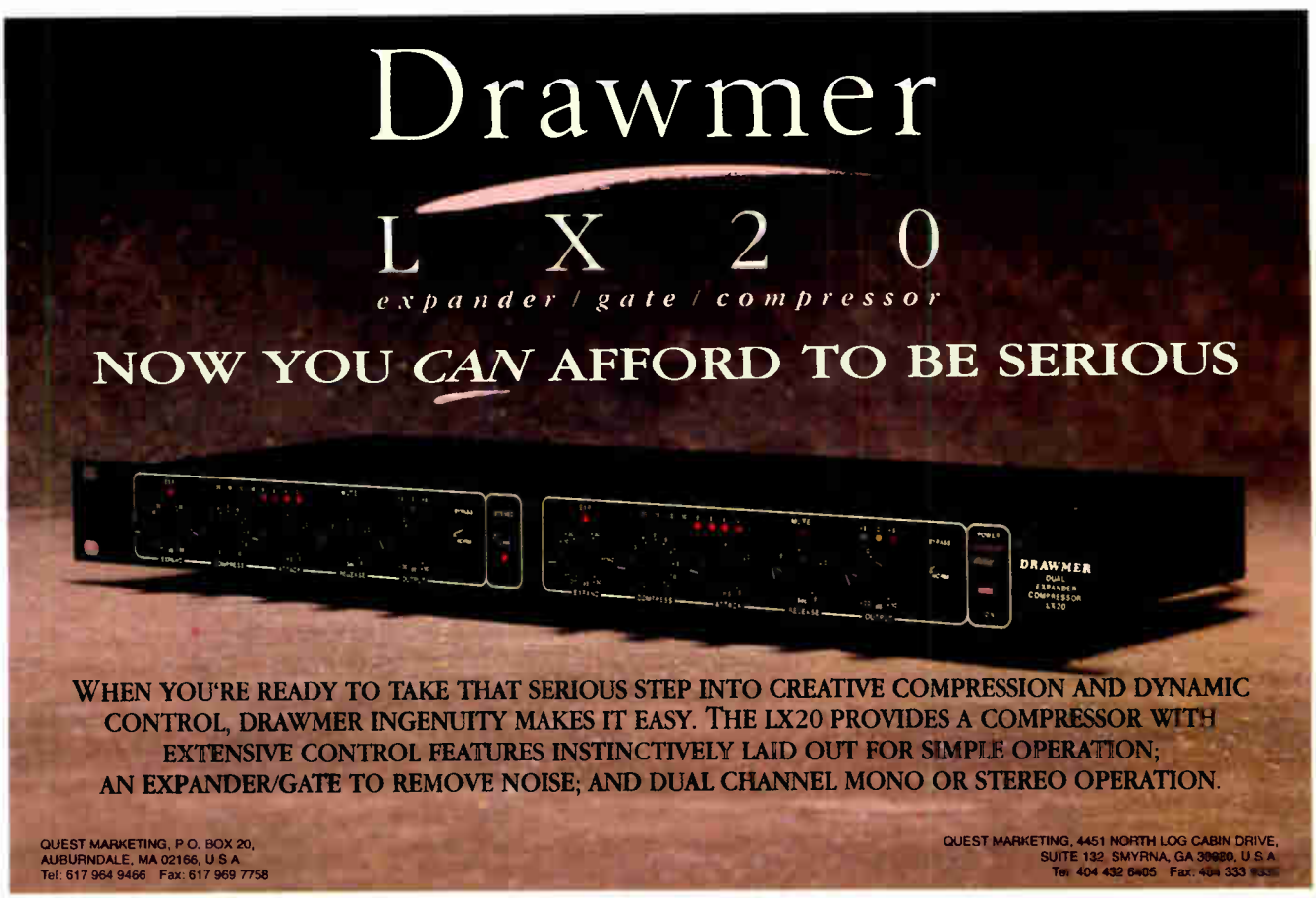
Bonzai: What do you think about him being stuck in the slammer?

Shaffer: It saddens me. This guy invented so much of what we are still dancing to—more so today than ever. I feel bad. I look forward to his freedom.

Bonzai: How shall we wrap this up?

Shaffer: Let's go get a sandwich. ■

Like Paul Shaffer, Mr. Bonzai is a "nutty guy."



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World Radio History

INDUSTRY STARS COME OUT FOR 1989 TEC AWARDS

Nearly 700 audio professionals—including some of the industry's biggest names—were on hand October 19 for *Mix*'s fifth annual TEC Awards, held at Manhattan Center Studios in New York City. Herbie Hancock, Laurie Anderson, Robert Moog and Neil Dorfsman were among those presenting awards to the 20 individuals and companies voted the best of the year by *Mix* subscribers. In addition, George Martin, Rupert Neve and Wally Heider were inducted into the TEC Awards Hall of Fame.

A record-setting $34,000 was raised for deafness research and audio scholarships, with the proceeds going to the House Ear Institute of Los Angeles, the Audio Engineering Society Educational Foundation and Full Sail Center for the Recording Arts. Full Sail, winner of the Outstanding Recording School award, also received a matching grant of recording tape from Agfa Corporation.

TEC Awards executive producer Hillel Resner (L) and *Mix* magazine editor-in-chief David Schwartz (R) congratulate New England Digital's Ted Pine for winning the TEC Award for Outstanding Musical Instrument Technology.

Keynote speaker, chairman and CEO of ACT III Communications Norman Lear (center), and his wife, Lyn, talk with Hall of Famer Les Paul before the ceremony.

Bruel & Kjaer president Geoff Perry (L) and Pro Audio Group manager Adrian Weidmann (R) present Jeanne Bone of the House Ear Institute with their donation of a Modular Precision Sound Level Meter.

Rupert Neve (L) accepts the Hall of Fame Award from David Schwartz.

ALL PHOTOS BY ANDY FRENCH

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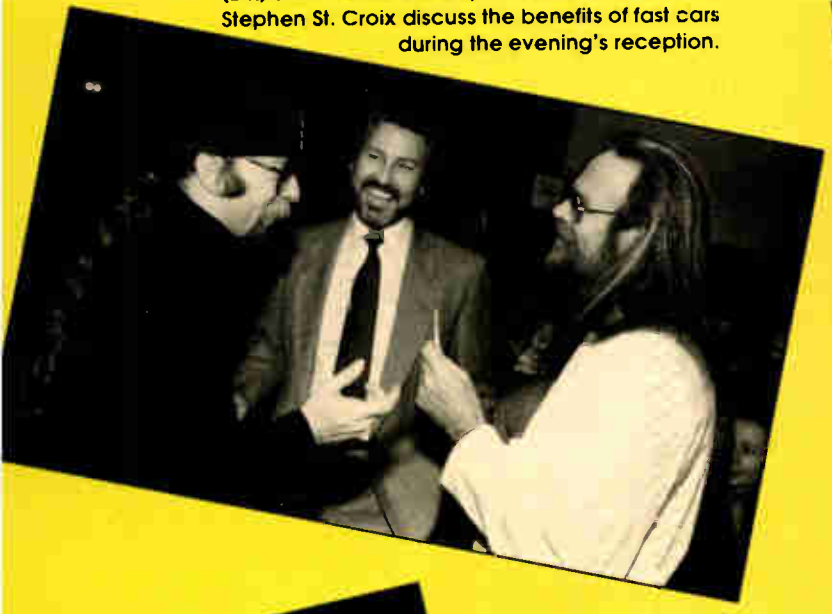
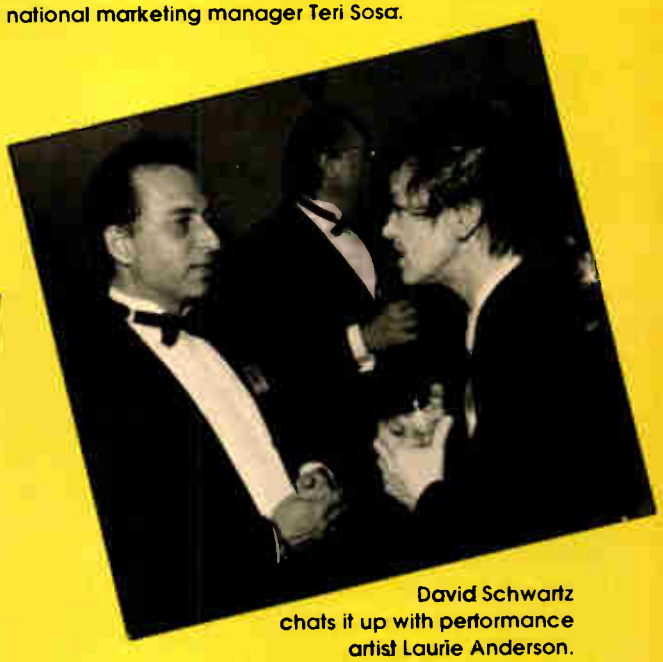
Engineer Bill Porter (L) and musician Herbie Hancock present awards in the Outstanding Creative Achievement category.

(L-R) Agfa national sales manager Andrew DaPuzzo, Full Sail Center for the Recording Arts president/founder Jon Phelps, Full Sail senior vice president Gary Jones, Esther Phelps, Agfa Atlantic regional sales manager Bob Zamoscianyk, Full Sail vice president/director of advanced studies Gary Platt and Agfa national marketing manager Teri Sosa.

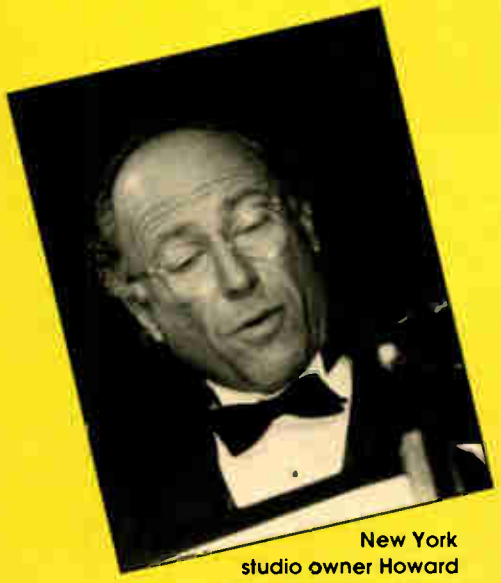
(L-R) Jeff "Skunk" Baxter, Otari's John Carey and Stephen St. Croix discuss the benefits of fast cars during the evening's reception.





David Schwartz chats it up with performance artist Laurie Anderson.

Electronic Musician editor Craig Anderton (L) and Mix consulting editor Stephen St. Croix (R) swap stories with synthesizer pioneer Bob Moog.



New York studio owner Howard Schwartz gives a touching tribute to his friend and mentor, Hall of Fame inductee Wally Heider.

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1989 TEC AWARD WINNERS

OUTSTANDING TECHNICAL ACHIEVEMENT

Signal Processing Technology
Lexicon LXP-1
Multi-Effects Processing Module

Transducer Technology
Bruel & Kjaer
Studio Microphone Type 4011

Ancillary Equipment Technology
Lexicon MRC MIDI Remote Controller

Console Technology
Neve Flying Faders

Computer Hardware/Peripherals
Apple Macintosh SE/30

Music Software Technology
Mark of the Unicorn
Performer Ver. 2.41

Musical Instrument Technology
New England Digital
Synclavier ® 3200

Recording Devices/Storage Technology
Sony PCM-3348 Digital Multi-Track Recorder

OUTSTANDING INSTITUTIONAL ACHIEVEMENT

Sound Reinforcement Company
Clair Brothers

Remote Recording Facility
Le Mobile

Recording School/Program
Full Sail Center for the Recording Arts

Acoustics/Studio Design Company
The Joiner-Rose Group

Mastering Facility
Masterdisk Corporation

Recording Studio
Power Station

HALL OF FAME

Wally Heider
George Martin
Rupert Neve

OUTSTANDING CREATIVE ACHIEVEMENT

Sound Reinforcement Engineer
Buford Jones

Remote/Location Recording Engineer
Guy Charbonneau

Audio Post-Production Engineer
Joel Moss

Mastering Engineer
Bob Ludwig

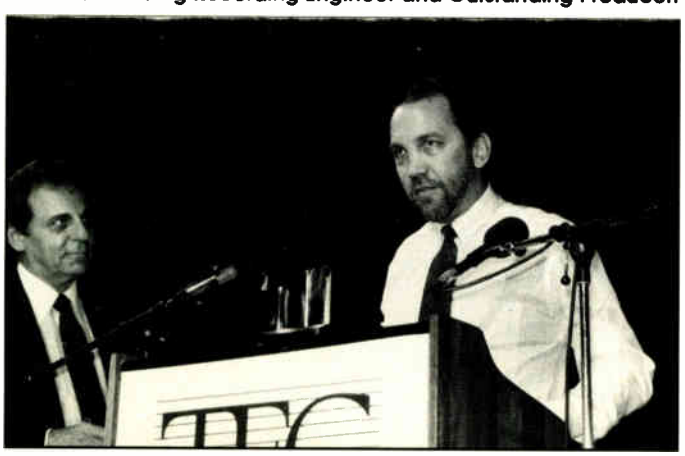
Record Producer
George Massenburg

Recording Engineer
George Massenburg

(L to R) Troy Clair of Clair Brothers accepts the TEC Award for Outstanding Sound Reinforcement Company from SPARS president Bruce Merley and *Mix* editor-at-large Mr. Bonzai.

(L-R) Lexicon president Ron Noonan accepts one of two TEC Awards from *Mix* senior editor John Woram and *Electronic Musician*'s Craig Anderton. Lexicon won for Outstanding Signal Processing Technology and Outstanding Ancillary Equipment.

Hal Blaine (L) looks on as C. J. Flynn accepts one of two TEC Awards for George Massenburg. Massenburg garnered the awards for Outstanding Recording Engineer and Outstanding Producer.



Power Station's Tony Bongiovi (R) congratulates Neve president Barry Roche as he accepts the TEC Award for Outstanding Console Technology.

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Cornerstone Recorders
CPN-TV
Digital Recorders
The Enterprise
Estefan Enterprises
Full Sail Center for the Recording Arts
Gibson Productions
LA Sound
New Age Sight and Sound
Powertracks
Rock Video International
Rumbo Recorders
Sigma Sound N.Y.
Streeterville Studios (x2)
George Tobin's Studio Sound
Todd A/O

Special congratulations to TEC Awards Winners Guy Charbonneau, Le Mobile, Bob Ludwig, Masterdisk, The Power Station and Full Sail Center For The Recording Arts

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Equipping the Entry-Level Facility

DEALERS SPEAK OUT

by George Petersen

Once upon a time, not too long ago, things were very simple. There were 24-track studios, 16-track studios (2-inch), 8-track (1-inch) and 4-track studios, along with 2-track and mono rooms specializing in voice-over and radio spot production. Consoles were simple affairs; all you really needed was a couple of effects sends per channel, and a couple more inputs than the number of channels on your tape machine.

Obviously things have changed from this status quo of a mere one-and-a-half decades ago. Today, the number of recording formats—both in current use and announced—is staggering. Among them are: 48-track DASH digital; 40-track, 2-inch analog; three 32-track formats (2-inch analog, ProDigi and 3M digital); three 24-track varieties (2-inch, 1-inch Tascam and DASH digital); four 16-tracks (½-, 1- and 2-inch analog and PD digital); Akai's 12-track analog and A-DAM digital; six 8-track formats (Toa and Tascam cassettes, ¼-, ½- and 1-inch analog, and Yamaha's forthcoming 8-track digital cassette); Sansui's 6-track cassette; and numerous 4-track formats, ranging from ⅛-inch cassettes to at least three stand-alone digital formats (Audio + Design, Colossus and Akai optical). This list provides 30 different recording formats, and doesn't even include the various workstation and computer-based systems.

During the latter part of the past decade, the techno-magic of MIDI and low-cost synchronization systems (such as those pioneered by Fostex) brought the concept of desktop audio to affordable reality. By combining near-field monitoring, computer-based virtual MIDI tracking, cost-effective signal processors and consumer-borne digital recording formats (PCM-F1 and DAT), a new genre of studios emerged. For a small investment, nearly anyone could enter the recording industry and have the capacity to produce results that could rival—if not exceed—the quality of many top facilities.

Yet with this recording revolution came more equipment, providing pro-

Shown here are three of the myriad recorder choices for the small studio. At left is the Otari 5050 Mk III/8; priced at $5,495 (less locator and stands), this 1/2-inch, 8-track has proved to be a dependable workhorse. Fostex pioneered the 1/2-inch, 16-track format; priced at $7,995, the E-16 (center photo above) is a second-generation design. At $13,999, Tascam's 1-inch MSR-24 (top right photo) brings the notion of affordable 24-track recording to reality.

grammability, new options, a myriad of features and even more complex questions (certainly in the area of interfacing equipment) as the lines between pro, semi-pro and consumer gear began to blur. (Could a typical buyer in a CD store really hear the difference between a project mixed on a "home" or a "pro" DAT deck?) And choices are becoming more numerous, as products such as Tascam's recently introduced MSR-24 (a 1-inch, 24-track recorder priced at under $15,000) continue to make waves throughout the industry, just as Fostex did some years ago with its debut of the B-16, the world's first ½-inch, 16-track (and refined in the current model, the second-generation E-16).

Clearly, decisions concerning how to equip a professional recording facility—particularly with a modest budget—are not easy, and the pro audio dealer has become an essential partner in the success or failure of a small-recording business. We talked with a number of retailers nationwide, soliciting their advice on selecting recording gear for the most basic com-

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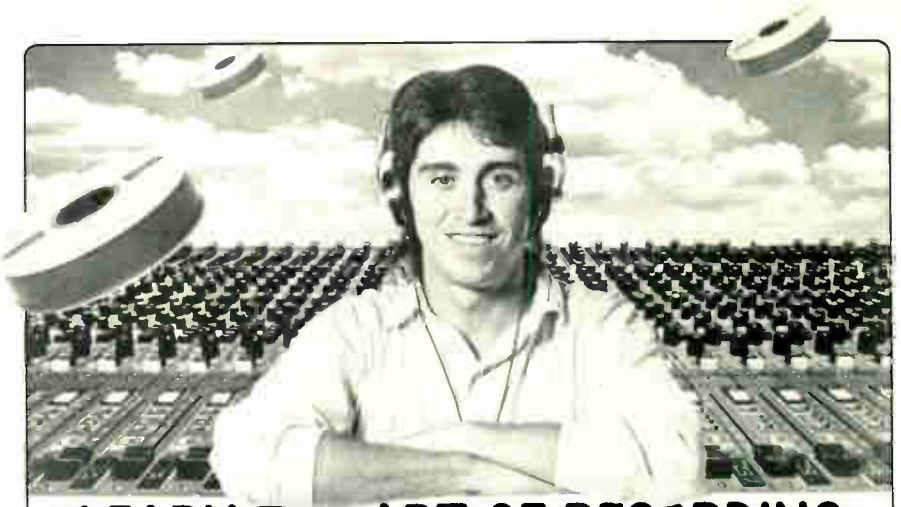
mercial studio setup. We chose a $20,000 figure, which probably best represents an entry-level system with simple, yet solid, 8- or 16-track gear (not including MIDI instruments, computers or video equipment).

Careful preplanning is an essential step before you begin spending, according to John Loeper of AudioLine, an equipment supplier with offices in Chicago, Milwaukee and Kansas City. "Some pro audio industry dealerships are driven by how fast you can get the customer's wallet, take the money and run—without analyzing their short- and long-term requirements," Loeper warns. "We spend a lot of time doing an in-depth analysis of what this person wants to do with this equipment and what would best suit their purposes. In some cases, we suggest waiting until they can afford to do what they want, or map out some sort of long-term purchase plan; get the initial pieces of equipment to get started right now, and gradually add other pieces into the system."

"One common misconception that customers have is that the dealer is there to rip them off," laments Ron Timmons of AIC Pro Audio in San Francisco. "A customer attempting to decide where to buy gear should try to figure out who's going to give the straight story. You can always find a guy who can beat your price, but it's important to find a dealer you can trust. We get a lot of business from word-of-mouth recommendations, and we try to live up to that. A client coming into a store for the first time should really try to seek out the boss or the owner of the company—because he's the guy that's going to be there for the next ten years—and talk to him a little. It's important."

Prospective buyers need to take a long, hard look at their future goals, particularly when selecting a console, which is usually a studio's largest single investment. "In the eight to ten years that I've sold equipment, it's always been satisfying to see places that started out as 8-track studios and wound up being 24-tracks, never thinking they would work their way up there," notes Robert Forman of Washington Professional Systems of Washington, D.C. "With consoles, I advise customers to get the largest frame and bus configuration they can afford. If they may want to be 8-track now and eventually work up to a 16-track setup, I suggest going with a 16-bus console with a 24- to 36-input frame and



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short-load the console until they've worked their way up to 16-track. When starting out, I always advise people to get the best equipment they can afford, even though it doesn't get them a lot of quantity. If you get a good console—like an Amek Scorpion or a Soundcraft—to start out with, then typically you will get a good resale once you outgrow it."

This need to plan for future facility growth when considering a console purchase is shared by Wes Dooley of Pasadena, California-based Audio Engineering Associates. "If you really want to do 16-track later," Dooley advises, "then start off with a board that will support it. We try to plan where the client wants to go over the next few years and then put enough together right now to get them that way, without foreclosing the future.

"Some people don't really need much of a console if they're tracking," Dooley explains. "If they're going to be mixing and want to layer six levels of echo, that's very different. They might prefer a console with six auxiliary sends, or [else] they should expect to go through a lot of insert points. For tracking, you could get away with a 24 × 4 console and some clean preamps. We have a demo mic preamp package here that has a Symetrix stereo pair, a Summit mic pre, a Studio Technologies Mic Preeminence, one of our A.E.A. MS-380s, and some metering and Monster Cable. So if someone just wants to do tracking, they can try this package for a day and get an idea of how important the mic preamp is to the final sound."

The industry once relied on tried-and-true guidelines that spelled out certain percentages of a total studio budget, such as 50% for the console, 30% for tape machines, etc. However, such axioms bear little semblance to reality today, especially with facilities such as MIDI scoring rooms that may have no need for a multitrack at all.

"There really aren't any formulas anymore," explains AudioLine's Loeper, "because there is so much to choose from out there. With audio consoles covering the gamut of price ranges, allocating any certain percentage to an audio console or tape machine doesn't have any bearing anymore. It comes down to the facility's needs. I'm always more concerned about a customer's selection of a tape machine, because that has the biggest wear-factor, while the mixing console pretty much stands idling most of the time. So if a person is planning to do a lot of overdubbing or back-and-forth synchronization work, we suggest spending a greater percentage on the tape machine. Someone using a machine eight to ten hours a day, five days a week, should be looking at a $5,000, $6,000 or $7,000 8-track, instead of a $3,000 machine."

"There are other costs to look at beyond the initial expenses for equipment, such as tape costs," adds Forman of Washington Professional Systems. "With a ½-inch, 8-track versus a 1-inch, 16-track, you're looking at $25 per reel as opposed to $60 per reel. If you're planning to record a lot of music and put a lot of things down on tape, that expense becomes pretty significant over a period of time."

Customers should analyze their signal processing needs carefully and take some time before making the purchasing plunge, says AudioLine's Loeper. "There must be a zillion companies making signal processors, and they all say they have the best digital reverbs and effects devices. Buyers really need to sit down and *listen* to these boxes and not get caught up in the hype and advertising and marketing claims. Then you quickly start to become aware of the sonic differences between them; many of them sound very 'electronic' and artificial. We spend a lot of time with customers to find out what their needs are, and in a lot of cases, we'll set them up with very basic processing. Buy a halfway decent compressor/limiter, noise gate and a decent-sounding reverb, and let all the other toys and tricks come as you need them."

Certain items, such as cables, mic stands, racks, splicers, accessories and even microphones are sometimes omitted from a studio's equipment budget. However, even if money is tight, "I always suggest that people get one really good microphone," advises Washington's Forman, "something like an AKG 414 or a Neumann U87, and fill out the rest of their collection with Shure SM57s and a couple of good condenser microphones. It's nice to have one really hot mic for vocals, sampling and any acoustic instruments in the studio."

Unfortunately, one crucial link is often overlooked. "The monitoring system is the most important element of the signal processing chain," notes AudioLine's Loeper, "because if it doesn't sound good coming out of a

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pair of speakers, then it won't sound good going onto tape. Monitors are an extremely personal thing and it's a tough choice. Therefore, you should spend a lot of time analyzing speakers and *listen* when making that selection. Other factors include the size of the room and what you're going to do with the speakers: Will they be soffitt-mounted, wall-mounted or sitting on top of your console in the near-field? These all determine the size of the box that would best suit the room, and then you should make your evaluations hearing material you're familiar with, on speakers from different manufacturers. Also, make sure your amplifier complements that speaker system with the necessary headroom, dynamic capability and reliability over a long period of time."

While equipment choices, purchasing and financing decisions weigh heavily on the mind of any prospective studio owner, there are a few hidden variables to consider as well.

"Unless you're just buying boxes to take home and figure out for yourself, making the whole system work is a key factor, as is service," says Timmons of AIC. "An important question to ask is: Who's going to repair it when it breaks? If it's large and heavy, can it be fixed at your home or studio? Or do you have to disconnect the whole thing and bring it to the dealer? We have technicians who go out to your place and fix it there. Of course, this costs money, but not during the warranty period. An important question for commercial studios is whether the dealer can loan you something while your unit is in for repair. This is particularly important for commercial studios that have to depend on a certain piece of gear."

The audio dealer must wear several hats to do the job right, and these range from wizard to seer, from confidant to counselor. "There are a variety of different approaches, but rarely do people have the experience to make judgment calls," comments Audio Engineering Associates' Dooley on the dealer-as-adviser relationship.

"We in effect act as a consultancy for the customer, which is very awkward, because we sell equipment. We do have a prejudice in that we sell equipment we think is good. We're involved in something that's part art form and part technical exercise—which is quite technical if it's done right—and part 'do your dance, get the deal.' A very complex mix." ■

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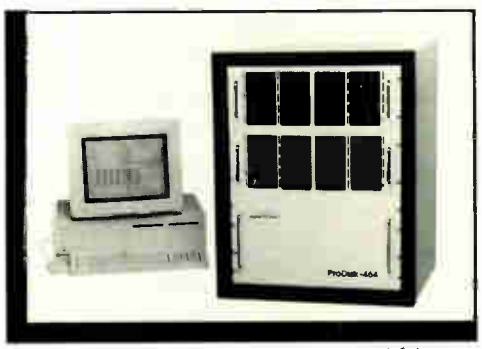

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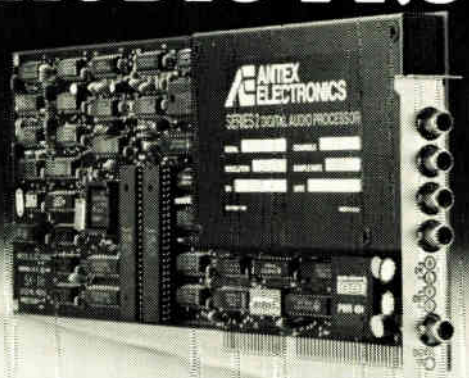

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—FROM PAGE 70, APPLE MUSIC

where people are yelling at you to be quiet.

"At the center of the studio," continues our engineer-cum-tour guide, "there are three separate rooms: an equipment room where all the audio lines from the two side rooms are fed and can be switched, a more traditional 'quiet' room, and a control room set up with a console for controlling the audio in and around the studio. The heart of it is the center room, which we call the 'listening room' rather than the 'recording chamber' because, for the most part, we use it for critical listening: being able to play sound under perhaps the most favorable listening conditions we could create to hear what it is our systems are actually doing. To be honest, most of the time you're programming stuff around this hardware and getting it to either make a noise or not; you're not doing the fine critical listening. But when you need to do the critical listening, you have to have an adequate environment. That's what this room is for."

The Charles Salter and Associates-designed room is a fully floating concrete room with double-wall construction. Lentczner waxes ecstatic over this room: "It's rated at A15, which says that ambient noise is expected to be below the threshold of hearing, and what I love is that it's even that way when the air conditioning is full blast."

The rooms are well connected to each other, with patching facilities to all rooms and conduit between the control room and listening room so that additional cabling can be run when needed without compromising the integrity of the acoustics. There is also a lot of MIDI at Apple's Sound R&D lab.

"We have a lot of MIDI around because we feel that MIDI is highly important. Each station has got its own MIDI ins and outs and two JL Cooper MSB 16x20 MIDI switchers route all those connections. There are eight MIDI connections in the listening room and eight in the control room plus tielines that go all the way into the equipment room, so there's a fairly extensive MIDI switching matrix. We really need it, there's no question."

—Larry Oppenheimer

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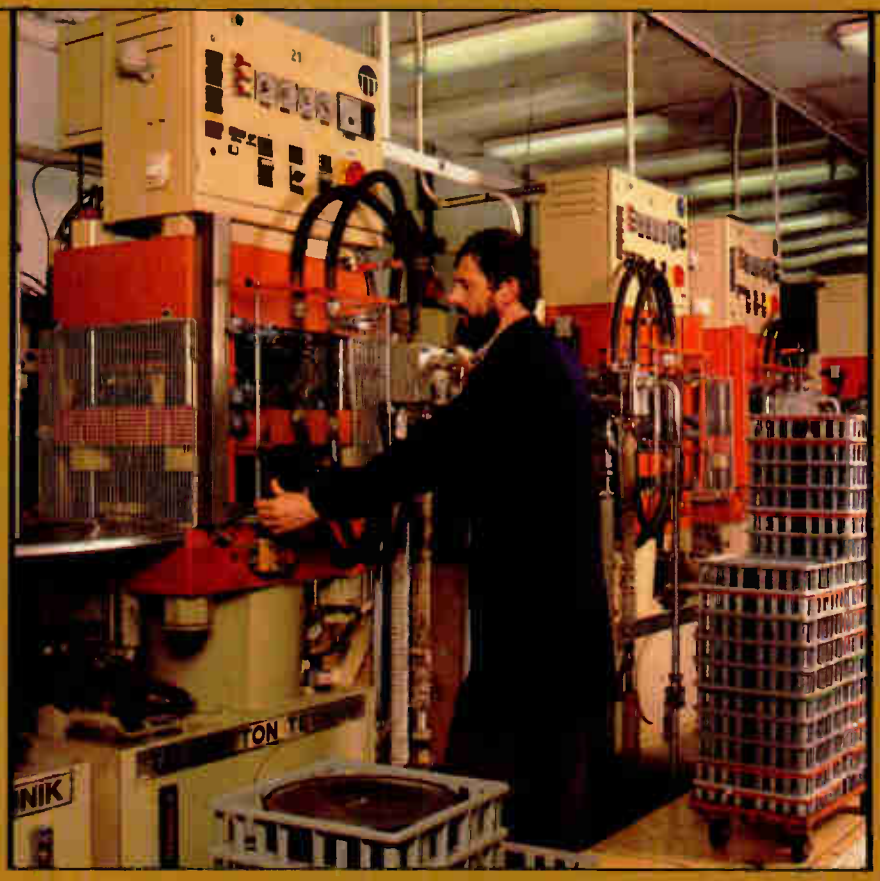
RECORDING IN HUNGARY

ART IS THE KEY



While the audio industry in this central European country of 10.6 million people may not rank with that of other countries in terms of its volume, Hungary does have a long history in disc production that dates back to the 1890s.

In its recent history, most of the record production activity has come from Hungaroton, a state company. Jeno Bors, who has directed the company's output since 1965, explains: "When I took over, it was a type of publisher with one studio. Since then, we've set up our own wholesale organization and outlets, with our own plant at Dorog and a joint export/import bureau with the Hungarian Kultura Foreign Trading Company."

Over the years, Hungaroton concentrated on producing what public relations manager Peter Rakosi describes as "art records." This approach seems to have paid off well, with hardly a year passing by without Hungaroton picking up at least one prestigious industry award for its output. Its winning streak emerged from its knack of combining outstanding artists (many are graduates of the Budapest Ferenc Liszt Academy of Music) with the major classics, such as its collection of the complete works of Bela Bartok, a 38-record set released in 1976.

Taking a cue from the Japanese

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high-tech industry, Hungaroton used a Classical Music Sony digital mixer to produce and release 4.5 million records, 4.4 million cassettes and 410,000 CDs last year. Even without the benefit of expensive promotion campaigns launched by larger companies, Hungaroton's emphasis on art and quality ensured a 100% sale of each release. Rakosi adds, "Quality is indeed important. We not only have to rival well-known companies, but [we must] do a little better. For years we've pursued a conscious repertoire policy based on Hungarian music life, releasing works not played or recorded before."

With a number of in-house composers on tap, ranging from Ferenc Liszt to Zoltan Kodaly, Hungaroton is in a fortunate position. "As Haydn spent decades in Hungary, the Hungarian performance is acknowledged as an authentic Haydn interpretation," Rakosi explains. As such recordings became known among buyers abroad, more attention was paid to other Hungarian releases.

When the company released a three-album Bartok archive, Peter Cosse, the Austrian Fonoforum critic, said, "I regard this as one of the most outstanding undertakings of gramophone record history." Not surprisingly, the collection picked up seven of the prestigious International Liszt Record Grand Prix Awards. Set up by the Budapest-based Liszt Society, the awards are presented each year in the Budapest Liszt Academy of Music on October 22, the maestro's birthday.

According to Rakosi, other international distinctions include: 44 awards from both the Grand Prix Academie Nationale du Disque and Grand Prix Academie Charles Cros; six Belgian Music Critic awards; and grand prizes from the Japanese Gramophone Record Academy, International Acoustical Biennale, International Record Critics, Mumm and Diapason d'Or; and ten Hungarian Record of the Year prizes.

"We have a diversified profile and use eight labels: Hungaroton, Start, Favorit, Bravo, Pepita, Profil, Gong and Qualiton," Rakosi says. Among the categories of classical, pop, folk and children's, the vast majority of CDs (96%) are classical. Total annual sales volume amounts to 980 million forints [about $18 million], and the company has license and general contract agreements with EMI, CBS, DG and WEA.

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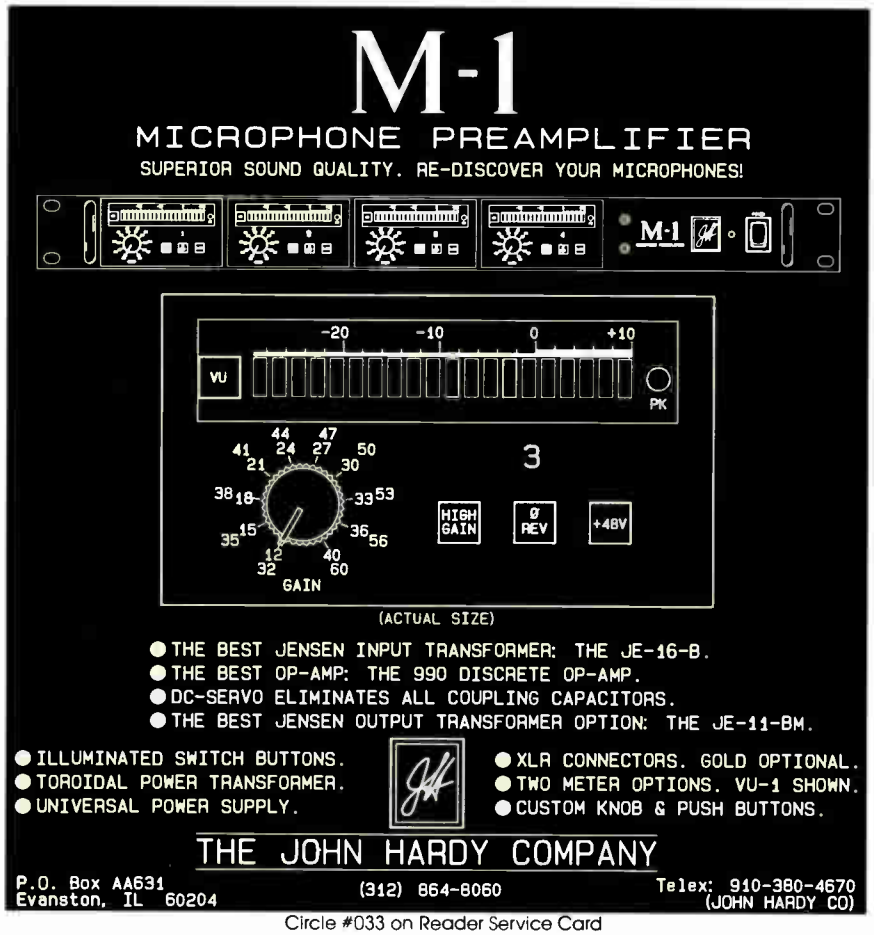

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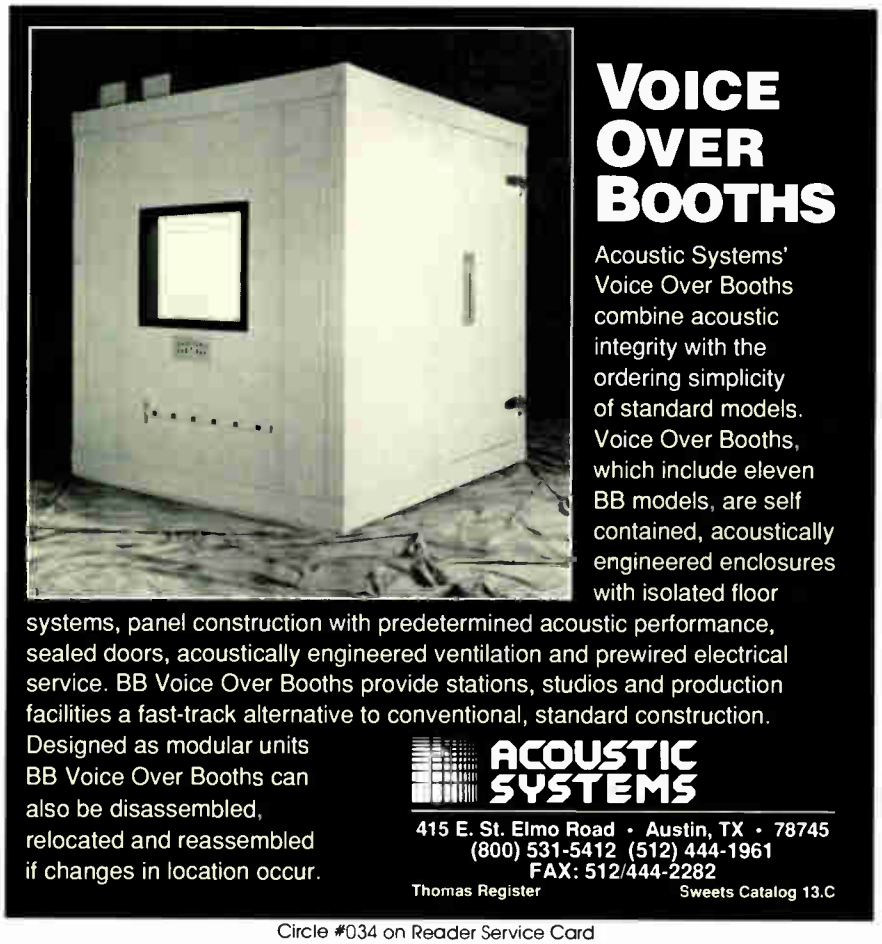

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About 40 titles are bought each year, mainly those of pop stars.

For many years, Hungaroton has used low-cost light and pop music revenue to offset the cost of its classical and educational records. In addition to its domestic outlets, Hungaroton broke into the international light music market some years back, and it has been estimated that more discs of the Hungarian Neoton Family pop group sell in Japan than in Hungary.

This description of the local Hungarian scene would not be complete without mention of a handful of small studios that have sprung up in recent years, also releasing pop music under their own labels. Of these, only Nivo Studio has its own pressing plant and also accepts custom orders. The company usually records the kind of artists that Hungaroton tends to turn down, but Hungarian heavy metal apparently finds a ready market.

It is estimated that there are about 10,000 CD players in Hungarian homes. Radio Budapest uses 60 Philips and Studer CD machines in its studios and editing suites. DJs are playing CDs in increasing numbers during broadcasts.

One recent development involves the formation of Gloria CD Ltd., a joint venture involving Hungaroton, Hungarian Credit Bank, Hungarian Videoton Radio/TV plant and Lako of Holland. The new company aims to press 6 million CDs a year; 95% of the output will be for export.

Hungarian Radio is also getting into the record business. Based on its archive material, in 1986 it started to release Radioton works recorded in its studios. To date, the company has issued approximately 50 releases, including 20 in 1989. Radioton releases are pressed by Hungaroton's Dorog plant. The company has already established a U.S. outlet: Qualiton Imports, 39/28 Crescent Street, Long Island City, NY 11101; (718) 937-8515.

—Len Scott

INTERNATIONAL BITS & PIECES

The **Second Annual Sights and Sounds** fair was the site of a workshop on tape machine alignment and maintenance held by Otari. The first of its kind in the Philippines, the workshop drew more than 150 professionals from the recording, broadcast and tape duplication industries.

World Radio History

Studio Spotlight
Olympic Studios Ltd.

London's Olympic Studios has seen a long tradition of world-class artists over its 20-year history, including sessions by Jimi Hendrix, the Beatles and early Rolling Stones. In 1986 the Virgin Group (which also owns several other British studios) bought the facility, closed it down and completely gutted it. The new Olympic reopened in February 1988, with three SSL-equipped rooms. Shown here is the SL 4056 G Series board in Studio 3, used primarily as an overdub and mixing room. Recent work includes projects with Boy George, Paul McCartney, The Who and Duran Duran. ■

Featured speakers were Otari Singapore's general manager **Kinjiro Murata** and Otari engineer **Nobuoshi Teramoto**... Electro Sound, manufacturer of high-speed audio cassette duplicating systems and equipment, has sold music duplicating systems to three leading companies in the People's Republic of China. **Simex**, in Shanghai, and **Kong Sen Tape Factory**, located in Panyu, Guanzhou and Guandong, have acquired new duplicating systems, while **Shaanxi Audio**, based in Xi'an, has acquired equipment to expand its duplication capability... WaveFrame continues to receive orders for its AudioFrame digital production systems around the world. Two AudioFrame systems were delivered recently to **Werner Studios** in Copenhagen, Denmark. Meanwhile, the corporation made the recent announcement that Naniwa Gakki Co. Ltd. has been appointed as distributor of AudioFrame systems in Japan... **Radio Bremen**, northern West Germany's regional broadcaster, has installed a Solid State Logic SL5000 M Series audio production console in its new outside broadcast vehicle. The new mobile unit is part of an expansion of radio OB operations by Radio Bremen and is equipped with an SL5547 M Series console with 32 mono and four stereo channels plus Instant Reset... In shifting in-house production to New England Digital PostPro workstations, Canada's **Moffat Communications Ltd.** radio chain has become the first such all-digital operation in North America. The Winnipeg-based company operates eight radio stations in five cities—Vancouver, Calgary, Winnipeg, Edmonton and Hamilton—making it the largest single PostPro radio installation in the world... **Greencorp Magnetics**, a leading tape manufacturer in Australia, has consolidated its marketing operations in Japan, Singapore and Taiwan. Hiyoshi Corp., Nagoya, Japan; Oriental Trading, Taiwan; and Globe Precision Products, Singapore, are now exclusive sales reps for Greencorp's cassette tape. ■

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DIGITAL MULTITRACK EDITING

PART 2

Razor Blade? No Thanks, I'm Trying to Quit

by Bob Clearmountain

Of all the advances in recording technology over the past decade, electronic digital multitrack editing could be the most powerful and creative tool to aid in the production of records using "live" musicians. Additionally, tasks like flying in instruments and vocals from other sections or takes becomes effortless, and problems such as generation loss and tape noise buildup are now a thing of the past.

Unfortunately, the costs of using digital recording hardware are still rather high, but well worth a bit of budget squeezing. We now have the unprecedented advantage of editing and even *re*-editing while keeping the original recording intact, and many different edit points can be previewed effortlessly. We can now perform experiments and entertain whims that we might never have bothered with, or even *thought* of, had we found it necessary to physically cut the master tape to bits in the process. And all tracks needn't be edited at the same point anymore; we can edit the drums on beat 1 and let the lead guitar continue to beat 4 to finish its phrase.

This article is an introduction for those who haven't experienced electronic editing yet, and it might supply a few helpful tips to those who have. If you haven't read "Digital Editing, Part 1" in last month's *Mix*, please go to the studio lounge, the restroom or even the studio manager's office if you must, find the issue and read it. There's lots of important stuff in there that you'll need to know before we continue. So as I promised last month, here's where the real fun begins.

DUBBING THE CHOICE TAKE

First make sure you have a digital I/O dubbing cable connected from the digital output connector of the slave machine to the digital input of the master machine. If you have two dubbing cables, connect the other one from the master to the slave. The second one is not necessary, but will come in handy later if you have it. From now on, we'll refer to the master as the "recorder" and the slave as the "player."

Now that you've got several acceptable takes of the next Record of the Year, select the best one, cue it up on the player and *make sure* the machine is in "master safe." Set the recorder's input mode to "digital," set the control mode to "remote" on both machines (not necessary on the 3348), the recorder's monitor mode (on the remote) to "auto input," and put all or as many tracks as you've recorded on and the analog tracks in "rec. ready." (Please note that except for formatting tapes, *both* machines should be set to insert mode at all times.)

Be very careful when changing mode switches on the TSW block so nothing gets switched accidentally. In particular, the emphasis switch, which is right next to input mode, has the potential of causing many hours of head-scratching, as you ask that age-old question, "What the *hell* is going on here?" Now play a bit of the take on the player while monitoring the recorder. Make sure all tracks that are playing on the player are getting to the recorder. If not, check to make sure all connections are correct and that the above steps have been followed.

Now you're going to start your first album master reel. Aren't you thrilled? Yeah, I'll bet. Thread up one of your formatted zero audio tapes on the recorder and run it in to 1:55. Park your choice take (on the player) ten seconds ahead of the count in. Press the slave button on the player's remote. The two machines should now be locked at that spot, and if they're not (i.e., the slave light hasn't come on), check the connections and the DIP switch settings on the back of the remotes. If the DIP switches are wrong, correct them and switch the power on the remotes off and on, player first, recorder second (see Fig. 1).

Now with all that happening, press the s/ms button on the player to reveal milliseconds on the locate time display, and make a note of the offset number next to the title on the mas-

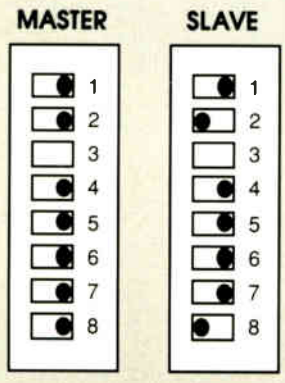

Fig. 1: The correct DIP switch settings on the RM-3310 for master/slave operation of two multitracks. No setting is given for switch #3, since this only selects the desired number of cue registers and doesn't affect synchronization.

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Hans Zimmer
Soundtrack Composer "RAINMAN"
(Grammy/Oscar Nominee)

"... We used B & K microphones to record piano, brass, flute, sax, electric and twelve string acoustic guitar, cello and bass because of the undistorted natural clarity we were able to maintain throughout the sampling process. We were surprised at just how good the stereo samples recorded with two omnis (4003s) were. When it came to microphone choices, we were rather particular. We decided on B & K."

Kevin Monahan
Sound Manager, E-mu Systems
(Proteus ROM Sample Player)

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ter reel tape box (very important). Now press "play" on the recorder, and as soon as the machines are locked (the play indicators will stop flashing), put the recorder in "record." Note that the machines will refuse to lock up while you have your finger on the play button, so be sure not to touch it until they're locked.

Once the two machines are locked together, you must think of them as one machine, so don't freak out when you see the record light on the player illuminate—this is why you've turned on its master safe switch! All transport functions and indicators of *both* machines are now controlled by the recorder's transport controls. The only player transport control that does anything is the "stop" button, which takes it out of slave mode, so try to avoid it. Dub the choice take over to the master reel in its entirety. When finished, press the player's slave button once again to take it out of lock.

Since you're not actually cutting the tape, just copying it, there are a few different methods of approaching electronic editing. The first is what we'll call hard editing, which is analogous to tape splice editing. Second is insert editing, in which you will replace only a *section* of your choice take with a section of another take or a different section of the same take by punching in and out. This technique is possible only if the tempos match exactly and the drummer is very tight with the click, or you're just damn lucky. The third method is identical to the insert method, but using only one or a few of the tracks. This is my personal favorite. Whatever method you choose, you must first find and *mark* the edit points.

MARKING THE EDIT POINT

Play the copy, or clone, of the choice take that is now on the recorder up to the point where the take starts to go south. Rewind a bit, play the tape and at the point you want to edit, press the down arrow button (next to the tape time display) to capture your edit point in the locate time display (for future reference I'll call this "marking" the tape), and press "locate." Now go to the player and find the section of another (or the same) take that you would like to edit to. (If the recorder is still in "auto input" and its tracks are still in "rec. ready," you should be hearing the player.) Mark your edit point the same way you did on the recorder and locate to that point. Now switch the console to monitor the analog tracks.

At this point you must decide if you want to use the drums or the click for finding the exact edit point. For a hard edit you'll probably want to use the drums, and for an insert edit you'll want the click, so to use the drums, put track 1 on the player's remote in "input" and analog track 2 in "tape." In effect, this mutes the click (analog 2 on the recorder) and lets you hear the drums (analog 1). If you want to use the click, do the opposite. Make sure both analog tracks on the recorder are in "tape."

Having accomplished this, you're probably hearing a lot of whiny, disgusting noise. . . so who said life was perfect? The quality of the analog tracks is quite poor, but they work just fine for what you're doing. You'll only have to put up with it for a few minutes. Go to the recorder, grab the large black knob (3324/3324A) on the head block and scrub, or rock, the tape to find your exact edit point as you would an analog tape. Now put the player's analog tracks in their opposite monitor modes, and find the exact edit point on the piece you're cutting

to (on the player). If one or both machines is a 3348, you'll find tape scrubbing rather difficult because its PWM (pulse width modulation) analog tracks mute when the tape is moving very slowly! You'll just have to be as accurate as possible when you mark your edit point on the fly, then trim it later. Now press the slave button on the player and store the offset number in one of the ten memories (not necessary, but this may come in handy later). The *ultimate* method of doing digital tape scrubbing is to use the machines in conjunction with Sony's DAE 3000 Digital Editor, but that's a topic for another article (and a larger album budget!).

PREVIEWING AND EXECUTING THE EDIT

There are two ways of executing your edit: programmed and manual. To program the edit, press the down arrow button on the recorder's remote, then "sto" and "in." This stores the current location in the auto punch-in (in point) memory. You must now store a dummy out point so the machine knows not to punch-out. Enter a time after the end of the song, say ten minutes, and press "sto" and "out." When you execute the edit, the record circuit of the machine will crossfade at the edit point, so to avoid having the crossfade occur directly on a snare or bass drum beat, you'll have to trim the in point back by at least the same amount of time as the crossfade. To find out what the crossfade time is on the 3324/3324A, press "rcl, =, 1." To change it, use the +/- buttons. The crossfade display isn't exact, so refer to the chart (Fig. 2). The 3348 has a crossfade knob at the upper right corner of the remote, numbered 1 through 16. Again, refer to the chart for the corresponding crossfade times.

To trim the in point, hold one finger on the in button, and with another finger press the minus button to move the earlier edit point (on the 3348, use the trim keys). The trim rate is dependent on the locate time display. If it's not showing milliseconds, you will be trimming by one second each time you press the plus or minus key. To trim by milliseconds (which is probably what you want to do), press the s/ms key to change the locate time display to reveal milliseconds.

Now you're ready to preview the edit. To do this simply press "auto punch." Both machines will rewind eight seconds, go into "play," lock up and when the edit point is reached, whatever tracks on the master are selected to "rec. ready" will switch to "input," and you will monitor the edit exactly as if it were done already, crossfade and all. Now you can preview the edit as often as you like. If you would like more or less pre-roll time (the default is eight seconds), enter the number of seconds you would like and press "sto" then "pre." If you're happy with the way it sounds, simultaneously press "auto punch" and "rec" to execute the edit. If not, read on.

To use the manual method—which I prefer—rewind the recorder about eight or ten seconds (the slave will chase), press "play" and when you get to the edit point, simultaneously press "auto punch" and "reh" (rehearse). The machine has now stored that point as the in point, so if you want to hear that again, just press "auto punch." Now keep in mind that the machine has also stored the point at which you punched out or stopped in the out-point memory, so when you rehearse or execute the edit, it will punch-out at that same point. To avoid this you must again enter a dummy

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3348 CROSS-FADE CONTROL SETTING	3324 LOCATE TIME DISPLAY	TRUE VALUE (in milliseconds)	
		44.1kHz sample rate	48 kHz sample rate
1	1	1.45	1.33
2	3	2.81	2.58
3	5	5.63	5.17
4	10	11.24	10.33
5	20	23.16	21.33
6	25	26.54	24.38
7	30	30.96	28.44
8	35	37.15	34.13
9	40	46.44	42.67
10	50	53.06	48.75
11	60	61.91	56.88
12	70	74.29	68.25
13	90	92.88	85.33
14	120	123.83	113.97
15	200	185.76	170.67
16	350	371.51	341.33

Fig. 2: Chart of actual crossfade values, in milliseconds.

out point. For convenience, I usually store one hour in an unused locate memory location (say, mem. 9) so I can simply press "recall, 9, sto, out" instead of having to enter a lot of digits each time.

The cool thing about punching manually is that once the offset is right, you can try lots of different in points just by punching in at different places until you find just the right spot. I've come up with some pretty interesting things by punching, say, right in the middle of a drum fill instead of before or after, where the drummer had played a totally different fill on the two takes. A good example of this is on the *Charlie Sexton* LP—the fill coming out of the breakdown chorus into the rideout of "I Can't Cry" (3:46 into the song on your CD player). Experiment. . . have some fun!

TRIMMING THE EDIT

So how does your edit sound? I'm on the edge of my seat. As you've probably gathered by now, there are three different parameters that affect the way the edit sounds. These are the in point, the crossfade time and the offset. We've pretty much covered the first one. You know how to adjust the crossfade time, so you might try a few different settings to find what sounds smoothest.

Trimming the offset is done exactly the same way as the in point, only you would use the offset button instead of the in button in conjunction with the +/- keys. If you need to trim the offset or in point by more than 15 or 20 milliseconds, there is an easier way. Let's say you'd like to increase the offset by 20 ms. First, make sure the locate time window is displaying milliseconds. Press "rcl" then "offset." Now press "+, 20, =" and make sure 20 ms has been added to the offset time. If some bizarre number has appeared, press "clear" and start over. Once the new number is correct, press "sto, offset." This same method can also be used with the contents of any memory, including in and out points, pre- and post-roll, or any of the ten locate memory keys. (If you're not a mental midget like me, you can also do the math in your head, enter the number and store it.)

In previewing the edit, if you can't tap your foot through it, you should trim the offset. If it slows down you'll want to *decrease* the offset, and if it rushes, *increase* it. If, after trimming the offset, you realize you've just made it worse, you can get back to what you had by recalling the original offset from the locate memory you stored it in earlier. (I told you this might come in handy!) If it feels okay but you can hear the edit, you'll either want to trim the in point or just try punching on a different beat. Once again, when you're finally pleased, execute the edit and let the machines record to the end of the song or just past the *next* point at which you would like to edit.

If you prefer not to have to think about offsets, you can use Sony's editor mode. (Unfortunately, the Version 4.0 software doesn't support the 3348, so this will only work with two 3324/3324As.) This makes the trimming process similar to shaving or adding

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bits of tape to an analog edit. To do this, take the player out of slave mode and press "1, sto, =, 0." The locate time display will show "editor." Now press the up arrow key, and the cue display will show "ed." Now trimming the in point on the slave or the master will also trim the offset by the same amount. For example, if you move the in point 20 ms earlier on the master the offset will *increase* by 20 ms, and if you do the same on the slave, the offset will *decrease* by 20 ms. You can preview the player and recorder separately, and when content, press the slave button on the player and the offset will be calculated. The obvious problem here is that you can't trim the in points while the machines are synchronized.

INSERT EDITING

Insert editing is exactly the same as hard editing except instead of letting the machines roll to the end of the song, you will punch-out at a point where the original take is once again acceptable. There are a couple of things to keep in mind when doing this. While you are previewing a programmed in point, if you press "play" to try to manually program an out point, the machine will not remember that as the out point. It will only remember a manually programmed out point if you had just punched in manually.

The way around this may seem a bit crude, but it works. Press the down arrow key simultaneously with the play button at the potential out point. If the punch-out sounds okay, just press "sto, out." This, of course, marks the out point and stores it in the out-point memory. You can now preview or execute your insert edit. Also, if you punch-in *and*-out manually, your out point will be remembered, but any in point you had previously programmed will be replaced by what you just did. So before you do this, you may want to recall the in point and store it in a locate memory. Then if you mess up the new in point, you can recall the original one from the locate memory and store it back in the in-point memory.

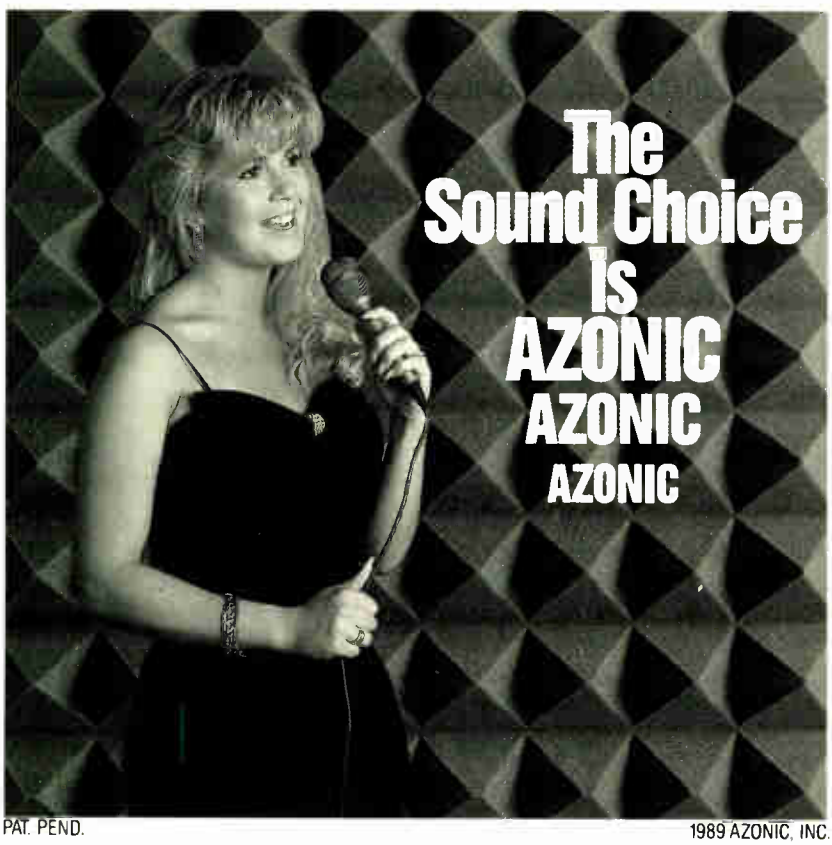
SELECTIVE TRACK EDITING

You may find that the drums, guitars and keyboards work just fine, but the edit point is awkward for the bass. Take the bass track out of "rec. ready," execute the edit ("rec" and "auto punch") and let it record for a few bars. Now do just the opposite—put the bass track in "rec. ready" and put all other tracks in "safe." Press "auto punch," but when the master parks, press "play" *before* it does so on its own. This locates the tapes to the pre-roll point, and then lets you punch-in manually. Try punching (by simultaneously pressing the play and rehearse buttons) the bass on different beats near the original edit point, and once you find a point that works, simultaneously press "rec" and "auto punch."

Of course, you can use this same technique with any track or combination of tracks. I use it most often for inserting drum fills from other takes, as in the example cited earlier. Depending on how you've recorded the drums, you can sometimes even get away with punching, say, the cymbals or the snare a beat or two before or after the rest of the drums, to make an otherwise impossible edit work quite smoothly.

FLYING IN TRACKS

I'm sure most of you are familiar with the practice of flying or spinning in instruments or vocals from other parts



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of a song, other takes or even other songs. Well, as I said earlier, with digital you don't have to worry about generation loss and you can fly more than two or four tracks at a time. A good example would be background vocals. First, make a vocal slave by locking another formatted tape to the master, writing down the offset on the tape box and also storing it in a locate memory. Do a monitor mix of the master's tracks onto the slave (of course, now it is no longer the "player.") Record your BVs on, say, six or eight tracks of the slave from the beginning through the first chorus. *Make sure the tracks you've selected on the slave are tracks that are also open on the master.* Lock the slave to the master, recall the offset from the locate memory where you stored it and press "sto offset." Put the slave in "master safe" and bounce the BVs to the master. Unlock the machines, cue the slave up to the first verse and the master to the second verse. Mark and lock the machines as if you were going to edit verse 1 into verse 2. Now just punch-in the BVs where they occur. Of course, this will only work if the track's tempo hasn't changed at all. You can repeat the process for the rest of the choruses.

If you need to move or repeat something that has already been recorded on the master, go through the same basic process of making a slave. In this case you won't need any extra open tracks, so you needn't do a monitor mix, you can just make a digital-to-digital clone. This is where that extra digital I/O cable comes in handy. Switch the master to "digital input" and "master safe off" and dub all the master's tracks to the slave. That's right, you *can* digitally dub either way, no matter which machine is designated master. Now just bounce the track in question back to the master where you want it, as if you were doing a selective track edit.

Well that's about it, or I should say, it's a good place to start. With two digital multitracks, this guide and your imagination, you'll be amazed at what you can do. . . I'd probably be amazed at what you can do! So good luck and happy editing! ■

Bob Clearmountain's recent credits include mixing tracks for Laurie Anderson, Paul Young and Paul McCartney. He makes his home in Connecticut, where he started out as a bassist in the late '60s.

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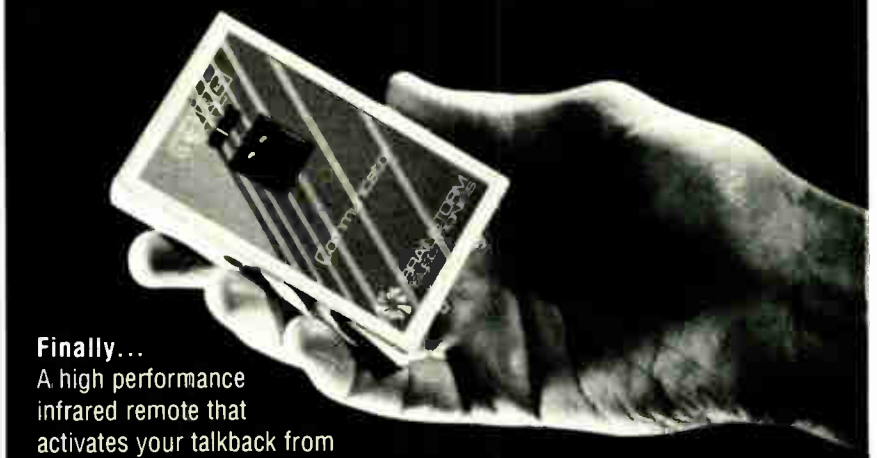

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NEW PRODUCTS

ZOOM 9010 SOUND PROCESSOR

The Zoom Corporation (Redwood City, Calif.) was formed in 1983 by a number of former Korg synthesizer design engineers. Zoom's ZFx-1 custom DSP chip is the basis of the 9010 Sound Processor, a 4-input, 4-output rack-mount device that provides 16-bit, 44.1kHz sound quality. Billed as easy-to-use, it features unique programmable multi-routing. Route-1 offers individual effects for studio recording; Route-2 incorporates multiple effects and 4-channel digital mixing, for processing multiple keyboards; Route-3 provides four isolated multi-effects channels to insert in send/return loops; and Route-4 is designed for guitarists, allowing up to seven effects to be used at once, with insertion of external effects at two points. The ROM-based design supports software updating, and an external computer or MIDI device can be used to change memory contents.

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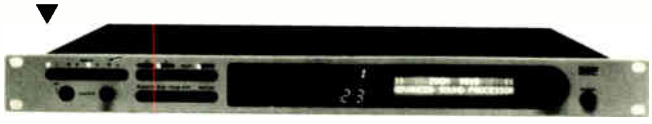

ASHLY AUDIO MOSFET POWER AMPLIFIERS

Having received the official seal of approval from Underwriters Laboratories, the FET-2000C and FET-2000M MOSFET power amps are available from Ashly Audio (Rochester, N.Y.). Both rack-mount models feature up to 500 watts RMS per channel into 4-ohm loads. The FET-2000M has a peak-reading meter, balanced XLR connectors and five-way binding posts for speaker outputs. The FET-2000C features barrier-strip input connections for permanent setups. Parallel phone jack input connectors are standard on both self-protecting models.

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SYSTEMS DEVELOPMENT ART DIFFUSER

If room acoustics pose a problem, yet the room's appearance matters, check out the Art Diffuser, a broadband acoustic diffuser designed for these situations by Systems Development Group (Poolesville, Md.). This modular system is sold in two versions, a 15-inch square and a 15×30-inch rectangle. These pieces interlock to fit space and diffusion requirements. By rotating interlocking pieces, broad-bandwidth diffusion occurs in both horizontal and vertical planes. Costing less than other diffuser systems, the Art Diffuser comes standard in poplar wood pieces, and is also available in cedar, oak, walnut, cherry and fir.

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JEANIUS ELECTRONICS RUSSIAN DRAGON ▲

The Russian Dragon from Jeanius Electronics (San Antonio, Texas) is a new stand-alone device that measures the timing accuracy of two sounds that were meant to happen at the same time (drummer playing with click track; time delay between acoustic drum and triggered replacement; timing inaccuracies in MIDI sequencers, etc.). It compares the timing of any two events and instantaneously shows who's rushin' and who's draggin', and by how much, in increments from 80 microseconds to a half-second. Both balanced and unbalanced inputs are accommodated. The tabletop version retails for $395, the rack model for $495.

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NEUTRIK PROFI CONNECTORS

Say goodbye to "grounding" noise and hello to cleaner signals when you connect your audio gear with Neutrik's new ProFi phono connectors. The ProFi does away with speaker-damaging grounding noise because its ground shell retracts into the connector body when the signal post is inserted into the phone jack; since the ground shell makes contact before the signal post, ground is achieved first, noiselessly. The rugged connectors accommodate a wide range of cable diameters and are available in nickel- or gold-plated casings. Neutrik USA is based in Millville, NJ.

Circle #089 on Reader Service Card

PANASONIC SV-255 PORTABLE DAT

You *can* take it with you—if it's Panasonic's new SV-255 portable DAT recorder. This deck is an update of the SV-250 model and boasts new and improved mic preamps, offering lower distortion, higher stability and lower (128dB) S/N ratio. A true gain control, rather than a fader-style attenuator, allows for optimal dynamic headroom and S/N ratio at all level settings. Also new is the dual-channel mono recording mode (a lower-level channel serves as backup when high-level sound sources [jet planes, sirens, etc.] put the normal-level channel into clipping).

Circle #090 on Reader Service Card

GENTNER 6X HEADSET/SPEAKER AMPLIFIER

Described as a utility amp, the rack-mount 6X Headset/Speaker Amplifier from Gentner Audio Products (Salt Lake City, Utah) is a 6-output stereo amplifier that delivers up to 2 watts per channel. Setup and operation is fast, simple and adaptable to every application. The flexible input configuration features master stereo input and individual direct inputs (¼-inch phone jacks) for each of six channels (providing for balanced mono or unbal-

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anced stereo input). Direct-input insertion can be set to interrupt the master input or mix with it. Included is a master gain control, and each output channel has its own level control and level-sensing LED. Each output appears on the front and back panels.

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TELEX EM-200 EAR-MIKE™

Talk out of the side of your head with the Magnum EM-200 Ear-Mike from Telex (Minneapolis, Minn.), a single-unit microphone and speaker worn in the ear. It converts the minute voice vibrations present in the ear canal into audio signals while also serving as a conventional earphone. Model EM-200 is intended for radio transmission, while EM-200W is for intercom use. The size of a hearing aid, Ear-Mike connects to a small interface unit that holds a PTT switch. It can be adjusted for optimum voice clarity and can be used under extreme weather conditions. It comes standard with transducer and cord, interface module, molded earpiece, 6-foot coil cord with ¼-inch phone plug (EM-200W), battery and a jack for remote PTT switch.

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SANKEN LAVALIER MICROPHONES ▶

The tiny COS-11 cylindrical and COS-12 flat lavaliers are new from Audio Intervisual Design (L.A.), Sanken's U.S. distributor. The ultra-miniaturization was accomplished by a vertical placement of the diaphragm for a greater effective miking area in a much smaller enclosure. These omnidirectional mics boast low sensitivity to mechanical noise, wide frequency response (COS-11, 40 to 12k Hz; COS-12, 40 to 20k Hz) and 93dB dynamic range (COS-12, 97dB).

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ACOUSTICAL PHYSICS LABS' DCM-15 MONITOR SYSTEM

Combine the advantages of coaxial driver-mounting with the low-distortion benefits of dome and cone driver technology and you get the new DCM-15 Dome Coaxial Control Room Monitor developed by Acoustical Physics Laboratories (Doraville, Ga.). This approach provides for tone accuracy, detail resolution, imaging accuracy and high SPL generation. Bass reproduction down to 24 Hz is achieved with two 15-inch drivers in a high-density enclosure. Mid-range is handled by a 9-inch driver, and high-end material to 26 kHz is produced by a coaxially mounted, 1-inch dome tweeter. The DCM-15 is available in custom cabinet sizes and system alignments.

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HOT OFF THE SHELF

Mac 'n Rak SE/30 is a retrofit that transforms your Macintosh SE/30 into a roadworthy, four-rack-space package, including 2 MIDI inputs and 6 MIDI outs. The modification (for the SE or SE/30) is priced from $1,595. Call Current Music Technologies, (215) 647-9426, for more details . . . **SansAmp** ($295) from Tech 21 of NYC is a pocket-sized processor giving any guitar or bass the rich sound of tube amps and offers eight selectable sounds, along with controls for presence drive, amp drive, HF and lead/normal switching. Call (212) 563-6325 . . . ***AMS Timeflex***, powerful new time-compression/expansion software for the Audio-File, alters the length of program material in real time while keeping the original pitch intact. The update also allows "reel rocking"-style edit location in the Assembly window. Call (206) 633-1956 . . . The second edition of ***Microphones***, written by Dr. Gerhart Boré and published by Georg Neumann GmbH, is now available for $2.50 (Calif. and N.Y. residents add sales tax) from Gotham Audio, 1790 Broadway, New York City, NY 10019 . . . **Rack-drawer™** ($44.95), a "two-space" drawer that fits into any 19-inch rack, is ideal for any studio or mobile storage needs. Call Four Designs Company at (818) 716-8540 . . . New sync interfaces: a **Q.Lock-to-Fostex D-20** DAT and an **ES1.11 ESbus-to-Akai DR1200** digital multitrack have been announced by Audio Kinetics, which has also unveiled a DR1200 modification that improves lockup time by 85%. Contact your local Audio Kinetics dealer for more details . . . TRF Music of NYC now offers the **Carlin Library of Recorded Music**, with nearly every style of production music represented on compact disc. The classical section alone includes more than 60 hours of music. Call (212) 753-3234 for a free music sampler, catalog and licensing info . . . **Cord Lox** are Velcro-type fasteners that keep cables tangle-free and are available in 19 sizes ranging from three to 24 inches to accommodate any cord. They come in a variety of colors and can also be printed with your company or studio logo. Call Toleeto Fasteners at (619) 426-3725 . . . **M-EX** ($425), from Steinberg/Jones, is an expansion board for Roland D-50 and D-550 synths that expands the internal memory (to 128 patches) and offers 8-channel, multitimbral operation. Call (818) 993-4091 for more details . . . At NAMM, QSC will unveil the **MX 4000** power amp, featuring 750W/ch at 8 ohms and an open architecture design for interfacing to external control systems. Call (714) 645-2540 for details. ■

World Radio History

by George Petersen

PRODUCT
CRITIQUES AND COMMENTS

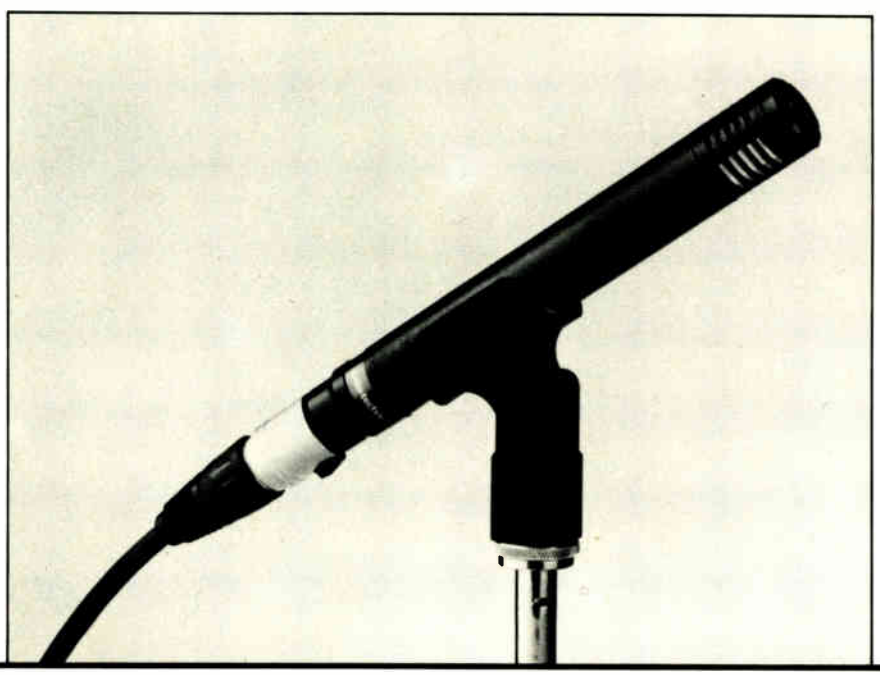
AUDIO-TECHNICA AT4031 MICROPHONE

The AT4031 is a phantom-powered condenser microphone designed to handle a wide variety of tasks in the studio environment. While the 4031 is the least expensive entry in Audio Technica's 40 Series line, its flat, wide-ranging frequency response and extremely consistent cardioid polar response belies its affordable list price of $325.

The 4031 is physically compact, 21mm in diameter, just over 159mm in length, and weighs under five ounces. The body is constructed of turned brass and is finished in non-reflective black chrome. The mic's fixed-charge capacitor element design allows the use of a very thin (4-micron), low-mass diaphragm that increases transient response and improves high-frequency reproduction. A recessed bass roll-off filter switches the mic from flat response to a 6dB/octave cut at 150 Hz, a slope that provides a 3dB down point at 75 Hz. Furnished accessories include a mic clip, carrying case and foam windscreen; 10/20/30dB in-line attenuators, a 4-channel phantom supply and two shock mounts are among the many available options.

My first test for the 4031s was as drum overheads on a digital pop album session. The mics were placed in an X-Y pattern, about two-and-a-half feet above the cymbals, using Audio-Technica's highly effective AT-8415 shock mounts. Results were smooth, crisp and punchy, with the 4031s effortlessly handling transients and capturing all the nuances of the kit's vintage Zildjians.

Next up were tom overdubs on that same session. I often like using condenser mics on toms, particularly with double-headed toms on a well-tuned set. The main drawback to using condensers in this situation is their fragility. While dynamic mics—such as Shure SM57s or Sennheiser 421s—seem to be impervious to the effects of drumstick smashes, I tend to be more cautious when placing condenser mics into the line of fire. Fortunately, on this date the drummer was fairly



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sane, and the 4031s provided rich, full reproduction with plenty of bottom end. The mics can handle a maximum sound pressure level of 145 dB, so microphone overload was no problem.

I was also pleased with the 4031's performance on two acoustic guitar cuts on that same album: The tracks were open, airy and natural, and the mic's gentle HF rise (+2 dB at 10 to 14 kHz) added a nice crispness, without being overly exaggerated.

I don't know about you, but I do a lot of strange gigs. We were recently working on an intro spot for a soon-to-be nationally syndicated radio show, and the producer wanted the sounds of two swords being drawn and then clashing together. No problem, until we started searching CD libraries, looking for an appropriate sound effect. No luck. This meant we had to—gasp!—actually *record* something. We dug up an antique sword with a metal scabbard, and the 4031 did a wonderful job of capturing that sizzling zzzz-i-n-g when the sword was pulled. In stereo, no less. Of course, the real swords didn't sound realistic enough when struck together, so we settled on a machete striking a prybar, which sounded great. Although I think the 4031s were somewhat embarrassed to be a party to this sort of misrepresentation, they also proved to be extremely versatile mics for sampling.

Overall, the Audio-Technica AT4031 does everything a small-diaphragm studio condenser microphone should, and does it well. At a list price of only $325, this product would be a welcome addition to the mic locker of any studio, large or small.

Audio-Technica U.S., Inc., 1221 Commerce Drive, Stow, OH 44224; (216) 686-2600.

PEAVEY MULTIFEX

Digital multieffects processors are nothing new. This genre of outboard gear allows you to combine 10 zillion effects at a time, which may be swell for sweetening spacy synth sounds, but what happens if you want reverb and a touch of flanging on cymbals, gated reverb on snare, chorus on guitar, and reverb/delay on lead vocals? Up until recently the answer, of course, would have been to buy *four* effects boxes. However, Peavey's Multifex allows you to do all that—and much more—from a single rack-space processor.

Multifex contains four 16-bit digital effects modules, each equipped with individual pairs of stereo inputs and outputs (¼-inch, unbalanced). The modules can be used in three ways: as four separate effects units, serially chained for multilayered processing, or as a combination of multilayered and single effects units.

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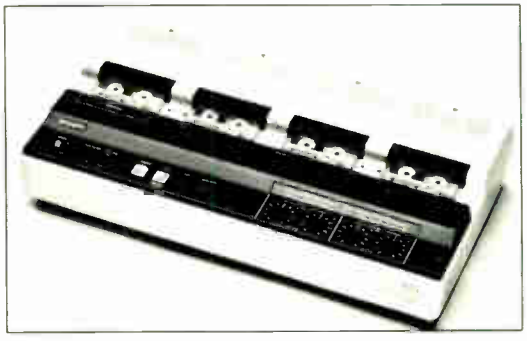

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small, ten medium and ten large rooms, with decay times of up to 28 seconds), gated and reverse reverbs, stereo delays (with independent programmable control of left and right channel echoes), chorus, flange, parametric EQ, and dual reverbs (medium room on left channel/large room on right, etc.).

The reverb algorithms are quite good, offering a variety of smooth, very natural reverbs and a host of other useful effects, including delay times of up to 2.75 seconds. The unit's "wet" bandwidth is limited to 11.5 kHz, which is adequate for most applications, particularly with vocals, drums and guitars.

The unit is straightforward and easy to use. Front panel trim controls are provided for each processor, with green/red LEDs that indicate signal presence/clipping status. The inputs can handle signal levels from -20 to +10 dBV, and the outputs can deliver a maximum of +6 dBV. While the rear panel location of the output level controls may not seem convenient, these can be regarded as a "set and forget" function once users determine the optimum setting for their system. A large, backlit two-column by 40-character LCD display shows patch, preset and editing data, all of which can be accessed quickly by two softkeys and increment/decrement buttons.

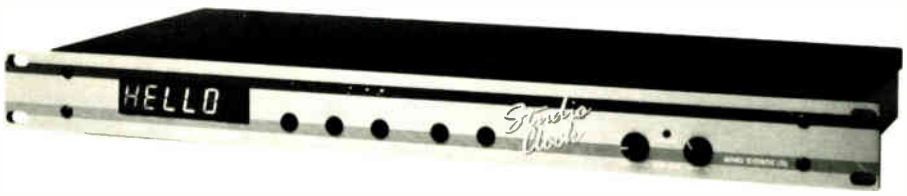
After a couple of minutes I quickly became accustomed to this simple user interface, which makes patch editing and effects manipulation a breeze. You merely press the softkeys to mark the desired parameter (several are displayed simultaneously, thanks to the large LCD display) and tweak away with the +/- keys. Presets can be modified, created, copied, stored and named in a matter of seconds. Patches can also be selected, dumped, loaded and stored via MIDI.

Listing at $1,199.99, the Peavey Multifex costs a bit more than most multieffects processors on the market, but in terms of versatility and flexibility, nothing else comes close, even at twice the price.

Peavey Electronics Corporation, 711 A Street, Meridian, MS 39302; (601) 483-5365.

APHEX STUDIO CLOCK

Every once in a while, someone invents a device that unleashes all kinds of creative energies and makes life in the studio a lot easier for everybody. One such device is the Aphex Studio Clock, and in this case that someone is producer/artist/inventor Michael Stewart.



The Studio Clock is many things: an audio-to-MIDI synchronizer, SMPTE time code reader/generator, SMPTE code reshaper and SMPTE-to-MIDI converter. It's also a tempo tracker, which allows users to create tempo maps from just about any audio source imaginable: click tracks, bass lines,

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MIDI clocks, MIDI note ons and even full audio mixes—either prerecorded (tape, CD, video, film) or in live performance.

The unit's front panel is simply laid out, although perhaps a bit too spartan. All the information is conveyed to the user via nine status LEDs and a six-digit, alphanumeric LED display. While the latter works fine as an easy-to-read display of time code values, especially in the reader/generator modes, this multipurpose approach is fairly cumbersome, particularly when one first attempts to use a unit of this complexity. Augmenting the Studio Clock's large LED readout with a two- or four-line LCD screen (for setting operational parameters, etc.) would alleviate this problem, yet such a move would have certainly added to the unit's $695 price.

The documentation is generally quite good, with a few minor glitches. For example, the section outlining how to set SMPTE start times when striping a tape has a note at the *end* of the section explaining that you must select one of four SMPTE types (30 fps non-drop, 29 fps drop-frame, 24 fps, 25 fps) *before* beginning the procedure. The manual could also have been improved by adding a section describing different synchronization scenarios, with tips and a simple explanation of what to do at each step. Perhaps Aphex could consider releasing such applications notes in the future.

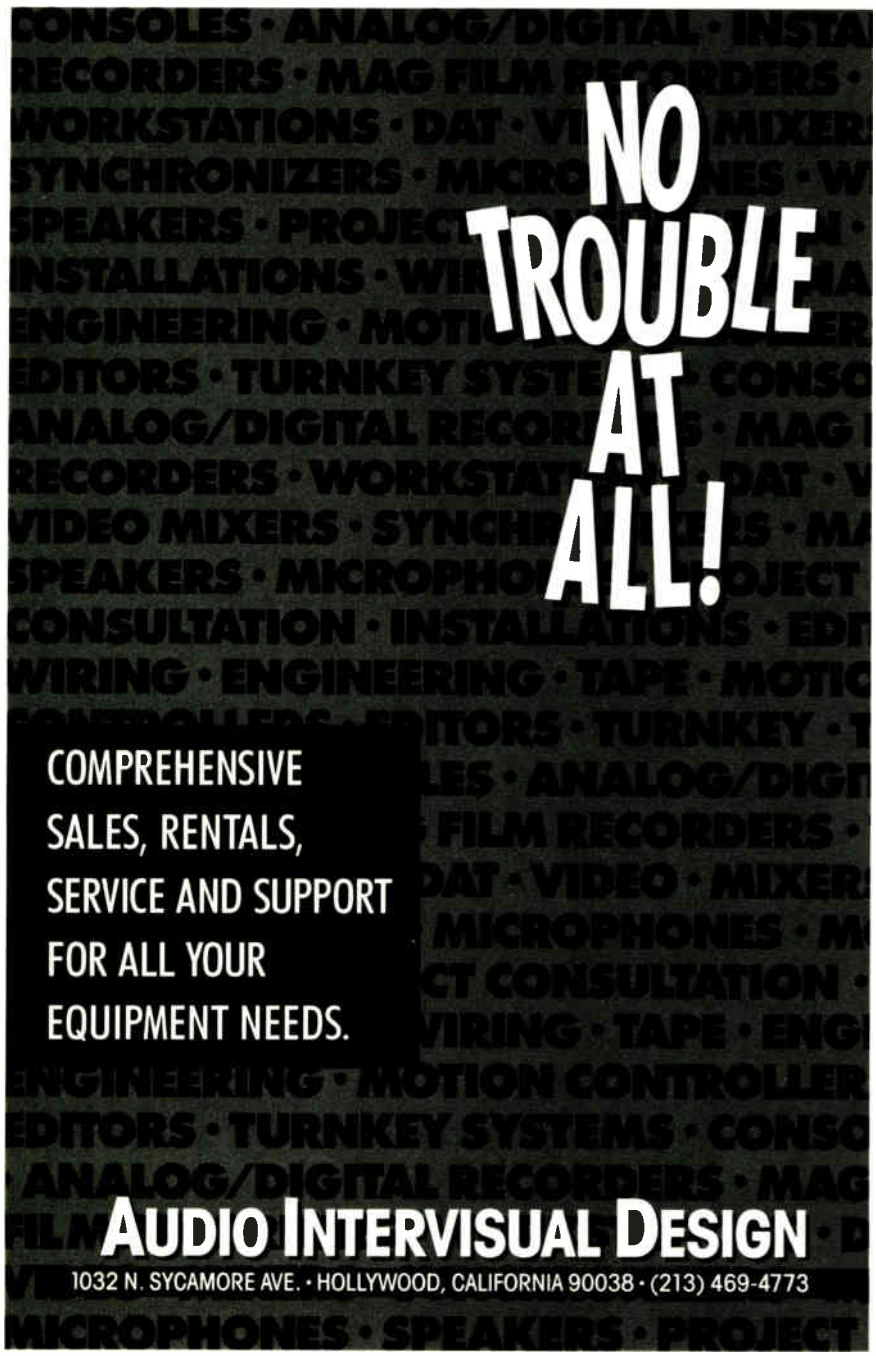
The Studio Clock proved nearly invincible in basic synchronization chores, such as controlling sequencer tempos from both electronic and acoustic drum kits, and multitrack-to-MIDI sync. On a few occasions, I had a bit of trouble synching MIDI to a completed mix. However, a judicious touch of equalization to the bus feeding the Studio Clock's audio trigger input (thus emphasizing the snare and kick drum) took care of the problem with a minimum of fuss.

The Aphex Studio Clock is a flexible powerhouse stuffed into a tiny, single rack-space chassis. Its creative possibilities should make it extremely appealing to a substantial section of the audio production spectrum. Sampled sound effects could be synched easily Foley-style to a final mix being sweetened for a music video release, just one of many talents this box has to offer besides synching MIDI sequences to live drum parts. One hip tip is to combine the Studio Clock (synching MIDI to tape) with the Aphex Feel Factory. (Its faders allow you to slide different sequenced MIDI instruments—especially drums and percussion sounds—into and out of the "pocket" for a totally humanized feel.) At least with the Studio Clock, I'll probably never have to suffer the painstaking drudgery of entering tempo maps bar-by-bar when synching a rhythmically complex piece. Technology can be so sweet.

Note: At press time, Aphex released Version 1.3 control software (an EPROM swap) for the Studio Clock, which simplifies the data entry procedure, cleans up a few minor "bugs" and allows the unit to display SMPTE times in hours/minutes/seconds or minutes/seconds/frames. Registered owners should contact Aphex for details on this upgrade.

Aphex Systems, Ltd., 11068 Randall Street, Sun Valley, CA 91352; (818) 767-2929. ■

When not writing for Mix, *George Petersen composes music, produces records and operates a Third World-class recording facility in the San Francisco area.*



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Definition:

mix'er *n.* **1.** one who, or a machine which mixes
2. to create or form by combining constituent parts
3. "Mix Series" products by Hill Audio – *see also,* quality, reliability, flexibility, expandability

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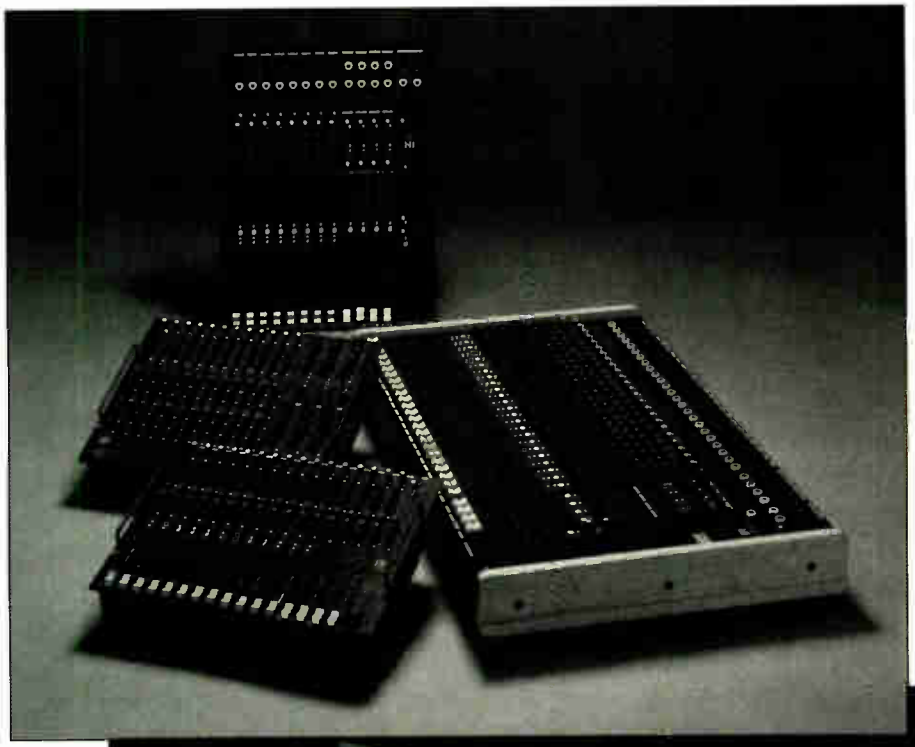

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- **Stagemix** (rackmount) 12×6 monitor console
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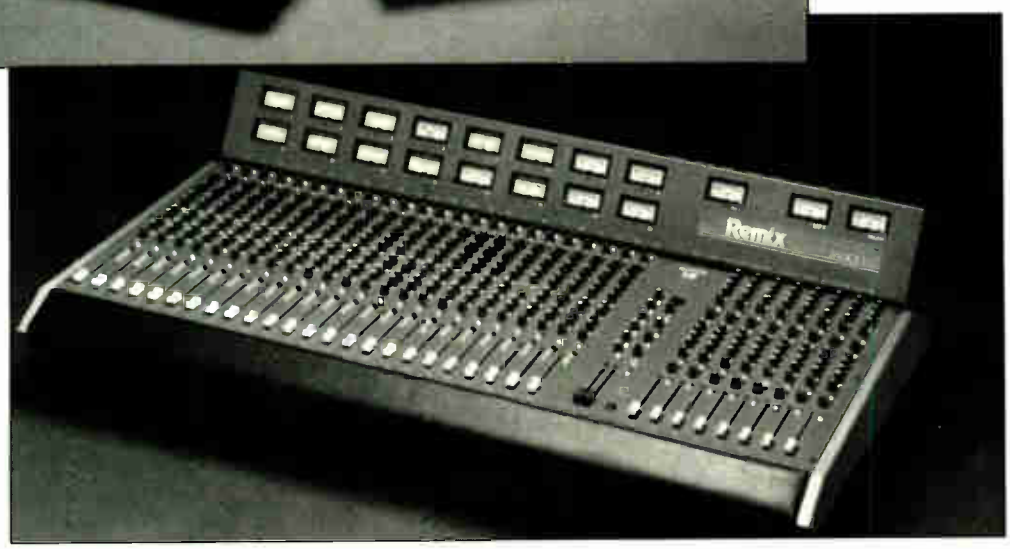

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All pro audio publications run press releases on new products. But NO other magazine goes beyond the press release like *Mix*, to bring you comprehensive coverage and practical information on new products. And no other magazine has editors with more hands-on experience in using the products they write about. In fact, *Mix* is the only pro audio magazine with a full-time products editor.

Products editor George Petersen organizes a host of contributing editors to provide our readers with complete and dependable coverage of new equipment and production tools—from the vantage point of working professionals.

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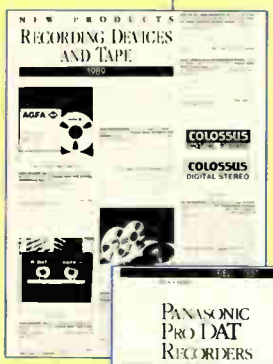

Hot Off the Shelf—"HOTS" presents those products coming to market as *Mix* goes to press; including list price and manufacturer's phone number.

Sound Reinforcement Product News—A booming live sound industry means more new products; basic specs, photo and list price. Includes reader service number.

Auditions—George Petersen evaluates equipment, software, books and videos in his own production studio. Three capsule reviews every month!

Field Test—Leading industry pros provide the most thorough product reviews in the industry—with an emphasis on practical applications and techniques.

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MIX — TRACKING YOUR FUTURE

MIX THE RECORDING INDUSTRY MAGAZINE

World Radio History

by George Petersen

SONY TCD-D10PRO DAT RECORDER

The Sony TCD-D10PRO is a compact, portable DAT machine designed with the needs of the professional recordist in mind. Priced at $2,900, and offering balanced XLR mic inputs, digital inputs/outputs and rugged construction, the deck seems well-suited to handle a variety of location recording tasks, from radio and news production to concert recording and sample/SFX gathering.

The TCD-D10PRO measures 10 x 2-1/4 x 7-5/8 inches. By no means does it rival the smallest DAT machines available overseas or on the U.S. gray market (some of which are about one-third of the TCD-D10PRO's size), but at about 4.5 pounds (including battery pack) the unit never felt "heavy," even after hours with the deck slung over my shoulder in the field.

Operationally, the unit is logically laid out and simple to use. A large, liquid crystal display provides accurate monitoring of operating status, record/playback levels, real-time counter, battery condition, etc. This display is easy to read, even in bright sunlight, while a front panel backlighting switch allows clear viewing in dim locations or for night/dusk recording. The TCD-D10PRO includes a "remote commander"—a versatile controller that connects to the deck via a 6-foot cord and duplicates the machine's record/index, play, stop, hold and pause controls in a convenient pistol-grip with mic-mounting threads. This simplifies one-hand operation, enabling quick, "point-and-shoot"-style recording. Other supplied accessories include two batteries and charger, AC adapter, carrying case and AES/EBU and SPDIF digital I/O cables.

The sampling frequency is selected automatically: 48 kHz into the analog inputs. Rates of 32/44.1/48 kHz can be recorded digitally and the TCD-D10PRO can play back tapes recorded at any of these sampling frequencies.

The TCD-D10PRO borrows its battery technology from Sony's proven Video-8 camcorder series, and the two NiCad battery packs supplied with the unit each provide about one-and-a-half hours of recording time. Charging takes a minimum of two hours, and since the deck does not accept standard-sized batteries, it's best to plan power requirements carefully before embarking into the field.

A long-life (three-

Sony TCD-D10PRO recorder, "remote commander" control, and optional ECM-MS5 mic and in-line phantom power supply.

World Radio History

and-a-half-hour) external DC pack is optional, as is a cord for powering from a car or other 12VDC source. Hidden inside the battery compartment is a small meter that indicates total time of operation. Sony recommends changing the rotary heads after every 1,000 hours of use.

The DAT cassette within the TCD-D10PRO is loaded by opening an outer and an inner door, which is quite effective in keeping dust and dirt out of the transport. The deck's -20dB mic attenuator and a low-frequency roll-off switch (-12dB/octave at 100 Hz) are located under the outer door, which is a minor inconvenience, although in this location it is unlikely that one would inadvertently move either of these controls.

In addition to a real-time counter (switchable to time remaining on tape display), the transport also provides review/cue (high-speed shuttle functions) and fast, reliable index point search modes. The transport was smooth and solid. The time from full stop to playback was just a little over a second, while entering playback from the pause mode was almost instantaneous—about half a second.

The Sony ECM-MS5 ($1,250) is a phantom-powered, MS (mid-side) microphone that has three unidirectional capsules. The center capsule is oriented toward the front of the mic, while the other two are mounted at 90 degrees off-axis to form a bidirectional, figure-8 pattern. An internal matrix circuit combines the output of the capsules into a left-right stereo pair. The user can select from a flat response or a steep bass roll-off at 400 Hz to optimize voice reproduction. The mic can be powered by either a 12- to 48VDC phantom source or an optional DC-MS5 supply that provides 20 hours of operation from a standard, alkaline penlight battery. The DC-MS5 has a recessed on/off switch. An LED glows briefly to indicate battery condition when the unit is powered up.

One of the ECM-MS5's unique features is a top-mounted, six-position control that allows the user to adjust the mic's directivity from 0 degrees (mono) to a spacious 127 degrees. This is ideal for field work; monitor on headphones and dial in the stereo spread that is appropriate to any particular sound. The mic is sensitive to wind noise, so the supplied foam windscreen is a necessity when it's used outdoors, even in the calmest climates. Better still is the optional AD-72 windscreen, which is bulky but provides 20 dB of wind attenuation.

I had the opportunity to spend some time with the TCD-D10PRO and ECM-MS5 combination in a variety of situations. First up was recording some musical groups, street ambiences and sound effects at a Renaissance festival a couple of months ago. Immediately apparent was that the recorder's -20dB mic pad was inadequate in very noisy environments. I did most of my recordings with the input gain set somewhere from 1 to 2 (on a scale of 10). Obviously, finding adequate gain would not be a problem.

With this in mind, I decided to try out the recorder's onboard limiter, which not only afforded protection from the harsh realities of digital overload when making fast-paced *DAT verite* recordings, but, to my surprise, also proved to be sonically quite transparent. Its onboard monitor speaker provided remarkable fidelity from a 2-inch driver.

The TCD-D10PRO is well thought out ergonomically. The placement of the concentric input gain controls is precisely where they need to be, when the deck is slung over one's left shoulder. Another nice touch is the

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raised, Braille-like markings on the record and LCD light controls, enabling quick access when lighting is poor or when you don't want to take your eyes off the subject.

The ECM-MS5 mic also proved to be a winner, providing excellent stereo imaging with minimal handling noise. With a frequency response that is -3 dB at about 200 Hz (and -6 dB around 100 Hz), the mic is obviously tailored to the needs of outdoor ENG and EFP work, and handles its duties nicely. The rotary, stereo pattern selector is versatile, and finding the right pattern is simple and fast. I was equally impressed with the remote commander/mic combo. It is lightweight, easy to operate, and with the DAT deck and mic power supply tucked into a shoulder bag, it's fairly inconspicuous.

With the introduction of the TCD-D10PRO portable DAT recorder and the ECM-MS5 stereo MS microphone, Sony has aptly addressed the needs of the location recordist. While these two products are not inexpensive, they are solid, well-crafted, flexible tools worthy of consideration by the serious professional. ■

—FROM PAGE 49, THE PLANT

me, Arne has a pioneering vision for digital audio," Shaw says.

"It's a 16-track Direct-to-Disk system with many additional MIDI or sequenced tracks. It's basically a tapeless recorder. When you figure out most pop music, the number of microphones you record with vs. the number of direct inputs, 16 tracks is a lot. That and the several hundred sequence tracks," Skye says.

One completely new studio at the Plant is called Boomtown, and it's the home of "Mark and Jeff's Jingle Company." Mark Keller and Jeff Cohen, with keyboardist Walter Afanasieff, are responsible for the music for all the California Raisins TV spots, Levi's 501 Blues and Taco Bell music. Their first project at the new facility was the Raisins TV spot featuring Michael Jackson ("Michael Raisin"). The 18×28-foot control room was designed by Skye, and features a 36-input DDA AMR-24 console that can accommodate up to 84 inputs for remix, a Studer A80 MkIII 24-track recorder and Sony APR-5003 2-track recorder with center-track time code. "I put it together in close cooperation with Mark and Jeff," Skye says. "Because they would be the primary users, they had certain requirements that we agreed to oblige them with."

Even with crucial financial investments, what Frager and Skye consider the most important aspect of getting a studio together is finding the right staff. "I bought a business with basically 8- to 16-year-old equipment, and it made money. So it wasn't the gear," Skye says. "You could go to 20 other studios in the Bay Area that had newer, better gear, so why did people insist on coming here? Well, we had a staff that was killer. People would come in and feel like they were at home."

Frager and Skye are faced with the challenge of moving ahead, changing the Plant with the times, while keeping the studio familiar to their regular customers like Santana, Starship, the Doobies, Journey, Huey Lewis and Van Morrison. Some musicians don't mind a bit admitting they like the Plant for other than purely technical reasons. "I'm very sentimental about it," says Carlos Santana. "At some studios it's like going to the dentist, but I love the Plant. The feeling there is so conducive to recording." ■

Robin Tolleson is a freelance writer living and working in the Bay Area.

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Circle #084 on Reader Service Card

World Radio History

by Mark Herman

SOUND REINFORCEMENT NEWS

Live mixing console update from AES...Rookie console manufacturer ATI (Audio Teknology Inc., Durham, Ore.) caused a considerable stir at October's Audio Engineering Society Convention in New York among mixing console aficionados with the introduction of the new Paragon desk. Designed to be used for either house or monitor applications, the Paragon comes fully loaded with a compressor/limiter and parametric noise gate on each of the 40 input channels, 4-band full parametric EQ, 16 aux sends, 16 submasters, eight VCA groups, eight stereo effects returns, stereo and mono matrices, and integrated muting. This new console is targeted toward the high-end touring sound companies and carries a price tag in the upper $80,000 range...Speaking of high-end consoles, rolling off the production line were the first of the Gamble Series EX 56-channel house consoles manufactured and distributed by amplifier giant Crest Audio. Sound reinforcement company **dB Sound** (Des Plaines, Ill.) purchased the first unit available and immediately put it out on **Aerosmith**'s huge world tour. The highly respected Series EX consoles which previously cost as much as $115,000 and required a four-month waiting period, now sell for around $80,000 with immediate delivery and worldwide service. According to designer **Jim Gamble** and Crest's **Craig Hannabury**, the Gamble/Crest Series EX will use the same high-quality parts and materials as the original...Klark-Teknik's Midas XL house console is now in production and available for sale in the U.S....Soundtracs displayed its new touring SPA console, which is available in 24-, 32-, 40- and 48-input sizes. Features include 5-band EQ, nine auxiliary sends and eight mute groups. A 40-channel unit will run somewhere in the mid-$50k range.

Those of you looking at pro mixing consoles for $10,000 and under should be glad to hear that both Yamaha and Soundcraft each just came out with a new model available in 16-, 24- and 32-input configurations with four subgroups and stereo mix. Yamaha's PM1200 has 3-band EQ, four aux sends and four scene channel mutes. The muting function can be automated to work with Yamaha's PM1800 and PM3000 consoles if used as a submixer. This feature alone makes the PM1200 attractive for PM3000 users short on cash and needing additional channels...Soundcraft's 200 Delta house console is a definite upgrade (without an increase in price) over the popular 200B model it is replacing. Standard (3-band), deluxe (4-band), stereo and dual line input modules are available. Six auxiliary sends and 20-segment bar graph meters with internally selectable peak/average ballistics are standard.

Adding a little spice into the main P.A. loudspeaker market, and debuting at AES, was Canadian manufacturer Adamson Acoustic Design Corp. This relatively new company showed convention attendees its inno-

Audio Teknology generated quite a bit of interest with the AES debut of its Paragon series consoles.

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vative two-box main P.A. system (fea-turing design criteria based on Dr. E. Geddes' Acoustic Waveguide Theory), the rage in Canada since its introduction nearly two years ago.

Sound reinforcement industry leader **Clair Brothers Audio Enterprises** (Lititz, Pa.) announced the formation of **Clair Brothers Audio Systems, Inc.** The new company, targeted at the booming installation market, will share existing engineering personnel, office and warehouse facilities with the parent company. Additional offices are scheduled to open soon in London, Tokyo, Los Angeles and New York.

General manager **Gene Pelland** discusses Clair Brothers Audio Systems' orientation and direction: "The objective is to market our expertise in the engineered, installed system market. We are committed to excellence in the design, manufacturing and delivery of sound systems. Clair Brothers Systems will be providing large-scale sales of portable and permanent installations for sound reinforcement in theaters, arenas, coliseums, stadiums and amusement park facilities. We also plan to negotiate contracts for presentation and audio/video systems for corporate offices and conference centers." According to Pelland, the new division will also handle the development and sale of Clair products. Reportedly, some of Clair's proprietary speakers and electronics will be available to the general market by next year.

Business as Usual...Sound reinforcement giant Clair Brothers reported considerable touring activity. **Bon Jovi** passed through Australia with 48 S4s and went to Europe in December. Bon Jovi's next stop is in South America for the Hollywood Rock festival in Sao Paulo, Brazil. A large (88 S-4s and 32 C-4s) outdoor system is to be transported via ship.

Rumor Control...Over the last few months signal processing device manufacturer dbx has been the subject of many rumors. AKG Acoustics officially purchased the dbx Professional Products line from Carillon Technologies in October and is now pumping manufacturing life

ON THE ROAD

SOUND COMPANIES, EQUIPMENT, ARTISTS & PERSONNEL ON TOUR

Artist Sound Company Tour Dates Region	House Console#1 House Console#2 Monitor Console#1 Monitor Console#2 House Crossover	Main Speakers Main Speakers Subwoofers Monitor Speakers Monitor Speakers	Main Amplifiers Main Amplifiers Sub Amplifiers Monitor Amplifiers Monitor Amplifiers	Engineers: (B) = band (H) = house (M) = monitor (T) = tech (a) = assistant (C) = crew chief
10,000 Maniacs Sun Sound Audio June - Sept North America	Yamaha PM3000 40x8x2 - TAC Scorpion 40x12 - EAW MX800 modified	(24) EAW KF850 - (8) EAW SB850 Sun Sound 2112, 2215	Crest 8001 - Crest 8001 Carver 1.5	Oliver Dow (B,H) Steve Schrims (B,M) Bill Taylor (C,aH) George Cook (aM) Josh States
Jeff Beck/S.R.Vaughan Showco Oct 25 - Dec 5 North America	Yamaha PM3000 40x8x2 Yamaha PM3000 40x8x2 Harrison SM-5 32x16 Harrison SM-5 32x16 Showco	(48) Prism (8) Prism front fill (12) Prism Sub Showco BFM 100,300,450	Crown MT1200,PSA-2 Crown MT1200 Crown MA2400 Crown MT1200	Steve Spencer (B/Beck,H) Mark Rutledge (B/SRV,H) Bill Sheppell (B/Beck,M) J.W.Roberts (SRV,M) Gary Kudrna (C) Randy Bryant (T)
David Byrne Delicate Productions Oct North America	Yamaha PM3000 40x8x2 - Soundcraft Series 4 40x16 - Martin MX-4	(24) Martin F2 - - Martin LE400	Crest 6001,8001, Carver 1.5 - - Carver 1.5	Vance Anderson (B,H) Steve Dabbs
L.A. Guns Schubert Systems Group Oct 9 - Nov 24 U.S.	Gamble Series EX 56x16x2 - Ramsa WR-S840 40x18 - SSG Custom	(16) SSG Steradian - (8) SSG Steradian Sub SSG 115 Low Profile	Crest 8001, 7001 - Crest 8001 Crest 7001	Michael Briggs (B,H) Mike Gonzales (M) Gary Whitelock John Ostrin
Meat Loaf Scorpio Sound Oct - Dec U.S.	Soundcraft Series 4 40x16x2 - Soundcraft 800B 40x12 - BSS 360	(18) EAW KF550 Series - - Scorpio Custom 1x15	Crest 8001 - - Crest 7001,6001,4801	Jim Staniforth (B,H) Barry LaMotte (M) Carl Gagnon
U2 Clair Brothers September - December Australia, Japan Europe	Clair Custom 32x12x6 Harrison HM-5 32x16x2 Harrison SM-5 32x16 - Clair	(72-Australia) Clair S-4 (128-Japan,100-Europe) S-4 (24) Clair Sub 12AM, Clair Custom	Clair/Carver 2.0 Clair/Carver 2.0 Clair/Carver 2.0 Clair/Carver 2.0	Joe O'Herlihy (B,H) Steve McCale (M) Dave Skaff (aM) Joe Ravitch (C) Chris Patterson (T)

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back into dormant dbx. Expansion-minded AKG bought another signal processing manufacturer, Orban Associates, early last year. **David Roudebush**, marketing and sales manager for dbx/Orban says, "The key thing we want people to know is that the products we are shipping are exactly the same as what they have been getting from dbx all along. We refuse to mess up a phenomenally successful product line, and we are committing the engineering resources needed to ensure that new dbx products will continue to be developed."

Products previously made in the U.S., such as the popular 900 Modular Processor Series and the 165 model, will now be manufactured at Orban's San Francisco facility and will be available in a couple of months. The 160x, 163x, 166, 263x, 463x, 563x and 1531PM models are currently in production and should be in dealers' hands by now.

Mix magazine's annual **TEC Awards** show honored Clair Brothers as best sound reinforcement company and **Buford Jones** as best live sound engineer. Jones mixed **Pink Floyd**'s recent world tour.

Chicago-based **On Stage Audio** opened a new sound and production operation in Orlando, Fla. They will be combining their strengths with San Francisco-area equipment rental company **Hi-Tech Audio Systems** (Half Moon Bay, Calif.). On Stage Audio specializes in the corporate theater and industrial entertainment. Hi-Tech Audio Systems will team up with OSA to provide Florida and neighboring states with 40-channel mainframe house and monitor consoles from Gamble, Yamaha, Soundcraft and Ramsa, as well as a varied selection of smaller boards.

OSA's **Mario Educate** says the Orlando area is one of the fastest-growing convention markets in the U.S. "We have seen an increasing number of large conventions going to Orlando because of the family attractions such as Disney, Epcot, MGM Studios, Sea World and Universal Studios, as well as the growing number of hotels and convention facilities. But we haven't really been able to tap that market yet because of the costs of equipment transportation and road labor. Now, our clients will be able to get the same high-quality systems without the additional expense." OSA has a full E-V DeltaMax P.A. system, as well as a Turbosound-based system to handle large industrial shows. Both systems are powered by Crest 8001 and 4001 amplifiers.

Intersonics announced it will be debuting a new subwoofer model at the January NAMM show. Reportedly, it will be lighter in weight and even more efficent than Intersonics' current SDL-5 subwoofer.

Concert touring company **Schubert Systems Group**'s (North Hollywood, Calif.) fall season was filled with several tours. The **Doobie Brothers** continued their world tour and traveled to Guam, Japan and Taipei before taking a break in late November. **George Thorogood** went out beginning in November for six weeks. Other tours were with **L.A. Guns** and **Oingo Boingo**. SSG's Power Plant rehearsal studio reported having **Megadeath** booked several months of extended time, **Billy Idol** for a month and **Little Feat**...**The Palace** nightclub in Hollywood recently contracted for an SSG-installed sound system that features 12 main and eight subwoofer SSG Steradian cabinets, ten monitor wedges, four sidefills and Crest power amplifiers.

Klark-Teknik is now distributing Edge Technology's Turbosound and BSS product lines in the U.S. The two companies have decided to join forces due to the industry's trend toward consolidation, and both see greater marketing and distribution advantages with the move. Turbosound and BSS products will be headquartered at K-T's facility in Long Island, N.Y.

Showco has opened a new office in Southern California. **Wil Sharpe** is now handling all of Showco's clients, as well as marketing and sales out of the new facility. New equipment developments saw Showco introduce its new digital crossover and drive system on the **Rolling Stones** tour. Sharpe stated that all of Showco's tours will be outfitted with the new equipment. **Guns N' Roses** opened on a few Stones dates and performed several one-offs as well with veteran **M.L. Procise** mixing house...An 80-cabinet quad Prism arena system was out with **Paul McCartney** in Europe ...Guitarists **Jeff Beck** and **Stevie Ray Vaughan** went out together on an arena tour carrying a 68-cabinet Prism system...Comedian **Andrew Dice Clay** must be funny, because he sold out arenas and carried a 360-degree Prism system in November and December...**The Kinks** finished in October and **Carole King** went out in November for three weeks.

Meat Loaf is hot again!...Northeastern sound reinforcement company **Scorpio Sound** (West Bridgewater, Mass.), located 20 miles south of Boston, reported plenty of club, college and national one-off dates in the Northeast. Resilient singer **Meat Loaf** has been using Scorpio since February and just finished a tour that went from October through mid-December. Owner **Gary King** started Scorpio nearly ten years ago and has gradually shepherded the company into a position to field three separate main P.A. systems composed of 60 EAW 550 Series cabinets powered by Crest 8001 amps. Scorpio's console inventory is entirely Soundcraft. For FOH systems, a Series 4 and 40 24-channel 800Bs are available, and stage applications are covered with 40- and 32-channel 800Bs and a 32-channel 400B. Monitor cabinets are proprietary, JBL-loaded enclosures with a single 15-inch speaker and a 1-inch driver. Two monitor rigs are

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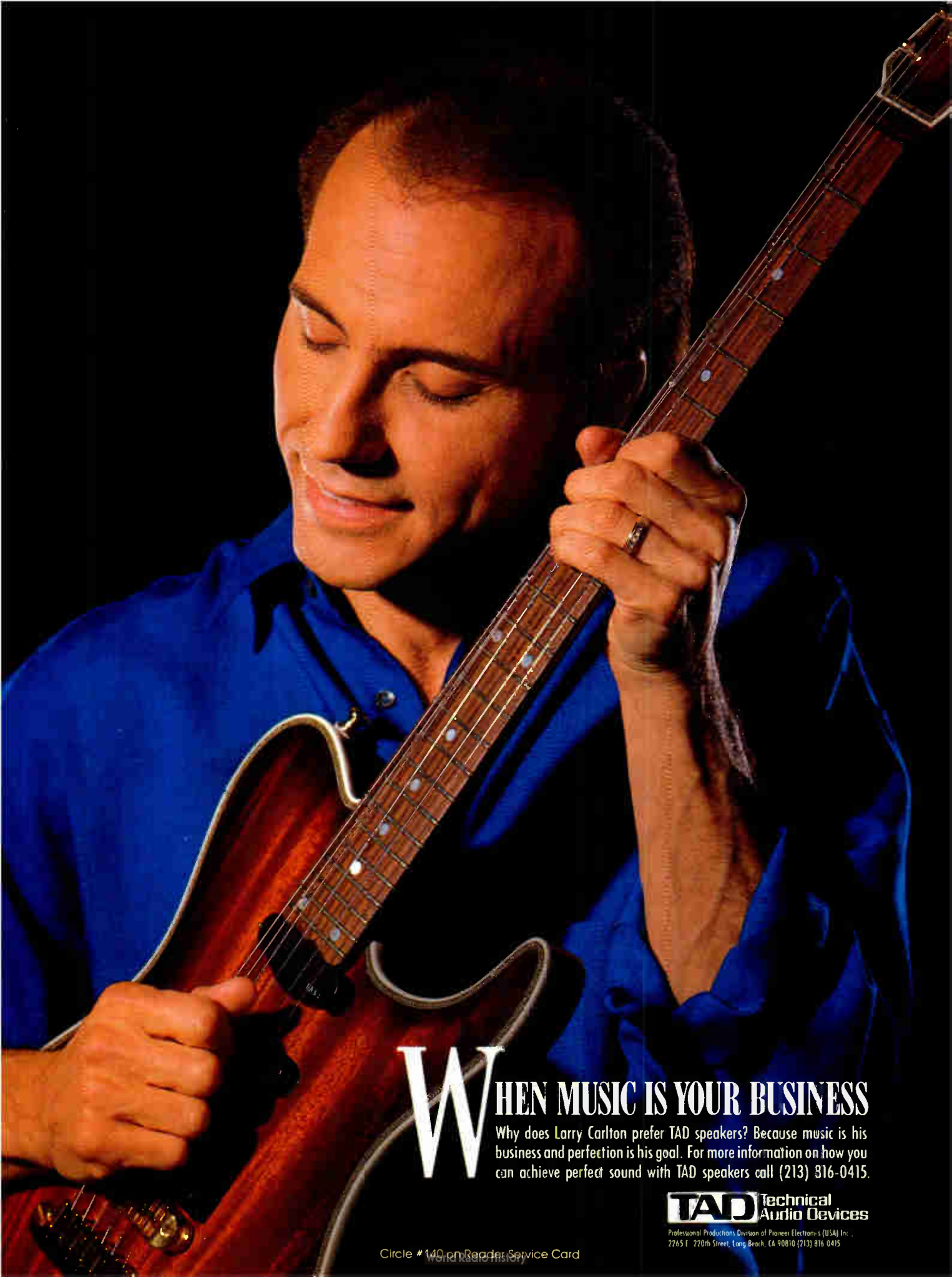

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powered by Crest 7001, 6001 and 4801 amps, and the third with Carver 1.5s.

FORE!...Audio System Rentals (Modesto, Calif.) recently provided two sound systems for the Rock and Roll Celebrity Golf Classic held at the Half Moon Bay Golf Links in the lovely seaside town of Half Moon Bay, Calif. The tournament benefited the T.J. Martell Foundation for cancer, leukemia and AIDS research.

Nashville's **Carlo Sound** just celebrated its 20th year in the sound reinforcement industry. In the early years Carlo did tours with the likes of the Eagles, Poco, Jackson Browne and Procol Harem. Current acts on the road are **The Oak Ridge Boys** and **Vern Gosdin**.

Studio Systems and Transport is located in Weehawken, N.J., just minutes from downtown Manhattan, and provides a variety of services for the New York area and national touring market. General manager **Skip Brown** says, "We do monitor systems, a lot of backline for many of the English bands that come to America, personnel, and everything but buses for tour transportation." The company's monitor rigs include Yamaha, EAW and proprietary cabinets powered by Crown amplifiers. Studio Systems maintains a good inventory of house board effects, several house and monitor consoles, and a limited number of house P.A. speakers. Several recent touring clients include the **Buzzcocks**, Australian act **Johnny Diesel**, Russian band **Gorky Park** and **Hawkwind**. [Note: Some of the data in this column and in "On the Road" is based on information provided by the companies. Address all correspondence and photos to Mix Publications, Sound Reinforcement Editor, 6400 Hollis St., Suite 12, Emeryville, CA 94608.] ■

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

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PLEBEIAN PROCESSING

REVOLUTION

THE DIGITAL EFFECTS

Sometimes you've got to wonder what Karl Marx would have thought of the home recording boom. He did say that power rests with those who control the means of production. And what has this decade's eruption of semipro audio gear done if not place the reins firmly in the hands of musicians—that notoriously dangerous breed? Even a player without the slightest pretensions to home demo-making is likely to have a personal equipment rack full of highly programmable, extremely low-noise effects devices. Stuff that's equal to, if not greater than, the gear you'll find behind the console at professional recording studios.

PHOTO: ROBIN ZARIN

Mitchell Froom

So there's been a real shift of power in recent years, a new division of labor between engineers and musicians when it comes to effects processing.

PHOTO: ANDY FRENCH

Skunk Baxter

At worst, the situation conjures scenes of revolting peasants and Bastille-storming excess. The megalomaniac headbanger who finally doesn't have to ask *anybody* for more reverb, more chorus, more level...MORE EVERYTHING!!! WAAAHHH!!!

Actually, the revolution has been fairly bloodless. Most engineers, producers and musicians seem quite happy to share the work...and play...of effects processing.

Recent trends in musical instrument marketing have conspired with the increasingly affordable price of microprocessor-based technology to place studio-quality digital effects in the hands of rank-and-file musicians. From a strictly utilitarian perspective, the development is a welcome one. Jingle producers can save valuable session time by giving players the authority to come up with their own effects, confident that the effects will be clean and quiet enough to put on tape. It's an assignment well within the capability of session vets like guitarist Elliott Randall (himself a producer, with releases by Chubby Checker and the Fat City Band currently in the works). "If I'm playing a jingle date and have an idea of what my client wants, I'll get that sound ready for him—complete with digital reverbs and delays and whatever effects are necessary. I'll present the sound at the client's microphone, finished and ready to go."

But beyond the world where instant pudding and nylons are glorified for the general public, digital effects have become as integral as strings or pick-

Joe Chiccarelli

by Alan di Perna

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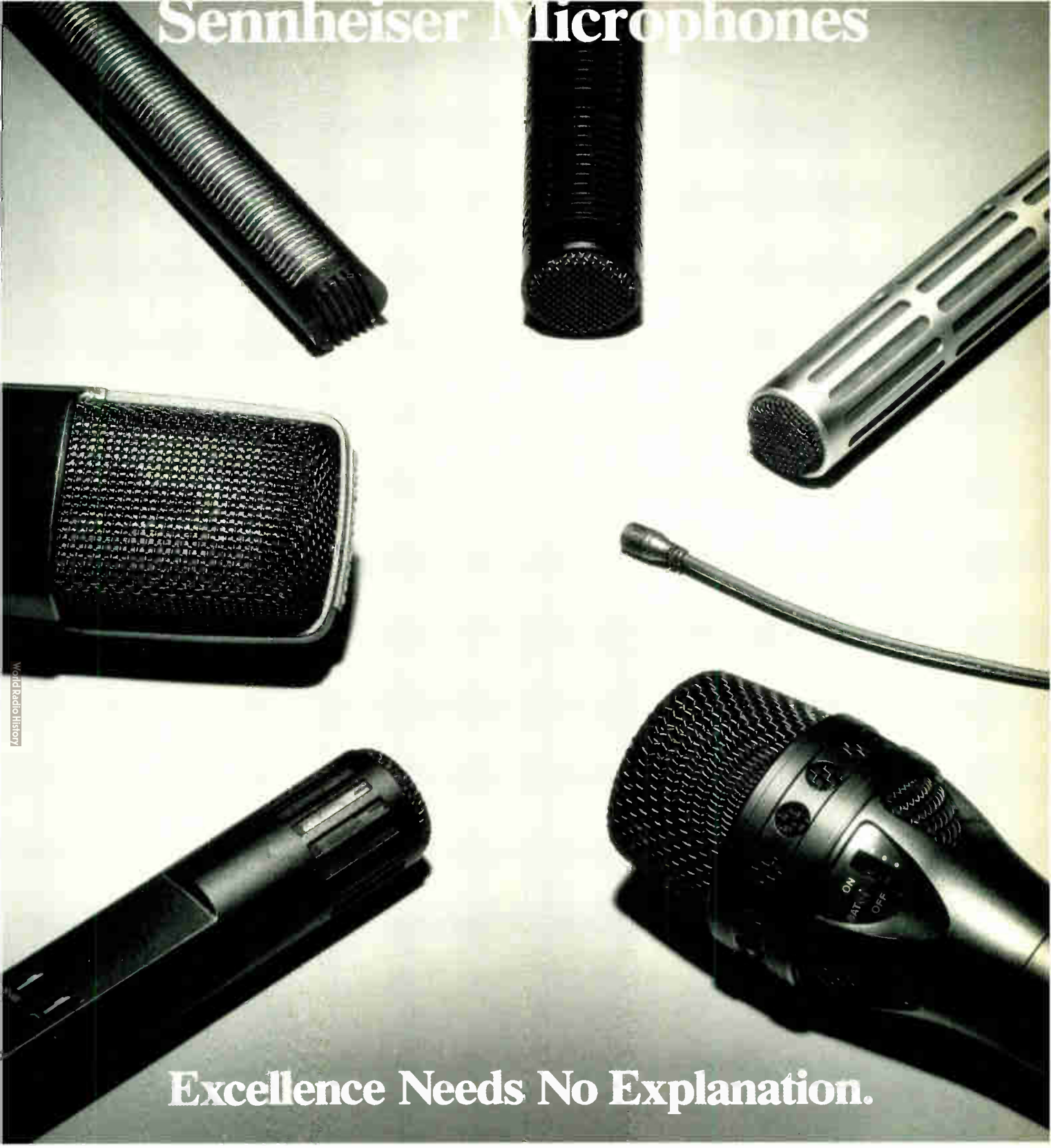

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ups to the signature sound of many an instrumentalist. This, combined with the superior noise specs of the new effects, advances one more powerful argument for printing the player's effects during tracking and overdub sessions. Like most recording professionals today, musician/engineer/producer Robert Musso (Mick Jagger, Herbie Hancock, Tom Waits) has learned to identify situations where it's best to print a musician's own effects.

"When I record someone like Steve Vai, he has his rack well set up and his sound together, so it's simple to get a good sound on tape without going through a lot of effects in the studio. But if I notice a player has a piece of gear that isn't top-of-the-line, and if I know I can do the same job better with something in my rack, I'll just suggest 'Why don't we use my delay instead?' "

So the new gear can serve to multiply the already staggering number of decisions an engineer or producer must make. It's not only a question of whether to add effects during tracking, overdubs or mixdown—now it also becomes a question of *whose* effects to add. The player's? The studio's? The engineer's own personal pieces? All three are likely to offer the same audio quality. Which means the decision becomes largely an artistic one.

Perhaps it's fitting, then, that the decision no longer rests solely with producers and engineers. Musicians have a basis for getting involved, too. "The new technology has created a new breed of musician," suggests engineer/producer/guitarist Glenn Rosenstein (Tom Tom Club, Talking Heads, Ziggy Marley, Full Force). "The musician is not only a talent person today, but a technical person as well. As a producer I like that because the player can show me more specifically what he's after with his sounds. As an engineer I like it because it makes my job a hell of a lot easier. And with the common knowledge of the technology more or less out of the way, we can now all focus on the music. It helps communication and it makes for a better end-product."

But do musicians really have the technical knowledge to participate in such a colloquy? Do they possess the engineering chops to tweak the fancy parameters lurking in their racks? "In some ways, I think players can be a little more knowledgeable than engineers," says producer/engineer Joe Chiccarelli (Pat Benatar, Stan Ridgway). "They have their two or three boxes they've lived with for six months or so. They get into every nook and cranny of each box and find out exactly what it can do. Most engineers and producers, on the other hand, bounce between different studios and deal with 15 or 20 different boxes. They rarely get to live with just one device and make the most of it. Players sometimes come up with stuff that I didn't even know a particular box could do."

Even if players *haven't* fully fathomed the complexities of their new digital reverbs, what's wrong with a little technical naivete in the studio? Look what it did for the Beatles. "I often learn things from people's home demos," notes keyboardist/producer Mitchell Froom (Crowded House, Paul McCartney, Elvis Costello). "Someone will have a bunch of equipment and no idea how to use it, so they'll just get it where it sounds good to them and, in the process, do something really interesting. That's why whenever players come in, my engineer [Tchad Blake] and I will start by seeing what *they* want to do with effects. We don't have any preconceptions like, 'You can't use that, it's too noisy,' or 'I don't like this reverb, we have a better one.' We don't take that kind of stance."

Noise and poor frequency response have been the traditional objections to printing musicians' effects during tracking and overdubs. These objections have been made obsolete by the high-quality, rack-mount effects many players now carry. But what about the other traditional reason for not printing effects, that the printed effects limit the producer's and engineer's options during mixdown? This argument also holds less water than it used to, as engineers and producers are gravitating toward building ambience around key instruments as they cut tracks, rather than waiting until the final mix. It's a practice that helps avoid "choosin' is confusin' " quandaries during mixdown and helps keep mixes true to what went down during basics.

"Sure, reverb adds another EQ color that may or may not fit into the palette in the end," acknowledges guitarist/producer Jeff "Skunk" Baxter (Steely Dan, Doobie Brothers). "But if a guy's got really great sounds, and

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his effects add to the quality of the performance, then I'll print the effects on a couple of extra tracks."

Case closed? Not quite. The rise of affordable, high-end processing gear presents aesthetic problems as well.

It's not only a question of whether to add effects during tracking, overdubs or mixdown—now it becomes a question of *whose* effects to add. The player's? The studio's? The engineer's?

They've tended to create a syndrome we've already seen with synthesizers. Everybody in town owns the same three or four pieces of the latest must-have microprocessor gear. Everybody uses the same factory presets on said gear. Result? Every record comes out sounding more or less...well...the *same*. As we've also seen with synths, the situation is beginning to generate a bit of a backlash.

"Right now I'm seeing a trend away from high-end digital effects processors for musicians," Chiccarelli observes. "For a while there, everybody was trying to sound like Steve Lukather or Jamie West-Oram or whoever it might be. Everybody was going for that zingy, thin, processed sound. But now they're starting to back away from those sounds and look for a good, real, organic guitar sound. Where a guitarist may have had two digital delay units, a PCM70 and a pile of other rack stuff, now he's basically trying to go straight into the amp. What I've done recently with electric guitar, in search of unique sounds, is go back ten or 20 years and put the guitar direct through a Leslie or some old Univibe, wah wah or Maestro fuzz tone."

The more things change the more they stay the same? Froom, Musso, Baxter and other recording professionals we spoke with all report seeing a similar phenomenon. Just as engineers before them, musicians seem to be reaching the saturation point with digital effects processors. For everyone involved, these devices represent a powerful option in the studio, but by no means the *only* option. For many musicians this is good news. The idea of the new hybrid musician/technician is an intriguing one, but there are many brilliant players who suffer from the proverbial inability to plug in their own amps.

"Sometimes people will come into the studio with a rack of effects and their own mixers as well," Musso says, "and they're having problems with their signal routing. I always wonder why they don't just let me do it."

High-end digital effects processors only become counterproductive when they become something that musicians and engineers feel they *must* use, like it or not—mysterious talismans blindly held to possess hit-making powers. As with everything else in the recording studio, there are no rules governing when digital processors should be used, by whom, or indeed if they should be switched on at all. But it's clear that musicians now have an important role in deciding individual cases. ■

Alan di Perna writes about music and technology for numerous publications and currently serves as Musician *magazine's music projects editor.*

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by Craig Anderton

TRENDS AT THE TEMPLE OF HIGH-TECH

New York City recently hosted the 87th (if you're counting) AES Convention. For what it's worth, the vibe was far less desperate and more laid-back than the summer NAMM show; the fact that there wasn't too much new technology seemed to provide a breather, as well as an opportunity for manufacturers to improve existing technologies.

Rather than look at specific products this time around, let's look at trends. The industry is going to some interesting places, but not necessarily the ones you might have been anticipating...

Are optical read/write disks the next big thing? Only partially. It takes a while to pull data from an optical disk, and music is a real-time operation. (Quote of the show: "Real time is not negotiable"—Nil Parent, Technos.) As a result, the only announced multitrack optical disk recorder, Akai's DD1000, will be limited to four tracks (two sets of stereo pairs). Still, four tracks of high-capacity digital recording on a non-tape medium for $12,000 indicates a machine with promise for a variety of niche applications, such as mastering.

When it comes to data density—packing digital data on something—tape still wins hands-down. A DAT tape holds a tremendous amount of data, as do other digital formats. Unfortunately, digital tape in general has a problem: *format wars*. The array of incompatible digital tape formats threatens to create a Beta vs. VHS-type market share war where no one wins. Even worse, by the time the winning technology has gone through the Darwinian process of outlasting the competition, that technology will be obsolete. When will the pro audio world learn from the example set by MIDI?

Meanwhile, hard disk recording is also inching closer to maturation. Seeing a bank of 720MB hard disks providing hours of track-minutes is a thing of beauty; although generally expensive, there is a way to cut costs—team up a recording system with an established computer serving as the brain (e.g., Hybrid Arts ADAP with the Atari, Digidesign's Sound Tools and Digital Dynamics ProDisk

Akai DD1000
Optical 4-track Recorder

PHOTO: GEORGE PETERSEN

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with the Mac). This adds the advantage of using standard, mass-produced systems.

Despite improvements in cost-effectiveness and their highly sophisticated editing operations, hard disk-based systems are still not perfect. They use moving parts, can be noisy and require the necessary computer smarts to control all those disks. Nonetheless, hard disks are getting competitive with digital tape and offer the magic of random access, throwing yet another hat into the digital (Token) ring.

Despite the digimania, analog tape is doing a lot more than just hanging on. After all, it's non-volatile, real-time, editable with a razor blade and adhesive tape, and has a higher "sampling rate" than digital could ever have. With Dolby SR, it provides wider dynamic range than 16-bit systems *and* throws in better resolution at low levels. Tape is also comparatively inexpensive, the formats are more-or-less standard, and you can even crunch a snare drum by turning up the level. Digital is great, no doubt about it; the deterioration that occurs with analog is a major drag, and the accuracy of digital sound these days is extraordinarily detailed. Yet it's clear that 24-track analog decks are not going to just roll over and die.

For the foreseeable future, it seems no single audio storage technology will dominate. There are pros and cons to all the major formats; until one offers a clear advantage in multiple specialized applications, the market will remain divided between several competitors, each offering a particular advantage to a particular market segment.

By the time the winning technology has gone through the Darwinian process of outlasting the competition, that technology will be obsolete.

It seems a waste of money to have zillions of knobs on a console when you only have two hands.

What we *really* need is a breakthrough in RAM technology (probably biological memory) that makes 100-megabit chips a reality. Then all storage and recall could be done at microsecond speeds, without moving parts and with sufficient track-minutes. Some type of tape or optical backup would complete the system. Unfortunately, that kind of RAM breakthrough is some time away, so for the moment, if we want digital multitracking, we need to deal with hard disks or tape.

As usual, there was a raft of console product introductions. Stereo inputs are becoming common, and noise figures are getting lower, even for budget models. Rack-mount, compact line mixers are quite in vogue (something for all you MIDI types who use distributed mixing), yet I can't help but feel that in the near future, today's consoles will seem as quaint as a vintage 1967 modular Moog Series III synthesizer.

Symetrix, in particular, showed a nifty prototype of a Mac II-based digital mixer/recorder (designed with the help of none other than *Mix* columnist Stephen St. Croix) with several screens—mixing, EQ, signal processing, routing, etc. Of course, Symetrix was by no means alone in the quest for the "virtual mixer."

Is moving a mouse to tweak parameters going to give you a more fluid mix? No. But programming an automated system is never a fluid process; it's an editing process. It takes getting used to, but it is possible to mix on a parameter-by-parameter basis (that's basically how I did my last recording project). The trade-off: You spend more time, but you can take the mix as far as your budget or sanity allows.

Other than technical considerations, it seems a waste of money to have zillions of knobs on a console when you only have two hands.

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Besides, electromechanical components such as pots and switches will continue to increase in price, and this will provide further incentive to use computers as mixers.

Speaking of computers, several points became obvious at AES. First, the Mac Plus and SE are essentially dead for anything but the most primitive audio applications; the Mac II family is the current price of admission. The Atari, Amiga and PC continue to lag behind the Mac at AES booths, but quite a few people at the show wondered what effect Commodore's $15 million Amiga advertising budget would have on sales.

The big question mark is the NeXT machine. It has all the hardware necessary to be a dandy audio workstation, but not the software. (And perplexingly enough, it doesn't have a floppy drive—when you want to send a 28K MIDI song file to your songwriting partner, you have to send it on a quarter-megabyte, $50 optical disk.) Yet the NeXT has some tantalizing improvements in the user interface compared to the Mac, and the price is realistic when you consider how much it would cost to create an equivalent Mac system. If enough software appears to justify buying a NeXT, look out. Otherwise, it and the Amiga can sit around and discuss how great hardware doesn't matter unless people can make it run the programs they need.

And so life in the digital fast lane goes on. Technology changes rapidly, with no real direction other than improved performance. You'd think that would be enough, but that goal often overlooks the related issues of compatibility and obsolescence. At some point users will have to stop demanding that they save that extra dollar or get that extra 1/4 dB of performance so manufacturers can settle down to improving the user interface, lowering costs and providing a path for not only upward compatibility, but "sideways" compatibility with comparable products from other manufacturers. ■

Craig Anderton currently uses four incompatible computer systems, three different types of floppy disks, four families of audio connectors and five different tape formats. Given all this, he understands why world peace has not yet occurred.

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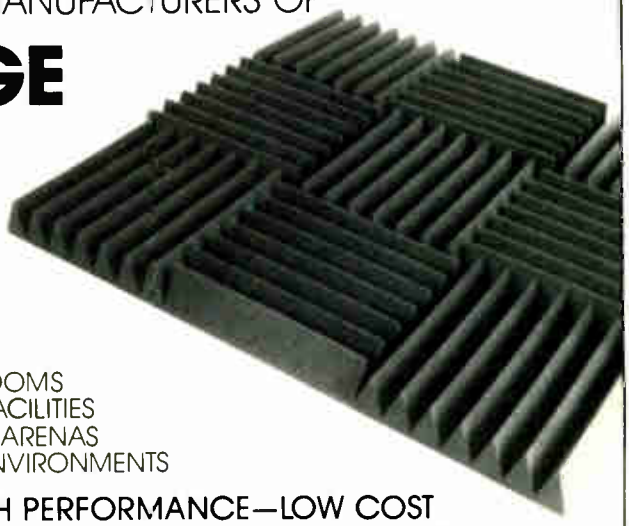

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(Above) Turtle Island String Quartet (l to r): Darol Anger, David Balakrishnan, Katrina Wreede, Mark Summer.

THE TURTLE ISLAND STRING QUARTET & ALL THAT JAZZ

Maybe they should just call themselves "Turtle Island." True, it is a classically configured string quartet, but that label seems limiting. Most people think they're a traditional ensemble steeped in Haydn and Ludwig van, of course. Others lump them with the better known Kronos Quartet, whose forays into Terry Riley, Jimi Hendrix and other moderns have won them a combination of high respect and puzzled looks the world over. Turtle Island is in a different bag, though—more jazz than anything else, and all that implies.

Their current release, *Metropolis*, juxtaposes truly imaginative renditions of tunes by the likes of Pat Metheny ("Jaco"), John Coltrane ("Naima") and Horace Silver ("Ecaroh") with originals that show off both the group's incredible ensemble playing and the improvisational skills of the individual players. Violinists/group leaders Darol Anger and David Balakrishnan have demonstrated their versatility in numerous San Francisco Bay Area acoustic music groups through the years, playing everything from bluegrass to jazz, so this is light-years removed from stuffy conservatory quartet music. Cellist Mark Summer and a new member, violinist Katrina Wreede, round out the lineup.

Metropolis is the group's second project for the Windham Hill Jazz label, and is a fine-sounding disc from beginning to end, thanks to the straight-ahead production approach of Anger and Balakrishnan, and Brian Walker's crisp engineering. "Basically, our concept was to stereo-mike everybody, so we used two mics," Walker explains of his work with the group at Mobius Music in San Francisco. "We used mainly Neumann 84s, except on the cello, where we used a combination of an 84 and a U87. Most string quartets are fairly distant-miked, and if there is some close-miking, they're down in relation to the distant mics. Our idea was to get a more immediate, in-your-face quality that better approximates our live sound.

"We found that if we used just one mic at a distance of even six inches or less, we couldn't find the single point on the instrument that gave us the sound we wanted. One point gave us brightness, another fullness, but there wasn't one that worked for both. So we used two and had everyone play very still. We didn't want to use headphones in the studio, so we set the musicians up very close to each other to create a small acoustic environment. We used a low baffle in front of the cello so it didn't bleed into the other mics, and that worked well."

Walker says that there was some editing from different takes to assemble the finished performances,

PHOTO: ED KASHI

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but there was minimal overdubbing. "In some places we'd have everyone just comping during the main take and then we overdubbed the solo later," he says.

In the months since *Metropolis* was released, the group has toured successfully all over the U.S., most recently playing colleges to large and enthusiastic crowds. "We get good word-of-mouth everywhere we play," says Walker, who also handles the group's live sound. "It really feels like it's building still. It's exciting."

The foursome hope to cut their third album—which Walker says will be "a little more pop-y and accessible"—this spring. And a project featuring Balakrishnan's orchestral music (which would be produced by doing multiple overdubs of the quartet) is also in the offing. "We're just trying to forge ahead," Walker concludes. "We're always looking to head into new territory."

—Blair Jackson

JOHN KLEMMER: "MUSIC" AND HEALTH

Saxman John Klemmer was 17 when he made his first album for Chess Records in 1963, a Coltrane-influenced collection of post-bop. His first hit record was called *Blowin' Gold*, a '60s psychedelic album with Hendrix and Beatles covers, inspired by the Miles Davis *Bitches Brew* bag. Klemmer's new release, *Music*, sees him entering the metaphysical new age realm. His soulful sax sits in lush, funky settings. The vocals are hypnotic, often just one word repeated over again—"love," "music," "life." *Music* is also the first "jazz" album to be run through the ERIC process.

Klemmer's musical history has been colorful and exciting—but it was a jolt to his medical history a couple of years ago that made *Music* the interesting story that it is. "I had been boogieing for quite a few years and decided to take a sabbatical," he says. "But my sabbatical turned into an unplanned health problem, which complicated things."

Music took over four years to complete, but Klemmer was bound and determined. "Sometimes when you're not feeling well the worst thing to do is just sit. So I dug in," the saxman says. He had recorded the basic tracks at Power Studios in New York and Mad Hatter in Los Angeles, using a rhythm section that included drummer Harvey Mason, bassist Abe Laboriel, keyboardists Ronnie Foster, Mike Lang and Victor Feldman, and guitarist John Tropea. But when overdub time came around, he was sick and unable to go to the studio.

Determined not to let his album come to a complete stop, Klemmer met engineer Steve Zipper from Fidelity Studios in Studio City and explained what he had in mind. Klemmer wanted to try to finish the album from his home, using the phone to direct events in the studio. "We had Lenny Castro in to do some percussion overdubs first," says Zipper. "I got a Radio Shack speaker phone and hooked it up to our lines at the studio so I could have my hands free. The phone has a real narrow band, so John couldn't tell sonically what was going on, but he could tell timings. He'd sit there for six and eight hours with a phone in

John Klemmer

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his ear at first. Then I talked him into getting a speaker phone like I had."

The technicians at Fidelity rigged up a box with line-matching transformers to match the console output into the phone lines—that made the sound quality more like listening to Muzak for Klemmer. "Then he could tell a lot more," Zipper says. "After a certain frequency, phones cut out. We were doing samples of bells and bell trees, and they're so high-pitched that he couldn't hear them over the phone."

Almost all overdubbing and mixing was done over speaker phones, according to Klemmer. "Sometimes we'd have to do things two or three times. Sometimes we'd hit it. I'd listen to the sounds over the phone and they'd make a cassette. They'd messenger the cassette immediately to my house, sometimes right in the middle of a session while they took a break. I would listen and call back with comments."

For Klemmer, working with Zipper after a layoff of several years was a chance to learn about MIDI, sampling and the newest technological advances of the studio. "I hate electronics, but I love sounds," says the saxist. "I've been known from my heavy use of the Echoplex, but I can't put a light bulb in. I know nothing about electronics."

Klemmer knew the concept he wanted for *Music*, but had no idea how far he'd be able to go until starting his work at Fidelity. "As for sounds, I was into it and improvising as I went along with the sampling and the mixing and the production of the album the same as if I was taking a solo with my horn."

Zipper didn't know exactly what he was getting into when he began working with Klemmer. "It started that we were going to finish these tracks he had started," the engineer says. "The basics were pretty much there. There were just a few percussion and sax overdubs, then mixing. But as problems crept up, I'd say, 'Let's sample this and try this.' "

Klemmer got a good lesson in sampling on "The Fire of Love." He had begun recording the song with strings a couple of years ago, but the session was canceled before they could finish their parts. Klemmer wanted strings on the song. "That

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was when I explained to him about the Publison [sampler]," Zipper says, "because you can't replace a 42-piece orchestra with a synthesizer. So I sampled the string section, some short stabs and some five or ten seconds long, and relayed them back onto the track with the right timing. It brought the song to life, and we ended up finishing it with the strings they laid down at the beginning."

Zipper introduced Klemmer to some sound effect libraries on CD and gave him a book of samples to pick through. "He marked what he thought was interesting, and we spent a whole day listening to samples. There's a bell tree on every song," Zipper laughs. "It's like a signature now for him. There's a little bell tree that goes everywhere. He fell in love with it."

Zipper and Klemmer sampled drums to replace some aging sounds on the analog tape. "Some of the dynamics of the kick and snare were gone, because over time analog tape loses its punch," says Zipper. "His album was kind of new age but still had to have some punch on the 1. We ended up using a fat, warm kick, and I put it in the Publison. We turned the tape over and bounced the existing track with a delay on it. It's the only way you can get the trigger kick ahead of the track. Then you turn the tape back around and delay the trigger kick a little so it settles and matches the kick you're trying to replace. You have to bounce the original kick to another track in reverse. Run the tape backwards and record everything off the repro head, except that one track off the sync head—it ends up putting the kick ahead of itself so you can delay it back into the track. If you just trigger off the existing kick it comes out like 10 or 15 milliseconds late because of microprocessor delay."

Once Klemmer got into the CD sound effects and the Publison, the tracks filled up fast. Some songs used up to 42 inputs. They'd make up to six mixes of a song, and Klemmer would pick the chorus out of one, a B section here and the verse from another mix. At Fidelity they used a 42-input MCI 500 Series board (with GML automation, which they didn't use), Ampex 1200 tape machine, AMS delay, Publison and more. "An AT&T phone," laughs Zipper. "That was our main piece of gear.

"The sonic quality and equalization and things I pretty much handled myself," Zipper says. "We discussed it some over the phone but most things were pretty normal. With bells you want to cut the brittleness and smooth them out. We'd run three cassettes a day back and forth. I'd mix passes and put them on cassette and run them to his house. He'd pick one and we'd fine-tune it from there."

Zipper's current project with ex-Megadeath guitarist Eric Presley is more the norm for the Los Angeles-based engineer. "Klemmer's thing was a big challenge, a totally different type of music to work with," Zipper says. "I would hear things one way and it would end up being too strong for what he was doing. I learned a lot from working with him."

It wasn't always easy, though. "It was like I had to play producer, engineer and technical guy. And one of the most frustrating parts about it was having to second-guess what John wants, especially in the mix."

The music on Klemmer's new release runs continuously from track to track. "We spent many hours edit-

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ing to get the right feel, to keep the flow going. I would do the edits and send him a cassette. And the next day I'd know whether I had it right or not," Zipper says. "One-on-one, with eye contact, listening together is a piece of cake, but this thing did take a lot of patience."

"Just doing it over the phone and going by our guts and trust and good relationships and good attitude and talent—that's what sticks out on this," Klemmer says. "Whatever deficiencies might be there technologically or talent-wise, a healthy, caring, professional attitude can overcome any obstacles."

For the saxman, *Music* was a lesson in the ways of the studio—1990s' style. "With all the sounds and hypnotic effects, and all the sampling we had done, there were so many things going on of interest that needed to be heard, subtly and blatantly. Steve and I felt there was something better."

Soon after, Klemmer read an article about the ERIC system, used in restoring Dick Clark's old *Bandstand* show kinescopes. Klemmer was concerned about a large amount of old, unreleased material in the vaults at MCA (bought from Chess) and got in touch with ERIC's Larry Duhart. After meeting Klemmer, Duhart offered to use his ERIC process on the saxist's new album, running the final mastered mix through his ERIC.

ERIC is an acronym for Emotional Responsive Impulse Computer. "The system has an activated matrix that allows the recording engineer to take an individual or complex signal, such as music, and attach information to it that the human needs in order to interact with the sound," Duhart explains. Duhart bases his ERIC process on Physonics, and research being done at Johns Hopkins on certain beat frequencies that release dopamines in the brain. "What I'm doing with ERIC is exciting the air molecules in the room so that you as a human being can feel the sound. You're feeling the information in the room."

"What the man has done borders on the Twilight Zone," says Klemmer. "He is one or two steps away from breaking the third dimension, which is the difference between feeling the music and hearing it." The ears are not the main thing, according to Duhart. "The vibratory system is first, before the ear. The body's got to feel the information. The sounds cues have to go through the cochlea and vibrate those hairs in there for you to get time cues. But the ears don't feel bass or midrange. Your body interprets the frequency response. So basically ERIC is an exaggerated audio interpretation system for humans. And when it plays back it retains the analog properties. It doesn't take anything away from what I've put on it, except now it's clean analog."

Zipper can't explain Duhart's system, but he certainly likes the final result, saying that ERIC "widens up" the sound. "It sounds wonderful. It makes the stereo mix sound even more stereo. It defined things nicely."

Klemmer would like to keep the same team for his next record. "More than half the battle of making a record is attitude. And through the process of doing this album and working with good, helpful people, I got better faster than I would have."

—by Robin Tolleson

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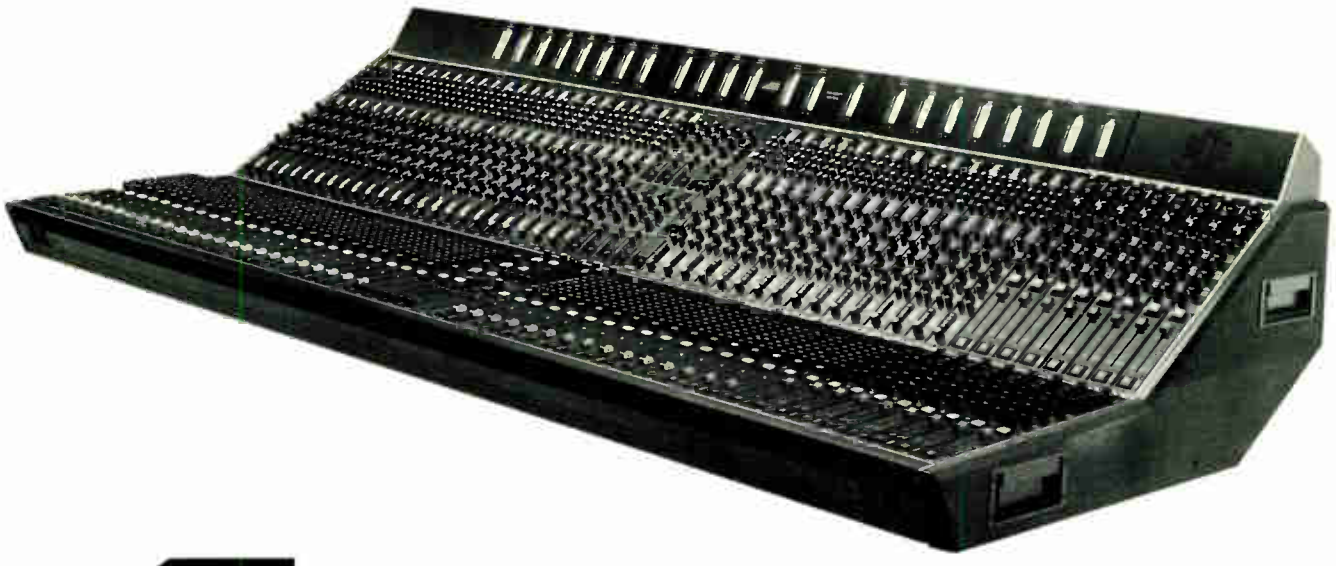

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by Philip De Lancie

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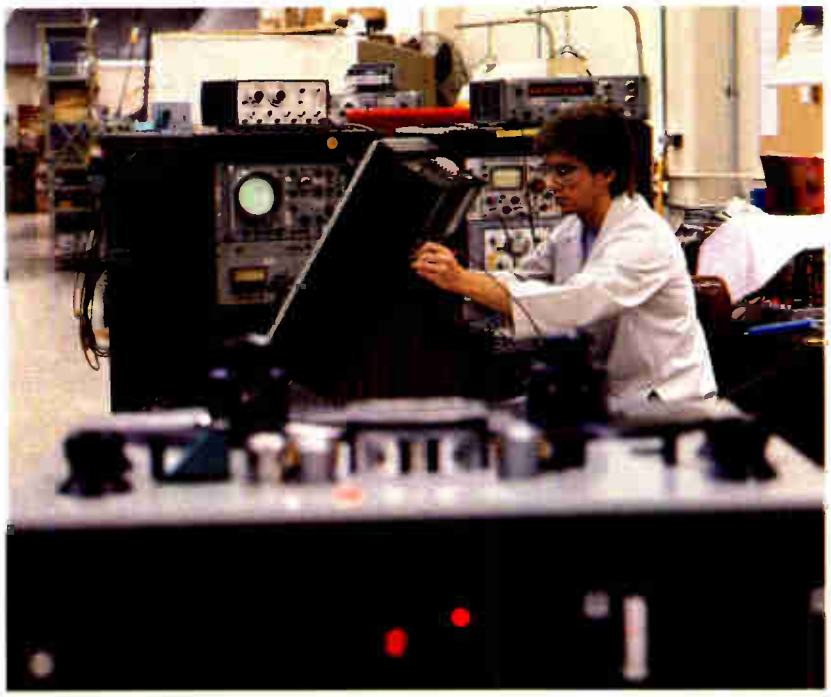
FORMER RIVALS FACE COMMON FUTURE

Last June, Sunnyvale, California-based cassette duplication hardware manufacturer Electro Sound, Inc., was acquired from parent Electro Sound Group by Mark IV Industries of West Amherst, New York. That brought Electro Sound under the same ownership of such venerable names in audio as Electro-Voice, Altec Lansing, Vega and, most significantly, rival dupe equipment maker Gauss.

According to Gauss president Jim Williams, who now oversees the operation of both companies, their combined sales of duplicating gear represents 80% to 85% of the U.S. market and perhaps 65% to 70% internationally. Those figures apparently aren't high enough to warrant opposition from Bush administration antitrust watchdogs, but they highlight the importance of the new Mark IV Audio lineup to all with an interest in the cassette duplication field. Reached at Gauss' Sun Valley headquarters in California, Williams describes in the following conversation his vision of the new Electro Sound/Gauss relationship, and shares his thoughts on the challenges the companies are likely to face in serving the audio cassette duplication markets of the future.



Test department for the 2400 System at Gauss' Sun Valley, California, plant.

Mix: Outline the various segments of the duplication market served by Electro Sound and Gauss. In what areas do the companies' product lines overlap, and in what ways do they differ?

Williams: Fundamentally, you have two major segments in the duplicator market. One is the very small, low-end market, usually institutions like schools or churches, with small-volume runs. These are primarily doing in-cassette duplication at low speeds. Moving from there into pancake duplication, you find some larger institutions using small systems, still running at relatively low speed. But beyond that, you cross the threshold into true high-speed duplication, which I would define as duplication ratios of 32:1 and up. Within that market, you have music products, which we consider the very high end, and spoken word, as well as religious materials, which combine the requirements of spoken word and music.

At Electro Sound we offer three different systems. We have the System 5000, a cost-effective system that goes into the less demanding markets. Then there is the System 8000, a reasonably state-of-the-art product that is a tried and proven workhorse of the industry. It's been on the market for about eight years, and we continue to produce it because there is still a lot of demand for it. It has been upgraded in the last year to run at 80 times real time for music applications, using a 3¾-ips master. At the high end is the newer state of the art, the System 4800, which has been on the market for two years. It does music at 80:1, with a 3¾ master, and spoken word at 128:1. Also available from Electro Sound is the Series 4300 test equipment and the 4800 cassette loader, a manual unit for small operations.

At Gauss, we basically offer only one duplication line, the 2400 system, which is strictly high-end state of the art. It duplicates music quality at 96:1, with a 3¾ master, or

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64:1 with a 7½-ips master. It also does spoken word at 128:1. And we have a line of test equipment, the 1100 Series.

Mix: Will there eventually be a consolidation of the lines to avoid competing for similar types of clients?

Williams: Electro Sound and Gauss will each continue to have a high-end product. I don't see Gauss ever having anything but one very high-end product, be it the existing system or the next generation. I see Electro Sound having at least two product lines, with a more cost-effective system in addition to the high end.

Mix: As the next generation of high-end equipment is developed under joint ownership, will the two companies' offerings end up being essentially the same, with different name plates?

Williams: They will continue to be separate systems with different applied technology.

Mix: Is manufacturing to be combined in any way, or kept completely separate?

Williams: Some of the peripheral products may be built for both companies at either one facility or the other. But there will be a distinct difference in the manufacturing of the main-line products, to keep a definite identity difference between the two companies.

At the same time, one of the things that made an awful lot of sense to me when the acquisition opportunity came up was that we would be able to combine our human and material resources in areas such as new product development to make ourselves even more competitive. We are in a niche market, which places limits on our growth. So both companies need for their futures to find other areas that complement the businesses we are already in. And it makes sense to use the resources of both companies to support that kind of work, especially with the expense of today's technology.

Mix: Will product development and testing be any more difficult for Electro Sound now that it is no longer part of an organization that includes duplication facilities?

Williams: Not really. You always select a friendly site to take your product and run it in production. In their case, they had that situation built into the operation, which was a nice convenience. But they were operated as a separate company anyway, so it was really no different from going to an outside company.

Mix: Is work already underway by either company on a "digital bin loop"?

Williams: There had been a good bit of work done at various levels in both companies prior to the acquisition, so it's not a new subject for us. In a consolidated fashion, that work will continue. It is probably premature to say what the specific product will be or when it might be ready. One of the complications is the cost-effectiveness of that type of product as it stands today. To date, it is not really cost-effective to the whole marketplace, and I don't think we would be fair to introduce something that's not really ready or cost-effective. Unless we can bring something to market that is really a viable product for the market as a whole, and can bring the whole market forward by making it available to everyone, I'm not sure that it is a justifiable venture for us. When the cost comes into line, then there may be a place for that type of product.

Mix: Do you see the DAAD or Duplitronics digital master systems as a threat to your conventional bin-loop products?

Williams: Under present conditions, no. Duplitronics is an unknown until we know exactly what their products are and where they are priced. As far as DAAD, I have to compliment Concept Designs for the technological advancements that they have been bold enough to do. But although a couple of the major labels are doing something with it, there is probably a limited market for that system at that price.

Mix: Do you feel that prerecorded analog cassette sales are near to reaching their peak, or do you foresee continued growth throughout the '90s?

Williams: From a global viewpoint, the prerecorded music market has had a substantial growth rate over the last several years, and is continuing to grow. The U.S. is

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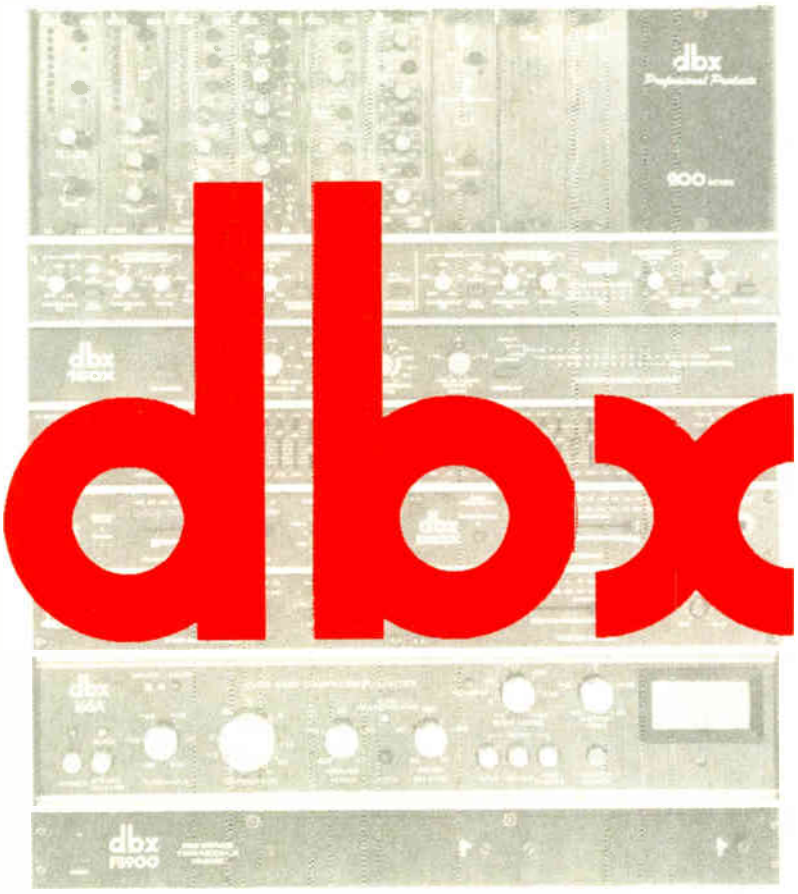

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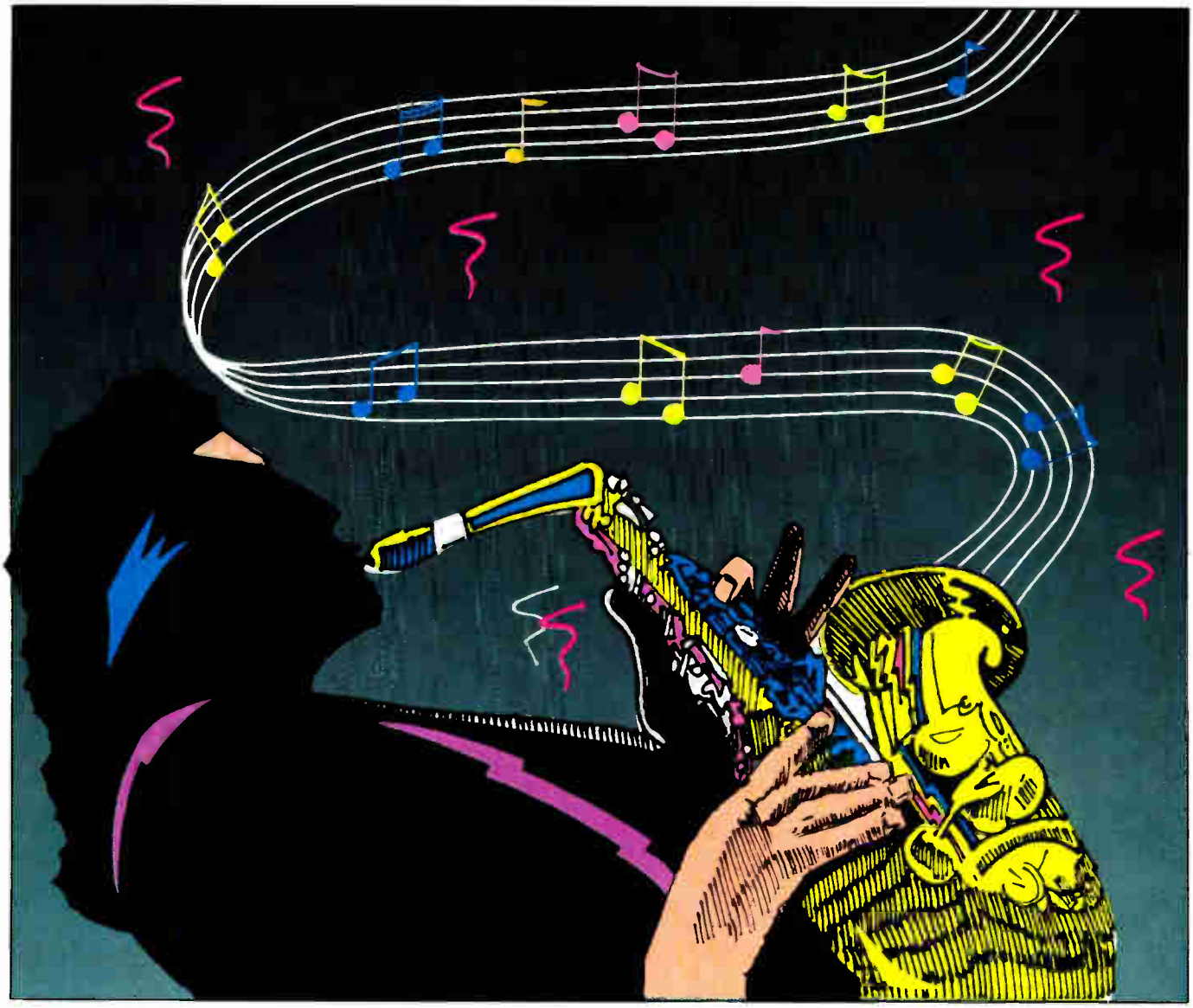

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the leader in that growth, but the whole world is following. The growth is going to continue over the next three to five years, though maybe not at the same rate as the last three years, because over that period you have had the decline of the LP market, which has almost totally translated into increased sales of cassettes. You also have the CD, but it is not taking away from the cassette, it is growing in parallel with it.

The real new growth for the future of the analog cassette is going to come from spoken word and other non-music applications. One problem in this area is getting a good handle on how big that market really is. In the music market there are measuring sticks like tracking royalties that make it easy to determine that information. In the spoken word market there are a whole lot of applications that are difficult to measure accurately. You've got books on tape, which is ready to take off into big numbers in the future, and that involves royalties. But then you've got religious applications, how-to, which include both personal and industrial applications, and self-entertainment.

Mix: How does the likelihood of increased emphasis on spoken word applications relative to prerecorded music affect the kinds of duplication products you'll be developing for the future?

Williams: The spoken word market carries an old connotation, which is really wrong, that it means "cheap and dirty" product. It's not. The quality requirements for a good spoken word product are almost as demanding as for music, though they are defined somewhat differently. One of the trade-offs can be in the absolute bandwidth of the product. You need flat frequency response out 10 or 12 kHz for spoken word, whereas in music it needs to be nominally around 18 kHz. Spoken word allows you to produce at a higher rate, up to 128:1, using a 3¾-ips master, and get bandwidth out to 12 kHz without much trouble. But other quality requirements, such as signal-to-noise or wow and flutter, can be just as high in spoken word as in music, because you have a lot of low-level passages where the noise floor can be very objectionable. So spoken word may have been seen as more or less "trash" product many years in the past, but it won't be in the future, because these are real professional products.

As far as our duplicating equipment goes, spoken word just puts different kinds of demands on our products. We will probably need to go to even higher speeds, which becomes very technically demanding on the equipment. You can't build a "cheap and dirty" duplicator to do that job. It just doesn't work that way.

Mix: Now that it looks as if DAT will finally be made available to U.S. consumers, do you see it as a potentially serious threat to the analog cassette?

Williams: For the long-term future, DAT is not the major concern, because it still faces too many obstacles. The CD, on the other hand, is now definitely an accepted consumer product, with compatible hardware already in place. If any digital recording format is going to have a chance to make it in the consumer market, I believe it will be the recordable CD.

Mix: How does that belief affect your long-range planning?

Williams: CD manufacturing involves a whole different technology that is not our forte. But if DAT were to become a viable consumer format someday—a possibility I'm not entirely ruling out—that would be within our interests. And along the same lines is the technology for high-speed video duplication. Those are areas in which both Gauss and Electro Sound have independently done some parallel research and development, interestingly enough. We are looking toward combining those efforts and moving forward from there. A future video duplication line is a real possibility, depending on how our R&D goes. ■

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.

TAPE & DISC NEWS

WEA has recommended to its associated labels that they usher in the new decade by ushering out the 7-inch 45 rpm single. The move by the nation's largest record company, prompted by continued declines in 7-inch sales and rapid acceptance of the cassette single, increases the possibility of similar action by other majors. WEA labels Warner, Elektra and Atlantic retain final say on when to implement the new policy, and whether to apply it across the board or on an artist-by-artist basis. WEA, however, is pushing for uniform compliance to avoid confusion among retailers. At the same time, a WEA source says, "We're not going to do anything to damage the jukebox industry." The company will continue filling orders from jukebox operators until they convert their equipment to play CDs or cassettes. "If we have sufficient orders, we'll go to press. When the demand dwindles to the point where it is no longer economically feasible, we will cut the title out of the catalog," the source continues.

Music Annex has completed the relocation of its cassette duplication plant to a new 18,000-square-foot facility in Fremont, Calif. The plant, which boosts the company's duping capacity to more than 350,000 units per month, is equipped with Otari DP-80 and Electro Sound 4800 duplicating systems, with loaders by Tapematic and King. Packaging and assembly is handled with gear from Apex, ITI and Scandia. Music Annex, with multiroom recording studios remaining in Menlo Park, Calif., has also expanded client services to include blank cassette sales and an expanded in-house graphics department.

Sony Professional Audio has added another link to its chain of products designed for the production of CDs. The SDP-1000 Digital Audio Effector is essentially a CD premastering console in computer form. The operator manipulates digital audio data using a computer keyboard with built-in track ball, while viewing a display of functions and

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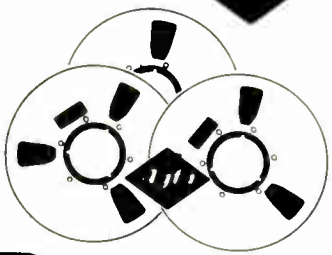
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metering on a high-resolution monitor. An equalizer section offers 4-band parametric EQ, as well as high and low shelving and filters. The dynamics section features compression, limiting, expansion and gating. A SMPTE time code-based dynamic automation system allows each parameter to be memorized and reproduced, with data storage on PD-1 2-inch discs. The unit incorporates Sony's DSP LS2 LSI chip, enabling 32-bit internal signal processing with 24- and 20-bit I/O word lengths. I/O interfacing in AES/ EBU, SDIF-2 and SPDIF formats is included, and the unit operates at three sampling frequencies: 48, 44.1 and 44.056 kHz. Delivery is expected to begin early this year at a suggested system price of about $25,000.

Personics Corporation, developer of the industry's only while-you-wait custom cassette duplication system, has announced a $15 million capital infusion that will allow more aggressive rollout of the in-store systems in the U.S. and Canadian markets. Current installed base is more than 100 in the Los Angeles, San Francisco and New York areas. The Redwood City, California-based company hopes to boost that figure to over 1,000 this year. The new funding includes $3 million in lease financing and $12 million from equity investors, among them Warner Communications. Warner will have the permanent right to designate a representative to the Personics board, and has selected Elektra Records founder Jac Holzman for the task.

Studer Editech, created by Studer International's August 31, 1989, purchase of Menlo Park, California-based Integrated Media Systems, has introduced six new products to its Dyaxis line of Macintosh II-based digital audio recording and editing hard disk workstations. Dyaxis 2 + 2 provides 2-channel simultaneous record or playback, with up to 4-channel playback and/ or overdubbing. The System Synchronizer syncs Dyaxis to house clock, film tach or SMPTE time code. An EX-cellerator card, featuring a Motorola 56000 chip, allows both real- and non-real-time 24-bit processing functions. Time scaling software is available with the new card for changing program duration without altering pitch. DAT file backup is now an option for systems with digital ports. Finally, a 760-megabyte drive option ups per-drive recording time to more than two hours, with a system maximum of over 12 track-hours.

Digital Audio Disc Corporation is marking its fifth anniversary with a 58,000-square-foot expansion that sets the stage for a move into the videodisc market. The Sony subsidiary's Terre Haute, Ind., plant plans to begin production this year of 100,000 videodiscs monthly. The addition will also allow DADC, which already claims to produce one of every three CDs sold in the U.S., to increase monthly CD capacity from 8 to 10 million. An on-site video mastering suite, equipped to handle all major international formats, is part of the construction project. The company intends to offer full production services at all phases of videodisc manufacture, including creative consultation, premastering, mastering, pressing, jacket fabrication and drop-shipping.

TDK (Port Washington, N.Y.), reflecting its increasing commitment to professional tape markets, has introduced a "Professional Master Series" line of video and audio tapes, featuring improved tape formulations, cassette mechanisms and packaging. The series includes five grades of audio cassettes, as well as Betacam and VHS video products. The company has also released specifications for high-speed video duping using its metal mirror master and chrome copy tapes with Otari's Thermal Magnetic Duplication gear. (TMD is likely to be adapted for high-speed DAT duplication if the need arises.) Based on results from video duplicator Future Productions, TDK claims a video signal-to-noise ratio for SP tapes of 50 dB, equivalent to 1-inch videotape, and 45 dB for EP, an improvement of 5 dB over real-time EP dubbing.

SPLICES

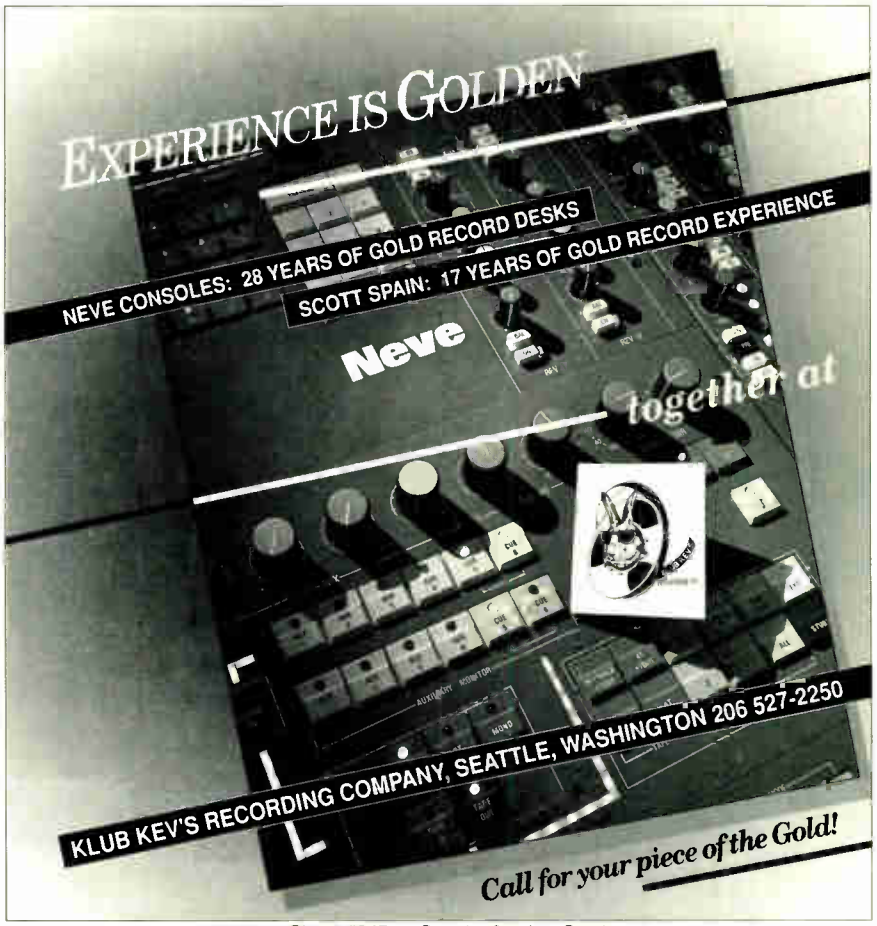
Sunkyong Magnetic/America is building an all new administrative, technical and warehousing facility in Long Beach, CA. The expansion corresponds with a major market-

World Radio History

ing push to promote UCR Pure Chrome duplicating tape...**Cintas VAC** is bringing out ferric and chrome audio cassette pancakes in 12,500-foot lengths for C-60 duplication, as well as a new leader tape for C-0s...Australian tape manufacturer **Greencorp Magnetics** will introduce audio duplicating pancakes in the U.S. in chrome and gamma ferric grades. Exclusive U.S. sales representation for the company has recently been granted to **Fujii International** of Northridge, CA. Fujii has also begun marketing the **Teccon Enterprises** line of laminated-tipped Sendust magnetic heads for master and slave duplicating systems...**Concept Designs** (Burlington, NC) has developed the Eliminator, an upgrade for King 760/770 and 780 loaders that allows them to yield as much as 50% to 70% per shift as the 790 ...**Nakamichi America** (Torrance, CA) has sold 108 MR-1 professional cassette decks to **Quadim Corporation**, the Westlake Vil-

Quadim Corporation

lage, CA, real-time cassette duplicator operated by former Motown executive Guy Costa...**Gauss** has introduced the Model 1131 4-track test head block for high-speed performance analysis on duplicating slaves. The head forms a system with the 1120 analyzer and Model 1110 composite generator. The company also announced the promotion of eight-year veteran Joe O'Connor to the position of customer service manager...**Passport Designs** (Half Moon Bay, CA) has joined forces with **Warner New Media** to produce a CD of MIDI "songs on disc" to offer music software users music data they can manipulate, rearrange and customize for a variety of applications... **Automatic Inspection Devices** (Toledo, OH) is shipping the Series 1000, Model 1100 machine vision system, designed to inspect clear or metalized CDs for optical flaws at two to five seconds per



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disc . . . Swiss electronics maker **FM Acoustics** has been selected by CD manufacturer **American Helix** of Lancaster, PA, to provide power amplification for its quality control department . . . Bertelsmann AG companies **Sonopress** and **Telemedia** will begin manufacturing 12-inch CD videodiscs early this year at Guetersloh, Germany, to service a European market anticipated by the company to reach 5 million in 1990 . . . Annual production of CD jewel boxes at **Shape South** will be increased by at least 10 million to 60 million. Shape has also recently introduced its new Standard videocassette, to be pro-

The new "Shape Standard" videocassette from Shape Inc.

duced at its Scarborough, ME, plant at an initial capacity of 5 million annually . . . **Disc Makers** in Philadelphia has begun offering video duplication services in all-inclusive packages, using in-house graphics capabilities to prepare retail-ready packaged videos from a client's master tape and photograph . . . Cerritos, CA-based **Optical Disc Corporation** has accepted orders for its 530 Master Disc Recording System, a DRAW CD mastering machine, from two overseas replicators: **Ibermemory** in Spain and **Ritek** in Taiwan . . . **Northeastern Digital Recording** (Shrewsbury, MA) has prepared a guide for clients who master CDs from DAT or F1 . . . **Digital House** has opened a sales and service center in New York City . . . **FDS Digital Mastering Labs** has completed the development and installation of the CDM (Clarified Digital Mastering) system, a refinement of its exclusive Waring FDS (Full Dimensional Sound) process. ■

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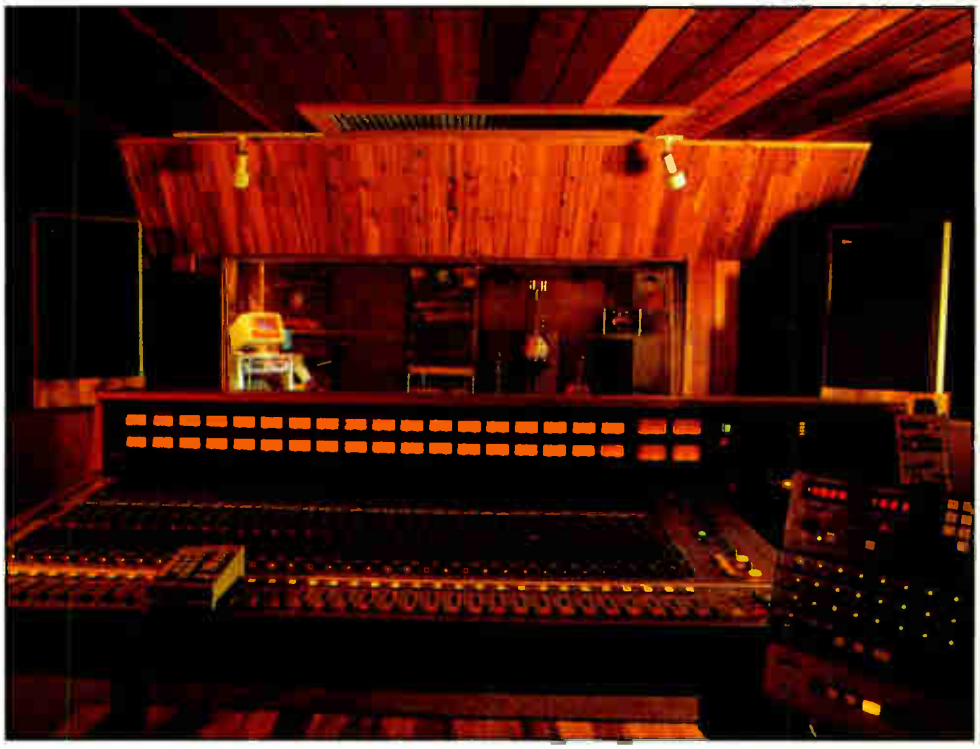
NORTHWEST STUDIOS

Information in the following directory section is based on questionnaires mailed earlier this year and was supplied by those facilities listed. *Mix* claims no responsibility for the accuracy of this information. Personnel, equipment, locations and rates may change, so please verify critical information with the companies directly.



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Mix listings procedure: Every month, *Mix* mails questionnaires to recording studios and/or other vital facilities and services for the recording, sound and video production industries. There is a nominal charge to list a Boldface Listing (name, address, contact) and an Extended Listing (equipment, credits, specialization and photo or logo). If you would like to be listed in a *Mix* Directory, write or call the *Mix* Directories Department, 6400 Hollis Street #12, Emeryville, CA 94608; toll free 800-344-LIST!

Upcoming Directory Deadlines:
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NORTHWEST 24+ TRACK STUDIOS

[24+] AKASHIC RECORDS GROUP/STEPHEN JARVIS RENTALS; *also REMOTE RECORDING;* PO Box 395; Danville, CA 94526; (415) 837-7959 S.F./Jarvi; (818) 769-6233 L.A./Gooch. Owner: Stephen Jarvis. Specialization & Credits: Now available: 48-track Dolby SR system (7 XP-24 frames) with auto-switching interface for Studer A80/800/820/827, MCI JH-24, Sony APR-24, Otari MTR-100/90, MX-80, 3M M79 and manual switching panel. Shipping available throughout the Western United States. 280 SR cards, stereo pair 361 and 363 Dolby SR systems, George Massenburg mic preamps, parametric EQ, limiter/compressors, Focusrite ISA 115HD mic preamp/EQ, Panasonic SV3500 professional studio DAT, Sony PCM-F1 with Meyers correction filter and Hitachi portable VHS VCR, tube mics, tube direct boxes, Sonosax professional portable mixer and more. Rentals by the day, week, month and project. Please call for rates.

[24+] ALPHA & OMEGA RECORDING; 245 Hyde St.; San Francisco, CA 94102; (415) 885-4999. Owner: Sandy Pearlman. Manager: Nancy Evans. Engineers: Marc Senasac, Anne Maria Scott, John Cuniberti, David Plank, Ulrich Wild. Dimensions: Room A: studio 21 x 36, control room 17 x 20. Room C: studio 18 x 34, control room 14 x 19. Mixing Consoles: API 44 x 32 w/ARMS moving fader Penny & Giles automation, API 32 x 24. Audio Recorders: Studer 820 24-track, Otari MTR-90 24-track, Ampex ATR-124 24-track, Ampex ATR-116 16-track, (2) Ampex ATR-102 2-track ½" and ¼", Studer 827 24-track. Cassette Recorders/Duplicators: (3) Tascam 122 Mark II, Sony R-DAT. Synchronization Systems: (4) TimeLine Lynx. Echo, Reverb & Delay Systems: (2) Lexicon 480L, Lexicon 224XL, (3) Lexicon PCM42, Lexicon Prime Time II, AMS 15-80S, AMS RMX 16, Eventide SP 2016, (2) Eventide H3000 Ultra-Harmonizer, Eventide 969, Eventide Phaser, TC Sampler, TC 1210, Lexicon LXP-1, Loft delay, EMT 140ST plate, Quantec Room Simulator, Yamaha SPX90. Other Outboard Equipment: (4) Sontec limiter, (2) NTP limiter, (4) dbx 160 limiter, (2) Trident limiter, Fairchild 660, Fairchild 670, (4) EAR Fairchild limiter, Aphex compellor, (3) UREI LA-4, (3) UREI 1176, (2) UREI LA-2A, API 525 limiter, Drawmer 1960 compressor, (8) Drawmer DS201 gate, (2) Dyna-Mite compressor/expander/gate, (12) Aphex 612 gate, (10) Kepex II, Drawmer M-500, (2) Pultec EQP-1A equalizer, (2) Pultec MEQ equalizer, Pultec HLF filter, (2) Massenberg EQ, (2) Sontec equalizer, (4) API 560 equalizer, (12) API equalizer, (4) Massenberg preamp, Aphex Aural Exciter II, EXR exciter, BBE exciter, Valley People 415 de-esser. Monitor Amplifiers: Bryston, Marantz tube, Phase Linear. Monitor Speakers: TAD, (2) Yamaha NS-10M, custom monitors. Musical Instruments: E-mu SP-1200 disk drive drum machine, Baldwin 6' grand piano, (2) Marshall JCM-800 w/Celistion speakers, (2) Marshall JCM-800 head.

[24+] APEX PRODUCTIONS; 348 Blossom Hill Rd.; San Jose, CA 95123; (408) 972-9966. Owner: Dennis Holseybrook. Manager: Christopher Bentley. Engineers: Christopher Bentley, Dennis Holseybrook. Dimensions: Studio 14 x 17, control room 13 x 9, iso booth #1 8 x 9, iso booth #2 5 x 4. Mixing Consoles: Tangent 3216A 24 x 24 x 2. Audio Recorders: MCI JH-16 24-track, Otari MX-5050 2-track. Cassette Recorders/Duplicators: JVC KD-D400, (3) JVC KD-D50, (4) Aiwa AD-S15. Noise Reduction Equipment: (8) dbx 150 for 8-track. Echo, Reverb & Delay Systems: Alesis QuadraVerb, ADA S1000 DDL, DOD comp/limiter, Ibanez stereo EQ, Roland SRV-2000, Yamaha SPX90, DigiTech DSP 128, DOD digital delay. Other Outboard Equipment: dbx 166 dual compressor/limiter plus noise gate, (2) MXR 15-band graphic equalizer, BBE 422 sonic maximizer. Microphones: AKG C-414B, AKG D-1000E, (2) Sennheiser 421, RCA 77-DX, (2) E-V RE15, E-V PL95A, PE76, 664, Audio-Technica ATM63, PR60, (6) Shure SM57, SM58, PE50SP. Monitor Amplifiers: Crown D-150A, Rane HC6 (cue). Monitor Speakers: (2) Yamaha NS-10M, (2) Tannoy SRN 10B, (2) Auratone. Musical Instruments: Korg DW6000, Korg M1, Yamaha FG44 acoustic guitar, Korg DW-8000 synth. Other: Peavey KV100 amp, Peavey Combo 300 amplifier, Fender Twin Reverb amplifier, assorted footpedal effects. Rates: $35/hour. Block rates at $200/8 hours w/engineer.

[24+] AUDIO PRODUCTION GROUP; 6884 Atlanta Cir.; Stockton, CA 95209; (209) 473-2345. Owner: Ralph and Diane Stover. Manager: Diane Stover. Engineers: Ralph Stover, Cecil Ramirez. Mixing Consoles: Neotek Elite 32 x 24 w/MIDI mute automation. Audio Recorders: AMS AudioFile digital recording/editing system, Studer A80 MkIV 24-track, Studer A812 2-track, Otari MX-5050, Panasonic SV-3500 DAT, Panasonic SV-2500 DAT. Cassette Recorders/Duplicators: Akai GX912, NAD. Noise Reduction Equipment: (2) Dolby SR. Synchronization Systems: (3) TimeLine Lynx, Opcode, Southworth. Echo, Reverb & Delay Systems: Lexicon 480L w/LARC, Lexicon PCM70, TC Electronic delay and effects, Yamaha REV7, Yamaha SPX90, Alesis MIDIverb II, ART Multiverb, Alesis Microverb, Yamaha R1000. Other Outboard Equipment: (4) dbx 903 compressor, (4) dbx 904 Kepex, dbx 902 de-esser, Eventide Harmonizer. Microphones: AKG Tube, Neumann U89, (2) Neumann KM84, AKG C-414, Beyer M380, Neumann U87, (2) AKG Dynamic. Monitor Amplifiers: QSC, Perreaux, (2) Rane headphone amp. Monitor Speakers: (2) Westlake BBSM-8, (2) Yamaha NS-10M. Musical Instruments: Emulator III w/CD-ROM and OMI w/Mass Micro 45MB removable, Emulator II w/CD-ROM and OMI, E-mu SP-1200, E-mu SP-12 w/DrumFile, Roland MKS-80 Super Jupiter, Roland MKS-20 digital piano, Roland D-50, Oberheim DPX-1, Yamaha TX802, Yamaha TX816 rack w/8 modules, Ensoniq ESQ-1, Steinway grand piano, Yamaha KX88, Alesis HR-16, Yamaha DX7IIFD, Spector bass guitar, Steinberger w/Roland synth electronics. Other MIDI Equipment: Sycological 16 x 32 MIDI switcher, Macintosh SE, MegaMix automation system, Performer 2.41, Digidesign sampling and Q-sheet, Macintosh Plus, Opcode Cue, Opcode librarian. Video Equipment: JVC CR850 ¾" w/remote, Sigma Electronic color sync generator, JVC digital VHS, Sony color monitor, Fender bass guitars. Other: Yamaha MJC8. Rates: Please call. Specialization & Credits: Audio Production Group is a full-service commercial production facility specializing in audio post-production and music scoring. We handle all aspects of audio post-production for motion pictures and video productions, with complete Foley, ADR, SFX and mix facilities. We also specialize in music scoring and jingles as well as spot work for radio and television commercials. Our experienced staff of engineers, composers, arrangers and technicians will help you complete your project on time and within budget in a relaxed and creative atmosphere. For any questions regarding our services, please call Diane.

AUDIO PRODUCTION GROUP
Stockton, CA

[24+] AVALANCHE RECORDING STUDIOS, INC.; 10650 Irma Dr. #27; Northglenn, CO 80233; (303) 452-0498. Owner: Avalanche Recording. Manager: Linda Warman. Engineers: George Counnas, Harry Warman, Bill Thomas, Steve Forgy. Dimensions: Studio 44 x 30, control room 20 x 30. Mixing Consoles: Soundcraft 2400 52 channel w/SMPTE-based automation, 1990 upgrade to Neve 8128. Audio Recorders: Sony/MCI JH-24 24-track, Sony/MCI JH-24 16-track, Sony/MCI JH-110C ½/4-track ½" or ¼", Studer Revox PR99 2-track ¼", Studer Revox A77 2-track ¼". Cassette Recorders/Duplicators: Technics RSB100. Noise Reduction Equipment: (2) Dolby SR. Synchronization Systems: (3) TimeLine Lynx. Echo, Reverb & Delay Systems: Lexicon 92, Lexicon 480L, Lexicon PCM42, (2) Lexicon PCM70, Lexicon 95, Audience. RFS-2 plate reverb, Lexicon PCM41, TC Electronic 2290 (12 sec.), Eventide 949 Harmonizer, MXR flanger/doubler, Eventide H3000 Ultra-Harmonizer, Roland Stereo Chorus, Ecoplate II. Other Outboard Equipment: (2) Aphex CX1 compressor/expander, (2) B&B F-2 EQ, (2) dbx 160, (3) UREI 1176LN, dbx 263X, dbx 166, JREI 546 parametric EQ, Aphex Type B Aural Exciter, (2) Symetrix 522 stereo expander gate, (2) Pultec EQ (tube), (2) Electrospace Strate Gate. Microphones: (2) Neumann U87, (2) Neumann U47, Neumann U48 tube, Neumann U67 tube, (4) AKG C-414, (5) AKG C-451, AKG D-112, (2) Telefunken ELAM 251 tube, (2) Sony C-37A tube, Sony C-37P, (6) Sennheiser 421, Sennheiser 441, RCA 77, (2) Electro-Voice RE20, (2) Crown PZM 30GPB, (2) Beyer M260, (5) Shure SM57. Monitor Amplifiers: UREI 6500, Hafler 200, Phase Linear 400, Technics SE-9060. Monitor Speakers: (2) JBL 4430 (2) Yamaha NS-10, (2) Tannoy SRM-12, (2) Auratone cube. Musical Instruments: Yamaha C7 grand piano, Hammond B-3 w/Leslie 147, Korg M1 sampling keyboard, Yamaha RX11 drum machine, Fender 1965 P bass, Fender 1965 Telecaster. Other MIDI Equipment: Programmers available w/various equipment. Video Equipment: JVC ¾" recorder, Panasonic CT-1930 19" color monitor. Other: Seymour Duncan 100-watt convertible (all modules), Fender Bassman 10. Rates: Upon request. Rate card and color brochure available. Specialization & Credits: We are pleased to offer our clients a complete sound effects and music library. Up to 40-track capability with automated mixes also available. Our 1990 upgrade in equipment will include a Neve 8128 console. Accommodation service for mountain retreats or Denver's best hotels with transportation arrangements available. Less than an hour drive to Rocky Mountain serenity. Top studio musicians, producers arrangers and composers. Digital 2-track mastering, synchronized lockup and additional equipment available upon request. Credits: Kip Winger, Kenny Loggins, Fiona, The Pretenders, The Winans, Michael McDonald, The Four Tops, Leon Russell, Jock Bartley, INXS, TNT, Highway 101, Flash Cadillac. Producers: Paul Worley, Beau Hill, Bill Porter, Geoff Workman. We continue to offer our clients the best in state-of-the-art equipment, engineers and personal service. Avalanche has a highly creative and comfortable atmosphere and total privacy.

AVALANCHE RECORDING STUDIOS, INC.
Northglenn, CO

[24+] THE BANQUET SOUND STUDIOS; 540 E. Todd Rd., Ste. B; Santa Rosa, CA 95407; (707) 585-1325. Owner: Warren Dennis. Manager: Wendy Palos.

BAYVIEW STUDIO
Richmond, CA

[24+] BAYVIEW STUDIO; 1368 S. 49th St.; Richmond, CA 94804; (415) 237-4066. Owner: Stephen Suda, Robert Hall. Engineers: Tom Anderson, Jack Crymes, Robert Beaton. Dimensions: Studio A 45 x 20 x 17, studio B 19 x 16 x 17, control room 14 x 18 x 8. Mixing Consoles: Soundcraft TS 24 40 x 24. Audio Recorders: Studer A800 24-track, Ampex ATR-102 2-track, Studer A80 MkII RC 2-track ½". Echo, Reverb & Delay Systems: (2) EMT 140 stereo plate, Yamaha REV7,

World Radio History

Roland SRV-2000, Yamaha SPX90, Yamaha SPX90II, Roland SDE-1000. Other Outboard Equipment: Eventide 949 Harmonizer, Lexicon Prime Time II, (4) UREI 1176, (2) UREI LA-4A, Teletronix LA-2A, dbx 161, (2) Valley People Dyna-Mite, (2) Pultec MEQ-5, (8) Dolby 361, TC Electronic sampler, Dolby SR. Microphones: AKG 414EB, AKG 414EB-P48, AKG 451, AKG C-422 stereo, Neumann U87, Neumann KM84, Neumann U47 FET, Neumann M49B, Crown PZM, E-V RE20, SM57, Shure SM7, Sennheiser 421, Sennheiser PML DC-73, Countryman Iso-max, direct boxes, Sony ECM-50, AKG C-451E, AKG 452EP, AKG C-460B, Telefunken Elam 251, Sony C-37A, Neumann KM84, Crown PZM. Monitor Amplifiers: Hafler. Monitor Speakers: Meyer 833, Yamaha NS-10, JBL 4311, Auratone 5C, MDM-4. Musical Instruments: Hammond B-3 organ w/Leslie, Roland Juno 106, Yamaha "R" Series, Simmons drums available by arrangement, vintage Fender basses and guitars, Martin guitars, Gretsch guitars, old Fender amps, Ampeg B-15 bass amps, Steinway B piano also available by arrangement. Rates: Please call for rates.

[24+] **BEAR CREEK RECORDING AND MUSIC PRODUCTION**; *also REMOTE RECORDING*; 6313 Maltby Rd.; Woodinville, WA 98072; (206) 481-4100. Owner: Joe Hadlock. Manager: Vickielee Wohlbach.

[24+] **BEYOND SOUND**; 6300 Federal Blvd.; Denver, CO 80221; (303) 427-6789. Owner: Paul Stenvig.

[24+] **KEN CARLTON RECORDING**; 11240 Hwy. 41; Madera, CA 93638; (209) 431-5275. Owner: Ken and Marilyn Carlton. Manager: Ken Carlton. Engineers: Ken Carlton, Donavan Dear. Dimensions: Studio 20 x 22, control room 14 x 17, w/8 x 8 piano alcove, iso room 9 x 10, vocal booth 5 x 10, equipment room 22 x 18. Mixing Consoles: Sound Workshop Series 34 32 x 24 w/Diskmix II. Audio Recorders: Otari MTR-90 16/24-track, Otari MTR-12c-2 w/cttc, Otari MTR-10 ¼" and ½" heads, Panasonic SV-250 DAT, Pioneer RT707 ¼-track. Cassette Recorders/Duplicators: (2) Akai GX-912, (11) Hitachi DE-7. Noise Reduction Equipment: Dolby SR (2 channels), Dynafex. Synchronization Systems: Soundmaster 5 (3-machine system w/shuttle and GPI to CD player. Echo, Reverb & Delay Systems: Lexicon 224XL digital delay, Lexicon PCM70 digital delay, Eventide H3000 Harmonizer DDL, Eventide 949 Harmonizer DDL, Ecoplate II, DeltaLab DL-3 DDL, Marshall 5402 Time Modulator. Other Outboard Equipment: (2) dbx 165 comp/lim, (2) UREI LA-4, (2) UREI 1176LN, ADR Vocal Stressor, ADR Express Stereo comp/lim/expan, Aphex stereo compellor, Gatex noise gate, Drawmer DS201 stereo noise gate, Orban 622B parametric EQ, Aphex Exciter. Microphones: Neumann TLM170, (2) Neumann U87, (2) Neumann U89, Neumann KM86, Neumann RSM190i stereo/MS, (2) AKG 414EB, (7) AKG 451EB, (9) Sennheiser 421, (2) Sennheiser 441, (2) E-V RE20, E-V RE16, (2) Crown PZM, Shure SM56, (8) Countryman FET 85 DI. Monitor Amplifiers: (3) Bryston 4B, Hafler, (2) Symetrix headphone amp. Monitor Speakers: JBL 4430 w/TAD drivers bi-amped (control room), Yamaha NS-10M Studio (control room), Auratones, Yamaha NS-1000 (studio). Musical Instruments: Kurzweil 250 fully loaded, Yamaha C7 grand piano, Yamaha TX802, Roland D-550, Roland MKS-70, Roland Juno-106, Linn 9000 drums, Moog synth, various guitars and effects. Other MIDI Equipment: Macintosh Plus w/Mark of the Unicorn Performer and Coda Finale, Opcode Studio 3 interface. Video Equipment: JVC CR8250 ¾" w/shuttle, Fostex 4010 SMPTE generator/reader, Horita Micro-window, Sigma sync generator, (3) Sony monitor. Other: Studer CD player, Sound Ideas SFX libraries. Rates: Please call for rates.

C.D. PRESENTS, LTD.
San Francisco, CA

[24+] **C.D. PRESENTS, LTD.**; 1317 Grant Ave., Ste. 531; San Francisco, CA 94133; (415) 285-3348. Owner: C.D. Presents. Manager: Terrell R. Winn. Engineers: Paul Mandl, Gary Mankin, Robert Gellen, Michael Rosen, Amy Atchison, Chris Scarabosio (independents welcome). Dimensions: Studio 30 x 40, control room 13 x 16. Mixing Consoles: MCI JH-636 30 x 24 automated transformerless w/parametric EQ. Audio Recorders: Studer A80 MkIV 24-track transformerless w/autolocator, MCI JH-110B 2-track transformerless, Nakamichi PCM-F1 2-track digital w/AMR transformerless interface, Panasonic VHS videocassette, Nakamichi 1000 DAT. Cassette Recorders/Duplicators: (2) JVC TD-V66J stereo, Aiwa M700B stereo. Echo, Reverb & Delay Systems: Lexicon 200 digital reverb, AKG BX-10 spring reverb, Lexicon PCM42 digital delay line, DeltaLab DL-4 digital delay, ADA STD-1 stereo taped delay, (2) Lexicon 480L digital reverb/processor. Other Outboard Equipment: Drawmer noise gate, Valley People Dyna-Mite, (2) UREI LA-4 compressor/limiter, Symetrix 501 compressor/limiter, DeltaLab DL-5 Harmoni computer, API 554 EQ. Microphones: Neumann U64 tube, Neumann U67 tube, (2) Neumann KM54, AKG C-24 stereo tube, (3) AKG C-414EB, AKG C-12A, (2) AKG C-460B, (3) AKG C-451, (2) Sony C-48, Sony ECM-22P, (2) Sennheiser MD-421U, Sennheiser MD-441, (2) Shure SM57, Shure SM58, Shure SM81, Shure SM85, E-V RE20, E-V RE16, E-V DS35, (2) Beyer M201, (3) Countryman direct box. Monitor Amplifiers: Hafler P-225, Crown DC-300A, Crown D-60, Phase Linear D-60, Klark-Teknik DN27A ⅓-octave EQ. Monitor Speakers: UREI 811A Time Align, Yamaha NS-10M, JBL 4301, JBL 4313, Realistic Minimus-7, Auratone 5C. Musical Instruments: Baldwin 1929 7' grand piano, Yamaha DX7 keyboard, Hammond M-3 organ w/Leslie cabinet, LinnDrum machine, various guitars (elec. and acoustic) and amps. Specialization & Credits: C.D. Studios' natural, live acoustics dramatically enhance tracks of any style—from thrash metal to orchestral. Our large main studio is known as one of the best acoustic tracking rooms in the Bay Area. The combination of Studer 24-track, MCI automated console and Lexicon 480L provides our clientele with start-to-finish quality control. Our affiliate label, C.D. Presents, can help with manufacturing and distribution of your final product. Satisfied customers include Game Theory (last 2 albums, produced by Mitch Easter for Enigma Records), Club Nouveau, Michael Cooper and 415 (King Jay Records), Bill Cutler (Juliet Slip, Boys Cry Wolf, Flame, Bird Killers), Tramine Hawkins (A&M Records), Sons of Silence (ex-Mission U.K.—Paul Mandl eng./prod.), Seahags (produced by Kirk Hammett), True West, Twisted Roots and *Rat Music Vol.III* just to name a few in our present to recent past. Come to C.D. Studios, where the sound of the future is captured today.

[24+] **CLOUD NINE STUDIOS**; 275 Fairchild Ave., Ste. 101A; Chico, CA 95926; (916) 342-7794. Owner: Rich Cavanaugh. Manager: Rich Cavanaugh. Engineers: Rich Cavanaugh, Jim

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24+ TRACK

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Simon (ind.), independents. Dimensions: Room 1: studio 30 x 18, control room 20 x 18. Room 2: control room 15 x 13. Mixing Consoles: Amek/TAC Matchless 26 x 24 VUs 60 inputs at mixdown, Allen and Heath System B 24 x 8 x 16. Audio Recorders: Ampex MM-1200 24-track, Fostex B-16D 16-track w/A.L., Ampex AG-440 2-track ¼" 15-30 ips, Fostex Model 20 2-track ¼" w/center-track time code. Cassette Recorders/Duplicators: Akai GX-912. Noise Reduction Equipment: Dolby C (Fostex B-16D), dbx Type I 2 channels. Synchronization Systems: Jam Box/4+. Echo, Reverb & Delay Systems: Eventide H3000 Ultra-Harmonizer, Lexicon PCM60, Lexicon PCM42, (2) Roland SRV-2000, Roland DEP-5 multieffects processor, Yamaha SPX90II, Yamaha R1000, Ibanez DM-2000. Other Outboard Equipment: (2) UREI 1176 limiter, dbx 166 comp/limiter/gate, Aphex 612 exp/gate, Symetrix 511 n.r./exp, BBE 822 processor, Aphex Type C exciter. Microphones: Neumann U87, AKG C-414BULS, (2) AKG C-451, (2) AKG C-747, (2) Sennheiser 421, E-V PL20, AKG D-112, (4) Shure SM57. Monitor Amplifiers: QSC 1400, QSC 1200, Crown DC-300A, QSC MX-700, USAudio headphone amp system, Rane HC-6 headphone amp. Monitor Speakers: JBL 4430 bi-amped, JBL 4411, Yamaha NS-10M. Musical Instruments: Yamaha DX7, Roland D-50, Akai S-900 sampler, Roland MKS-20 digital piano, E-mu Proteus XR, E-mu SP-12 turbo drum sampler, Gibson 335, Strat, P-bass, Martin D-16, Mesa/Boogie studio preamp, Roland Jazz Chorus, Fender Tweed Deluxe, Scholz Rockman, Scholz Bass Rockman, Tubeworks Real Tube preamp. Other MIDI Equipment: Macintosh SE w/40MB HD, Southworth Jam Box/4+ SMPTE/MIDI interface, Digital Music MX-8 MIDI patch bay, Mark of the Unicorn Performer, Blank Drumfile. Other: Simon direct box, Stewart D.I., (10) headphones (AKG, Sennheiser), Denon DCD 810 CD player, Sound Ideas sound effects and music production libraries on CD. Rates: Call for pleasant surprise.

[24+] COAST RECORDERS; *also REMOTE RECORDING;* 1340 Mission St.; San Francisco, CA 94103; (415) 864-5200. Owner: Dan and Ketty Alexander. Manager: Steve Atkin. Engineers: Steve Atkin, Bob Lindner, independents. Dimensions: Room 1: studio 45 x 25, control room 20 x 18. Room 2: studio 18 x 12, control room 18 x 16. Room 3: studio 12 x 6, control room 12 x 10. Mixing Consoles: Neve 40 inputs plus discreet, Harrison 3624, Neve 12 x 4. Audio Recorders: Otari MTR-90II-24, MCI JH-114-24, (7) Ampex/MCI 2-track. Cassette Recorders/Duplicators: (3) Otari, (4) Nakamichi MR-1/MR-2, (6) Nakamichi CR-1X. Noise Reduction Equipment: (32) Dolby A, (8) dbx. Synchronization Systems: (2) Q.Lock 3.10. Echo, Reverb & Delay Systems: (2) EMT 140 stereo plate, Eventide SP2016, AKG 68K. EMT 251, (5) Yamaha, (2) LXP-1 w/MIDI controller, (7) Levy program EQ and EQ/limiter, (2) Pultec EQP-1ABS, (2) Lang PEQ-2, (2) ITI/Sontec parametrics, TC Electronic 2290, (6) UREI 1176LN, (2) UREI 1178LN, ADR Panscan, (10) Aphex CX1, (2) Eventide H949 Harmonizer, Eventide H910 Harmonizer, Aphex compellor, (2) Lexicon 102/122 DDL, Fairchild 666 limiter, Neve 2254 limiter, (2) Studio Technologies AN2. Other Outboard Equipment: (40+) many other goodies. Microphones: Neumann U47, Neumann M49, (7) Neumann U87, AKG C-12, AKG C-24 stereo, (6) AKG 414, (9) AKG 451, (7) AKG C-12A tube, (5) Schoeps M221 tube, (40) more. Monitor Amplifiers: (6) UREI, (2) Phase Linear. Monitor Speakers: (5) UREI, Augspurger, (2) Genelec S30, (2) Yamaha NS-10, (4) Auratone Cube. Musical Instruments: Steinway B (newly rebuilt action), Yamaha DX7. Video Equipment: JVC 8500U VCR, JVC 850, Sony 30" monitor. Other: Reel-to-reel duplication, real-time and high-speed cassette duplication, phone patch for each room, complete mailing and packaging services. Rates: Audio: $75 to $110, w/video lock: $110 to $165. Specialization & Credits: For over 25 years, Coast has served the Bay Area. National and local advertising is our main business; we have also done dozens of jazz recordings for Concord Records. Our main room has a natural sound that lends itself to recording all types of music or voice. Recent clients include Mel Torme, Tito Puente, S.F. Boys Choir, Joe Satriani, Charles Schwab, S.F. Chronicle, McDonalds, Tom Bodett and many others. We are in the process of updating all of our facilities to provide a new level of service and comfort for our clientele. Call Bethany or Julie to see the rooms or book time.

[24+] COLOR BLIND MUSIC™; *also REMOTE RECORDING;* 1128 Alder, Ste. C; Eugene, OR 97403; (503) 342-2844. Manager: Michael Pfohl.

[24+] COLORADO SOUND RECORDING; *also REMOTE RECORDING;* 3100 W. 71st Ave.; Westminster, CO 80030; (303) 430-8811. Owner: Kevin Clock. Manager: Kevin Clock. Engineers: Kevin Clock, Tom Capek, Steve Bruns, John Macy, Neal Thompson. Dimensions: Room 1: studio 550 sq.ft., control room 500 sq.ft. Room 2: studio 450 sq.ft. Mixing Consoles: Trident TSM 24 x 24 x 2 w/automation. Audio Recorders: Otari MTR-90II 24/16-track, Ampex ATR-104 2/4-track ¼" and ½", Studer A80 2-track ¼" and ½", Revox PR99 2-track ¼".

COLORADO SOUND RECORDING

COLORADO SOUND RECORDING
Westminster, CO

Cassette Recorders/Duplicators: Nakamichi MR-2, Technics RSB100. Synchronization Systems: Adams-Smith Zeta-3. Echo, Reverb & Delay Systems: AMS RMX 16 digital reverb, Lexicon PCM70, (2) Yamaha SPX90II, TC 2290 18-bit digital processor, DeltaLab 1024, Alesis MIDIverb II. Other Outboard Equipment: (2) API 525D compressor/limiter, (2) API 550 EQ, Teletronix LA-2, (2) UREI LA-3A, (2) UREI 1176, (2) UREI LA-4, BBE 802, (2) dbx 160 compressor/limiter, (2) dbx 902 de-esser, (4) Valley People Dyna-Mite, Aphex Aural Exciter, Altec 436C tube compressor. Microphones: AKG C-24 stereo tube, (4) AKG 414, (2) AKG 451, AKG C-33 stereo, Neumann U48 tube, (2) Neumann U47, (2) Neumann U87, Neumann KM84, Neumann KM86, (3) Sennheiser 421, (2) Sennheiser 441, (2) Shure SM81, (4) Shure SM57, Crown PZM. Monitor Amplifiers: UREI 6300, Crown DC-300A, Yamaha. Monitor Speakers: UREI 813, Yamaha NS-10, UREI 809. Musical Instruments: Yamaha C7 grand piano, Hammond C-3 organ w/Leslie, Emulator II sampling keyboard, (2) Korg DSM1 sampler, Korg MR-1 synth, Yamaha KX88 MIDI keyboard controller, Yamaha TX802 synth, (2) Yamaha DX7, Oberheim Matrix-6R, Roland MKS-20 digital piano, E-mu SP12 turbo w/drum file, Mesa guitar amp. Other MIDI Equipment: Macintosh computer w/Mark of the Unicorn Performer/Composer, Southworth Jam Box/4+, (5) Opcode editor/librarian, Sound Designer sampling editor. Video Equipment: Panasonic AG7500A deck, NEC 19" monitor, (3) Sony 13" monitor, Toshiba DX900 deck. Rates: Studio rates upon request.

[24+] CROW RECORDING STUDIO, *also REMOTE RECORDING;* 4000 Wallingford Ave. N.; Seattle, WA 98103; (206) 634-3088. Owner: John Nelson. Manager: John Nelson.

DIFFERENT FUR RECORDING
San Francisco, CA

[24+] DIFFERENT FUR RECORDING, *also REMOTE RECORDING;* 3470 19th St.; San Francisco, CA 94110; (415) 864-1967. Owner: Susan Skaggs, Howard Johnston. Manager: Susan Skaggs. Engineers: Howard Johnston, Ron Rigler, Mark Slagle, Chris Kellas, Mack Clark. Dimensions: Studio 25 x 35, control room 17 x 21. Mixing Consoles: SSL 4056G 48 x 48 w/Total Recall. Audio Recorders: Studer A80 VU MkIII 24-track, Sony 3324 digital, Studer A80 VU MkIII 2-track ½" and ¼", MCI JH-110A 2-track and/or 4-track, Sony R-DAT 1000ES, Panasonic R-DAT SV3500, Sony PCM-F1. Cassette Recorders/Duplicators: (5) Denon. Noise Reduction Equipment: (2) Dolby SR 26 channels, Dolby A 2 channels. Synchronization Systems: (3) Lynx. Echo, Reverb & Delay Systems: Lexicon 480L digital reverb, Lexicon 224 digital reverb, AMX RMX 16 digital reverb, (2) Lexicon PCM70, (2) Yamaha REV7, Yamaha SPX90, EMT 240 Gold Foil, Eventide DDL, (2)

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NORTHWEST

24+ TRACK

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Lexicon Prime Time, Eventide 910 Harmonizer. Other Outboard Equipment: (2) Drawmer gate, Aphex Compellor, (6) Kepex, (2) RM noise gate, (6) Gain Brain, (2) 1176, (2) LA-4A, White 1/6-octave spectrum analyzer w/software processing. Microphones: Neumann SM69 stereo tube, Neumann 269, (2) Neumann 254, (7) Neumann U87, (2) Neumann U47, (3) Neumann KM84, (9) AKG 414/452, Beyer, (8) Sennheiser, (3) Sony, (7) Shure. Monitor Amplifiers: Crown, BGW, Spectra Sonics, Phase Linear, Yamaha. Monitor Speakers: Westlake TM-1, JBL 4310, JBL 4311, Yamaha NS-10, Auratone. Musical Instruments: Yamaha C7B grand piano. Other MIDI Equipment: "MIDIFUR" Synclavier 3200, Kurzweil, Roland D-550, Emax. Video Equipment: Sony 25" monitor, Sony 19" monitor. Other: Sonic Solutions premastering and NoNoise system. Rates: $125/hr; $1,500/12-hour lockout. Specialization & Credits: Complete seclusion in a very private atmosphere. Spacious lounge, kitchen, sauna, showers, washer-dryer, 26" color TV and off-street secured parking. Custom service in a studio designed by John Storyk, with additional acoustic design by Russell Berger of the Joiner Rose Group and Tom Paddock of Sound Research. Recent clients include The Starship, Tom Lord-Alge, Mike Shipley, Bobby McFerrin, Bobby Brown, Tuck & Patti, Kronos Quartet, Exodus, Larry White, Stevie Wonder, Club Foot Orchestra, B.B. King. 1989 Grammy Award for Best Children's Story "Pecos Bill" with Robin Williams and Ry Cooder, The Residents, Too Short, George Winston.

PER
PHIL EDWARDS RECORDING
1534 WEST WINTON AVENUE • HAYWARD CA 94545 1311

PHIL EDWARDS RECORDING
Hayward, CA

[24+] **PHIL EDWARDS RECORDING**; *also REMOTE RECORDING*; 1534 W. Winton Ave.; Hayward, CA 94545; (415) 784-1971. Owner: Phil Edwards. Manager: Brian Hague. Engineers: Phil Edwards, Brian Hague. Dimensions: Truck 16 x 8. Mixing Consoles: API De Medio 4024 40 x 24. Audio Recorders: (2) 3M 79 24-track, 3M 79 16-track, MCI 110B 2-track, Ampex 440B 2-track. Cassette Recorders/Duplicators: (2) Sony TCK-81, Aiwa M700B. Noise Reduction Equipment: Dolby M24 "A", (4) Dolby A361. Synchronization Systems: Adams-Smith 605B three-machine synchronizer. Echo, Reverb & Delay Systems: Lexicon PCM70, Yamaha SPX90II, Yamaha REV5, EMT 140ST. Other Outboard Equipment: (5) UREI 1176LN, (2) UREI LA-3A, (2) Orban parametric EQ, Orban 516 de-esser, (4) Valley People noise gate, Sony PCM-F1 digital processor, (4) Sony 323 and 1000 Beta decks, Panasonic VHS deck. Microphones: (5) Neumann U87, (2) Neumann U47, Neumann KM84, AKG 414, (2) AKG 451, (25) Shure SM56, Shure SM58, (2) Shure SM85, (2) Shure SM87, (4) E-V RE15, (2) E-V 1761, (6) Sennheiser 421, Sony ECM-22P, (2) RCA 77-DX, (5) Countryman FET 85 DI, C-tape stereo transducer. Monitor Amplifiers: Crown DC-300A, (2) McIntosh MC2100, McIntosh MC250. Monitor Speakers: (2) UREI 811A, (4) Auratone 5C, (2) KLH CL4. Video Equipment: Sony KX-1901 video monitor, Sony KX-1201 video monitor, Sony Trinicon 220 color camera. Rates: Studio hourly rates from $50; truck daily rates from $1,200. Specialization & Credits: The "PER" tradition continues with remotes and production for: ABC Sports (1988 Winter Olympics—Calgary), KQED, KRON (NBC), Concord Jazz, Wild Sanctuary—St. Louis Zoo, Carsey-Werner Communications—Bill Cosby, Kitaro, 1988 Bammies, KFOG live radio broadcasts. Write for brochure.

[24+] **ENGLAND DESIGN AUDIO (E.D.A.)**; 2115 N. Vancouver Ave.; Portland, OR 97227; (503) 287-1662. Owner: Carl England. Engineers: Carl England, various independents. Dimensions: Studio 32 x 20, iso room 9 x 10, control room 12 x 16. Mixing Consoles: Harrison MR-4/Raven 32 x 24. Audio Recorders: Otari MTR-90II 24-track, Otari MTR-12IIC 2-track w/resolver, Panasonic SV-3500 DAT. Cassette Recorders/Duplicators: Nakamichi MR-1, Akai 6X912. Echo, Reverb & Delay Systems: Lexicon 224X w/LARC, Lexicon PCM70, (2) Lexicon LXP-1 w/MRC, Yamaha REV7, (2) ART Delay System VII. Other Outboard Equipment: Aphex Compellor, BBE 822 exciter, Eventide H3000B Ultra-Harmonizer, Orban 642 parametric EQ, (2) Rane SP15 parametric EQ, (3) Aphex 612 gate/expander, (2) UREI LA-4 compressor/limiter, (2) Valley 430 compressor/limiter. Microphones: (2) Neumann TLM170, AKG C-414BULS, (2) AKG C-460ULS, (2) Beyer Dynamic M201, (2) Sennheiser MD-421U, (4) Shure SM57. Monitor Amplifiers: UREI 6500, Yamaha P2100, Ramsa WP-9055. Monitor Speakers: (2) UREI 811C, (2) Tannoy PBM 6.5, (2) Custom studio monitor. Musical Instruments: Yamaha C7 grand piano, Emulator III w/40MB HD and 1,300 presets, Roland Octapad. Other MIDI Equipment: Macintosh Plus w/20MB HD and MIDI transport, Master Tracks Pro and Encore. Other: Technics SL-P999 high-res. 20-bit CD player, Valentino SFX library. Rates: 287-1662 is the number to call to get all your questions answered!

[24+] **ENHARMONIK STUDIOS**; *also REMOTE RECORDING*; PO Box 22243; Sacramento, CA 95822; (916) 443-0373. Owner: Mad Rover Records, Inc. Manager: John Baccigaluppi.

FANFARE RECORDING STUDIOS
Golden, CO

[24+] **FANFARE RECORDING STUDIOS**; 5142 Quaker St.; Golden, CO 80403; (303) 279-2334. Owner: Guy Bianchini. Manager: Guy Bianchini. Engineers: Mark Derryberry, Guy Bianchini. Dimensions: Studio 16 x 35, control room 17 x 15. Mixing Consoles: Trident 24 Series w/64 inputs in mixdown. Audio Recorders: Sony JH-24 24-track, Otari MTR-10CT 2-track ¼" with center track, Sony PCM-2500 R-DAT 2-track digital, Otari MTR-10 2-track ½". Cassette Recorders/Duplicators: Nakamichi MR-2, Technics RS-B905. Synchronization Systems: Adams-Smith Zeta-3. Echo, Reverb & Delay Systems: Lexicon PCM70, (2) Lexicon LXP-1, Lexicon 200, (2) Yamaha SPX90II, ADA D1280 digital delay. Other Outboard Equipment: (2) dbx 160, (2) Valley People Gain Brain, (5) Valley People Kepex II, Valley People DSP-815 de-esser, Audioarts 4200B 2-channel 4-band parametric EQ, Klark-Teknik DN360 graphic EQ, Aural Exciter Type B. Microphones: AKG Tube, (2) AKG C-414, (4) AKG C-460 w/CK61 and CK62 capsules, (2) Sennheiser 441, (2) Sennheiser 421, E-V RE20, (2) Shure SM57, (2) Shure SM59, (2) E-V PL95, (2) Neumann U89. Monitor Amplifiers: JBL/UREI 6290, (2) Crown D-300A, (2) Yamaha P2200, Crest 1501A, Ramsa WP-9055. Monitor Speakers: Gauss 15" co-axial custom made, Yamaha NS-10M, JBL Control 5, JBL Control 1, Auratone Cubes. Musical Instruments: Yamaha C7 conservatory 7' grand piano, E-mu Emulator III, Marshall amp 100 watts, Fender Stratocaster, Fender Precision bass, Prophet 600 synthesizer, Gon-Bop congas. Other MIDI Equipment: Mac SE w/Performer, Master Tracks Pro and other assorted software, Southworth Jam Box/4+ MIDI interface, J.L. Cooper MSB+ REV2 MIDI patch bay. Video Equipment: JVC CR600U ¾" VCR, JVC BR7700U Hi-fi VHS VCR, fast-forward video F21 SMPTE time-code character inserter, Adams-Smith Zeta-3 will lock up all audio and video machines. Other: A full assortment of sound FX and music production libraries. Rates: Rates starting at $35/hr. including engineer. Specialization & Credits: A new air-conditioned facility with 2 large overdub rooms and a vocal booth as well as studio recording room. Fully equipped MIDI pre-production room at reduced rates. Quality audio-for-film, video and radio as well as records and demos. Quiet country setting on more than an acre along the Rocky Mountain Foothills only 20 minutes from downtown Denver or the airport. Amenities include a lounge with cable TV and a basketball court. Professional engineers and programmers to assist you in your direction. Composers, arrangers and studio musicians available upon request. At FanFare we believe that the most important aspect of a successful recording is capturing the intent of the artist and the producer.

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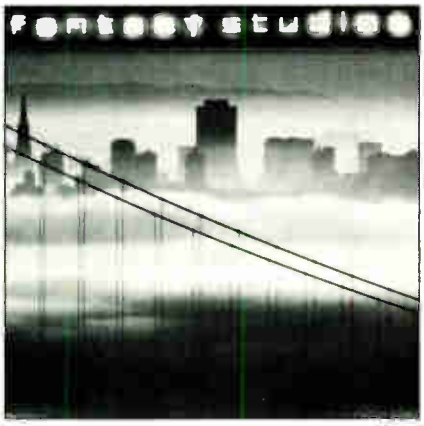

FANTASY STUDIOS
Berkeley, CA

[24+] **FANTASY STUDIOS**; 10th & Parker Sts.; Berkeley, CA 94710; (415) 549-2500. Owner: Fantasy Inc. Manager: Nina Bombardier. Engineers: Danny Kopelson, Dave Luke, Michael Semanick, Neill King. Dimensions: Studio A 30 x 50, control room 20 x 16. Studio B 21 x 26, control room 15 x 17. Studio C 24 x 37, control room 18 x 16. Studio D 30 x 50, control room 25 x 22, string room 18 x 30. Mixing Consoles: SSL 4056E 56 x 32 w/Total Recall automation, Neve 8108 32 x 24 w/Necam automation, Trident Series 80 32 x 24 x 32. Audio Recorders: (5) Studer A800 24-track, (5) Studer A80 2-track ½" and ¼", Studer A80 4-track ½", Mitsubishi X-850 32-track digital, (6) Mitsubishi X-80 2-track digital, MCI 110C 4/8-track, (2) PCM-1630 2-track digital w/D4000, (3) Sony PCM-F1 2-track digital. Cassette Recorders/Duplicators: Sony. Noise Reduction Equipment: Dolby A, SR, dbx. Synchronization Systems: Studer TLS-2000, Audio Kinetics Q-lock. Echo, Reverb & Delay Systems: (5) live chambers, (3) EMT 140, Ecoplate, (2) AMS reverb, EMT 250, Lexicon 224XL, Lexicon 200, PCM60, (2) Bel DDL, Eventide DDL, Lexicon PCM42, AMS 15-80S DDL, Yamaha SPX90 reverb. Other Outboard Equipment: (2) Eventide 910 Harmonizer, (2) Eventide 949 Harmonizer, Lexicon Prime Time, Dyna-Mite gates, Drawmer gates, Space Station, dbx 160 limiters, Orban de-esser, Scamp rack, (2) Lexicon PCM70, Kepex racks, EchoPlex, much more. Microphones: (174) vintage tube, ribbon, dynamic, condenser and PZM. Monitor Amplifiers: Crown, McIntosh. Monitor Speakers: Sierra-Hidley, UREI Time Align, Yamaha NS-10, Auratone, Visonik, MDM, JBL 4311. Musical Instruments: Steinway 7', Yamaha 9' grand piano, Yamaha 7' grand piano, Baldwin 5' piano, Hammond B-3 organ. Video Equipment: Sweetening, SMPTE code, window dubs, ¾" to VHS or Beta ½" transfers. Rates: Call for Nina, Andrea or Roy. Specialization & Credits: In addition to our 4 recording studios we offer the following: a keyboard room that features Kurzweil 250, Roland S-550, Korg M1, Linn 9000 drum machine, Roland D-5, (4) DX7, Soundcraft Series 600 38-input/24-track console and much more for your pre-production needs. A tape copy room accommodates ¼" and ½" analog, DAT, Mitsubishi X-80 digital, F1 and real-time cassette copies. A full mastering facility for LP, cassette and CD mastering features Neumann lathe, Zuma audio computer, Studer analog, Mitsubishi X-80, F1 digital, DAT and Sony 1630. And a CD room prepares your tapes for CD manufacturing including Sony 1630, Harmonia-Mundi, digital sampling converter, Mitsubishi X-80, F1 and DAT formats.

[24+] **FOCUSED AUDIO**; *also REMOTE RECORDING*; 544 Natoma; San Francisco, CA 94103; (415) 777-3108. Owner: Jeff Roth. Manager: Laredo Heddens. Engineers: James Allen, Rob Grace, John Mardesich, Jeff Roth. Dimensions: Room 1: studio 10 x 20, control room 20 x 20. Room 2: studio 6.5 x 8.5, control room 12 x 16. Room 3: studio 6 x 5, control room 10 x 14.5. Room 4: studio 11 x 12. Mixing Consoles: Neotek Series III 40 x 32, Allen and Heath 16 x 16. Audio Recorders: Otari MX-80 24-track, (2) Fostex B-16 16-track, Otari MTR-10 2-track center time code, Fostex E-2 2-track center time code, Fostex DAT w/SMPTE. Cassette Recorders/Duplicators: Aiwa, Teac 1500. Noise Reduction Equipment: Dolby SRXP24 for 24-track, (5) Dolby SR 361 rack and card. Synchronization Systems: (4) IBM computer w/Kelly Quan software, (6) Cipher Digital Shadow. Echo, Reverb & Delay Systems: (4) Yamaha SPX90 effects unit, (2) Roland SRV-2000 reverb, DeltaLab Effectron II effects, ART Multiverb II, Lexicon PCM70 digital reverb. Other Outboard Equipment: (3) dbx 166 compressor/gate, (2) dbx 160 compressor, (2) dbx 463 gate, Yamaha 2020 compressor/gate, Aphex Compellor leveler/compressor, (2) Aphex Aural Exciter C, Studio Technologies mic preamp, Orban 622B stereo parametric EQ, (3) Orban 627A mono graphic EQ, Orban 516EL de-esser, Rane HC-6 headphone amp, Rane RE-27 graphic EQ/analyzer, (2) Gain Brain 700 compressor/gate, (2) Kepex compressor/gate. Microphones: (2) Sennheiser 441, (3) Sennheiser 421, (5) E-V RE15, (3) Electro-Voice PL20, Neumann U87, (3) Neumann KM84, RCA 77-DX, Schoepps CMC4-UK, AKG C-414, (2)

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World Radio History

N O R T H W E S T

24+ TRACK

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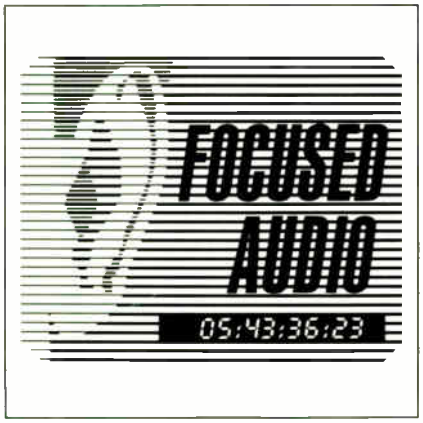

FOCUSED AUDIO
San Francisco, CA

AKG 451. Monitor Amplifiers: Crown Power Bass I, (2) Crown D-60, NAD 2200, QSC 1200, (3) Sony P-100. Monitor Speakers: JBL 4425 "A," (5) Yamaha NS-10, (3) Yamaha NS-40M. Musical Instruments: Roland S-550 digital sampler, E-mu Emax SEHD, Casio V2-1, (2) Roland S-50 and S-550, Roland MKS-70, Roland D-50, Roland R-8 drum machine, Korg M1 keyboard, Kurzweil K100 keyboard, Yamaha DX7 keyboard. Other MIDI Equipment: J.L. Cooper Mix Mate MIDI auto faders. Video Equipment: JVC CR850 ¾" deck w/time code, Magnavox monitor, (2) JVC BR8600U VHS VCR w/Jog Knob. Other: (2) Technics P1200 CD player, Waveframe digital workstation, Network effects library, Sound Ideas Series 2000 effects library, Sound Ideas Series 3000 effects library, Digidesign Sound Tools and editor. **Specialization & Credits:** Focused Audio continues to be a leader in the development and application of creative audio-for-video technology. Having recently produced 65 half-hour soundtracks for Lorimar Telepictures, 26 for the A&E cable channel and numerous documentaries, Focused has moved into the '90s with a brand new facility. Four control rooms and three recording spaces have been carefully designed and equipped with the best audio tools available today. All rooms are fully SMPTE-locked to picture and can access any of our available recording formats: 24-track w/Dolby SR, 16-track or hard disk digital multitrack, through a main machine room. The appropriate control room, recording space and recording format for your project and budget can be configured easily. Engineers with expertise in feature film and television sound supervision, multimedia production, music and radio work are on staff to put this facility to work for you.

FTM STUDIOS
Denver, CO

[24+] **FTM STUDIOS;** *also REMOTE RECORDING*; 1111 S. Pierce St.; Denver, CO 80226; (303) 922-3330. Owner: John & Diane Sundberg. Manager: John F. Sundberg. Engineers: John Sundberg, approved independents: Jeff Shuey, Steve Avedis, Scott Meade. Dimensions: Room 1: studio 2,200 sq.ft. w/5 isos, control room 550 sq.ft. Room 2: studio 1,500 sq.ft. w/4 isos, control room 450 sq.ft. Room 3: 550 sq.ft w/iso, control room 350 sq.ft. Mixing Consoles: Soundcraft 2400 28 x 24 x 24 customized and modified, Soundcraft 2400 24 x 24 x 24 customized and modified, Tascam 15 24 x 16 x 8. Audio Recorders: (2) Otari MTR-90 24-track w/autolocator, (2) Soundcraft 760 24-track w/autolocator, Otari MTR-10 2-track ½" and ¼" w/center-track, (3) Otari MkIII 2-track ¼", Otari MkIII 4-track ½", (2) Ampex ATR-700 2-track ¼", Tascam Series 70 4-track ½", Tascam 80-8 8-track ½", Otari 5050B 8-track ½", (2) Otari 5050B 2-track ¼". Echo, Reverb & Delay Systems: EMT 140 plate, Audi-ence plate, Quantec QRS, AMS RMX 16, (2) Lexicon 200 w/6 programs, Roland SRV-2000, AKG BX-10, (2) Scamp stereo, (2) Lexicon Prime Time II, Lexicon Prime Time, (3) DeltaLab, Eventide 949 Harmonizer, Eventide 910 Harmonizer, (2) 1024 Effectron II, MXR pitch transposer, DL-5 pitch transposer, Ursa Major Space Station, Lexicon PCM70, (4) Yamaha SPX90, TC Electronic 2290 w/16-sec 18-bit sampler, Eventide H3000 Ultra-Harmonizer. Other Outboard Equipment: Full Scamp rack, limiter and EQs by dbx, Symetrix, UREI, Orban, Sontec, Valley Audio, Audioarts. Microphones: Variety including AKG, Neumann, Shure, E-V, Sennheiser, Crown PZM, Countryman Pressure Zone. Monitor Amplifiers: Crown Delta Omega, (8) Hafler 500, Crown D-300, Crown D-150, Crest 3501. Monitor Speakers: UREI 813B, E-V 500, Yamaha SP10, Auratone, Tannoy 12B, Tannoy NS10B, E-V 100. Musical Instruments: Kawai 7'4" grand piano, Kawai US50, Kurzweil 250 w/all block and sampling, Oberheim OB-Xa, Oberheim DSX, Rhodes, Korg C-30 organ, ARP Odyssey, Korg DW-8000, Yamaha TX7, Yamaha RX5, Steinway 9' C&A piano. Video Equipment: Adams-Smith 2600 SMPTE/EBU, JVC CR850U ¾" stereo recorder, NEC 25" high-resolution monitor. Rates: (1) $65 w/eng., (2) $45 w/eng.; (3) $15 w/eng. Block rates available. **Specialization & Credits:** Large lounge w/big-screen TV, kitchen and meal table. Conference room with high ceilings for practice and relaxing. All rooms acoustically designed. Constructed from the ground up. Studios 1 & 2 with RPG diffusors on rear walls. Real-time cassette duplication. CD sound effects and music libraries. 48 tracks available, commercials, jingles, audio sweetening, film scoring. Macintosh computer w/Performer arranging and sequencing to our Kurzweil 250. Arrangers and producers are available. One of the nation's finest studios. Located on the west side of Denver. Near summer mountain activities and winter skiing.

[24+] **PHILIP (ROSCOE) GALLO PRODUCTIONS;** 3112 Laguna; San Francisco, CA 94123; (415) 563-8223. Owner: Roscoe Gallo. Manager: Roscoe Gallo.

[24+] **GUNG-HO RECORDING STUDIO;** 86821 McMorott Ln.; Eugene, OR 97402; (503) 484-9352. Owner: Bill and Julienne Barnett. Manager: Bill Barnett. Engineers: Bill Barnett, independents. Dimensions: Studio 20 x 30, control room 12 x 17. Mixing Consoles: Trident Series 65 24 x 16 x 2. Audio Recorders: Otari MX-80 24-track, Otari 5050BII 2-track, Revox A77 2-track, Panasonic SV-3500 2-track digital. Cassette Recorders/Duplicators: (5) Nakamichi MR-2B. Noise Reduction Equipment: (2) Dolby 361 SR, (2) dbx 180/150. Echo, Reverb & Delay Systems: Lexicon 480L, Lexicon PCM70, Eventide H3000, Yamaha SPX90, ART DR-1, Lexicon PCM41, DeltaLab CE-1700 CompuEffectron, DeltaLab ADM-1024 Effectron II. Other Outboard Equipment: Summit TPA-200 dual tube mic preamp, Studio Technologies 2-channel mic preamp, Summit TLA-100A tube compressor, UREI/JBL 7110 comp/limiter, (2) dbx 160X comp/limiter, Symetrix 525 dual gated/compressor, (2) Aphex 612 dual expander/gate, Valley Autogate dual expander/gate, (4) Valley Gatex 4-channel expander/gate, Aphex Compellor stereo leveller/compressor, Aphex Aural Exciter. Microphones: (2) Neumann U87, Neumann KM84, Neumann KM140, (2) AKG C-414EB, (2) AKG C-451, AKG D-12E, AKG D-112, (2) Sennheiser 441, (4) Sennheiser 421, (4) Shure SM56/SM57, (2) Shure SM58, Beyer M422, (2) PZM custom. Monitor Amplifiers: Hafler 220, McIntosh 6100, Rane HC-6 headphone console. Monitor Speakers: JBL 4411, Yamaha NS-10M, Auratone 5C, Eclipse. Musical Instruments: Yamaha C3 6' conservatory grand piano, 1959 Fender P-bass, 1967 Fender Telly w/Bigsby, 1976 fretless Fender P-bass, 1946 Martin 0018 acoustic guitar, Ampeg B-15 amp, Ampeg SVT amp, Tom Scholz Rockman. Other: (7) AKG K-240 headphones, (4) Fostex T-20 headphones, Sony Discman CD player, JVC turntable, (10) ASC tube traps bass traps. Rates: Rates upon request/call for rates.

[24+] **JOE HOFFMANN STUDIOS;** *also REMOTE RECORDING*; PO Box 840; Occidental, CA 95465; (707) 874-2278. Owner: Joe Hoffmann. Manager: Sally Schaeffer. Engineers: Joe Hoffmann, Brian Walker, Stephen Hart, John Altmann, Gary Mankin, Randy Quan. Dimensions: Room 1: studio 23 x 26, control room 16 x 21. Room 2: studio 10 x 14. Mixing Consoles: Neotek Series II 28 x 24, Ramsa 8210A 10 x 4. Audio Recorders: Otari MTR-90 16/24-track, Otari MX-5050 MkIII 8-track, TEAC 3340S 4-track, Otari MX-5050B 2-track, Otari MTR-12 2-track. Cassette Recorders/Duplicators: Denon DR-M14HX, (5) TEAC V25/V307 for real-time dubs. Noise Reduction Equipment: (24) Dolby A, (4) Dolby C, (2) Dolby SR, (10) dbx Type I. Echo, Reverb & Delay Systems: Klark-Teknik DN780, Lexicon 60, Lexicon 70, Lexicon 200, Roland DEP-5, Roland SRV-2000, Ibanez SDR-1000, MasterRoom XL-305.

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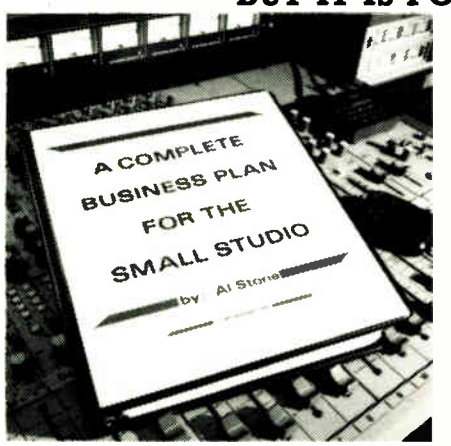
FINANCIAL SUCCESS IN RECORDING IS NOT EASY, BUT IT IS POSSIBLE!!



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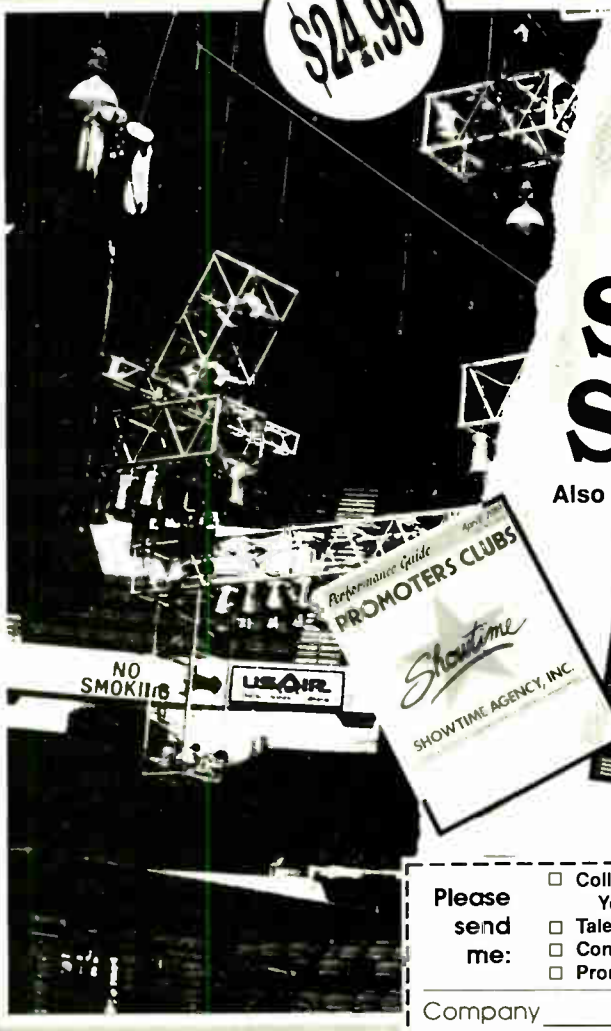

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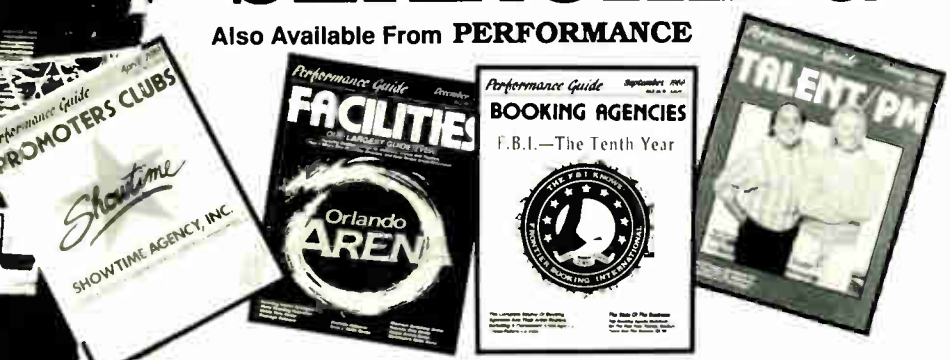

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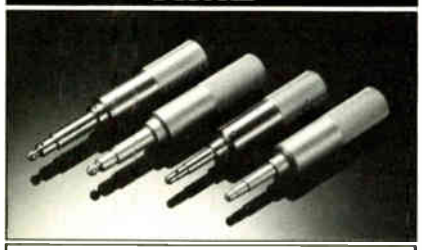

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N O R T H W E S T

24+ TRACK

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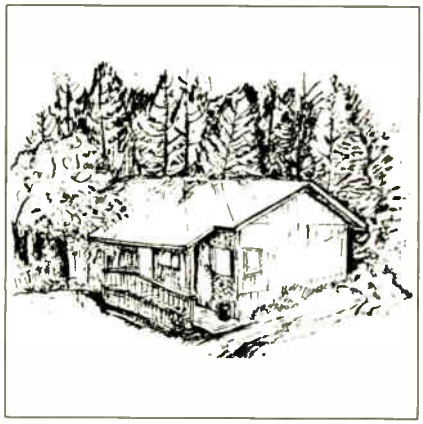

JOE HOFFMANN STUDIOS
Occidental, CA

Other Outboard Equipment: (2) dbx 263X de-esser, dbx 1631P ⅓-octave graphic EQ, Symetrix 522 (5-function stereo), Symetrix SG200 stereo gate, (2) Symetrix 501 comp/limiter, (2) UREI LA-4 comp/limiter, (2) Phase Linear E51 parametric EQ, Emerson CD player. Microphones: (2) Neumann KM84, (4) B&K 4006, (2) Sony C-48, (2) AKG 460B/CKI, (2) Shure SM81, Neumann M49 tube (by arrangement), (3) Sennheiser 421, Sennheiser 441, (2) Shure SM57, Electro-Voice RE20, Tascam PE250, Shure SM85 vocal, AT 814, AKG D-12, Beyer M130, Beyer M130, Beyer M160, Beyer M260, AKG C-451EB. Monitor Amplifiers: Peavey DECA 700, Carver 1200, JBL 600, Carver C-2 preamp, Rane HC-6 (cue). Monitor Speakers: JBL 4408, Yamaha NS-10, KEF 105/2, KEF 104/2, Toa 312-ME, Auratones. Musical Instruments: Steinway 9' concert grand piano (1956). Video Equipment: Magnavox VHS-HQ ½" camcorder, ¾" video by arrangement for live session shooting. Other: Wheelchair accessible. Rates: $35-$50/hr. Call for rate card and literature. Specialization & Credits: Imagine a warm, comfortable, acoustically satisfying space where you could record your songs, perhaps have a small live audience, or lead your workshop and have a high-quality audio recording or videotape made of your presentation. I've custom designed and built the ideal recording environment near Sebastopol, with skylights and a spectacular view of the Redwoods. It is complete with 2- through 24-track recording capability, a nine-foot concert grand Steinway piano and the affordable rates you need. A wide variety of music and other projects have been produced here on cassettes, vinyl and compact discs, including original music, healing arts projects, new age music, radio drama, classical, jazz, folk and children's music, commercials and video soundtracks. Certified massage is available for performance preparation. You're welcome to call or visit and ask questions about your special project. Ask for our Healing Arts Media catalog of cassettes and videos produced here.

[24+] **HYDE STREET STUDIOS;** 245 Hyde St.; San Francisco, CA 94102; (415) 441-8934. Owner: Michael Ward. Manager: Beverly Sommerfeld. Engineers: Mark Needham, Garry Creiman, Larry Schalit, Andrew Murdock, Wendy Bardsley, Matt Kelley, Tom Doty. Dimensions: Studio 31 x 20, control room 20 x 18. MIDI room 14 x 14. Mixing Consoles: Amek 2500 48 x 24 x 48 automated/MasterMix disc-based (studio D), Biamp Legend 28-input w/8-track Cooper MixMate (MIDI room). Audio Recorders: Studer A800 24/16-track w/autolocater, Otari MTR-12 2-track ½", Otari MTR-10 2-track ¼", Otari MX-5050B 2-track ¼" (optional ¼-track playback), Scully 280 4-track ½", (2) Aiwa AD-F870U cassette, Sony DAT DRC-1000ES, Otari 5050 MkII 8-track w/remote. Noise Reduction Equipment: Dolby SR-XP 24-channel, (2) Dolby 361 SR or A. Synchronization Systems: Adam-Smith 2600. Echo, Reverb & Delay Systems: Acoustic chamber, Lexicon 480L w/LARC and 3.0 update, Lexicon PCM70 w/3.1 update, Lexicon PCM60, Lexicon PCM42, Lexicon PCM41, Eventide H3000 Ultra-Harmonizer, Eventide 949 Harmonizer, TC 2290 w/12 seconds of sample memory, Yamaha REV7, DeltaLab DL-2. Other Outboard Equipment: Focusrite ISA 115HD, (2) Massenburg 8200, (2) Teletronix LA-2A, (3) UREI 1176LN, (2) dbx 165A, Aphex Studio Dominator, (6) Drawmer noise gate, (5) Dyna-Mite, Lang PEQ-1, (2) Klark-Teknik ⅓-octave graphic EQ, White 4100A stereo octave EQ, White 4001 ⅓-octave EQ. Microphones: Neumann 47 FET, Neumann 47 (tube w/optional omni capsule), (2) Neumann KM54 (tube), Neumann M49 (tube), Neumann U67, Neumann U87, AKG C-12 (tube), (4) AKG C-12A (tube), (2) AKG 460B, (2) AKG 414EB, (2) Pearl DC-63, (9) Sennheiser, (9) Beyer, (6) Shure, Crown PZM, etc., (6) Countryman direct box. Monitor Amplifiers: Meyer, (2) Hafler, (4) Crown. Monitor Speakers: Meyer, Tannoy PBM 6.5, Yamaha NS-10M, Tannoy LGM. Musical Instruments: Steinway 9' grand piano, Hammond B-3 organ w/Leslie, Music Man amp, Roland D-50. Other MIDI Equipment: Atari ST computer (2MB RAM) w/C-Lab Creator, Akai S900 16-bit sampler (60MB HD), Korg MR-1 music workstation. Video Equipment: Sony VO-5800 ¾" video deck w/address-track modification, Proton 602M 26" monitor, JVC 27" high resolution monitor. Rates: Call studio for rates.

[24+] **INFINITE STUDIOS;** *also REMOTE RECORDING;* PO Box 1709; Alameda, CA 94501; (415) 521-0321. Owner: Michael Denten. Manager: Michael Denten.

IRONWOOD STUDIOS
Seattle, WA

[24+] **IRONWOOD STUDIOS;** 601 NW 80th St.; Seattle, WA 98117; (206) 789-7569. Owner: Paul Scoles. Manager: Myron Partman. Engineers: Jay Follette, Steve Adamek, Paul Scoles, Rod Johnson, Myron Partman. Dimensions: Room 1: studio 34 x 28, control room 16 x 14. Room 2: studio 36 x 34, control room 22 x 18. Mixing Consoles: Harrison Raven 32 x 24 automated, Harrison MR-3 28 x 24 automated. Audio Recorders: (2) Sony JH-24 24-track, (2) Sony JH-110C 2-track ½" and ¼", Tascam ATR-60 2-track ¼" w/center time code, Sony JH-110C 1" layback. Cassette Recorders/Duplicators: (6) Technics. Synchronization Systems: Audio Kinetics Q-Lock 4.10, Adams-Smith Zeta-3. Echo, Reverb & Delay Systems: Lexicon 480L w/LARC, Lexicon 224X w/LARC, Lexicon 200, Lexicon PCM70, Lexicon Super Prime Time delay, (2) Yamaha SPX90, DeltaLab DL-2 delay, Roland SRE-555 tape echo. Other Outboard Equipment: dbx 900 rack w/gates/compressors/de-essers, Aphex Type E Exciter, Teletronix LA-2A compressor, (2) UREI 1176 limiter, (2) Symetrix parametric EQ, MXR pitch transposer, Audioarts parametric EQ, UREI 527A EQ, (2) Symetrix compressor, (2) Symetrix gate. Roland Dimension D, Roland flanger. Microphones: Telefunken U47 (tube), Neumann U67 (tube), (2) Neumann U87, Neumann U47 FET, (2) Neumann KM56 (tube), (2) Neumann KM84, AKG The Tube, (2) AKG 451, AKG D-12E, (2) Sennheiser 441, (2) E-V RE20, (2) E-V RE16, (2) Sony C-37A (tube), Sony C-500, (2) American D330 ribbon, Beyer M500 ribbon, (2) Norelco C-60 (tube), (3) Shure SM57. Monitor Amplifiers: (2) Hafler P-500, (2) Yamaha P2050, Crown D-60, McIntosh 240, BGW 100. Monitor Speakers: (2) JBL 4430, (2) Yamaha NS-10, (2) Auratone 5C. Musical Instruments: Yamaha 7'4" grand w/forte MIDI, Korg M-1 MIDI workstation, Korg DSS-1 digital sampling synthesizer, Roland JX-10 synthesizer, LinnDrum w/MIDI, Hammond M-3 w/Leslie. Other MIDI Equipment: Yamaha QX-5 sequencer. Video Equipment: Sony JH-110C 1" layback recorder. (2) Sony VO-5600 ¾" VTR, (3) NEC monitor. Other: Digita Creations DiskMix console automation. Rates: Please call for rates.

[24+] **JENSEN SOUND PRODUCTIONS;** San Francisco, CA 94115; (415) 346-2418. Owner: Eric Jensen, Suzanne Jensen. Manager: Suzanne Jensen.

[24+] **KLUB KEV'S RECORDING COMPANY;** 3177 NE 82nd; Seattle, WA 98115; (206) 527-2250. Owner: Kevin G. Boyd. Manager: Scott Spain. Engineers: Scott Spain, Lloyd Cable. Dimensions: Room 1: studio 12 x 15.5, control room 11.5 x 14.5. Room 2: studio 11 x 15. Mixing Consoles: Neve 8232. Audio Recorders: Otari MX-80 24-track, Otari MX-70 16-track, Otar MTR-12 2-track, Otari MTR-12TC 2-track w/center track time code, Sony PCM-2500 R-DAT. Cassette Recorders/Duplicators: (2) Nakamichi MR-1, (2) Nakamichi MR-2. Noise Reduction Equipment: Dolby XP rack w/SR cards 24 channels, Dolby 363 rack w/SR cards 2 channels. Synchronization Systems: Adams-Smith Zeta-3, Opcode System Studio 3. Echo, Reverb & Delay Systems: AKG 68K digital reverb, (2) Klark-Teknik DN-780 digital reverb, Yamaha REV7 digital reverb, (2) Ibanez SDR-1000+ digital reverb, TC Electronic digital delay, Eventide H3000 Harmonizer. Other Outboard Equipment: dbx F900 System w/929 SENR, (2) 902

World Radio History

KLUB KEV'S RECORDING COMPANY
Seattle, WA

de-esser, (6) 904 noise gate, dbx RTA-1 real-time analysis system, dbx 165 compressor/limiter, dbx 166 stereo compressor/limiter, (2) UREI LA-4A stereo compressor/limiter, (2) UREI 1176LN peak limiter, (2) UREI 1178LN stereo peak limiter, (3) Drawmer M-500 dynamic processor. Microphones: AKG Tube, (4) AKG 452 cardioid, omni, bidirectional capsules, (2) AKG D-12E, Neumann TLM170, (2) Sennheiser 441, (4) Sennheiser 421, (2) Electro-Voice RE20, Electro-Voice PL10, RCA BK-11, RCA BK-44, Beyer M380. Monitor Amplifiers: (5) Crown MT-1200LX main, aux and cue system. Monitor Speakers: (2) Westlake BBSM-12VF, (4) Yamaha NS-10M, Kurzweil 250, Kurzweil 1000PX, Kurzweil 1000SX, Kurzweil 1000HX, Roland D-550, Yamaha DX7IID, Yamaha RX5 drum machine, Oberheim OB-X, Moog Micromoog. Other: Macintosh SE computer w/45MB HD. Rates: Available upon request. Specialization & Credits: Located in the north end of Seattle, KLUB Kev's Recording Company offers a world-class attitude, as well as equipment, for the record building process. Dedicated to a high level of engineering excellence, our staff has designed and engineered a production/mixing suite to meet the needs of the recording musician of the '90s. No stress is best! KKRC is comfortable, affordable, workable and serious about recording.

LAWSON PRODUCTIONS, INC.
Seattle, WA

[24+] **LAWSON PRODUCTIONS, INC.**; *also REMOTE RECORDING*; 2212 4th Ave.; Seattle, WA 98121; (206) 443-1500; FAX: (206) 441-2910. Owner: Steven Lawson. Manager: Matthew Sutton. Engineers: Reed Ruddy, Carol Howell, Ed Brooks, Brett Eliason, Vince Werner, Steve Malott. Dimensions: Room A: studio 25 x 25, control room 32 x 25. Room B: studio 18.5 x 19.5, control room 19 x 29. Room C: studio 16 x 19, control room 8.5 x 8. Room D: studio 19.5 x 18, control room 12 x 9. Mixing Consoles: API w/DiskMix Moving Fader automation (Studio A), API w/ARMS DiskMix automation (Studio B), (2) JH636 w/DiskMix automation (Studios C and D), Tangent 3216 (Studio E). Audio Recorders: (2) JH-24 24-track, MM1200 24/16-track, (2) ATR-100 2-track, New England Digital Post Pro 8-track digital, New England Digital Post Pro 16/8-track digital, JH-110C 8-track, (3) JH-110C 2-track, Sony PCM-3324 24-track digital, Sony TCD-D10 R-DAT, PCM-2500 R-DAT. Noise Reduction Equipment: Dolby A 48 channels available, Dolby A and dbx on all 2-track recorders. Synchronization Systems: Adams-Smith Zeta-3 1" layback, (2) Q.Lock. Echo, Reverb & Delay Systems: Lexicon, EMT, Eventide, AMS. Other Outboard Equipment: Limiters by UREI, Valley, ADR; EQs by Pultec, UREI, Trident, Summit Audio, ITI, Perception; noise gates by Kepex, Meyer Sound Labs. Microphones: Neumann, Electro-Voice, Shure, Beyer, Sennheiser, RCA, AKG. Monitor Amplifiers: Hafler, Crown. Monitor Speakers: Westlake, Tannoy. Musical Instruments: Yamaha grand piano. Video Equipment: Sony BVU-800, JVC CR-850, CR-650. Other: In-house music production, professional yet comfortable atmosphere in scenic Pacific Northwest. Rates: Call for rates. Specialization & Credits: We've taken ten years of experience and put together a facility that deals with the real needs of our clients. We've designed our rooms from top to bottom to be working, creative environments. Our new 15,000 square foot facility offers 16 to 48-track music production. The entire facility is cross-connected to allow producers instant access to any and all of our services, including our 4,000 square foot sound stage. We recognize that people are the most important element in making your production come to fruition. Working efficiently allows you to concentrate on the creative aspects. To that end, we have a diverse engineering and professional support staff. Enjoy the beauty and recreational opportunities the Northwest offers while recording your project in a relaxed and professional atmosphere. Call for rates and further information.

[24+] **LIVE OAK STUDIO**; 1300 Arch St.; Berkeley, CA 94708; (415) 540-0177. Owner: Jim and Priscilla Gardiner. Manager: Priscilla Gardiner. Engineers: Dale Everingham. Mixing Consoles: MCI JH-636 w/ARMS II DiskMix automation, Sound Workshop Series 34C 32 x 28 x 24 automated, Yamaha DMP7 digital. Audio Recorders: (2) MCI JH-24 16/24-track, Otari MTR-10 2-track ½" and ¼", Sony PCM-F1 2-track digital, IMS Dyaxis digital workstation/editor. Synchronization Systems: Q.Lock 4.10-E w/Eclipse editor. Echo, Reverb & Delay Systems: Lexicon 224XL, Lexicon Prime Time II, Lexicon PCM42, Publison Infernal Machine 90 w/controller, Yamaha REV7, (4) Yamaha MIDIverb II, Publison Fullmost exciter (stereo). Other Outboard Equipment: Scamp rack (full), vocal stressor, (2) Drawmer DS-201 gate, UREI LA-2, (2) UREI LA-3A, UREI 1176, Spectra Sonics 610, Publison vocal exciter, Publison CL20C, Symetrix 544, dbx compressor/limiter, Eventide Ultra-Harmonizer. Microphones: (24) Full selection, AKG Tube. Monitor Amplifiers: Bryston, Yamaha, Crown, Crest, UREI. Monitor Speakers: JBL 4430 bi-radial, JBL 4401, Yamaha NS-10, Toa 265ME, (2) Auratone. Musical Instruments: Kurzweil 250 w/50kHz sampling option, Emax SE w/HD, Yamaha TX816 rack system w/8 DX7s, Oberheim Matrix-12 (rentable), Korg MI (rentable), E-mu SP-12 drum machine (rentable), Alesis drum machine, (2) Macintosh computers. Video Equipment: JVC 8250 ¾" U-VCR, Sony color projection system w/100" screen, Sony 13" color monitor. Special-

—CONTINUED ON NEXT PAGE

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World Radio History

LIVE OAK STUDIO
Berkeley, CA

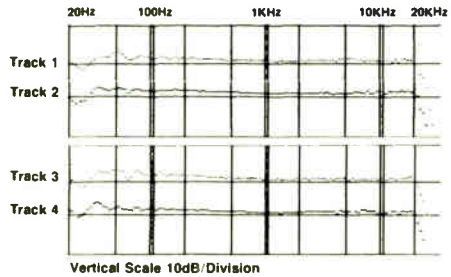
NORTHWEST 24+ TRACK

—CONTINUED FROM PREVIOUS PAGE

ization & Credits: Artists' lounge with spectacular views of the Bay. Private garden with redwood decks and brick patios. Complete pre-production services available using top-of-the-line synthesizers and computer programs. Live Oak Studio is designed for the artist/composer or producer who wishes the highest quality recording tracks for his or her project. We are equipped to produce albums or to record tracks for movie scores or video work. We have the very latest synchronization gear, a computer-automated mixing console and an outstanding collection of outboard gear including the Publison Infernal Machine 90. We have a long list of satisfied clients who enjoy the beautiful and peaceful private atmosphere. If you need a producer for your project, Jim Gardiner is available to help you get the best product.

EXCEPTIONAL FREQUENCY RESPONSE

AT 1⅞ IPS (REAL TIME)



TEST METHOD A 40KHz to 20Hz sweep at -20dB from a Sound Technology 1510-A was recorded at 1⅞ ips in a KABA slave deck on TDK SA tape. The tape was played back at 1⅞ ips in the KABA master control deck and the output displayed on the Sound Technology. The curves represent the **SUM** of the record and playback response of the KABA system at 1⅞ ips.

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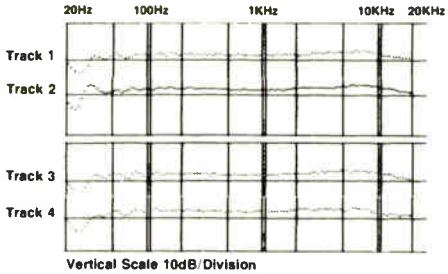
EXCEPTIONAL FREQUENCY RESPONSE

AT 3¾ IPS (DOUBLE TIME)

TEST METHOD Same as above except the sweep was recorded at 3¾ ips on the KABA slave deck and played back at 1⅞ ips on the master control deck. Highest frequency on playback was 20KHz so there is no response beyond 20KHz.



RTDS-4TM MASTER CONTROL DECK

RTDS-4TS DUAL TRANSPORT DECK

FOUR TRACK REAL TIME AND 2X DUPLICATION SYSTEM

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[24+] LONDON BRIDGE STUDIOS INC.; 20021 Ballinger Way NE, Ste. A; Seattle, WA 98155; (206) 364-1525. **Owner:** Rajan and Rick Parasher. **Manager:** Rajan Parasher. **Engineers:** Rick Parashar, Don Gilmore, Ron Gangnes. **Dimensions:** Room 1: studio 35 x 55, control room 40 x 30. Room 2: studio 20 x 20, control room 20 x 20. **Mixing Consoles:** Neve 8048 w/1081 EQs, Trident Series 65. **Audio Recorders:** Studer A800 24-track, 3M M79 24-track, Ampex ATR-102 2-track, Sony APR-5000 2-track. **Cassette Recorders/Duplicators:** (5) NAD. **Echo, Reverb & Delay Systems:** Lexicon 224X, Eventide C3000 Harmonizer, large assortment of reverbs and delays, (2) Teletronix LA-2A limiter, (3) Neve onboard compressor, wide selection of compressors and limiters. **Microphones:** Neumann, AKG. **Monitor Speakers:** JBL 4435, (2) Yamaha NS-10. **Musical Instruments:** Wide selection of synthesizers, Yamaha C7 grand piano (7'). **Rates:** Upon request.

[24+] MICHAEL LORD PRODUCTIONS; 9508 17th Ave. NE; Seattle, WA 98115; (206) 527-9002. **Owner:** Michael Lord. **Manager:** Michael Lord.

[24+] MASTER TRACK PRODUCTIONS; 1524 W. Winton Ave.; Hayward, CA 94545; (415) 782-0877. **Owner:** Don Enns. **Specialization & Credits:** For over 16 years we've been producing albums in the fields of contemporary and traditional gospel, jazz, rock and other styles with an emphasis on gospel music. Our facility is a completely professional, fully equipped 24-track studio with spacious rooms and high ceilings, plus a wide assortment of microphones and signal processing gear. We deliver quiet and sonically superior recordings with our transformerless 32 x 24 Neotek Series IIIC console and Stephens Electronics multi-track recorder. We also include 30-ips Studer A80 2-track recorders and Dolby A noise reduction systems. Our engineering staff is experienced, knowledgeable and helpful with a long list of album and radio credits. Their combined expertise in the fields of musical performance and technical production assures a high level of excellence and understanding of each client's needs. MTP is also a complete, high-volume cassette duplication and packaging plant. Please call for additional information.

MAXIMUS RECORDING STUDIOS
Fresno, CA

[24+] MAXIMUS RECORDING STUDIOS; 2727 N. Grove Industrial Dr. #111; Fresno, CA 93727; (209) 255-1688; FAX: (209) 255-1755. **Owner:** Jeff Hall. **Manager:** Leigh Ratliff. **Engineers:** Nye F. Morton, Jeff Hall, Eric Seaberg (ind.), Loyd Clifft. **Dimensions:** Room 1: studio 28 x 44, control room 28 x 20. Room 2: studio 30 x 30, control room 24 x 18. Room 3: studio 9 x 10, control room 16 x 10. Room 4: (MIDI suite) control room 10 x 24. **Mixing Consoles:** (2) Harrison MR-3 w/autoset, Sound Workshop Logex 8. **Audio Recorders:** Studio A800 MkIII 16/24-track, Studer A80 16/8-track, (3) Studer A80 2-track ¼" and ½", (2) Studer A810 2-track, (5) Revox PR-99 2-track, Otari 5050B full track, Nagra IV-S 2-track w/sync, Panasonic SV-3500 DAT, Akai MG-1214 12-track. **Cassette Recorders/Duplicators:** (2) Studer, (13) Sony, (2) Akai, Nakamichi. **Synchronization Systems:** Audio Kinetics Q.Lock 3.10. **Echo, Reverb & Delay Systems:** Lexicon 224-X w/LARC, Ecoplate III, (3) Ibanez SDR 1000+, Korg SDR-3000, Yamaha SPX90, Lexicon Super Prime Time, (2) Lexicon Prime Time II, Eventide 949. **Other Outboard Equipment:** (10) UREI LA-4A, (4) UREI 1176, (2) UREI 1178, (2) UREI LA-3A, UREI 535, (2) EXR EX-IV, (3) Orban 536A, (2) Orban 245F. **Microphones:** (9) AKG 414EB/P-48, (6) AKG 460, (6) E-V RE20, (4) Sennheiser MD-441, (4) Sennheiser MD-421, (2) AKG D-12, AKG C-34, (4) Shure SM77, Sony C-37, (3) RCA Ribbon, (2) Wahrenbrock PZM, (2) Crown PZM. **Monitor Amplifiers:** (11) Crown DC-300, (9) Crown D-75, Crown PS-200. **Monitor Speakers:** (2) George Augspurger custom, (2) Electro-Voice Sentry 500, (4) Electro-Voice Sentry 100, (5) Auratone 5C, Yamaha NS-10M, Altec 604, Fostex RM780. **Musical Instruments:** E-mu Emulator E-III, E-mu Emulator E-II, Yamaha DX7, Roland D-550, Roland D-110, Roland MT-32, Yamaha TX802, Yamaha TX7, Kawai K-1, Oberheim Expander, E-mu Emulator SP-12, E-mu Emulator Drumulator, Alesis HR-16. **Video Equipment:** Full synchronous lockup to Sony 1" or Sony ¾". Specializa-

World Radio History

tion & Credits: After glancing through this listing you're probably saying to yourself, "Freno?!?? You have a studio like this in Fresno? I thought that Fresno was only warm summers and Dancing Raisins!" Actually, Fresno is a convenient, cost-effective place to record anything from film scores to broadcast production work to anything in between. Maximus serves clients from all over the country who find that working in Fresno gives them quicker turn-around than major metropolitan market studios at a fraction of the cost with no compromise in quality. We are able to offer our high-profile clients more freedom than in large-market studios. We combine large-market quality with a small-market profile to avoid the hassles and delays from outside distractions (or overzealous media).

[24+] **MILLTREE PRODUCTIONS;** PO Box 70322, Seattle, WA 98107-0322; (206) 782-3115. Owner: Milltree Productions, Inc. Manager: Claude Autry.

[24+] **MIRAMAR RECORDING STUDIOS;** PO Box 70127; Bellevue, WA 98007; (206) 747-5233. Owner: Miramar Images, Inc. Manager: Paul Speer. Engineers: Paul Speer, David Lanz, James Reynolds. Dimensions: Studio 15 x 25, control room 12 x 15. Mixing Consoles: Harrison MR-4 26 x 24 automated. Audio Recorders: Sony/MCI JH-24 24-track, Otari 5050 2-track, Sony F1 digital processor. Cassette Recorders/Duplicators: Nakamichi. Noise Reduction Equipment: Dolby Model 363 SR 2 channels, Symetrix 511 single-ended 2 channels. Synchronization Systems: Cipher Digital Shadow System. Echo, Reverb & Delay Systems: Lexicon PCM70 digital reverb, Yamaha SPX90 digital effects, Alesis MIDIverb II digital effects, ART 1A digital reverb, Roland SDE-3000 digital delay, Roland SDE-1000 digital delay. Other Outboard Equipment: dbx 900 rack w/comp/gate/EQ/de-esser, dbx 166 stereo comp/gate, Symetrix 522 comp/gate. Microphones: (3) Neumann KM100, (2) Sennheiser 421, E-V RE20. Monitor Amplifiers: Carver PM-350, Crown D-150A, Symetrix headphone amp. Monitor Speakers: (2) JBL 4425, (2) Tannoy PBM65, (2) Auratone 5C. Musical Instruments: Prophet VS, Yamaha KX88 MIDI controller, Roland MKS-20 digital piano, Roland D-550, Roland R-8 drum machine, Yamaha DX7. Video Equipment: NEC 20" monitor, JVC BRS-610U Super VHS. Other: Krups espresso machine. Rates: Private facility/invitation only.

[24+] **MOBIUS MUSIC;** *also REMOTE RECORDING;* 1583 Sanchez St.; San Francisco, CA 94131; (415) 285-7888. Owner: Oliver DiCicco. Manager: Janet Stark Krick. Engineers: Jane Scolieri, Ken Kessie. Dimensions: Studio 17 x 38, control room 17 x 14. Mixing Consoles: Neve 8068. Audio Recorders:

MOBIUS MUSIC
San Francisco, CA

MCI JH-114 24/16-track, Studer 820A 2-track, MCI JH-110 2-track. Cassette Recorders/Duplicators: (3) Sony FX44. Noise Reduction Equipment: (2) Dolby SR. Echo, Reverb & Delay Systems: Lexicon 224 reverb, Eventide H3000 Ultra-Harmonizer, Yamaha REV7 processor, Yamaha SPX90 processor, DeltaLab DL-4 delay, Master-Room MR3 reverb. Other Outboard Equipment: Lang program EQ, (2) dbx 160 compressor/limiter, (2) UREI LA-4 compressor/limiter, (2) Dyna-Mite expander/gate, (2) Kepex gate, Orban 622 parametric EQ. Microphones: (2) B&K 4006, Neumann U47 tube, (2) Neumann KM54 tube, (2) Neumann U87, (4) Neumann KM84, (6) Sennheiser 421, Sennheiser 402, (2) Shure SM57, Beyer M500. Monitor Amplifiers: Hafler 500, Crown D-150, Crown D-60. Monitor Speakers: (2) UREI 811, (2) Auratone, (2) Yamaha NS-10, (2) Altec 604 w/Mastering Lab crossovers. Musical Instruments: Yamaha C3 6' grand piano, Radio King drums. Video Equipment: Available as rental package. Other: Available as rental package. Rates: On request, lockout rates available.

[24+] **MOON RECORDING INC.;** 156 Otto Cir.; Sacramento, CA 95822; (916) 392-5640. Owner: George Whyler. Manager: George Whyler. Engineers: David L. Houston, Pete Clemente, Gary Woltmon. Dimensions: Studio 22 x 34, control room 17 x 18. Mixing Consoles: MCI JH-636 32 x 24 automated. Audio Recorders: Otari MTR-90 24-track, Otari MkIII 8-track, Otari MTR-10 2-track, Sony PCM-2500 DAT. Cassette Recorders/Duplicators: (2) Tascam 122B. Echo, Reverb & Delay Systems: Lexicon Prime Time II, Lexicon PCM70, Lexicon PCM60, Lexicon PCM42, DeltaLab CompuEffectron, Yamaha REV7, Yamaha SPX90, Eventide Harmonizer, Echoplate II. Other Outboard Equipment: (2) UREI LA-3A limiter, UREI 1178 comp/limiter, Orban 424A comp/limiter, (2) dbx 160 comp/limiter, Aphex Dominator, Aphex B Aural Exciter, Barcus-Berry 802 processor, (2) Valley People Maxi-Q, (2) Valley People Gain Brain II, (6) Valley People Kepex II, (2) Drawmer 201 noise gate, Furman QN4A noise gate. Microphones: (2) Neumann U87, (2) Neumann U67, Neumann KM84, (4) E-V PL20, (5) E-V RE15, (2) Sennheiser 441, (3) Sennheiser 421, (2) AKG 451, AKG 414, (2) Crown PZM 315, Sony ECM-56F, Shure SM53. Monitor Amplifiers: UREI 6300, JBL/UREI 6290, Crown 1200. Monitor Speakers: UREI 813B, JBL 4435, Yamaha NS-10M, Auratone Soundcubes, (13) AKG 240 headphone, (2) Fostex T20 headphone. Musical Instruments: Emulator III, E-mu SP-1200 drum machine, Yamaha DX7, (8) Yamaha 816, Roland Octapad, Minimoog. Other: Sony PCM-701 digital processor, Sony 2710 Beta. Sound Ideas sound effects library. Rates: Please call. Block rates available.

[24+] **MUSIC ANNEX, INC.;** 69 Green St.; San Francisco, CA 94111; (415) 421-6622. Owner: Music Annex, Inc. Manager: Angela Goodison. Engineers: Randy Bobo, Patrick Fitzgerald, Jon Grier, Roger Wiersema, Mary Ellen Perry, Linda Lew. Dimensions: Room 1: studio 12 x 16, control room 23 x 28. Room 2: studio 13 x 11, control room 17 x 14. Room 3: studio 12 x 10, control room 20 x 25. Mixing Consoles: Amek 2500 36 x 24 w/MasterMix automation, Amek 2500 36 x 24, TAC Scorpion 16 x 8. Audio Recorders: Otari MTR-90 24-track, MCI JH-114 24-track, Otari 5050 MkIII 8-track, Otari MTR-10 4-track, (3) Otari MTR-12 2-track w/center track time code, (8) Otari 5050 2-track, New England Digital Post Pro direct-to-disk tapeless recorder/editor, multitrack magnetics 35mm and 16mm recorder. Cassette Recorders/Duplicators: (5) Tascam 122, Otari C-2. Noise Reduction Equipment: (2) Dolby M-24 Type A, (2) Dolby 363 SR/Type A, (2) Dolby 361 SR or Type A, Dolby CAT 43/361, Symetrix 511, dbx Type I 12 channels. Synchronization Systems: (2) Audio Kinetics Q.Lock 4.10 w/3-machine lock, Audio Kinetics Q.Lock 4.10 w/Eclipse editor 4-machine lock. Echo, Reverb & Delay Systems: Lexicon 480 LARC, Lexicon 224, (3) Yamaha SPX90, Eventide 949. Other Outboard Equipment: Scamp rack (EQ, gates, comp), (6) dbx 160X, (2) UREI 1176, (3) Symetrix T101 phone

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NORTHWEST

24+ TRACK

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patch. **Microphones:** Neumann, AKG, E-V, RCA. **Monitor Amplifiers:** Yamaha, Hafler, Crown, BGW, Symetrix. **Monitor Speakers:** KRK, Tannoy, JBL, Auratone, Yamaha. **Musical Instruments:** (2) E-mu E-III, Korg M1-R, Roland D-550, Roland R-8, (2) Macintosh II. **Other MIDI Equipment:** (2) Opcode Studio 3 MIDI/SMPTE conv. **Video Equipment:** Sony DVR-10 digital video, Sony BVH-110 1" C type, (3) VC-CR850 ¾" U-matic, FLS fiber optic MIDI link, Skoter time code window generator w/UITC, Datametric time code window generator, Sigma Black generator, (6) Sony color monitor, (2) Sharp color monitor. **Other:** (2) Technics SL-P1200 CD player, Technics SL-P500 CD player, Technics SL-P300 CD player, (2) Technics SL-1200 turntable. **Rates:** Available upon request.

MUSIC ANNEX RECORDING STUDIOS
Menlo Park, CA

[24+] MUSIC ANNEX RECORDING STUDIOS; *also REMOTE RECORDING*; 970 O'Brien Dr.; Menlo Park, CA 94025; (415) 328-8338. **Owner:** David H. Porter. **Manager:** Charlie Albert. **Engineers:** Russell Bond, Pat Coughlin, Robert Iriartborde, Tom Carr, Bruce Kaphan, Andy Heller. **Dimensions:** Room 1: studio 28 x 25, control room 22 x 25. Room 2: studio 16 x 13, control room 21 x 18. Room 3: studio 16 x 14, control room 25 x 19. Room 4: studio 40 x 33, control room 25 x 19. **Mixing Consoles:** Neve 8036, MCI JHS-636 w/DiskMix, Soundcraft 3-B 32 x 24, Amek TAC Scorpion 16 x 8. **Audio Recorders:** Studer A827 24-track, (2) Studer A80 16/24-track, (6) MCI JH-110B 2-track, Otari 5050B MkIII 8-track, Ampex AG440C 2/4-track. **Cassette Recorders/Duplicators:** (10) Nakamichi BX-100, (6) Tascam 122B, Otari C-2 duplicator. **Noise Reduction Equipment:** (4) Dolby SR/A. **Echo, Reverb & Delay Systems:** Lexicon 224XL w/LARC digital reverb/FX, (2) Lexicon 224 digital reverb, Quantec QRS room simulator, Eventide HD3000 room simulator, (4) Lexicon PCM70 digital reverb/FX, Lexicon PCM60 digital reverb/FX, (5) Yamaha REV7 and other digital reverb/FX, (2) Lexicon LXP-1 and other digital reverb/FX, (4) Korg and others digital reverb, (3) Lexicon Super Prime Time digital delay, (4) Lexicon PCM41 and other DDL, (5) Roland and other DDL, EMT Gold Foil plate. **Other Outboard Equipment:** (8) UREI 1176LN limiter, (2) UREI 1178 stereo limiter, (2) UREI LA-4 limiter, (4) dbx 160X compressor/limiter, ADR Vocal Stresser 2-channel, Aphex Compellor 2-channel, Summit Audio tube limiter, (2) Aphex Exciter Type C, Barcus-Berry BBE processor, (8) Drawmer DS-201 gate, (4) Valley People Dyna-Mite, (2) Valley People Gain Brain, (2) Scamp rack w/gate/EQ/limiter, (6) UREI 546 parametric EQ. **Microphones:** Neumann U67 tube, (6) Neumann U87 tube, (2) Neumann U47 FET, (4) Neumann KM84, AKG C-12A tube, (3) AKG 414, (8) AKG C-60/C-61 tube, (8) AKG 452/461, AKG D-12, (12) Sennheiser 421/441, (8) E-V RE20/RE16, (18) Beyer, Sony, ASC, Countryman, Calrec, Audix, etc. **Monitor Amplifiers:** (19) Hafler, Crown, BGW, Yamaha, AB, etc. **Monitor Speakers:** UREI 813B, 813, 811. **Musical Instruments:** Yamaha C7 grand piano, Gretsch/Ludwig/Paist/Zildjian drum set, (6) Yamaha and other synths. **Other MIDI Equipment:** Macintosh w/Opcode and Performer. **Video Equipment:** (3) Sony 2860 ¾" color monitor, (2) Beta and VHS VCR. **Other:** Sony PCM-701, Sony 2860 ¾" U-matic, (2) SMPTE-based automation system, Sony 2500 R-DAT. **Specialization & Credits:** Music Annex has a long history of studio development, success and growth. Credits include gold, platinum and Grammy Award-winning records. Four recording studios and an experienced staff including two in-house technicians ensure the depth and diversity needed for virtually any recording project. In 1988 Dragon Studios joined Music Annex, bringing with them their excellent reputation, fine staff and experience. Two all-new studios have been built in 1988 and were designed to provide the latest in studio acoustical design and technology. Also in 1988, Music Annex Cassette Duplication moved from Menlo Park to Fremont to provide expanded service and allow for the recording studio's growth. So much has happened that we're calling it "the New Music Annex." Check it out we've got the best of the old with a whole new aspect to offer as well.

[24+] MUSIC ARTS RECORDING STUDIO (MARS); PO Box 1838; Aptos, CA 95001; (408) 688-8435. **Owner:** Ken Capitanich. **Manager:** Heather Capitanich. **Engineers:** Ken Capitanich, Ken Kraft, David Gibson, Eric Bates. **Dimensions:** Studio 16 x 18, control room 14 x 16. **Mixing Consoles:** Soundcraft TS 24 32 x 24. **Audio Recorders:** Ampex MM1100 24-track, Tascam 80-8, Ampex 440-C 2-track, Otari 5050 2-track. **Cassette Recorders/Duplicators:** (3) Sony TC-K81. **Noise Reduction Equipment:** (8) dbx. **Echo, Reverb & Delay Systems:** Lexicon 200, Ecoplate II, Lexicon Prime Time 93, Eventide Harmonizer, MICMIX XL-305, ADR Time Module, Yamaha SPX90. **Other Outboard Equipment:** (5) ADR (Scamp) expander/gate, (5) ADR (Scamp) comp/limiter, (2) ADR (Scamp) parametric, Aphex Exciter, dbx 165 compressor, dbx 162 compressor, (2) TLA 100 tube limiter, (2) TPA 200 tube preamp, Pultec tube EQ. **Microphones:** (2) Neumann U47, (4) AKG C-414, (2) Sennheiser MD-441, Sony C-37P, (2) Shure SM54, (2) Neumann U87, (5) Beyer M500, Neumann U67, Electro-Voice RE20, (2) Electro-Voice 666, (2) Electro-Voice CS15, Electro-Voice RE16, Electro-Voice DS35, (2) Shure SM56, (4) Shure SM57, (2) Shure SM545SD, (3) AKG C-451, (2) AKG 330BT, AKG D-112, AKG D-12E, (4) Sennheiser MD-421, Sony ECM-22. **Monitor Speakers:** (2) UREI 811, (2) MDM-4, (2) JBL 4313B, (2) Auratone, (2) Yamaha NS-10M. **Musical Instruments:** Chickering 6'6" grand piano, Hammond B-3 with Leslie, Yamaha DX7II FD, Oberheim DMX, various drums, cymbals and toys, Ampeg amp. **Rates:** Rate sheet available upon request.

[24+] THE MUSIC COMPLEX; *also REMOTE RECORDING*; 348 Broadway; Millbrae, CA 94030; (415) 697-4488. **Owner:** Pat Maciejewski, Kelly Bryarly. **Manager:** Kelly Bryarly. **Engineers:** Kelly Bryarly, Jamie Bridges, Victor Bellomo, John Maciejewski, Pat Maciejewski. **Dimensions:** Room 1: studio 22 x 18, control room 14 x 14. Room 2: studio 22 x 18, control room 9.5 x 9.5. **Mixing Consoles:** Harrison 3624, Yamaha RM2408. **Audio Recorders:** Studer A80 24-track, Sony JH-24 24-track, Tascam ATR-60 8-track (30 ips), Otari MX-55 center track time code ¼", Otari MX-5050 2-track, Revox PR99 2-track. **Cassette Recorders/Duplicators:** Revox B215, (3) Nakamichi MR-2, Philips 5391. **Noise Reduction Equipment:** Dolby A, Rocktron. **Synchronization Systems:** Fostex 4030/4035 (four-transport lockup capability). **Echo, Reverb & Delay Systems:** Yamaha REV7, Lexicon PCM70, Lexicon PCM60, Lexicon PCM42, Yamaha SPX90, Yamaha D1500. **Other Outboard Equipment:** Orban 424A compressor/limiter, Orban 622B stereo parametric, SAE parametric, Aphex Aural Exciter, (3) Rane ME30 EQ, (2) dbx 160X comp/limiter, dbx 166 comp/gate, (4) Gatex gate, BBE Sonic Maximizer, DOD Electronics R830, Rockman, (2) Jensen direct box, (7) Countryman direct box, (3) Stewart direct box. **Microphones:** AKG C-414EB, AKG C-414ULS, AKG D-112, AKG 460, Sony C-48, Sennheiser MD-421, Beyer Soundstar MkII, Shure SM57, Shure 545SD, Fostex RP88 (printed ribbon), any other upon request. **Monitor Amplifiers:** Hafler DH200, Hafler P125, Yamaha P2201, Yamaha P2050. **Monitor Speakers:** UREI 813, Yamaha NS-10, Fostex RM780, Auratone. **Musical Instruments:** QX1 sequencer, Yamaha DX7, Roland JX-8P, TX816, Oberheim DMX, Alesis HR-16, Yamaha console piano. **Video Equipment:** Toshiba S-VHS editing bay, Panasonic AG6500 VHS/Hi-fi, Pioneer CLD-1010 laserdisc player, fast-forward window-burn/TC gen./reader. **Specialization & Credits:** The Music Complex is a state-of-the-art, 48-track recording studio with over 250 nationally released singles and albums. The Music Complex is a full-service audio production facility with a focus on post-production sound for film and video. We offer scoring to picture, sound effects design and editing, Foley, ADR and S-VHS editing. The Music Complex is experienced in national and regional commercial productions, television and feature film releases and a 1988 Cindy Award recipient. The Music Complex is a resource center for voice-over, instrumental and vocal talent with an emphasis on children through in-house performing arts programs. The Music Complex, whether on location or in the studio, can see a project through; from recording production dialog to the final mix in Dolby (LCRS) stereo. The Music Complex invites you to inquire why more post-production is coming to the Bay Area.

[24+] THE MUSIC SOURCE; 615 E. Pike; Seattle, WA 98122; (206) 323-6847. **Owner:** Jim Wolfe. **Manager:** Peter Barnes. **Engineers:** Jim Wolfe, Peter Barnes, Glenn Lorbiecki, Ben Goldfarb, Steve Fisk, Dave Cruikshank, Larry Brewer. **Dimensions:** Room 1: studio 27 x 24, control room 27 x 18. Room 2: studio 15 x 13, control room 15 x 21. Room 3: studio 11 x 12, control room 15 x 15. **Mixing Consoles:** MCI 636 36 x 44 automated, MCI 636 36 x 36 automated, MCI 636 28 x 28. **Audio Recorders:** AudioFile digital, (2) MCI JH-24 48-track in room A, (2) MCI JH-24 24-track in B, MCI JH-114 in C, (2) Sony/MCI JH-110 2/4-track, Tascam ATR-62 2-track center-channel time code, Sony 1" layback video, Magna-Tech 16/35mm recorder/reproducer, Sony PCM-F1 digital. **Cassette Recorders/Duplicators:** (10) real-time duplicator, Naka-

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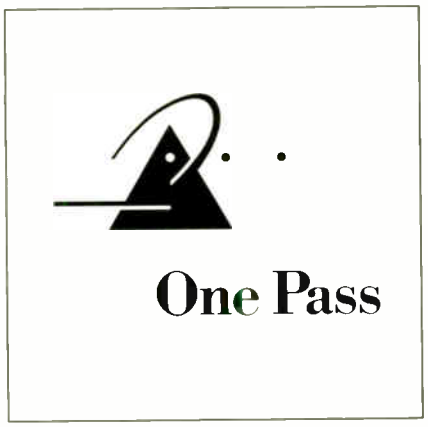
michi, (8) Tascam 22-2 and Revox A77 dubbing. Noise Reduction Equipment: dbx 8 channels, other formats available. Synchronization Systems: (2) Adams-Smith 2600 for 5 slaves including compact controller. Echo, Reverb & Delay Systems: (2) Lexicon 224X w/LARC, Lexicon Super Prime Time, (2) Yamaha SPX90, Yamaha REV7 and REV5, Eventide Harmonizer. Other Outboard Equipment: Scamp rack, UREI, Symetrix, dbx, Spectra Sonics, graphic and parametric EQ, Aphex and EXR exciters, Garfield Master Beat and Drum Doctor, Roland Vocoder, UREI ⅓-octave equalizers, Barcus-Berry BBE-802. Microphones: Neumann U87, Neumann U67 tube, AKG 414, AKG D-12E, AKG "the Tube," AKG 460, Milab, E-V RE20, Beyer ribbons, Sony tube condenser. Monitor Amplifiers: UREI 6500, Crown, BGW, Phase Linear, Symetrix, Carver. Monitor Speakers: JBL 4430, JBL L-100, Yamaha NS-10M, Auratone. Musical Instruments: Kurzweil K-250, Yamaha DX7, Oberheim OB-Xa, Minimoog, (2) Emax, Yamaha TX81Z, Yamaha RX5 drum machine, Kawai 9' concert grand, Simmons electronic drums, Yamaha acoustic drum kit. Other MIDI Equipment: Garfield Master Beat and Drum Doctor, Macintosh Plus w/hyperdrive-running, Opcode software. Video Equipment: Sony layback (1"), Sony 5850 ¾" w/address track, Magna-Tech film dubber (16/35mm). Rates: Available upon request.



ONE PASS FILM & VIDEO
San Francisco, CA

[24+] **ONE PASS FILM & VIDEO;** One China Basin Bldg.; San Francisco, CA 94107; (415) 777-5777. Engineers: Jay Shilliday, Vance Walden. Dimensions: Studio 10 x 17, control room 19 x 17. Mixing Consoles: Sony MXP-3036VF console with Diskmix moving fader automation 36 x 24. Audio Recorders: Otari MTR-90 Series II 24-track, Studer A80 8/4-track, Studer A820 2-track center-track TC, Otari MTR-12 2-track center-track TC. Cassette Recorders/Duplicators: Nakamichi MR-1B. Noise Reduction Equipment: Dolby SR 34 channels, Dolby A 8 channels. Synchronization Systems: Lynx keyboard controller and system supervisor, (5) Lynx/SAL module. Echo, Reverb & Delay Systems: Klark-Teknik DN780 digital reverb, (2) Lexicon PCM70 digital reverb, TC Electronic 2290 digital delay, Yamaha SPX90II multi-effects unit, Roland DEP5 multi-effects unit. Other Outboard Equipment: Eventide 3000B Ultra-Harmonizer, (2) Dolby CAT 43, various dbx compressors/limiters/gates/de-essers, Aphex Aural Exciter, Aphex studio Dominator, Aphex Compellor, (2) UREI 565T "Little Dippers," (2) Valley People Kepex II gate. Microphones: Beyer Dynamic MC740, Neumann 1905i stereo mic, Neumann U87, (2) Sennheiser 416, (2) AKG 414EB. Monitor Amplifiers: (2) Perreaux 6200B and 3000B, (4) Bryston 3B & 2B-L. Monitor Speakers: (2) JBL 4430 (bi-amped), (2) Auratone 5CV. Musical Instruments: Emulator III (300MB external HD, 8MB RAM) with Macintosh II computer interface. Video Equipment: Sony BVU-800 ¾" U-matic, Sony BVH-1100 1" C format, Sony BVW-75 Betacam-SP, Sony DVR-10 digital video with PCM audio, Sony DVR-1000 digital video with PCM audio. Other: MTM series 2000 dual recorder/reproducer magnetic film recorder (4/3/1-track heads), MTM series 600 magnetic film reproducer (3/1-track heads), Gefen M&E organizer system with (2) Sony CDK-006 CD units (120 CDs). Rates: Call for information.

[24+] **OTR STUDIOS;** *also REMOTE RECORDING;* PO Box 874; Belmont, CA 94002; (415) 391-9861; FAX: (415) 598-0915. Owner: Cookie Marenco. Manager: Amy Yamamoto. Dimensions: Room 1: studio 23 x 14, control room 23 x 17. Room 2: studio 27 x 17, control room 11 x 12. Audio Recorders: Otari MTR-90II 24-track, Otari MTR-10 2-track ½", ¼" and ¼" center-track time code, Otari 5050 4/8-track ½", (2) Otari 5050 2/4-track, Technics SV-1110 DAT, (2) Sony PCM-F1 digital encoder/decoder. Cassette Recorders/Duplicators: (2) Tascam 122. Noise Reduction Equipment: Dolby SR 24-track, (2) Dolby SR rack unit. Synchronization Systems: SMPTE. Echo, Reverb & Delay Systems: Lexicon 224XL reverb, AMS RMS 16 reverb, Lexicon Super Prime Time delay, (2) Lexicon PCM42 delay, Lexicon PCM60 reverb, Yamaha SPX90 effects, Roland SV-3000 reverb. Other Outboard Equipment: Eventide 949 Harmonizer, Aphex Compellor, Drawmer dual noise gate, (2) Valley People Dyna-Mite dual noise gate, UREI LA-4 compressor/limiter, de-esser. Microphones: AKG 414, AKG 451, Neumann U87, Neumann U67, E-V RE20, Crown PZM, Shure SM56/57, Sennheiser 421, Beyer, Sennheiser ME-80/88. Monitor Amplifiers: Crown, Bryston 4B. Monitor Speakers: Meyer Sound Labs 833, Tannoy, Yamaha NS-10M, Auratone Cubes. Musical Instruments: Steinway 7' grand piano (1885), Yamaha TX7, Korg M1 synthesizer, Prophet-VS synthesizer, Prophet-5 synthesizer w/MIDI, Minimoog, LinnDrum, Hammond B-3 organ, Roland MC-500 sequencer, Casio CZ-100 synthesizer. Other MIDI Equipment: Macintosh computer MIDI system, Mark of the Unicorn Performer 3.0, Opcode.

[24+] **PACE VIDEO CENTER;** *also REMOTE RECORDING;* 2020 SW Fourth Ave., Ste. 700; Portland, OR 97201; (503) 226-7223. Owner: Edwin Cornelius, chairman of the board. Manager: Dave Janney, production mgr.

[24+] **PACIFIC MOBILE RECORDERS;** *only REMOTE RECORDING;* 2616 Garfield Ave.; Carmichael (Sacramento), CA 95608; (916) 483-2340. Manager: Kat Coffey Hibbard.

[24+] **PARADISE SOUND RECORDING INC.;** PO Box 117; Index, WA 98256; (206) 793-2614. Owner: Patrick Sample. Manager: Karen Sample. Engineers: Patrick Sample. Dimensions: Room 1: studio 40 x 19, control room 25 x 20. Room 2: studio 13 x 16. Room 3: studio 13 x 13. Room 4: studio 16 x 12. Mixing Consoles: Harrison MR-4 32 x 24. Audio Recorders: Otari MTR-90 24-track, Otari MTR-12 2-track, Sony DAT. Cassette Recorders/Duplicators: (6) Nakamichi, (5) Yamaha, (3) Otari high-speed duplicator. Noise Reduction Equipment: Symetrix 511. Synchronization Systems: TimeLine Lynx. Echo, Reverb & Delay Systems: AKG ADR 68K digital reverb, Lexicon 200 digital reverb, Lexicon PCM60 digital reverb, Lexicon PCM41 digital delay, (2) DigiTech 128 delay/reverb. Other Outboard Equipment: Eventide H3000 Harmonizer, Yamaha SPX90II, Aphex Compellor, (4) dbx 163X comp/limiter, (4) dbx 463X noise gate, Orban. Microphones: Neumann U89, AKG 414, Beyer M88, Sennheiser 441, (4) Sennheiser 421, (2) E-V PL20, (2) E-V PL76, (5) E-V ND257, E-V ND357, (2) Fender P-2, (2) Shure SM57, Shure SM81. Monitor Amplifiers: Hafler P5050, Yamaha M80. Monitor Speakers: UREI 811, JBL 4406, E-V Century 100. Musical Instruments: Hammond B-3 organ w/Leslie, Yamaha DX7 synthesizer, Yamaha QX7 sequencer, Roland S-50 synth/sampler, Emulator II w/outstanding library, Roland DDR-30 digital drums, Marshall amp, Mesa/Boogie amp, Gibson Les Paul guitar, Martin guitar. Video Equipment: TimeLine Lynx synchronizer, Panasonic CT2010 monitor, Sony BVU-800 U-matic ¾". Rates: $75 per hour audio/$100 video sync. Specialization & Credits: Yes, it's true. Paradise Sound Recording is located in the Cascade Mountains, in the little town of Index, next to the North Fork of the Skykomish River—just a short distance from Seattle, Washington. Yes, we are building a new facility opening April of this year! It has been designed by one of the world's foremost acoustical engineers, with four isolation booths, a very large main recording room and a spacious control room designed with accurate monitoring, efficiency and comfort in mind. Well, yes! We are selling Time Packages to producers, sound engineers and bands from all over the country. Packages are available by the week or month for a five- or ten-year time period. No, we don't cut any corners. We believe in personal service for professional results. Please call for more details.

[24+] **PARADISE STUDIOS;** *also REMOTE RECORDING;* 1020 35th Ave.; Sacramento, CA 95822; (916) 424-8772. Owner: Arne Peterson, Kirt Shearer, Craig Long. Manager: Kirt Shearer, Craig Long. Engineers: Kirt Shearer, Craig Long. Dimensions: Room 1: studio 22 x 30, control room 22 x 17. Room 2: studio 14 x 10. Room 3: studio 18 x 7.5. Mixing Consoles: Trident 80B 30 x 24 x 24 (54 channels on remix w/EQ) w/automation, Hill 16 x 4 multimix. Audio Recorders: Sony/MCI JH-24, (2) Fostex B-16 (can be synched to 24-track), Panasonic 3500 R-DAT, Fostex E-2 2-track center stripe SMPTE. Cassette Recorders/Duplicators: (2) JVC TD-V66. Synchronization Systems: Fostex 4030/4035 for JH-24 or B-16. Echo, Reverb & Delay Systems: Lexicon PCM70, Lexicon LXP-1 w/MRC controller, Lexicon LXP-5, (2) Yamaha SPX90, Yamaha REV7, Roland SDE-3000 delay, Alesis XTiC reverb, MXR 01a reverb, Alesis QuadraVerb, Alesis MIDIverb II. Other Outboard Equipment: UREI 1176LN compressor, Aphex Dominator peak limiter, (3) Symetrix 522 compressor/expander, (2) Drawmer DS-201 noise gate, Barcus-Berry 202R phase compensator, Tascam PE40 parametric EQ. Microphones: Telefunken 251 tube (Steven Paul mod), Neumann U87, (4) AKG 414EB/ULS, (4) AKG 451, (2) Sennheiser 421, (5) Shure SM57, (3) E-V PL20, Shure SM58, (2) E-V PL80, (4) Countryman direct box, (2) Boss DI-1 direct box. Monitor Amplifiers: Hafler P-505, (2) Hafler P-225, (2) McIntosh "60" tube, Carver 175. Monitor Speakers: UREI 813A, Yamaha NS-10M (studio version), Auratone 5C cube. Musical Instruments: Baldwin 6'3" grand 1947, Hammond B-3 w/Leslie, Gretsch 6-piece drum set (power Toms), Fender Jazz bass 1962, Fender Rhodes, Mesa/Boogie Mkll 100-watt guitar amp, Marshall 9000 guitar preamp, Mesa/Boogie 4 x 12 cabinet w/E-V drivers, "Amp" 400-watt bass amp, Mesa/Boogie 15" bass cabinet, Korg M-1 synth w/extra PCM cards, Moog Memorymoog Plus, Yamaha DX7 w/5,000 patches in a librarian, Yamaha TX7 module, (2) Oberheim Matrix-1000, E-mu SP-12 turbo sampling drum machine, Alesis HR-16

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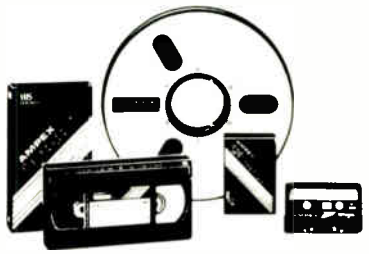

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24+ TRACK

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drum machine. Other MIDI Equipment: (2) Macintosh computers w/Sonus Macface MIDI interface, (2) Performer 2.41 sequencing software for the Mac, Drumfile sample storage for SP-12, Opcode librarian software for DX7 w/6,000 patches, Fostex 4050 autolocator w/SMPTE/MIDI conversion, Atari 1040ST computer.

THE PLANT RECORDING STUDIOS
Sausalito, CA

[24+] **THE PLANT RECORDING STUDIOS;** *also REMOTE RECORDING;* 2200 Bridgeway; Sausalito, CA 94965; (415) 332-6100. Owner: Bob Skye, Arne Frager. Manager: Rose Greenway, Julie Straton. Engineers: Arne Frager, Bob Skye, Devon Bernardoni, Tom Sadzeck, Manny LaCarrubba, Scott Blockland, Curtis Drake (director of technical operations). Dimensions: Room 1: studio 35 x 25, control room 23 x 21. Room 2: studio 32 x 25, control room 23 x 21. Room 3: studio 15 x 17, control room 18 x 28. Room 4: studio 15 x 17, control room 18 x 26. Mixing Consoles: SSL 4064G w/Total Recall, Trident TSM 40 x 24 x 32, (2) DDA AMR-24 36 x 24, Sound Workshop Series 30 32 x 24. Audio Recorders: (2) Otari MTR-100 24-track w/SR Dolby, (2) Otari MTR-90II 24-track, Otari MTR-12 2-track ½", (4) Ampex ATR-102 2-track ¼" and ½", (2) Sony APR-5003 2-track w/center track time code, Studer A80 24-track, (2) Otari MkIII 2-track, Otari 5050 2-track, Tascam ATR-50 4-track. Cassette Recorders/Duplicators: (4) Yamaha KX800, (4) Aiwa F-770, Tascam 122B, Nakamichi Dragon, (4) Nakamichi MR-1. Noise Reduction Equipment: (4) Dolby SR (stereo pairs), Dolby SR 24 channels in Otari MTR-100, Dolby A 24 channels. Synchronization Systems: (5) Adams-Smith Zeta-3 w/remote, Otari EC-101 MTR-90 w/remote. Echo, Reverb & Delay Systems: AMS RMX 16 reverb, Lexicon 480L, (4) Lexicon PCM70, Lexicon PCM6, (5) Klark-Teknik DN-780 reverb, (9) Yamaha SPX90, (2) Alesis QuadraVerb, Sony DRE-2000 reverb, Lexicon 224 reverb, Quantec QRS, (2) Yamaha REV5, (9) Roland and other digital delays. Other Outboard Equipment: (11) Pultec EQP-1A3 and others, Orban 424A and others, (2) Lang PEQ-2 equalizer, (6) Teletronix LA-2 limiter/compressor, Summit Audio tube limiter, Universal Audio limiter, UREI 550 and other equalizers and filters, (10) API 550/550A equalizer, Fairchild 670 stereo limiter, (26) Valley People Kepex/Gain Brain/gate, Drawmer gates, Biamp gates, UREI LA-2 and other limiter/compressors. Microphones: AKG 414C and others, Beyer M88, RCA 77-DX and others, Milab VIP-50, Electro-Voice 635A and others, Neumann KM84 and others, Sennheiser 431 and others, Shure 546 and others, Sony 37P and others, Telefunken ELAM-251/KM56, (2) Wahrenbrock PZM. Monitor Speakers: PRS all TAD component 2-way system, Westlake, Yamaha NS-10 and others, Meyer Sound Labs ADC system. Musical Instruments: Synclavier system w/Mac II control terminal, release "O" software, 16-channel, disk-based system, Kurzweil 250 and many synths, (2) Marshall JCM-800 guitar amp, Hammond B-3 w/Leslie, (2) Yamaha C7 grand. Specialization & Credits: The Plant Studios recently celebrated its 17th birthday. We have recently opened our newest studio featuring Dyaxis and Synclavier Direct-to-Disk recording systems, Macintosh II, with multiformat synchronization and picture-lock for record, video and film producers desiring all the important synthesizers, signal processing and recording systems available. The combination of our staff for support, vintage equipment (we have the largest collection of tube microphones, limiters and Pultec EQs in the Bay Area) and availability of any format from analog 24-track (Studer and Otari) to digital 24-track and/or 32-track (Sony and Mitsubishi) to tapeless disk-based digital, provides our clients with the tools needed to meet their technical and budget needs. Join the ranks of our legendary clients who have come to The Plant to record gold and platinum LPs such as: Fleetwood Mac's *Rumours*, Stevie Wonder's *Songs in the Key of Life*, John Fogerty's *Centerfield*, Huey Lewis' *Sports*, Jefferson Starship's *Knee Deep in the Hoopla* and Aretha Franklin's *Who's Zoomin' Who*.

[24+] **POINT BLANK RECORDING;** 19 Lake Way; Scotts Valley, CA 95066; (408) 438-2331. Owner: Rick Chaisse, Robert Crow. Manager: Rick Chaisse.

[24+] **PRAIRIE SUN RECORDING;** *also REMOTE RECORDING;* PO Box 7084; Cotati, CA 94928; (707) 795-7011; (707) 795-8184. Owner: Mark "Mooka" Rennick. Manager: Jeffrey Sloan. Engineers: Steve Fontano, Dino Alden, Allen Sudduth, Tori Swenson, Moira Marquis, Steve Counter. Dimensions: Room 1: studio 25 x 30, control room 10 x 15. Room 2: studio 8 x 10, control room 22 x 23. Mixing Consoles: Trident Series 80 32 x 24 x 56, Trident TSM 42 x 32 x 80. Audio Recorders: 3M 56 16-track 2", (2) Ampex ATR-102 2-track, Magnavox CD player, Sony DTC-1000ES DAT, Studer MkIV 24-track, Studer MkIII 24-track. Cassette Recorders/Duplicators: (3) Nakamichi/Onkyo. Noise Reduction Equipment: (4) dbx 160XS, dbx 263X de-esser. Echo, Reverb & Delay Systems: (2) 1,000 sq.ft. drum tracking room, AMS RMX 16 digital reverb, AMS DMX 15-80 delay/sam., (2) EMT 140 stereo, Eventide H910 Harmonizer, EXR aural exciter, (2) Lexicon 92/93, (2) Lexicon PCM41 digital delay, Publison exciter, Publison Infernal 90 processor w/21 sec. stereo sam, TC Electronic 2290 sampler/delay, Yamaha REV7, (4) Yamaha SPX90. Other Outboard Equipment: (4) UREI 1176 comp/limiter, (4) Allison Research Kepex gate, Altec tube limiter vintage, Aphex Type C exciter, (2) Drawmer DS-201 stereo, (4) Valley People Dyna-Mite stereo gate, Eventide 949, Lang EQ, Neve comp/lim, Orban stereo para, Publison C120C comp/lim, Publison relief enlarger, Pultec tube EQ vintage, Rane para EQ, Sontec stereo para vin., (2) TC Electronic 1128 RTA real-time analyzer, (2) White Instruments ⅓-octave EQ. Microphones: AKG C-414 and others, DML F-69, Nakamichi CM300, Neumann U87 and others, Neumann KM84, Schoeps stereo pr., Sennheiser D-25 and others, Shure PE-66L and others. Monitor Amplifiers: (3) Crown Micro-Tech 1200, McIntosh 2300, UREI 6500, Yamaha P2100. Monitor Speakers: Big Reds, Genelec 1022A, JBL 4311, MDM 4 Ed Long, (2) UREI 811B/813B, Wharfdale Diamonds, (2) Yamaha NS-10M. Musical Instruments: E-mu Emulator II, Hammond B-3 w/122, Kimball 7' grand piano, Korg M-1 8-voice MIDI keyboard, Pearl MLR Maple Recording series drum, (8) various guitars and bass. Other: Gallien-Krueger and other amps, (2) Macintosh Plus w/Jasmine HD, Sound Designer and Performer. Rates: Please call. Specialization & Credits: Located 50 miles north of S.F. in Cotati off Gravenstein Hwy., off Interstate 101. We have two 24-track recording studios. As well as a 16-track, 2" 3M 56. Our live drum chamber boasts some of the best live drum sound in the Bay Area! Our microphones have been specially modified by the famous "Klaus Hayne," renowned microphone specialist. We have excellent maintenance, video lockup and on-site economical lodging. We pride ourselves on making your budget work from rehearsal to tracking, to mixing and duplication. We have a low-key, high-energy atmosphere that everyone finds creatively inspiring to work in, coupled with excellent engineers and equipment. Many talented musicians and producers are available. Including world class recording artists. Booking-band liaison information contact Bill Gandy. If you have engineering/scheduling questions ask for Jeff Sloan operations manager or Mark "Mooka" Rennick.

[24+] **PROFESSIONAL SOUND AND RECORDING;** *only REMOTE RECORDING;* 3100 W. 71st Ave.; Westminster, CO 80030; (303) 426-7819. Owner: Chris Mickle. Manager: Phil Crumrine. Engineers: Kevin Clock, Phil Crumrine, Mickey Houlihan, Chris Mickle. Mixing Consoles: Soundcraft 1624 24 x 24, Rowland Research Audiophile 8 x 2. Audio Recorders: (2) Stephens 821B 16/24-track, (2) Nakamichi DMP-100 PCM 2-track digital, Revox PR-99 2-track. Cassette Recorders/Duplicators: (12) TEAC V-2RX real-time, Pentagon C-4322 high-speed. Echo, Reverb & Delay Systems: Lexicon PCM60, Yamaha REV7, Yamaha SPX90II, DeltaLab ADM-1024. Other Outboard Equipment: UREI LA-3 compressor, (2) Symetrix 501 comp/limiter, (2) Symetrix 522 gate/limiter, dbx 900 rack w/(2) parametric EQ, (4) compressor, (3) gate, BBE 202R, (2) Dorrough meter. Microphones: (2) AKG C-414EB, (2) AKG C-451 w/shotguns, Schoeps CMTS 301 stereo, (4) Schoeps CMC-3, AKG C-33 stereo, (2) Sennheiser MD-421U, (3) Shure SM81, (2) Countryman Lavalier, (2) pre-Crown PZM. Monitor Amplifiers: Rowland Research model 5, Hafler DH-200, Intersound SP-300. Monitor Speakers: Yamaha NS-10M, B&W DM-100, E-V Sentry 100, JBL Control 1. Video Equipment: Canon VC-20A camera, Panasonic AG-6400 Hi-fi VHS stereo VCR, (3) color monitor. Other: Full transformer isolation, Mogami Neglex internal wiring, air conditioning, low current requirements.

[24+] **"THE RANCH";** 15849 Stump Rd.; Westcreek, CO 80135; (719) 687-9531. Owner: Flash Cadillac. Manager: Duane Scott. Engineers: Jody Stewart, Duane Scott, Sam McFadin, Linn Philips, Dan Berthelot. Dimensions: Room 1: studio 20 x 20, control room 18 x 16. Drum room 10 x 10,

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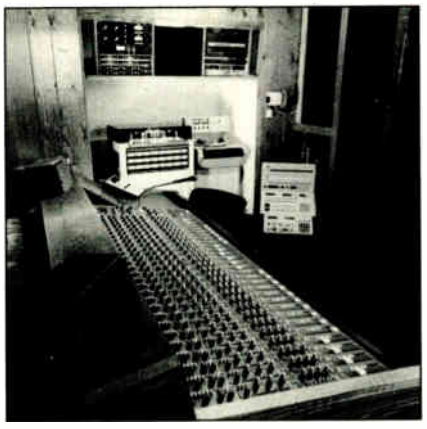
"THE RANCH"
Westcreek, CO

piano room 18 x 10, iso booth 25 x 8. **Mixing Consoles:** Sony MXP-3036 36 x 36, 4-band parametric EQ, 6 cue sends, optional EQ L.C. type MXBK-EQ34, CAF 3000 fader automation system, dbx VCA system. **Audio Recorders:** MCI JH-24 24-track, MCI JH-110C 2-track ½" headstack w/Dolby SR, MCI JH-110B 4/2-track. **Cassette Recorders/Duplicators:** Technics RSB100 cassette recorders. **Noise Reduction Equipment:** Dolby SR. **Synchronization Systems:** Lynx system. **Echo, Reverb & Delay Systems:** Lexicon 224, Yamaha SPX90II, Yamaha REV7, Lexicon PCM70, Alesis MIDIverb II, Harmonizer 910/949, (2) Lexicon PCM42. **Other Outboard Equipment:** Aphex Aural Exciter, dbx 165A over-easy, dbx 160X, dbx noise gate, LA-2A tube limiter, 1176 limiter, rack-mounts, Ibanez multieffects, Hush II, Sontec stereo parametric EQ. **Microphones:** AKG, Neumann, Sennheiser, Shure, Sony, Beyer, AKG tube mics, Neumann tube mics. A complete selection of microphones is available at The Ranch. **Monitor Amplifiers:** Meyer MS1000 amps, Spectra Sonics 701 series. **Monitor Speakers:** Meyer 833 sound monitor system, Yamaha NS-10T, Visonik David 7000, JBL 4333A (studio). **Musical Instruments:** Roland R-5 Octapad 2, Roland Pad-80, Kurzweil K-1000, Kurzweil HX-1000, DDR 30 MIDI, Alesis drum machine, Linn drum machine, acoustic drums (two full sets), 1930 Mason Hamlin acoustic grand piano, church pump organ, Hammond with Leslie, Leslie speaker with all JBL components, Sho-Bud pedal steel, Casio MG510 MIDI guitar, Korg with TX rack, (2) Yamaha DX7, Fender amps, Vox amps, Marshall amps, Gibson acoustic Hummingbird, Gibson acoustic 2-50, Martin acoustic D28, Rickenbacker 6- and 12-string guitars, 1950 Fender Broadcaster 1957 Fender Gretsch, Dean Bel-Air with Floyd Rose tremolo, Mosrite 12-string w/tremolo, Jacksons. **Other MIDI Equipment:** IBM-compatible (AT) system, Roland S-550 digital sampler, J.L. Cooper MIDI patch bay, Patch Master Plus, Sequencer Plus Mark III Version 2.0. **Video Equipment:** Available upon request. **Other:** Flash and the kids have more equipment available than you can believe. **Rates:** $1,000 a day (lodging included). **Specialization & Credits:** Located at the base of Pikes Peak, just 30 minutes from Colorado Springs, 90 minutes from Denver, on 120 secluded acres you will find Flash Cadillac's Ranch and Recording Complex. The Ranch blends computerized high-technology with vintage acoustic and electric instruments. The Ranch caters to all musical styles from down-home bluegrass to dance. The Ranch's vaults contain a volume library of classic rock and roll songs from the '50s through the '80s for your film, video or commercial needs. In-house production is also available from a qualified and talented team. Relax in the beautiful surroundings of The Ranch, fish in the trout ponds, shoot some hoops or just escape into the woods. Lodging is provided in a 2-story, 6-bedroom rustic ranch house, complete with moss-rock fireplace, nuclear kitchen and satellite big-screen TV. The studio and lodging are yours 24 hours a day. No outside interruptions unless you need to get to Denver or the Springs. Meanwhile, back at The Ranch...don't forget about Fun Island and that cold bottle of champagne. Come on out!

[24+] R.O. STUDIOS; 3359 Walnut Ave.; Concord, CA 94519; (415) 676-7237. **Owner:** Henry Brothers. **Manager:** Ralph Heury. **Engineers:** Rick Henry, Richie Corsello, Jimmie Robinson, independents welcome. **Dimensions:** Studio 25 x 16 control room 18 x 16. **Mixing Consoles:** Otari Series 54 40 x 24 fully automated w/moving faders, high-resolution metering w/80 inputs. **Audio Recorders:** Otari MTR-1000 24-track w/self-align and self-bias, Otari MTR-10 2-track ¼" mastering, Toshiba 900 PCM 2-track digital mastering. **Cassette Recorders/Duplicators:** Nakamichi MR-1, Denon DR M-3, Onkyo TA-2058. **Noise Reduction Equipment:** UREI LA-4 limiter, (2) UREI 1176LN peak limiter, UREI 1178 dual peak limiter, (4) Valley People Dyna-Mite 430 limiter, Drawmer DS-201 dual gate, RSP Hush-2000 multiband stereo. **Synchronization Systems:** SMPTE-computer RAN. **Echo, Reverb & Delay Systems:** Lexicon 480L digital reverb/processor w/LARC, (2) Lexicon PCM70 digital reverb/processor w/MRC controller, Lexicon LXP-5, Lexicon LXP-1 digital reverb, (2) TC Electronic TC-2290 dynamic digital delay/effects processor, TC Electronic TC-1210 spatial expander/stereo chorus/flanger. **Other Outboard Equipment:** Pultec EQP-1A equalizer, Studio Technologies stereo mic preamp. **Microphones:** (2) Neumann U87, Neumann U47 vocal mic, (2) AKG 414, (2) AKG 452, (2) Sennheiser 441, (4) Sennheiser 421, Electro-Voice RE20, (5) Shure Beta-57, New mics always coming in, any available upon request. **Monitor Amplifiers:** Hafler DH-500, Hafler P-230, McIntosh 2105. **Monitor Speakers:** Professional Audio Systems bi-amp system T.O.C., (2) Mastering Lab time offset correction/cross-over, (2) Yamaha NS-10 close range, (2) KEF listening speaker. **Musical Instruments:** Linn 9000 drums/sequencer w/SMPTE, Kurzweil 1000-PX sampled keyboard expander, Kurzweil 1000-SX string expander, Kurzweil 1000-HX horn expander, E-mu Proteus/1 sampled keyboard expander, 360 Systems Pro-MIDI sampled bass sound expander, Roland D-50 keyboard, Sequential Circuits VS keyboard, Roland RD-300S digital grand piano, (2) Rocktron Pro-Gap guitar preamp, (2) Kasha Amplifier s Rockmod-2 guitar preamp, Macintosh Plus w/Sound Designer and Performer software, guitars, bass, drums, etc. available upon request. **Other MIDI Equipment:** KMX MIDI 16-channel patch bay. **Rates:** Available upon request. Block rates available. **Specialization & Credits:** Swimming pool, full lodging w/2 bedrooms, kitchen, shower, laundry room, TV and listening room and a relaxed atmosphere. We would like to thank our clients, first and formost Mr. Eddie Money for earning us a platinum and gold album for the *Can't Hold Back* album, a gold album for the *Nothin' to Lose* album, and for staying here at R.O. for two weeks to work on the *Greatest Hits* album. Thanks Eddie, we love you. Work Force for their great debut album on Scotti Bros.—C.B.S. Records, David Terry & Easy Money on independent label, Anna Nine, Johnny Gunn, Solar Wind, and all the rest of our clients—thank you. To the producers: Richie Zito, David Kershenbaum, Tom Dowd, The Henry Brothers, Jimmy Robinson, Chuck Coke, along with our clients we would like to thank you for keeping us busy and for the support in the growth here at R.O. Studios. Happy New Year to all and God bless. Here at R.O. we pride ourselves in keeping a state-of-the-art facility at the edge of technology. Come work with the best for less!



R.O. STUDIOS
Concord, CA

[24+] ROSEWOOD REC. CO.; 2288 W. 300 North; Provo, UT 84601; (801) 375-5764. **Owner:** Rosewood Rec. Inc. **Manager:** Kristen Handle.

[24+] RUSSIAN HILL RECORDING; 1520 Pacific Ave.; San Francisco, CA 94109; (415) 474-4520. **Owner:** Jack Leahy, Bob Shotland. **Manager:** Gail Nord. **Engineers:** Samuel Lehmer, Jack Leahy, Gary Clayton, Jeff Kliment. **Dimensions:** Room 1: studio 20 x 30, control room 15 x 24. Room 2: studio 18 x 28, control room 13 x 22. Room 3: studio 12 x 14. Room 4: studio 12 x 14. **Mixing Consoles:** SSL 4040E 32 x 32, Neotek Series III 28 x 24, Soundcraft 600 24 x 16. **Audio Recorders:** Otari MTR-100A 24-track, Otari MTR-90II 24-track, MCI JH-114 24-track, (4) MCI JH-110 2/4-track, Otari MX-55 center channel SMPTE, (2) Fostex E-16 16-track, Fostex E-2 center channel SMPTE, Otari MX-5050 2-track, (2) Sony R-DAT, (2) Sony F-1. **Cassette Recorders/Duplicators:** (2) Aiwa. **Noise Reduction Equipment:** (2) Dolby SR 24-channel rack, (2) Dolby A 24-channel rack, (6) Dolby SR/A 361. **Synchronization Systems:** (2) Q-Lock 3.10, Fostex 4035, Kelly Quan SC610. **Echo, Reverb & Delay Systems:** (4) Lexicon PCM70, (2) Lexicon PCM60, EMT plate, Lexicon 224, Lexicon Prime Time. **Other Outboard Equipment:** Anything currently available, if not in house, we'll rent it. **Microphones:** Neumann, AKG, RCA, Sony, Sennheiser, Crown, Shure, Countryman, etc. **Monitor Amplifiers:** Hafler, McIntosh, QSI. **Monitor Speakers:** UREI 813A, JBL 4311, Yamaha NS-10, Auratone. **Musical Instruments:** Yamaha C5, Yamaha G2, Emulator II, DX7, various synths and drum machines. **Other MIDI Equipment:** Macintosh driven systems, various MIDI interfaces. **Video Equipment:** Film-to-tape transfer, double system 16 and 35mm to ¾" VHS and Beta, sync audio for video in all studios,

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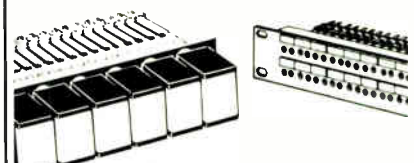

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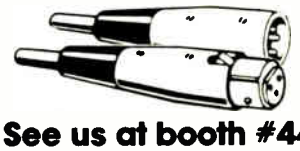

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big screen projector. **Other:** Mixing to all film release formats (mono to 6-track surrounds) on custom SSL console. **Rates:** Brochure on request.

[24+] SAGE ARTS; *also REMOTE RECORDING;* **Littlefield Farm; 14311 Stehr Rd.; Arlington, WA 98223; (206) 691-5203. Owner:** Edmund W. Littlefield, Jr. **Manager:** Warren Argo. **Engineers:** Ed Littlefield, Jr., Ed Brooks, Paul Speer, Matthew Sutton, Danny Wheetman, Neville Pearsal. (Other qualified engineers are welcome.) **Dimensions:** Studio 25 x 35 x 10, control room 12 x 12.5 x 8. **Mixing Consoles:** Sony MXP-3036 w/Sony hard disk automation. **Audio Recorders:** Sony PCM-3324 24-track digital w/Apogee filters, Sony PCM-3202 2-track digital w/Apogee filters, Sony R-DAT 2500 w/Apogee filters, Sony/MCI JH-24-16 16-track, Sony/MCI JH-112 w/½" or ¼" heads, Nagra IV-s, (3) Sony F-1. **Cassette Recorders/Duplicators:** (4) Nakamichi MR-1. **Echo, Reverb & Delay Systems:** Lexicon 480L, Lexicon PCM70, Lexicon 41, Lexicon LXP-1, Ursa Major 8 x 32 MkII, EMT 262. **Other Outboard Equipment:** (2) Summit Audio TPA/200 dual tube preamp, (4) Jensen-Hardy preamp, Mesa/Boogie Quad preamp, Mesa/Boogie Studio preamp, (2) API EQ, (2) Summit Audio EQP/200 tube stereo EQ, (2) Summit Audio TLA/100 tube leveling amp, (2) UREI Teletronix LA-2 limiter, (2) UREI Teletronix LA-3 limiter, (2) Gain Brain limiter, (4) Kepex noise gate, (2) Yamaha DEQ7 digital EQ, Klark-Teknik spectrum analyzer. **Microphones:** (6) Bruel & Kjaer 4003, (2) Bruel & Kjaer 4004, (2) Bruel & Kjaer 4006, (2) Bruel & Kjaer 4007, (2) Bruel & Kjaer 4011, (2) Neumann TLM-170, (2) Schoeps, AKG "the Tube," (4) Countryman Isomax, (4) Sennheiser 421, (2) Sennheiser 441, (2) Beyer M500, RCA 77-DX. **Monitor Amplifiers:** (4) Yamaha PC2002, Yamaha PC2001, UREI. **Monitor Speakers:** Nestorovic, Tannoy, MDM-20, Westlake Audio, Auratone. **Musical Instruments:** Steinway D 9' 1982, Steinway B 7' 1914, Yamaha KX88 MIDI keyboard, Kurzweil K-1000, Emax, SP-1200 drum machine, Oberheim DMX drum machine, Yamaha DX7. **Other MIDI Equipment:** Lexicon LARC, Lexicon MCR. **Video Equipment:** (4) Betamax. **Other:** (2) Macintosh Plus, Apple LaserWriter II printer, (6) Mesa/Boogie speaker cabinet, great collection of cameras and lenses, Leica, Nikon, Hasselblad, Linhof, Deardorff, Leitz, Zeiss, Schneider, Nikkor, Rodenstock, Calumet 3000 w/s electronic flash. **Rates:** Call. **Specialization & Credits:** Sage Arts is located an hour's drive north of Seattle. We specialize in providing a relaxed environment conducive to the production of highest quality recordings. The studio has a warm, living room feel, fine library, stone fireplace and a view of Deer Mountain. We can provide quality photographic services and album cover design. Traditional music is one of our specialties. Our superb Steinways are maintained by Ed McMorrow. Call for more details concerning our unusual collection of fine instruments including Alembic, Martin, Gibson, Matlin, Sierra, Dobro; super guitars by Robert Girdis. Please write or call for more information. Credits include: *First Generation*, Bertram Levy & Peter Ostroushko; *New Melody Stomp*, How's Bayou; *Box Lunch*, Sandy Bradley & The Small Wonder String Band; *Desert Visions*, Paul Speer & David Lanz; *Haunting Melodies*, Marley's Ghost; *Sweet Rural Shade*, Boys of the Lough; *Moose On The Roof*, Norrsken; *Timepieces*, Larry Edelman; *Singing a Glad Noel* Seattle Symphony Chorale; *Cataract* The Walkabouts.

[24+] SANTA CRUZ STUDIOS; *also REMOTE RECORDING;* **1334 Brommer St.; Santa Cruz, CA 95062; (408) 462-9995. Owner:** Stephen Fritch. **Manager:** Lou Lambert.

[24+] SOMA SYNC STUDIOS; 372 Brannan St.; San Francisco, CA 94107; (415) 546-1374. **Owner:** Salvage Prod, Inc. **Manager:** Steve Savage. **Engineers:** Kevin Casey, Larry Oppenheimer, Brian Risner, Karl Derfler. **Dimensions:** Studio 21 x 20, control room 22 x 20. **Mixing Consoles:** SSL 4040 w/G Series computer and electronics. **Audio Recorders:** Otari MTR-90 Series II w/locator, Otari MTR-12 2-track ½", Otari MTR-10 2-track ¼" w/center track time code. **Cassette Recorders/Duplicators:** Nakamichi MR-2, Akai GX912. **Synchronization Systems:** EC101 for MTR-90, Cipher Digital Shadow for JVC CR850, Opcode Time Machine SMPTE and MTC reader/writer. **Echo, Reverb & Delay Systems:** Lexicon 480L digital effects, Yamaha REV5, Lexicon 200 reverb, Lexicon PCM70, (2) Lexicon PCM42. **Other Outboard Equipment:** Eventide H3000 Ultra-Harmonizer, (2) Neve 2254 compressor, Aphex Compellor, Aphex 612 stereo gates, Drawmer DS-201 stereo gate, (2) UREI LA-4 compressor, Pultec EQH-2 tube EQ, (2) EAR 882Q tube EQ, EAR MP2 stereo mic pre, EAR 660 tube compressor. **Microphones:** Neumann M49 tube, (2) Neumann U87, (2) AKG 414, (2) AKG 451, (2) Schoeps M221 tube, (6) Sennheiser 421, Electro-Voice RE20, (2) Beyer M69, (2) Shure SM57, (2) Sennheiser 406, (3) Nakamichi CM100. **Monitor Amplifiers:** Crown PSA-2, (2) Crown PS-400, Crown PS-200. **Monitor Speakers:** PAS Time Offset Correction (TOC) w/Mastering Room crossovers, Yamaha NS-10M studio, JBL 4411, Auratone. **Musical Instruments:** Yamaha C3 baby grand w/fiber optic MIDI interface, Roland D-50, Kurzweil K-1000, Akai S900 sampler w/trigger inputs. **Other MIDI Equipment:** Macintosh SE computer, Opcode Studio Plus Two MIDI interface, Performer and other sequencing and librarian software, IBM 640 XT clone w/color monitor, 360 Systems MIDI patcher. **Video Equipment:** JVC CR850 ¾" deck, Kelly Quan audio editing system, JVC 26" monitor, Fostex 4010 time code generator, Sigma BSG 100A house sync reference. **Other:** Sony CD player, Denon turntable. **Rates:** Please call for rates. **Specialization & Credits:** Soma Sync Studios is a newly constructed recording facility designed to satisfy the needs of the contemporary recording process. Construction features a spacious control room and the finest in modern audio design concepts including variable studio acoustics. Soma Sync is a fully equipped 24-track studio offering the latest state-of-the-art technology including the new Solid State Logic console with G Series computer and electronics. The studio is also equipped for complete video and film post-production work. Located in San Francisco's colorful South of Market area, Soma Sync is conveniently within walking distance of numerous restaurants, cafes and nightclubs, and the studio contains a comfortable lounge area. Package rates including living quarters are available for out-of-towners.

SOMA SYNC STUDIOS
San Francisco, CA

[24+] SOUND IMPRESSIONS; *also REMOTE RECORDING;* **4704 SE View Acres; Milwaukie, OR 97267; (503) 659-5953. Owner:** Dan Decker. **Manager:** Bob Stark. **Engineers:** Bob Stark, Nick Kellog, Kelly Berry, Tony Lash. **Dimensions:** Studio 22 x 24, control room 18 x 20. **Mixing Consoles:** Amek Matchless 26 x 8 x 2. **Audio Recorders:** Otari MX-80 32-track (24-track heads available), Tascam 52, Panasonic SV-3500 professional DAT. **Cassette Recorders/Duplicators:** Nakamichi MR-1. **Noise Reduction Equipment:** Dolby SR (2 channels). **Echo, Reverb & Delay Systems:** Lexicon 480L, (2) Lexicon PCM70, Lexicon PCM41, (2) Yamaha REV7, Ibanez SDR-1000, Eventide H3000 Ultra-Harmonizer, DeltaLab 1024, DeltaLab 64, Roland SDE-3000. **Other Outboard Equipment:** (2) Symetrix CL-501, (2) Symetrix CL-100, Symetrix CL-150, (2) Symetrix 544 quad gate, Audio Logic quad gate, Aphex Compellor, Aphex Type B Aural Exciter, Aphex II Studio Aural Exciter, Orban 672A parametric equalizer, Orban 622B parametric equalizer, UREI 527A ⅓-octave equalizer, NIH PE-30 parametric equalizer. **Microphones:** AKG "The Tube," (2) AKG 414, (2) AKG D-12, AKG 460, (2) AKG 451, (2) AKG 330, AKG 320, (2) Tascam PE250, E-V RE20, (7) Shure SM57, (7) Audio-Technica ATM-63, (2) Neumann KM56. **Monitor Amplifiers:** Hafler, (2) Biamp TC-120, (2) Crown DC-75. **Monitor Speakers:** UREI 813, Yamaha NS-10M, Auratone. **Musical Instruments:** Yamaha C3 grand piano, Yamaha DX7, Korg DW-8000, Oberheim Matrix 6R, Sequential Circuits Prophet 5, Sequential Circuits Drumtrax, Fender J-bass, Fender P-bass, Fender Telecaster, Gibson J-40 acoustic. **Other MIDI Equipment:** Yamaha YME8, ACER 386 PC w/sequencing software. **Other:** Roland Comp4 editor automation (30 ch). **Rates:** Block rates available. Please call for an appointment.

[24+] SOUND SET RECORDING; 2125 S. Valentia St., #B; Denver, CO 80231; (303) 671-0572. **Owner:** Anette Yadgar, Lior Zelmanowicz. **Manager:** Lior Zelmanowicz. **Engineers:** Lior Zelmanowicz, independent producers/engineers, GJM Productions. **Dimensions:** Room 1: studio 21 x 18, control room 18 x 15. Room 2: studio 15 x 12. Room 3: studio 19 x 16. **Mixing Consoles:** AHB CMC-32 32 x 24 (56 inputs available in mix mode, in-line semi-automated, all routing and muting controlled via built-in computer [CARS]). **Audio Recorders:** Otari MTR-90 24-track 2", Fostex E-16 16-track special order 30 ips w/4050 SMPTE-to-MIDI autolocator, Sony PCM-501 2-track digital, Fostex E-22 2-track ½" 15/30 ips, Fostex A-20 2-track ¼". **Cassette Recorders/Duplicators:** (4) Telex CD4MS 4-track high-speed/real-time duplicator. **Noise Reduction Equipment:** (16) Dolby C. **Synchronization Systems:** (2) Fostex 4030, Fostex 8710, Fostex 4035 multisynchronizer remote controller. **Echo, Reverb & Delay Systems:** Lexicon 224 reverb, (2) Lexicon PCM60 Ver. 2.0, Yamaha REV7, Yamaha SPX90II, Roland DEP-5, Roland SDE-2500 delay, Korg SDD-2000 sampling digital delay, Korg DVP-1 vocoder, harmonizer, pitch shifter, TC Electronic 2290 digital delay, Eventide H3000 Ultra-Harmonizer. **Other Outboard Equipment:** Valley People 440 dynamic sibilance processor/compressor, Yamaha G2031 stereo 31-band EQ, dbx 165A over-easy compressor, dbx 166 stereo compressor, (2) dbx 263X de-esser, Valley People Gatex, Audio Logic MT-44 quad noise gate, Furman PQ-6B stereo parametric EQ, Rane SP-15 parametric EQ, Aphex Aural Exciter Type B (stereo), custom tube preamp, Loft Model 602, Blairtech the Tube Channel preamp and EQ. **Microphones:** Neumann KM56 tube, AKG "Tube," AKG C-414EB P-48, AKG C-460CK1 ULS, AKG D-224EB, D-12E, D-330BT, D-112, D-170ME, (3) Sennheiser U5-421, Fostex M-11RP printed ribbon, M-80RP, M-77RP, Beyer Dynamic M500, Shure SM57, Crown PZM. **Monitor Amplifiers:** (2) Micro Audio EQ pod 1.1B computerized room EQ. **Monitor Speakers:** (2) UREI 811B Time Align, (2) Fostex 6301-B. **Musical Instruments:** Korg DSS-1 w/12,000 sounds, Yamaha TX802, Yamaha RX5, Roland D-20, Roland MKS-30, Korg EX-800, Alesis HR-16B, Korg DDM-220, Roland MSQ-100 sequencer, Korg DVP-1 Human-wave synth, Korg KMS-30 synchronizer. **Other MIDI Equipment:** IBM 286 system 20MB w/MQX MIDI interface, Cakewalk Pro 250-track sequencer, Commodore 64 w/disk drive and JMS interface, JMS 12-track sequencer, Yamaha MDF1, Yamaha YMM2, Roland PAD-8 Octapad. **Video Equipment:** Sony VO-5600 ¾" for post-production, NEC monitor. **Other:** SFX library on CD, Sony CD player. **Rates:** Call for brochure.

[24+] SOUNDTEK STUDIOS; 85 S. 2nd St.; Campbell, CA 95008; (408) 370-3313. **Owner:** Robert Berry. **Manager:** Peter Roberts.

[24+] SOUNDWARE & VIDEO PROD.; *also REMOTE RECORDING;* **1211 Park Ave., Ste. 102; San Jose, CA 95126; (408) 287-8066. Owner:** Robert M. Lopes. **Manager:** Brian Godula.

SPECTRUM SOUND STUDIOS
Portland, OR

[24+] SPECTRUM SOUND STUDIOS; *also REMOTE RECORDING;* **1634 SW Alder St.; Portland, OR 97205; (503) 248-0248. Owner:** Michael Carter, Lindsey McGill. **Manager:** Michael Carter. **Engineers:** Mike Moore, Michael Carter, Chris Douthitt, Rob Perkins, Jim Baer, Jim Roger—chief engineer. **Dimensions:** Room 1: studio 38 x 30, control room 25 x 23. Room 2: studio 27 x 19, control room 21 x 22. Room 3: studio 17 x 16, control room 20.5 x 22. Room 4: studio 11.5 x 17, control room 20.5 x 22. Room 5: control room 22 x 15. **Mixing Consoles:** SSL 6056E-TR 40 x 32, MCI JH-536 36 x 32 automated, (3) Spectrum custom 16 x 8. **Audio Recorders:** (2) Otari MTR-90II 24-track, Mitsubishi X-86a 2-track w/Apogee filters, Ampex MM-1100 16-track, Ampex ATR-102 3-track CTTC, (18) Scully 280B 4/2/1-track. **Cassette Recorders/Duplicators:** (3) Nakamichi LX-5, (4) Technics RSB-605, (2) Tascam 133AV, (12) Tascam 124AV. **Noise Reduction Equipment:** (2) Dolby M24h, Dolby 361 w/2 SR and 4 A, dbx 187 etc. **Synchronization Systems:** Audio Kinetics Q.Lock 3.10, TimeLine Lynx. **Echo, Reverb & Delay Systems:** Lexicon 224XL, (2) Lexicon PCM70, Dynacord DRP-20, Roland SRV-2000, (4) Yamaha REV7, (2) Yamaha SPX90II, EMT 240S plate, (2) Alesis MIDIverb II, TC 2290 sampler/processor, Eventide H3000 Ultra-Harmonizer, Lexicon Prime Time II delay, Lexicon PCM42 delay, Roland SDE-3000 delay, Eventide H910 Harmonizer. **Other Outboard Equipment:** Summit EQP-200 2 ch. tube EQ, (2) Summit TLA-100A tube limiter, (4) UREI 1176 limiter, (5) UREI LA-3 limiter, (5) dbx 160/162/166 limiter, Fairchild 660 tube limiter, (2) Barcus-Berry 802 Exciter, (2) Aphex 610 gate/expander, Eventide flanger, UREI Little Dipper, UREI 527A graphic EQ, (3) ADR Vocal Stressor, Ursa Major SST Space Station. **Microphones:** Neumann TLM-170, Neumann U87, Neumann U47 FET, Neumann KMR81i, AKG C-414, AKG C-451, Sennheiser MD-421, Shure SM57, RCA 77-DX, misc. ribbon, dynamic lavs. **Monitor Amplifiers:** (2) UREI 6500A, (6) Yamaha PC2002, (4) Yamaha PC1002. **Monitor Speakers:** UREI 813C (A & B studios), UREI 811C (C & D

World Radio History

studios), Tannoy NFM-8, Yamaha NS-10, B&W 550, Auratone 5C. Musical Instruments: Yamaha 7' grand piano, Akai X-7000 sampling keyboard. Other MIDI Equipment: ADAT digital audio workstation. Video Equipment: Sony BVH-1100a 1" w/Dolby NR. Other: Nagra IV STC, 4.21. Rates: Weekly lockout, day rates available. Prices on request. Specialization & Credits: Designed by Russ Berger of Joiner-Rose Group. Ultra-quiet studios with 18' ceilings allow great digital acoustic recordings. Five-room complex, two years old. Large control rooms have excellent imaging. Central tech room for SSL computers, power supplies, power amps, grounding. Video, audio and MIDI interfaces. In the very livable city of Portland, Oregon.

[24+] STAR TRACK RECORDING; 19351 23rd NW; Seattle, WA 98177; (206) 542-1041. Owner: Bob Long, Richard Eaks. Manager: Richard Eaks.

[24+] STARLIGHT SOUND; 617 S. 13th St.; Richmond, CA 94804; (415) 233-7140. Owner: Bill Thompson, Neil Young. Manager: Kay Arbuckle. Engineers: Bill Thompson, Steve Counter, Damin Harris, Jamie Bridges. Dimensions: Studio 35 x 25, control room 25 x 16. Mixing Consoles: Harrison 40 x 32 automated. Audio Recorders: Studer A800 24-track, Ampex ATR-102 2-track, Sony F-1 2-track digital. Cassette Recorders/Duplicators: (2) Nakamichi MR-1. Noise Reduction Equipment: (2) Dolby SR (2-track only). Synchronization Systems: J.L. Cooper PPS-1. Echo, Reverb & Delay Systems: 224X digital reverb, Lexicon PCM70, Lexicon PCM60, Lexicon LXP-1, Roland DEP-5, SPX90, MXR flanger/doubler, Eventide 910 Harmonizer, Alesis MIDIverb, Alesis MIDI FX, (3) Effectron DDL, Lexicon PCM42 DDL, Roland SDE-1000 DDL, (2) EXR exciter. Other Outboard Equipment: (2) Valley People Dyna-Mite gate/comp, (2) Drawmer gate, (5) Symetrix gate, (3) dbx 160 comp, UREI 1176 comp, (2) UREI LA-4 comp, (2) Audioarts parametric EQ, (2) Biamp graphic EQ. Microphones: Neumann U47 tube, (2) Neumann KM250 tube, Neumann KM69 tube, (2) Neumann KM253 tube, Neumann U87, (2) AKG 414, (4) Sennheiser 421, (5) Shure SM87, Sennheiser 441, (2) Crown PZM, (4) Beyer 100 ribbon, RCA 77 ribbon. Monitor Amplifiers: Bryston, (2) Crown, Hafler. Monitor Speakers: UREI 813 Time Align, Yamaha NS-10, Auratone. Musical Instruments: Rogers drum kit, (8) various guitar amp, Yamaha C7 grand piano, Yamaha DX7, Oberheim M-6, Prophet-2000 sampling keyboard, Akai 612 sampling keyboard, Kawai K-1 modular synth, Yamaha DX100, Linn drum, Roland 505 drum machine. Other MIDI Equipment: Atari ST 1040 computer, Steinberg Pro-24 Ver. 3.0 software, Akai ME35T audio-MIDI trigger, Garfield Mini-Doc.

[24+] STARSOUND AUDIO, INC.; 2679 Oddie Blvd.; Reno, NV 89512; (702) 331-1010. Owner: Scott Bergstrom. Manager: Lee Taggart. Engineers: Mark Ishikawa, Scott Bergstrom, Dave Jensen, Lee Taggart. Dimensions: Studio 35 x 30, (3) iso rooms 8 x 14, 7 x 10, 8 x 16; control room 15 x 25. Mixing Consoles: Amek Angela 28 x 24, CPE-800 RSS mixdown computer. Audio Recorders: Studer A80 24-track, Otari MkIII-2 2-track, Tascam 52 2-track. Cassette Recorders/Duplicators: Yamaha C200. Echo, Reverb & Delay Systems: Lexicon PCM70, Lexicon PCM60, Yamaha REV7, Yamaha REV5, (2) Yamaha SPX90, Roland SRV-2000, Roland SDE-3000, (2) DEP-5 Brick Audio 3300 plate, DeltaLab CPE-1700. Other Outboard Equipment: Aphex II broadcast, Aphex C (mod), UREI LA-4, dbx 166, Valley People Dyna-Mite, Symetrix 522, Orban 674A parametric, Roland Vocoder, Dimension D, dbx 503. Microphones: AKG 414EB, AKG 460, AKG 451, AKG 330, Sennheiser 441, Sennheiser 421, Sennheiser 431, Sennheiser 409, Sennheiser 211, E-V PL20, E-V RE20, E-V RE15, E-V RE18, Shure SM56, Shure SM57, Shure SM81, Shure SM85, Sony C-37, PZM, Countryman 101. Monitor Amplifiers: Crown PSA-2, Crown DC-300, Yamaha PC2002, Crown PS-400. Monitor Speakers: JBL 4333, JBL 4435, JBL 4425, JBL 4411, Auratone T6, Auratone 5C, Yamaha NS-10. Musical Instruments: Large set Fibes drums, Simmons, Kawai 7'4" grand, Prophet-2000, Prophet-VS, E-mu SP-12, Yamaha DX7, Yamaha DX21, Akai S900, Ensoniq Mirage, Roland JX-10. Video Equipment: (2) JVC 8250 ¾" recorder, (2) JVC 5550 ¾" players, JVC 86-U editor, Sony SEG-2000 6-camera switcher/special effects generator, Sony DCX-M-3A camera, Sony CCD-3000 chip camera. Rates: $45-$65/hr. depending on project. Specialization & Credits: Over 2,000 instruments available in Starsound Audio/Bizarre guitar complex. TEF® analysis available to clients. Studio in Reno, 45 minutes from Lake Tahoe, endless recreation potential. Also provide concert sound, lighting and staging for any Reno/Tahoe venues. State-of-the-art production facility with a high-tech, low-key staff. Complete album projects, tracking only, demos; the key is the quality of service for the small cost.

[24+] STAUNTON STUDIOS, INC.; *also REMOTE RECORDING*; 5450 Coleman Creek Rd.; Medford, OR 97501; (503) 535-3972. Owner: Web and Karen Staunton. Manager: Web Staunton.

[24+] STUDIO C/CUSTOM RECORDING; *only REMOTE RECORDING*; 2220 Broadridge Way; Stockton, CA 95209; (209) 477-5130. Owner: Dr. Thomas T. Chen, M.D. Manager: Bryan Caldwell. Engineers: John Edman, Dr. Thomas T. Chen, Bryan Caldwell, Tony Hodson. Dimensions: Room 1: studio 32 x 30, control room 12 x 16. Room 2: studio 9 x 12. Mixing Consoles: Sound Workshop Model 54 64 x 24 x 4 w/DiskMix automation, Interface Electronics 8 x 4. Audio Recorders: Otari MX-80 24-track, Otari MTR-10 2-track, Otari MTR-12 2-track Cassette Recorders/Duplicators: (2) Nakamichi MR-1, Denon DR-M12HX, Otari high-speed duplicator. Noise Reduction Equipment: Dolby SR, Hush IIC. Synchronization Systems: (2) TimeLine Lynx code module. Echo, Reverb & Delay Systems: Quantec QRS room simulator, Lexicon 224, Yamaha REV7, Yamaha SPX90II, (2) Yamaha SPX90. Other Outboard Equipment: Aphex Compellor, UREI 1178 limiter, Eventide Harmonizer, Valley People Kepex II, Valley People Gain Brain II, Valley People Maxi.Q. Microphones: Shure, AKG, Neumann Electro-Voice, Sennheiser, Crown PZM. Monitor Amplifiers: Spectra Sonics 701, Crown D-60. Monitor Speakers: Genelec 1022A, Yamaha NS-10, MDM-4, Rogers LS3/5A, JBL 4430 Musical Instruments: New England Digital Synclavier II system w/polyphonic sampling, music printing, SMPTE, MIDI, IBM interface, video sync, etc., Steinway 6'8" grand piano, Hammond B-3 organ, Alembic bass w/graphite neck, Oberheim DMX drum machine, Roland D-550, Roland MKS-20, Yamaha TX802, Roland MKS-70, assorted bass and guitar amps. Other MIDI Equipment: Akai MIDI trigger. Video Equipment: JVC 8250 ¾" VTR. Rates: Available upon request.

STUDIO D RECORDING INC.
Sausalito, CA

[24+] STUDIO D RECORDING INC.; 425 Coloma St.; Sausalito, CA 94965; (415) 332-6289. Owner: Dan Godfrey, Joel Jaffe, Evie Thompson. Manager: Joel Jaffe. Engineers: Dr. Richie Moore, Joel Jaffe, Rick Sanchez, Bob Hodas, Robert Missbach, Karl Derfler, Watts Vereecke, Scott Tatter. Dimensions: Studio 29 x 36 x 20 ceilings and tunable acoustic panels and (3) iso booth 14 x 16 x 8, control room 20 x 20 w/compression ceiling. Mixing Consoles: Trident TSM 40 x 32 x 32. Audio Recorders: Studer A800 MkII 24-track, Ampex ATR-102 2-track, Sony R-DAT. Cassette Recorders/Duplicators: Aiwa F770, Aiwa F660, Yamaha KX800. Echo, Reverb & Delay Systems: AMS 16 digital reverb, Roland SDE-3000 digital delay, Bel BD80 delay/sampler, Yamaha SPX90II, Yamaha SPX90, Eventide H910 Harmonizer/delay. Other Outboard Equipment: (2) Pultec EQP-1 valve EQ, EAR B22Q valve program EQ, Pultec MEQ-5, (2) Lang PEQ-2, UREI 545 parametric EQ, Valley People International de-esser/⅓-octave EQ, (2) Teletronix LA-2A, (2) UREI 1176LN, (2) UREI LA-4A Model 165 compressor, Drawmer dual gate, (8) Aphex 612 expander gate, (4) Aphex symetric gate, Sony CD player. Microphones: Neumann M49b valve, Neumann U47 valve, (2) Neumann U67 valve, (2) Neumann U87 FET, (2) Neumann U47 FET, Neumann KM84 FET, (4) AKG C-451EB w/pads, (4) AKG C-414EB, (2) AKG C-451EB w/pads, (2) AKG C-452EB w/pads, AKG D-12E, (2) AKG D-200E, (6) Sennheiser MD-421U, Sennheiser MD-441U, E-V 666, E-V RE20, (6) Shure SM57, (4) PZM, (2) Beyer 201N, Sony ECM-50P. Monitor Amplifiers: Hafler 500, (5) Hafler 220, Custom Z-link modified. Monitor Speakers: Hidley custom, Yamaha NS-10M, Auratone. Musical Instruments: Yamaha C7-E MIDI grand, Hammond B-3 organ w/Leslie. Video Equipment: Studio is located next to major soundstage w/video tie to control room, TimeLine Lynx modules and all VTR formats available upon application. Other: In-house rental items are: LinnDrum LMII, Yamaha DX7, Roland Super Jupiter w/remote programmer, MKS-80, Roland Jazz Chorus amp, Marshall JCM 800, Gallien-Krueger studio amp. Rates: Please call for rates. Specialization & Credits: Studio D Recording has become known as the Bay Area's foremost tracking facility. With tunable acoustics, 20-foot high ceilings and three big iso booths, our live ambient room sounds are unbeatable. All equipment is maintained in optimum operating condition by chief engineer Dr. Richie Moore. We also offer clients full kitchen and bath facilities, and a comfortable lounge for that home-away-from-home environment with comfort and privacy. Studio D has had the pleasure of working with such fine clients as Huey Lewis & the News (*Fore, Small World*), Bourgeois Tagg, Bruce Hornsby, Starship, KBC Band, Will Ackerman and Windham Hill, Earth, Wind and Fire, Anita Pointer, Four Tops, Pebbles, Van Morrison, Faith No More, The Looters, Jet Red, Gene Loves Jezebel, Leon Russell, Dan Hicks, Maria Mauldaur, J.J. Cale and Hiroshi Kamayatsoo. Thanks to all.

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World Radio History

24+ TRACK

[24+] STUDIO 69; *also REMOTE RECORDING*; 69 B S. 13th St.; San Jose, CA 95112; (408) 995-6969. **Owner:** Nacho Melgoza. **Manager:** Nacho Melgoza.

[24+] SUN VALLEY AUDIO; 808 Warm Springs Rd.; Ketchum, ID 83353; (208) 726-3509. **Owner:** Amos Galpin. **Manager:** Randy Young. **Engineers:** Randy Young. **Dimensions:** Room 1: studio 24 x 24, control room 16 x 30. Room 2: studio 10 x 20. **Mixing Consoles:** ICC 9000. **Audio Recorders:** Stephens 24, Ampex ATR-102, Ampex ATR-104, Panasonic DAT 3500, Panasonic DAT 250, Otari. **Cassette Recorders/Duplicators:** Akai GX912, (5) Akai GX7. **Synchronization Systems:** Adams-Smith Zeta-3. **Echo, Reverb & Delay Systems:** Lexicon PCM60, Lexicon PCM70, Lexicon LXP-1, Lexicon LXP-5, TC Electronic 2290, Eventide 949, Eventide flanger/phaser, Echotron, Aphex 303, (4) Valley Kepex II. **Microphones:** AKG Tube, (2) AKG 414, (4) AKG 460B, Shure SM98, (4) Shure 849, (2) Sennheiser MD421. **Monitor Amplifiers:** (2) Hafler 225, (2) PS Audio. **Monitor Speakers:** JBL/TAD custom, Yamaha NS-10M, Auratone. **Musical Instruments:** Akai MPC60, Akai S950, Yamaha DX7II, Yamaha 9' grand piano, North drums. **Rates:** $60 per hour.

[24+] SURREAL STUDIOS; 355 W. Potter Dr.; Anchorage, AK 99518; (907) 562-3754. **Owner:** Kurt Riemann. **Manager:** Kathie Libbey.

[24+] SWINGSTREET STUDIOS; *only REMOTE RECORDING*; 620 Bercut Dr.; Sacramento, CA 95814; (916) 446-3088. **Owner:** Ashley, Lauzon, Sillas. **Manager:** Larry Lauzon. **Engineers:** Martin Ashley, Darrell Joe, Larry Lauzon, Phil Sillas. **Dimensions:** Studio 34 x 37, control room 21 x 24. **Mixing Consoles:** Quad Eight Pacifica 28 x 24. **Audio Recorders:** MCI JH-16 24-track, (2) MCI JH-110B 2-track. **Cassette Recorders/Duplicators:** (2) Technics M-85. **Noise Reduction Equipment:** dbx 28 channels, Hush IIC 2 channels. **Echo, Reverb & Delay Systems:** Lexicon 224 digital reverb, Lexicon PCM70 digital reverb, Lexicon 97 Super Prime Time, Yamaha SPX90 digital effects, Yamaha D1500 digital delay, AKG BX-20E reverb, (2) Marshall Time Modulator. **Other Outboard Equipment:** (2) UREI 1176LN limiter, (2) Teletronix LA-2A limiter, (2) Allison Gain Brain limiter, (2) Quad Eight CL-22 companders, (3) ADR/Scamp expander/gate, ADR/Scamp auto-pan, (2) Gregg Labs 2530 tri-band compressor, (2) Pultec PEQ-1S equalizer, Pultec HLF-3C filter, Aphex Aural Exciter. **Microphones:** (2) Neumann U47 FET, Neumann U67, (4) Neumann U87, Neumann KM84, (3) AKG C-414EB, (2) AKG C-451, AKG C-34, (3) Crown PZM-30, (3) Electro-Voice RE20, Electro-Voice 654A, Electro-Voice 666, Electro-Voice 667A, Sennheiser 409, (5) Sennheiser MD-421, (2) Shure SM57, (2) Shure SM58, (2) Shure SM81, Shure 300, RCA 77-DX, Countryman EM-101, Altec M-30. **Monitor Amplifiers:** UREI 6500, Yamaha P2150, McIntosh 2100, McIntosh MC30. **Monitor Speakers:** UREI 813A Time Align, JBL 4333, JBL 4313, JBL 4311, Tannoy PBM 6.5, Auratone 5C. **Musical Instruments:** Yamaha C3 grand piano, Yamaha DX7 synthesizer, E-mu Emax SE sampling keyboard, E-mu Proteus sample player/synthesizer, Casio CZ-1000 synthesizer, Roland R-8 drum machine, Alesis HR-16 drum machine, various percussion instruments, total instrument rental available. **Other MIDI Equipment:** Alesis MMT-8 sequencer, Korg KMP-8. **Video Equipment:** Sony VO-1800 ¾" U-matic VCR, Kenwood KV-917HF VHS Hi-fi VCR. **Other:** Denon DCE-800 CD player, Technics SL-1200 turntable.

[24+] TARPAN STUDIOS; 1925-G Francisco Blvd. E.; San Rafael, CA 94901; (415) 485-1999. **Owner:** Narada Michael Walden. **Manager:** Janice Lee. **Engineers:** David Frazer, Dana Jon Chappelle, Matt Rohr, Marc Reyburn, Doc Shaffer (systems engineer). **Dimensions:** Studio 25 x 35, control room 19 x 18. **Mixing Consoles:** Solid State Logic 400G 50 x 32 x 50 w/Total Recall. **Audio Recorders:** Studer A80VU MkIV 24-track, MCI JH-24 16/24-track, (2) Ampex ATR-102 2-track w/SSI amp (½" and ¼"), (2) Sony PCM-2500 A-DAT. **Cassette Recorders/Duplicators:** (2) Technics RS-B100, (2) Technics RS-B50, Aiwa ADWX909. **Synchronization Systems:** Audio Kinetics Q.Lock 3.1, Roland SBX-80 sync box. **Echo, Reverb & Delay Systems:** (2) AMS RMX 16 reverb, AMS 15-80S digital delay, Sony MU-R201, (2) Yamaha SPX90II, Lexicon Prime Time, Eventide 949 Harmonizer, Ecoplate I, DeltaLab DL-4 w/memory module, Marshall time modulator, ADA SD-1, anything upon request. **Other Outboard Equipment:** (2) Focusrite 110 module, NTP compressor, BBE 802, dbx 120X-DS, Aphex Compellor, (2) Drawmer gate, (2) Valley People Dyna-Gate, Orban de-esser, Teletronix LA-2A, (4) UREI LA-4 compressor/limiter, Symetrix, (4) Allison Research Kepex and Gain Brain, anything available upon request. **Microphones:** Neumann, AKG, Sennheiser, Beyer, Shure, PZM. **Monitor Amplifiers:** Crown DO-2000 w/Delta Omega module, BGW 750, Crown D-150 Series II, Crown PS-400, Crown Micro-Tech 1000. **Monitor Speakers:** UREI 813B, Yamaha NS-10MS, Auratone, UREI 811. **Musical Instruments:** Fairlight CMI Series III w/custom library, Roland D-50, Korg M1, Roland

TARPAN STUDIOS
San Rafael, CA

R-8 drum machine, Roland MSQ-700, Linn drum machine, Alesis HR-16 and 16B drum machine. **Other MIDI Equipment:** Kahler Human Clock. **Video Equipment:** Mitsubishi 35" color monitor w/RGB, NEC DX-2000U VHS player. **Other:** Sony CDP-310 and CDP-550 CD players, Denon DP-30LII turntable w/Shure V15 cartridge. **Rates:** Please call for rates. **Specialization & Credits:** Credits: Narada, Whitney Houston, Aretha Franklin, Eddie Murphy, Barbra Streisand, Quincy Jones, Regina Belle, D'Atra Hicks, Gladys Knight, Four Tops, Mick Jagger, Patti LaBelle, Clarence Clemmons, June Pointer, Mariah Carey, Natalie Cole, Freddie Jackson, Pia Zadora.

TELEMATION
Seattle, WA

[24+] TELEMATION; *also REMOTE RECORDING*; 1200 Stewart St.; Seattle, WA 98101; (206) 623-5934. **Owner:** HSN Communications. **Manager:** Kurt Horn. **Engineers:** Gordon R. Glascock. **Dimensions:** Room 1: studio 28 x 38, control room 18 x 16. Room 2: studio 9 x 13, control room 15 x 13. **Mixing Consoles:** Lexicon Opus digital audio workstation, Neve 5116 24 x 24 x 4, (3) Neve 5432 8 x 2, Audio Developments, Shure. **Audio Recorders:** Studer A800 MkII 24/ 16-track 2" multitrack, Nagra T ¼" center channel time code, MCI JH-110 ¼" ½-track, ½" 4-track, (2) Ampex ATR-800 ¼" ½-track, ½" 4-track, (4) Ampex high-speed ¼" duplicator, Magna-Tech 35mm/16mm recorder. **Cassette Recorders/Duplicators:** (2) Nakamichi MR-1, (9) 3M high-speed duplicator. **Noise Reduction Equipment:** (2) Dynafex single-ended. **Synchronization Systems:** Q.Lock 310 w/ADR. **Echo, Reverb & Delay Systems:** Lexicon 480L w/2 LARC controllers, EMT 190 plate reverb, Eventide H3000 Ultra-Harmonizer, Yamaha SPX90, Ursa Major Space Station. **Other Outboard Equipment:** (4) Neve compressor/limiter, Audio & Design vocal stresser, BBE 802, Orban 622B parametric EQ, Orban de-esser, (6) UREI graphic EQ, (6) UREI LA-4A, (3) time code generator, Technics turntable, Denon CD player. **Microphones:** (2) Neumann U87, (2) Neumann KM84, (2) AKG 414EB, (2) RCA 77-D reconditioned, (2) Crown PZM, E-V RE20, Sennheiser 816, Sennheiser 416, Sennheiser K2U, (4) Tram lavalier, (2) Sony ECM-50 lavalier. **Monitor Amplifiers:** BGW, Hafler. **Monitor Speakers:** Tannoy, UREI 809, Altec 604E, Yamaha NS-10M, Auratone 5C. **Musical Instruments:** Yamaha C7 grand piano, most instruments, synthesizers, sequencers and samples available. **Other MIDI Equipment:** Available upon request. **Video Equipment:** (2) 2CMX 3400A interformat edit bay, (2) Betacam recorder, (2) Beta SP recorder, (9) 1" recorder, (3) D-2 recorder, (2) Abekas A-72 character generator, ADQ, Bosch FDL60B Telecine, DiVinci color correction, 38 x 60 x 16 stage w/Betacam 7 Beta SP capa, Artstar 3-D graphic and paint system, Nagra T field tape resolution to videotape, full videotape duplication available. **Rates:** Call for quote. Special night rates available. **Specialization & Credits:** Telemation Productions offers complete production services from concept to distribution, all under one roof. Telemation also has the latest in digital audio production with the Opus digital audio workstation from Lexicon. We have the most extensive collection of music libraries in the Pacific Northwest, and our sound effects library includes the latest CD libraries as well as many field recordings we have collected over the past 20 years. We can also provide composers, arrangers and musicians for original score-to-picture. The Telemation Studios are designed for music, Foley, voice and ADR recording. We specialize in synchronous transfers and can solve virtually any audio sync problem. Our Nagra T allows us to resolve neo-pilot, FM-pilot or center-track time code to 16/24/multitrack; 1", ¾", Betacam and M-format video; as well as 16mm or 35mm mag stock. Telemation's experienced staff will provide you with the best product within your production budget! Try our award-winning sound on your next audio sweetening project.

[24+] TELESCENE; *also REMOTE RECORDING*; 3487 W. 2100 S.; Salt Lake City, UT 84119; (801) 973-3140; (801) 973-3089. **Owner:** Standard Corporation. **Manager:** Jeff Hall.

THEOCRATIC RECORDS/JAH WORKS STUDIOS
O'Brien, OR

[24+] THEOCRATIC RECORDS/JAH WORKS STUDIOS; *also REMOTE RECORDING*; PO Box 15; O'Brien, OR 97534; (503) 596-2180. **Owner:** Jah Levi, Karl Goldstein. **Manager:** Luna Dove.

[24+] TIKI RECORDING STUDIOS; 195 S. 26th St.; San Jose, CA 95116; (408) 286-9840. **Owner:** Gradie J. O'Neal. **Manager:** Gradie J. O'Neal. **Specialization & Credits:** Specializing in album and single production work in all styles of music from rock, heavy metal to country, gospel, Spanish and Mexican music. In house producers, arrangers and musicians with chart-proven results. In house cassette duplication short- or long-run record pressing and CD manufacturing available. Publishing companies for BMI and ASCAP, music telemarketing, radio and television commercials.

[24+] T.J. RECORDING STUDIO, INC.; *also REMOTE RECORDING*; 2718 E. 96th St.; Tacoma, WA 98445; (206) 537-0123. **Owner:** T.J. Landon. **Manager:** Debbie Landon.

[24+] TRIAD RECORDING STUDIOS; 352 W. 12th Ave.; Eugene, OR 97401; (503) 687-9032. **Owner:** Allan Weyl. **Manager:** Allan Weyl. **Engineers:** Peter Lorincz. **Dimensions:** Studio 30 x 40, control room 20 x 30. **Mixing Consoles:** Triad 26 x 16 x 24 x 8 automated. **Audio Recorders:** Ampex 1200 24-track search-to-cue/remote/VSO, Studer B67 2-track, Otari 5050 2-track, Revox A70 2-track. **Cassette Recorders/Duplicators:** Nakamichi 582, Nakamichi DP 40-50 duplicator. **Echo, Reverb & Delay Systems:** EMT plate stereo tube reverb, Klark-Teknik DN780 digital reverb, Klark-Teknik DN36 delay, Lexicon Prime Time delay, DeltaLab Acousticomputer, MIC-MIX Super C Master-Room reverb, Eventide 3000 Ultra-Harmonizer. **Other Outboard Equipment:** Scamp rack w/(4) limiter/compressor, (8) noise gate, (4) parametric EQ/delay/autopan, (2) dbx 160 compressor, (2) Roger Mayer noise gate, EXR exciter, (2) White 27-band EQ, Linn/Akai MPC-60 MIDI production center. **Microphones:** (2) Neumann U87, (2) Neumann U47, (2) Neumann KM84, (2) AKG 414, (2) RCA 77-DX, (2) Sennheiser 421, AKG D-112, (2) Shure SM57, (4) AKG 251, PZM. **Monitor Amplifiers:** Phase Linear 700B, McIntosh 7270, McIntosh 2105. **Monitor Speakers:** Tannoy FSMU. **Musical Instruments:** 1922 Steinway B vintage concert grand, Kurzweil 250. **Rates:** $65/hr. includes engineer.

[24+] TRIAD STUDIOS; *also REMOTE RECORDING*; 4572 150th Ave. NE; Redmond, WA 98052; (206) 881-9322. **Owner:** Full Scale, Inc. **Manager:** Chris Middaugh. **Engineers:** Lary "Larz" Nefzger, Tom Hall, Michael Tortorello, Dave Dysart, David Keohi. **Dimensions:** Room 1: studio 40 x 24, control room 19 x 24; room 2: studio 35 x 23, control room 16 x 19. **Mixing Consoles:** Mitsubishi Westar 52-input w/DiskMix mov-

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TRIAD STUDIOS
Redmond, WA

ing fader. Neotek III C modified 36-input w/DiskMix moving fader. Audio Recorders: (2) Sony/MCI JH-24 24-track, Ampex ATR-100 2-track w/½" and ¼" heads, Sony 2500 DAT, Sony/MCI JH-110B 2-track w/½" and ¼" heads, Otari MTR-12-2 2-track w/center track time code, Ampex 440B 4-track ½" w/various headstacks, Pioneer PT-70 ¼-track ¼". Cassette Recorders/Duplicators: Akai, TEAC C3X, Aiwa F-660, (22) KABA real-time duplicator. Noise Reduction Equipment: (2) Dolby SR. Synchronization Systems: (6) TimeLine Lynx. Echo, Reverb & Delay Systems: Lexicon 224XL, (2) Klark-Teknik DN-780, (2) EMT 140TS plate reverb, Lexicon PCM70, Yamaha REV5, (3) Yamaha SPX90II, (2) TC Electronic 2290 digital delay, (2) Eventide H3000 Ultra-Harmonizer, (2) Lexicon Super Prime Time, (2) Lexicon PCM41, (2) Eventide H910 Harmonizer, (3) Alesis Microverb. Other Outboard Equipment: Klark-Teknik DN-60 spectrum analyzer, ADR Panscan, (2) Aphex Compellor (stereo), ADR F760X Compex/limiter, (4) dbx RM160 compressor/limiter, (2) BBE 802 Sonic Maximizer, (12) Valley People Kepex II gate, (2) Valley People de-esser, (2) Drawmer 201 gate, (2) UREI 1176, (3) Teletronix LA-2A, (2) API 550 EQ, B&B EQF-2, Pultec EQH-2, Orban 586A de-esser. Microphones: (16) AKG, (11) Neumann, (3) Sony C-37A tube, (2) B&K 4006, (5) Sennheiser, (7) Shure, (5) Electro-Voice. Monitor Speakers: (4) PAS SM-1 w/Mastering Lab mods, (2) Tannoy SGM-10B, (4) Yamaha NS-10M. Musical Instruments: Yamaha C7D grand piano, Emulator E-II, (2) Akai S-900, Roland D-550, (2) Roland MKS-70, (2) Yamaha TX802, (2) Alesis HR-16 drum machine, (2) Emulator Emax, Yamaha DX7, E-mu SP-12 drum machine. Other MIDI Equipment: (2) Macintosh Plus w/MIDI interface, (2) Opcode SMPTE time machine. Video Equipment: (2) Sony BVU-800 ¾" recorder, (2) NEC DX-2500U ½" VHS-HQ Dolby stereo VCR. Other: (2) Mark of the Unicorn MIDI software, Sound Ideas complete SFX library on CD. Rates: Our rates are reasonable and competitive. Please call. Specialization & Credits: Satisfied clients include Steve Miller, Deniece Williams, Michael Tomlinson, Heir Apparent, Eric Tingstad, UB40, Queensryche, Randy Meisner, Uncle Bonsai, Tim Noah. Nestled in evergreens, minutes from downtown Seattle. Complete subcontracting, equipment rental and hospitality services available. Large video soundstage nearby. For nine years, we've been called the best-sounding studio north of San Francisco; now our 1988 upgrade has made Triad a truly world-class facility. Triad prioritizes your creative comfort in everything from the ergonomics of the MIDI workstations to the gourmet coffee in the kitchenette and lounge areas. State-of-the-art studios are balanced with warm, contemporary design elements. Award-winning rooms, outstanding engineers, sensitive support staff and attractive rates make Triad worth the trip from anywhere.

[24+] **TRUE NORTH RECORDING STUDIO**; PO Box 81485; Fairbanks, AK 99708; (907) 456-3419. Owner: Michael States. Manager: Michael States.

[24+] **TURTLE MOBILE RECORDING, LTD.**; *only REMOTE RECORDING*; 12819 SE 38th, Ste. 250; Bellevue, WA 98006; (206) 641-1406 (Seattle); (604) 872-3447 (Vancouver). Owner: Larry Anschell. Manager: Larry Anschell.

[24+] **DAVE WELLHAUSEN STUDIOS**; 1310 20th Ave.; San Francisco, CA 94122; (415) 564-4910. Owner: Dave Wellhausen. Manager: Janet Wellhausen. Engineers: Dave Wellhausen, John Altmann, Gary Mankin, Mark Needham, Marc Senasac. Dimensions: Studio 25 x 15, control room 15 x 15. Mixing Consoles: Sound Workshop 34C w/ARMS and DiskMix, 32 inputs—52 inputs in mixdown. Audio Recorders: MCI JH-24 w/24 and 16-track heads, Otari MTR-12, Otari MX-5050. Cassette Recorders/Duplicators: (2) Aiwa. Noise Reduction Equipment: (2) Dolby spectral recording on MTR-12. Echo, Reverb & Delay Systems: Lexicon 224XL digital reverb, Eventide H3000 Harmonizer, Eventide SP10 Harmonizer, Roland DEP-5, Roland SRV-2000, Yamaha SPX90, Yamaha D1500 Lexicon Prime Time digital delay, Marshall time modulator, DeltaLab ADM-1024, DeltaLab ADM-64, Alesis Microverb. Other Outboard Equipment: Drawmer gate, (2) Valley People Dyna-Mite, ADR Vocal Stresser, (2) UREI 1176 limiter, (2) UREI LA-4 limiter, Aphex Compellor, (2) SAE graphic equalizer, Symetrix gates, (4) Massenburg microphone preamp, (2) Massenburg EQ, Aphex Aural Exciter. Microphones: (2) Neumann U87, Neumann KM84, (2) AKG 414EB, (3) AKG 451, (2) AKG 460B, (2) AKG D-12, (3) Electro-Voice RE20, (2) Electro-Voice RE15, (5) Sennheiser 421, Sennheiser 441, (5) Shure SM57, Shure SM58, (4) Countryman direct box, Beyer M201, Sony C-36P, (4) Crown PZM. Monitor Amplifiers: Symetrix A220 (headphones), BGW 100, AB Systems Precendent Series 600, BGW 250. Monitor Speakers: (2) Westlake BBSM8, (2) Yamaha NS-10M, (2) Auratone. Musical Instruments: Emax HD sampler w/over 3,000 voices, Yamaha C3 6' conservatory grand piano, Yamaha DX7, Yamaha RX5 drum machine, Roland MKS-30, Roland TR-707 drum machine, Les Paul, Fender Precision bass, Casio CZ101, MIDIbass, Octapad. Other: Macintosh SE w/Performer software and SMPTE-MIDI interface. Rates: Call for rates.

NORTHWEST

16 TRACK

[16] **ADSONGS**; PO Box 816; Point Reyes, CA 94956; (415) 669-1111. Owner: Ethan Kenning, Arthur Indenbaum. Manager: Ethan Kenning, Arthur Indenbaum. Specialization & Credits: Adsongs is an award winning music production company specializing in original music, jingles and audio-for-video post-production. Our in-house studio features a 20 x 25 control room, Trident Series 65 console, UREI and Yamaha monitors, Lexicon, Eventide, dbx and Klark-Teknik signal processing, Neumann, AKG and Sennheiser microphones and much more. We have an extensive MIDI capability and sound effects library. A partial client list includes Levi's 501 Jeans, Valu-Rite Drugs, Taco Bell, Flavorland Foods, Wallpapers To Go and St. Mary's Spine Center.

[16] **ART OF EARS**; 1217 A Fell St.; San Francisco, CA 94117; (415) 864-4641. Owner: Andy Ernst. Manager: Nance Urquidez.

[16] **AVID PRODUCTIONS**; *also REMOTE RECORDING*; 235 E. 3rd Ave.; San Mateo, CA 94401; (415) 347-3417. Owner: Henry Bilbao. Manager: Chris Craig.

[16] **BAY RECORDS**; *also REMOTE RECORDING*; 1741 Alcatraz Ave.; Berkeley, CA 94703; (415) 428-2002. Owner: Michael Cogan. Manager: Robert Shumaker. Engineers: Robert Shumaker, Michael Cogan, David Pontecorvo. Dimensions: Studio 32 x 32, control room 15 x 12. Mixing Consoles: BIMIX 20 x 16. Audio Recorders: M79 16-track, M79 8-track, Ampex 800 2-track. Cassette Recorders/Duplicators: Onkyo. Noise Reduction Equipment: (2) Dolby A, (2) Dolby SR. Echo, Reverb & Delay Systems: Lexicon 200 reverb, Compex limiter, Yamaha SPX90, Effectron II, dbx 160, (2) 1176LN, SAE 2700B equalizer, MICMIX Super C reverb. Microphones: Neumann SM69, (4) Neumann U87, (4) Neumann KM83, (2) Neumann KM86, (2) AKG C-452, RCA 77-DX, (20) dynamic. Musical Instruments: Yamaha C7D 7'4" concert grand. Rates: $55/hr. $50/hr. after 10 hours.

[16] **BEAR CREEK RECORDING**; *also REMOTE RECORDING*; 20711 Bear Creek Rd.; Los Gatos, CA 95030; (408) 354-2351. Owner: Justin Mayer. Manager: Justin Mayer.

[16] **ROBERT BERKE SOUND**; 50 Mendell St. #11; San Francisco, CA 94124; (415) 285-8800. Owner: Robert Berke. Manager: Mark Escott.

[16] **DANCING DOG STUDIOS**; 1500 Park Ave. #B210; Emeryville, CA 94608; (415) 655-6760. Owner: David Bryson. Manager: David Bryson.

[16] **DAVIS SOUND STUDIO**; 1205 Oak Ave.; Davis, CA 95616; (916) 758-6661; FAX: (916) 758-9412. Owner: Andy Lang. Manager: Andy Lang. Engineers: Andy Lang, Christine Webster. Dimensions: Studio 13 x 12, control room 18 x 10. Iso room 1: 7 x 6. Iso room 2: 5 x 4. Mixing Consoles: Amek/TAC Scorpion 16 x 8 x 2 w/16-track monitoring and metering. Audio Recorders: Otari MX-70 16-track 1", Otari MX-5050BII 2-track ¼". Cassette Recorders/Duplicators: Bang & Olufsen Beocord 9000, Nakamichi BX-300, Denon DR-M4, Sony WM-D6C. Noise Reduction Equipment: Dolby 363 2-channel SR/A. Echo, Reverb & Delay Systems: (2) Lexicon PCM70, Lexicon PCM60 digital reverb, Alesis QuadraVerb, Yamaha SPX900, (2) Lexicon PCM42 digital delay. Other Outboard Equipment: (4) Valley People Kepex II keyable noise gate, (2) Valley People Gain Brain II keyable compressor/limiter/ducker, (3) Valley People Maxi-Q 3-band parametric EQ, (2) Rane PE-15 5-band parametric EQ, Orban 674A 8-band parametric equalizer, UREI 7110 keyable compressor/limiter, dbx 166 2-channel keyable compressor/limiter/gate, BBE 822 2-channel sonic maximizer, Aphex Type B 2-channel Aural Exciter. Microphones: AKG C-414, Neumann U89i, (3) Neumann KM84i, (2) Sennheiser MD-421, (2) Audio-Technica AT813R, Audio-Technica ATM63, Beyer M500, Beyer M201,

DAVIS SOUND STUDIO
Davis, CA

Shure SM57, (2) Crown PZM 30 GPB. Monitor Amplifiers: Hafler P-505, Tandberg TIA-3012, Hitachi HA-610 (headphone). Monitor Speakers: Spica TC-50 w/2 Spica servo subwoofers (main), ADS L-400 (console), Canton GL-300F (studio), ADS 300i (car type). Musical Instruments: Roland D-50LA digital synthesizer w/Musitronics MEX-1 multitimbral expansion board, Alesis HR-16, Wing and Son concert grand upright piano w/Forte music MIDI retrofit, Marshall Lead 12 guitar amplifier, Ibanez Roadstar II electric guitar, Yamaha G240 acoustic guitar. Other MIDI Equipment: Roland S-330 digital sampler w/RC-100 remote and monochrome monitor, E-mu Systems Proteus XR, Roland Octapad Pad-8, J.L. Cooper Fadermaster MIDI command controller, Digital Music Corporation MX-8 MIDI patch bay/processor, Macintosh SE computer (2.5MB RAM; internal drives: 1 floppy, 1 20MB HD), Passport MIDI transport interface, Mark of the Unicorn Performer sequencing software, Passport Master Tracks Pro sequencing software, FX Designer PCM70 visual editing software, Opcode E-mu Proteus editor/librarian software, Dr. T's Roland D-50 editing software. Video Equipment: Mitsubishi U70 Super-VHS Hi-fi ½" recorder, JVC HR-7300U VHS ½" recorder, Sony KV-1393R monitor, Sony KV-13TR20 monitor, Mitsubishi CS-1352 monitor. Other: (9) various headphones, Pulsar Laboratories RTA-150 15-band real-time analyzer, Roland D-50 volume and sustain pedals, (6) Phi-Tech acoustic drum triggers, (2) Axxe klik-trac, (8) Countryman and other direct boxes, Sound Ideas sound effects library (over 3,000 effects on 28 CDs). Rates: 1 to 25 hrs: $35/hr; 26 to 50 hrs: $30/hr; 50+ hrs: $25/hr. All prices include engineer and any studio instruments the client desires to use. Specialization & Credits: Davis Sound Studio strives not only to make the best possible recordings technically, but also to provide a very friendly, comfortable, relaxed and creative atmosphere for our clients. We treat every project with care and concern for what our clients want, and turn their desires into a professional-quality finished product. We handle all types of projects including narration, voice-over and commercial/jingle production. We also offer in-house real-time tape duplication using four very high-quality decks. In addition, production services and session musicians are available upon request. Our lounge area includes TV, video games and a refrigerator (always stocked with water, soft drinks, coffee and tea). Access to Davis Sound Studio is easy via nearby freeways and airports. As you can see, we are more than just competitive! Please give us a call or just stop by.

[16] **DOME STUDIOS**; 1912 Gilmore Trail; Fairbanks, AK 99712; (907) 457-1993. Owner: Gerald Rafson. Manager: Ron "Rif" Rafson. Engineers: Rif Rafson, Jerry Rafson. Dimensions: Studio 460 sq.ft. (irregular polygon), control room 150 sq.ft. Mixing Consoles: Hill B-32 4 x 8 x 2, Tascam Model 38 x 4 x 2. Audio Recorders: Tascam MS-16 16-track, Tascam 80-8 8-track, TEAC 334DS 4-track, Technics RS1500US 2-track, Pioneer RT 1050 2-track. Cassette Recorders/Duplicators: Tascam 122B, Technics. Noise Reduction Equipment: dbx, Symetrix 511. Echo, Reverb & Delay Systems: ART ProVerb, DL-2 Acousticomputer, AKG BX-5 reverb, Yamaha SPX90. Other Outboard Equipment: Orban 622B parametric equalizer, Rane GE-27 graphic equalizer, Rane RE-27 real-time equalizer, (2) Furman LC-2 comp/limiter, Yamaha GC2020 comp/limiter, Aphex Type C Aural Exciter, Valley People 4-channel gate. Microphones: Neumann U47 tube, Beyer, Shure, Sony, AKG, Crown PZM, Audio-Technica, Toa, Calrec, Peavey, Countryman direct boxes. Monitor Amplifiers: Hafler, Crown, Rane HC-6 headphone amp. Monitor Speakers: Klipsch Cornwalls, JBL 4313, Auratone. Musical Instruments: Yamaha DX7, Yamaha QX7, Alesis HR-16 drum machine, E-drums, Midi Bass, electric and acoustic bass, guitars, upright grand piano. Other: Macintosh SE with Jam Box/4 and MidiPaint. Rates: Upon request.

[16] **EMERALD CITY PRODUCTIONS**; 512 Lisbon St.; San Francisco, CA 94112; (415) 469-8453. Owner: Christopher Grinstead. Manager: Christopher Grinstead.

World Radio History

N O R T H W E S T

16 TRACK

[16] **EVENSONG**; 2621 Sonoma Ave.; El Cerrito, CA 94530; (415) 237-4577. Owner: Frank Stratton. Manager: Gordon Brislawn. Engineers: Frank Stratton, Gordon Brislawn. Dimensions: Studio 10 x 16, control room 13 x 18. Mixing Consoles: Soundtracs PC MIDI 56 x 8 x 2 w/MIDI mutes, Tascam MM1 20 x 4 x 2 w/MIDI mutes. Audio Recorders: Fostex E-16 16-track ½" w/Dolby C NR, Tascam 32-2B 2-track ¼" w/dbx 155 NR, Sony PCM-501 w/VHS, Panasonic PD3500 DAT, Digidesign Sound Tools. Cassette Recorders/Duplicators: JVC DD-5, JVC DD-7 dual. Noise Reduction Equipment: Rocktron Hush IIC 2 channels, (2) dbx 155 4-channel. Synchronization Systems: Fostex 4050, Southworth Jam Box/4+, Opcode Studio 3. Echo, Reverb & Delay Systems: (2) Lexicon LXP-1, Alesis QuadraVerb, BBE 422 Sonic Maximizer, DigiTech IPS 33 (Smart Shift), DigiTech DSP 128, Ibanez DMD-2000, Roland UP-70, Roland DEP-5, Roland GS-6, Roland SRV-2000, Yamaha SPX90, DigiTech GSP-5, Roland GP-8, Alesis MIDIverb II, DeltaLab Effectron, Akai PEQ6 programmable EQ. Other Outboard Equipment: Tube Works Blue Tube bass preamp, Peavey Pro Bass 1000 preamp, Mesa/Boogie studio preamp tube, Symetrix CL-150 compressor, Symetrix 528 voice processor, Rane HC-6 headphone amp. Microphones: AKG 414B-ULS, (3) AKG D-1000E, E-V PL76B, (2) Audio-Technica ATM-31, Shure SM78. Monitor Amplifiers: Hafler P230, Harman Kardon Citation II. Monitor Speakers: (2) JBL 4312, (2) Tannoy 6.5. Musical Instruments: Ibanez Roadstar T Series bass, Modulus graphite Black Knife guitar w/ EGM, Roland RD-300 MIDI piano, Roland A-50 MIDI keyboard controller, Roland JX-8P analog synthesizer, DKI Synergy 2+ w/MIDI, Yamaha CS80, E-mu Emax SE w/350 disk library, Yamaha TX802 w/1.2MB of FM patches, Ensoniq ESQ-M w/4 cartridges, Roland S-330 w/100 disk library, Yamaha TX16W w/150 disk library, Oberheim M-1000, Roland D-550 w/4 cards, Roland Octapad II (Pad 80), Roland R8 w/jazz and ethnic cards, Alesis HR-16. Other MIDI Equipment: Lexicon MRC, Axxes Mapper, Audio Matrix MIDI accelerator. Other: Macintosh SE w/4MB, Macintosh Plus w/1MB, Syquest 45MB removable, Performer, Vision, Alchemy editor/librarian. Rates: Introductory rates $35 (block rates available).

[16] **HIGHLAND STUDIO**, PO Box 554; Los Gatos, CA 95031; (408) 353-3952. Owner: Joe Weed. Manager: Joe Weed.

[16] **HOMETOWN ARTISTS RECORDING**; 120 W. 5th St.; Rifle, CO 81650; (303) 625-3421. Owner: Lee and Roberta Gillespie. Manager: Lee Gillespie.

[16] **HORIZON AUDIO RECORDING**; 8185 Meridian Rd. S; Meridian, ID 83642; (208) 888-1723. Owner: Rob and Kim Matson. Manager: Rob Matson.

[16] **MAGIC SOUND**; *also REMOTE RECORDING*; 1780 Chanticleer Ave.; Santa Cruz, CA 95062; (408) 475-7505. Owner: Alan Goldwater. Manager: Alan Goldwater, Merle Sparks. Engineers: Alan Goldwater, Merle Sparks. Dimensions: Studio 16 x 20 x 12 (asymmetrical wedge ceiling), isolated drum room 12 x 14, booth 5 x 6 x 7, control room 12 x 14 x 16. Mixing Consoles: Custom 36 x 8 separate 16-track fully equalized monitor, section, full patch bay, API 550 mixboard EQ. Audio Recorders: MCI/Inovonics JH-16 15/30 ips, Rockwell computer autolocator, Ampex AG440 2-track 15/30 ips, Otari MX-5050 2-track, Sony PCM-701 2-track digital, Studer Dyaxis digital workstation. Cassette Recorders/Duplicators: (2) Kenwood KX 1060. Echo, Reverb & Delay Systems: Ecoplate II multitrack reverb, Marshall Time Modulator, Roland Space Echo, Lexicon Prime Time II, Lexicon PCM60. Other Outboard Equipment: (2) MXR flanger, (2) MXR 2/3-octave graphic EQ, (2) Universal Audio 175B tube limiter, Allison Gain Brain, Roger Mayer noise gates, (8) API 550A EQ, (2) UREI LA-4 limiter, Thorens/Rabco disc player. Microphones: Neumann KM54a, Neumann U67, (2) AKG 414EB, AKG C-451, AKG D-190, AKG D-160, AKG D-12, AKG C-28A (tube), Beyer M-260, (2) Beyer X1N, (2) Sennheiser MD-421, Shure SM57, Shure SM58, Shure SM81 (several each), Sony C-377, Sony C-22, Sony C-37A (tube), Altec M30s (tube), RCA BK5 (ribbon), (2) AKG C-61a tube, AKG C-12 (tube), Shure SM7. Monitor Amplifiers: Hafler 250. Monitor Speakers: Altec/UREI 811, White 4100 EQ, Sennheiser and AKG headphones. Musical Instruments: Cable upright piano, Apple computer 16-voice synthesizer system, Guild F30, Danelectro and Rickenbacker 12-string guitars, Fender Princeton and Deluxe amps, Polytone amps, CB drums w/Zildjian cymbals, E-mu Drumulator w/computer sequencer. Video Equipment: Panasonic NV8200 w/computer search, Panasonic 8500 VHS editing system. Rates: $40/hr. 16-track, $35/hr. block (10 hrs. or more); $30/hr. 8-track, $30 block; $30/hr. 2-track and editing; 1 hour free setup. Above rates include engineer and instruments.

[16] **M.I.P. RECORDING & PRODUCTIONS**; *only REMOTE RECORDING*; 3013 E. Monte Vista; Denair, CA 95316; (209) 632-8415. Owner: Gary L. Shriver. Manager: Eric Cripe.

NACNUD SOUND
Lodi, CA

[16] **NACNUD SOUND**; *also REMOTE RECORDING*; 6748 Hogan Ln.; Lodi, CA 95240; (209) 334-2845. Owner: Richard Duncan. Manager: Richard Duncan. Engineers: Rick Duncan, Mark Maier, Mark Zarek. Dimensions: Studio 20 x 40, control room 22 x 12. Mixing Consoles: Soundtracs 32 x 8 x 16 x 2. Audio Recorders: Tascam MS-16 16-track w/autolocator, Otari MX-5050 ½-track master w/remote, Sony PCM-2500 R-DAT Cassette Recorders/Duplicators: Yamaha C300, Nakamichi MR-2. Noise Reduction Equipment: dbx 16 tracks. Synchronization Systems: Yamaha MSS-1 MIDI, Performer SMPTE. Echo, Reverb & Delay Systems: Yamaha REV5, Yamaha SPX900 w/remote, Lexicon PCM70, Lexicon Prime Time II DDL, Eventide H3000 Harmonizer, AKG BX-20. Other Outboard Equipment: Valley People rack w/Gain Brain/Max EQ/Kepex/Commander/DSP, dbx 160, Aphex Aural Exciter. Microphones: Neumann U87, AKG 414, AKG 441, AKG 442, AKG 412, Sennheiser 421, E-V RE20, Shure SM81, Shure SM58, Shure SM57, Sony ECM-230F. Monitor Amplifiers: Hafler D-500, Yamaha P2200. Monitor Speakers: Westlake BB-SM10, Yamaha NS-10M, Auratone. Musical Instruments: Yamaha KX88, Yamaha DX7IIFDE, Yamaha TX-816 rack, Oberheim Expander, Oberheim DPX-1 sample playback of Mirage/Prophet-2000/E-2, Roland D-50, Roland MKS-20 digital piano, Roland Super Jupiter, Moog Minimoog complete w/MIDI interface, E-mu SP-12 drum machine. Other MIDI Equipment: Macintosh Plus w/Performer sequencer/editing/sound libraries, Opcode MIDI interface, Jasmine 20MB HD, Sycologic 32 x 32 MIDI switcher, Universe of Sound CD-ROM library, Yamaha MJC8 switcher. Other: (2) Fender Deluxe 85 guitar amp, Rocktron XDC preamp, Alesis QuadraVerb, Rocktron Hush II CX, Ibanez guitar, complete Yamaha bass rack system, (2) JBL Cabaret 15 Series cabinet, Yamaha Recording Series 7-piece drum set, Zildjian cymbals, Rane H-6 headphone amp, Crown paragraphic EQ, Hi-Watt 30W combo, Yamaha PB-1 preamp, Rockman amp, Furman comp/limiter, modem. Rates: Available upon request. Specialization & Credits: At Nacnud Sound we specialize in custom original production. We offer producers, engineers, arrangers, musicians of only first rate quality for the San Joaquin Valley. Our studio is located in a peaceful country surrounding perfect for creative endeavors. You will find a diverse selection of acoustic and electronic capabilities available to give the musician, singer, songwriter, producer the most flexible work environment in which to realize projects with a minimum of effort and cost. Nacnud Sound is a musician-owned and operated facility with a strong emphasis on musical and technical co-existence. With an emphasis on album, cassette and demo production, we have produced jazz, classical, rock, contemporary Christian, country and many other styles of music. Look for expansion in Nacnud Sound in the coming months to keep pace with our clients' ever-changing needs. We hope to work with you in the future on a most enjoyable and creative project.

[16] **NIGHTWIND PRODUCTIONS**; *also REMOTE RECORDING*; 60 Monument Plaza; Pleasant Hill, CA 94523; (415) 827-0200. Owner: Bob Peacock, Donna Stewart. Manager: Bob Peacock. Specialization & Credits: At Nightwind Productions we offer 16- and 8-track SMPTE analog recording with producer and engineer services. For more extensive projects we offer MIDI and digital computer recording and editing. We produce music for television and radio commercials and can also provide budget video production services with digital stereo sound.

[16] **OREGON SOUND RECORDING**; 125 S. Central, Ste. 209; Medford, OR 97501; (503) 773-2113. Owner: Michael McCoy. Manager: Sean McCoy.

[16] **PLATINUM SOUNDS RECORDING & DUPLICATIONS**; *also REMOTE RECORDING*; 1725 Little Orchard St., Ste. A; San Jose, CA 95125; (408) 971-1310; FAX: (408) 971-1371. Owner: Cornell Watson.

POOLSIDE STUDIOS

POOLSIDE STUDIOS
San Francisco, CA

[16] **POOLSIDE STUDIOS**; *also REMOTE RECORDING*; 2269 Chestnut #310, San Francisco, CA 94123; (415) 931-9390. Owner: Mitchell Stein, David Nelson, Dieter Weihl. Manager: Mitchell Stein. Engineers: David Nelson, chief engineer; Mitchell Stein, executive producer. Dimensions: Studio 14 x 21, control room 12 x 18, iso booth 5 x 10. Mixing Consoles: Euphonix Crescendo digital 48 (stereo) x 24 w/automation. Audio Recorders: Otari MX-70 16-track, Otari MX-55 2-track w/center-track time code and Dolby SR, digital direct-to-hard drive recording/storage system. Cassette Recorders/Duplicators: Nakamichi RX505. Noise Reduction Equipment: (2) Dolby SR, (16) Rocktron System One, dbx 224X-DS stereo. Synchronization Systems: (3) TimeLine Lynx, Roland SBX-80 MIDI/SMPTE, Opcode SMPTE/MIDI time code machine. Echo, Reverb & Delay Systems: Lexicon 200, Lexicon LXP-1 stereo, Lexicon LXP-5 stereo, (2) Effectron II. Other Outboard Equipment: Orban 424A stereo compressor/limiter/de-esser, (2) Valley Audio Maxi-Q parametric equalizer, Aphex Aural Exciter, USAudio Gatex 4-channel expander/noise gate, Parasound stereo graphic equalizer, Roland GP-8 multieffects processor, Sony PCM-501ES digital audio processor, dbx 463X noise gate, dbx 163X compressor/limiter, Sonic Research Associates Tri-Ambient synthesis unit. Microphones: Neumann U67 Klaus Heyne modified, (2) Neumann KM83 Klaus Heyne modified, (2) Neumann KM84 Klaus Heyne modified, (2) Sennheiser 421, Sennheiser 441, (2) Crown PZM, (2) Shure SM57, (2) Shure SM58. Monitor Amplifiers: Hafler 500, Crown D-150A, BGW M-75. Monitor Speakers: (2) UREI 809, (2) Yamaha NS-10M, (2) Auratone. Musical Instruments: Emulator EIII, Emulator EII, Roland TR-707 drum machine, Roland Juno-106, Slingerland drum kit, Rhodes MK-80 digital electric/acoustic piano, Fender Jazz bass, Wendel jr. drum replacement module, timbales, congas, Korg Vocoder, Moog Minimoog. Other MIDI Equipment: 360 Systems MIDI router, Opcode Studio Plus. Video Equipment: JVC 8250 ¾" editing VTR w/controller, Sony Super Beta Hi-fi, Panasonic Professional ½" Hi-fi VTR, Proton 619-S monitor, Hitachi CT2077B monitor, (2) Panasonic CT-110 monitor. Other: Extensive digital sound effects library, Macintosh II w/170MB HD, Macintosh Plus w/60MB HD, Vision, Q-Sheet, Alchemy, Upbeat, Performer, Sound Designer, (7) AKG/Sony MDR-V6 digital stereo headphones. Rates: Available upon request. Complete production packages available. Specialization & Credits: Poolside Studios is a full-service recording studio specializing in soundtrack for film and video. We offer complete production services from pre-production consultation through final post. Recent Poolside productions include award-winning theatrical motion pictures, PBS documentaries, television programs and commercials, radio programs and commercials, music videos and record albums. Our frame-accurate synchronization system makes complete film and video soundtrack work (including sound design/effects, ADR, music and Foley) possible. Situated in one of San Francisco's most beautiful neighborhoods, Poolside Studios is an ideal location for producers and clients. Whether your project takes a few hours or a few weeks, every step has been taken to provide you with a creative, comfortable working environment. While our production services are state-of-the-art, our rates are very reasonable. Poolside Studios—we take pride in every project we produce.

[16] **PYRAMIND SOUND—A SAN FRANCISCO AUDIO NETWORK RECORDING STUDIO**; 39 Gilbert St.; San Francisco, CA 94103; (415) 863-8565. Owner: Keith Moreau, Gregory Gordon. Manager: Gregory Gordon.

[16] **BILL RASE PRODUCTIONS, INC.**; *also REMOTE RECORDING*; 955 Venture Ct.; Sacramento, CA 95825; (916) 929-9181. Owner: Bill Rase. Manager: Bill Rase.

[16] **RECIPROCAL RECORDING**; 4230 Leary Way NW; Seattle, WA 98107; (206) 782-6411. Owner: Chris Hanzsek. Manager: Chris Hanzsek.

World Radio History

[16] **THE RECORDING CENTER**; *also REMOTE RECORDING*; 118 W. Pine St.; Missoula, MT 59802; (406) 721-4172. Owner: Richard H. Kuschel.

[16] **DON ROSS PRODUCTIONS**; *also REMOTE RECORDING*; 3097 Floral Hill Dr.; Eugene, OR 97403; (503) 343-2692. Owner: Don Ross. Manager: Don Ross.

[16] **SOHO STUDIOS**; 6108 Phinney Ave. N; Seattle, WA 98103; (206) 784-2912. Owner: Trent Petrie. Manager: Trent Petrie. Engineers: Trent Petrie, Chris Malone. Dimensions: Studio 12 x 14, control room 12 x 17. Mixing Consoles: MCI 416 24 x 16 x 24. Audio Recorders: MCI JH-16 16-track, Otari MX-5050. Cassette Recorders/Duplicators: Onkyo dual. Echo, Reverb & Delay Systems: (2) Yamaha SPX90, (2) Alesis MIDIverb II. Other Outboard Equipment: Symetrix 501 compressor/limiter, Symetrix CL-250 compressor/limiter, (2) Symetrix quad gate, BBE Sonic Maximizer. Microphones: (2) AKG 414, (2) Sennheiser 421, (4) Shure SM57, Shure SM58. Monitor Amplifiers: JBL, BGW. Monitor Speakers: (2) UREI 811, (2) Yamaha NS-10M. Musical Instruments: Emulator III, E-mu Proteus, Akai S-900 16-bit, Roland Super Jupiter, Technics digital piano, Yamaha DX7. Other MIDI Equipment: Atari 1040ST w/SMPTE tracks. Rates: $25 per hour.

[16] **SOUND & VISION**; 684 Indiana St.; San Francisco, CA 94107; (415) 821-2321. Owner: Neal Brighton. Manager: Michael Molenda.

[16] **THE SOUND SOURCE**; *also REMOTE RECORDING*; PO Box 4596; Santa Rosa, CA 95402 (707) 528-4619. Owner: Randy Teaford. Manager: Claire Teaford.

[16] **STUDIO CENTER SAN JOSE, INC.**; *also REMOTE RECORDING*; 434 S. First St.; San Jose, CA 95113; (408) 993-1040. Owner: Corporation. Manager: Jerry McReynolds. Engineers: Jerry McReynolds, Matthew C. Howe. Dimensions: Room 1: studio 30 x 44, control room 14 x 16 x 11. Room 2: studio 11 x 14. Mixing Consoles: Sound Workshop Series 30 24 x 24 x 8 w/automation and Diskmix, Tascam M-208 8 x 4 x 2 8-channel, Neptune 8 x 2 8-channel, Tapco 6000R 6-channel. Audio Recorders: Otari MX-70 16-track, Otari MX-5050II 2-track, TEAC 3340S 4-track, TEAC 2340SX 4-track, Pioneer RT-909 2-track. Cassette Recorders/Duplicators: Nakamichi Dragon, Akai GX-912, Dual C828. Synchronization Systems: Audio Kinetics Pacer, Sonus SMX 2000. Echo, Reverb & Delay Systems: Yamaha REV7 digital reverb, (2) DigiTech DSP-128 digital processor, Roland SDE-1000 digital delay, Lexicon Prime Time digital delay, Korg DRV-1000, DeltaLab ADM-64 Effectron II, Yamaha SPX90, Alesis Microverb. Other Outboard Equipment: (2) UREI LA-4 compressor/limiter, MXR 15-band stereo equalizer, (2) Rane HC-6 stereo headphone amp. Microphones: AKG C-414EB, Neumann U87, (3) Sennheiser 421, (4) Shure SM57, (2) Shure SM58, (2) Audio-Technica ATM-41, (2) Sennheiser ME-20, Sennheiser ME-80. Monitor Amplifiers: Hill DX1500, AMR PMA-200, GLI-2130, (2) QSC 3.7. Monitor Speakers: (2) JBL 4411, (2) Yamaha NS-10M, (2) Auratone Model C. Musical Instruments: Ensoniq EPS sampler, Roland D-50, (2) Roland Juno-106, Yamaha DX27, Roland TR-707, Alesis HR-16, Minimoog, Gibson Les Paul w/MIDI interface, Chickering 6'4" grand piano, Fender Precision bass, Audition 20 amp. Other MIDI Equipment: DMC MX-8 MIDI patch bay/processor, Akai ME20A MIDI sequencer/arpeggiator, Compaq computer w/Robert Keller's 64-track PC software, Roland GM-70 guitar MIDI controller. Video Equipment: (3) Sony BVU-950 SP ¾" U-matic VTR, Sony BVU-920 SP DT ¾" U-matic (slow motion) VTR, Sony BVU-150 SP ¾" U-matic (portable) VTR, Sony VP-7020 ¾" player U-matic, Sony VO-5850 ¾" U-matic VTR, Videomedia Mickey system w/PC link (offline), Sony BVE-900 editor, Sony SEG-2550/2551 switcher/effects generator, (2) Ikegami 720A camera, comprehensive PC-2 character generator, Sony VO-2860 ¾" U-matic VTR. Other: ADC 162R compact disc player, Fairlight CVI digital video effects, soundstage w/440 amp lighting grid, Lumena 2D custom computer graphics system.

[16] **TIME CAPSULE RECORDING**; *also REMOTE RECORDING*; 1042 Perry St.; Denver, CO 80204; (303) 534-6977. Owner: James Jackson. Manager: T.J. Jackson. Dimensions: Room 1: studio 36 x 20, control room 22 x 14. Room 2: studio 24 x 20. Room 3: studio 14 x 20. Room 4: studio 11 x 12. Mixing Consoles: Tascam M-520 20 x 8 x 16 x 2, Tascam M-320 20 x 4 x 8 x 2. Audio Recorders: Fostex E-16 16-track w/Dolby C, Tascam 38 8-track, TEAC A3440S 4-track, Tascam 32 ½/2-track (mastering deck). Cassette Recorders/Duplicators: Technics RS-B100, Tascam 122B. Noise Reduction Equipment: (2) Tascam DX-4D 4-channel dbx unit. Synchronization Systems: J.L. Cooper PPS-100 SMPTE/MIDI. Echo, Reverb & Delay Systems: (2) Yamaha REV7 reverb/effects, Lexicon PCM60 reverb, Lexicon LPX-1 reverb/effects, (3) Yamaha SPX90II, ADA 640 digital delay, (2) Yamaha R100 reverb/effects. Other Outboard Equipment: Aphex Aurel Exciter 2-ch., Gatex 4-ch. noise gate, (2) Audio Logic MT-44 4-ch. noise gate, Symetrix 522 dual-ch. compressor/expander, Yamaha CG2020B dual-ch. compressor/gate, Yamaha GQ1031B 31-band graphic EQ, Yamaha Q2031 dual-ch. 31-band graphic EQ, Rane RB-27 31-band real-time analyzer, Yamaha GE60 dual-ch. 10-band graphic EQ, Fostex Model 8090 remote control (for 16-track deck), Yamaha CP-450 CD player, (6) Tascam PB-64 64-point patch bay, Nakamichi DPM-100 digital mastering unit, Panasonic VHS VCR

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Required Reading

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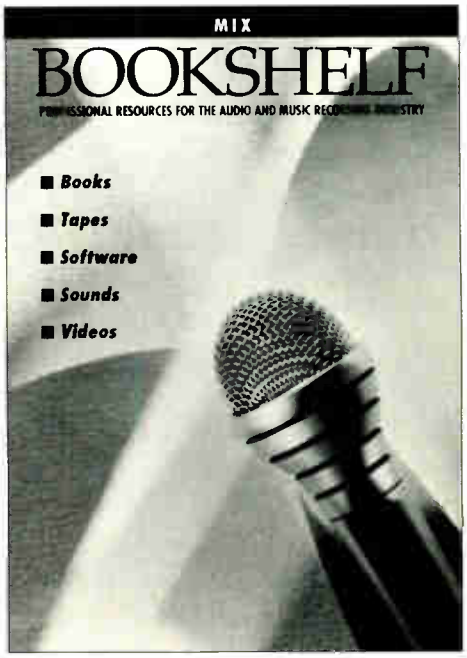

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World Radio History

NORTHWEST

16 TRACK

—CONTINUED FROM PREVIOUS PAGE

(for digital mastering). **Microphones:** AKG 414 condenser, Fostex MT-88 ribbon, (4) E-V N/D 757, (4) E-V N/D 408, (2) AKG 320B, (2) AKG D-1000E, (6) Shure SM57, (2) Sennheiser 421, (12) various others. **Monitor Amplifiers:** Yamaha M60, Yamaha M80. **Monitor Speakers:** JBL 4425, JBL 4410, Yamaha NS-10 nearfield, Klipsch, Fostex RM-685. **Musical Instruments:** Yamaha DX7IIFD, Roland D-10, Yamaha TX16W stereo sampler, (3) Yamaha TX81Z, module, (2) Yamaha RX5 and RX11 drum machine, Fender P-bass, Fender Stratocaster, Gibson Les Paul custom, (6) Yamaha guitar and bass amps, (2) Marshall amp. **Other MIDI Equipment:** Amiga 500 computer w/serial sequencing programs and 2MB RAM, Apple IIE 256K RAM w/Passport Master Tracks Pro sequencer, Akai 8-channel audio-to-MIDI triggers, (2) Akai MIDI delays, Akai MIDI arpeggiator, Fostex 2050 line mixer (for MIDI station), TEAC Model 3 8 x 4 x 2 mixer (for MIDI station), Alesis MIDIverb reverb (MIDI station), (2) Korg 2 x 8 MIDI thru box. **Rates:** 16-track—$20/hr. 16-track with MIDI-to-tape SMPTE lock-up—$25/hr. 8-track—$15/hr. 8-track with MIDI-to-tape SMPTE lock-up—$20/hr. Block rate also available—call for info.

[16] **TRI-WEST RECORDING;** 21040 5th Ave. S.; **Seattle,** WA 98198; (206) 824-6722. **Owner:** Dean Krippaehne. **Manager:** Dean Krippaehne.

[16] **VIDEOSONIC SOUND RECORDING;** 503 A Divisadero St.; San Francisco, CA 94117; (415) 922-4382. **Owner:** Jack Cutter. **Manager:** Jack Cutter.

[16] **WEST SHORE RECORDING;** PO Box 3000; **Lakeside,** MT 59922; (406) 844-2221. **Owner:** Youth with a Mission. **Manager:** Larry Heity.

NORTHWEST

2-8 TRACK

[8] **AUDIO RECORDING, INC.;** *also REMOTE RECORDING;* 4718 38th Ave. NE; **Seattle,** WA 98105; (206) 525-7372; (206) 623-2030. **Owner:** Kearney W. Barton. **Manager:** Kearney W. Barton.

[8] **CANYON RECORDING;** PO Box 13; **Canyon,** CA 94516; (415) 376-6135. **Owner:** Neil J. Young. **Manager:** Neil J. Young. **Engineers:** N.J. Young, Mark Lemaire. **Dimensions:** Studio 12.5 x 25, control room 12.5 x 15. **Mixing Consoles:** Sound Workshop Series 30 20 x 16. **Audio Recorders:** Otari MX-5050 8-track, Technics 1920 2-track. **Cassette Recorders/Duplicators:** (2) TEAC CX210, Technics XL8. **Echo, Reverb & Delay Systems:** Lexicon PCM70 digital reverb, Yamaha SPX90II digital reverb, Alesis MIDIverb II, Master-Room spring reverb, Lexicon PCM41 DDL, ADA DDL, UREI LA-4 comp/limiter, UREI LA-3A comp/limiter, Symetrix CL-100 comp/limiter, dbx 161 comp/limiter, Symetrix 525 stereo gate/comp/limiter, (2) Symetrix SG-200 gate. **Other Outboard Equipment:** (4) Furman 3-band parametric EQ, (2) Orban 672A 9-band paragraphic EQ. **Microphones:** Neumann U87 modified, (2) AKG 414, AKG 420, (2) Neumann KM84, (9) Sennheiser 421, (3) Shure SM57, (2) E-V RE20. **Monitor Amplifiers:** (2) Crown. **Monitor Speakers:** JBL 4311, Yamaha NS-10M, Auratone. **Musical Instruments:** Upright piano, acoustic guitar amp w/Sunn speakers, Alesis HR-16 drum machine, Rockman powerplay guitar preamp.

[8] **DJ MUSIC;** *also REMOTE RECORDING;* 3691 Edgefield Dr.; Santa Clara, CA 95054; (408) 727-7108. **Owner:** Dave Jasak. **Manager:** Dave Jasak.

[8] **FULL MOON RECORDING COMPANY;** *also REMOTE RECORDING;* 197 W. 12th Ave.; **Eugene,** OR 97401; (503) 343-1294. **Owner:** PRN, Inc. **Manager:** Steve Diamond. **Engineers:** Steve Diamond, Jon Davie, Phil Powers, Ray Schmidt, Pat Brand. **Dimensions:** Room 1: studio 24 x 15 plus 2 isolation booths, control room 15 x 12. Room 2: control room 15 x 12. **Mixing Consoles:** TAC Scorpion 16 x 8, Ramsa 12 x 4. **Audio Recorders:** Otari MX-70 8-track, (2) Otari MTR-10 2-track, Otari MX-5050 2-track, Ampex 350 1-track, Ampex 700 2-track. **Cassette Recorders/Duplicators:** Otari DP-4050C2 stereo high-speed w/5 slaves, Nakamichi MR-1, Nakamichi MR-2 and others. **Noise Reduction Equipment:** Dolby SR 2 channels. **Synchronization Systems:** (2) Adams-Smith Zeta-3 SMPTE generator/controller, Adams-Smith Zeta remote. **Echo, Reverb & Delay Systems:** Lexicon PCM70, Yamaha SPX90, Alesis QuadraVerb. **Other Outboard Equipment:** dbx 166 dual-channel comp/limiter/gate, Aphex Compellor dual-channel, Valley People Dyna-Mite 2 channels, Valley International Gatex 4 channels, UREI 533 EQ, Valley International dynamic sibilance processor, Summit Audio dual-channel tube preamplifier, Summit Audio tube equalizer. **Microphones:** (4) Neumann U87, (2) Neumann TLM170, (2) Neumann U89, (4) Neumann KM84, (2) AKG 460, Beyer 500, (2) Sennheiser MD-421, others. **Monitor Amplifiers:** Hafler DH-220, Yamaha, Rane HC-6, (2) McIntosh C-60 tube. **Monitor Speakers:** Tannoy Little Red w/sync source, JBL 4315, JBL 4311, Auratone 5C. **Musical Instruments:** Many synths available. **Video Equipment:** Panasonic AG 6500, center-stripe time code for Otari MTR-10 2-track, 1" layback kit for Otari MX-70 8-track, (2) MGA monitor. **Other:** Technics SL-1200 MkII turntable, (4) Harris cart machine, (2) custom phone patch coupler, Technics SL-P1200 CD player.

FULL MOON RECORDING COMPANY
Eugene, OR

[8] **HANK'S BASEMENT AUDIO;** *also REMOTE RECORDING;* 5665 E. Colorado Ave.; **Denver,** CO 80224; (303) 756-8777. **Owner:** H.B. Anderson, Jr. **Manager:** H.B. Anderson, Jr.

[2] **JOHNSON DIGITAL AUDIO;** *only REMOTE RECORDING;* 467 Saratoga Ave., Ste. 627; **San Jose,** CA 95129; (408) 255-5950. **Owner:** Tom Johnson.

[8] **JUDE PRODUCTIONS;** PO Box 90; Dutch Flat, CA 95714; (916) 389-2326. **Owner:** Russell Brian Brooker. **Manager:** Victoria Brooker.

[8] **LEON-FORREST PRODUCTIONS;** 4416 SE Hwy. 101; Lincoln City, OR 97367; (503) 996-2575. **Owner:** L.F. Caulkins. **Manager:** L.F. Caulkins.

LOST SHEEP RECORDS
Sacramento, CA

[8] **LOST SHEEP RECORDS;** 5777 Madison Ave., Ste. 110; Sacramento, CA 95841; (916) 348-3811. **Owner:** Robert and Janet Spencer. **Manager:** Robert Spencer. **Engineers:** Robert M. Spencer. **Dimensions:** Studio 15 x 15, control room 15 x 15. **Mixing Consoles:** Fostex 1840 18 x 4, Roland M-160 16-channel mixer, Tascam M-06 submixer, Yamaha MV-802 submixer. **Audio Recorders:** Fostex Model 80 8-track, Fostex Model 20 2-track, Tascam 234 4-track. **Cassette Recorders/Duplicators:** Tascam 112, Tascam 225 2-track, (4) Nakamichi MR-2. **Noise Reduction Equipment:** (2) dbx 150-X. **Synchronization Systems:** Fostex 4050 autolocator. **Echo, Reverb & Delay Systems:** Yamaha SPX90, Alesis MIDIverb II, Alesis Microverb, Alesis Multiverb. **Other Outboard Equipment:** Yamaha Q2031 graphic EQ, Biamp LG-2 stereo limiter/noise gate, (3) Alesis Micro Gate, Alesis Micro Enhancer, Alesis Micro Limiter. **Microphones:** (10) assorted E-V, Shure, Audio-Technica. **Monitor Amplifiers:** Carver PM-2.0, Yamaha P2075. **Monitor Speakers:** (2) UREI 809 Time Align, (2) JBL Control 5. **Musical Instruments:** Roland 4500-S 88-key digital piano controller, Korg M-1 workstation, Roland S-10 digital sampler w/complete library, Kramer Farrington acoustic/electric guitar, Kramer imitation Stratocaster guitar, Yamaha DX27 FM synthesizer, Yamaha TX81Z FM tone generator, Roland MT-32 Multi-Timbral TG, Roland GM-70 guitar synthesizer. **Other MIDI Equipment:** Kawai Q-80 32-track sequencer, Yamaha MJC-8 MIDI junction controller, IBM PC-turbo w/Music Quest, Music Quest SMPTE read/write, Cakewalk Pro MQX, Promidi, Prolib Midilibrarian, Bacchus TX-81Z, MT Master MT-32. **Other:** dbx DX-5 CD player, Scholz Rockman, Mesa/Boogie guitar amp, Stewart 4-channel mixer/amp, Rane HC6 6-channel headphone mixer/amp, (6) AKG K-240 headphones, (6) Audio-Technica ATH-909 headphones, Nady 201 wireless mic, Fostex TT-15 oscillator, (4) Furman PB-40 patch bay, (3) Furman PL-8 power module. **Specialization & Credits:** Lost Sheep Records was founded in 1988 as an 8-track studio with extensive MIDI capabilities. In the past year LSR has expanded to become a full-service, custom record company. Combining the different aspects of the music industry into one facility, we offer the following services: music recording, producing, copywriting, publishing, consulting, composing, arranging, sound tracks for film and video productions, radio and television spots, as well as quality record, cassette and compact disc packages, with graphic design, layout and photography. LSR is dedicated to quality. Our objective is to meet our customers' production needs with a professional product. Besides being a custom record company, Lost Sheep Records is also a Christian record label, dedicated to promoting the gospel of Jesus Christ through music. Prices available upon request.

MCCUNE STUDIOS
San Francisco, CA

[8] **MCCUNE STUDIOS;** *also REMOTE RECORDING;* 951 Howard St.; **San Francisco,** CA 94103; (415) 777-2700. **Owner:** McCune Audio/Visual/Video. **Manager:** Jim Draper. **Engineers:** Dave Duca, Dan Crowe, Jim Draper, Rich Izzi. **Dimensions:** Studio 16 x 26, control room 15 x 19. **Mixing Consoles:** Amek TAC 1682 16 x 8 x 2. **Audio Recorders:** Otari MX-5050 8-track, (2) MCI JH-110 2-track, Otari MX-5050 4-track. **Cassette Recorders/Duplicators:** Tascam 133 two-speed w/cue track, (2) Onkyo Integra TA-2058 3-head, Otari DP4050/C2/Z3 high-speed stereo duplicator. **Noise Reduction Equipment:** dbx 150X Type I (8 channels). **Echo, Reverb & Delay Systems:** Yamaha SPX90II, AKG BX-20, Roland SRE-555 chorus echo. **Other Outboard Equipment:** dbx 166 2-channel compressor/limiter/noise gate, UREI 1176 compressor/limiter, Orban 536A de-esser, Orban 622-B parametric EQ, Eventide 910 Harmonizer, Primus P-VG1 noise gate. **Microphones:** (4) Neumann U87, Neumann KM84, AKG 414, AKG 451, AKG 202, Sony C-37, RCA 77, Shure SM57, Shure SM58, many others from our rental inventory. **Monitor Amplifiers:** Hafler DH200 (bi-amped). **Monitor Speakers:** McCune SM-4B, Altec 604 w/active x-over, time correction and EQ circuitry, Auratone. **Musical Instruments:** On request. **Video Equipment:** ½", ¾" and componant VTRs, 19" video monitor, SMPTE interface. **Other:** Technics SL-1200 turntable w/transient noise reduction, Technics SL-P770 CD player, music and SFX libraries. **Specialization & Credits:** McCune Studios is fully equipped to serve the needs of our media clients, from television and radio spots, to film and multi-image soundtracks. Video production services are also a specialty at McCune Studios: single and multicamera productions (on location or in the studio), editing, duplication, film and slide transfers. In addition, our extensive rental stock is available for your session—at no additional cost.

[4] **MISS WHIB, A-BROAD;** *only REMOTE RECORDING;* PO Box 185; **Greenville,** CA 95947; (916) 284-7258. **Owner:** Jean A. Souders. **Manager:** J. Souders.

[8] **POWER SUPPLY RECORDING;** **Napa,** CA 94558; (707) 224-7157. **Owner:** Tim Pickler. **Manager:** Tim Pickler.

World Radio History

[8] **PREGNANT BADGER STUDIOS;** 10010 Biscanewoods Way; Sacramento, CA 95827; (916) 361-8217. Owner: Pregnant Badger Music. Manager: Colin Aiken. Engineers: Colin Aiken, Bill Barton. Dimensions: Studio 13 x 21, control room 6 x 16. Mixing Consoles: Tascam Model 308 8 x 4, Biamp 12/83 12 x 2. Audio Recorders: Tascam 38 8-track, Tascam 22-2 2-track. Cassette Recorders/Duplicators: Tascam 225, Nakamichi MR-1, Yamaha MT44 4-track. Noise Reduction Equipment: dbx 166 comp/limiter, dbx 160 comp/limiter, Symetrix 501 comp/limiter. Echo, Reverb & Delay Systems: Yamaha SPX90, Alesis XTC digital reverb, ADM 1024 Effectron, ART ProVerb, DigiTech DSP 128, Alesis MIDIverb II. Other Outboard Equipment: Rane HC-6 headphone amp, TEAC graphic EQ. Microphones: (2) Shure SM58, (3) Audio-Technica Pro 5, (3) AKG 707E, (3) Shure SM10 headset, Shure SM57, (3) Electro-Voice DS-35. Monitor Amplifiers: (2) NAD 3130. Monitor Speakers: (2) Auratones, (2) Toa 265-ME, (2) ESS HD series. Musical Instruments: Yamaha RX11 drum machine, Yamaha RX21L drum machine, (2) Yamaha DX7, Kawai K3, Roland Juno-106, Minimoog, Sequential Circuits Prophet-5, Yamaha TX81Z module, Oberheim Matrix 1000, Roland D-50. Other MIDI Equipment: Commodore Amiga 1000 w/2 floppy drives, Music-X seq. software.

[8] **PROJECT ONE AUDIO SERVICES;** 291 Valley River Center; Eugene, OR 97401; (503) 345-6004. Owner: Denny Conn, Gus Russell, Bill Shreve. Manager: Denny Conn. Mixing Consoles: Trident VFM 16 x 8 x 2, Tascam MM-1 20 x 2. Audio Recorders: Fostex Model 80 8-track (Dolby C), Fostex Model 20 ½-track w/center SMPTE. Cassette Recorders/Duplicators: Yamaha KX-300U (Dolby B,C and HX Pro). Synchronization Systems: Fostex 4030, Fostex 4035 sync remote. Echo, Reverb & Delay Systems: Lexicon LXP-1, Yamaha SPX90, (2) Alesis Microverb, Audio Digital TC-2 digital delay, Roland SDE-1000 digital delay. Other Outboard Equipment: Symetrix 522 comp/limit/gate/expand/duck, Alesis Micro limiter, BBE 422 Sonic Maximizer, Audioarts 4100 parametric EQ, (2) Akai PEQ6 programmable 6-channel 7-band EQ. Microphones: (2) ATM 813 condenser, (2) ATM 31 condenser, (2) Shure SM57, (3) Shure SM58, E-V PL20. Monitor Amplifiers: Hafler 220, Peavey CS-400. Monitor Speakers: (2) JBL 4408. Musical Instruments: Emax SE w/extensive library, Yamaha TX81Z, E-mu Proteus, Oberheim Matrix-6R, Casio CZ-101, Korg EX-800, Korg SG1X digital grand piano, Casio MG-510 MIDI guitar, Roland Octapad, Fender Precision bass, Ampeg B-15 bass amp, Framus acoustic 12-string guitar, Yamaha DX9, Gibson/Ibanez electric guitar, Peavey Backstage Plus guitar amp. Other MIDI Equipment: Akai ME30PII MIDI patch bay, Fostex 4050 SMPTE-to-MIDI converter. Video Equipment: RCA VET650 VHS, Toshiba 20" monitor. Other: Compaq Deskpro computer w/HD, various ed/lib programs, 64-track PC sequencer software, Samplevision sample editing software w/digital playback, large amount of music utility software, BSR real-time spectrum analyzer/EQ.

[8] **ROXOUND STUDIOS/DEM VIDEO PRODUCTIONS;** *also REMOTE RECORDING;* 2833 NE 115th; Seattle, WA 98125; (206) 365-7949. Owner: Mark Angeledes. Manager: Delia Gailfus.

[8] **RANDALL SCHILLER PRODUCTIONS;** *also REMOTE RECORDING;* 1207 Fifth Ave.; San Francisco, CA 94122; (415) 661-7553. Owner: Randall Schiller. Engineers: Randall Schiller, Cathy Cohn. Dimensions: Studio 12.5 x 15, drum room 9 x 9, control room 12.5 x 15. Mixing Consoles: TEAC/Tascam 5B 8 x 4, TEAC/Tascam M-35EX 12 x 4. Audio Recorders: TEAC/Tascam 80-8 8-track, Otari 5050B 2-track, Sony TC-8544S 4-track, Sony TC-850 2-track. Cassette Recorders/Duplicators: Aiwa AD-F990. Echo, Reverb & Delay Systems: DeltaLab 2048 digital delay, DeltaLab DL-2 Acousticomputer stereo digital delay, Eventide H910 Harmonizer, Yamaha REV7 digital reverb, Yamaha SPX90 digital reverb, Sound Workshop 242 stereo reverb. Other Outboard Equipment: Yamaha Q2031 31-band stereo graphic equalizer, MXR dual 15-band stereo equalizers, Orban 622 parametric equalizer, dbx 161 compressor/limiter, dbx 163 compressor/limiter, UREI 1178 stereo compressor/limiter, dbx 154 decilinear noise reduction, Crown VFX-2A stereo electronic crossover/filter, SAE 5000 impulse noise reduction, dbx 503, dynamic range expander, Technics SL-1200 MkII turntable, assorted patch bays and necessary support equipment. Microphones: Neumann U87, AKG C-414, E-V RE15, E-V RE20, E-V 635A, Shure SM81, Shure SM58, Shure SM57, Shure SM78, Shure 55SH, Shure SM91, Shure "Green Bullet," Sony ECM-33P, Sony ECM-33F, Sony ECM-16, Sennheiser MD-421, Sennheiser MD-431, AKG D-12, Crown PZM. Monitor Amplifiers: SAE A-201, SAE A-501, Crown Micro-Tech 1200LX, BGW Model 100-01. Monitor Speakers: JBL 4411, Auratone 5C, Altec A7-500 (modified and bi-amped), Pioneer CS-88. Musical Instruments: Story & Clark console piano. Video Equipment: Sony SL-2700 stereo Hi-fi videocassette recorder, JVC HR-D 470U stereo Hi-fi videocassette recorder. Rates: 8-track, $30/hr.; 4-track, $25/hr.; 2-track, $25/hr. Location recording available upon request.

[2] **SHYNE SOUND;** *only REMOTE RECORDING;* PO Box 2280; San Rafael, CA 94912; (415) 459-2833. Owner: Leroy Shyne. Manager: Leroy Shyne.

[8] **SILVER SHADOW PRODUCTIONS;** *also REMOTE RECORDING;* 2170-M Commerce Ave.; Concord, CA 94520; (415) 827-2732. Owner: Joseph K. Gaeta. Manager: Joseph K. Gaeta.

[8] **SOUND INNOVATIONS;** *only REMOTE RECORDING;* 5520 Lake Otis Pkwy., Ste. #104; Anchorage, AK 99507; (907) 563-TAPE (8273); FAX: (907) 561-FAXX (3299). Owner: Bruce Graham. Engineers: Bruce Graham, Vinnie Palazzotto. Dimensions: Room A: studio 22 x 24, control room 24 x 20. Room B: studio 13 x 10, control room 13 x 20. Dub room 13 x 10. Mixing Consoles: Neotek Series 1 16 x 8 x 2 (control A), Sound Works 1280B 12 x 8 (control B). Audio Recorders: Otari MX-5050B-8 8-track, Otari MK-II/8 8-track, (4) Otari MX-5050B-2 2-track, (2) Otari MK-II/2 2-track, Ampex ATR-100 2-track, Revox B-99 mono, Sony TC-854-4 4-track, Sony TC-854-2 2-track. Cassette Recorders/Duplicators: Technics M63, TEAC C-3X, Marantz PMD-360, Marantz PMD-221, Tascam T-2640/MS and T-2640/2S stereo w/3-well, Telex Copyette 1 and 3 w/3-well, (4) Telex Copyette 1 and 1 mono w/1-well. Noise Reduction Equipment: (4) dbx 155 4-channel, (2) dbx 150 2-channel. Echo, Reverb & Delay Systems: Ursa Major Stargate 323 digital reverb, Orban 111B reverb, (2) Alesis MIDIverb, Alesis Microverb, MXR flanger/doubler, MXR digital delay, MXR pitch transposer w/LED readout. Other Outboard Equipment: (4) UREI LA-3A leveler, Orban 424A gated compressor/limiter, (2) dbx 160 comp/lim, PAiA/Reeltime 6790R dual limiter, Allison Research Gain Brain limiter, Allison Research Kepex keyable noise gate, JVC 7070 graphic EQ, SAE Mark XXVII graphic EQ, Tapco 2200 graphic EQ, Orban 622B parametric EQ, Orban 516EC sibilance controller (3-ch). Microphones: (2) Sony C-37P condenser, (2) AKG 414 condenser, (2) Neumann U87 condenser, (2) AKG D-1000E dynamic, (2) Shure SM61 dynamic, (3) E-V 635 dynamic, E-V RE10 dynamic, E-V RE15 dynamic, (2) Sennheiser MD-421 dynamic, (2) Shure SM57 dynamic, Audio-Technica AT814 dynamic, Shure SM62 dynamic. Monitor Amplifiers: Nikko Alpha, Crown D-150A, (5) Kenwood KA-3500. Monitor Speakers: (6) Auratone 5C, (2) Auratone T6, (3) JBL L100, (2) E-V Sentry 100, (6) Advent Model 2. Musical Instruments: Alesis HR-16 drum machine, alphaSyntauri synthesizer w/Apple II+. Other: Nagra III mono sync recorder w/SLO sync, MagnaSync 602 16mm mono film recorder. Rates: $65/hour plus tape.

[8] **THE SOUNDSMITH;** PO Box 1567; Monterey, CA 93942; (408) 394-6940. Owner: David Kempton. Manager: Jeremy Hertzberg.

[8] **STONNELL ENTERPRISES;** *also REMOTE RECORDING;* PO Box 217; Bozeman, MT 59715; (406) 586-2443. Owner: Jack M. Stonnell. Manager: Jack Stonnell.

[8] **STUDIO 101;** 69 Harold Ave.; San Francisco, CA 94112; (415) 585-8770. Owner: Don Hunter. Manager: Don Hunter.

[2] **SUNRISE SOUND DIGITAL RECORDING;** *only REMOTE RECORDING;* 1548 Ingalls St.; Lakewood, CO 80214; (303) 238-5002. Owner: Rich O'Neil. Manager: Rich O'Neil.

[8] **SUNSET RECORDING;** *also REMOTE RECORDING;* 856 Airport Rd.; Monterey, CA 93940; (408) 375-2861. Owner: Sal Marullo.

[8] **TONAL MAGIC RECORDING;** *also REMOTE RECORDING;* 109 Bonner St., PO Box 1361; Bonnersferry, ID 83805; (208) 267-2389. Owner: Tonal Magic Corp. Manager: Cody Taylor.

[8] **XANDOR RECORDING STUDIOS;** *also REMOTE RECORDING;* 407 Camino Sobrante; Orinda, CA 94563; (415) 254-9077. Owner: James Weyeneth. Manager: Jim.

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MIX THE RECORDING INDUSTRY MAGAZINE

World Radio History

—FROM PAGE 28

to the show 12 hours late. This meant we then had to set up overnight, with only the dim hope of having a functioning booth by show opening next morning.

This overnight deal proved to be a bit more difficult than we had originally anticipated, as the show security guard guys came down on us around 2 or 3 a.m. with stories of total lockup security, guard dogs and other yahoo.

All *that* apparently proved to be a bit more difficult than *they* had originally anticipated—as equipment disappeared from the show floor faster than ice in Arizona. Gosh, New York must have some pretty sophisticated thieves if they can get all those DAT players, *at least six pairs of speaker cabinets* and who knows what else out of the hall with all that security.

Let me tell you a little about all that security. Within 15 minutes of my arriving on the floor (at midnight before the first day) I had been told of FIVE disappearing DATs and the traveling speakers. There were only three or four exhibitors on the floor at that time. Within two hours after the official opening, when there was a full house, I learned of so many more losses that I literally lost count.

As a test, I was personally able to walk out with three Mac IIs, four Quantec XLs, two huge computer monitors, two large CD players and a partridge in a pear tree. Much of this was done *after hours, with NO badge at all*!!

Well, anyway, to complete the picture, every day of the show was an all-nighter. I worked the booths all day and did business stuff each night. It is an official business skill to be able to eat three dinners with three different companies in one night and look like you enjoy each one as if it were your first.

It rained every day. I hadn't slept since 1967. The venue was useless (a two-block trek through the rain gets you access to some of the booths), and the timing was insane (SMPTE started the same day that AES ended, 3,000 miles away). Equipment theft was so bad that we had to break down and pack up the booth every damn night. The union guys were, well, union guys. You know. Orange juice cost $4.50 for a *small* glass, if you happen to be in the right hotel (I think they begin selling it by the cc next year).

Still, I had a wonderful time! "What?" you might ask. "How can this be?"

The answer is simple. Our industry seems to have actually gotten itself back together a bit. The people who make it happen are beginning to make it happen again, for the first time in years. A fellow exhibitor commented to me during teardown that he thought the show felt like the old ones used to in the good old days of ten years ago. You know, it *did*! The magic is back.

It was interesting (dare I say exciting?) again. There was direction. There was evolution. Revolution. Buzz.

We as an industry are about to jump into hyperspace, and when we come out we will find ourselves in a new universe. We as people will be working in virtual studios, sitting in front of massively powerful high-speed virtual workstations (or workplaces), with real-world physical human interfaces at our fingertips. Our data will travel anywhere we want it to, without hum, noise or signal damage of any kind—as non-visible light on small, single strands of glass, 32 or 64 channels at a time. We will listen through new speakers, with more accuracy and excitement, tighter imaging, less compression and less displacement than ever before.

I saw and heard all of this begin at this AES Convention. I personally was lucky enough to have three of my projects debut at this show—three product lines, from three different companies, each of which I plan to have revolutionize the industry.

All of you are lucky because a *lot* of people showed stuff that should revolutionize the industry. It *was* good.

The TEC Awards happened again, and once again those in charge were silly enough to allow me up on the stage. This is quite dangerous for them, as I don't always agree with who wins. In fact, sometimes I am appalled. But sometimes good guys win, and more importantly, the TEC Awards bring in money for very important causes, and they do this *every time*. They raised over $40,000 this year. Forty kilobucks for feeding both educational growth in our industry and for working directly to help the hearing impaired, high SPL damage included. Seems fair to me. If you have ever seen any of the little kids that have directly benefited, my bet is that you agree.

I finally met Les Paul, at the TEC Awards ceremony, in fact. I told him that his first efforts in developing the concept of multitracking helped start the industry that I (and I) and we currently live in. I figure that without him and other visionaries the multitrack recording industry might not exist in the form that it does today. And without this, I would probably be slinging hash browns in a diner somewhere in Needles, California. He was great.

Two days later, this very same Les Paul (not to be confused with all those Les Paul copies) caught me on the floor at the convention and described, with much excitement, a 40-track, disk-based digital recorder/editor/virtual studio that he had just seen demonstrated. He was fascinated that the industry had grown so far in so little time and that what was so complex for him is so easy now.

Now as it turns out, I happen to know one of the designers on that particular project quite well, and he is deeply honored that the man who made the first jump, from one track to two, should be there to see and enjoy this jump: from 24/32 on tape to "n" on disk.

We must each carry the torch in turn. I felt silly poetic things like this, not only in reference to the Les Paul adventure, but to many other things that took place at this AES.

I am always moved by the motivation behind the TEC Awards, and who can resist being moved by an entire industry that is on the move itself, once again, after all these beers. Maybe we're growing up after all. If you doubt it, have a look at one of the first issues of *Mix*. ■

Steve St. Croix came out of this show feeling like a kid again. An old kid, but a kid. He wants to do this again real soon.

World Radio History

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