

George Harrison • Digital Signal Processing • Michael Omartian

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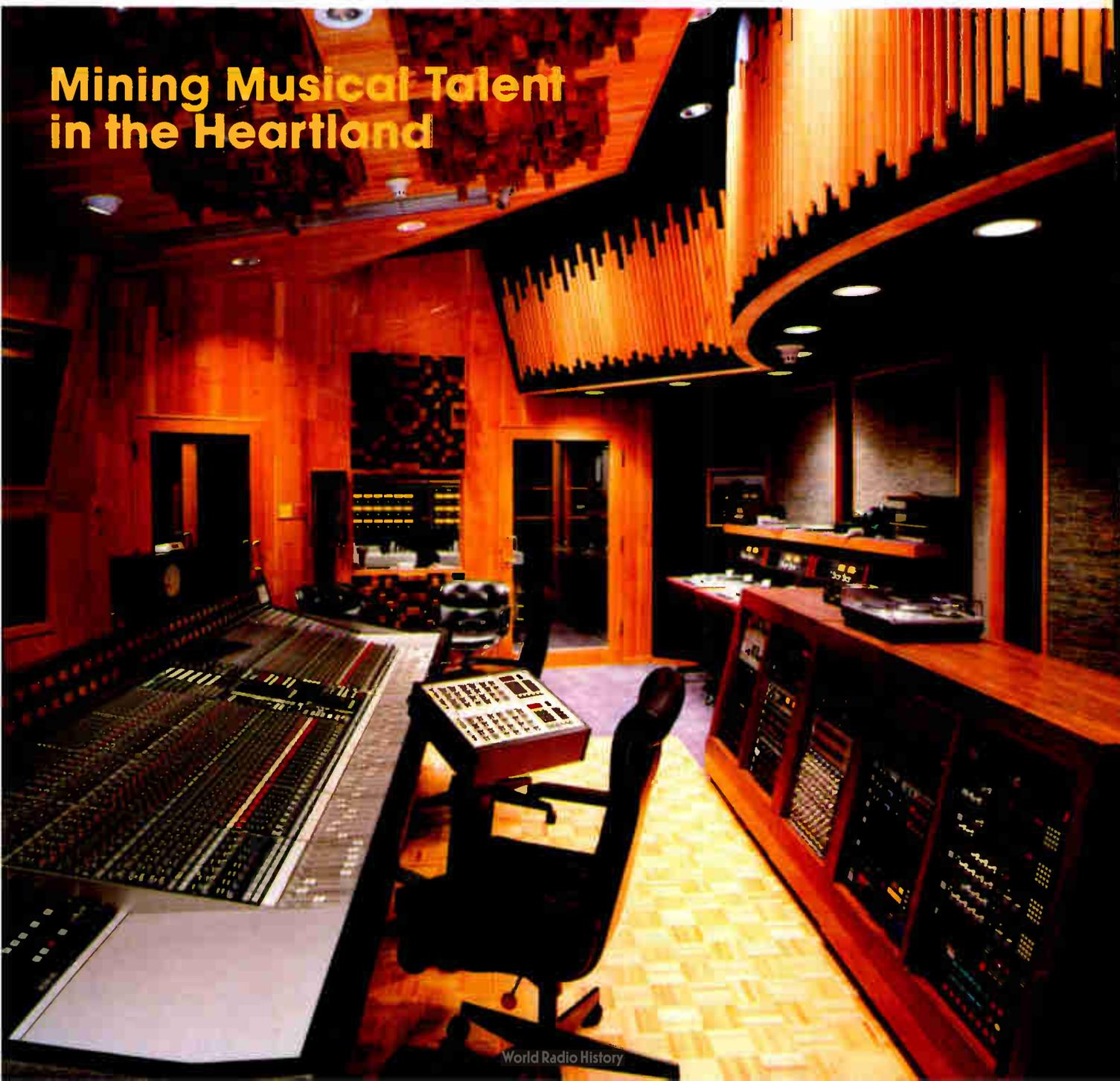
MIX

**North Central Recording
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**Canadian Recording
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THE RECORDING INDUSTRY MAGAZINE

**Mining Musical Talent
in the Heartland**



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World Radio History

MIX

NOVEMBER 1987

THE RECORDING INDUSTRY MAGAZINE

VOL. 11, NO. 11



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FROM THE EDITOR

Cover: On line since June of this year, Paisley Park Studio in Chanhassen, Minnesota (near Minneapolis) features a 64 input Solid State Logic SL 6056E console. Owned by rock star Prince and available for outside projects, the facility was designed by Bret Thoeny of BOTO Design.

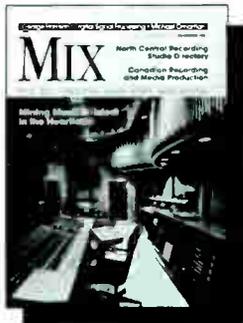


Photo: Bob Perzel, Perzel Commercial Photography

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From time to time we ask

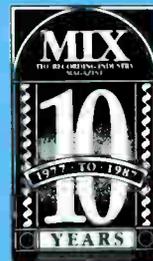
Mix readers what they'd like to see in the magazine, what kind of articles, columns, information and interviews we can provide to serve their needs. Sometimes we cook up elaborate questionnaires to try to analyze the popularity or importance of the various elements in the magazine. Other times we gather groups of *Mix* readers in a room and discuss the current issues and how we can best respond to them.

This time we'd like to invite you to take the initiative, to write and tell us what you'd like to see more of, or less of, in *Mix*. What features do you like, what do you find no use for? What are the topics that are most important to you, the areas where we may be able to dig up some valuable information for you? All of these things are of great interest to us, especially at this time of the year, as we build our editorial schedule for 1988. Please write and let us know!

One other order of business that it is our pleasure to share with you is the introduction of a new column and a new writer to our pages. Mel Lambert has been known to many as the editor of *Recording Engineer/Producer* magazine for the past seven years. Since his departure there, he has organized a pro audio marketing and public relations firm with Bobbi Marcus in Los Angeles. Mel has also been developing a series for *Mix* readers called "Juxtapositions," which will take a look at important current topics of discussion and controversy in pro audio, with a sense of historical perspective. His aim will be to show the patterns and relationships in our rapidly developing technology, from his unique and widely experienced viewpoint. We hope you enjoy his writing as much as we have through the years. Welcome to our pages, Mel.

Keep reading,

David M. Schwartz
Editor/Publisher



CURRENT

RIAA/NARM Consumer Survey

The Market Research Committee of the Recording Industry Association of America (RIAA), and the National Association of Recording Merchandisers (NARM), recently completed their second annual joint market research project involving questions pertaining to buying patterns, sales volume and outlet information.

According to the survey of 107 regular NARM members (representing approximately 90% of that organization's membership by product volume), cassettes made up 56% of 1986 music dollars, while CDs represented 19%—up from 8% in 1985. LPs accounted for 18% of dollars spent and singles 7%. Those surveyed estimated that their customers spent more in 1986 on "full-price catalog" (38%) than on "current release/best sellers" (35%).

NARM members are optimistic about the future: 80% feel that sales will increase over the next two years while 78% plan to expand during that time. Growth in the home entertainment industry during the two years is expected to come from prerecorded music products, according to 56% of the respondents. An average of 2,460 CD titles are estimated to be carried by respondents at each location and 44% feel CD sell-through is better than that of LPs and cassettes. Ninety-six percent of those surveyed expect CD sales to increase this year.

The First American Video Conference

The First American Video Conference incorporating *Billboard* magazine's Ninth Annual Music Video Conference & Awards will be held at the Hollywood Roosevelt Hotel in Los Angeles, November 19

through 21, 1987. This year's event is co-sponsored by the American Film Institute. The New Music Seminar has been retained to help in conceptualizing, promoting and presenting the conference.

The agenda includes two full days of seminars and panels covering all aspects of special interest production and marketing. Subjects include development, funding, distribution and sales. Separate panels will cover music video production, programming and promotion.

In addition to the *Billboard* Music Video Awards, the awards banquet will honor the best in non-theatrical video, including: drama, comedy, documentary, biography, educational, how-to, health/fitness, children, sports, cultural, videoart, games and interactive.

Pre-registration cost will be \$325 through November 6; after that date the registration fee will be \$375. There will be a combined American Video Conference and *Billboard* Music Video Awards Banquet on November 21 with a separate fee of \$95. For more information call (212) 722-2115.

NAB Moves Forward in HDTV

The National Association of Broadcasters' (NAB) High Definition Television Task Force recently approved expenditures for the first portion of its comprehensive feasibility study and implementation plan. The funds were approved following the presentation of a detailed timetable by NAB's Science and Technology Department.

The presentation involved concurrent work in seven areas, including propagation tests, standards development, spectrum studies and demonstrations.

"Both aspects of this undertaking—

the development of information and standards on high definition television and the protection of spectrum to accommodate the technology which is ultimately developed—are absolutely vital," says NAB television board member and Task Force chairman William G. Mall, president/CEO of Harte-Hanks Television, San Antonio, TX.

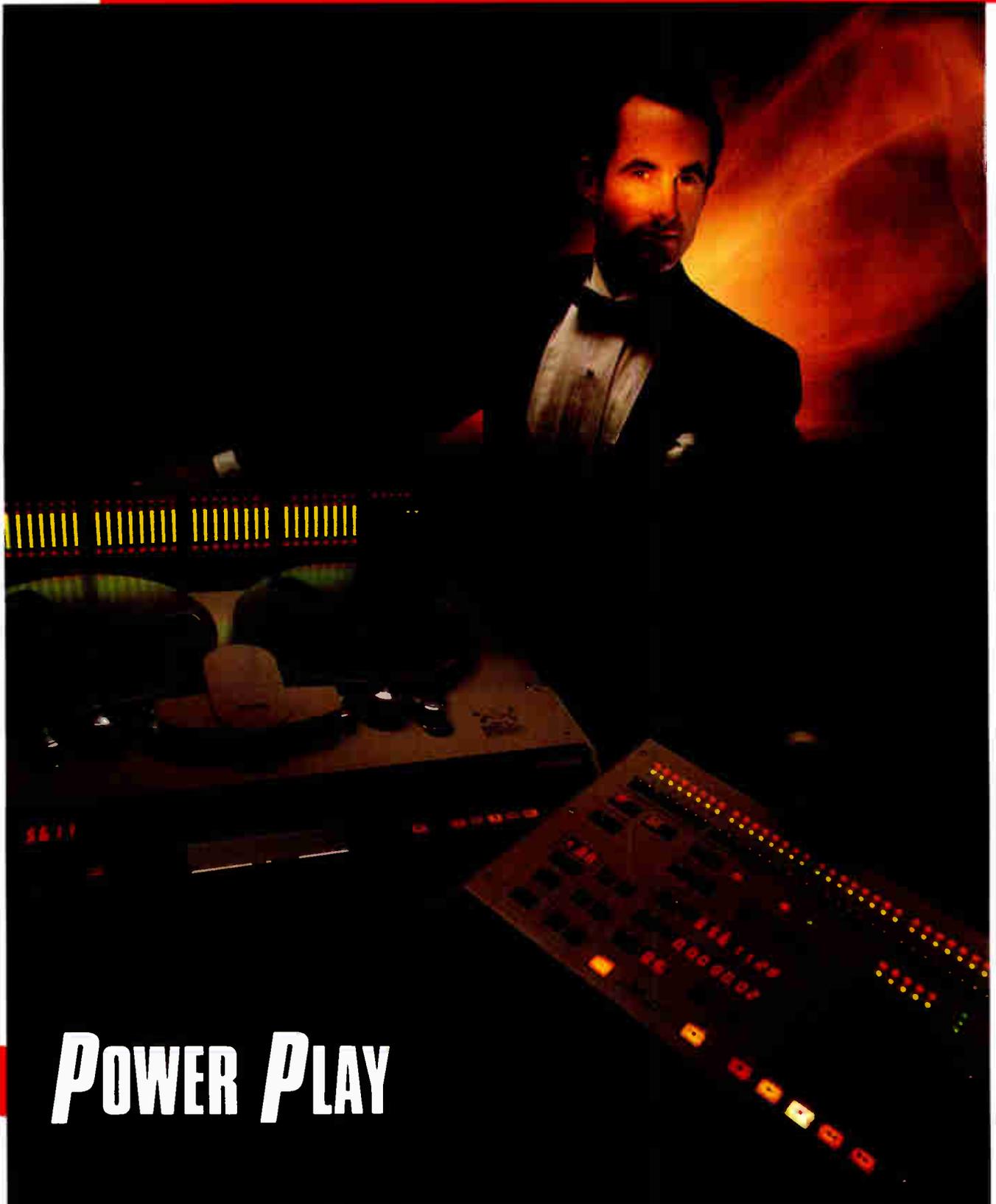
The Task Force recommended funding for specific projects which will require approximately \$200,000 through the first quarter of 1988. It plans to meet again in two months. One item on the agenda will be to review suggestions of its technical subcommittee, which plans and monitors the individual activities of the overall effort.

NRSC Announces New AM Broadcast Standards

Additional voluntary standards to further reduce AM band interference were proposed by the National Radio Systems Committee (NRSC). The standards would complement the NRSC standards now being implemented by AM stations and would further mask unwanted radio frequency emissions.

"Together with the NRSC audio standard adopted earlier this year, adoption of the new emission limitation standard will virtually eliminate AM splatter interference, resulting in a significant technical improvement in the AM band as a whole," according to NAB chairman Jerry R. Lyman, president of RKO Radio, New York.

The NRSC proposal tightens out-of-band emission limitations for AM stations and assures absence of AM splatter interference. The NRSC established a six-month public comment period.



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INDUSTRY NOTES

Oberheim has agreed in principle for **Hammond Suzuki Ltd.** of Japan to be their exclusive manufacturer and producer of future Oberheim products worldwide. The products will be developed jointly, the first two of which will be previewed at the January NAMM show. . . **Discovery Systems**, the Columbus, OH compact disc manufacturer, has opened two new offices: in New York (212-888-2220) and Raleigh, NC (919-881-0066). . . **DOD Electronics**, the Salt Lake City manufacturer of audio signal processing equipment, has acquired another building, to be used for an expanded engineering R&D department and circuit board manufacturing. . . Four regional **Electronic Sound & Systems Conferences** have been scheduled for November and December in St. Louis, Chicago, Los Angeles and San Jose, CA. The two-day seminars will cover fiber optic technology and applications, CPUs, compare automatic mic mixers and topics on CCTV and digital. For further information call (312) 593-8360. . . **Von Haney** has been appointed national sales manager of **Lenco's** electronics division. . . **Lexicon** has opened a new office to represent its random access, pro audio and broadcast products at 11965 Venice Blvd., Ste. 407, Los Angeles, (213) 391-0363. . . **Audio/Digital** has appointed six new manufacturers' representatives for its product line. They are **Lichtenauer & Associates** (415-757-1200) for Northern California and northern Nevada; **New Horizons Electronics Marketing** (312-234-6500) for northern Illinois and eastern Wisconsin; **Monfort Electronics Marketing** (317-872-8877) for Indiana and Kentucky; **RW Sales, Inc.** (612-646-2710) for Minnesota, North and South Dakota and western Wisconsin; **Gerald Horne Associates** (617-897-1741) for Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island and Vermont and **C.L. Pugh & Associates, Inc.** (216-238-1777) for Ohio, western Pennsylvania and West Virginia. . . **New Media Learning Center** has opened in San

Francisco and provides classes, seminars and consultation in high technology media production and information processing systems. They can be reached at (415) 243-0775. . . **DigiPrep**, a new digital audio studio, was opened in Los Angeles by **Warren Salyer** and **Dan Hersch**, formerly of Hollywood's JVC Studios. They will be using the complete Sony 1630 system, the Harmonia Mundi system and the Ampex ATR for analog. Their telephone number is (213) 461-1709. . . England's **Total Audio Concepts Ltd. (TAC)** was awarded the Queen's Award for Export Achievement 1987. . . **Pacific Video Resources (PVR)** of San Francisco has doubled its space by completing a new conference room, graphics production room, expanding its client lounge and adding a private office for producer's use. . . **Stewart Electronics Corp.** has relocated to an 11,000-square-foot facility at 11460 Sunrise Gold Circle, Ste. B, Rancho Cordova, CA 95670. Their telephone number remains unchanged at (916) 635-3011. They also named **James Ruse** as national sales and marketing manager. . . **Apogee Electronics** and engineer/designer **Dave Smith** have designed a new digital-to-analog conversion box due out in early 1988. The precision mastering converter combines the most recent advances in oversampling filters and converter technology with multi-standard digital input capabilities. . . **Tina Sharkey** was named vice president, marketing of **Rebo High Definition Studio, Inc.**, a video production company involved in the adaptation and use of high definition television. . . **Auteri Associates, Inc.**, a lab facility specializing in evaluating and servicing all magnetic heads and assemblies, including precision head relapping and complete optical alignment, has expanded to new facilities at 53 Foreston Circle, Manorville, NY 11949, (516) 878-6421. . . Nashville's **Harrison Systems** has established a West Coast office at 4721 Laurel Canyon, Ste. 290, North Hollywood, CA, (818) 763-2349. . .

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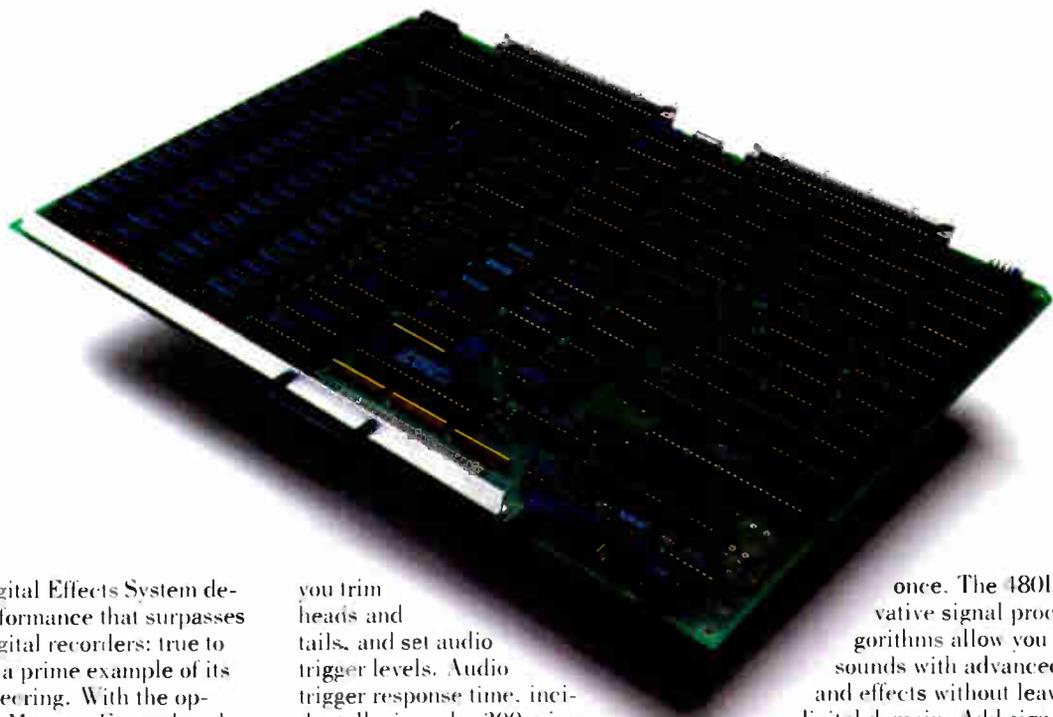
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a Lexicon applications brief.*



The 480L Digital Effects System delivers audio performance that surpasses conventional digital recorders: true to life sampling is a prime example of its advanced engineering. With the optional Sampling Memory Expander, the 480L becomes an astonishingly practical way to copy or move several seconds of audio from point A to points B and C.

Until now, "flying in" or "slipping" vocal and instrumental overdubs meant tradeoffs. Two-track tape is clumsy and degrades the signal; DDLs with long memories are better, but not by much. Now, with the 480L's optional Sampling Memory Expander, you can digitally record 10 seconds of true phase-locked stereo or 20 seconds of mono at a 48 kHz sampling rate. 18 bit equivalent A/D conversion produces a typical dynamic range of 98 dB, with a bandwidth of 20 – 20,000 Hz; output doesn't get any closer to input.

If you're using a digital recorder that's Sony 1610 compatible, the Sampling Memory Expander and the 480L's digital I/O interface can reproduce the original performance at any location on tape without leaving the digital domain. Slip syncing, copying and time shifting of audio segments is faster and cleaner than ever before.

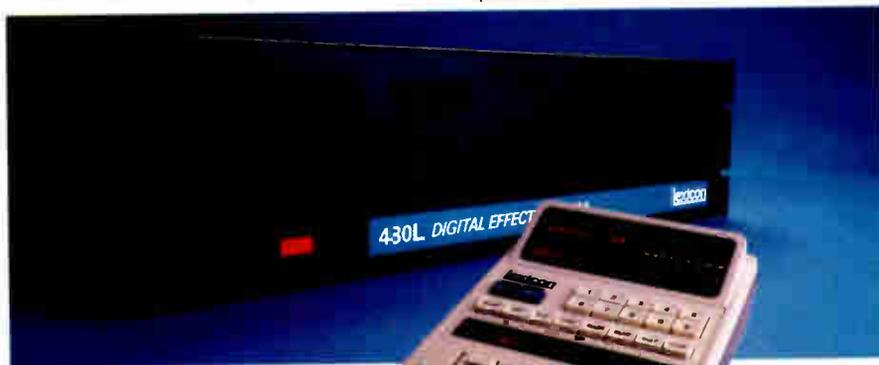
You control sample recording, editing, processing and triggering from your work position using the 480L LARC. Varying up to six parameters at once,

you trim heads and tails, and set audio trigger levels. Audio trigger response time, incidentally, is under 300 microseconds — virtually instantaneous. Sampling Memory Expander enhancements include Record Trigger to trigger sampling automatically from audio input, Time Variant Record, and sound on sound digital recording in sync with the original sample. Lexicon Dynamic MIDI® lets you assign MIDI controllers to sampling parameters, for new dimensions of real-time or sequenced control.

Sometimes even the most accurate replica isn't exactly what you're looking for; if so, the 480L will take you beyond imitation into creative sampling. Play samples faster or slower (without changing the sampling rate), backwards or forwards, even both at

once. The 480L's innovative signal processing algorithms allow you to enhance sounds with advanced reverbs and effects without leaving the digital domain. Add signal processing as you sample, or process a "dry" sample on playback with digital wet-dry mixing.

The 480L digitally integrates sampling and signal processing because it's designed as a comprehensive audio production tool: a system. And sampling is only the first of many directions in which this Digital Effects System can grow. We're continually examining the possibilities, and as your needs develop we'll implement new tools to meet them. Now is the time to call your Lexicon Advanced Products dealer for a demo of the new production techniques the Sampling Memory Expander makes possible.



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SESSIONS AND STUDIO NEWS

SOUTHEAST

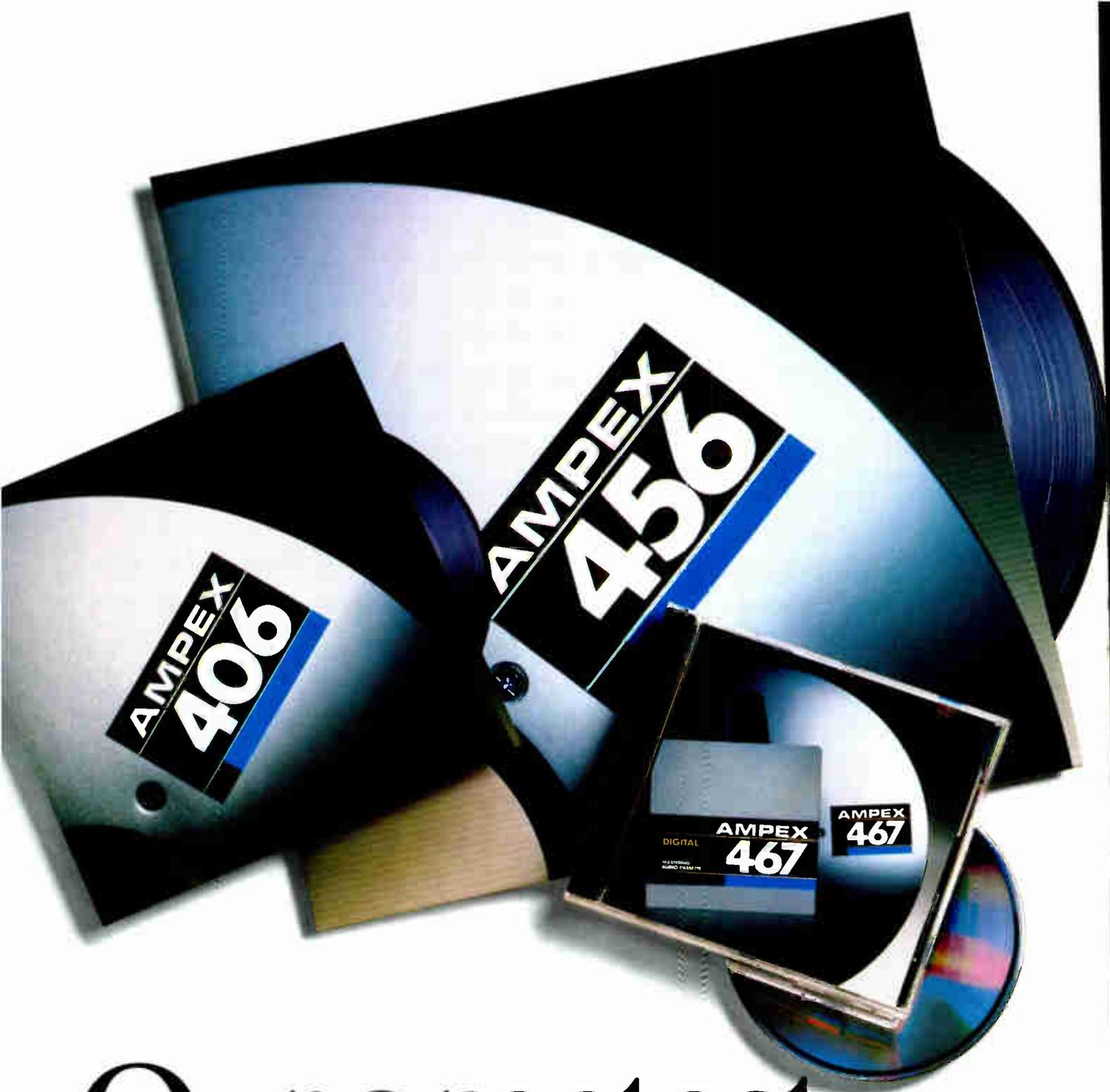
George Thorogood & The Destroyers rolled in to Memphis' **Ardent Recording** to cut tracks and mix their new album for Rounder/EMI. **Terry Manning** produced and engineered. . . At **Criteria Recording Studios** in Miami, FL, **Julio Iglesias** mixed an upcoming album. Engineering was **Carlos Nieto**, assisted by **Carlos Alvarez**. Also at Criteria, **Kashif** cut tracks for an upcoming album. Producing and programming was handled by **Lewis Martinec**. The tunes were engineered by **Mike Couzzi**, assisted by **Charles Dye**. . . **Razzy Bailey** was overdubbing on his newest tracks with **Gene Eichelberger** engineering at **The Bennett House** in Franklin, TN. . . Original music for Geraldo Rivera's new syndicated TV show was created, in part, at **Crawford Post-Production** in Atlanta using a Synclavier manned by **Eddie Horst**. **Steve Davis** produced. . . At **Reflection Sound Studios**, Charlotte, NC, producer **Jamie Hoover** of OVO Productions and engineer **Mark Williams** recorded and mixed two songs for the **Reluctant Debutant's** upcoming EP. . . At **Park Street Studios** in Tupelo, MS, **Tyrone Davis** recorded three songs for his new album, *Man of Stone*. It was produced by **Leo Graham** with **Sam Mosley** and **Bobby Johnson**. Engineering and mixing was by **Perry Barrett**. . . At **Air Studios** in Hendersonville, TN, **Shurfire** have completed work with co-producers/engineers **Mike Daniel** and **Denny Knight**, on their second Air/Compleat/PolyGram release, *Roll The Dice*. . . Jeannie C. Riley was in with producer **Margaret Warwick** and engineer **Billy Sherrill** cutting tracks at **Sound Emporium** in Nashville. . . Artist/writer/producer **Billy Hunter** completed basic tracks of a Frantic Fez Records project at **Silent Runing Records** in Decatur, GA. Mixdown for the project will be at **Threshold Audio** of Carrollton, GA. . .

Activity at **New River Studios** in Fort Lauderdale included MCA Records artist **Randy Bernson** in recording his next LP. Engineering duties were shared by **Mike Couzzi** and **Ted Stein**. **Dave Barton** and **John Portuondo** assisted. . . **New Age Sight & Sound**, Atlanta, had the local group **Lou's Blues Revue** in to record their new album on 24-track digital with engineer **Gary Hamm**. . .

NORTHEAST

Christopher Plummer completed the recording of Robert Davey's book, *High Spirits* for Listening Library at **SounTec Studios**, Norwalk, CT. . . **Kurt Shore** of **Kajem/Victory Studios** in Philly completed producing an LP for Roadrunner Records by **The Great Kat**, a great female guitar player. . . Producer **Steve Lunt** was in at NYC's **Counterpoint Studios** mixing a single for PolyGram recording artist **Gerry Woo**. Engineering was done by **Rick Kerr**. . . At **Cove City Sound Studios** (Glen Cove, NY) **Leslie West** began work for his new release on Passport Records, **Clay Hutchinson** engineering. . . **Paul Arnold**, chief engineer at **Newbury Sound** in Boston, has been behind the console for producer/songwriter **Dimples**. Paul and Dimples completed mixes for Dimples' newest album on CBS records entitled, *Tellin' It Like It Is*. . . At **D&D Recording** in NYC, **Ted Currier** and **David Sanchez** of Platinum Vibe Productions have been back with CBS artist **Tony Terry** working on vocals for his upcoming album. **Mike Rogers** engineered and **Kiren Walsh** assisted. . . **Chuck Chillout** was in at NYC's **I.N.S. Recording** with **Eric Isles** to produce **Disk Masters'** new project. "Keisha" was mixed by Chillout, and **Steve Griffin** engineered. . . At **Secret Sound** in NYC, **Chuck Irwin** engi-

neered and co-produced the new **Morgana King** album for Muse Records, assisted by **Eric Behrend**. . . At **Thryller One Studios** in Hartford, CT the **Kings of Rapp** have finished recording their debut album, *The Kings Control It*. Engineering was done by **Earl Calloway**. Producing was **Rupert Coley**, with **James McGovern** assisting. . . **Jean Robitaille** of Montreal completed mixing a new LP for Paroles & Musique Records at **Fantasy Studios** in Berkeley with **Stephen Hart** and **Mickeal Rosen** at the console. Basic tracks and overdubs were recorded at **Le Studio**, Morin Heights, Canada, by **Richard Belanger**. . . The **National Postal Procurement Association** recently contracted **Mirror Sound** in Cinnaminson, NJ, to record all of the dialog and speeches that occurred at its recent convention at the Hershey Hotel in Philadelphia. . . At **Digital** in NYC, **Gary Rottger** and **Mark Berry** did a remix of **David Bowie's** release "Never Let Me Down." Gary and Mark also co-produced a Canadian band, **Hypnogo**. . . At **Calliope Productions** in NYC, **Ray Davies** of The Kinks worked on a soundtrack with **Chris Julian**. . . After one and a half years in construction, **If Walls Could Talk Studios** has moved into its new 1,500-square-foot facility in Essex County, NJ. The new studio features a four-room studio complex designed by **Herb Pabst** and **Glenn Taylor**. Included are a 20 x 23 ft. control room, live studio, iso booth and MIDI/keyboard room complemented by reception, lounge/kitchen and shop areas. . . **The Nik Everett Group** spent a couple of months in Philadelphia's **Third Story Recording** recording their debut album on Third Story Records. **John Wicks** produced, **Dan McKay** and **Scott Herzog** engineered. . . At **Quad Recording** in NYC, vocalist **Gwen Guthrie** has been laying the tracks for her next album for PolyGram Records. Guthrie produced, **Tom Zepp** and **Gregg Mann** engineered,



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assisted by **Henry Falco**. Mix engineer was **Steven Stanley**. . . At New York's **Unique Recording, Ashford & Simpson** were mixing their single "Down To Earth." The mixes were to be used in the soundtrack to the R.J. Louis Production entitled *Mac & Me*. **Brooks Arthur** produced, **Michael Hutchinson** engineered, **Ken Collins** assisted. . . Sessions at **Frankford/Wayne Mastering Labs** of New York City included **Carlton Batts** engineering **Samantha Fox**'s "If You Could See Me Now" and **Schooly D's** "Parkside 5-2" for RCA Records. . . At **Metropolis Music** in New York, pop vocalist **Barbara M.** completed her debut album entitled *Hi Steppin'* for 3C Records. **Gene Schwartz** co-produced the project with **Leslie Fradkin** and **Elizabeth Rose**. Engineering and mixing was handled by **Cynthia Daniels, JC Convertino** and **Laura Fried**. . . At **39th Street Music** (NYC), **Randy Klein** was in producing **Sara Dash**'s latest track, "After Love," for Hush Productions. **Richard Kaye** was at the console, assisted by **Dennis Wall**. . .

NORTH CENTRAL

At **Solid Sound**, Ann Arbor, MI, **High/Scope Foundation** with **Phyllis Weikart** and **Gemini** finished mixing their 11th album entitled *Rhythmically Moving #11*. **Will Spencer** engineered. . . **David "Z" Rivkin** engineered/produced several projects at **Metro Studios** in Minneapolis, including **Tyka Nelson** (Chrysalis), **Boz Scaggs** (CBS) and **Nu Shooz** (Atlantic), all with **Tommy Tucker Jr.** assisting. . . **Farley "Jackmaster" Funk** was at **Paragon Studios**, Chicago, doing an instrumental mix of his hit "Love Can't Turn Me Around," which he will use at his performance at London's **Limelight**. **Bob Kearney** engineered the session. . . Recent **Hidden City Recorders** (Inkster, MI) projects included demos for songwriter **Ken Mobley**, rock groups **Back Beat, Boogie Chillen**, and folk-gospel favorites **Peter, Paul & Mary Ford** all engineered by **Jim "Flash" Pashkot**. . . At **Mus-I-Col Studios** in Columbus, OH, the local band **The Burners** completed session work for its first LP, *Mezmerization*, for Penguin Productions. It was produced by band members **Mick Williams** and **Pete Linzell**, while **Doug Edwards** handled engineering responsibilities. . . At **Studio A**, Dearborn Heights, MI, **Eric Morgeson** and **Randall Jacobs** co-produced a single for PolyGram's **Gerry Woo** for Three G's Productions. Morgeson was at the console

with **Randy Poole** assisting. . . At **Brown & Brown Recording** (Portage, MI) 1960s hit-maker **Junior Walker** was tracking a new project engineered by studio owner/manager **Kevin Brown**. . . Piano/harmonica wizard **Howard Levy** has been in at **Tone Zone Recording** in Chicago laying a number of solo piano pieces direct-to-track for his latest personal project. . .

NORTHWEST

The Looters were in **Studio D** (Sausalito, CA) laying down tracks for their upcoming album for David Rubinson Management and Island Records. **Ken Kessie** engineered and produced with **Jim Verecke** assisting. . . The Santa Cruz Band **Solution** was in at **Montage Recording** (Newark, CA) with **Will Mullins** recording a demo. . . Christmas came early in the studios at Seattle's **Steve Lawson Productions**. Northwest recording artists once again donated their music to the recording of the successful benefit album *Christmas in the Northwest*. Among them was **Randy Hanson**, who worked with engineers **Terry Date** and **Bruce Calder** recording an original Christmas tune in the Jimi Hendrix style that has earned Hanson his national reputation. . . *Surfing With the Alien*, **Joe Satriani**'s second album for Relativity Records, was completed with **John Cuni-berti** engineering at **Alpha & Omega Studios** in SF. . . At **Sage Recording** in Arlington, WA, **Hows Bayou**, Seattle's Cajun band, finished their first album *New Melody Stomp* with engineer **Ed Littlefield, Jr.** Mixdown was by **Matthew Sutton** and **Mike Bristow**. . . **Russian Hill Recording** in SF hosted the **Beach Boys** recently for a series of overdubbing and mixing sessions in Studio A. The single "Happy Endings," with **Little Richard** singing lead vocal, was produced by **Terry Melcher** with **Bruce Johnston**. Recording and mixing engineer was **Keith Wechsler** with RHR's **Samuel Lehmer** and **Jeffrey Kliment** assisting. . . Platinum album producer/engineer **Geoff Workman** has taken studio residence at **Avalanche Recording** in Northglenn, CO, to produce local bands through his company, Original Projects Unlimited. His recent projects include **G-Force, Original Rabbits, Jynx, Toy** and **Denny Lake**. . . **Bourgeois Tagg** (a San Francisco band) was in **The Plant** in Sausalito, CA with producer **Todd Rundgren** doing overdubs for their new album. Rundgren also engineered the project. . . **The Music Source** in Seattle completed several video

sweetening and/or music projects for diverse clients such as **Nordstrom's, Steinfeld's Pickles** and the **Columbia Health Center**. . . In Sunnyvale, CA, **The Recording Studio, Inc.** completed an EP for **Electric Voice Phenomenon**, a popular Bay Area group. . . At **Jopheir 12 Studios** in Los Gatos, CA, **Blue Chamber** completed their latest demo project. **Todd** and **Dave** produced with **Dennis Fish** engineering. . . **Miss Kitty & The Psycho Souls** recorded six songs at **OTR's** 24-track studio in Belmont, CA. The session was engineered by **Randy Selgrin**, and produced by the band, who are shopping the tape for a record deal. . . **Patrick Gleeson** was in SF's **Different Fur** producing/recording/mixing the soundtrack for this season's *Rags to Riches* TV series, with **Devon Bernardoni** engineering. . .

SOUTHERN CAL

Virgin Recording artists **Scarlet & Black** were in **The Enterprise** in Burbank mixing down their latest 12-inch with **Paul Fox** producing. . . At **Larrabee Sound** in L.A. **Supertramp** mixed their new album for A&M Records. Grammy award-winning engineer **Tom Lord-Alge** manned the console, with the assistance of **Jeff Lorenzen**. . . **Chico DeBarge**'s new album project for Motown was produced and engineered at **Encore Studios** in Burbank by **Skip Drinkwater**. . . **Kenny Loggins** was in **Skip Saylor Recording's** new SSL room overdubbing and mixing for CBS/Columbia Records. Engineering the sessions in the L.A. studio was **Brian Malouf**, assisted by **Clif Jones**. . . **Brian Wilson** of the Beach Boys was in L.A.'s **Wildcat Studios** working on his project for Warners, with **Josh Schneider** engineering. . . **R.E.O. Speedwagon** enlisted **Preferred Sound** in Woodland Hills to mix a live show for later broadcast on Westwood One. **David Devore** engineered, assisted by **Scott Campbell**. . . **Steve Griffin** was in **Mad Dog Studio** in Venice cutting tracks for underground rocker **Rik Lear**. **Rickey Reynolds** and **Don Tittle** assisted. . . At **Sound Solutions Recording** in Santa Monica, **George Clinton** produced **Otis Day & The Knights** for MCA and **The Tachheads** for Warner Bros. Various engineers on the sessions included **Leonard Jackson, Larry Ferguson, David Blade, Aarin Richard** and **Jim Burnett**. . . At **Total Access** in Redondo Beach, **Dokken** completed vocal overdubs and guitar solos for their new Elektra album, **Neil Kernon**

—CONTINUED ON PAGE 209

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by Ken Pohlmann

LOCALIZATION HEARING IS BELIEVING

Here at "Insider Audio" we spend a lot of time spouting off about sampling rates, injection molding machines, optical discs, error correction, DAT, and things like that. Those topics sure are fun to talk about, but they kind of miss the point. You see, the real business of audio takes place inside our heads. Audio is merely an academic concept without our perception of it. Acoustical perception explains our subjective response to anything we hear and it is the ultimate arbitrator in acoustical matters. Psychoacoustics seeks to reconcile acoustical stimuli and all the scientific, objective and physical properties which surround them, with the psychological responses evoked by them. This month, Insider Audio would like to get really inside.

The ear is a very sensitive organ. When coupled to the interpretative powers of the brain, the kinds of mental judgments which result form the basis for all the enjoyment we experience from sound and music. Psycho-

acoustics presents a formidable opportunity for basic research into factors such as aural associations, the effect of musical training, attentional ability and organization of memory for musical information. In addition, while many responses are common to all listeners, any listener's response is a unique reflection of individual experience.

The basis of psychoacoustics, and all aural perception, is the ear-brain system composed of two ears, and two brain hemispheres. It is a wonderfully complex machine, and while some of the simple mechanisms are fairly well understood, the entire system is not. The left and right ears do not differ physiologically in their capacity for detecting sound, but their respective right and left brain halves certainly do. Each of us has one brain (more or less), but the two halves loosely divide the brain's functions.

Interestingly and mysteriously, the connections from the ears to the brain halves are crossed; in other words, the

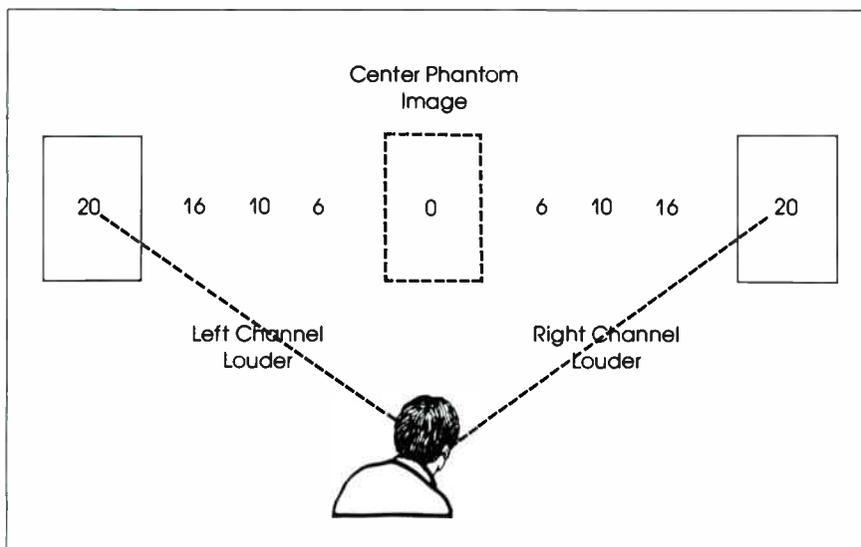


FIG. 1 Approximate image location between loudspeakers versus interchannel intensity difference in dB.

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right ear is wired to the left brain half and the left ear to the right brain half. There is some overlap in the connections, but the primary links are crossed. It has been found that the left cerebral hemisphere processes most of our speech (verbal) information. Thus, the right ear is perceptually superior for spoken words. On the other hand, it is mainly the right temporal lobe which processes melodic (non-verbal) information. Therefore we are better at perceiving melodies heard by the left ear. Should Congress pass a law placing music on left loudspeakers, and lyrics

on the right?

Localization provides a fine example to study psychoacoustics in action, and show the sophistication, and simple-mindedness, of the ear-brain. The ear-brain uses four main cues to localize sound: relative intensity, time of incidence, phase and complexity of waveform. The system is mainly designed for two ears (and two are needed for solid localization). That raises many questions including one of basic design—specifically, why do people have ears? With one good ear we can fully perceive amplitude, frequency, loudness and timbre. But primeval man needed two ears for reliable localiza-

tion—that is, to know what direction the man-eating animals were coming from. Today, of course, modern man still desperately needs two ears—otherwise his Walkman headphones would fall off.

Curiously, as Everest points out in his Auditory Perception course (see also Rodgers, *JAES*, April, 1981), the folds, ridges, depressions, and other funny shapes (some funnier than others) of the outer ear enables us to at least feebly locate sound (particularly in height) with only one ear. The asymmetry acts to differentiate incoming sounds depending on their direction by comb-filtering the direct sound with the reflections from specific areas on the outer ear; specifically, path length differences of about an inch resulting in a 74-microsecond time difference. This creates a series of notches, with the first notch at 6,800 Hz. Sound from a different location would yield a different path length and hence a notch at a different frequency. The outer ear is thus valuable, in particular for fine-tuning localization.

This one-ear localization can be simulated (and demonstrated) by playing a wide noise band, with notches at various frequencies to emulate the effect of the outer ear (see Bloom, *JASA*, March, 1977). As the notch is moved in frequency, the positional height of the signal seems to change. This is particularly ironic, because copy-code for DAT seeks to permanently implant deep “inaudible” notches in all pre-recorded music software, such as CDs. Given the complexity of the hearing mechanism, and our shallow understanding of it, the absurdity of calling this copy-code notch “inaudible” is apparent. Such playing with the psychoacoustics of music is like van Gogh playing with a kitchen knife. Think about it.

Of the various mechanisms employed for localization, relative intensity difference is perhaps the most important cue. A sound from one side will have greater intensity at the near ear because of the inverse-square law which dictates that sound attenuates as it propagates. Intensity is also influenced by the head's acoustic shadow; high frequencies will be blocked by the head, and will be further attenuated at the far ear. This effect is important at frequencies above 1 kHz, but is insignificant at lower frequencies because long wavelengths tend to bend around the head. If you're in doubt



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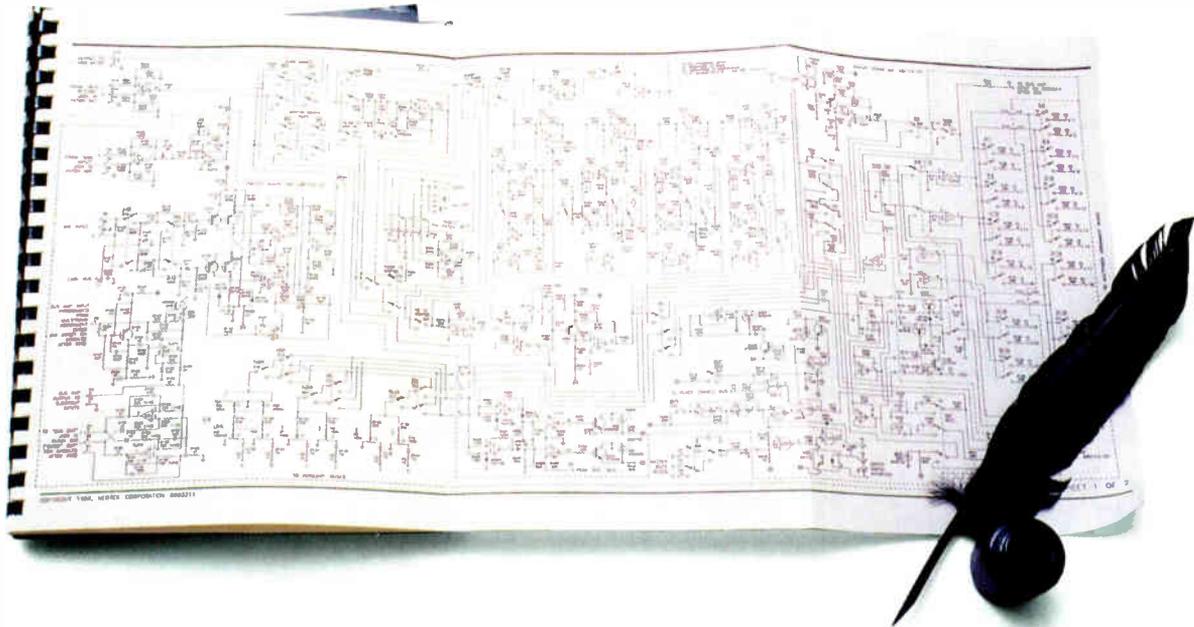
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about this, turn on your stereo and hold an LP jacket in front of your face. It blocks high frequencies, just as your head does.

The second cue, time of incidence, exercises the brain's computational power; the brain rapidly calculates time differences of less than a few thousandths of a second between one ear and the other. The ear nearest to the sound receives the sound first, and points to its direction of origin. This cue is ineffective for a steady-state continuous tone, but highly useful for any changing waveform.

There is no question that the ear-brain is sensitive to phase differences in sounds. It's easy to demonstrate this with binaural beats, which are beat frequencies created not acoustically, but psychoacoustically. Put on a pair of headphones and play a 500 Hz tone in one ear and a slightly detuned tone in the other. Your brain conveniently creates a beat frequency inside your head, with a sound quite dissimilar to acoustic beats in the air. Once we more fully understand this, there could be some wild mixes on the charts.

The other two cues are derivatives of the first two. For continuous tones, the brain compares the phase between the two ears. The greater the calculated phase difference, the further to one side the sound's origin. Of course, this cue is frequency-dependent; the effect is only good for frequencies where the patch length between the two ears is a wavelength or less. At higher frequencies different waveform cycles are superimposed and phase information is lost.

Finally, the complexity of the waveform plays a part. The head attenuates high-frequency components and not lower ones, and the brain perceives the resulting timbre differences between the ears—the further ear has less high frequencies. Thus, lower frequencies are localized primarily by time of incidence, or phase, between the two ears, and high frequencies by amplitude difference. The shape of the outer ear helps to determine front-back localization. Also, slight head movements which shift the ear-brain's placement in the sound field help to decipher the cues.

A pair of loudspeakers (or headphones) provides a perfect laboratory to study the psychoacoustics of locali-

zation, as shown in **Fig. 1**. When sound is produced from the left speaker, our ear-brain uses its four cues to determine the left-hand direction of origin; likewise for the right speaker. But when equal sound is produced from both speakers, a fairly amazing phenomenon takes place—instead of localizing sound from two left and right speakers, our highly evolved ear-brain decides that the sound is coming from the empty space between the speakers even though other sensory organs such as our eyes clearly show that nothing is there (however, localization is sharper in a darkened room). Each ear receives the same information, and that information is stubbornly decoded as coming from straight ahead. Our interpretation of the cues leaves us no choice. We have created a phantom image.

The ear-brain's gullibility and the phantom images it creates is the keystone of stereo reproduction. When the correct spatial information is recorded along with the music, the ear-brain decodes it to recreate the panorama of a sound stage. As some diehards enjoy pointing out, stereo is nothing more than two-channel monaural. The rest is purely interpretive.

The principal device used to accomplish stereo encoding is, of course, none other than a pan pot. By varying the information of the localization cues, phantom images may be placed anywhere along the line between two speakers. When a pan pot is rotated, it varies the relative amplitude of the signal between two channels. The ear-brain uses the resulting cues (amplitude and others) to determine localization and presto—the image appears to move. It's only an illusion, but a pretty

good one. Of course, it works best with sounds that fit the ear-brain's cue criteria. As we've already noted, high frequencies are the best candidates. Low frequencies are more difficult to localize, and the stability of the placement also is dependent on the timbre of the waveform, the interaction of other signals present in the loudspeakers, the effects of the listening room acoustics, and of course, listener placement.

Time of incidence also can be used to create phantom images. If equal amplitude signals are supplied to our loudspeakers, the phantom image appears in the middle. But if a 2-millisecond time delay is introduced to one speaker, the sound will appear to come from the earlier speaker; the later speaker perceptually disappears, as shown in **Fig. 2**. This nifty bit of psychoacoustics is known as the Haas Effect; it states that the ear-brain is drawn to the earlier source, ignoring the later one. The effect is good up to about a 40-millisecond delay, after that the ear-brain has time to realize the trick, and perceives the two sounds as discrete impulses. By playing with delays less than 2 milliseconds, we may move the phantom image along the line between our two sound sources, our ear-brain obediently using time of incidence cues to create the phantoms. Try it for yourself: the effect is so convincing you may have to put your ear up to the "silent" delayed loudspeaker to make sure it's still on.

Rather than rely on electronics, localization cues can be obtained easily from a pair of ordinary microphones. When a pair of spaced-apart omnidirectional microphones is placed in front of an orchestra, the orchestra's spatial information is encoded free of

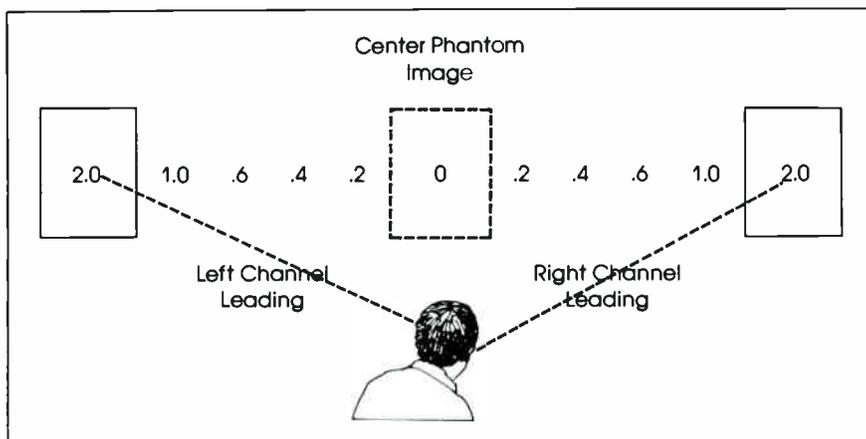


FIG. 2 Approximate image location between loudspeakers versus interchannel time difference in milliseconds.

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charge. For example, the sound of the violins will be picked up by both microphones, but the violins are closer to the left microphone than to the right, thus their sound output will be louder in the left microphone, and will arrive earlier.

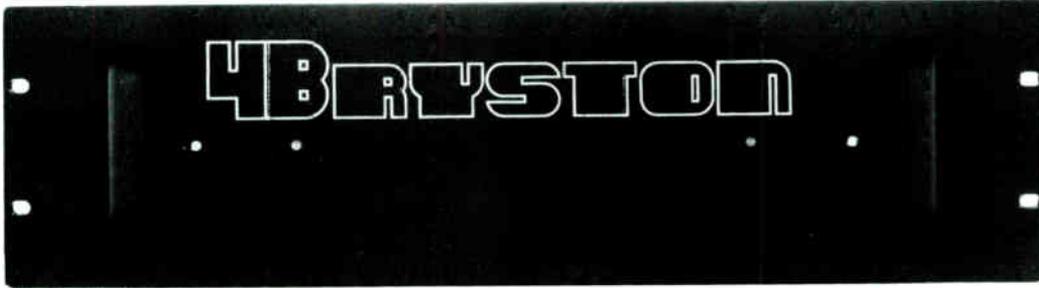
When the two channels are reproduced, the amplitude and time of incidence information encoded along with the music will cause our ear-brain to place the violins on the left. Likewise, the rest of the orchestra members are aurally seated in their respective chairs between our loudspeakers. In addition, combinations of cues such as amplitude, time of incidence, hall reverberation, and high-frequency attenuation create information of depth, placing the woodwinds behind the cellos, and the percussion behind the woodwinds.

If you've got two ears, you are a bonafide spatial localization expert. What you have underneath that \$8 haircut is a marvelously complex decoding machine, obedient to many kinds of aural cues. Of course, when listening to a recording of aural cues, you are largely constrained by the accuracy of cues presented on the recording, but when everything is done properly, the effect can be realistic indeed. Unfortunately, the skill of the recording engineer is a factor outside your control. Fortunately, when you're the one doing the recording, you can exercise those cues, and improve your sound.

However, one factor outside your control is how your brain itself receives and interprets the electrical information from the ear. As we've seen, the ear-brain interface is wonderfully complicated, and with psychoacoustics we begin to understand that the enjoyment of music doesn't take place in air at all, but right between the ears. Consider: if your stereo system supplies all the acoustical cues of a concert hall, are you listening at home, or in the concert hall? In much the same way, any musical experience ultimately is a purely subjective experience. ■

Ken Pohlmann is an associate professor of music and director of music engineering at the University of Miami in Coral Gables, and vice president of U.S. Digital Disc in New York. He is author of Principles of Digital Audio and The Compact Disc Handbook.

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by Mel Lambert

TRACING ORIGINS & CONNECTIONS

Welcome to a new monthly *Mix* column. In case you don't recognize the name (or "byline" as we communicators are prone to use), let me introduce myself. Having served for the last seven years as the editor of another pro-audio magazine, I have now moved on to pursue a more rarefied existence.

Whereas in the past I used to be concerned with what amounted to a single assignment—the production of a monthly technical magazine, and all that such a task implies—these days I involve myself with a much more varied collection of simultaneous activities.

Why am I telling you all this? Apart from being of a somewhat friendly and chatty disposition, my current orientation parallels very closely that of many *Mix* readers working in recording studios, production facilities and handling live sound engineering.

In a nutshell, the pro-audio industry has been going through some extremely interesting changes over the past several years, with the result that the current generation of recording and production engineers is very different from that of a decade ago. And the most fundamental of these changes has been a growing complexity in the type of assignments that most recording and live-sound engineers, producers and support staff can expect to encounter during a typical studio session or concert date.

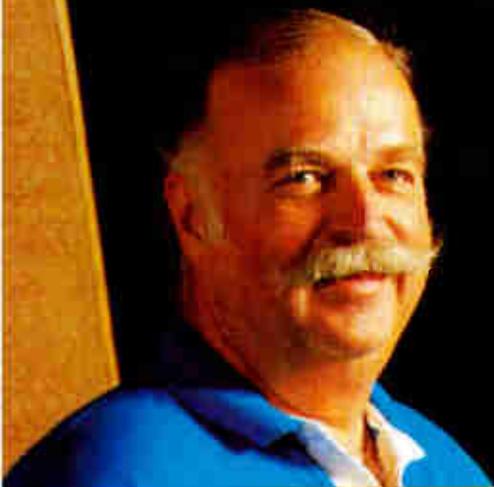
In the not too distant past, many engineers and producers assumed that a basic understanding of audio technology would get them through prac-

tically any problems in the studio or out on the road. While all of us should have more than a passing familiarity with what's happening beneath the hood of most items of hardware used in the studio or as part of a live-sound rig, these days such information simply isn't enough to ensure our continuing fame and fortune.

“The pro-audio industry has been going through some extremely interesting changes over the past several years, with the result that the current generation of recording and production engineers is very different from that of a decade ago.”

As sessions became more and more complex, no self-respecting engineer or producer worth his salt would assume that he can stay abreast of new technology simply by hanging out with the guys before a session, or rapping at the end of a long-haul remix or concert date.

On the contrary, few of us can maintain the sufficiently wide overview



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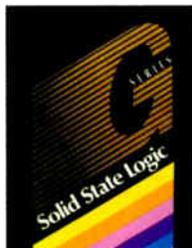
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necessary to keep ourselves up to date with the rapid changes permeating our industry. Think about it. Not too long ago, to handle even the most complex studio or live dates we had a fairly basic console in front of us—28 or 36 input channels being the norm for top-end designs—linked to maybe a handful of outboard effects units.

If you were tracking the session for prosperity (and/or financial gain for the record company) then 24 analog tape tracks was the norm. Monitor speaker technology was pretty much established as being the prerogative of a handful of companies on either side of the Atlantic, while acoustics was considered the realm of a small circle of sonic gurus.

Contrast that typical studio/live-sound scenario with what we now face on a regular basis. It cannot have escaped anybody's notice that consoles are becoming increasingly complex. By their very nature, some of the more recent state-of-the-art digital and assignable designs are offering ergonomic features and operational capabilities that take some getting used to. And VCA-based automation systems we could only have dreamed about using just a couple of years ago—most of which now offer memorization of console settings beyond the conventional fader levels and channel mutes—are pretty much taken for granted.

Digital has now become the recording technology of choice for many projects: the hot debate between proponents of DASH- and PD-format stereo and multi-track transports will obviously continue for a while. Competing digital formats aside, however, there can be little doubt that 2-, 24- and 32-track digital is the medium of choice for important album, audio-for-video, broadcast production and film re-recording projects.

While outboard sound blenders and benders continue to offer more and better sounding effects for your buck, all of us are becoming increasingly aware that critical decisions have to be made more often during the tracking and mixdown stages. This learning curve can be acutely steep if we are to remain current with all that is available to us in the way of sonic modification devices that can add the necessary sound signature to a track.

Monitor loudspeakers and imple-

mentations continue to evolve; it seems as if we are passing through a renaissance of interest in transducer technologies and cabinet designs. And in the field of acoustical design of production rooms and live-performance venues, we are experiencing a re-evaluation of older theories, and the absorption of a new body of fundamental work in the fields of sound propagation and psycho-acoustics.

aside from more obvious changes—like maybe adding a couple of U-Matic decks plus a good-quality video monitor—you have to come to terms with time-code synchronization, video editing systems and EDLs, not to mention developing new mix techniques for stereo sweetening sessions.

Facility owners and operators are also becoming more attuned to the diverse needs of their clients, and are

While outboard sound blenders and benders continue to offer more and better sounding effects for your buck, all of us are becoming increasingly aware that critical decisions have to be made more often during the tracking and mixdown stages.”

And let's not forget the hardware manufacturers, for whom the availability of low-cost, high-power microprocessor chips has resulted in a no-holds-barred battle to be first on the street with innovative effects units and processors that previously would have required a full-blown mainframe computer—not to mention some significant assistance from your favorite financier.

Developments in audio production and live-sound technologies are not the only changes with which we are having to remain current. For facility operators, the '80s have become the decade of diversification: audio-for-video, -film and -multimedia are now occupying an increasing proportion of their session hours. This era of diversification, expanding markets and increased sophistication that began in the late '70s, and which accelerated earlier this decade following the significant downturn in consumer spending and a subsequent reduction in record label budgets, meant that an increasing number of facility owners were forced to re-evaluate their marketing strategies.

Responding to such fundamental changes in the production market, however, is not without its own particular considerations. If you decide to attract audio-for-multimedia sessions,

constantly looking at up-and-coming areas of audio production into which they can expand. What might have seemed, just a brief few years ago, to be strange combinations on a studio session log are becoming routine for a growing number of major-market facilities.

A “typical” day at such a facility might include any or all of the following: a morning voice-over session and stereo remix for a major advertising agency; an afternoon digital-to-digital transfer of basic tracks and a subsequent sweetening session of some film score elements; a late afternoon session for a corporate audio/video client wanting to quickly put together some 4-track time-coded mixes for an upcoming sales conference; finally ending the day with an overnight, MIDI-based session for a new European band that has just been signed to a major label for a speculative two-album deal.

If one accepts my analysis of the changing nature of our industry, what are the best ways to stay in touch with the important trends and developments? Obviously you can pick up a certain amount of industry intelligence from your clients, and the engineers and producers who pass through your facility or you encounter on the road. But to maintain that all-important



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edge, I would suggest that magazines like this cover many of the important bases, and enable one to remain up to date with technology and techniques.

What often happens, however, is that while we might have the necessary information available to use, we cannot quite see just how it will affect our day-to-day existence. Which, after such a long, erudite introduction, brings me to the point of this new column, Juxtapositions.

What I plan to cover on a monthly basis are the origins and connections of some of the more important audio technologies and production techniques that we find ourselves having to master in the increasingly complex world of professional audio. I don't necessarily plan to provide a detailed discussion of such topics; rather I intend to place them in a context that, hopefully, will provide a unique vantage point from which you will more readily assimilate the essence of these new audio technologies and production techniques.

During the coming months I will be looking at some of the following topic areas:

- How recent developments in microphone technologies are affecting what types you should be using on sessions.
- Why R-DAT transports might prove to be an unrealistic choice for certain production tasks, and what digital alternatives might be worth considering.
- How computers in the studio and on the road can increase your efficiency, but also ways in which they might simply be "technology for technology's sake."
- Why audio courses at various colleges around the country might be inappropriate to the needs of contemporary engineers and producers, and how they might be improved to address the specific needs of the '80s.

All in all, the near future would appear to offer some unique challenges to both engineers and equipment manufacturers alike.

Not only is the available technology expanding and becoming increasingly cost-effective, but the applications of that technology throughout the pro-audio industry are also expanding. I don't think I am exaggerating when I suggest that an interesting future lies ahead for all of us.

See you next month. ■

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THE NEXT GENERATION

Speculation on the Future of Digital Signal Processing

by George Petersen

It's been nearly 30 years since Dr. Manfred Schroeder began his experiments with the computer simulations of acoustical environments

at AT&T Bell Labs in Murray Hill, New Jersey. Unfortunately, due to

the vast amounts of computational power and memory required to run such complex algo-



This circa-1980 Quad/Eight System 5 digital reverb (remote controller shown here) cost nearly \$9,000 and allowed the storage of four user presets. Today, units with the capability of storing dozens of programs can be had at a fraction of the price.



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rithms, the first commercially available digital reverberator (the EMT 250) didn't make its debut until the 1976 AES Convention in Zurich. Compared to other technological advances over the centuries, the history of digital signal processing has been very short, yet a phenomenal amount of progress has been achieved in that brief time. Certainly, the audio community has benefited greatly from breakthroughs in the computer and aerospace industries, a point which was most recently underscored by the dazzling exhibition of state-of-the-art gizmos shown at last month's AES convention.

By leafing through manufacturers brochures and trade journals over the years, it's easy enough to see where we've been—yet a more interesting question is what lies ahead in the next three to five years. Just a year ago, we decided that this issue of *Mix* would feature an article on digital reverberation. However, there is hardly a device today that offers *only* digital reverb—even the most basic units on the market include effects such as gated and reverse reverb, as well as simulations of various acoustic environments. Intermediate-level devices include chorus, flange and delay programs. And the diversity of sounds offered by the more expensive processors takes them far beyond the reverb function. Thus the very term "digital reverb" is somewhat of a misnomer; "Digital Multi-Effect Processor" (coined by Yamaha to describe their SPX90) probably provides a more accurate description of these devices.

What will tomorrow bring? The obvious answer is "better products at lower cost," but to go a little further, we solicited comments on the future of digital signal processing from representatives of four companies involved in different aspects of the industry. The participants are Roland Corp U.S. president Thomas Beckmen, Gregory Kramer of Clarity (manufacturer of outboard automation systems for the Lexicon 224XL/480L, AMS rmx 16, Yamaha REV-1 and Quantec QRS), Lexicon president Ron Noonan, and Alesis vice president Allen Wald.

What directions or trends will digital signal processing follow in the next three to five years?

Noonan: As you know, we sort of invented it—we developed the world's first digital audio device in 1972—the

“When you think of all the power in those processors, the fact that they are set and left is ludicrous. Everybody is putting all this work into automating amplitude, yet here we've got all these complex signal processors sitting static”

—Gregory Kramer

Delta-T 101 digital delay line. We've been involved in the business for a long time, and in longer terms, progress is being made at a dizzying rate. For the high end market, there will always be the need to have effects and ambience which is several cuts above what's available at the M.I. [musical instrument] level. There's no question that the industry will see more development, particularly with LSI [large scale integration] devices that provide more capability at lower cost. As digital audio becomes more widespread, particularly among larger studios, systems like our Opus will have internal buses for digital signal processing as part of the system. Yamaha has done that on a smaller scale with their DMP7 digital mixer: they've stuck in a few subsets of their reverb chip to provide some signal processing capability in there. The incorporation of effects within consoles is something we'll be seeing more of.

Beckmen: We'll start seeing units in the area of what we call sound placement—devices having the ability to process sound and place sounds spatially in a given area. There's a lot of talk about surround sound in the high end of the audio business, and digital sound processing technology has been looked at more from a playback mode—but there's no reason that the same kind of ideas can't be expanded upon and used in live performances. You could go to the theater and watch a play from one side of the auditorium, and come back the next night and see it from the other side and get a completely different perspective.

Being able to do things like this will add some new creative possibilities with new depth and dimensions to performances. The hardware technology is here today: it's just a matter of getting the software.

Kramer: Probably the biggest trend is automation. When you think of all the power in those processors, the fact that they are set and left is ludicrous. Everybody is putting all this work into automating amplitude, yet here we've got all these complex signal processors sitting static, so the first thing that comes to my mind is automation. Obviously, MIDI is the going automation protocol, but we may even see other automation protocols within the pro environment.

As an addendum to that, we'll see more complex groupings of parameters, like we see on the [Lexicon] 480L. We won't just be dealing with pre-delay and reverb time in a couple of frequency bands, but the interaction between reverb time and pre-delay, randomization of delays and so on. The way these are controlled—either statically or automated—give a lot more accessibility to the user. The 480L is a perfect example, where they came up with subjective comments like "shape" and "spread," and throughout the industry, we'll see more creative groupings of parameters.

Another trend will be more radical signal processing as people continue to search for new sounds. This might take root in M.I. first, but the same kinds of things will work up into the pro arena, where it will really get interesting.

Wald: I imagine you'll see Alesis continuing to make stuff that's easy to use and eliminates all but the most important parameters for changing the sound. We've had a fabulous response to our approach, which is presets, rather than user-programmability. If a unit offers presets only, then professional users don't want it, but if it's preset and sounds great, they'll take it anyway. They don't care if they can't tweak it, because they have so many Lexicon and AMS units on the front of the mix, and will take whatever they have on the back on the mix. Our Microverb is so inexpensive, it's almost free, as far as the professional is

concerned: you could spend that amount on a good boom stand and some cables.

One thing that everybody would like to do is what Yamaha did with the DMP7—having all functions internalized in one place. One step further is to have the recorded information, the mixer and all the signal processing in one "black box," with a data slider and some representation of faders—some kind of cool interaction so the average guy knows what's going on. Now this is all feasible as the price of memory comes down at the consumer level, but the memory doesn't exist today to get *everything* into one black box.

In signal processing like gating, compression, psychoacoustical enhancing and digital reverb, there's nothing that anyone with enough smarts couldn't do. The kinds of things musicians would like to see are: good sound, which we did for \$250; total flexibility, which Lexicon already did with the PCM70 for about \$2,300; and somewhere in that range is whatever anyone needs—MIDI, signal processing, equalization—it's all there. It's all a matter of making more complex chips, and companies buckling down and making all of those features and functions more accessible, both financially and in terms of the user interface.

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Will MIDI remain important as a protocol for controlling effects?

Beckmen: I think so. We still have a long way to go with MIDI. We sometimes have a tendency to get opinions from people who are much further ahead than the norm, and they can be critical. But a lot of the problems with MIDI is not the MIDI spec itself, but problems with the processors used in the instruments, which can cause some delays. As the quality and efficiency of those processors increase, a lot of the questions about MIDI and speed will fade away.

Wald: MIDI is very powerful and it can do great things, but it's a pain in the neck and it's not very elegant. This is what's elegant: if you pay your electricity bill, you can flip a switch and fill your room with light, and *that's* elegant. MIDI is still too far from *music*. I recently did a clinic for 200 people with our new sequencer and drum machine, and some people who asked some very intelligent questions during the clinic came up later and asked me what the *bandwidth* of the sequencer was! Now, those people came to play music—they didn't come to play computers. We have to hide the computer aspect from them and give them an interface that makes the computer transparent.

Will units with digital input/output ports become more common?

Noonan: Yes, but that's going to take a while to arrive. If R-DAT really catches on with the semi-pro and professional community, that will have a big effect. Right now, we've got almost the equivalent of R-DAT with the PCM-F1 digital recording processors, and that has had some effect, but not

much. When digital becomes more widespread, then digital I/O will be in more units. Of course, we offer it on our 480L, so if somebody has done primary recording on a PCM-1610/PCM-1630, he can mix it, adjust the stereo level, do some EQ, add ambience reverb and processing—all in the digital domain. There isn't a widespread need to do that now, because digital [domain] processing is fairly limited right now.

When projects are mixed, they're generally mixed analog, so if you record something on multi-track digital, it'll be mixed on an analog board, unless you go to an Opus-kind of system, or something yet to be announced. At the moment, there's not much need for digital I/O, but as digital processing becomes more common, that will increase as well.

Kramer: We'll be seeing more units with digital input/output ports—even on the low-end units. The Yamaha DMP7 [digital mixing processor] has SPX90s in it—it's all digital I/O—but to the user it's a built-in effects device. Signals flow from the mixer to the signal processor *digitally*, and since that can be done on a \$3,000 to \$4,000 mixer/signal processor, then we'll see digital I/O ports on more signal processors in the future.

There's a general trend towards signal cleanliness, but to me that's not as exciting as automation. You can get a cleaner and crisper production, but the creative possibilities aren't extended. Automation offers unique creative avenues to walk down and eventually we'll see automation of all the signal processors—reverb, compressor/limiters, outboard VCAs, digital delay lines, equalizers, the whole works.

Wald: We would add digital inputs if it was dirt-cheap and we could just throw them on. The reason MIDI was included on the original MIDVerb is because it really didn't cost anything to put on there. Certainly, we derived the product's name from that, but that's not the reason people bought the unit: they liked the sounds. It could change programs, which could be very useful in an automated mix-down, but I'm sure it is actually used with the increment/decrement [program change] buttons 99% of the time. So if data ports are cheap enough to stick on there, you might see them, but right now, we always strip units down to what's musically relevant.

Beckmen: Especially in the area of

synthesizers, where we're dealing in the digital domain, it's silly to leave via a D-to-A converter for signal processing and then come back through an A-to-D converter. The logical thing is to have a bus system allowing processing to continue in the digital domain. This may require a standard bus system, but that part would be easy; it's mostly a matter of somebody doing it and a lot of other people following them. If we're going to bring these things down from a cost standpoint, keeping signals in the digital domain is the way to go. It would be a significant cost savings.

Technology starts with the military

establishment and gets passed down. Right now, we're in the 16-bit generation, but soon we'll be in the 32-bit generation, and I'm sure that eventually we'll be into parallel processing. Wherever technology is heading, you can rest assured that people on the audio and music side will continue to make these applications. ■

George Petersen, associate editor of Mix, has written over 200 articles for music, sound and film publications. He lives with his wife and two musical dogs in a 102-year-old Victorian house on an island in San Francisco Bay.

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OF FILM SOUND

Cast your mind back to World War I and imagine a young engineer flying in a rickety biplane to test out some new "wireless telephony" equipment. Before the word "radio" would become a common term, Dr. John Frayne had embarked on a career that would affect the entire history of film sound.

Now jump forward to a Hollywood TV studio in 1951. Frank Pontius is at NBC in L.A. recording video and audio from New York on the Kinescope for the delayed broadcast to the West Coast. With only three hours to air time, the film is processed—not printed—and the negative is reversed via the TV tube for broadcast. Across town, Joe Kelly is putting the final touches on the first camera truck equipped with synchronized 1/4-inch magnetic recording. Finally, the sound engineer can

DR. JOHN FRAYNE

JOE KELLY

& FRANK PONTIUS

by David Goggin

3M recently recognized several industry veterans for their contributions to the development of motion picture audio as part of its annual Lyra Awards program. From left to right are: Fred Wilson, John Frayne, Leon Leon, Joe Kelly, Frank Pontius and Pete Vlahos.

ride "shotgun" and really follow the action.

This year, these three men were among those recognized as Pioneers of Sound and presented with an award for their achievements in sound by the 3M Corporation. Each man played a key role in the evolution of sound for motion pictures. They were there for the breakthroughs and they are still with us today. It's still a young industry, after all.

Dr. John Frayne is a wiry, 93-year-old Irishman who just returned from a visit to the old country with his wife Dorothy, whom he married last year. We met at his home in Pasadena, where he guided me through hallways lined with awards and photographs of his past. When I asked him for the secret of his success, he answered in a still



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1951—“Rangertone” ¼-inch tape machine—First ¼-inch tape synchronization system. (L to R) James Stewart, dubbing mixer; Joe Kelly, Glen Glenn Sound chief engineer; Dick Peck, Glen Glenn director of sales; Colonel Richard Ranger, inventor of “Rangertone;” Glen Glenn, president and founder of Glen Glenn Sound; Harry Eccles, Glen Glenn co-founder and vice president; Bob Callen, sound engineer.

strong Irish accent, “Oh, I’m just living now—I’m not succeeding in anything. I’ve been lucky—you have to be lucky to live this long.”

John Frayne is a reminder of a time when an educated man was schooled in the classics. He studied at Dublin’s Trinity College and still enjoys peppering conversation with Latin phrases. His specialty was physics, because it interested him, but he told me, “I was the kind of guy who was pretty good at anything.”

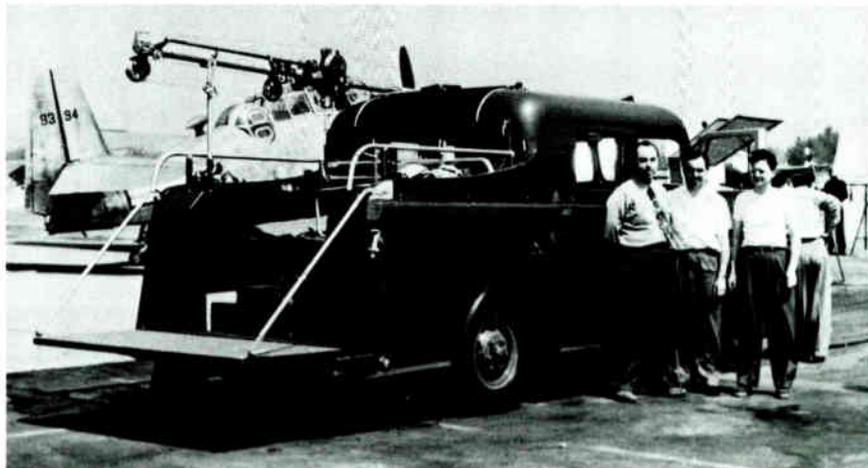
In 1917, he journeyed to the University of Minnesota for post-graduate work. “They had a good physics department. When the war broke out, R.A. Millikan, the Nobel prize winner, set up some Signal Corp research laboratories and I signed up. We were involved with the development of wireless telephony, as they called it, for transmission between the ground and airplanes, and between airplanes in flight, which hadn’t been done before. I flew in the old jennies testing our equipment, which led to radio—but I never heard that word mentioned at the time. Public radio transmission came later—I remember the first news of Harding’s election in 1921 from KDKA in Pittsburgh.”

Dr. Frayne’s superior officer, Major

Levinson, became a colonel in the reserves after the war. When he was made the head of the ERPI (Electrical Research Products, Inc.) labs of Western Electric, he contacted Dr. Frayne and invited him to join. Dr. Frayne had taken leave as head of the physics department at Antioch College and was on a research sabbatical at Cal Tech. “It was 1928, and they had just released *The Jazz Singer*,” he remembers. “The sound was just music and songs—all disk recording at the time. Jolson was overheard making a remark that got in the film. The only actual dialog is Jolson saying, ‘You ain’t seen nothin’ yet.’”

In 1929, Dr. Frayne became a member of the scientific team of ERPI, later known in the industry as Westrex. “Our job was to increase the fidelity of sound for motion pictures,” he says. “All the

1951—First combination camera/sound truck built by Glen Glenn Sound for Gene Autrey’s Flying “A” Productions. (L to R) Glen Glenn, mixer and founder of Glen Glenn Sound; Bob Callen, recordist; Joe Kelly, chief engineer.



1955—Dr. John Frayne, president of SMPTE, awards Walt Disney honorary membership in the society.

equipment was developed by Bell Labs in New Jersey. We were the first scientists out here; until that time everything was done by guess and by God.”

At that time, sound for film was produced either by disk recorders or the new optical method of variable density recording on film. “To improve the fidelity, I realized we had to develop densitometers and sensitometers for measurement because the quality was so poor,” he says. “We also worked with Eastman Kodak to create a fine grain film necessary for sound recording.”

Looking back, Dr. Frayne remembers an interesting meeting with one of the cameramen from the 1914 film, *Birth of a Nation*: “In the silent days, all the cameras were hand-cranked and to maintain constant speed they used to repeat over and over again, ‘One cent for Broulatour, one cent for Broulatour.’ They were referring to the royalties paid to Mr. Broulatour, the man who financed George Eastman.”

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Dr. Frayne recalls a demonstration of stereo sound in 1932, when it was known as "acoustic perspective." "We should give some credit to Dr. Harvey Fletcher—he had the idea," Frayne says. "This development was turned over to ERPI for refinement and commercialization. The name 'acoustic perspective' was too fancy, so they had a contest in the office and some bright guy came up with the name 'stereophonic,' a variation on 'stereoscopic.' The lawyers decided we couldn't use the name, though, because someone had a patent for a 'stereophone,' which was actually a sterilized telephone. It had nothing to do with us, but it was many years before 'stereophonic' was used. Isn't that silly?"

"I remember an early 3-channel stereo recording on 35mm film for a demonstration at the Pantages Theater in Hollywood. No picture—just sound. Bell Labs had developed their own variable area optical recording system for stereo. We had all the top executives from the studios there but no one was financially interested in stereo, and then WWII broke out. The government told Bell Labs to forget it and work on things for the war effort."

In the late '20s and early '30s, Dr. Frayne headed an engineering team at ERPI working with disk recorders and optical recorders. Sound recording was shunned by everyone at first, but Colonel Levinson had convinced a nearly bankrupt studio to try the new technology. The Warner brothers became the sole licensees of sound recording, with worldwide control to sublicense the new technology. "With the growing success of talking pictures, all the studios came running to ERPI for the equipment," Dr. Frayne says. "The Warner brothers refused to comply with the licensing agreement made with Western Electric."

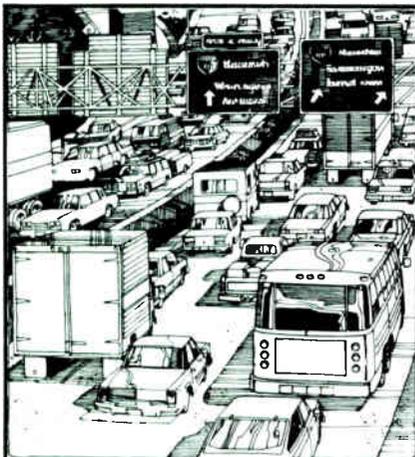
Incredible as it may seem today, Warner Bros. came very close to controlling sound on film. As it finally turned out, Westrex governed about 90% of the industry by manufacturing and leasing the equipment to the studios. "We collected royalties on every foot of film and equipped every studio in town, except RKO, which was owned by RCA," Dr. Frayne explains. "At the time, RCA began working with an alternative method, called variable area recording, developed by General Electric during WWI. Eventually, varia-

ble area would become the standard method, but we won most of the awards for 20 years." For many years, RCA and Westrex controlled the sound for all movies, until the successful development of magnetic recording.

Dr. Frayne recounts another incident which shook the foundations of the film industry: "Westrex was almost out of business once, and so was RCA. Bill Fox had us over the ropes. In the '20s, a German/Swiss organization known as Tri-Ergon controlled some basic patents, which they offered to AT&T for \$40,000. AT&T passed on the deal because they didn't realize the importance of the technology, as did everyone except William Fox, of Twentieth Century fame. The first patent was for a flywheel to add inertia for a recorder. The second was for double printing on film, before anyone had the idea that a soundtrack could be printed alongside the picture. The third was for projecting light through film onto a photoelectric cell to reproduce sound. Without these three ideas, it would be very difficult to make a soundtrack.

"Well, Fox sued Westrex and RCA and won the case in district court. You should have seen the headlines—'William Fox Controls Movie Business.' We appealed, but the judgement was upheld. We had no choice but to take it all the way to the Supreme Court, which rarely takes patent cases. We had just changed administrations in Washington. Franklin Roosevelt was in and Hoover was out. We hired the former Solicitor General to handle the appeal and the decision was reversed. Without that decision, Bill Fox would have effectively controlled all manufacturing and leasing of film sound equipment throughout the world."

After World War II, the new magnetic recording technology was brought back from Germany. "One of the Bell Labs engineers took the equipment to the directors of AT&T, but the government said they wanted us to stay out of any new business," Dr. Frayne says. "We had to confine ourselves to using magnetic recording for motion pictures only. We couldn't put it on tape. Minnesota Mining & Manufacturing was just getting started and Dupont was working on it, too. 3M had all these bright young guys from the University of Minnesota working under the late Dr. Wilfred Wetzel and their tape just kept getting better and better. Our job was to test all the new tape, and eventually 3M won out."



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In 1947, 3M introduced the world's first commercially acceptable, mass producible magnetic tape. Called #100, it had a black iron oxide formula on a paper backing. The next year, Scotch #111 was introduced, using a red iron oxide on a cellulose acetate backing. In 1949, #115 sprocket configured magnetic film was an industry first, permitting re-recording and synchronized audio and picture editing. Through the ensuing decades, 3M continued to upgrade its product, developing the first low noise oxide in 1962, and in 1982, introduced Cinetrak, a mag film with unprecedented sonic performance and able to withstand the rigors of multiple overdubbing and fast shuttling in film mag recorders.

In addition to Dr. Frayne's many contributions to the film industry, he also was instrumental in the development of stereo disk recording. "People thought it was possible to get stereo from one groove," he notes. "You have two ways of cutting: vertically, which is known as 'hill and dale'—the old Edison method—and laterally, where the needle moves back and forth, which was developed in Germany. We came up with the idea of cutting both ways

at 45-degree angles, which gave it symmetry and balance. The late Charlie Davis was essential in its success. It was a pretty good trick and it's still used today, I believe. I made the first demonstration in New York City in 1958, which was a big boost for Westrex."

In 1959, Dr. Frayne retired from his position as engineering manager of Westrex and returned to teaching. During his tenure with the company he received two Gold Medals from SMPTE, served as president of the organization in 1954-55, and received another Gold Medal from the AES. In 1984, he was awarded the distinguished Gordon Sawyer "Oscar" for his contributions to the motion picture industry.

Now let's move on to a meeting with two old friends, Joe Kelly and Frank Pontius. They both began their careers in the film industry during the '40s, and although now retired, still are active in the field. Joe Kelly pioneered the use of 1/4-inch synchronous tape in production recording, the development of solid-state dubbing and scoring consoles with matrix switching, automatic dialog replacement, and a system for interfacing motion-picture

re-recording techniques with videotape using time codes and multi-track recording.

Frank Pontius designed some of the first magnetic film recording equipment and holds two patents for unique head designs, for which he was awarded "Fellow" status in SMPTE.

In the late '30s, Joe Kelly joined Western Electric and made his way west installing long distance telephone lines and relay stations for AT&T. Beginning in Elgin, Illinois, he made it as far as Reno, Nevada; then he decided to take an offer in Berkeley to work on the Manhattan Project. During WWII, he traveled from Seattle to San Diego installing radar equipment for the Navy. In 1948, he was asked by Glen Glenn to build a console at Glenn's Hollywood sound facility.

"Glen said it would take about two weeks," Kelly recalls. "I became fascinated with the business and decided to stay." Thirty-five years later he retired from his post as president of Glen Glenn!

Frank Pontius graduated from Indiana Tech in 1943 and joined RCA's motion picture engineering group, specializing in lens coating. After the

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war, the entire group was relocated from Indianapolis to Hollywood, where they were given the task of adapting the new magnetic recording technology for the film industry.

"We built the recorders and one of my patents is for the head mount and motor drive system," Pontius says. "It permitted azimuth and zenith and tilt adjustment and was used universally. I remember when 3M came out with the first sprocketed mag film. Their claim to fame was, 'You can reuse it!'—this was big news."

"In the early days of magnetic tape, there was a lot of competition," Kelly adds, "but 3M established a reputation

as the people you could rely on. None of the other tape was reliable or uniform. The oxides came off and piled up on the heads, for instance, and it was common to ship back carloads of bad tape. 3M had the R&D and the quality control we needed. All the advances came from 3M because they always work on improving the product. They've contributed a whole heluva lot to our business."

Under the maverick Glen Glenn, Joe Kelly was responsible for the success of 1/4-inch synchronized recording. "Everyone in town said you couldn't maintain sync without sprocket holes," he says. "The optical sound trucks were

enormous 5-ton vehicles. We took one of the first recorders—the Rangertone built by Colonel Richard Ranger, which had mechanical synchronization with a tapered capstan. This was 1951 and we used it for *The Gene Autrey Show*, recording both magnetically and optically to play it safe. After one season of transferring the 1/4-inch over to mag striped film, we proved that it could be done and got rid of the optical recording. After our success with *I Love Lucy* and *Our Miss Brooks*, all hell broke loose."

In 1953, Kelly collaborated with Donald Mossman to install the first push-button switching on a dubbing console: "It was really just one step in the evolution of the mixing/dubbing console. The switch was designed by Don's father so that broadcasters could switch live from one studio to another. Prior to this, we had lever switches and if you wanted to get from one to three, you had to go through number two."

In 1954, Kelly's incorporation of "slide pots" or linear faders—unheard of in picture dubbing consoles—were packaged along with push buttons as the prototype for the contemporary film mixing console. In 1960, his introduction of solid-state technology to the dubbing console was another industry first. In the '70s, his use of videotape, time-code and multi-track recorders paved the way for the "audio sweetening" that is now an industry standard.

Though Kelly and Pontius are now officially "retired," they both continue their involvement in the film business. Kelly is on the board of directors of WaveFrame, a young company dedicated to the creation of the all-digital studio. Pontius stayed with Westrex through its many corporate takeovers and now serves as a consultant since it was acquired by Mitsubishi. He is one of the world's few experts on light valve technology, the essence of optical recording. "Not many people realize that optical soundtracks are still prevalent and haven't changed much since the '40s. We are making improvements in the photographic recording process and introducing digital electronics to the equipment. We are also looking at the possibilities of 35mm digital film sound using sprocketed digital tape." ■

David Goggin has been a journalist and photographer active in the broadcast and recording industries for the past decade.

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DOLBY SURROUND

Adding New Dimensions to Music and Music Video Productions

by Robert B. Schulein

There is little question that audio quality is playing a significant part in consumer awareness of audio/video programming. This awareness has been fueled by the growth of the compact disc, prerecorded video software, broadcast stereo television, and most recently, by the introduction of the CD video and Super VHS formats.

On the positive side, this growth has brought about new and robust audio delivery systems typified by an excellent dynamic range and demonstrating well-matched amplitude and phase characteristics. The quality gap between audio-only formats and audio/video formats has essentially been closed. Other factors being equal, such as amplifiers and loudspeakers, an increasing number of consumers are able to experience the same sonic im-

pect from audio/video programs as they have grown to expect from audio-only formats.

On the other hand, as the presence of quality audio with video becomes more commonplace, a number of factors are emerging that offer cause for concern. Perhaps the most significant is the lack of center channel localization for practical viewer seating positions.

It is interesting to note that literally all television consumers have been exposed since birth to a "hard center" or screen-localized audio image. Placing the loudspeaker in the television receiver near the screen has always been both a logical and cost-effective measure. With the advent of stereo audio for television and video, it is desirable to place loudspeakers to the left and

right of the screen in much the same fashion as a home stereo system. This, however, results in poor audio imaging for viewers other than those midway between the two loudspeakers.

Many consumers and product manufacturers have dealt with this problem by moving the loudspeakers closer together and, in some cases, building them into the television receiver. These measures adequately deal with the problem of center screen imaging, but at the expense of a very narrow stereo sound stage. This problem has generally not been an issue with audio-only formats because the listener has little indication of the location of the sound source. In addition, most consumers listen to audio-only formats while doing something else, in contrast to watching television, which requires a higher degree of attention.

A logical solution to this problem is to create a three-channel discrete audio system for audio/video formats. As intriguing as this might sound, such a system would be incompatible with present audio/video transmission and distribution systems that are becoming firmly established. A further expansion to add a fourth discrete channel for surround or ambience information would create even greater transmission and duplication problems. Practically speaking, it is highly desirable to look towards maximizing the benefits of existing two-channel systems before contemplating additional discrete channels.

Motion Picture Sound Matrix Audio Technology—A Practical Solution

The task of producing stereo audio for a music video production is essentially the same as producing a musical segment for a motion picture. The only differences are that motion pictures are predominantly released on film with two-channel optical soundtracks, whereas music video productions are released on video tape with two-channel magnetic soundtracks. In addition,

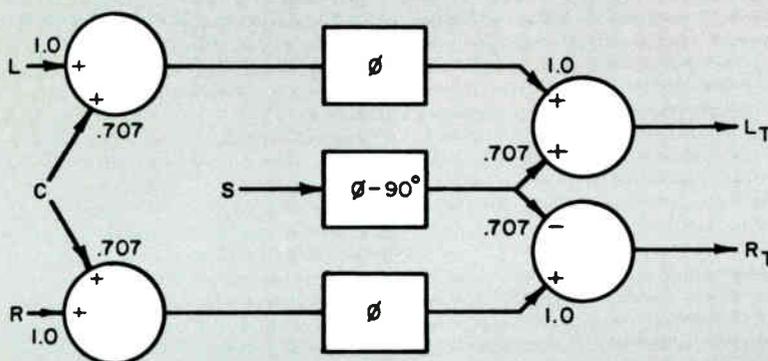


Figure 1
Simplified block diagram, Dolby MP matrix encoder

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(L to R) Ric Coken, studio manager; Kari Coken, business manager; Brett Johnson, technical engineer; and (standing) Tom Labus, recording engineer.

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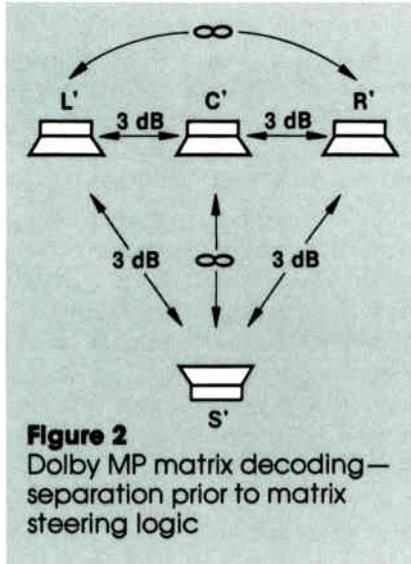
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the problems and opportunities previously mentioned concerning stereo television also apply to motion picture sound playback in theaters.

New as these concerns may seem, however, they are not new to the motion picture industry. Multi-channel motion picture releases have been produced in one form or another as early as 1939, with the original release of the Walt Disney film *Fantasia*. However, the most significant developments towards a practical system have occurred within the last ten years with the evolution of what is called the Dolby MP (Motion Picture) matrix process. Commonly referred to as Dolby Stereo, this and related signal processing techniques are used to produce an encoded four-channel soundtrack (four channels electronically combined into two); that is, both two-speaker stereo and mono compatible. As a matter of historical note, the original stereo audio experiments conducted by Bell Telephone Laboratories in the early 1930s made use of three discrete channels across the front stage for accurate localization. As desirable as this was, today's two-speaker systems are simply an approximation of this method of reproduction.

Unlike the four-corner quadraphonic systems (CBS SQ, Sansui QS and some forms of Ambisonics), the Dolby MP matrix process involves three channels in front, and one feeding an array of speakers behind and to the sides of the viewer. In addition, an appropriate matrix enhancement scheme is also employed to impart a discrete character to the system. Most important, the Dolby Stereo process provides the following basic production capabili-

ties necessary for the creation of exciting motion picture soundtracks (used in over 1,100 films):

1. Accurate localization of dialog and sound effects across the width of the screen for listeners seated in a wide listening area.
2. Rearward localization of specific sound effects.
3. Ability to create interior sounds which surround the listener with environmental and ambience effects from all directions.
4. Smooth panning capabilities across the front sound stage, and between rear, interior and the front locations.
5. Simultaneous reproduction of localized and interior sounds.

The practical significance of this technology is that it is not restricted to theatrical motion picture productions and may be applied to music and music video productions as well.

In order to avoid technical confusion when the Dolby MP matrix process is used for non-theatrical productions, Dolby Laboratories has defined an additional term: Dolby Surround. This term is applied to all productions that do not involve the optical film sound process such as live or prerecorded video and audio programs. Additional forms of signal processing are involved with Dolby Stereo productions because of the motion picture optical sound process and theater acoustics. What follows is a more detailed description of how this matrix process works and how it may be used in a practical live mix or post-production environment.

The Motion Picture Matrix Process—Technical Description

The matrix portion of the Dolby Stereo process is a non-symmetrical encode/decode process in the sense that the decoding process involves additional logic circuitry (steering logic) to make the system sound more like four discrete channels are being used. It is also non-symmetrical in the sense that four basic levels of decoding sophistication can be used in playback for the same encoded program albeit with decreasing realism and localization accuracy.

1. Through a decoder with proper steering logic capability (most accurate).
2. Through a decoder without logic

capability.

3. Through a conventional two-speaker stereo system.
4. Through a single speaker mono system (least accurate).

A simplified version of the encoding process is shown in **Fig. 1** where L_T and R_T represent the total left and right encoded signals, and L , C , R , and S represent the input left, center, right, and surround signals, respectively. It is important to note that the three elements denoted by \emptyset and \emptyset to 90° are all pass electrical networks characterized as having a flat amplitude, but frequency dependent phase response. The significance of the \emptyset to 90° designation is to indicate that the phase shift within that element differs from the other two elements by 90° over the entire audio band. Analysis of the complete set of encode/decode equations reveals that such phase shift functions are required in order to allow for an interior or all-around sound capability.

The decoding matrix process consists of two major functions: a basic decoding matrix element and a steering logic or matrix enhancement ele-

ment. In order to appreciate the function and value of steering logic circuitry, it is important to first understand the basic decoding matrix process. The decoded left and right channels (denoted by L' and R') are simply obtained by using L_T and R_T , respectively. The center channel (C') is obtained by adding L_T and R_T , and the surround channel (S') by subtracting L_T and R_T . **Fig. 2** shows, in graphic form, the degree of channel separation possible from this process. In looking at the figure, the 3

dB and infinity symbols represent the various degrees of crosstalk that exist between the four playback channels. For example, if a left signal only was encoded, none of it would be decoded into the right channel (∞ separation), whereas a significant portion would appear in both the center and surround channels (3 dB separation). In a similar fashion, encoded surround channel information will not appear in the center channel, but will appear in both the left and right channels in signifi-

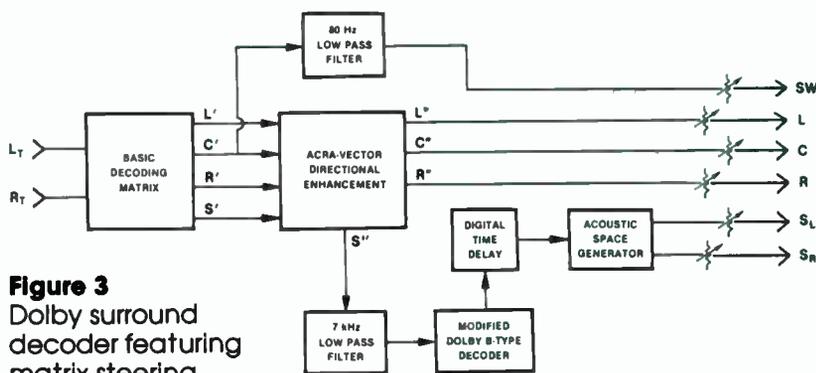
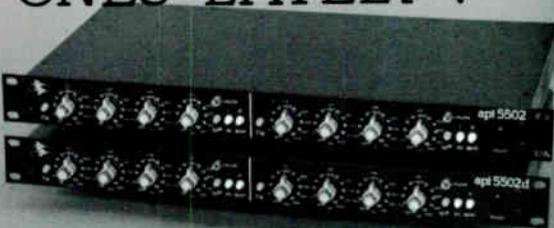


Figure 3
Dolby surround decoder featuring matrix steering logic

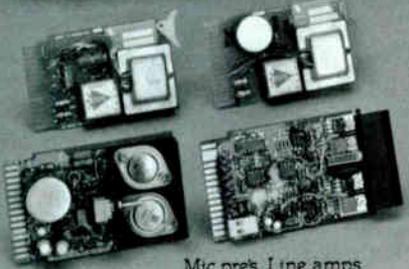
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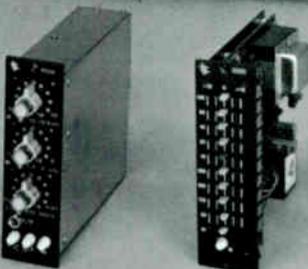
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Figure 4 Shure HTS 5200 Surround Audio Processor

cant proportions.

From a perception standpoint, the situation shown in **Fig. 2** is a step in the right direction in that all reproduced sounds are most dominant in their intended directions. It is interesting to note that today the majority of consumer surround sound decoders provide this level of performance accuracy. Subjectively, however, this level of decoding cannot produce unambiguous localization perception over a wide listening area, particularly with respect to centrally placed images.

A number of techniques have been developed to deal with this limitation,

however. Functionally, such circuits serve to reduce the undesired crosstalk signal components as a function of the dominant directional content of the program. For example, during that portion of a program where the left channel is dominant, the logic circuitry would be substantially reducing (greater than 40 dB) the amount of left channel leakage into both the center and surround channels. Since no technique has yet been developed that produces four independent channels matrixed into two, it is always necessary to make system compromises.

In the case of the Dolby Stereo sys-

tem, compromises have been made with artistic considerations in mind. For example, the integrity of the center channel is most important, and a number of steps are taken to keep center channel sounds, such as dialog or a center vocal track out of the surround channel. On the other hand, the ability of the system to *simultaneously* reproduce a center channel and right or left discrete image of *equal dominance* are not very important and, consequently, are not possible without perceived crosstalk. The system can, however, very quickly alternate between these locations giving an accurate sense of discrete behavior. In many ways this is like the real world in the sense that it is very difficult to concentrate on two sounds with equal characteristics simultaneously. As a result of such compromises, it is common practice to monitor such productions through the encode/decode process so that any limitations of the process can be heard and corrective action taken (more details in the section on Production Techniques).

Summarizing this process, a block diagram of a Dolby Surround decoder is shown in **Fig. 3** which incorporates



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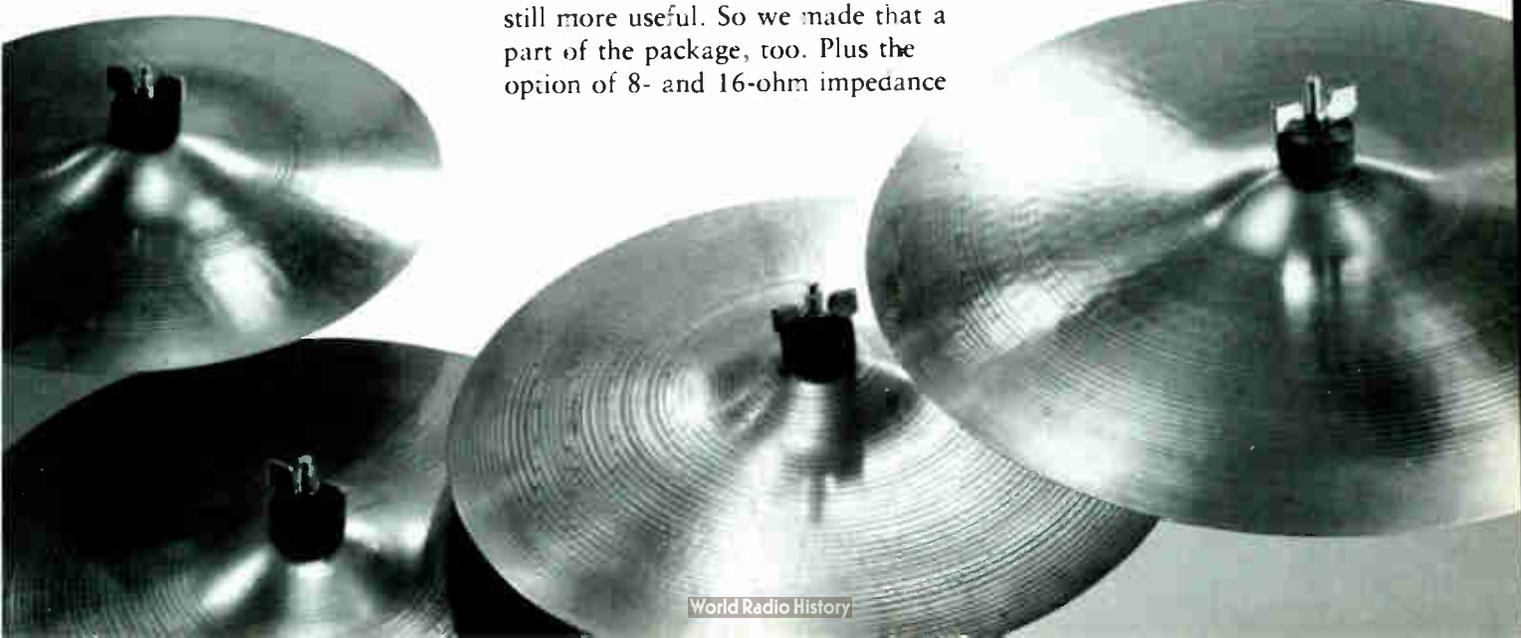
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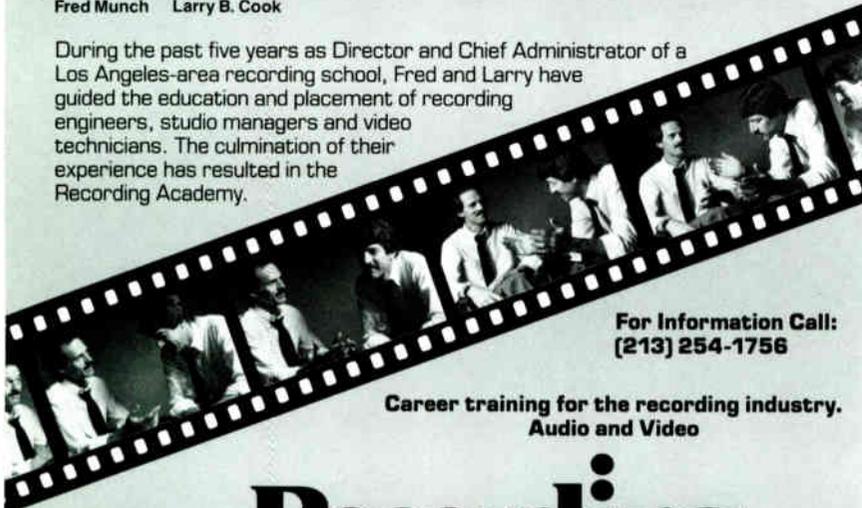




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The quality gap between audio-only formats and video-only formats has essentially been closed.

steering or matrix enhancement logic. Several additional elements are shown which further improve localization accuracy, reduce the perception of software anomalies, and more closely emulate the motion picture theater art form. The most significant of these is the use of time delay to ensure that any signal leakage (typically caused by software transfer or transmission problems) is not localized in the surround channel. Other elements include a circuit element to simulate (using two loudspeakers) the array of loudspeakers used for surround channel reproduction in a theater, and a separate subwoofer output for deep bass (SW) that is not directionally steered as a part of the encode/decode process.

The Music and Music Video Production Process

The emphasis of the following discussion is on the production of music video programs. The techniques, however, directly apply to live television broadcasts, and music-only productions. In such cases, the multi-track audio tape playback would be replaced with live microphone and instrument feeds, or the production would not be mixed to picture.

A typical audio monitoring environment for such productions is shown in Fig. 5. Left and right monitor loudspeakers are positioned just above or below the video monitor. Ideally, the center loudspeaker should be positioned behind an acoustically transparent video screen (as in the motion picture theater); however, this is generally not practical with video projection systems due to the visibility of screen perforations at typical viewing distances. Since the center channel will be receiving the greatest amount of power with real program material, it must be able to match or exceed the acoustic output capabilities of the right and left monitoring channels. In addition, the frequency response and polar

characteristics of the three front loudspeakers should be identical in order to maintain a stable and uniform image across the front sound stage.

A minimum of two rear loudspeakers are required to reproduce the surround channel. These loudspeakers do not reproduce the full bandwidth as in the case of the front channels, but should have a smooth frequency response between 100 and 7,000 Hz. In order to best emulate the motion picture theater art form, these loudspeakers should be less directional than those in the front. If space and budget permit, an array of four to eight rear loudspeakers should be used to create a more diffuse and directionless sound field.

Once established, this loudspeaker monitoring arrangement has the added benefit of providing a means to audition the program in a conventional two-speaker mode and a single speaker mono mode using straightforward switching. In order to calibrate the monitoring system, it is instructive to refer to **Fig. 6**, which shows the important functional blocks of a production mixing system.

Of the many pieces of equipment shown in this figure, the element referred to as a Dolby DS4 is probably least familiar to those associated with music mixing. This device serves several functions, and is of prime importance in creating the desired Dolby Surround mix. Its main functions are those of encoding the discrete L, C, R and S inputs in the required L_T and R_T two-channel program, and providing a means by which the program mixer can monitor through the entire encode/decode process. Shown in simplified form, this device consists of an encoder that produces the L_T and R_T output signals, and a decoder that provides a continuous four-channel monitor output capability. As mentioned earlier, this form of monitoring is highly desirable in that it allows the program mixer a continuous ability to optimize system performance. Prior to starting the mixing process, system calibration is accomplished by feeding a known level of band limited random noise into each of the four DS4 inputs and verifying that each of the four monitoring channels is producing the same acoustic output at the mixer's position. Additional calibration is also required to confirm proper input and output operating levels for the DS4 and its associated equipment.

Having fully calibrated the system, the mixing process can be started. Individual tracks can be panned directly to either of the four channels or to positions in between. Of particular importance are pans between the center and surround channel. Sound elements panned to a position midway between these two directions are said to be in the interior (equal output from all channels) and have the advantage of not interfering with additional tracks panned to any other position. This in itself is a very powerful aspect of the system, allowing the listener to be surrounded by one element of the mix while simultaneously localizing on the

dominant sound at a second location.

Once the desired mix has been obtained, the resulting L_T and R_T signals are recorded along with the picture time code, thus becoming the program master. The master can then be re-played and monitored in all formats for which there is a concern for compatibility.

Based on extensive discussions with several film mixers, and others intimately familiar with Dolby Stereo music mixing, a number of important points are worth mentioning. Because of the monitoring characteristics of the DS4 processor, an experienced mixer soon becomes skilled in working

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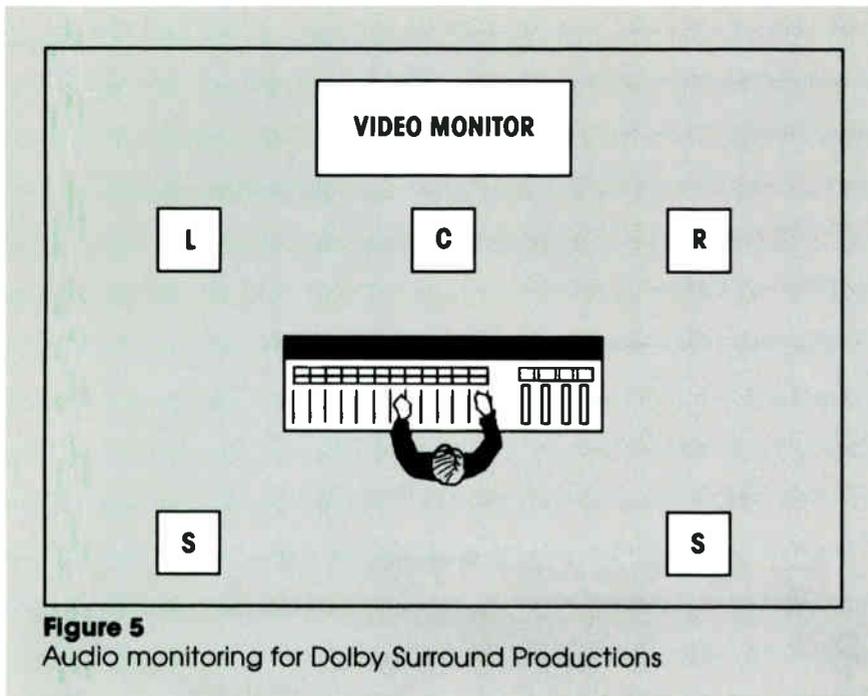


Figure 5
Audio monitoring for Dolby Surround Productions

around the restrictions of the Dolby MP matrix process and is able to create satisfying, discrete sounding mixes. Even though any mixer would prefer to work with a completely discrete system, the benefits of the process far outweigh the disadvantages. Mixing with the Dolby MP matrix also has the advantage of creating a more compatible mono mix from the standpoint of center image and low frequency build-up. As far as two-speaker stereo compatibility is concerned, Dolby Surround mixes generally sound wider than conventional stereo mixes, which is often a desirable characteristic considering the large number of consumer playback systems with narrow loudspeaker placement.

Due to the relatively short period of time that consumer video software has been available with high quality audio, very little music video programming has become available in the Dolby Surround format. Several examples are available, however, which were originally produced as films for theatrical release:

1. *Running Out of Luck*, Mick Jagger (available on videotape and videodisc, with digital audio)
2. *Bring on the Night*, Sting (available on videotape and videodisc, with digital audio)
3. *Stop Making Sense*, Talking Heads (available on videotape)

Each of these programs is worth audi-

tioning on a calibrated playback system for those contemplating a Dolby Surround music or music video production.

Software Mastering, Duplication, and Transmission Considerations

Once the desired Dolby Surround mix has been achieved, based on monitoring the L_T and R_T outputs of the DS4, it is important to ensure that its artistic content is accurately preserved as it finds its way through duplication and transmission to the end customer. Using present day professional and consumer technology, it is possible to deliver an essentially perfect copy of the L_T , R_T master. Many examples of such transfers have been auditioned and an-

alyzed in our laboratories. Perfect copies are, however, in the minority, typically for two reasons: lack of mastering equipment calibration, and inaccurate production monitoring facilities.

Since the Dolby MP matrix process relies on the relative amplitude and phase between channels to achieve the desired directional accuracy, any anomaly in transmission or duplication that changes these relationships essentially remixes the production. Matching channels within a few dB in level and frequency response and keeping time delay errors due to azimuth or multiple path transmission problems under approximately ten microseconds permits outstanding decoding accuracy. Using digital duplication and production techniques, high-quality programs are easily produced. It is the analog processes that are typically the sources of error. In addition to improper azimuth adjustment, a more subtle but equally disturbing problem has been found in some software where noise reduction has been used on master tapes (typically one-inch videotape). Since this process requires that decoding be performed just before duplication to the consumer format, dynamic localization errors occur if one of the two channels has not been decoded. On music video programs with this particular problem, low level sounds panned to center tend to shift towards the undecoded channel and then jump towards the center at higher levels.

Since all of these problems are correctable, the best way to prevent them is through proper monitoring at each critical point in the production and duplication process. Only decoders

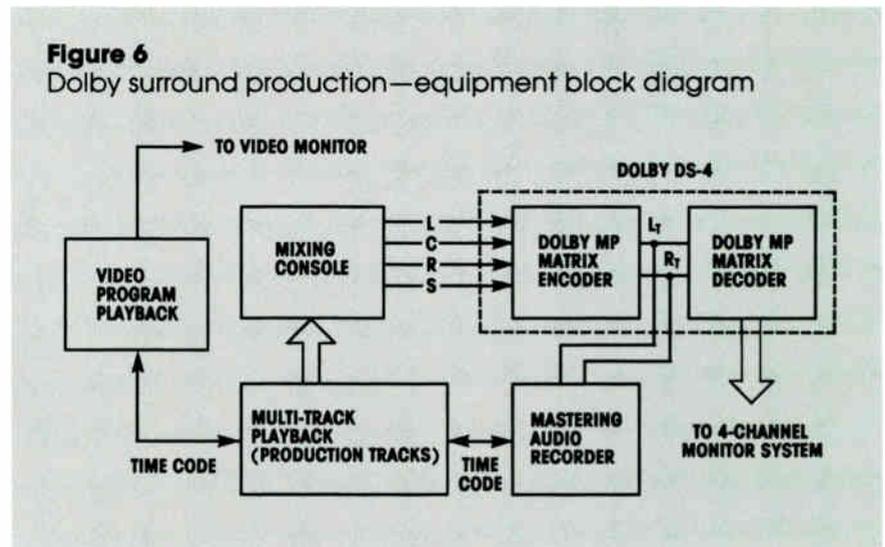


Figure 6
Dolby surround production—equipment block diagram

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that accurately match the professional production tools should be used with a complete (three channels in front and one in the back) loudspeaker monitoring system. Localization or other errors can then be detected and corrective action taken. The addition of an X-Y oscilloscope monitor (phase scope) has also proven to be quite effective in detecting software errors.

Conclusions

From both a subjective and theoretical standpoint, the matrix audio technology that is an important part of the Dolby Stereo process has a lot to offer the consumer music and music video market. Based upon our laboratory studies and a large number of demonstrations to professional and consumer groups, we feel that properly produced, duplicated, transmitted and decoded, this process has considerable growth potential beyond motion picture production. All of this is possible today because of the widespread availability of two high performance audio channels and cost-effective matrix signal processing techniques. We feel that it is only a question of time before consumers will regularly benefit from this exciting and logical approach to stereo reproduction.

Acknowledgements

I would like to thank the following individuals for their contributions and suggestions in preparing this article: Bill Varney, sound director, Universal Studios Sound Department; Steve Maslow, music rerecording mixer, Sound Department, Warner Hollywood Studios; and David Gray, chief engineer, Motion Picture Division, Dolby Laboratories.

For details on Dolby MP matrix production hardware and licensing contact: Mr. David Gray, Dolby Laboratories Inc., 1610 N. LasPalma Avenue, Los Angeles, CA 90028, tel. (213) 464-4596.

For additional information on consumer playback of Dolby Surround encoded software, the author may be contacted at Shure HTS, 222 Hartrey Ave., Evanston, IL, 60202-3696, tel. (312) 866-2374. ■

Past-president and Fellow of the Audio Engineering Society, Robert Schulein was chairman of the AES 4th International Conference—Stereo Audio Technology for Television and Video and was formerly chief development engineer for Shure Brothers Incorporated.

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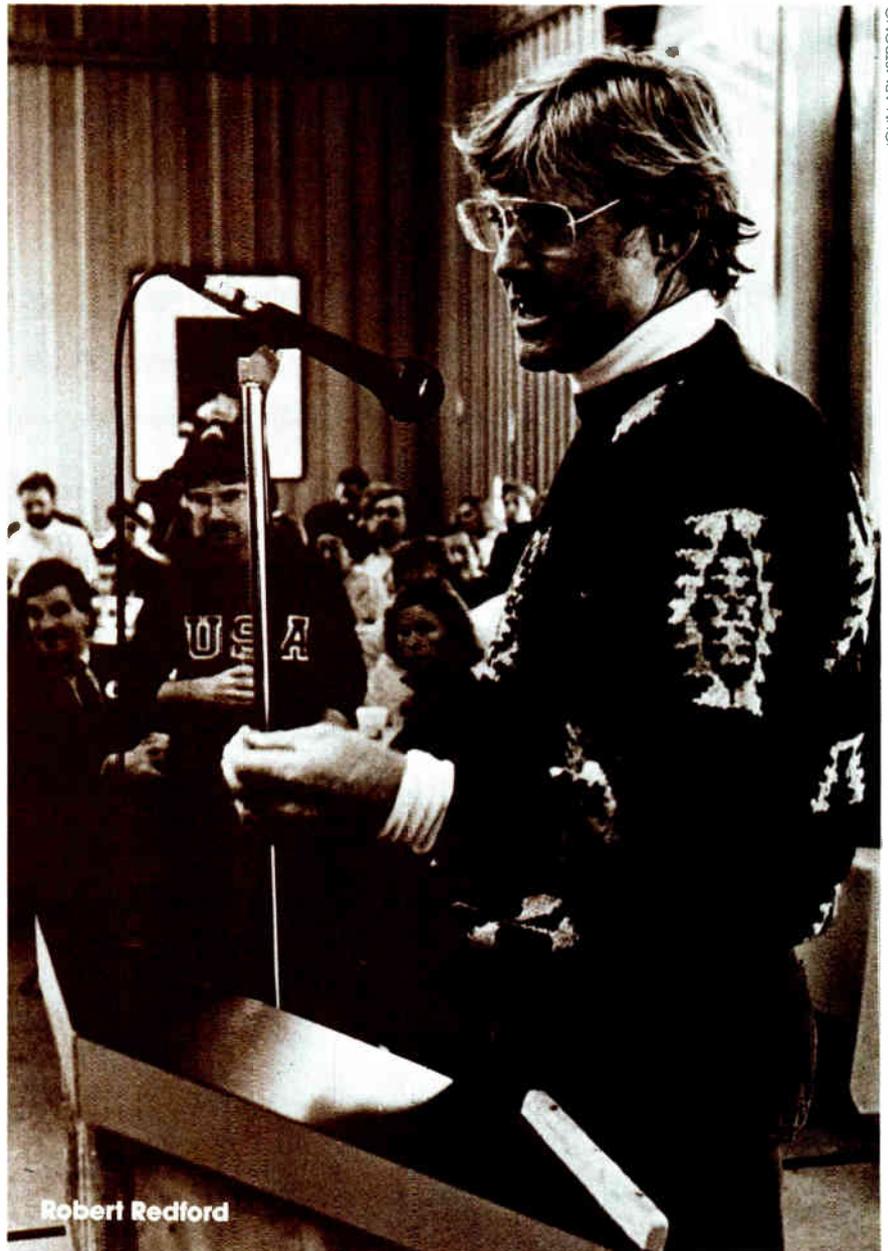


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BY TIM BOYLE



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After talking to various film industry people, I learned that Sundance was created by Robert Redford to give young filmmakers, composers, directors, actors, playwrights, dancers, and

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patchbay, tape machines and outboard gear ended up being about 40 feet by 45 feet. To break up standing waves, we placed sound gobos strategically around the room and a 12 foot by 12 foot platform under the recording gear at a 45-degree angle to the walls, facing the console in a corner of the room. The platform provided a way to neatly dress our cables under the control room floor. Newman and technical wizard/audio consultant Don Walker spent many weeks contacting every audio merchandiser in the quasi-civilized world to provide us with gear.

Our console was an Amek Scorpion, 28-input, 12-bus, 24-monitor stereo mix desk. Early on we made the decision to do all mixing to 2-track stereo, since video was the medium available for the screen work. This considerably simplified the mixing. The tape machines were an Otari MR-70 24-track, two Sony 5000 2-tracks (one with center channel SMPTE) and two Yamaha K-1020 cassette decks. Three Sony BVU800 3/4-inch video decks were purchased for video playback, 2-track digital recording and time code/video transfers. The digital audio processor was a Nakamichi 601. For outboard gear, we had two Yamaha SPX90s, a REV7, a Valley People expander/compressor and a Lexicon PCM 42 for delay.

The one piece of gear that made the control room construction possible in a limited amount of time was the patchbay built for us by Pro-Co Sound of Salt Lake City. Amazingly, all Walker did was tell Pro-Co what console, out-

board gear, and tape machines we had, and their approximate distances from the patchbay. Through the use of a special computer program Pro-Co prefabricated and packaged the patchbay and all associated cabling with the proper hardware for instant interface. The patchbay was mounted in an 18-inch road case and in less than a day and a half, the studio was fully working. Molex connectors plugged right into the patchbay and, bingo, we were rockin'.

Synchronization was accomplished with three TimeLine Lynx modules. We ran into difficulty trying to make our MR-70 slave to our BVU800s because of a problem with the Otari, but since it had a fully functioning 4-memory, cycling remote box, making the Otari our master worked just fine. The Lynx modules were great for reshaping time code for transfer to our multi-track.

Our audio monitors were Yamaha NS10s and large Westlake speakers powered by two Yamaha 2200 power amps. We set up our keyboards between the console and the big monitors so our musicians could hear themselves loud and clear.

In the synthesizer department, we were lucky to have a Yamaha DX7IIFD, Roland D50, S50, JX-10, Roland Piano Module, four Yamaha TX81Zs, and a KX88 keyboard controller as our master keyboard. Peter Kay contributed his Fairlight and extensive sample library. Sequencing was handled by either Mac Performer or Sequencer Plus,

(L to R) Robert Redford, Nan Newton, Dave Grusin, Rick Nobis





(L to R) Dave Newman, Chris Newman and author Tim Boyle mix the string date.

depending on the composer. Richard and Ron Grant, creators of the Auricle composers program, brought along Auricle and a Commodore 64 and instructed the composers on use and application. Most of the scores written in the workshop were programmed on Auricle. We also had the Roland SBX-80 SMPTE-to-click converter to drive the sequences from the time code on the videos. This also gave us Song Pointer so we could start the recording in the middle of a cue. MIDI routing was taken care of by the Sycologic.

Three other composers' facilities were constructed for score writing outside the main recording room. Two rooms were each equipped with video playback and a DX7 to enable spotting and theme demonstration for directors. The third room was an extensive writers' facility with a DX7IIDF, a TX816 rack, a Yamaha 16 by 4 mixing console, a REV7, an SPX90, an RX-11 drum machine, a Cooper MSB MIDI merger, the IBM computer with Sequencer Plus, a Mac with the Performer program and printer, and two NS20 speakers. All this gear mounted on an Ultimate Support system rack and used a Yamaha 2200 power amp. Although this room was a writer's dream, some problems were encountered because the control room gear was not identical to this equipment and new sounds had to be developed in the studio for each pre-written cue. Fortunately, this wasn't a big problem since we had two of the world's best synthesizer musicians at our disposal—Ralph Grierson and Rick Marvin. Having dealt with thousands of scores, they worked at truly amazing speed.

During the second week at Sundance, 25 members of the Utah Symphony came for a day of scoring. All eight composers at the workshop wrote orchestra pieces for a day. The instrumentation was eight violins, four violas, four woodwinds, a trumpet, a bone/tuba player, two French horns, four basses, a percussionist, and a pianist. I mixed the orchestra to 2-track digital with a 24-track back-up and only two of the cues were overdubbed and remixed.

The combination of a very live recording and no real acoustic isolation provided some lighter moments. The aforementioned rushing streams can be heard on some of the more delicate cues we recorded (no, that's not tape hiss!). During another quiet passage, Robert Redford's cowboy boots can be heard clunking through, prompting some hysterical laughter in the control room.

All the microphones, stands and cables were lent to us by Brigham Young University, Performance Audio and Rick Nobis. Rick lent us two B&K microphones that I used as room overalls for the big concert hall effect. We used a minimum amount of miking since the room was naturally loud.

During the date the composers were provided with a video monitor and a click from the control room, but none of the players wore headsets, a tricky way of recording.

As for the seminar leaders, they were some of the top composers in the film business, including Dave Grusin, Bruce Broughton, Ira Newborne, David Raskin, Alan Silvestri, Ron Grant, David Newman, Brad Fiedel, J.A.C. Redford and Joel McNeely. They held seminars



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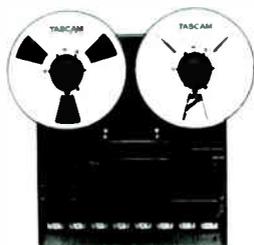


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and met with workshop participants one-on-one on a daily basis to impart their priceless experience. Daily screenings were held, followed by informal discussions with the films' composers. Other seminars were given daily by music editors, agents, technical types, film directors, and producers, providing a well-rounded glimpse of the entire film music business.

Two composer agencies, Bart-Milander and Gorfaine-Schwartz Agency, attended the workshop. As these two agencies handle about 90% of all signed composers, their seminars were attended to the max. Publishing was also represented by Lyn Benjamin of ASCAP and Doreen Ringer of BMI. The Sundance curriculum covered just about every angle of the business.

Attending this year's workshop were composers drawn from academia to the work-a-day musical world. They were Leon Milo, Albert Olson, William Olvis, Jim Stemple, Sasha Matson, Mark McKenzie, Laura Karpman and Kurt Bestor. A committee chose them on the basis of a written letter and demo tape.

A typical day at Sundance started with an 8 a.m. breakfast, 9 a.m. downbeat in the studio, and a seminar before a one p.m. lunch. After lunch, the writing rooms filled up and the studio restarted till dinner at six. At 7:30, a screening was scheduled, followed by an informal talk by the composers. Meanwhile, I usually was at the studio mixing the day's cues. Almost nightly a party was held in one of the cabins. It must have been the clean mountain air that gave us the energy to keep this going for seven days a week.

The story of Sundance would be incomplete without a mention of the Sundance staff. Their warm, helpful attitude made us all feel at home. From Albert Garcia, my audio assistant, to administrative director Cinda Holt to David Chambers, managing director, and all the others, a big thanks for making our stay at Sundance the complete educational experience.

For information on Sundance and future workshops, write: Sundance Institute, 19 Exchange Place, Salt Lake City, UT 84111. ■

Tim Boyle is a Wally Heider refugee who found his way to Record Plant Scoring, Inc. five years ago as Dan Wallin's assistant. Since then, Tim has been mixing records, films and remotes for the Record Plant.



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TRENDS IN FILM SOUND

BY NICHOLAS PASQUARIELLO



In the following interviews we explore some recent trends and issues in film sound, chief among which are: the impact of multi-track systems on mixing; the virtually universal call for digital random access storage systems in post-production and the effects of commercial exhibition standards on film presentations.

The participants in this broad ranging discussion are some of the nation's most highly regarded soundmen, representing a cross-section of the American feature film industry. Directors like Woody Allen, Francis Coppola, Steven Spielberg and George Lucas have consistently called on these film audio professionals to produce award-winning tracks on films such as *Star Wars*, *Apocalypse Now*, *Raiders of the Lost Ark*, *ET* and *Star Trek IV*.

PART ONE

NELSON STOLL

An Academy Award nominee and 20-year veteran production mixer, Nelson Stoll has more than 30 documentaries, commercials, dramatic shorts and feature films to his credit. He just completed work at the recently opened Dino DeLaurentiis studios in North Carolina on *Date with an Angel*. Among his other credits are: *Dune* (1983), *Indiana Jones & the Temple of Doom* (1984), *Never Cry Wolf* (1982),

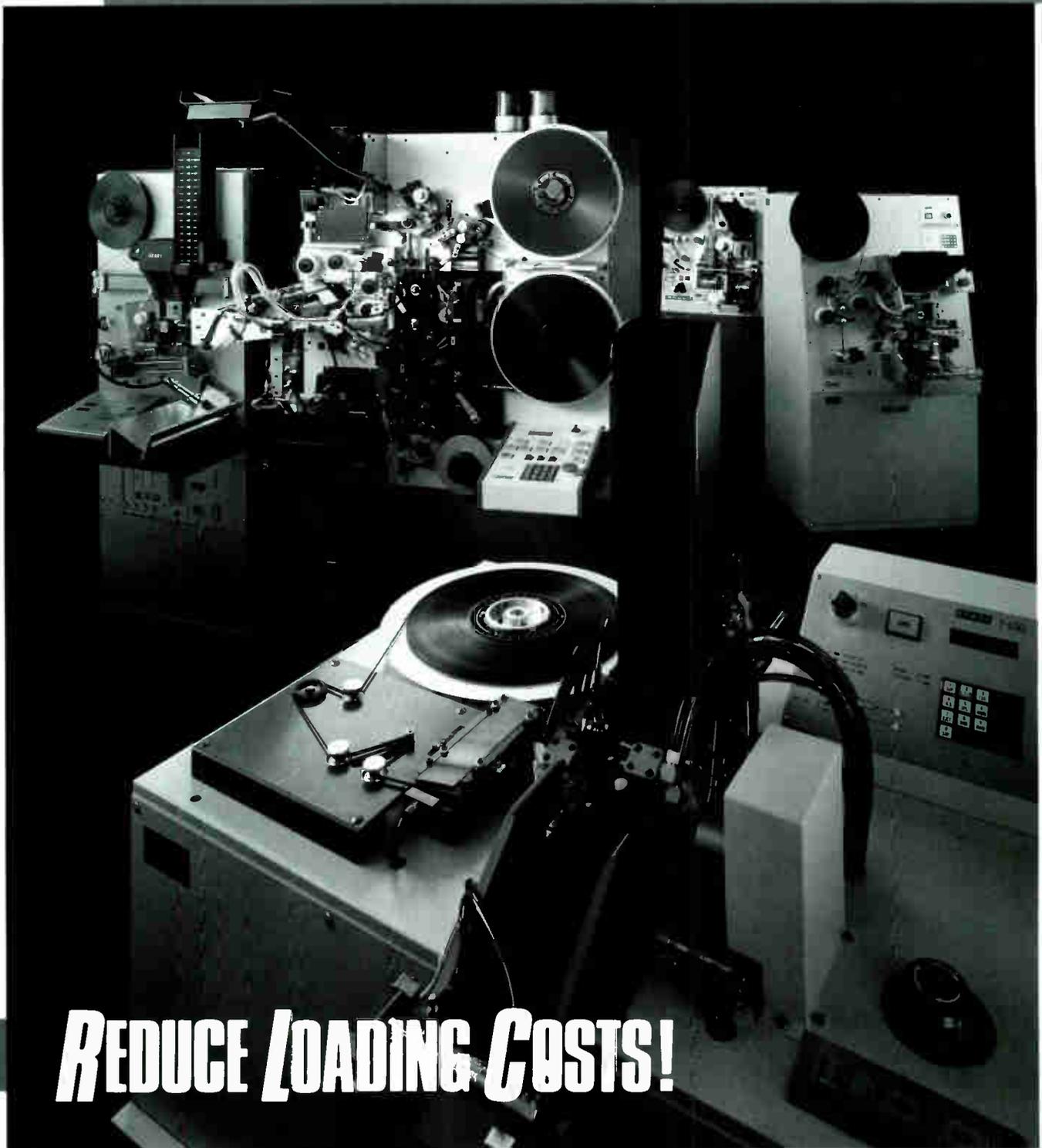
Running Fence (1977), *The Grateful Dead* (1977), *The Last Waltz* (1976) and *Over Under-Sideways Downs* (1975).

Mix: Give me an example of how you go about analyzing a shoot for production mixing.

Stoll: If you take a relatively simple situation such as a master shot of a scene—where the microphone has to be five or six feet overhead—for a scene like this I do a lot of acoustical work to the environment so the sound is very clear to the microphone or to the ear. If you walk into an average kind of living room and you have someone stand in the middle and talk, the sound is very diffuse. It's very hard to hear detail because the sound is bouncing off of all kinds of reflective surfaces. I pay attention to a multitude of small things: attention to acoustics, attention to the directness and simplicity of the chain. I don't like to go through unnecessary amplifiers or unnecessary cables. And the quality of the components are as high a level as possible, so that the degradation of

Nick Pasquariello is a freelance writer and filmmaker based in San Francisco.

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the sound is minimized as much as possible.

If you take that one example of the overhead microphone in a living room: I've chosen the microphone, the capsule, the kind and length of the cabling, the simplicity of the routing, the acoustical treatment of the room. All kinds of things that are not revolutionary, but are just acknowledgment and attention to the basics of sound recording and attention to detail.

Mix: Is your recording technique different when recording for theatrical versus broadcast television release, such as a TV movie?

Stoll: Sound has to be compressed for theatrical use because there is a noise floor, which in practice is not the sound of the hiss in the background, but the sound of the people in the audience, air conditioning and projector noise.

Every time I record a production track, I have to ask myself: what's this being recorded for? Is this being recorded for TV, where Papa's getting up, getting a beer and the kids are yelling in the background? In other words, how low can I let the subtler kinds of sounds go and still have them be heard? Because if I can capture the wealth of low level detail that's there I've got to turn the level up to bring it above that noise floor. The noise floor is higher for TV than for theaters; the signal to noise ratio is a lot smaller for TV because televisions can't play very loud. I'd say the practical dynamic range for theater is about 60 dB. I don't like to have any low level detail—and that includes the ambience. When I record people inside a room I want to hear not only the people but also whatever else is going on in the room. That has to be heard at a level that's above that noise floor so it can add character to the scene.

I record on a Nagra at 15 ips with Nagramaster—an equalization curve that's part of the stereo Nagra system—which has a signal-to-noise ratio of 75 dB. The Nagra has a limiter that gives you a 6 dB buffer above that, so, for example, if you're recording a door slam with the high level set at +4 on the meter—which goes to +12—the Nagra will hold that at +4. If it gets above +11 with a sustained sound it goes into gross distortion. But for a short transient like a gunshot, door slam or somebody's yell, I set those

“When you do a documentary, you are forced to think about what is possible with one microphone: you have to choose that microphone very carefully.”

levels up higher, the effect of which is to compress the sound at the high end of the spectrum. And that means I can record people at average peak levels around 0 or -2 or +1, depending on the kind of scene it is. So that for those unexpected peaks that are much higher than that, it limits the dynamic range at the top. That's how I compress the dynamic range at the top. And that's a very important kind of limiter for film use.

For TV, the dynamic range is about 10 or 15 dB less than it is for theater release.

Mix: In practice, is that bringing it up from the floor and also down from the top?

Stoll: Both things.

Mix: By about half as much on either end?

Stoll: Well, no, because when you do the original recording you want to optimize the recording. What that means is you want to have acceptable amounts of distortion. When you do a recording you have two limits: the noise floor at one end and distortion at the other end. I try to record things as hot as they can be—modulating at as high a level as possible—without having distortion. But you can't record everything hot. If there's a scene where people are whispering and later they start yelling at each other you don't want to record the whispers at the same level as the yells, do you? These are the hardest kinds of scenes to record because you have to ask yourself: is this for TV or for theater and how much dynamic range can I get away with?

Mix: Why do you tend to integrate new hardware into your film sound

work from hi-fi applications rather than more standardized film sound applications?

Stoll: The hi-fi application is more sophisticated. State-of-the-art sound reproduction usually comes from the highest quality music recording and playback—not theater, but professional 2-track stereo playback systems.

My approach towards sound recording originally came out of documentary work and very small productions where there was no money to replace sound. And usually for documentary sound it's an event that only goes past once; there's no take two. So I had to very thoroughly understand the abilities of the equipment because you couldn't say to the director “That wasn't any good for sound, could we do it again?” The guy's already been shot or the mother already died and the son was already weeping—whatever it was.

Mix: How do you prepare differently for a documentary compared to a theatrical feature?

Stoll: The equipment is a lot simpler on a documentary and that's something else that I tend to do. I like to make things as simple as possible. If there's any way of doing it, I like to use one microphone to record a scene. When you do a documentary you are forced to think about what is possible with one microphone: you have to choose that microphone very carefully. You have to especially be cognizant of the implications of putting a microphone in a given position and committing yourself to that position.

In theatrical work many times you use many more microphones for a master shot because you have to, but I strive, if it's at all possible, to be able to use one microphone. That is, to get the sound of whatever's taking place in its multitude of elements so that to the ear it can sound as natural and believable and have as much detail as possible.

Mix: What are some examples of modifications you've done to hardware?

Stoll: Windscreens are an example. When you put a windscreen on a microphone it ideally does two things: it does not stop any of the sound or change the characteristics of the microphone; but it stops the pressure of the wind. That's a pretty hard nut to crack. Every windscreen that's out does neither. So about ten years ago I started

listening to all the windscreens that were available and started buying raw materials and making microphone suspensions and windscreens. I use Schoeps microphones, which I consider the best sounding condenser microphones available; they're the most natural sounding ones. The windscreens that they made sounded really bad. And this was before I had strong engineering skills to be able to verify what I heard.

In addition to the two characteristics I just mentioned, another that I consider in designing windscreens is cavity resonance. The first one I made was a large windscreen, one usable in winds over 30 mph, which is essentially the one I use today. Its design takes into account cavity resonance; the polar response of the microphone; the outside surface and the way the wind sounds when it hits that surface; the high frequency attenuation; and the physical structure in terms of the mechanical resonance.

Mix: What modifications have you made to the Nagra's in-line filters?

Stoll: These Schoeps microphones have incredible bass response.

Mix: Too much?

Stoll: Yes. They're perfect for the lowest note of an organ, they're very flat down there and sometimes that's desirable. But usually you're recording dialog and the male voice only really goes down to the fundamentals to around 125 Hz and you can lose a little bit of the chest cavity on a very large man; and you really want to record down to about 100 Hz. But anything below that you don't want to record because what you're getting is mechanical problems through handling noise and the wind impacting the diaphragm. So you want a bandwidth limit on the low end of the spectrum. Because some of the Nagra's built-in filters are not as useful as others, I modified the less useful ones to take care of this problem.

On the Nagra 4.2 rotary switch, the HP2 [High Pass Number 2] was so high that it castrates all but the squeakiest of female voices; anything that has anything of low end power to it. So I shifted it down just enough to where it was acceptable: from around 150 Hz, now it's down to about 115.

Mix: What are the most challenging aspects of your work?

Stoll: The biggest challenges I face involve the politics of filmmaking: trying to find the space, time and energy to discuss what is possible to get out of production sound considering the time and financial constraints that exist in every project. The hardest challenges are not the technical challenges—those are relatively simple and relatively straight forward if you know who to ask.

Take a worst case example: say you go onto a commercial that's only going to be a three-day job and half an hour before you're to start shooting they show you the story boards. You're trying to find out what they want and expect, what is possible to give them and how you might alter their expectations—present them with alternatives—efficiently and quickly.

Mix: In general how do you think the quality of film sound could be improved?

Stoll: If everyone who works with film audio were to have a thorough understanding of sound basics—from the original concept of the film right to the final reproduction in the theater—this would greatly enhance film sound quality. Most of the time it's such a fragmented process and there's so little communication between all the diverse elements of the process that the sound gets castrated each time it's transferred. So that what you end up with even if the sound is recorded very, very well initially, is a sound that is not preserved carefully all the way through. ■

BEN BURTT

One of the original *Star Wars* film sound team, sound designer Ben Burtt has gone on to win two additional Academy Awards for Best Sound Effects for *Raiders of the Lost Ark* and *ET, The Extraterrestrial*. He has been one of a small group of mixers who has grown with the state-of-the-art and much-envied Lucasfilm-Sprocket Systems post-production facility in Marin County, California. In addition to mixing virtually every Lucasfilm feature since *Star Wars*, Burtt has written specials and animation programs for TV, as well as been picture editor on IMAX and Disney World productions.

Among his film credits are *Star Wars* (1977), *Alien* (1979), *The Empire Strikes Back* (1980), *Raiders of the Lost Ark* (1981), *ET* (1982), *Return of the*

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—FROM PAGE 71, FILM SOUND

Jedi (1983), *The Dark Crystal* (1983), *Indiana Jones & the Temple of Doom* (1984), *Nutcracker: The Movie* (1986); IMAX Films: *The Dream Is Alive*, *Niagara*, *The Alamo*.

Mix: How has the hardware you use in your mixing work changed in the last few years?

Burt: A lot of it hasn't changed that much. We just have a more efficient dubbing system—we have more dubbers than we used to, so we can handle more tracks, which means we can offer more options to the producer. In our two mixing studios here we have about 25 dubbers upstairs and 16 downstairs.

Mix: How has some of the newer hardware here helped you do your work more efficiently?

Burt: The Synclavier, because it's in digital form, allows me to go through my sound materials and drop out samples of a sound. I can clear tracks up in some ways which I could not have done very easily in the past except by putting them on tape and using a razor blade.

For example, last week I cut an IMAX trailer and did the whole soundtrack and composed the music and did the sound effects on the Synclavier in one day. It would have taken five days to do it conventionally.

Mix: Have you been increasing your use of multi-track in your mixes?

Burt: Yes, I have. For example, on the last IMAX film I did, *Niagara*, certainly 60% of what I cut for the film was on multi-track rather than on film. The rest was done on sprocketed material. The sprocketed material was principally music and dialog, and almost all the sound effects were done on multi-track tape. I've found I can develop sounds a lot faster on multi-track.

Mix: How do you work with sync effects in multi-track?

Burt: It's hard on multi-track. I do it a couple of different ways: if I am concerned about a particular effect I'd cut it on film—as some small percentage was done on *Niagara*.

I also time-coded some 1/4-inch tape materials, locked them to the picture and 24-track and dumped them on to multi-track in sync. In addition, I've gotten very good at spinning things in sync.

The Lexicon reverb system has been helpful: we used to go out and rere-

cord a lot of our sounds by playing them through speakers in environments to get the proper echo. That took a lot of time—we did it on *Star Wars*, where we took the dialog out and played it in a bathroom to make it sound like it was done in a space ship. Now we have such nice sophisticated digital tools at the console that we don't have to leave the room to get many of those effects that we used to fuss with mechanically years ago. That's been something that's saved a fair amount of wear and tear on us.

We've been using the Lexicon 224 for about the last five years and we've grown more dependent on those kinds of devices than ever before.

Mix: Do you find that it's easier to mix certain types of sound materials on multi-track than on mag film?

Burt: When I edit sound I divide my sound materials ahead of time into what I can do best on film mag and what I can do best on multi-track. I tend to relegate the things to film that are specific known sounds such as a door closing or a face sock—something that's in the library; there's no doubt about what it is and where you're going to be experimenting with it very much; it's a straightforward creative situation.

One of the advantages of working in multi-track over working in film is that you have 24 or more tracks that are running along that are empty, waiting to be filled with ideas. You can start building your track up layer by layer, and as it grows and develops—because you've got the ability to play many tracks at once in sync with picture—you get ideas about what direction the sequence should go; what's working and what isn't. It's not something an editor on a Moviola can do; he's going to cut the door slam, then the next effect and the next effect, and then put that track aside and then work on another track and he may not have the ability to have reference to what he's already done.

So I tend to relegate to mag film the material that is—not simple—but in which less judgement needs to be passed on.

Mix: Do you feel that you have the same flexibility in working with film or video to multi-track?

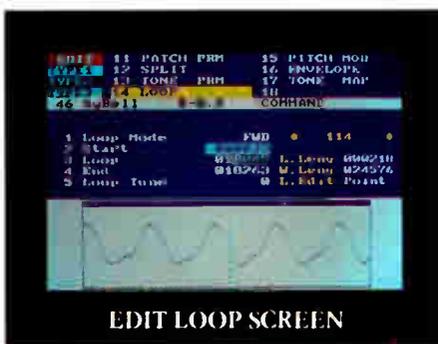
Burt: Since most of the shows I work on are sprocketed, I prefer working on

—CONTINUED ON PAGE 77

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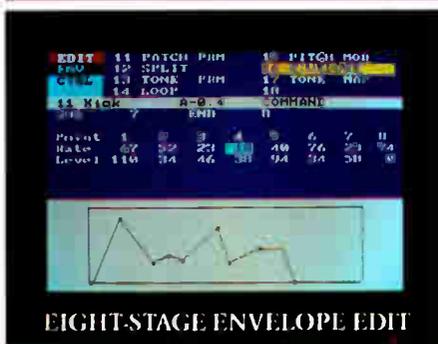
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MULTI-TIMBRAL PLAY SCREEN



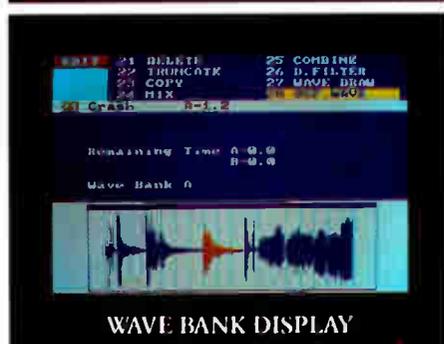
VELOCITY CURVE FOR ENVELOPE



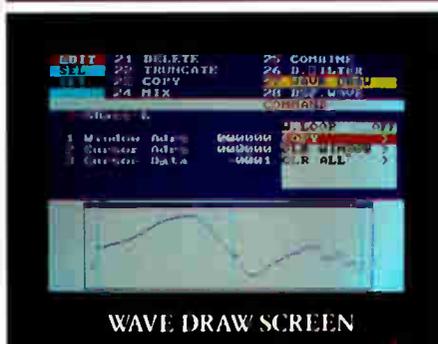
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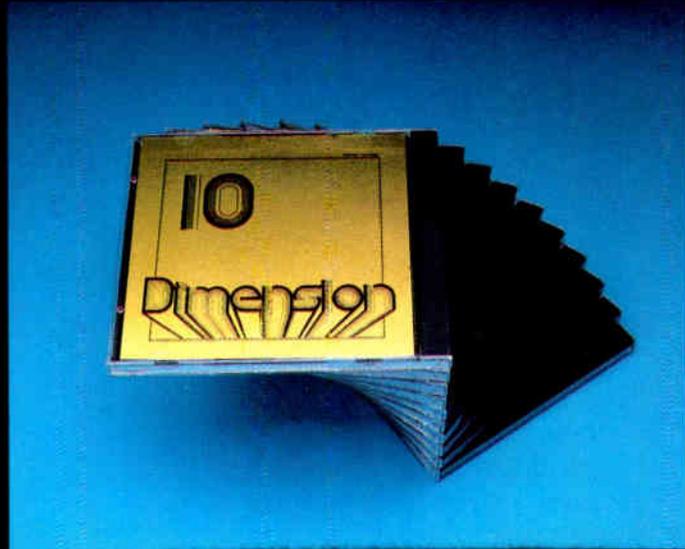
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film when I'm doing a film because image size is important as to the scale of what you're going to hear and see. Also, assuming this is a film that will be theatrically released, I want to evaluate the soundtrack in relation to a large projected picture, because that's the way the audience is going to see it.

The other consideration is that when I'm working under considerable time pressures, quite often the director decides part way through the sound process that he wants to recut the picture. If the picture editors are working in film it's best for the sound people to be working in film because you can just conform and follow along with what they do. When posting on video from a film original you have this additional translation: cuts that editors have made have to be converted from film quantities to video and then you have to convert back. This all can be done, although in the process there's a significant chance for error and for mistakes.

Mix: What kinds of future changes do you see occurring in film sound technology?

Burt: I think what will happen sooner or later is that film and video post-production technology will merge into one thing. I say that only because this is such a well established trend, as well as the fact that we rely so much now on synchronization systems and computer systems. How many companies are working on synchronization systems and how many are making sprocketed film machines? There are very few companies researching and manufacturing better dubbers and projectors and better sprocketed devices, yet there's a tremendous amount of research and money being spent on multi-track systems, digital systems, interlocking CDs with one thing and another, because there are so many applications for those things in television and exhibition of various kinds.

I think in the editing area in particular more and more will be done on videotape. Another parallel development will be that more editing will be done digitally. More and more producers come to us with their preliminary work—sound and/or music—done in a recording studio on digital or multi-track.

Everybody's looking for a means to store their material in a random access fashion. That's probably the most universal desire that almost everyone in



PHOTO: NANCY JENCKS

Ben Burt

sound has because in order to do work faster you want to be able to manage your raw materials faster. If I had money to put into it I would put the highest priority into the permanent high quality storage of sound random access, because I could use that for TV, films, radio—any number of media. ■

RICHARD BEGGS

In the late '70s, Richard Beggs and the *Apocalypse Now* post-production crew pioneered the use of 24 track film sound post-production. To this day he has not found a more cost-efficient and creatively satisfying system for his mixing needs—although he has added to his mixing board hardware over the years. In this interview, however, Beggs discusses some of the things that mixers have the *least* amount of control over, namely how theater owners and projectionists across the country present the soundtrack over which so much of their blood, sweat and tears have been shed. He also talks about some of the requirements for his "dream" digital posting system.

In 1980, Beggs received the Academy Award for his rerecording mixing work on *Apocalypse Now*. Since then he has mixed five features for Francis Coppola. His major credits include: *Tucker* (due in 1988; sound designer/supervising rerecording mixer), *Walker* (1988; sound designer/supervising rerecording mixer), *Gardens of Stone* (1987; sound designer/supervising rerecording mixer), *Spaceballs* (1987; mixer), *The Nutcracker* (1986;

music mixer), *Cotton Club* (1984; sound designer/supervising rerecording mixer) and *Ghostbusters* (1984; sound designer).

Mix: What has your experience been with stereo and mono tracks in relation to theatrical release prints of your films?

Beggs: My experience generally with theatrical release of Dolby stereo pictures has been somewhat less than satisfactory.

Mix: Do you know where the problems are?

Beggs: It's basically to be found in the state of theaters and projection technology. There's not a lot of trouble with standard Academy mono optical sound. It has certain deficiencies in frequency response and distortion, but in general there's not a lot that can go wrong with it, relatively speaking. If you took a mono picture with a good mono track and took it to 20 mono theaters you'd get a certain variation in quality from the very best to the very worst, but that variation would be nowhere as wide as with a Dolby stereo print among 20 Dolby stereo theaters in their normal state of operation—with their normal maintenance and the way they're usually run on a day in, day out basis.

Mix: Why is there such a disparity between the two systems?

Beggs: Well, there might be some formula you could apply to a Dolby stereo print that goes something like this: the amount of potential problems you will have can be related to the square of the tracks. In other words there are four potential tracks in a Dolby stereo release: left, center, right, surround. OK, so: four times four times four times four equals 256. That's the potential for problems. In a mono you have one track.

And the factors that go to influence this include the technical training and ability of the projectionist and the state of the theater equipment. When we took *Cotton Club* on previews, three of the five theaters we ran it at, chosen in somewhat random fashion nationwide—one each in Boston, San Jose and Chicago—had been running a popular rock and roll picture very loudly when we came in. Each one of them had blown out the horn in the center speaker in the theater—which

—CONTINUED ON PAGE 78

is the principal dialog speaker.

I have never gone into a motion picture theater, put on the Dolby test materials, measured the response in the theater and had it ever come back according to specifications.

Mix: How many times have you done such a test?

Beggs: I've done about 25 to 30 previews. We always had to bring in an independent technician—our own technicians or technicians from Dolby—to bring the theaters up to standard, and many times it couldn't meet the standards but we did the best we

could.

In the normal course of the operation of a theater projection system drivers blow out and channels go out. As a consequence, these systems require constant maintenance; perhaps as often as every other day. Many theaters do not get this much needed work and so what happens is that in the normal course of a film's release, eight times out of ten it's not going to be presented properly.

Two things have got to happen: either the quality of their presentation has to increase—through training and money—or a medium has to be made that is so foolproof you eliminate the

possibility of things going wrong. I think the latter is more likely to happen than the former; though I don't see evidence of either.

Mix: What effect, if any, has digital technology had on your work?

Beggs: It hasn't had much of an effect. The pictures that I've done that have had digital materials involved—usually the music score was recorded digitally, then it comes into the movie. This approach has created complications because of the hybrid nature of the two media. In the best situations, it's resulted in better sound in scores in films. But generally speaking I don't think the improvement is obvious to the average theater goer in an average presentation; but it's a necessary stage because you have to start somewhere.

Digital's probably going to be the format of the future; it's inevitable. Getting into it is going to have certain awkwardnesses and problems. The first one is dynamic range. I came from a music studio background—music and records. For me dynamic range and signal-to-noise ratio were very important and I brought that bias with me into film. And what I've learned is that tremendous dynamic range is not that desirable in film. Creating the illusion of dynamic range is important. If there's a secret or art to mixing it lies in that area.

The tremendous dynamic range of digital sound for which everybody's been waiting for years creates a lot of problems—in my case I've only had experience with digital music, no effects or dialog. When we were mixing *The Nutcracker* for Carroll Ballard we used Telarc, which produces CDs. The music came in and it had incredibly wide dynamic range. The music was recorded digitally and we went straight from a 24-track digital to mag film. The problem was that when the loud passages were within acceptable limits, the soft passages were completely lost in the hiss. Now this has been a problem in recording for years, but usually original material has been compressed or processed in some way so that by the time it gets to the film, it's not as hard to handle.

However, since digital gives you an additional 10 to 15 dB of dynamic range the job became one of massive gain riding on all the 24 tracks simultaneously to squeeze these sound materials in. That much dynamic range is

—CONTINUED ON PAGE 155



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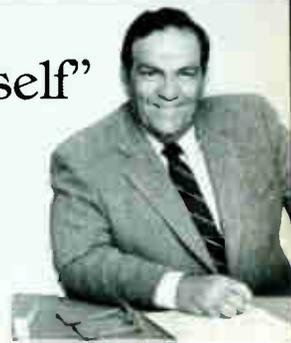
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by Lou CasaBianca

BOOKS ON FILM AND VIDEO

Film and video post-production services have had the same beneficial effect on recording studio bookings as compact discs have had on the record business. Many film and video producers have realized that in the long run, it's more economical to do their sound work in audio studios equipped to handle video. It's changing, but a large number of video facilities are still not properly equipped to handle high-quality sound mixing and layback. Driven by the SMPTE standard, film, video and television continue to be integrated into the recording studio environment. As a consequence, the need for greater knowledge about these technologies becomes an increasingly important element in the continuing education of audio professionals and musicians.

Seminars and workshops offer the kinds of hands-on interactivity that can make all the difference in getting up to speed quickly on what can be very complicated subjects. But books and magazines are still probably the most important knowledge tools for those who wish to gain specific insight or get answers to questions that come up on a day-to-day basis. Technical reading can be very dry, and for some, very intimidating. However, it is also possible to make complex subjects accessible, even enjoyable. I'm reminded of James Thurber's grandmother, who thought that "electricity was dripping invisibly" from wall sockets all over the house. A vibrant and technically correct image.

Below, I have reviewed a number of books that may be seen as part of a film-video resource library. I've tried to condense a great deal of information into short takes on each of the books. I have found these publications to be particularly relevant to understanding audio-for-video, film/video budgeting, and video post-production techniques. Together, they provide a cross-sectional knowledge base for editors, producers, directors, videotape operators, audio engineers, production managers and assistants, and students—anyone on the hunt for solid but accessible information on film and video post-production.

Computerized Videotape Editing

AUTHOR: Diana Weynand

PUBLISHER: Weynand Associates

PAGES: 236, PRICE: \$34.95

Computer-assisted editing systems are all the rage in the video post-production world these days. Over the last ten years they have evolved from clunky black boxes driving 2-inch videotape machines to sophisticated elements in an integrated workstation that controls multi-format video, audio tape machines and effects. *Computerized Videotape Editing* takes an incredibly complicated subject and breaks it down into digestible bite-sized elements. Based on the omnipresent CMX 340X industry standard, the generic concepts reviewed can be applied to virtually any manufacturer's editing system, including ISC, Sony 5000 and Convergence 204. The man-

ual is illustrated well and easy to read.

A companion manual, *Videotape Operations*, is an excellent video primer covering the television signal, reading and monitoring the signal, machine setup, editing, testing and timing. *Computerized Videotape Editing* begins with time code, the "language" of computer editing. Videotape formats, the editing process, and both "off-line" and "on-line" post-production are reviewed in depth. One point that emerges from the book, and my own experience, is that on-line quality and control is now available in off-line rooms or project studios. What really defines on-line today is not necessarily the room in which you're working, but whether or not you're working on the edited master tape.

In the system start-up process we take a look at the computers behind the system, peripheral equipment, and initializing the editing system. Setting up the edit in the DMX context means moving tapes around, selecting and refining your edit points, setting edit durations and transferring numbers on the CRT. The ritual of keystrokes and creating edit decision lists is pleasingly de-mystified into an understandable logical process.

All this preparation is to get to the point of making the edit. Video editing incorporates the ability to preview your edit, a feature which only recently has found its way into audio editing. Weynand orchestrates the rhythm of the edit process with preview, record and replay punctuated by cut, split, match frame, dissolve, wipe and key edits. She reaffirms that the creative flow and excitement of the edit session can only happen when the science of list management is in place. Cleaning the list, deleting, moving and renumbering events are all part of the discipline needed to render the final artistic product in the assembly process. Other more enhanced options, such as sync roll (simultaneous multiple machine), the general purpose interface (GPI) and jam sync are reviewed in the final chapter.

Diana Weynand has an extensive track record as editor, producer and director for the ABC Network including on-line edit duties on *20/20*, *Wide World of Sports* and *World News Tonight*. Her work in music video includes Stevie Wonder's "Ribbon in The Sky." Weynand Associates pro-

vides post-production training for the film and video industry. *Computerized Videotape Editing* is a must for anyone dealing with computerized audio or video.

Film & Video Budgets

AUTHOR: Michael Wiese

PUBLISHER: Michael Wiese Film Productions

PAGES: 345, **PRICE:** \$14.95

After developing "Independent Film and Video: Financing and Marketing Techniques" as a seminar for the American Film Institute, filmmaker Michael Wiese decided to compile his knowledge into this how-to book on budgeting for film and video. Designed as a supplement to another Wiese book, *The Independent Filmmaker's Guide, Film and Video Budgets* is about the most comprehensive and down-to-earth media budgeting guide in print. It shows how to prepare budgets for music videos, documentaries, commercials, shorts, film-to-tape, pay-TV and low-budget features.

The "Basic Concepts" section is required reading for anyone trying to get a handle on the film and video financial landscape. The author's experience in these diverse fields proves to be a reservoir of money-saving tips, negotiation strategies and computerized budgeting techniques.

Specifics include the "Hollywood Feature" format, with a review of every line item entry imaginable. Another invaluable chapter, "Sample Budgets," covers budget guidelines for a multitude of film and video projects. It also contains money-saving ideas: bottom-line factors like cash flow charts, interest-earning charts, budget codes, project codes, and the cash disbursement journal are critical tools for those on the financial end of things. The discipline of organization is clearly illustrated with examples of purchase orders, facility request forms, session sheets, confirmation letters, labels and budget report sheets. The generous use of charts, graphics, sample contracts and budgets makes *Film and Video Budgets* a very practical investment for those seeking to refine their budgeting skills.

How to Read a Film

AUTHOR: James Monaco

PUBLISHER: Oxford University Press

PAGES: 533, **PRICE:** \$15.95

How to Read a Film is subtitled *The*

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RECORDING STUDIO

Art, Technology, History and Theory of Film and Media. It sounds like an almost impossible amount of material to cover in one book, but in this case, it isn't. Author James Monaco sets up things by taking the position that we apprehend the media more easily than we comprehend it. He successfully illustrates how "film and electronic media have drastically changed the way we perceive the world—and ourselves." Monaco believes that film is the most important art of the 20th century. He dis-

cusses the nature of the relationship between film and painting, film and the novel, film and music, and film and the environmental arts. He describes the existence of codes and signs that are the fabric of all the arts, which can be used to produce new and unexpected meanings. He calls this active aspect of art "trope."

For example, rhythm, melody and harmony are essential codes of music. The subcode of a syncopated idiomatic jazz beat become tropes when rendered with the idiosyncratic syncopations of Thelonius Monk. Another interpretation of subcode

would be the soft edge of analog and the hard edge of digital audio. Film and video are unique in that they can record all of the arts. Monaco's concepts are thought-provoking. He delivers an artistic and technological semantic language based on a system unique to the recording arts.

How to Read a Film reconfirms that technology and aesthetics are interlocked. Filmmaking is image and sound technology; the lens and the camera and the filmstock, the negatives and prints. The nuance of the visual image is captured in the use of film aspect ratio; grain, gauge and speed, contrast, tone and color. He reviews the soundtrack and magnetic recording in a short tutorial on sound in film. The emphasis in technology is on post-production editing, mixing, looping and special effects including opticals and the laboratory.

In dealing with the language of film, Monaco reviews the physiology of perception and how reading image and syntax relate to the shot, sound and the reading of the narrative. We see how dissolves serve as commas, and the fade and still frames as periods in the structured punctuation of film.

The chapter on "The Shape of Film History" covers the birth of film, from the "Silent Business" and "The Introduction of Sound" to "The Studio System." It goes on to deal with the economics of film versus television, and the conglomerates and independents as a counterpoint to the issues of aesthetics. Addressing the psychopolitics and sociopolitics of film today and projecting into the '90s and beyond, the remaining chapters on film theory and media round out this major overview of movies, media and technology. The book's glossary is a valuable resource for film and media criticism.

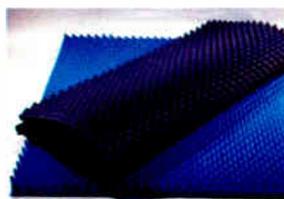
James Monaco's ability to explain complicated technical and ideological points is the book's most important attribute. At the same time, it is almost encyclopedic in its range without assuming previous knowledge on the part of the reader. *How to Read a Film* delivers an enormous amount of useful information in a simple, systematic way.

—CONTINUED ON PAGE 209

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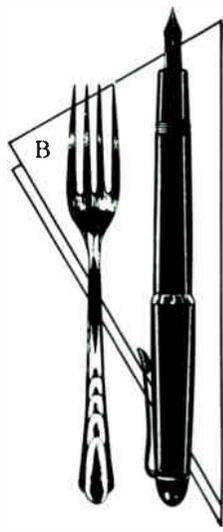
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THE MASTER SCORES



Can you imagine Peter O'Toole billowing across the hot desert as *Lawrence of Arabia* without the music of Maurice Jarre? Even with the blazing passion of Omar Sharif and Julie Christie, those *Dr. Zhivago* nights would have been a little chilly without Jarre. *A Passage to India* took Maurice Jarre to the Oscars for the third time.

Jarre's pre-electronic score for *The Tin Drum* has a parade of strange sounds that would tax a Macrovox sampler. He lurks way back in the jungles, adding a tasteful touch to the terror of *The Mosquito Coast*. *Mad Max* entered the "Thunderdome" with the help of Maurice Jarre.

In his long career, Maurice Jarre has written music for David Lean, John Huston, Peter Weir, Volker Schlöndorff, Alfred Hitchcock, Luchino Visconti, Clint Eastwood and George Miller, to name a few. To create cinema moods, he has employed full orchestras, arcane ethnic instruments, and in recent years, the latest in electronic devices. He freely chooses the musical pigments he needs, mixes sonic colors, and paints the atmosphere with a flourish, or maybe just a dab where needed.

To work so well with such a wide range of directors, stories, settings and characters must demand a mercurial nature, one which blends imperceptibly with the images, yet provides a unique and memorable impression.

A late starter in music, Maurice was expected to follow his father's footsteps into broadcast engineering. Instead, at the age of 16, he entered the Paris Conservatory of Music. After graduating, he earned a living as a tympa-

nist with leading French orchestras. His talents as composer and conductor led to a post as the musical director of the world-famous French National Theater for 12 years, where he composed the music for plays by everyone from Shakespeare to Pinter. More than 40 French motion picture scores paved the way for his expansive international career in film music.

The man is charming, in the true sense. Perhaps this is one of the keys to his success. At his home in Malibu



PHOTO MR BONZAI

overlooking the Pacific, he served tea and we chatted in his study, surrounded by his many awards and a collection of bizarre instruments. His hair was tousled, as if he had just conducted a strenuous symphony. His French accent is strong, and his soft-spoken voice rises and falls musically. Our conversation meandered leisurely, but like music, the thoughts became themes which appeared now and then.

Bonzai: Did your work as a composer and conductor for theater help prepare you for film scoring?

Jarre: Yes, it did in many ways. I worked in the French National Theater and wrote about 70 scores for plays by Shakespeare, Moliere, O'Neill, Chekhov, Brecht, Goldoni—a large spectrum. Every night we had a live orchestra with 25 musicians and we were subsidized by the government so the seats were very cheap—the equivalent in 1955 of about 25 cents. The theater held 4,000 and every night it was sold out. We had a very good director and most of the actors we now know from France started there, people like Philippe Noiret and Jeanne Moreau.

To answer your question, I was doing everything: writing the music, attending the rehearsals to know what the director wanted and also conducting at night. We also went on tour all around the world, from South America to the communist countries. I learned a lot about speed. For instance, the director called me in one morning and told me that he had changed his mind and had decided that he wanted some music for that evening's performance. So, I had to write fast and rehearse a group of ten musicians, and play as well. It was quite a learning experience.

Also, in my studies at the conservatory of music, I learned about music from all over the world. We had special classes to study ethnic music from Japan, China, India, Africa.

Bonzai: Your scores quite often use unusual instruments.

Jarre: That is fascinating. Often I have mixed ethnic instruments with orchestras. Now, with electronics, that has changed. In the past, for instance, if I wanted a Japanese shamisen in a score, I had to find a great shamisen player, who could also read music. When you have an 80-piece orchestra, and the shamisen player is not a good reader,

“Basically, I like to work with directors that I like and respect. It can be very boring to deal with ego, and there are a lot of directors I would never work with because of this.”

you can have trouble. Now, with electronics—fortunately, or unfortunately—it's much easier. You have a digital sample of a shamisen and play with a keyboard, and it sounds great.

To get back to the theater—the music was very important, because we had no scenery. Just a black curtain and the costumes. The music with the costumes created the background, and the setting, and the feeling. For instance, if it was Chekov, there was some Russian flavor. At times, we used some very early electronic music—in 1954, we did the first stereophonic sound in the theater. A long time ago, I studied electronic music and used a French instrument called Ondes Martenot—Martenot was the name of the inventor. It was an ancestor of electronic instruments, a primitive synthesizer. We used it in the theater for a somewhat avant-garde play by a young playwright. Alexander Calder, famous for his mobiles, did the stage. We experimented with stereo effects going through the theater, like we did in films 20 years later.

Bonzai: Composing for the stage, and then for film, which is most dictated by timing, is different from free composition. What is your relationship with the clock—is it a burden, or is it something that sharpens your talent?

Jarre: My experience with theater gave me a discipline of timing, but much less drastic than film. Our stage was huge, so the music would bring the actor from backstage to the center of the stage to speak. The timing was

maybe between 20 and 35 seconds, but in film the timing is to the split-second.

And when we were on tour, suddenly we found ourselves in Athens in the open air at an amphitheater and I had to extend the timing. Or we would go to a small theater and the stage was smaller, and in one rehearsal I had to create the same feeling for the actors as they had in Paris, only shorter.

I came from a classical background and it is fun to have the freedom to write a sonata for piano, or a little concerto for orchestra. You have maybe 20 minutes, or a half hour. But I like film—you have to be very precise to give the theme, and the feeling of the scene. It's like cooking—you have to cook with the ingredients you have. It's an interesting discipline. You follow a scene with dialog, and at one point there is a pause—maybe you have just three notes of the theme, interwoven.

Bonzai: I'm sure you can pick the projects you would like to work on. Do you choose because you like the script, the director?

Jarre: It's more difficult than you think. Sometimes it's luck. You may have a very good script, good director, good cast and the final thing you see is lousy. On the contrary, you have a so-so script, and a director whose last film was a failure and somehow the new film is great. One example is the film, *No Way Out*. Roger Donaldson, the director, made a fabulous film in New Zealand—a small film. After that, Dino DeLaurentiis gave him a chance to do a big film, *Mutiny on the Bounty*—a total disaster from A to Z. But his new film is great. It's hard to know what will happen.

Basically, I like to go with a director that I like and respect. It can be very boring to deal with ego, and there are a lot of directors I would never work with because of this. I have no ego—I can do whatever they want, I can change the music, re-cut. I am lucky to have good friends like Volker Schlöndorff, Peter Weir, Roger Donaldson, David Lean, Adrian Lyne, Wolfgang Petersen.

Bonzai: You've worked with the greats. Could you give me your impression of Hitchcock?

Jarre: It was a strange thing. *Topaz* was a departure for him and I don't

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think he was comfortable with the story. I had a great relationship with Hitchcock—he was the first director who gave me a gift at the end of the picture, a complete electronic camera setup. But it was a bit of a disappointment to work with him, because he didn't give me any indication of what he wanted. I said, "Hitch, I would like to play the theme for you." He said, "OK, nice theme, that's good." I asked him what I should do next and he told me to do what I wanted. It scared me to death.

For the recording, we had a 100-

piece orchestra. Everyone told me that he was a really mean guy, and if he didn't like it, forget it. He sat down behind the orchestra and after ten minutes he said, "I think you can do it well without me," and he left! I felt uncomfortable, because I wanted more feedback—but he was pleased with the results.

Bonzai: John Huston, *The Man Who Would Be King*.

Jarre: That was very different. He gave me much more. But with John, we were friends, because I had done two films before with him. The communication when doing the first score with

a director can be very difficult. How can you tell me what kind of music you want?

The Man Who Would Be King was John's favorite story. He knew very well what he wanted from the music. I used a lot of strange instruments from Afghanistan. I also had five Indian musicians. You know, they don't read music like Westerners. They don't have a staff, they read by special notation and letters, and a different scale. I knew how to write Indian music, so I wrote for them and for the large orchestra to play together.

We had the best sarangi player from India; the sound is like crying. John was very supportive—I explained that we had to bring the player from India to London, where we were recording. And I had two friends playing tabla, and a sarod, which is like an Indian lute, and a kamanje, and a shanai, a wind instrument.

When the London Symphony Orchestra came to the studio and they saw a podium with these Indian musicians, dressed in white, with incense everywhere—they looked at me and expected take after take. But I prepared my guys before, and explained to them what I wanted and we did the first rehearsal and it went perfectly. Like a concerto. All the members of the London Symphony stood up at the end of the recording and gave them a standing ovation.

Bonzai: And John Huston was there for the scoring?

Jarre: Yes, and he loved having these pure, ethnic instruments with the orchestra. At one point, if you remember, when Sean Connery and Michael Caine are crossing the mountains in Kafiristan, there is the sudden beauty of the Himalayas and the music of these instruments is majestic. It was very inspiring to work with John.

Bonzai: I think that most filmgoers are not aware of the music—it's a subconscious effect. But the experience would be totally different without the music. It's an interesting challenge for the composer—can't jump into the foreground. The scenes are the building blocks and the music is the cement.

Jarre: Exactly. You see, maybe because I was trained in the theater I see the music as a part of the whole, part of a work of collaboration. You must understand that if you want to do music



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for film. Your music won't be up front—you have to be happy with the counterpoint. For me, the most fascinating thing about writing music for film is to meet so many different directors—like Hitchcock, Huston, Visconti, Weir, Schlöndorff.

Bonzai: Let's talk about Schlöndorff. The score for *The Tin Drum* is amazing.
Jarre: Schlöndorff, Visconti, Zefferelli and Peter Weir are directors that have much musical culture. First of all, they have done operatic stage productions. With these men it is incredible. Sometimes there are problems if the director thinks that he knows about music and he doesn't—that's the worst situation. For one director, I suggested an oboe, and he agreed. At the recording, he wasn't pleased with the solo oboe. It wasn't what he expected, not the sound he was thinking of. I added a clarinet and he got excited: "That's it!"

As for Schlöndorff and Weir, they have brilliant musical culture. You can talk about reference. Working with Visconti on *The Damned* he would say, "You should think about the second movement of the third symphony by Mahler." You know what he is talking about.

It was funny working with Schlöndorff. At one point during *The Tin Drum*, he said that the music should not be too big, and should at one point have an instrument that makes you feel that the music is coming from the potato fields. Gunter Grass [author of the original novel] is always talking about potatoes and the land and Poland.

Once in 1955, while our theater was touring Poland, we had a day free and we went to the mountains between Czechoslovakia and Poland to a little resort. There was a group of folkloric musicians, peasants—not professionals—just playing for fun. I heard an instrument, called fujara, which was absolutely fabulous. It looked like a big bassoon, but the sound was like a flute. There was no reed. When Schlöndorff wanted a sound from the earth, I thought of the fujara. We had no sophisticated synthesizers at the time, so I asked the musical contractor in London who specialized in medieval and folk instruments who had a fujara and could play. It really gave me the sound of the film.

Bonzai: Let's talk about the role of the

engineer in your work.

Jarre: We have moved to an age of sophisticated sound—with digital recording everything must be perfect. But you still must have the feeling of a human presence in the music. When you deal with electronic instruments, there are dangers. A sequencer creates a perfect pattern that repeats, over and over again. When you ask an orchestra to do this, the pattern will never be exactly perfect, because it is human. It can be dangerous, and you depend on the engineer to help you. There are a number of tricks that can be done by a talented engineer. Also, with digital recording, the listener has developed

as well. You really need an engineer that gives you a good sound with acoustic instruments as well as electronic instruments.

Bonzai: Your engineer these days, Joel Moss, had a career as a musician. Is this significant?

Jarre: Absolutely. There are only a few excellent scoring engineers in town. Joel is amazing, and he can read music like a composer, a musician. The recording goes much faster when I can refer to bar 15 and ask for a modification with the top line, and he knows. Also, the input of the engineer can give you ideas—maybe a little delay



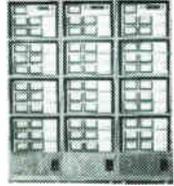
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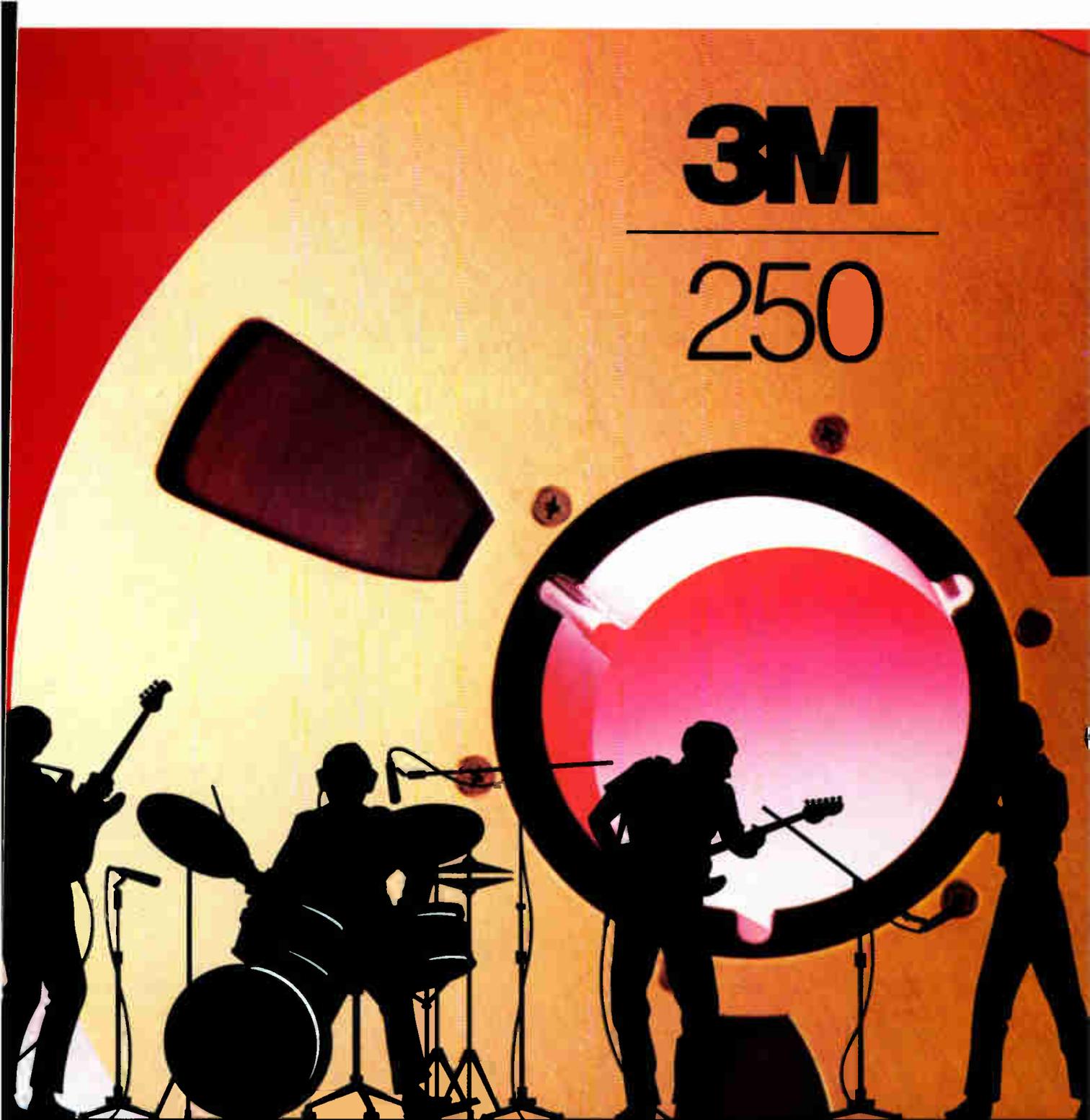
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Mic-Eze Mic Clamps

Mic-Eze Manufacturing of Salt Lake City, Utah, have introduced Mic-Eze—clamp-on microphone holders that can attach to almost anything: drum rims/stands, guitar amps, horn instruments, or to set pieces for concealing mics on location film/video shoots. Features include a built-in double spring and O-ring shock mount to

prevent unwanted vibrations from reaching the microphone, 360-degree swivel-like rotation capability for easy positioning and a sliding wingnut and bolt assembly for secure placement. Constructed of super-tough nylon, Mic-Eze clamps are suitable for a variety of recording, broadcast and sound reinforcement applications, and retail at \$14.95.

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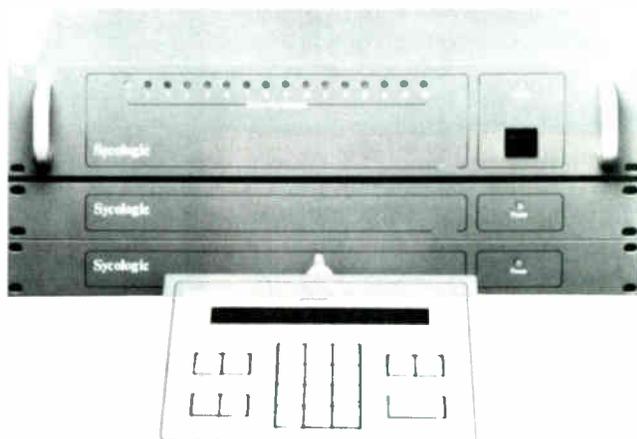
Martin VRS-800 Speaker

Martin America (Chatsworth, CA) has introduced their 3-way VRS-800 speaker, a vertically formatted system that's ideal for high-output sidefill applications and tightly coupled clusters. The system includes 18-inch bass, 12-inch midrange and one-inch exit HF drivers, all horn-loaded for maximum efficiency. Martin's "delay line porting" adds reactance control to the rear of the bass driver, providing extra output at low frequencies, down to 35 Hz. The midrange horn assembly features horizontal

constant directivity. The VRS-800's crossover can be set up in a 2-way or 3-way biamp configuration. Power handling is rated at 1,000 watts, sensitivity at 106 dB/SPL (1W/1m). Enclosed in a birchwood cabinet, the VRS-800 features a steel mesh grille, casters and three pre-installed flying points. It lists at \$2,700.

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their note-offs. The user can name each source and destination with an 8-character label, displayed on the keypad during editing. Also, the user can send individual MIDI program changes to all 16 destinations upon selection of a new matrix patch, allowing one MIDI program change from a master instrument to configure the MIDI system



Syco M16 MIDI Matrix

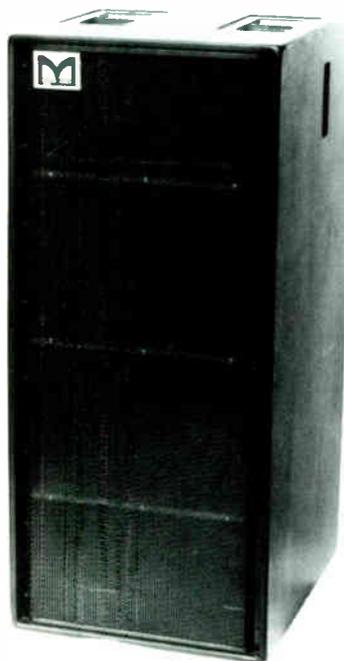
The UK-based Syco Systems brings to the States their Sycologic M16 Digital MIDI Matrix. The M16 allows permanent connection and fast routing of large MIDI systems, all cables kept out of sight. The 16x16 matrix and remote controller keypad/display let the user edit, store and recall 32 user-definable matrix patches. A patch can be selected by a MIDI program change received from any of 16 source instruments. "Intelligent Patching" causes "all notes off" events to route to a disconnected or reasigned destination, thus preventing voices from sustaining if they've lost

routing and the programs of all the connected instruments—in less than a second. The M16's suggested retail price is \$1,295, and it's available through Creative Dimensions (Sherman Oaks, CA).

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Tascam ES-50 Tape Synchronizer

Designed for audio and video production applications, Tascam's new ES-50 is compatible with all SMPTE time code formats, reads time code from 1/30 to 100 times normal speed, and offers a subframe-accuracy offset of 1/100th of a frame. The frame sync function uses time code, pulse, or vertical sync. Other functions



include time code-only master/slave chase-lock, slow sync, and jam sync capability with continuous code. Tascam claims sync accuracy within ± 50 microseconds for most ATRs. The ES-50 features five contact closures that can be activated by pre-programmed addresses.

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Knight Studio Rack

The Model KR-14 Studio Rack from Knight Industries, Brooklyn, NY, offers a new concept in rack mount stands. Constructed from 1.5-inch black anodized

aluminum tubing, the basic KR-14 is equipped with a 14-space rack that is adjustable for both height and tilt. The latter can vary from a full horizontal position to 90+ degrees for vertical applications. The stand's modular design allows users to select from a wide variety of options to configure the system to their own needs, including an 8-space expander rack which replaces the lower crossbars, a fixed bottom shelf, and a 4-space rack mounted cabinet with hinged door. The basic KR-14 retails at \$220, including locking wheels.

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Crown Hand-Held Mics

A new line of hand-held mics is the latest from Crown International (Elkhart, IN): the CM-100 PZM[®] omnidirectional, CM-200 cardioid and CM-300 Differoid™. All three are phantom-powered electret-condenser types, designed for studio and in-the-field performance. The rugged CM mics feature pop filtering, ability to handle high SPLs without distortion, and include balanced, low impedance outputs. The unique CM-300 Differoid combines cardioid and differential (noise canceling) mic qualities, handling 60 to 18k Hz and thus is intended for vocal use. This mic offers superior control of the mix, because it differentiates between near and distant sound, favoring the closer sound of the vocalist by as much as 30 dB.

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Kelly Quan Lynx Software

The Kelly Quan Research (San Francisco, CA) SC710 software for the control of the TimeLine Lynx synchronizer is a versatile package that allows for rapid ADR, Foley and edit control of tape machines via the Lynx controller. An audio edit decision list fea-

ture permits the conforming of up to 999 edits at a time, while a SC710-CMX option includes an 8-inch disk subsystem for reading CMX-compatible EDLs. Other versions of the control package are available for Cipher Digital, BTX and Otari synchronizers.

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SRA Stereo Soundfield Processor

After researching music reproduction in the brain, Sonic Research Associates (Arlington, TX) developed and patented their SRA-573 Tri-Ambient Synthesis Stereo Soundfield Processor. It's designed to provide clean, precise, stereo sound everywhere in a room (especially nightclubs). According to the company, this single rack space processor enhances the width of stereo imaging and decreases the number of "muddy" nodes throughout a room. Using the SRA-573 requires four loudspeakers arrayed in a T-pattern (left-center-right-rear) and interconnecting it before the crossovers or amps. In this setup, each ear perceives one signal and sends two signals to the brain from four channels of sound, creating more spatial information of the intended sound event. The system's front panel provides input level, image blend, center level, front level and back level controls. All connections are XLR-type.

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by Andrew Scheps

KORG DRV 3000

W

ith the introduction of the DRV 3000, Korg has made a formidable entry into the digital signal processor market. The product not only is well-designed aesthetically and ergonomically, but technically as well, taking advantage of many advances at the cutting edge of digital electronics.

The unit is a two rack space box with a matte black finish and enough front panel LEDs to keep any producer happy. The only front panel controls aside from the power button are an input level knob and a remote enable button. The indicators cover input level, mode of operation, program and effect, and a two-line back-lit LCD display for program names and parameter information. The back panel has unbalanced inputs (1/4-inch mono and RCA stereo), outputs (1/4-inch and RCA stereo) as well as footswitch and MIDI In and Thru jacks.

The first, and probably most striking feature to come to the user's attention, is the wireless remote control. All operation and manipulation of the programs is accomplished via the remote, which is similar to those found in consumer audio and video products. While clumsy initially, the remote proved to be an asset in a fast-paced session where access to the outboard rack may be blocked by producers, talent, and the like. The controls are logically laid out and one quickly be-

EFFECT#	NAME
1	Hall 1
2	Hall 2
3	Hall 3
4	Plate
5	Garage
6	Early Ref. 1
7	Early Ref. 2
8	P-EQ/Driver
9	Stereo Echo 1
10	Stereo Echo 2
11	Stereo Flange
12	Stereo Chorus
13	Ensemble
14	Pan
15	Pitch Shift 1
16	Pitch Shift 2

Figure 1

comes accustomed to the concept of controlling an outboard effect unit with a remote control. Then the remote control becomes invaluable.

The basic concept behind the DRV 3000 is the combination of two discrete digital effect processors under the control of a single microprocessor. Each of the effect processors is capable of 16 different effects ranging from reverbs to pitch-changing to auto-pans (see **Fig. 1**). The two processors can be chained together in either parallel or serial modes of operation. In the parallel mode, the input is split to the two processors, processed, and the stereo signals are mixed at the output. In the serial mode, the left output of the first effect is then used as the input to the second effect, the output of



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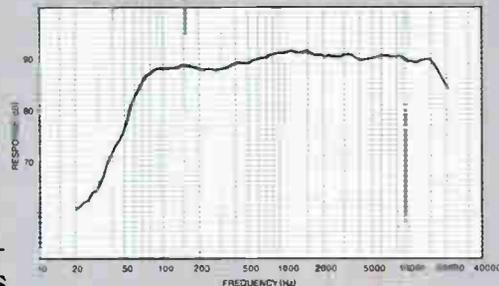
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which appears at the main stereo outputs. The combination of almost any two effects is stored as one of 32 programs; the first 16 are stored in ROM and can be recalled at any time. Only one effect from numbers 11 through 16 in Fig. 1 can be used in a program due to the large amount of memory and processing time these effects require.

Once the effects have been selected, up to nine parameters are available to "tailor" the sound to the immediate application. A "single monitor" function lets you listen to only the effect you are working with. Once the effects and their parameters are set, the overall level and the individual level and balance of each effect can be adjusted as well. There also are a number of system functions for non-program specific parameters: "Title Edit" allows the naming of new programs (yes, there are the requisite Japanese characters as well as all punctuation); "MIDI Receive Channel" chooses incoming MIDI channels; "MIDI Program Change" MIDI maps the programs (e.g. MIDI note #128=program #27); "Switch Program Change" sets a range of programs to be accessed by the footswitches; "Switch 1 Assign" defines the function of footswitch one: either to scroll up through the defined range of programs or to call a secondary reverb time (for effects #1-5); "Switch 2 Assign" assigns switch two to either scroll down through the defined range of programs or to cancel the effect; "Effect Cancel Mode" lets you decide whether the "Effect Cancel" will stop all output or just stop the effect while still passing direct signals; and finally "Initialize Programs 1-16" recalls the factory presets and writes them into RAM.

Versatile yes, but how does it sound? First, though, we put this thing to the bench to see how it *should* sound.

The specifications in the manual are vague in terms of references so I used standard references to test the unit and the results are very impressive. The unit is indeed flat from 20Hz to 20kHz with serious brickwall filtering resulting in minus 23dB at 21kHz. The third harmonic distortion also measures up to spec.

The DRV 3000 sounds as excellent as its specifications would indicate. The effects are very clean and do not

suffer from the graininess present in some of the other processing units on the market. This is due to its 44.1 kHz sampling rate (relatively high for an effect processor) and 16-bit quantization. Another problem commonly found in lower-priced effect processors is that when a lot of sources are pumped through (such as an entire drum kit or multiple vocals), the output tends to become indistinct and messy, especially on reverb programs. Not so here. The reverbs are incredibly clean, giving a lot of depth to the sound while the delay and pitch-change programs had no problems handling multiple inputs.

Technical and practical testing was performed at the Music Annex, a major San Francisco Bay Area recording facility, which allowed for many and varied opportunities for putting the DRV 3000 through its paces. The unit was used on radio sessions, vocal mixes, jazz sessions, and that most feared of studio situations, the heavy metal demo. In all cases the unit performed up to par and caused no delays (no pun intended) in the sessions. In most cases, it even proved to be a time-saver due to the ease of use afforded by its remote control.

With any unit, however, there are always some negative points. The first is a minor one. While checking out the programs I called up the parametric EQ driver and was accosted by a wall of noise. A thin wall, but a wall nonetheless. Fortunately, this is not a characteristic of the effect itself but of the parameter presets. Apparently, the effect is set for maximum overdrive and minimum EQ. Why else would you boost 13 dB at 2.5kHz? To fool the copy inhibit on R-DAT players? I think not. The other problem brought up by all of the engineers and producers who used the unit was the fact that there are no front panel controls. If you were to lose the remote control (not an impossibility in a busy studio or on the road or even in your house) the unit would be all but unusable. Also, if the remote's batteries fail, you would be reduced to changing programs with MIDI or footswitches and nothing else. This oversight at Korg could turn out to be the only major detractor from an otherwise great unit. Aside from these problems, at \$1,399 the DRV 3000 is a remarkable product that will certainly find its place in the professional and amateur audio market. ■



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Circle #158 on Reader Service Card

by Tony Thomas

BUDGETING FOR EXPANSION

AN INTERVIEW WITH JIMMY DOLAN AT STREETERVILLE RECORDING, CHICAGO

Expanding a recording facility can be an exhilarating experience. The smell of fresh paint and the look of shiny new equipment is enough to send most studio owners into a fit of ecstasy. Until the bills begin to arrive, that is. Then reality begins to set in. "How will we be able to pay for all this?" the studio owner asks. Good question. Unless you move into your expansion phase with both eyes open and both feet firmly planted on the ground, financially speaking, you may be in for a bit of a surprise. Upgrading a studio can be expensive. Stratospherically expensive.

How do you control costs while optimizing quality? For that and other answers, we turn this month to Jimmy Dolan, president and owner of Streeterville Recording, a seven-studio(!) recording complex located in the heart of downtown Chicago. The studio was founded in 1968 as a three-studio facility, with 16-, 8- and 4-track rooms. In 1978 to 1979, the studio added two 48-track rooms and in 1985 the studio put in two more 24-track rooms and another 4-track room.

Streeterville specializes in both music recording and the production of national radio and television spots for such agencies as J. Walter Thompson, Leo Burnett, Foote, Cone & Belding, DDB/Needham and Hal Riney & Partners, and for a list of clients that includes McDonald's, Burger King, Bud

Lite, Michelob, United Airlines, Coors and Sears. Album credits include blues greats Muddy Waters, Willie Dixon, Mighty Joe Young, jazz artists Doug Carn, Henry Franklin and Anthony

**Jimmy Dolan of
Streeterville
Studios**



STUDIO · VIEW

Braxton and contemporary acts such as Todd Rundgren, John Denver and Dennis De Young.

Dolan began his recording career in 1971 as an engineer, and during his tenure has worn every hat from delivery boy to first senior mixer. "I learned about recording studio management by being in the trenches," Dolan says. A hard working engineer to this day, we caught up with Dolan after a grueling 11 hour session for Burger King.

Mix: How do you go about budgeting for expansion? Do you put aside a certain percentage for that purpose or do you just raise the money when it is needed?

Dolan: A little bit of both. Based upon our particular set of circumstances, we have been able to plan and allocate certain space for growth, as well as leaving ourselves in a position where we can react, when necessary, to client and industry changes. One of the things we did during our 1978 to '79 expansion was acquire a major piece of ownership in our building, which set the stage for future growth by giv-

ing us options for expansion. That came about because when we were in the process of taking on another 2,500 square feet and put about \$2 million into the facility, the owners of the building wanted to put us on a month-to-month basis because our first ten-year lease ran out. After we began looking all over the place for new space, we were finally able to negotiate a deal with the owners of our building which allowed us to maintain our leasehold investment here as well as develop plans for the future. In addition, there was a buyout of the owners of Streeterville in 1983 by me and my father, and that set the stage for even more expansion and growth. This set of circumstances has allowed us to make the best business decisions based upon our client's needs, the technical demands of the industry and personnel trends.

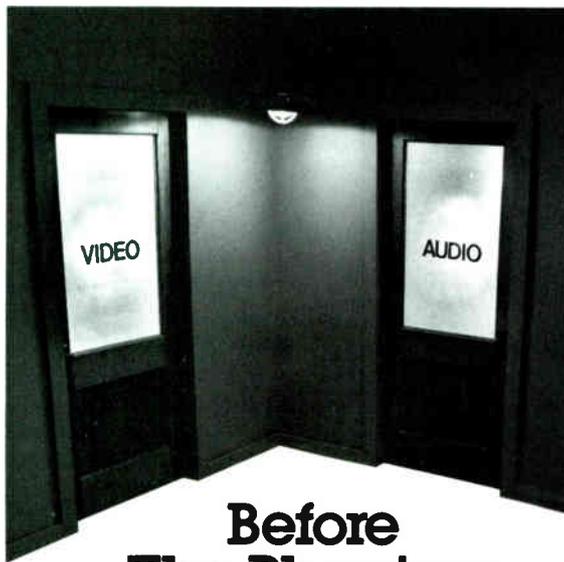
Mix: How much does the competition fuel your expansion decisions?

Dolan: It doesn't fuel my decisions to expand at all. In some circumstances, it may have some effect on it. While you don't turn your back on your competition—you can't ignore it—you

can't be led by the nose, either. If you've been in the audio business for the last ten or 15 years, then you're very accustomed to the syndrome of trying to keep up with the Joneses. You've been hit on the head with that kind of mentality because of technological developments. In that light, you can never *not* be cognizant of what the Joneses are doing, but it is best to be in an environment where you can make that secondary to your own indicators.

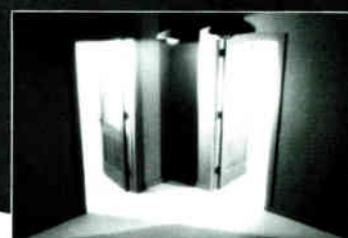
Mix: So, your studio expansion concept is more client driven than competitor driven.

Dolan: It's client driven and it's driven by my madness. In 1985 we technically put in five rooms. Two were SSL retrofits which required major rewiring as well as building and installing three rooms from the ground up. Our facility is built around two floors. One floor focuses on voice narration, sound effects and production for television, radio and corporate/industrial soundtracks. The other floor is dedicated to music production for records, film and commercials. In the future, I can see adding two to three rooms to the production floor and two rooms and a



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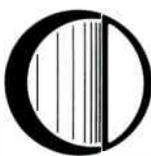
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retrofit of one of the rooms on the music floor. That will bring the total to 11 or 12 rooms which would max us out, space-wise.

Mix: Does the nature of the business that you have require that large a number of studios?

Dolan: Yes. In reality, we're seven businesses in one. We're dealing with producers and production companies that are supporting the corporate, the industrial, the film, the video, the cable, the radio and the television worlds. In Chicago, there are very few studios that service that broad a spectrum of requirements. And it's been that way from the beginning. The rooms that we will be adding have specific designs and concepts from a system and operational standpoint. By the time we open a new room, there is little guesswork involved. We will have already developed a business rationale internally that assures us that we will have a client base to support it. As long as we continue to do good business, we won't have any problems with reinvestment back into the company or with creditors.

Mix: Do you tend to cycle older pieces of gear to other rooms as you acquire new equipment?

Dolan: In many multi-room studios, you have A rooms, B rooms and C rooms. The letters designate the quality of equipment as well as the price. At Streeterville, we don't do that. The three music rooms upstairs are world-class, state-of-the-art studios. What you find in one room, you find in the other rooms. I don't want to create that sort of technological hierarchy here, because by the nature of our business, we do a lot of moving from studio to studio. Some of the music sessions may use two rooms in the same day—one for tracking and one for mixing. Moving a session to a mixing room at that stage allows us to open up a room for tracking.

Mix: How do you finance your expansion?

Dolan: Depending on the times, you use cash-flow bank power or lease power. I believe in using the smartest method for the task at hand. Over the years, we've used a combination of all three. Since we've been in business since 1968, we've been able to cultivate relationships with different compan-

"You can never not be cognizant of what the Joneses are doing, but it's best to make that secondary to your own indicators."

ies. Our banker in 1968 is still our banker today.

Mix: How long do you usually wait for technology to improve before you think about upgrading your rooms?

Dolan: I believe in continually changing and upgrading. There is a line in the middle of the road. You may lean to the left or the right, but you never allow yourself to go off the road. You have to constantly jockey several factors—your clients, your staff as well as what the manufacturers are doing. I don't want to update based upon the marketing strategies of manufacturers. I want to upgrade if it makes sense to my staff and addresses the needs of my clientele.

Mix: Do you have any advice for the studio owner who is contemplating expansion at the present time?

Dolan: Good luck. The most important thing is to think about it as many different ways as you can. I was once told as an apprentice engineer that there are four or five ways to do something, and you'll find out two or three steps down the line whether or not you've chosen the right one. That probably holds true with many things in life. You have to make sure your decision is based upon a tangible rationale. It has to make sense from a business standpoint. A lot of people in our business have made decisions for the wrong reasons, and it has created a lot of frustration. As far as I'm concerned, any expansion has to enhance what you need to do and how you have to do it. ■

Tony Thomas has been involved in broadcasting, recording and publishing for over a decade. He is managing director of Target Communications International, a full-service ad agency, broadcast production firm and MIDI-based recording studio based in Southern California.

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PHOTO MICHAEL CAPLAN

NEW MUSICAL GROWTH IN

AMERICA'S HEARTLAND

Some of the participants in Acme Studios' "13 by Thirteen" cassette project, a compilation of local artists who have recorded in the Chicago studio.

by Josh Gressel

The North Central region of the U.S. (more commonly known as the Midwest) is an area often regarded as fertile ground for corn, car factories and college football. It generally is not considered at the cutting edge of American culture in general, and new musical trends in particular.

This month's survey of North Central studios, from Minneapolis, down and over through Chicago, Detroit and Cleveland, examines the truth of this stereotype, and previews possible new musical styles just beginning with the local acts cutting demos in the studios.

Is There More to Minneapolis Than Prince?

While *Mary Tyler Moore* and the Minnesota Vikings put Minneapolis on the

map long before Prince, his explosion onto the national music scene and insistence on remaining in Minneapolis have undoubtedly affected Minneapolis' musical fortunes. Yet according to Harry Grossman, business director of Prince's brand new, \$10 million Paisley Park Studios in Minneapolis (see cover photo), something more is afoot:

"There has been a marked growth in the Minneapolis market, past the point of Prince," Grossman reports. "It's becoming the Detroit of the '80s. Prince is definitely part of the stimulus, but what's been going on here has been going on for a while.

"We've been in operation since April. Prince has only done two projects here because of his touring schedule and we've been keeping the place full with outside talent. You've got The Jets, Husker-du, Jimmy Jam & Terry Lewis, David Rifkin and other produc-

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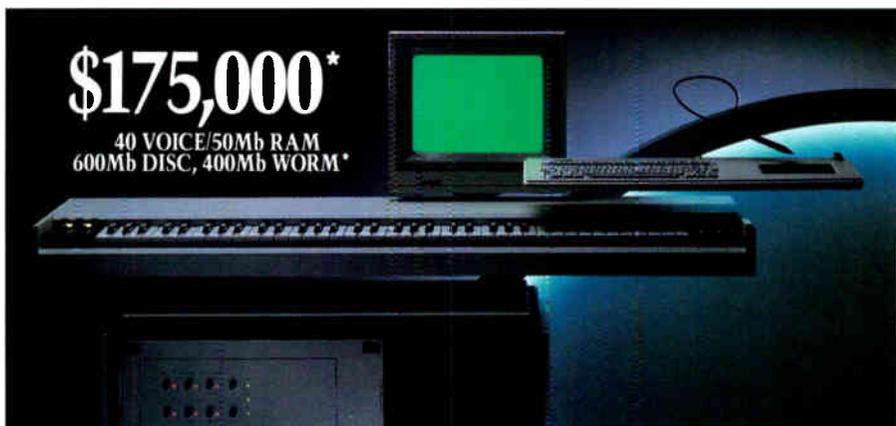
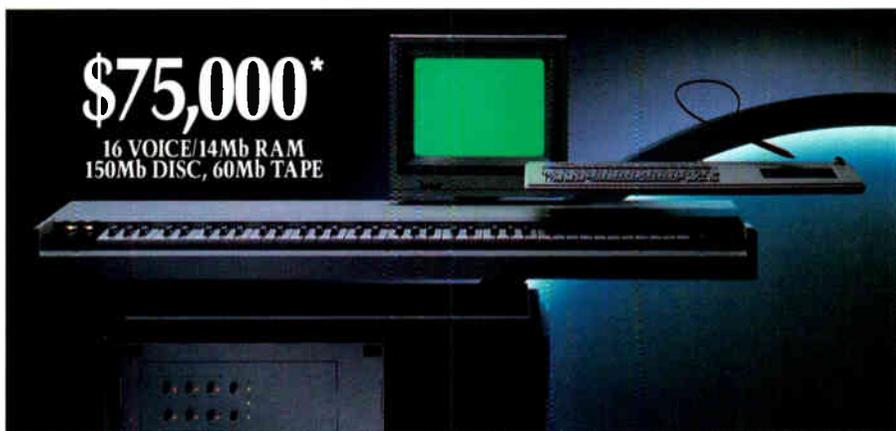
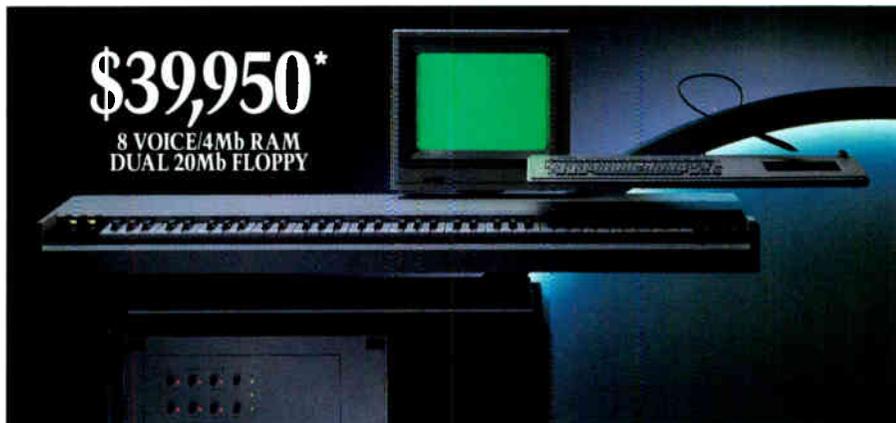
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ers here in town who are all growing as the market grows and they're bringing in outside production."

Are these people leapfrogging off of Prince's success?

"No," answers Grossman. "Husker-du is a white kind of 'new sound' type of band that's got nothing to do with Prince. With Jimmy Jam & Terry Lewis there is a relationship but they've gone off on their own. They won Grammy Awards as Producer of the Year."

Grossman has also aimed his marketing sights at out of town acts, which he says will come to Paisley Park for its state-of-the-art technology: an SSL 6056 automated console, two Studer A-800 24-track analog recorders, Mitsubishi 32-track digital recorders, video sweetening and film scoring capabilities and a soundstage so large—120 feet x 102 feet with a 45-foot ceiling—Grossman says "you can fit an airplane in."

Asked if Minneapolis was developing a unique sound of its own, Grossman replies that "the Midwest and the people here are survivors and they're persistent. They're that way with their music too. They just work hard at it and it comes out."



Chicago Trax studio manager Reid Hyams poses with producer Lauren Little.

Chicago—A Giant Ignored

Chicago is not only the largest city in the North Central region, it is the U.S.' third largest city—though for some reason it seems to lack equal representation in the musical world.

"For years no one's really looked at the talent here seriously," claims Reid Hyams, studio manager of Chicago Trax. "Everybody's had to go to the coast to get signed. After ignoring a whole music scene for this long the record people are coming and saying 'God, there are real things going on down here. Why did we ignore it for so long?'"



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Big Dog Studio opened this April in Wichita, Kansas. Its control room sports an Amek Angela console, Studer A80 24-track recorder and Tannoy SGM3000 monitors.

One of the "things" which seems to be unique to Chicago is "house music," a local variation on the disco theme which has sprung up in the past year.

"It's a form of dance music started by DJs in the clubs," explains Hyams. "They were playing these dance tracks and said 'God, I could do these things myself.' They bought drum machines and started laying their own dance tracks and it's developed into a form of dance music. They're using everything from a Casio you could buy at Ace Hardware to hiring a Fairlight with a Fairlight programmer.

"Good house music has a very strong dance beat, a lot of foot drum in it and sparse instrumentation. I would say that a lot of the house music is developing into R&B music."

"House is basically DJs making music," says Tom Haban, owner of Chicago's Seagrape Recording Studios. "They

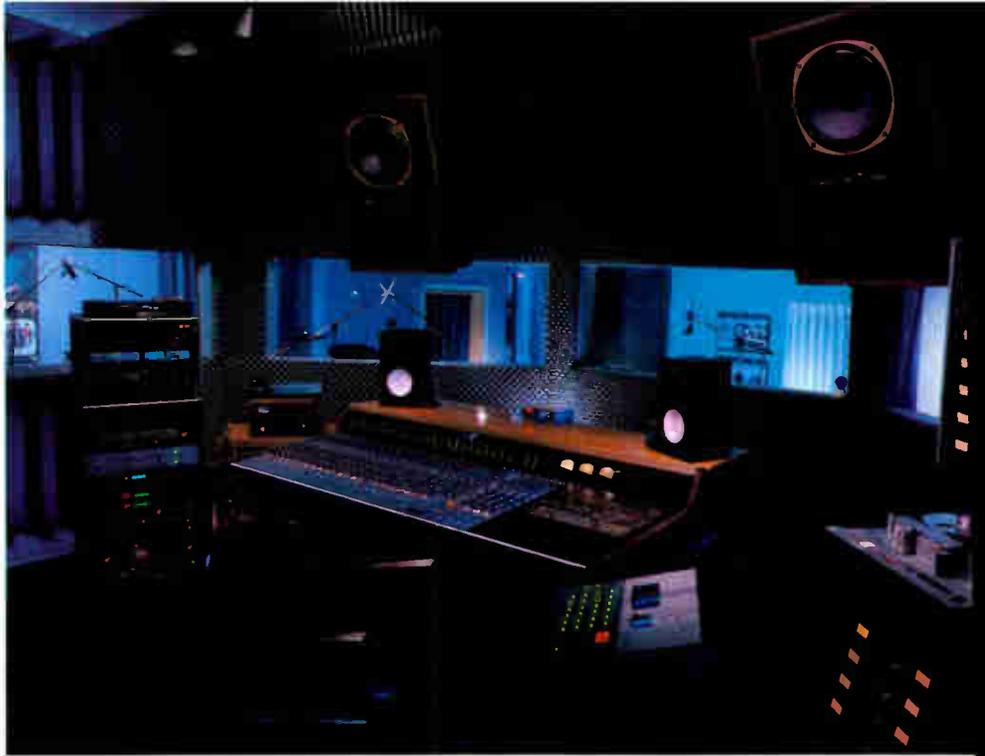


PHOTO: MICHAEL PETER

never had the tracks that they wanted so they started creating their own. Most of these DJs can't sing, or else they wouldn't be DJs. If nothing else, house music is going to leave a legacy of excellent singers that these guys have gone around and discovered.

"We've been the hottest guys in town for house music. We set the record, I think, with 17 drum tracks on a basic 24-track. The Roland 707 and the Roland 909 are the heart and the keys to house music. A lot of the guys try to do it with more high tech drum machines,



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an [E-mu] SP-12, but they sound too good for house. House is still really an underground type of sound. They always say: 'Aw no man, this is sounding too radio. This is sounding too slick.'

"Usually they sync together three drum machines: a 707, 727 (the Ro-

land Latin percussion drum machine) and a 909. What you usually do is combine the two kicks and the two snares of the 707 and the 909, fill in the toms and that's how you come up with 17 drum tracks on the basics without a soul in the place."

Haban lists an unexpected market for house music, besides the streets (where some records may sell as many as 50,000 copies): "Aerobics teachers are in love with it. It's very high energy. Aerobics tapes have to be changed pretty often because after a month peo-



Chicago Studios Sound Off at EARS

Question: What happens when you put 60 engineers from competing studios together into a bar?

- A. They start a brawl.
- B. They leave.
- C. They talk shop and enjoy each other's company.

Depending on the inter-studio dynamics in your city, you may have a hard time guessing the right answer to the above question. But in Chicago, following a year-old experiment under the auspices of NARAS, studio folks will confidently circle "C" as the right answer.

Mike Rasfeld, chairperson of EARS (Engineering and Recording Society) and owner of Acme Recording Studios explains what the group is and how it got started:

"About five years ago at an AES convention, I ran into a couple of recording engineers from Chicago, and we started to talk shop. We realized it was the type of conversation we should be having in Chicago, not saving it for when we got together on the coast at AES conventions. I found that as an individual studio owner I was in isolation and felt that all the situation needed was a social excuse for people to hang out and that dialog would start.

"I knew that Hewlett Packard got some of its best ideas from paying

Marty Feldman, president of Chicago's Paragon Recording (seated, far right) is roasted during a recent EARS benefit which raised over \$1,000 for charity.

for Friday afternoon beer busts for its engineers. If they found it successful, then it would probably work in Chicago. I proposed to [Paragon Studio owner] Marty Feldman, then president of the local NARAS chapter, that it sponsor an organization for recording engineers. A year ago last June we had our first meeting at Gasper's, a bar owned by an old friend who had nothing going on in his music room on Tuesday night.

"We've felt that it's best to keep it loose, to maintain the informality which encourages the open dialog. It's important to keep the balance between the educational and social elements. Within each meeting, I try to keep a balance of information so that it doesn't just strictly focus on economic topics that would only be of interest to studio owners."

Among the technical topics have been shootouts for different pieces of equipment, such as digital reverbs costing under \$1,500, and condenser microphones. In order to do a thorough job, different engineers volunteer to meet at a studio and conduct the tests, then

report back to the next EARS meeting.

"We found that by the variety of people who would show up, the tests would be very stringent because everyone would have to agree that we were really testing this thing properly," Rasfeld reports. "We'll also be shooting out microphone cables, signal processing gear and computer programs—anything that's a possible purchase for studio owners."

The EARS group has also formed sub-committees, such as the business committee, which put together a uniform credit customer information form that has lowered the incidence of bad check writing. They distribute a newsletter (that has contributed to the recovery of stolen equipment through its column listing missing items and their serial numbers) and held a roast of Feldman, during which they raised \$1,000 for the Center for Deaf Children.

"The atmosphere among studios has become more cooperative," Rasfeld reports. "I know a dozen studios now that if I need a roll of tape, or they need to ask about a customer's history or any kind of problems, we all know that we welcome the phone call and the conversation, because we're all seeing each other every month."

Persons interested in joining the meetings may call Rasfeld at (312) 477-7333.

—J.G.

ple are tired of hearing the tape. House music is exciting, because the music is always changing. You never know what these guys are going to come up with next. It's a populist type of thing. Any kid who has a drum machine and two synthesizers and a sequencer can make this stuff at his home with a 4-track, and a lot of them do. It's a spawning ground for new artists and has brought in a lot of new blood."

Timothy Powell, owner of Metro Mobile, Chicago's only large-scale remote recording facility, says that "there's a real strong scene coming in the Midwest, especially around Chicago. There's

two things going on: house music and a jangly guitar rock which has a '60s flavor that kind of echos The Byrds.

"The jangly guitar rock is less based on gear—it's more of a retro sound. It's not a revival, where they're just copping a sound from the '60s and that's it. It has an '80s flavor, with a big drum sound which sounds well-washed, and a digital reverb and the big room sound.

"The rap on Chicago was that you had to go to L.A. and New York to make it. Now it seems that the record companies are coming here."

Murray Allen, owner of Chicago's Uni-

versal Recording, reports on another important (and more well-known) element in the Chicago recording scene:

"Chicago is a tremendously big advertising center. There's a tremendous number of commercials that are post-produced in Chicago. [Universal's commercial credits include national advertising spots for Busch beer, Bud Lite, all the Genesis tracks for Michelob, Coors beer, Ford's Taurus cars, Kellogg's, United Airlines, and even Frank Sinatra's "You're the Winner" ad for Holiday Inn.] The audio tracks, the music recording, the announcer and dialog recording, the editing are all done in Chicago. Because of the huge amount of volume, it gives us a chance to experiment with new methods, mostly digital, for processing this work."

Allen says that advertisers, with recording budgets alone which top \$40,000 for a 30-second spot, are increasingly interested in new sound technology:

"The sound of the sampled instruments is very prevalent in the commercial realm as well. It's what the advertisers are hearing on the records, so they want the same thing on the commercials."

Two hours west of Chicago on Highway 80 lies Barn Burner Studios, a large barn-cum-studio in Annawan, serving the quad cities of Davenport, Bettendorf, Moline and Rock Island on the Illinois/Iowa border.

"The trendiest thing around here is power pop," reports studio manager Roxanne Heath. "It's not rock and roll; it's using a lot of keyboards, synthesizers, and has very basic lyrics which don't mean a thing. It's got to be danceable. It's fashioned after Prince music, but you've got the bad boy image with it. All the young girls like it, all the young boys wish they were like it, and mothers and fathers are running.

"They use a lot of strange noises—shrieking, backward piano types of things; turning the tape on the machine upside-down, flipping it over and then doing the song. In the studio we need the latest voices on the keyboards and the knowledge of how to make these effects happen for the band. They just say: 'Well, I want this breaking glass over my piano,' and you have to be able to turn their words into the music."

Detroit—Still in the Shadow of Motown?

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World Radio History



sociation with Detroit and they'll tell you cars or race riots. Ask someone in the music world and you'll hear "Motown." Yet Motown abandoned Detroit for Los Angeles back in 1972. Has Detroit developed a musical voice of its own in the interim?

"I'd have to say there's more activity going on now than there ever was before, and I've been around here since 1965," says Eric Morgeson, co-owner of Detroit's Studio A. "I was here through seven years of Motown. When Motown was king, everything else was secondary. Anybody who was serious about the music business in Detroit either dealt with [Motown president] Berry Gordy or he wasn't that serious. That's not the case anymore. There are too many independent guys selling millions of records out of this town who operate through their own deals. There's a real cross-section of different people working in different styles competitively and egging each other on to be successful, and to make better recordings and better music."

When asked if Detroit had found a new voice, Morgeson responds: "In Detroit, it's always been polarized as a rock and roll city and an R&B city. There's always been the Bob Segers and the Ted Nugents on the one hand, and Aretha Franklins on the other. That's still pretty much the way it is—there's R&B music and rock and roll, and there's not too much in the middle."

Significant on the R&B end in Detroit is rap, which as Detroit's Sound Suite co-owner John Lewis says, is "not really a new trend, it's just a continuous trend that nobody thought would last this long. We did some rap records as far back as 1980."

Do rappers place high demands on the studio's technology?

"All the rappers really need is a drum

machine, a little percussion and maybe a keyboard or two. Generally we have four to five tracks on vocals, at most, with more tracks on drums.

"Technically, they know what they want. They're basically right out of somebody's basement. It's really good because they're generating a lot of enthusiasm.

"A good rapper has a combination of great rhythm, a sense of excitement in delivery and just a *little* catch to his voice. He says 'Hey, here I am' with conviction. Some of them are a little timid, laid back, and it comes off that way. The guys who really believe and are convinced that they have a smash record deliver it with conviction and confidence."

Kal Sands, of the Motor City's Spectrum Studios, sees a resurgence in studio work by local acts paralleling the demise of the city's club scene:

"The number of local people who are knocking at the door has increased greatly," reports Sands. "As in a lot of other places, the original music scene in the Midwest is going straight down the tubes and crawling into the studio and cutting more tapes. As an example, there are two bands—Bittersweet Alley and Heavy Red—which have been around Detroit for 15 years or more, playing the clubs. They [just recently] went into some studios, cut some tapes and got labels."

As a final eastern stop on our North Central tour, we checked in with a few studios in Cleveland. Greg James, co-owner of Clockwerke Sound Studio, says that "there are more original music clubs popping up over the city, whereas just a few years ago there might have been one or two."

Bruce Gigax, studio manager of Audio Recording Studios, reports that his most regular gig has been for the world-renowned Cleveland Orchestra,

for whom they record 52 concert broadcasts a year.

"We record all the concerts of the orchestra and produce them for international release to 300 radio stations in America, Australia, Europe and Canada," Gigax says. "The big thing we have to do is be consistent night to night. When we have to edit between three different programs [for a single broadcast], the edit has to be perfect.

"In addition, we're just finishing up a two-year contract to transfer all of the last 20 years of archival material to PCM data, because some of the early George Szell recordings [he was the orchestra's famed director, largely credited for its world-class status] which are valuable, are deteriorating to the point where you could see right through the tape—the oxide was just leaving. We've spent the last two years transferring probably 1,100 programs from reel-to-reel to PCM format."

Classical recording aside, Audio Recording is scheduled to take delivery on an Orion Research console (coincidentally developed and produced also in Cleveland), which Gigax says will be "its first use of this type ever.

"They're doing with audio boards what Grass Valley has been doing with video boards for years. They are fully computerized to the point where no audio actually flows through the board."

Indeed, Orion's approach to technology is so radically different that some feel it won't catch on—not because it's not market-worthy, but because it requires a definite shift in the way one thinks of consoles. Yet somehow it seems fitting that such technology not only gets developed in America's heartland, but also gets its first field use there as well. Perhaps next year we'll find them in New York and L.A. studios?

Editor's Note:

Roxanne Heath, 30, studio manager of Barn Burner Studios in Annawan, IL, died unexpectedly since the above interview was conducted. She is survived by her husband, studio owner Harry Heath, and their four children, aged 6 through 12. *Mix* extends its condolences to her family and colleagues. ■

Josh Gressel, a Mix editorial assistant, was born and raised in Delphos, Ohio (pop. 7,000). He began his journalism career 13 years ago with the Delphos Herald, Ohio's third smallest daily.

Power Station selects t.c.electronic installs 6 TC-2290 sampler/delays

"I love the sound, the ease of operation, and the complete control over all parameters. With the three modulation parameters, speed, depth and waveform on the front panel, and the special key functions to access software T.C. allows fine tuning of parameters that are predetermined in other units."

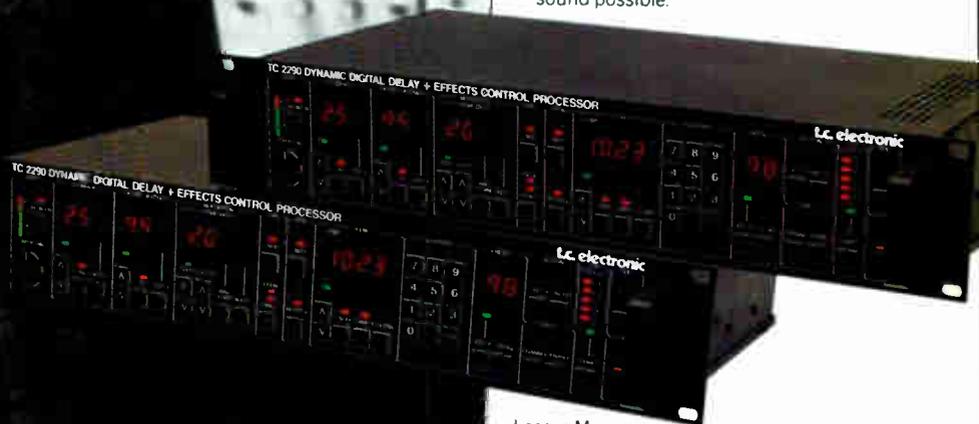
The combination of dynamic delay and pan modulation allow quite a variety of effects within a single processing device. T.C. was very smart about this. The 2290 does a lot more, and is more affordable than any other unit we've used. "

Engineer Don Rodenbach

A demonstration model of the new TC 2290 was sent to Power Station by Martin Audio. The first engineer to use the 2290 was Don Rodenbach, who was so pleased with the sound, and features of the 2290, as well as "the clarity of the :32 samples," that he bought one for his own rack. His unit then started making the rounds of various sessions at Power Station. Today there are six TC 2290 units at Power Station and no waiting. Each unit has 32 second capability for sampling (and delay), can be locked in perfect synch with a second 2290 for stereo sampling (*The new stereo link update*), and has Sampling 2 software, along with "Fast Trigger!" update.

Sampling 2 Features

- 1) Multi-layering of samples. Up to 16 samples on top of each other with no degradation of signal, into the same pre-set.
- 2) Fancy Dancing-samples triggering samples any order, or number, as many times as desired.
- 3) :32 second delay possibility
- 4) Crossfade-After the first sample is triggered, a second sample can be triggered, and the first sample will continue to play simultaneously.
- 5) Note counter for pitchshift of samples.
- 6) 1 millisecond sample looping and sound on sound possible.



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The TC 2290 offers 2 bits more resolution, at a quarter the price of any truly competitive unit. T.C.'s 18 bit resolution, 1 MegaHz sampling rate, and 20-20KHz bandwidth (rolling off at 33KHz even out to 32 seconds) make the TC 2290 a remarkable unit for sampling, multi-effect delays, and panning programs.

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OF DENMARK

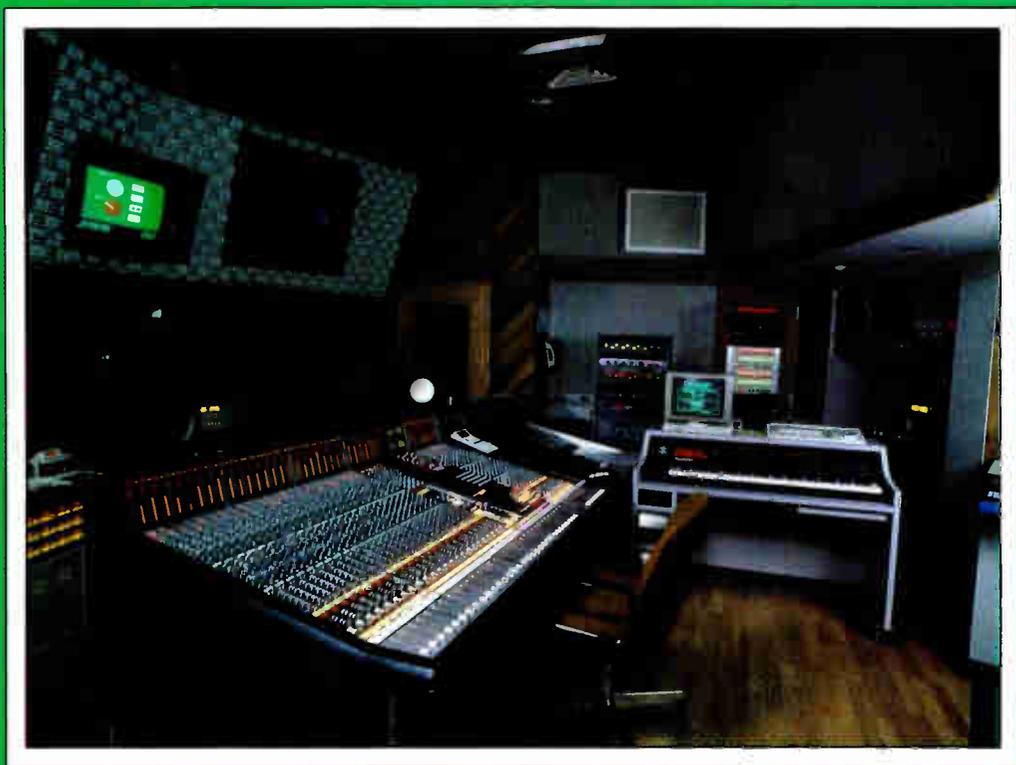
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NORTH CENTRAL STUDIOS

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.



The "Finishing Suite" at Streeterville Studios in Chicago was designed by owner James Dolan in conjunction with master acousticians Jack Edwards and George Augspurger. Recent sessions include LPs by Johnny Winter, Roy Buchanan, and Koko Taylor; and a host of spot work, including Miche-lob (featuring Eric Clapton), Budweiser/Spuds McKenzie, 7-Up and McDonalds. Photo: Bob Ringham

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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. Basic listings (name, address, contact) are provided free of charge. Extended listings (equipment, credits, specialization), and photographs or company logos may be included at a nominal charge. If you would like to be listed in a *Mix* Directory, write or call the *Mix* Directories Department, 2608 Ninth Street, Berkeley, CA 94710, (415) 843-7901.

Upcoming Directory Deadlines:

Independent Producers and Engineers: **November 9, 1987**

Southeast U.S. Studios: **December 3, 1987**

Video Production/Post-Production: **January 4, 1988**



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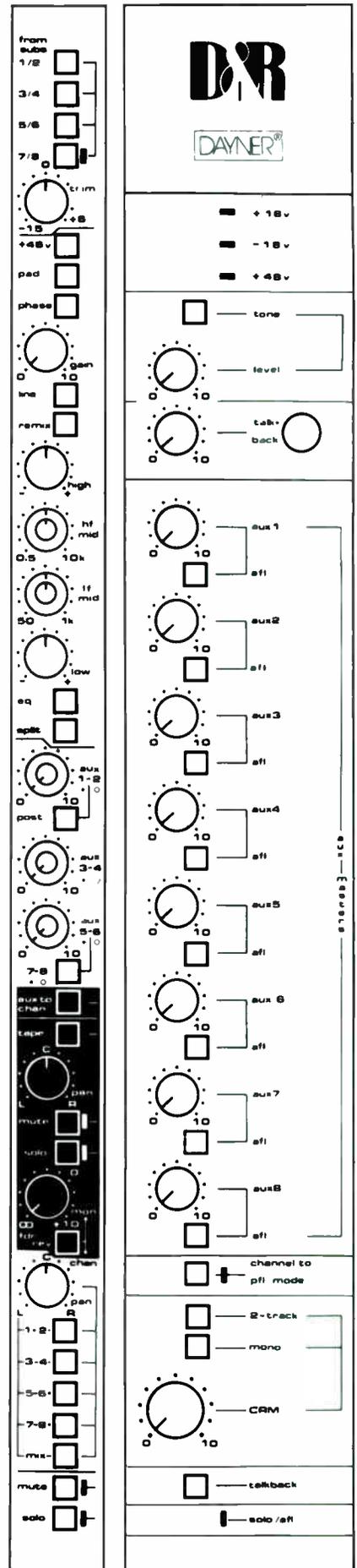
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12 Audiolmage Recording Studio	Stockton	8 Control	4 BRAN-TAN Alley
Maple Plain	8 Village Music	Guyeville	16 Cornerstone Recording
24 Westwood Sound Studio	Thayer	8 Lost Nation Sound	8 Kluge Communications, Inc
Minneapolis	16 Thayer Music Studio	Holland	16 Mauer Brothers Recording Studio Inc
24 Blackberry Way Recording Studios, Inc	Webster Groves	24 Scharren Studios	24 Midwest Recorders, Ltd
24 Cookhouse Recording Studios	8 Deer Creek Audio Illusions	Hudson	16 Milwaukee Sound Studios
24 Creation Audio	NEBRASKA	24 Stokes Sound International, Inc	24 New Horizons Singers Recording Studios
16 Custom Recording Studios	Hastings	Lagrange	16 RSVP, Inc
24 Eurosound Studios	8 IVO Sound Recorders	16 JMC Recording	8 Sonic Flight Studio
24 Face Front Productions	Lincoln	Lakewood	8 The Sound Palette
2 Fulton Audio	8 Jungle Studios	16 Modern Recording Service's Inc	Mishicot
8 Maxwell Records	8 Real Gone Recording	Loudonville	8 TRW Studios
24 Metro Studios	Omaha	8 Synapse Sound Studio	Neenah
2 Orchard House Audio	16 Authentic Audio Lab	Marion	16 Bonzai Studios
24 74th St Recording Studio	8 Crystallin Recording Studios	24 Futuresound Studios	Oakfield
8 Sound 80	24 Rainbow Recording Studios Inc	8 Mayfield Hts.	8 Lincoln Ave Recording Studios
16 Toby's Tunes, Inc	—Rainbow Productions Omaha	24 Studio 7	Sheboygan Falls
16 The Tracking Station	Waverly	McConneville	16 GRG Recording
8 U S Studios	8 Sounds Fantastic Recording	8 Atmosound	Superior
16 West Bank Sound		Mentor	16 Inland Sea Recording

All studio information listed has been supplied to *Mix* by studios responding to questionnaires mailed in May 1987. People, equipment and locations change, so please verify critical information with the studios directly. *Mix* does not take responsibility for the accuracy of the information supplied to us by the studios.

NORTH CENTRAL

24+ TRACK

STUDIOS

[24+] ABSOLUTE STUDIOS
15101 W. 10-Mile Rd.
Oak Park, MI 48237
(313) 967-6767
Owner: Stephen Goodale IV
Studio Manager: Frank Serafino

[24+] THE ALLIANCE RECORDING COMPANY
also REMOTE RECORDING
8449 Parshallville Rd.
Fenton, MI 48430
(313) 632-5653
Owner: Al Hirschman, Mark Farner
Studio Manager: Al Hirschman
Engineers: Al Hirschman, Dee Hirschman, Don Pushies, Jacques Mersereau, independents
Dimensions: Room 1: studio 36 x 40, control room 20 x 24.
Room 2: control room 18 x 20
Mixing Consoles: NEOTEK IIIC 56 x 24, Hill J Series 24 x 8.
Audio Recorders: MCI JH-114 24-track, MCI 110-A 2-track, MCI 110-B 2-track, Otari Mark III 8-track, Scully 280B 2-track.
Echo, Reverb, & Delay Systems: Lexicon 224XL, EMT 140TS, ART 01A, Sound Workshop 262, Harmonizer 910, Marshall Time Modulator, DeltaLab DL-2, DeltaLab TimeLine, Eventide 1745, Yamaha analog delay, Dynacord Time Tech tape delay
Other Outboard Equipment: (2) UREI 1176, (2) dbx 165, (2) dbx 166, Scamp rack w/limiters, gates, EQs, Orban 418A, Orban 424A, Omni Craft noise gates, Teletronix LA-2A, Eventide Instant Phaser, MXR flanger/doubler, Inovonics limiter
Microphones: Neumann U89s, U87s, KM84s, KM56s, U47s (tube), AKG 414s, 451s, C28s, 109s, 190s, E-V RE20s, CS15s, RE55s, RE15s, 635s, 666, DS35s, Sennheiser 421s, 441s, Beyer 500s, 260s, 101s, Shure: SM81s, SM57s, SM58s, SM54s, Altec M30s, Crown PZM
Monitor Amplifiers: SAE, Crown, McIntosh
Monitor Speakers: UREI 813B, JBL 4311, JBL 4312, JBL 4301, Yamaha NS-10, Auratone
Musical Instruments: Ensoniq Mirage, Yamaha DX7, Korg Poly 6, Korg 3 x 3, LinnDrum, Ludwig drums, Fender Rhodes, Fender, Peavey, Roland, AIMS and Marshall instrument amps.
Video Equipment: Synchronizer, 3/4" deck and monitor available for post-scoring
Rates: Available on request

[24+] AMBIENCE RECORDINGS
27920 Orchard Lake
Farmington Hills, MI
(313) 851-9766
Owner: Charles Schenck
Studio Manager: Dennis Forbes

[24+] AMERICAN ARTISTS
also REMOTE RECORDING
1763 E. Elm
Springfield, MO 65802
(417) 862-1768
Owner: Joseph H Higgins
Studio Manager: Joseph H Higgins

[24+] ARS RECORDING & TAPE DUPLICATION
also REMOTE RECORDING
11628 S. Pulaski
Alsip, IL 60658
(312) 371-8424
Owner: ARS Enterprises Inc
Studio Manager: Allen Keilman
Engineers: Gary A. Cobb, Harry Brotman, Joe Tortorici, Bob Kearney
Dimensions: Room 1: studio 30 x 20, control room 19 x 13
Room 2: studio 9 x 11
Mixing Consoles: Amek Angela 28 x 24 w/Audio Kinetics automation
Audio Recorders: Otari MTR-90 24-track, Otari MX-7800 8-track, Studer A810 2-track, Otari MX-5050BII 2-track
Cassette Recorders/Duplicators: Studer A710, (10) Nakami-

chi MR1, Telex 6120 XLP w/3 slaves
Noise Reduction Equipment: (2) Dolby SR, (2) Dolby "A", (8) dbx Type I
Echo, Reverb, & Delay Systems: Lexicon 200, Lexicon Super Prime Time, Ursa Major 8 x 32, Lexicon PCM42, Ecoplate II, Lexicon PCM60, (2) Yamaha SPX90, DeltaLab ADM1024, Barcus-Berry BBE 202R, Eventide Instant Phaser
Other Outboard Equipment: Orban 424A gated compressor/limiter, Orban 672 A parabolic equalizer, Orban 245 E stereo synthesizer, (2) dbx 165 compressors, (2) dbx 160X compressors, (2) dbx 163 compressors, (8) Omni Craft gates, (2) MXR auto phasers, (2) MXR auto flangers
Microphones: Beyer MC740N, Neumann U47, (2) Neumann U87, (4) B&K 4007, AKG 414, AKG 451, (8) Sennheiser 421, Sennheiser 441, (2) E-V PL20, (4) Crown PZM 30GP, various Shure and Audio-Technica dynamics
Monitor Amplifiers: (2) Crown PSA-2, Crown MT1000, Tandberg 3003
Monitor Speakers: (2) UREI 811B, (2) B&W DM12, (2) JBL 4430, (2) Auratone
Musical Instruments: Yamaha DX7, Bluthner 7' grand piano, Gretsch 7-piece drum kit, various percussive instruments
Other MIDI Equipment: Sequential Circuits Model 64 sequencer
Rates: Call for rates

[24+] ATTICA RECORDING STUDIO
2614 5th Ave.
Rock Island, IL 61201
(309) 786-9832
Owner: Greg Ballard
Studio Manager: Greg Ballard
Engineers: Greg Ballard, Alanson Clark
Dimensions: Room 1: main studio 14 x 20 x 12
Room 2: control room 14 x 20 x 10
Room 3: drum booth 10 x 10 x 8
Room 4: vocal booth 6 x 8 x 8
Mixing Consoles: Soundcraft 1600 24 x 24 x 8
Audio Recorders: 3M 79 24-track, Otari 5050B 2-track, Pioneer 2-track, TEAC A4010 4-track, Tascam 80-8 8-track
Cassette Recorders/Duplicators: Sony, Aiwa, Pioneer
Echo, Reverb, & Delay Systems: Lexicon 200, Yamaha SPX90, (2) DeltaLab DL-4, ADA 256, (3) ADA 1000
Other Outboard Equipment: MXR doubler/flanger, MXP pitch controller, Yamaha doubler, Aphex Aural Exciter, (4) Symetrix compressor/limiter, (2) Symetrix noise gates, (4) Omni Craft noise gates, Roland RE-201, (2) Symetrix parametric EQ, (3) Yamaha 31-band EQs
Microphones: (2) Neumann U87, (12) Shure 57s, (4) Sennheiser 421s, RCA 77DX, Sony 37-P, E-V RE20
Monitor Amplifiers: BGW, QSC
Monitor Speakers: (2) Yamaha, (2) Auratone, (2) E-V
Musical Instruments: Bradburry grand piano, DX7, CX3, Ludwig drum set (5-piece), Drumulator 700D
Other: Computer system interfaced to our Soundcraft for mix-down assistance
Rates: \$50/hr., but vary according to final contract

[24+] AUDIO GRAPH PRODUCTIONS, INC.
also REMOTE RECORDING
2810 Bennett Rd.
Okemos, MI
(517) 332-3272
Owner: Doug Monson, Glenn Brown
Studio Manager: Jerome Fox
Engineers: Glenn Brown, Jerome Fox, Lisa Cousino
Dimensions: Room 1: studio 30 x 23, control room 18 x 17
Room 2: studio 13 x 16, control room 13 x 17
Mixing Consoles: NEOTEK Series II 32 x 24
Audio Recorders: Studer A80 MKIII 24-track, Studer A810 2-track, (2) Otari MX-5050BII 2-track
Cassette Recorders/Duplicators: Studer A710, Revox B215, Technics
Synchronization Systems: Adams-Smith 2600 System
Echo, Reverb, & Delay Systems: Lexicon 224XL digital reverb system, (2) Lexicon PCM70 digital reverb system, Yamaha REV7, Yamaha SPX90, live chamber
Other Outboard Equipment: Lexicon 93 Prime Time delay,

Lexicon Prime Time II delay, Lexicon PCM42 delay, Eventide H910 Harmonizer, Eventide FL201 Instant Flanger, UREI 1176LN & 1178LN compressors, (2) dbx 160X compressors, Orban de-esser, Valley People Kexep II and Gain Brain IIs, Teletronix LA-2A and more
Microphones: Neumann, Sennheiser, Sony, Crown PZM, Bey-er, Shure, E-V, AKG
Monitor Amplifiers: (4) McIntosh, (3) Crown
Monitor Speakers: UREI 813A, JBL 4311, JBL 4310, Yamaha NS-10M, Auratone, Studer
Musical Instruments: 1929 Kimball grand, Oberheim OBXA, DMX, DSX, Emulator II w/huge library, Simmons SDS-1000, MTM MIDI trigger, (3) Marshall stacks, misc vintage Fender and Gibson amps, Mesa/Boogie, Rockman rack, Yamaha DX7
Video Equipment: Sony 2600 3/4" deck
Other: Roland vocoder, 2-channel Dormeyer Food Fixer, stereo mixer
Rates: Call for rates

[24+] AUDIO RECORDING STUDIOS, INC.
also REMOTE RECORDING
601 Rockwell Ave.
Cleveland, OH 44114
(216) 771-5112
Studio Manager: Bruce Gigax
Dimensions: Room 1: studio 20 x 60, control room 24 x 22
Room 2: studio 9 x 15, control room 19 x 15
Mixing Consoles: Sony MXP-3036, Sound Workshop Series 30 12 x 8
Audio Recorders: Ampex MM-1200 24-track, (3) Ampex ATR-800 2-track, MCI JH-110C 8-track, (3) Electro Sound ES-505 1-, 2-, 4-track
Echo, Reverb, & Delay Systems: Lexicon 224XL, EMT240, Master-Room, Eventide Harmonizer, TC 2290, ART DRI
Other Outboard Equipment: dbx and Symetrix limiters, Orban and Ashly EQ, Quad 8 noise gates, EXR Exciter, Symetrix phone interface
Microphones: Neumann, AKG, Shure, Sennheiser, B&K, E-V, RCA
Monitor Amplifiers: Spectra Sonics, NAD
Monitor Speakers: JBL 4333, JBL 4411, JBL 4401, JBL MDM-4
Musical Instruments: Yamaha grand piano, KX88 keyboard controller, TX816, sound modules, Roland MKS-20 digital piano, E-mu SP-12 drum machine, Prophet 2002
Other MIDI Equipment: Roland SBX-80, Yamaha MJC-8 switcher, MacPlus w/Sound Designer, Performer and TX editor/librarian software
Video Equipment: BTX Softouch SMPTE interlock system w/Sony VO-5800 U-matic, Beta Hi-fi and VHS Hi-fi, Sony, Panasonic monitors
Other: PCM-701, PCM-501, (3) Sony Betamax, Nagrali, (2) Technics turntables, (2) Sony CD players
Rates: Upon request

[24+] AUDIOCRAFT
also REMOTE RECORDING
915 W. 8th St.
Cincinnati, OH 45203
(513) 241-4304
Owner: E.T. Herzog, Jr

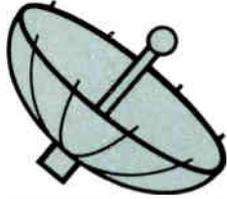
[24+] AUDIOVISIONS
PO Box 714
Birmingham, MI 48012
(313) 258-5602
Owner: Jeff Jones
Studio Manager: Jeff Jones

[24+] BARN BURNER STUDIO
also REMOTE RECORDING
1500 North Rd.
Annawan, IL
(309) 935-6181
Owner: Heath Audio Associates Inc.
Studio Manager: Roxanne Heath

[24+] BEACHWOOD STUDIOS
also REMOTE RECORDING
23330 Commerce Park Rd.
Beachwood, OH 44122
(216) 292-7300
Owner: EDR Corporation
Studio Manager: Joel M. Solloway, George A. Sipl
Engineers: George A. Sipl, Joel M. Solloway, Dave Wilson, Jim Derman, Dave Jonke
Dimensions: Room A: live room 26 x 29, rhythm room 35 x 29, control room 27 x 27
Room B: rhythm room 31 x 30, control room 24 x 20
Mixing Consoles: MCI JH-600 automated 36 x 24, MCI JH-600 automated 28 x 24
Audio Recorders: (3) MCI JH-24 24-track, (5) MCI JH-110B 2-track, (2) Sony APR-5002 2-track, (3) Otari MX 5050 2-track

—CONTINUED ON PAGE 120

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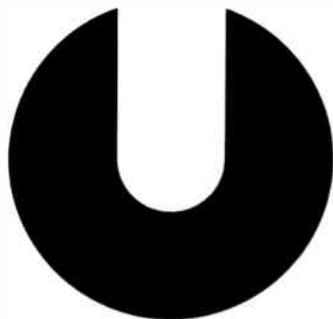
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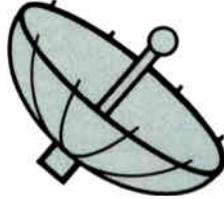
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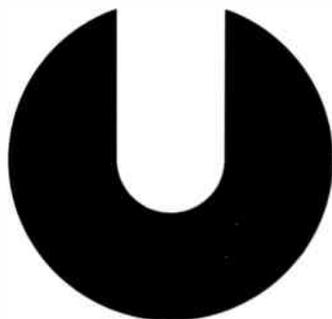
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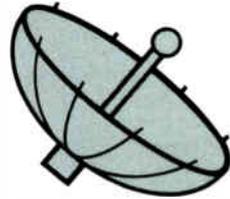
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¼"; Sony Beta 2-track Hi-Fi, (2) Tascam 44-OB 4-track, Otari MTR-10 2-track

Echo, Reverb, & Delay Systems: Lexicon 224XL w/LARC, Lexicon 224, Klark-Teknik DN780, (2) Ecoplates, Lexicon 41, Lexicon 42

Other Outboard Equipment: (2) Teletronix Tube limiters, UREI LA-2, UREI LA-4, UREI 1176 limiters, AMS Harmonizer, Eventide H969 and Eventide H949 Harmonizers, (2) Aphex Aural Exciters, (2) Eventide flangers, (2) Klark-Teknik graphic EQ, Gain Brain II and Kepex IIs, Scamp noise gates and compressors, Dolby 32 channels, Yamaha SP90 reverb

Microphones: Neumann, AKG, Beyer, Shure, Sennheiser, Samson "TD Concert" Series wireless w/DPX chip

Monitor Amplifiers: McIntosh 2300, BGW 750s, Crown DC-300s

Monitor Speakers: UREI 813 Time Aligned

Musical Instruments: Yamaha 9' and 7' grand pianos, Hammond organ

Video Equipment: Adams-Smith 2600 video interlock, RCA 25" and (2) Panasonic 12" color monitors, JVC 850CR ¾" video, VO5850 video

Rates: Please call



BIG DOG STUDIO
Wichita, KS

[24+] **BIG DOG STUDIO**
also **REMOTE RECORDING**

412 ½ E. Douglas
Wichita, KS 67202
(316) 263-4464

Owner: Sheldon Coleman Jr
Studio Manager: John F. Salem

Engineers: John F. Salem, Bo Reusch
Dimensions: Room 1 studio 135 x 35, control room 20 x 18
Room 2: studio 18 x 18, control room 16 x 16

Mixing Consoles: Amek Angela 28 x 24, Studiomaster 16 x 16, Carvin 16 x 8 x 2

Audio Recorders: Studer A80 MKIV 24-track, Sony ADR-5000 2-track ¼" and ½", Otari MX 5050B 2-track, Fostex B-16 16-track

Cassette Recorders/Duplicators: (2) Tascam 122 MKII decks
Noise Reduction Equipment: dbx 180A 24-channel, (2) Rocktron Hush II 2-channel

Echo, Reverb, & Delay Systems: Lexicon PCM70, live chamber (35 x 95), (2) Yamaha REV7, (3) Yamaha SPX90, Lexicon PCM41, Lexicon PCM42

Other Outboard Equipment: Aphex Type B Aural Exciter, Studio Technologies AN2 stereo simulator, Orban Model 672A equalizer, Symetrix 544 4-channel noise gate, (2) dbx 166 comp/lim/gate, dbx 160 comp/lim, (2) Orban 536A sibilance controllers, (8) Stewart active direct boxes, Rockman Rock Module

Microphones: Neumann U87, (2) AKG C414 EB, Beyer M-88, (6) Sennheiser 421, (5) Shure SM81, (12) Shure SM57, E-V N/DYM 308

Monitor Amplifiers: Hafler P-500, Crown DC-75, Biamp monitor headphone amp, QSC studio monitor

Monitor Speakers: (2) Tannoy S6M 3000, (2) Yamaha NS-10s, (2) JBL 4411 control monitors, (2) E-V Sentry 100s, (10) AKG K-240 DI headphones

Musical Instruments: Yamaha C-7 7'4" conservatory grand piano (1985), Gretsch 4-piece drum set, various cymbals and percussion, Simmons SDS7 electronic drums, Roland DDR-30 electronic drums, Linn LM1 drum machine, Yamaha RX11 drum machine, Ensoniq Mirage, Ensoniq ESQ 1, Roland S-50 sampler, Yamaha master keyboard controller, Yamaha CP electric grand, Marshall JCM800 guitar amp

Video Equipment: Panasonic VHS stereo VCR

Other: Roland JC120 jazz chorus guitar amp, Fender pre-CBS Concert amp, Mesa Boogie guitar amp

Rates: \$60/hr or \$600/day block out. \$100/hr with recording theater, \$800/day theater block out

Extras & Direction: Big Dog Studio is a world class 24-track

NORTH CENTRAL 24+ TRACK STUDIOS

recording studio. In our control room you'll find an engineer/producer's dream array of carefully selected audio production tools nestled within an acoustic monitoring environment custom crafted to deliver pinpoint accuracy in stereo imaging, broad band frequency response and dynamic range. There are five isolated studios, a recording theater with variable acoustics, two experienced full time staff engineers, and a wide range of musical instruments. Making even the most challenging productions well within reach. Manager John Salem has 13 years engineering experience with all styles of music. Artists include: Leon Russell, Roy Clark, The Sons of the Pioneers, Gail Davies, Tracy Nelson, Rodney Dillard, The Embarrassment, Jerry Hahn, Tommy Overstreet and many others

[24+] **BLACKBERRY WAY RECORDING STUDIOS, INC.**
606 13th Ave. SE

Minneapolis, MN
(612) 378-2466

Owner: Mike Owens, Kevin Glynn
Studio Manager: Mike or Kevin

[24+] **BOARDROOM RECORDING STUDIO**

608 S. Elmhurst Rd.
Mount Prospect, IL 60056
(312) 255-1151

Owner: Brian T. Adler
Studio Manager: Brian T. Adler

[24+] **BREEZEWAY RECORDING STUDIOS INC.**

363 W. Main St.
Waukesha, WI 53186
(414) 547-5757

Owner: Steven J. Gotzler, Patricia C. Bosch
Studio Manager: Kathy Bosch
Engineers: Lee Crooks, Paul Wehrley, Mike Hoffmann, Greg Smith, independents welcome

Dimensions: Studio 32 x 18, control room 18 x 15
Mixing Consoles: NEOTEK elite 26 x 26 w/8 stereo audio subgroups (over 40 total returns), Audio Kinetics MasterMix disk-based automation.

Audio Recorders: MCI JH-24 24-track (16 optional), MCI JH-110 ½-track, Otari 5050B ½-track, Nakamichi DMP-100 2-track digital processor (F-1 type)

Cassette Recorders/Duplicators: Sony TC-D5M, Technics RSM-85 MKII, Harman Kardon TD302

Noise Reduction Equipment: Dolby 361-A or SR, dbx 180 available on ½ tracks

Echo, Reverb, & Delay Systems: Klark-Teknik DN 780 digital reverb, Ecoplate II, Ecoplate III, Lexicon PCM70 and PCM60 reverbs, Prme Time 93 w/MEO, Yamaha SPX90 and REV7 processors, Roland SDE-3000, DeltaLab Effectron II ADM 1024

Other Outboard Equipment: dbx 160, dbx 160X, dbx 165 limiters, UREI 1176LN, UREI LA-4 limiters, Valley People Dyna-Mite stereo limiters/gates, Omni Craft GT-4 gates, Drawmer DS201 gates, Aphex B stereo Aural Exciter, Studio Techno gies AN-2 stereo simulator, Eventide 910 Harmonizer, MXR flanger/doubler, Orban 674A stereo parabolic equalizer, Orban 536A de-esser, API 550A equalizers, 512 mic pre-amps, dbx 902 de-essers, Wendel jr. drum replacer, other outboard equipment available upon request

Microphones: AKG: C-24 stereo tube, 414EBs, 451s, D112; Neumann: U47 tube, U87, Bruel & Kjaer 4006s, Sennheiser: 441s, 421s; E-V RE20s; Shure: SM57s, 58s, 81s, SM7; Sony: C-48, Beyer: M500, M88, Crown PZMs

Monitor Amplifiers: UREI: 6500, 6250, 6150; BGW 250C
Monitor Speakers: UREI 813B, Yamaha NS-10M, JBL 4311, Auralone 5C

Musical Instruments: Yamaha Recording Series drums w/Zildjian and Paiste cymbals, Kawai 6'8" grand piano, Hammond B-3 organ w/Leslie, Roland S-50, Roland D-50, Roland JX-10, Ensoniq ESQ-1, E-mu SP-1200 drum machine

Other MIDI Equipment: Southworth Jam Box SMPTE/sync box, Roland Octapad, Macintosh SE w/Opcode Studio Plus MIDI converter, Performer 2.0 and Professional Composer software, plus other items

Other: Proton 19" video monitor, Beta and VHS VCRs, Technics SL-1200 turntable w/Shure Type V cartridge, Stanton pre-amp, Toshiba CD player

Rates: Upon request

Extras & Direction: Already one of Wisconsin's most popular studios, Breezeaway's new ownership continues to expand its facilities. During the last 12 months we have met the growing technical demands of jingle and album work with the purchase of a new automated console, more MIDI equipment and outboard gear, and round-the-clock service. Future plans

include the addition of full-service cassette duplication. Our reasonable rates and professional staff work with the client to make a truly cost-effective recording, without sacrificing quality. Recent album projects include: Jasmine, Couch Flambeau, Free Hot Lunch, The X-Cleavers, Those Spanic Boys, Leroy Airmaster, Your Mood Merchants, etc

[24+] **BROWN & BROWN RECORDING AND MUSIC PRODUCTIONS**
also **REMOTE RECORDING**

PO Box 224
Portage, MI 49081
(616) 327-8352

Owner: Kevin & Deborah Brown
Studio Manager: Tim Brown

Extras & Direction: Brown & Brown is located precisely between Detroit and Chicago, specializing in original music for broadcast production, voice-over and multi-track recording. In addition to 2-track remote recording, we offer studio work in a handsomely remodeled control room and large recording room, using the MCI JH-24 (2" 24-track) and Ampex 440-C (1" 8-track). Clients appreciate our full complement of digital signal processing gear and experienced engineers. Original musical image packages and syndicated music productions are airing in the Midwest, USA and abroad. We are producing an increasing number of album projects, many of which are in wide distribution. In the next year, we will offer an extensive range of services for the multi-track client, including product packaging and marketing. In the broadcasting field, one focus will be in the area of custom music productions for specialized formats

[24+] **CHARLES BROWN MUSIC, INC.**

1349 E. McMillan St.
Cincinnati, OH 45206
(513) 281-5212

Owner: Charles Brown
Studio Manager: Jan Wiggeringloh

[24+] **CAVE RECORDING STUDIO**

1275 E. Miner Rd.
Mayfield Hts., OH 44124
(216) 449-3511

Owner: RSC Productions
Studio Manager: Rick Cohen

[24+] **CHANCELLOR FILM & VIDEO**

also **REMOTE RECORDING**
2326 E. Seminole
Springfield, MO 65804
(417) 882-5211

Owner: Bill Charlesworth
Studio Manager: David Charlesworth

[24+] **CHAPMAN RECORDING STUDIOS**

also **REMOTE RECORDING**
228 W. 5th
Kansas City, MO 64105

(816) 842-6854
Owner: Chuck Chapman



CHICAGO RECORDING COMPANY
Chicago, IL

[24+] **CHICAGO RECORDING COMPANY**

232 E. Ohio St.
Chicago, IL 60611
(312) 822-9333

Owner: Alan Kubicka
Studio Manager: Jo Sturm, Hank Neuberger
Engineers: Hank Neuberger, Chris Sabold, Gus Mossler, Tom Hanson, Ian Burgess, Mike King, Tim Butler, Bill Kouach, John

Titak, Cleon Wells, Mike Coyle, Joe Daniels
 Dimensions: Rooms 4 & 5: studio 78 x 32, control room 28 x 28. Plus six additional studios. Room D: studio 67 x 37, control room 26 x 26. Room H: studio 20 x 12, control room 26 x 26.
 Mixing Consoles: SSL 6000E 48 x 48 w/Total Recall, Neve 8068 32 x 32 w/Necam, MCI 556D 56 x 48 w/Discmix, Cadac Series E 36 x 32
 Audio Recorders: Studer A800 24-track, Studer A80 24-track, (4) MCI JH-114 24-track, AMS Audiohle Cassette Recorders/Duplicators: (10) Nakamichi, Intonics.
 Noise Reduction Equipment: Dolby A 48-track.
 Synchronization Systems: (8) BTX Softouch System.
 Echo, Reverb, & Delay Systems: AMS RMX-16, AMS 1580-S, (3) Lexicon PCM70, EMT 251, (6) Yamaha REV7, (8) Yamaha SPX90, Lexicon 200, (5) EMT 140 plates, Lexicon PCM60, (12) Lexicon Prime Time, Lexicon PCM41, Lexicon PCM42s.
 Other Outboard Equipment: Wendel Labs drum sampler, (12) Drawmer gates, Scamp processing, Aphex processors, Fairchild Instruments limiters (tube), Pultec EQ and filters, dbx limiters, ADR limiters, API EQ.
 Microphones: Neumann, AKG, Schoeps, Sennheiser, Sony, Shure, E-V, many tube mics.
 Monitor Amplifiers: Tannoy, Studer, Crown.
 Monitor Speakers: Tannoy Dreadnoughts, Tannoy FSM, UREI 813, Yamaha NS-10, Auratones.
 Musical Instruments: Bosendorfer grand piano, Bechstein grand piano, (2) Steinway grand piano w/MIDI interface, (4) Hammond organs, (4) Fender Rhodes pianos, Wuritzer piano, Hohner clavinet, Sonor, Rogers and Slingerland drums, tympani, Yamaha DX7.
 Other MIDI Equipment: Akai sampler.
 Video Equipment: (8) BTX Softouch SMPTE lock systems, (12) JVC and Sony 3/4" videocassette recorders, Sony Type C 1" videotape recorder, complete audio for video sweetening in all studios.
 Other: AMS Audiofile disc-based digital recorder (tapeless).
 Rates: Music studios \$240-\$280/hr., production studios \$100/hr.
 Extras & Direction: 48-track recording with 60 automated returns, tapeless digital recording and editing with AMS Audiofile, Total Recall automation, SMPTE sync video sweetening. Since we opened our doors in 1975, we have been Chicago's world-class recording facility, having grown from one studio to 12. We are in the final stages of a \$3 million move and expansion that has resulted in live new studios so far, with more under construction. After our Grammy-winning records, gold albums and Clio-winning commercials, we know how to provide the best.

[24+] CHICAGO TRAX RECORDING
 3347 N. Halsted
 Chicago, IL 60657
 (312) 525-6565
 Owner: Chicago Trax Inc.
 Studio Manager: Reid Hyams
 Engineers: Al Ursini, John Patterson, Steve Spapperi, Harry Broitman, Chuck Kawai, Julian Herzfeld, Bob Kearny, Glenn Odagawa, Dan Pinault, Keith Auerbach, Ron Gresham, Rick Jaeger, Goh Hotoda, Phil Bonnet, Mark Rubenstein.
 Dimensions: Room 1: studio 34 x 24, control room 24 x 18. Room 2: studio 11 x 16, control room 14 x 12.
 Mixing Consoles: Harrison MR4 32 x 24 w/Mastermix automation, Soundcraft 2400 24 x 24 (at this time, but upgrade in progress).
 Audio Recorders: (2) Otari MX-80 24-track, Otari MTR-12 2-track, Studer A810 2-track, Studer B67 2-track, Otari MX-5050B 2-track
 Cassette Recorders/Duplicators: (12) Tascam 122 MKIIs, (2) Nakamichi MR1s
 Noise Reduction Equipment: dbx 155.
 Echo, Reverb, & Delay Systems: Lexicon 200 digital reverb, Klark-Teknik DN780 digital reverberator/processor, Ecoplate II, Lexicon PCM60, (3) Yamaha SPX90s, Lexicon PCM42, (2) Effectron 1024s, Lexicon Prime Time I digital delay, Lexicon Prime Time II digital delay, Eventide Instant Phaser, Eventide 910 Harmonizer
 Other Outboard Equipment: AMS DMX15-80S digital delay/dual sampler, (3) Drawmer DS201 dual gate, (2) dbx 165 comp/limiters, EXR exciter, (4) dbx 263 de-essers, (2) dbx 160X comp/limiters, (2) UREI LA-4 comp/limiters, (4) Pultec EQs, (2) Valley People Dyna-Mites, (2) Gatex and Omni Craft expander/gates, (4) UREI graphic EQs, TC Electronics 1210 stereo chorus spatial expander, Orban Parasound dual reverb.
 Microphones: (2) Neumann U87s, (2) AKG C12As, (2) AKG 414s, (2) Neumann KM84s, (2) AKG 451s, (4) Sennheiser 421s, (2) Sennheiser 441s, (2) E-V RE20s, (2) Beyer M260s, (2) Shure SM57s, (2) Crown PZMs.
 Monitor Amplifiers: (2) Crown Micro-Tech 1000s, (2) Haller P500s, (2) Crown 150s.
 Monitor Speakers: (2) UREI 813s, (2) UREI 811s, (2) UREI 809s, (2) JBL 4313s, (6) Yamaha NS-10Ms, (4) Auratone.
 Musical Instruments: Emulator II +HD, Yamaha DX7, Oberheim OB-8, LinnDrum, Roland TR-707, Roland TR-727, Moog Model 900, E-mu SP12, Yamaha TX816, Hammond B-3 w/Leslie, Sonor drum kit w/5 snares, Yamaha C5 grand piano, Fairlight CMI.
 Rates: Upon request.

[24+] CLOCKWERKE SOUND STUDIO, INC.
 1328 Linda St.
 Cleveland, OH 44116
 (216) 331-2210
 Owner: Greg James, Tom Gagen
 Studio Manager: Tom Gagen

[24+] COACHHOUSE MUSIC
 also REMOTE RECORDING
 PO Box 1308
 Barrington, IL 60010
 (312) 382-5295
 Owner: Michael Freeman

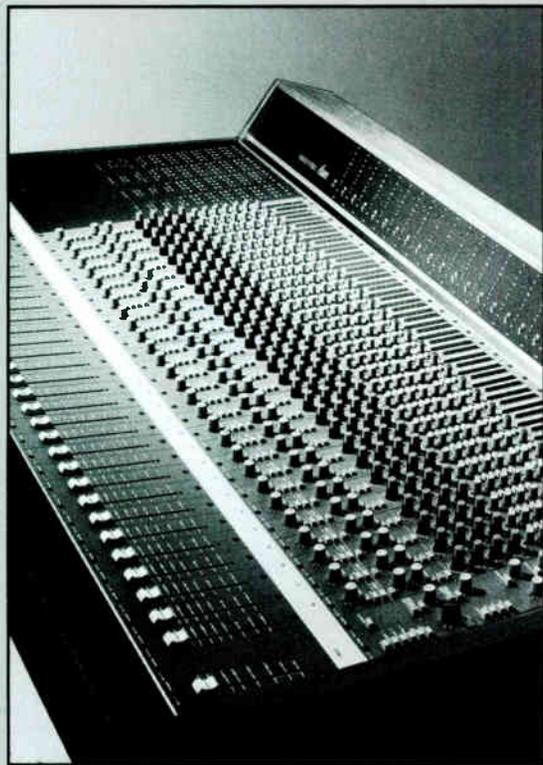
[24+] COLUMN ONE RECORDING
 3555 S. Mentor
 Springfield, MO 65804
 (417) 881-5015
 Owner: Elizabeth M. Williams
 Studio Manager: Lou Whitney

[24+] COOKHOUSE RECORDING STUDIOS
 10 S. 5th St., Ste. 440
 Minneapolis, MN 55402
 (612) 333-2067
 Owner: Dale Menten
 Studio Manager: Jerry Stenstadvold

[24+] CREATION AUDIO
 4130 Multi Foods Tower
 Minneapolis, MN 55402
 (612) 870-0028
 Owner: Terry Grant, Steve Weiss
 Studio Manager: Terry Grant

[24+] CREATIVE AUDIO GROUP
 PO Box 83094
 Troy, MI 48083
 (313) 828-8528
 Owner: R.A. Crane
 Studio Manager: Tom Gordon

—CONTINUED ON NEXT PAGE



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All studio equipment from a single piece of gear to a complete digital 24-track studio

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2608 Ninth Street,
Berkeley, CA 94710,
(415) 843-7901.**

Deadline: November 13

NORTH CENTRAL 24+ TRACK STUDIOS

—CONTINUED FROM PAGE 121

Engineers: Geoff Michael, Tom Gordon, Bob Crane
Dimensions: Studio 18 x 25, control room 16 x 14
Mixing Consoles: NEOTEK IIC 28 x 24
Audio Recorders: Otari MX-80 24-track, Otari 5050 2-track
Cassette Recorders/Duplicators: Technics, Onkyo, Tascam, Awa
Echo, Reverb, & Delay Systems: Lexicon 224XL, Lexicon PCM70 ver 3.0, Roland SRV-2000, Yamaha REV7, Yamaha SPX90, TC Electronics sampler/delay, Lexicon PCM42, Ibanez SDR-1000, Efectrons
Other Outboard Equipment: Valley People Kepex, Valley People Gain Brans, Gatex gates, Symetrix compressors, Audio Logic compressor, Aphex Type C Exciter, Barcus-Berry Electronics 802, Rane graphic EQs
Microphones: Neumann, Sennheiser, Shure, E-V, Toa, AKG
Monitor Amplifiers: Haller
Monitor Speakers: E-V, Yamaha, Auratone.
Musical Instruments: Any Roland products currently available, Kawai R-100, Steinberger bass, Fender amps, Marshall amps, Pearl drums, anything you request as we are also a full-line music store
Other MIDI Equipment: Roland MC-500, Steve Schuetz
Rates: Please call

[24+] CREATIVE COMMUNICATIONS COMPANIES
also REMOTE RECORDING
3700 S. Hawthorne
Sioux Falls, SD 57105
(605) 334-6832
Owner: Wm. Prines III
Studio Manager: Vesta L. Prines

[24+] CYBERTEKNICS CREATIVE RECORDING STUDIO
1953 E. Third St.
Dayton, OH 45403
(513) 258-2463
Owner: Philip Mehaffey
Studio Manager: Adella

[24+] DIGITRAC STUDIOS, INC. (DSI)
823 E. Long St., PO Box 03125
Columbus, OH 43203
(614) 252-1114
Owner: Ava Dawkins
Studio Manager: Chris Dawkins



THE DISC LTD

THE DISC LTD.
East Detroit, MI

[24+] THE DISC LTD.
14611 E. Nine Mile Rd.
East Detroit, MI 48021
(313) 779-1380
Owner: Robert Dennis, Greg Reilly, Tom Gelardi
Studio Manager: Greg Reilly
Engineers: Greg Reilly, Robert Dennis
Mixing Consoles: API fitted w/Allison Research computer mix system, custom 32 x 24
Audio Recorders: Otari MTR-90II 24-track, Ampex MM-1000 24-track, Ampex ATR-102 2-track, MCI JH-110B, Mitsubishi X-80

Echo, Reverb, & Delay Systems: (2) EMT 140s, Lexicon PCM41, Effectron, DeltaLab DDL-1, Lexicon 200 digital reverb, TC Electronics effects and sampler.

Other Outboard Equipment: Harmonizer, Kepex, Teletronix compressors, Pultec EQs, Orban parametric EQ, Loft delay and flanger, time code regenerator, DLC limiters, dbx 166 limit./comp., Lexicon PCM70, Yamaha REV7.

Microphones: Neumann: U47, U67, U87, U86s, U85, E-V: RE20s, RE15, RE10, RE55, 635A; Sennheiser MD-421s, AKG 414.

Monitor Amplifiers: McIntosh, Crown, PAS
Monitor Speakers: DLC design ACUs w/UREI horn, Acoustic Research modified, Yamaha NS-10s, Auratones

Musical Instruments: Linn 9000, Premier drums, Yamaha TX7, Macintosh Sound Library, Yamaha grand piano, orchestra bells, LinnDrum, Mirage digital sampling synthesizer, Roland Super Jupiter

Video Equipment: Sony BVU-800 3/4", BTX synchronizers and tape controller, BTX time code generator, Panasonic color monitor.

Rates: Give us a call
Extras & Direction: Separate edit room with two MCI 2-tracks and monitor system. Used for tape duplication, editing and listening. MIDI room w/Linn 9000, Macintosh computer, (3) TX7 modules, Mirage sampling synthesizer. Credits include: "One Way" produced by E. Deodato, "Michele Goulet" on Island Records, "Atomic Dog" by George Clinton, "Heard it Through the Grapevine" by Roger Troutman, "Lady" by One Way, "The Saga Continues" by Roger Troutman, and many early Detroit rock & roll groups such as Bob Seger, SRC, Frost and Frigid Pink. We are also licensed by the State of Michigan to teach Recording Engineering classes.

[24+] DISCOVERY SYSTEMS
also REMOTE RECORDING
7001 Discovery Blvd.
Dublin, OH 43017
(614) 761-2000
Studio Manager: Ed Thompson

[24+] DR. CAW RECORDING
2219 Farnsworth
Northbrook, IL 60062
(312) 272-9015
Owner: Craig Williams
Studio Manager: Dave Roberts

[24+] EDITEL-CHICAGO
301 E. Erie
Chicago, IL 60611
(312) 440-2360
Owner: Scanline Comm.
Studio Manager: Reid Brody

[24+] ENERGY AUDIO RECORDING
PO Box 40218
Saint Paul, MN 55104
(612) 488-6608
Owner: David Penn
Studio Manager: Jina Lucas

[24+] EUROSOUND STUDIOS
6900 Knox Ave. S.
Minneapolis, MN 55423
(612) 866-2999
Owner: Jorgen Hoglund
Engineers: Bjornar Svendsen, Jorgen H.
Dimensions: Studio 40 x 20, control room 28 x 14
Mixing Consoles: D&R Series 8000 II 32 x 32
Audio Recorders: Sony/MCI JH-24 24-track, Sony APR-5002 2-track.
Cassette Recorders/Duplicators: Nakamichi MR1, Nakamichi MR2s
Noise Reduction Equipment: D&R, dbx.
Echo, Reverb, & Delay Systems: AMS RMX-16, Lexicon 224XL, AMS DMX 15-80s, Lexicon PCM42, D&R stereo reverbs, Ursa Major multi-tap stereo processor.
Other Outboard Equipment: Drawmer noise gates, dbx noise gates, D&R noise gates multi-gate, dbx 900 rack w/compressors, de-esser/noise gates, dbx 160X stereo compressors, D&R exciter, Kahler Human Clock.
Microphones: Neumann U87s, Neumann TL170 limited edition, AKG 440s, AKG D12E, AKG 330, AKG 460, AKG 461, AKG CK1s, AKG CK5, AKG "The Tube"; E-V RE20s, E-V 671s, E-V CS-15, E-V PL76, E-V PL91s, Shure SM81s, Shure SM57, Shure SM58.
Monitor Amplifiers: (2) Crown DC-300 w/Tannoy electronic crossover (biamped), (3) Trace Elliot RA-500.
Monitor Speakers: Tannoy SRM 15X sync-source, Yamaha NS-10.
Musical Instruments: Trace Elliot bass combo, Rockman pre-amp/sustainer and chorus/delay, Rockman X-100, Bass Rockman, Halkan-Amp, Mesa Boogie amp, Sonor drums, Sabian cymbals, Yamaha DX7, Roland digital piano, Linn 9000.
Rates: Call for rates and info.

[24+] FACE FRONT PRODUCTIONS
1812 Clinton S., #9
Minneapolis, MN 55404
(612) 874-1881
Owner: Michael McKern

[24+] FUTURE STUDIOS LTD.
1412 W. Belmont Ave.
Chicago, IL 60657
(312) 880-5000
Owner: Sonny Herman
Studio Manager: Gary Messing

[24+] FUTURE SOUND STUDIOS
141 S. Main St.
Marion, OH 43302
(614) 383-2566
Owner: David Sifritt
Studio Manager: Terry Hero

[24+] GRS, RECORDING
also REMOTE RECORDING
13300 Broad St.

Pataskala, OH 43062
(614) 927-9566
Owner: GRS, Inc.
Studio Manager: Steve Andrews

[24+] HIGH FIDELITY RECORDING INC.
also REMOTE RECORDING
1059 Porter
Wichita, KS 67203
(316) 262-6456
Studio Manager: James Strattau

[24+] HIT CITY RECORDING
also REMOTE RECORDING
707 E. 54th St.
Indianapolis, IN 46220
(317) 257-0764
Owner: Dave Langlitt, Tim Brickley
Studio Manager: Dean Lozow
Engineers: Paul C. Mahern, Jon Quest, Tom Waldo
Dimensions: Room 1 studio 28 x 22, control room 19 x 15
Room 2 studio 12 x 15, control room 15 x 13

—CONTINUED ON NEXT PAGE

Audio Production & Finishing: Streeterville Style



"The Finishing Suite:" SSL with Total Recall mix automation, 5 machine synchronization, 24/48 track to 1" video mixing.

Solely with the intention of elevating the integrity of the production process, we offer sound-to-picture capabilities in 7 studios, affording producers the ultimate setting for decision-making in a pro audio environment. Considering the development, the experimentation and refinement involved in audio production, you will find creative engineering excellence, technical leadership, and a support staff and services with a "family feel." This distinguishes Streeterville from all competition. In addition, our awareness of what can be achieved sonically on television or in any playback format shows Streeterville's superior expertise. For your next project come to *the source*. Streeterville. Why settle for anything less?

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Nationwide Satellite Recording Services/Uplink & Downlink

Streeterville Recording Studios • 161 E. Grand Avenue • Chicago, IL 60611 (312) 644-1666

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Mixing Consoles: Soundcraft 1600 24 x 24, Ramsa Audio Recorders: Studer A80 MKIV 24-track, Scully 280 16-track, Tascam 80-8 8-track, (2) Otari 5050B 2-track Cassette Recorders/Duplicators: (3) JVC KD-V6 Noise Reduction Equipment: (2) Dolby SR, (2) Dynafex, (2) Symatrix 511
Synchronization Systems: Fostex Chase
Echo, Reverb, & Delay Systems: AMS RMX, Lexicon PCM70, Lexicon PCM60, Yamaha REV7, Yamaha SPX90, Roland SDE-1000, H910 Harmonizer, Klark-Teknik DN780
Other Outboard Equipment: Akai S900 sampler, (2) Aphex Compellor, (2) Aphex Aural Exciter, (2) 1176LN, (2) dbx 160, (2) dbx 162, (2) Valley People Dyna-Mite, (8) Kepex, (8) Gatex, Goldline Model 30 RTA
Microphones: (2) AKG C451, AKG D224E, AKG C414, Neumann U47, Neumann U87, (2) Neumann KM84, (6) Sennheiser MD421, (10) Shure SM57, (2) Crown PZM
Monitor Amplifiers: Crown DC300, Crown D150, Hafler
Monitor Speakers: (2) UREI 809B, (2) JBL 4313B, (2) Polk 5A, (2) Auratone
Musical Instruments: Linn 9000 SMPTE full sampling update, DX7IID, Oberheim Matrix GR, Yamaha TX7, Mirage, Yamaha CP70, (2) Stratocaster, P-Bass, Rickencaster 12-string, Emons D12 pedal steel, Roland D-550, Korg DSS-1
Other MIDI Equipment: SBX80, Mapper Axxess, Macintosh Plus
Video Equipment: 3/4" and 1/2" VCR
Other: Fender Deluxe, Roland JC120
Rates: Studio A \$65, studio B \$50, block call

[24+] IRONSIDE RECORDING STUDIO
Fall Creek Rd.
Branson, MO 65616
(417) 334-7040
Owner: Bob & Sherri Milsap

[24+] J.E.M. RECORDING
1428 Noyes St.
Evanston, IL 60201
(312) 328-8801
Owner: J. Scott Exum
Studio Manager: J. Scott Exum

[24+] JERICHO RECORDING
700 N. Green
Chicago, IL 60622
(312) 733-4800
Owner: J G S Inc
Studio Manager: Mike Mazza

[24+] JEWEL RECORDING STUDIOS
also **REMOTE RECORDING**
1594 Kinney Ave.
Cincinnati, OH 45231
(513) 522-9336
Owner: Rusty & Linda York
Studio Manager: J R Bennett

[24+] JOR-DAN, INC.
1100 Wheaton Oaks Ct.
Wheaton, IL 60187
(312) 653-1919
Owner: Grace Jordan, Dan Zimbelman
Studio Manager: Dan Zimbelman
Engineers: Mal Davis, Jeff Beaumont, Mark Volle
Dimensions: Studio Design by George Augspurger, Jack Edwards 2,500 sq ft, (3) iso rooms, 20' ceiling
Mixing Consoles: Neve 8058 custom modified 32 x 24
Audio Recorders: Studer A80 MKIV 24-track, Studer A810 2-track, Studer B67 2-track
Echo, Reverb, & Delay Systems: AMS, EMT, Yamaha, Lexicon
Other Outboard Equipment: Focusrite modules, Dolby and dbx noise reduction, Pultec EQs, Neve compressors, Aphex Compellor, Drawmer noise gates
Microphones: Neumann, AKG, Sennheiser, Beyer, Shure
Monitor Amplifiers: Hafler
Monitor Speakers: UREI, Yamaha, Auratone
Musical Instruments: Sonor drum kit, Yamaha conservatory grand piano, extensive synthesizer and percussion equipment available to rent upon request
Video Equipment: Separate additional power source available for video lighting in studio. Video, duplicating also available in 3/4" and 1/2"
Extras & Direction: Country suburban setting with adjacent tennis, racquetball, pool, whirlpool, Nautilus, indoor track, etc. Full service professional staff plus personal attention to clients' accommodations (kitchen, dining room, musician's lounge on premises—staff handles travel, hotel, dining reservations). Also featuring 8-track media studio, critical quality cassette manufacturing and packaging

NORTH CENTRAL 24+ TRACK STUDIOS



JOSEPH PRODUCTIONS, INC.
Southfield, MI

[24+] JOSEPH PRODUCTIONS, INC.
also **REMOTE RECORDING**
21759 Melrose Ave.
Southfield, MI 48075
(313) 353-7300
Owner: Sheldon J. Nueman
Studio Manager: Eve Avadenka
Engineers: Sheldon J. Nueman, Chris J. Staels
Dimensions: Studio 15 x 13, control room/machine room 12 x 23
Mixing Consoles: Trident Series 65 28 x 24
Audio Recorders: Otari MTR-90 24-track, Otari MTR-12 4- and 2-track, Otari MTR-12 2- and 1-track, Ampex 440 1-track
Echo, Reverb, & Delay Systems: Lexicon 224XL, Lexicon PCM42 digital delay, Ursa Major 8 x 32 digital reverberator
Other Outboard Equipment: Aphex II Aural Exciter, Aphex Compellor, Orban stereo synthesizer, Orban de-esser, Orban parametric EQ, Neumann dialog mastering compressor, UREI compressors, UREI limiters, UREI 1/3-octave EQ, Dolby A, dbx, Symatrix noise reduction, Otari EC401 Universal Resolver, Tascam cassette deck, Magna-Tech Model 10000 16/35mm dubber, Magna-Tech Resolver, The Boss, BTX Shadow synchronizers, Comrex duplex phone patch system
Microphones: AKG "The Tube," AKG 414, Neumann U89, any microphone of producer's choice from our in-house rental department
Monitor Amplifiers: Crown PS400, Crown PS200, Crown D75
Monitor Speakers: JBL 4411, Auratone, Hafler P500, UREI 813C
Musical Instruments: On request (original music production)
Video Equipment: Hitachi HR 230 Type C 1" video tape recorder, Sony VO-5850 3/4" video cassette recorder, Mitsubishi stereo hi-fi 1/2" video tape recorder, Sony VO-2600 3/4" video tape recorder, Hitachi 9-bit TC-230 time base corrector, NEC 12" monitors, Panasonic 19" monitor
Rates: \$200/hr for mix-to-picture, \$90/hr for 1- to 4-track production, \$200/hr. for Digi-Sync™
Extras & Direction: Full service audio production and rental departments afford the ability to carry projects from concept to completion. We specialize in voice, music and effects recording and conforming to mix-to-picture facilities for commercials, industrial films and video tapes. Digi-Sync allows the producer who shoots film and finishes on video tape to bypass the audio mag transfer stage by synchronizing location soundtracks directly to 1" video tape. Look for grand opening of new re-recording facility soon!

[24+] K&R'S RECORDING STUDIO, INC.
also **REMOTE RECORDING**
28533 Greenfield
Southfield, MI 48076
(313) 557-8276
Owner: Ken Glaza
Studio Manager: Patty Glaza

[24+] KOPPERHEAD PRODUCTIONS INC.
935 Schneider Rd.
North Canton, OH 44720
(216) 494-8760
Owner: Lee R Kopp
Studio Manager: George E. Payne

Engineers: Bruce Hensal, George E. Payne
Dimensions: Master room: studio 900 sq ft, 17' ceiling, control room 400 sq ft. Production room: studio 132 sq ft., control room 275 sq ft. Synclavier control room 540 sq ft.
Mixing Consoles: Soundcraft 3B 32 x 24, Tascam 15-S 20 x 16 x 8
Audio Recorders: MCI JH-24 24-track w/dbx, Tascam 90-16 16-track w/dbx, Tascam 70-H8 8-track w/dbx, Ampex ATR-100 2-track 1/2" and 1/4", Sony PCM-F1 2-track digital, (2) Tascam 25-2 2-track w/dbx
Cassette Recorders/Duplicators: Nakamichi, Eumig, JVC, Technics, Sony cassette duplicator
Noise Reduction Equipment: dbx available on all multi-tracks
Echo, Reverb, & Delay Systems: Lexicon 224, (2) Yamaha REV7, Korg DRV-3000, EMT plate, Ecouplate, MasterMix, AKG, Orban, Eventide Harmonizers, DeltaLab, Yamaha D1500s
Other Outboard Equipment: Eventide flanger and Omnipresor, Orban de-essers and parametric EQs, Kepex and Dyna-mite gates, dbx and UREI compressor/limiters, Vocal Stresser, Exciter, 27-band real time analyzer
Microphones: Neumann: U87s, U89s, KM84s, KM85s; AKG 414s, Sony C55s, 150, Sennheiser 421s, E-V RE20s, RE15x, Shure SM57s, SM81s; Crown PZMs; Beyer 500 and assorted
Monitor Amplifiers: Yamaha B1, Crown PSI, Crown D150 and various
Monitor Speakers: UREI 813-A, Yamaha NS-10, JBL 4311, JBL 4310, E-V Sentry, Bose 310, Auratones
Musical Instruments: Synclavier digital music system w/32 polyphonic sample voices and 32 FM voices, 8-channel multi-outs, velocity/pressure keyboard, 50k stereo/100k mono sample-to-memory, music printing and full terminal support, MIDI and SMPTE, Baldwin grand piano, Steinway grand piano, Ludwig drums, Linn drums, various MIDI modules and analog synthesizers
Video Equipment: 3/4" and 1/2" video playback and Synclavier post-scoring
Rates: By hour, block and project; available upon request

[24+] LAKE RECORDING
418 Lake
Maywood, IL 60153
(312) 344-8760
Owner: Robert Kaider
Studio Manager: Robert Kaider

[24+] LANSING SOUND STUDIOS, INC.
also **REMOTE RECORDING**
2719 Mt. Hope Rd.
Okemos, MI 48864
(517) 351-6444
Owner: Bob Baldori
Studio Manager: Lew Frpnr

[24+] LRS-LAUSCHE RECORDING STUDIOS
9526 Winton Rd.
Cincinnati, OH 45231
(513) 521-0015
Owner: Lou Lausche
Studio Manager: Bob Rowlette
Engineers: Bob Rowlette, independents welcome
Dimensions: Studio 28 x 24, control room 18 x 16
Mixing Consoles: Trident Series 75 28 x 24
Audio Recorders: Otari MX-80 24-track, Otari MTR-12 2-track, Otari MX-5050 MKIII-2 2-track
Noise Reduction Equipment: dbx
Synchronization Systems: MIDI sync
Echo, Reverb, & Delay Systems: Lexicon, Yamaha, Roland, DeltaLab, Ursa Major digital reverb and effects, also plate reverb
Other Outboard Equipment: UREI, dbx, Barcus-Berry Electronics, Symatrix, US Audio signal processing
Microphones: Neumann, AKG, Sennheiser, Shure, Beyer, E-V, RCA, Sony, PZM Over 50 in all
Monitor Amplifiers: Hafler, BGW, Yamaha
Monitor Speakers: Eastern Acoustic Works, JBL, Auratone
Musical Instruments: Steinway 7' grand piano, Sonor drums, Yamaha DX7, Akai S900 digital sampler, Simmons SDS7 digital drums, Simmons MTM MIDI interface, Oberheim DMX MIDI drum machine, Oberheim Prommer and more
Rates: \$40/hr for 24-track recording. Call for more info

[24+] MADISON STREET SOUND STUDIO
also **REMOTE RECORDING**
17 1/2 N. Madison St.
Waupun, WI 53963
(414) 324-3864
Owner: Nick Kuzulka, Wally Messner
Studio Manager: Nick Kuzulka

[24+] MASTER VIEW LTD.
also **REMOTE RECORDING**
2236 Jefferson Rd.
Otsego, MI 49078
(616) 694-6322
Owner: Tom Gray, Rich Dekker, Paul Darns
Studio Manager: Tom Gray

[24+] METRO MOBILE LOCATION RECORDING
only REMOTE RECORDING

2009 Johns Dr.
Glenview, IL 60025
(312) 998-6420

Owner: Timothy R Powell

Engineers: Timothy R Powell, Mark Harder, John Nevin
Dimensions: Remote truck 14 x 8
Mixing Consoles: NEOTEK Series II 32 x 24
Audio Recorders: (2) Sony/MCI JH-24 24-track, Fostex E16
16-track, Tascam 40-4 4-track, Scully 280B 2-track, Technics
1500US 2-track, Sony PCM-601, Sony 950 Beta 2-track digital

Cassette Recorders/Duplicators: (10) Aiwa F350 cassette
decks, Nakamichi MR-2

Noise Reduction Equipment: dbx 18 channels, Dolby C 16
channels

Echo, Reverb, & Delay Systems: Yamaha REV7 digital reverb,
Yamaha SPX90 digital processor, Yamaha SPX90II digital
processor, Lexicon PCM60, (3) Yamaha D1500 digital delay,
Effectron ADM 256 digital delay, Sound Workshop 260 reverb.

Other Outboard Equipment: Studio Technologies AN2 simulators,
Aphex Aural Exciter, Burwen 1201 noise reduction, (2)
dbx 160X limiter, (2) dbx 166X limiter, (2) dbx 263X de-esser,
(2) dbx 463X noise gate, (2) US Audio GateX noise gates,
Eventide Omnipressor

Microphones: (8) Shure SM57, (4) Shure SM58, (4) Senn-
heiser MD421, (2) Shure SM81, (2) Neumann KM84, (2) E-V
757, (2) AKG D202, AKG D112, Sony C500, (2) Sony ECM-
377, Beyer M260.

Monitor Amplifiers: Carver 1.0 stereo amp, Crown D-150 A
stereo amp, Rane HC headphone amp.

Monitor Speakers: UREI 809, JBL 4313, Yamaha NS-10, Cali-
bration Standards MDM-4, Fostex RM785, Auratone 5C.

Video Equipment: Toshiba color camera, Sony 1270 color
monitor, Sony Beta SL-950.

Other: Cables, snakes, stands, 48-channel splitter w/trans-
formers, (10) direct boxes, clear-com intercom system.

Rates: Call for quote.

[24+] METRO PRODUCTIONS

also REMOTE RECORDING

705 W. Western Ave.

Urbana, IL 61801

(217) 359-2602

(217) 367-3530

Owner: Jonathan D. Pines

Studio Manager: Jonathan D. Pines

[24+] METRO STUDIOS

200 3rd Ave. N.

Minneapolis, MN 55401

(612) 338-3833

Owner: GMA, Inc., Thomas C. Tucker

Studio Manager: Larry Osterman

[24+] MIDWEST RECORDERS, LTD.

also REMOTE RECORDING

807 W. Oklahoma

Milwaukee, WI 53215

(414) 483-5055

Owner: Rick Singer

Studio Manager: Rick Singer

Engineers: Dave Neitzke

Dimensions: Studio 25 x 22, control room 20 x 18, keyboard
suite 9 x 16

Mixing Consoles: Harrison Raven 32 x 24 w/automation.

Audio Recorders: Otari MTR-90 II 24-track, Otari 5050 BIII
8-track, Otari MTR-10 2-track, Ampex 440C 2-track, Studer/
Revox A-700 2-track, Sony PCM-F1 2-track digital.

Cassette Recorders/Duplicators: Tanberg 3004.

Echo, Reverb, & Delay Systems: Lexicon 224XL, Lexicon 93
Prime Time, ART DR-1, Eventide H910, (3) Ibanez SDR1000+,
(3) SDE 3000

Other Outboard Equipment: dbx 3BX expander, Orban 622B
parametric EQ, Delta Graph EQ-10 graphic, (2) UREI 1176LN
limiters, (2) UREI LA-4 limiters, (2) Audioarts 1200 limiters, (2)
Omni Craft GT-4 noise gates, Furman QN-4A noise gates,
Eventide 2830 Omnipressor, Rocktron RX2H Exciter/Imager/
Hush II

Microphones: Neumann U87s, U47, U67, KM84; AKG: 414s,
452s, D12E, Sennheiser: 441s, 421s, E-V RE20s; Shure
SM58s; Studer SMK-5Us, Crown PZM 30 APGs, RCA 77DX.

Monitor Amplifiers: Crown DC-300A II, Banner 300, Crown
D75

Monitor Speakers: JBL 4435s, JBL 4333, Yamaha NS-10M,
Auratones

Musical Instruments: Kurzweil K250 sampler w/thousands of
sounds, 2 meg MRC w/hard disk and all popular music pro-
grams, an assortment of guitars, amps and basses, Pearl,
Tama, Ludwig, Slingerland drums, LinnDrum.

Video Equipment: Sony Pro Feet 25", JVC CR-6300 U-3/4".

Rates: \$35/hr block.

[24+] MIXED MODES PRODUCTIONS

254 Durand

East Lansing, MI 48823

(517) 351-3340

Owner: Dennis Jablonski

Studio Manager: Deborah Jablonski

[24+] MUSICOL, INC.

also REMOTE RECORDING

780 Oakland Park Ave.

Columbus, OH 43224

(614) 267-3133

Owner: John W. Hull, Boyd Niederlander

[24+] NEW EARTH PRODUCTIONS, INC.

also REMOTE RECORDING

14799 Timberbluff Dr.

St. Louis, MO 63017

(314) 532-6532

Owner: Tom Brooks

Studio Manager: Tom Brooks

[24+] NEW HORIZONS SINGERS RECORDING STUDIOS

7722 W. National Ave.

Milwaukee, WI 53214

(414) 774-8000

Owner: New Horizon Singers

Studio Manager: Rod Liwowski, Phil Polsley

[24+] NUMARK, INC.

51308 Peachtree Ln.

Utica, MI 48087

(313) 739-6940

Owner: John & Mark Antos

Studio Manager: Mark Antos

[24+] THE OLD SCHOOLHOUSE STUDIOS

also REMOTE RECORDING

PO Box 2095

Ann Arbor, MI 48106

(313) 994-9325

Owner: David Henry Weck, Pete Bankert

Studio Manager: Henry Weck

[24+] ON SOUND PRODUCTIONS

RECORDING STUDIOS, INC.

9315 Clifton Rd.

Cleveland, OH 44102

(216) 631-1900

Owner: Pamela Ross

Studio Manager: Pamela Ross

[24+] OPUS RECORDING

4262 Grand Ave.

Gurnee, IL 60031

(312) 336-6787

Owner: Tony Pettinato

Studio Manager: Fred Bergstrom

Engineers: Tony Pettinato, Al Pangeianan, Perry Miller.

Dimensions: Room 1: studio 50 x 30, control room 21 x 23.
Room 2: control room 17 x 16.

Mixing Consoles: TAC Matchless 26 x 24, TAC Scorpion 24 x
16.

Audio Recorders: Otari MX-80 24-track, Otari MX-70 16-
track, Otari MTR-12 2-track, Otari BII 2-track, Sony APR-5000
2-track, TEAC A-6600 2-track.

Cassette Recorders/Duplicators: (2) Nakamichi MR-1, (2)
Nakamichi MR-2, (2) Tascam 122.

Noise Reduction Equipment: (2) dbx 150.

Synchronization Systems: Adams-Smith Zeta-3, Audio Kinet-
ics Pacer, Fostex 4035/4035.

Echo, Reverb, & Delay Systems: (3) Lexicon PCM60, Korg
DRV-2000, (3) Lexicon PCM41, Lexicon PCM70, AKG ADR-
68K, Eventide 910, Lexicon 200, Moog Phaser, Korg SDD-
1200

Other Outboard Equipment: Aphex Type C, Barcus-Berry Elec-
tronics 802, JL Cooper MIDImute, (2) Neve limiter/compres-
sors, (2) UREI LA-4 comp/limiters, dbx 166 comp/limiter/gate,
(2) dbx 903 comp/limiters, (4) dbx 904 noise gates, (2) dbx
905 parametric EQs, Ibanez HD-1000 harmonizer.

Microphones: (2) AKG C12, AKG Tube, (5) AKG 451, Beyer
740, (3) Beyer 710 series, Beyer M-88, (2) E-V PL20, (3)
Sennheiser 421, (7) Sennheiser 441, RCA DX-77, (2) AKG
414.

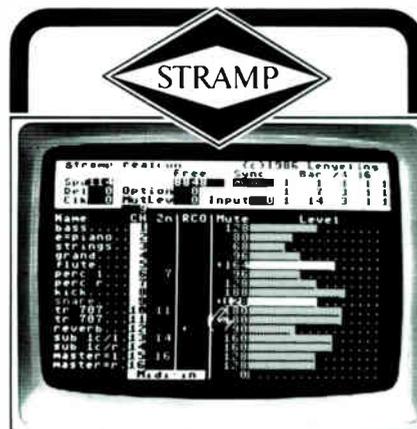
Monitor Amplifiers: Ramsa 9220, Crown D-300, Soundcraft
7501.

Monitor Speakers: (2) Gauss 3588 co-ax, (2) Fostex 780, (2)
E-V Sentry 100, (2) Auratone 5-C.

Musical Instruments: Yamaha 7"4" studio grand, Ludwig
drums w/Zildjian cymbals, Korg 800 keyboard, Oberheim
DMX drum machine, Roland DDR-30 digital drums, Ham-
mond B-3, Fender P-Bass, set of congas.

Video Equipment: JVC 1/2" editing system, (2) NEC monitors,
(2) JVC monitors.

Rates: \$35-\$70/hr



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[24+] PAC-3 RECORDING COMPANY, INC.
also REMOTE RECORDING
7106 Greenfield Rd.
Dearborn, MI 48126
(313) 581-0520
Owner: Richard Becker
Studio Manager: Richard Becker

[24+] PANDEMIC MUSIC, INC.
also REMOTE RECORDING
3546 Briggs Blvd. NE
Grand Rapids, MI 49505
(616) 361-0733
Owner: Fred Baker, Billy Vits
Studio Manager: Fred Baker, Billy Vits

[24+] PARAGON RECORDING STUDIOS, INC.
also REMOTE RECORDING
9 E. Huron St.
Chicago, IL 60611
(312) 266-0075
Owner: Marty Feldman
Studio Manager: Nancy Gardner
Extras & Direction: In 1987, Paragon Recording Studios celebrates its 20th anniversary as specialists for the international audio recording community with over 30 gold and platinum records. Paragon Recording provides its clients with the finest recording services, an environment conducive to creativity and engineers and personnel committed to service. Thank you to all of our clients who have contributed to our success.

[24+] PEPPERMINT PRODUCTIONS CORP.
also REMOTE RECORDING
803 E. Indianola Ave.
Youngstown, OH 44502
(216) 783-2222
Owner: Gary Rhamy
Studio Manager: Michelle Galathris
Engineers: Gary Rhamy, Richard Willmitch
Dimensions: Room A: studio 40 x 30 x 15 ceiling, control room 10 x 35 Room B: studio 20 x 15, control room 10 x 15
Mixing Consoles: Custom console, utilizing the best individual components by UREI, API, Altec and Modular Audio Products includes 3-band parametric and conventional EQs, built-in compressors, limiters and noise gates.
Audio Recorders: Scully 24-track on professional 2" tape format, Ampex 1/2" and 1/4" machines, Technics 1500 2-track, Pioneer 1/4-track, 30 ips mastering for no noise recording.
Cassette Recorders/Duplicators: Pioneer, Marantz
Echo, Reverb, & Delay Systems: Eventide Harmonizer, DeltaLab, Loft and Fostex digital delays, acoustic echo chamber, tape echo, Lexicon digital reverb.
Other Outboard Equipment: Variable speed on all machines, dbx and API comp/limiters, EXR Exciter, graphic EQ, flanging and phasing
Microphones: The finest and most desired microphones by Neumann, Telefunken, Shure, E-V, Sennheiser, Sony, RCA, AKG, Crown P2M
Monitor Amplifiers: Crown, McIntosh
Monitor Speakers: JBL 4320, Altec Voice of the Theatre, Sennheiser and Koss headphones
Musical Instruments: Steinway grand piano, Hammond C-3 organ w/Leslie, string ensemble, tympani, xylophone, bells, percussion instruments, Fender Rhodes
Video Equipment: Moviola flat bed editing table, Canon 16mm camera w/crystal sync, Nagra tape recorder, Magna-Sync dubbers, Betamax VTR w/time code readout, lighting and crew, original music sound tracks.
Rates: Available upon request.

[24+] PINEBROOK RECORDING STUDIOS, INC.
also REMOTE RECORDING
PO Box 146, State Rd. #9 S.
Alexandria, IN 46001
(317) 724-7721
Owner: WJ Gauthier, R.L. Hammel, E.L. Daniels
Studio Manager: Randy Hammel

[24+] THE POWER PLANT RECORDING STUDIO
PO Box 477
Flint, MI 48501
(313) 789-2504
(313) 695-0054
Owner: Darryl E. Davis, Curtis Hayes Jr
Studio Manager: Curtis Hayes

[24+] PRODUCERS COLOR SERVICE INC.
24242 Northwestern Hwy.
Southfield, MI 48075
(313) 352-5353
Owner: Producers Color Service
Studio Manager: Bruce Calmer
Engineers: Bob Meloche, Jay Scott, Ben Thomas, Jim Vitti, Bryan Gold, Tom Bray
Dimensions: AP1 studio 7 5 x 12 x 9, control room 21 5 x 17 x

NORTH CENTRAL 24+ TRACK STUDIOS



PRODUCERS COLOR SERVICE INC.
Southfield, MI

10. AP2: studio 8 5 x 15 x 10, control room 21 x 17 5 x 10.
Mixing Consoles: AP1 Solid State Logic 4040B 24 x 24, AP2: Solid State Logic 6000E 32 x 32
Audio Recorders: AP1 Otari MTR-9011 24-track, Ampex ATR*00 4-1/2-track, MCI JH-110B 2-1/1-track, ITC Series 99 cart machine, AP2 Otari MTR-9011 24-track, Ampex MM1200 24-track, Otari MTR-20 4-1/2-track Otari MTR-12-2 2-track w/center TC.
Cassette Recorders/Duplicators: Technics M253X deck, Sony TC-F302 deck, (2) Sony CDP-203 compact disc players.
Noise Reduction Equipment: AP1 dbx Type 1, Dolby A, AP2: dbx type 1.
Synchronization Systems: Lynx TimeLine synchronizers in both rooms.
Echo, Reverb, & Delay Systems: AP1 Lexicon 224, DeltaLab DL-2 AP2: Klark-Teknik DN-780, Ursula Major MSP-126
Other Outboard Equipment: Eventide H949 Harmonizer, Aphex B Aural Exciter, Aphex Compellor, Symetrix 511, Orban 536A de-esser, Magna-Tech 16 and 35 rec./repro mag deck, Technics SL-330 turntable, Sound Ideas 1000 & 2000 Series CD SFX library, (2) Gentner SPH-3 phone systems
Microphones: AKG (The Tube), AKG C414EB, Neumann U87, Beyer MCE-5
Monitor Amplifiers: AP1: UREI 6500 Crown ID-75, AP2: Haller P500, Haller P-225
Monitor Speakers: AP1: UREI 815, Auratone, AP2: UREI 813, Yamaha NS-10
Video Equipment: Mix-to-picture on Sony 3VH-2000, Sony 72" hi-res projection and Sony 19" Profel, complete video production and post-production facilities on premises
Rates: \$245/hr. record, \$275/hr. mix-to-pix

[24+] P.S. RECORDING STUDIOS
323 E. 23rd
Chicago, IL 60616
(312) 225-2110
Owner: Paul Serrano

[24+] PUMPKIN RECORDING STUDIOS INC.
6737 W. 95th
Oak Lawn, IL 60453
(312) 598-3045
Owner: Gary Loizzo
Studio Manager: Gary Loizzo

[24+] PYRAMID AUDIO, INC.
450 W. Taft Dr.
South Holland, IL 60473
(312) 339-8014
Owner: Rob Wukelich
Studio Manager: Rob Wukelich

[24+] QCA RECORDING STUDIO
2832 Spring Grove Ave.
Cincinnati, OH 45225
(513) 681-8400
Owner: E.J. Bosken
Studio Manager: Amber E. Hines

[24+] QUALITY MEDIA PRODUCTIONS
also REMOTE RECORDING
1425 W. Whittaker
Salem, IL 62881
(618) 548-2031
Owner: Doug Cosby, Keith Bailey
Studio Manager: Doug Cosby

[24+] RAINBOW BRIDGE 24TK RECORDING
also REMOTE RECORDING
117 W. Rockland Rd., PO Box 615
Libertyville, IL 60048
(312) 362-4060
Studio Manager: Perry Johnson

[24+] RAINBOW RECORDING STUDIOS INC.—RAINBOW PRODUCTIONS OMAHA
also REMOTE RECORDING
2322 S. 64th Ave.
Omaha, NE 68106
(402) 554-0123
Owner: Nils Anders Erickson
Studio Manager: Paul Jonas

[24+] RCL RECORDING
900 Western Ave.
Glen Ellyn, IL 60137
(312) 469-4149
Owner: Robert Lawton
Studio Manager: Connie Lawton



THE RECORDING WORKSHOP
Chillicothe, OH

[24+] THE RECORDING WORKSHOP
455 Massieville Rd.
Chillicothe, OH 45601
(614) 663-2544
Owner: Jim Rosebrook
Studio Manager: Brian Stritenberger
Engineers: Dave Egan, Jeff Ling, Dan Smart, Lisa Michael, Rusty D'Agnoletto, Tom Johnson, Jim Wilson, Jeff Redefler, Rob Brumfiel, Tony Cottrill, Marty Van, Eric Brown, Rob Gough, Chris Breck, Larry Pester, Darlene Hall
Dimensions: Room A: studio 15 x 12, control room 18 x 12, Room B: control room 11 x 8, Room C: studio 30 x 40, control room 30 x 20 Room D: studio 15 x 20, control room 15 x 17, Room E: studio 30 x 35, control room 30 x 27 Room F: studio 25 x 24, control room 15 x 16
Mixing Consoles: (2) MCI 636 36 x 36, Sound Workshop Series 30 28 x 28, (2) TAC Scorpion 16 x 16, Sound Workshop Logex 20 x 8
Audio Recorders: (3) MCI JH-24 24-track, (2) Otari MX-70 16-track, Otari Mark III 8-track, MCI JH-110 2-track, (12) Otari 5050 2-track, Sony PCM-501, (2) Sanyo 1900 Hi-fi VCR
Cassette Recorders/Duplicators: (3) Nakamichi, (4) Tascam.
Synchronization Systems: Fostex 4030/4035
Echo, Reverb, & Delay Systems: Lexicon 224X, Klark-Teknik DN78, Lexicon PCM70, Lexicon PCM60, Lexicon PCM41, Yamaha SPX90, Eventide Harmonizer
Other Outboard Equipment: dbx, UREI, Pultec, Orban, Scholz, Galax, Aphex, Rane, Orban, Teletronix.
Microphones: All major manufacturers and models.
Monitor Amplifiers: Crown
Monitor Speakers: UREI, JBL, Fostex, Yamaha
Musical Instruments: Yamaha 77" conservatory grand piano, Yamaha KX88, Yamaha 416, Yamaha RX11, Yamaha DX7, Ensoniq ESQ1, Roland RD1000, Roland MKS20
Other MIDI Equipment: Atari 130, Atari 520, Atari 1040 computers, Hybrid Arts MIDI track ST/SMPT, Hybrid Arts DX Droid, 360 Systems MIDI patcher
Video Equipment: JVC VEP-2 video editing
Rates: Available upon request

Extras & Direction: The Recording Workshop is the leading educational institution featuring a "hands-on" approach towards learning the recording arts. Our training programs cover all aspects involved in the operation of state-of-the-art professional recording equipment. In-studio experience in music production is a prime feature of our curriculum, as well as classes in commercial production, audio-for-video and MIDI application. Our programs also feature training in studio maintenance and troubleshooting, including "hands-on" experience in tape machine alignment. No previous experience is required to participate in the Workshop training. Classes are conveniently offered seven times annually, and on-campus housing is available. On the road and in the studio, Workshop graduates are working with such artists as Bon Jovi, Whitney Houston, Miami Sound Machine, REO Speedwagon and many other of today's biggest talents. Call today for a free brochure. Find out how we can help you get started and get ahead.

[24+] **THE REEL THING INC.**
3133 Chester Ave.
Cleveland, OH 44114
(216) 696-3133
Owner: James Silver
Studio Manager: Brenda Dotson



REFRAZE RECORDING STUDIO
Dayton, OH

[24+] **REFRAZE RECORDING STUDIO**
2727 Gaylord Ave.
Dayton, OH 45419
(513) 298-2727
Owner: Mark & Jane Frazee
Studio Manager: Mark Frazee
Engineers: Mark Frazee, Gary King, independents
Dimensions: Studio 38 x 34 x 20, iso room 11 x 11, drum booth 9 x 10, 20' ceiling, control room 18 x 21 LEDE acoustics
Mixing Consoles: Trident Series 80B 30 x 24 x 24, disk mix automation by Digital Creations
Audio Recorders: Otari MTR-90 24-track, Otari MTR-121IC 2-track 1/4", Otari MTR-12H 2-track 1/2", Tascam 25-2 2-track 1/4"
Cassette Recorders/Duplicators: (2) Sony, Tascam 122, Nakamichi, Denon
Echo, Reverb, & Delay Systems: Quantec Room Simulator, Lexicon 200 digital reverb (6 programs), Lexicon PCM60 digital reverb, Orban Parasound 111B reverb, Lexicon Prime Time (w/extended memory), Lexicon PCM41s, Eventide Harmonizer 949 (2/extended memory), Lexicon PCM41s, Eventide Harmonizer 949 (w/extended memory), DeltaLab Harmonicompiler, MXR digital delay, AMS RMX 16 digital reverb system, ADM 1024 Effectron II, Yamaha SPX90, DeltaLab ADM 1024 delay
Other Outboard Equipment: (2) UREI 1176 peak limiters, (2) dbx 160 comp/limiters, Valley Audio Gain Brain, Kepex, Klark-Teknik DN 30/30 graphic EQ, UREI 546 dual parametric EQ, dbx 160X comp/limiter, (2) dbx 166 dynamics processors, Orban 424A comp/limiter/gate/de-esser (stereo), Aphex Type B Aural Exciter
Microphones: Neumann U87s, U48s, Sennheiser 421s, 441, AKG D12Es, 451s (w/ck 1 modules), 414, 224e, Crown PZM; Beyer 101s, 201s, Shure SM57s, SM58s, E-V RE20, Audio-Technica 836, Canare cables
Monitor Amplifiers: UREI 6500, Crown DC-300A, Crown D150A, Crown D60
Monitor Speakers: UREI 813B, JBL 4313, Auratone 5C, Hitachi HS-01, Yamaha NS-10 monitors, E-V Sentry 100, (6) AKG 240 headphones
Musical Instruments: Fender Rhodes customized, Baldwin 9' grand piano, Ludwig drums, Zildjian cymbals, Sound City 120 amp, Ampeg and Yamaha bass amp, Ludwig tympani, Music Man bass, Rickenbacker 4001 bass, Rickenbacker 12-string, Martin acoustics, Hagstrom Swede guitar, Gibson guitars, most keyboards available on request Linn and DX drum machines available, Simmons requests, Yamaha DX71FD key-

board, Roland S-50 digital sampler keyboard, E-mu SP-1200 sampling percussion system w/turbo, DX drum machine (w/MIDI), Baldwin 9' concert grand piano, Fender bass, Rickenbacker bass, Fender guitars, Ovation acoustic, Martin acoustic, Fender twin reverb, Ampeg and Yamaha bass amps, percussion, Roland DDR-30 digital drums, L P congas, Ludwig marimba, Premier snare drum, Rat distortion pedal.
Video Equipment: 1/2" Beta and VHS recorders, multiple cameras available
Rates: Very competitive, please call for quote. Lock-outs and block rates available

[24+] **REMUS RECORDERS**
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Chicago, IL 60630
(312) 283-1477
Owner: Madonna M. Remus
Studio Manager: John McIvan

[24+] **RIVER CITY STUDIOS, LTD.**
also **REMOTE RECORDING**
147 Goodrich SE
Grand Rapids, MI 49506
Owner: Corporate
Studio Manager: Stephen Thrall

[24+] **ROYAL RECORDERS**
Americana Resort, Hwy. 50
Lake Geneva, WI 53147
(414) 248-9100
Owner: Ronald Fajerstein, Robert Brigham
Studio Manager: Helen Tyler
Engineers: Phil Bonanno, Jim Bartz, Rich Denhart, Dan Harjung
Dimensions: Studio 35 x 24, control room 21 x 20
Mixing Consoles: SSL 4072E 80 x 80 w/primary and Total Recall automation
Audio Recorders: (2) Studer A800 MKIII 24-track, (2) Mitsubishi X-850 32-track digital, (2) Mitsubishi X-86 2-track digital, Studer A80 2-track 1/2", Studer A80 2-track 1/4", Sony 1/4" mono (w/stereo repro)
Cassette Recorders/Duplicators: (3) Revox B-215 cassette machines
Noise Reduction Equipment: (2) Dolby SR, (2) Dolby A
Synchronization Systems: Adams-Smith 2600 synchronizer



ROYAL RECORDERS
Lake Geneva, WI

w/remcte slave controller
Echo, Reverb, & Delay Systems: (2) AMS RMX16, EMT 140 (tube type), Ecoplate 1, Lexicon 224XL, Lexicon 224, Lexicon 200, (2) Yamaha REV7, (2) AMS DMX 15-80s, Lexicon Super Prime Time DDL, Lexicon Prime Time II DDL
Other Outboard Equipment: (8) Focusrite ISA 110 equalizers, (2) dbx 160 limiters, (4) dbx 160X limiters, (2) UREI 1176, (2) UREI LA-4A limiters, (5) Teletronix LA-2A limiters, (8) Drawmer DS-201 dual noise gates, (6) Pultec EQH2 EQs, (2) GML stereo parametric EQs, (4) Orban 622B parametric EQs
Microphones: AKG 250 (tube), (5) 451E, (7) C-12, (4) C-12A, (2) 414 (2) C-24, D-12, D112, D-25, D-707, Neumann (2) U47 (tube), (3) U87, (2) M269 (tube), (3) M250 (tube), (2) M249 (tube), U67, (2) 253, (2) 254, Shure (7) SM57, (4) SM81, (2) hotgun 451, SM7, SM5A, 555, SM59, Sennheiser (5) 421, (2) MD409, (3) Profl-Power, 441, Telefunken M251 (tube), Sony (2) C37-A, C-500, (4) Studer SKM5, Beyer M101, M88, MC74C (2) E-V RE20
Monitor Amplifiers: Times One, Yamaha 2002, Crown DC300, '50, 60

—CONTINUED ON NEXT PAGE

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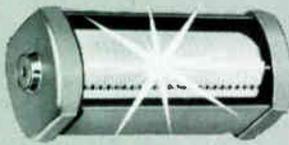
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The Mix Directory of SOUTHEAST RECORDING STUDIOS

will be published in MARCH, 1988. Don't miss this opportunity to have your FREE listing appear in over 44,000 copies of *Mix*! To receive a questionnaire or more information, call the Directories Dept. at (415) 843-7901.

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Source: Publishers' BPA circulation statement for six months ending June, 1987. (Average of qualified and non-qualified circulation.)

NORTH CENTRAL 24+ TRACK STUDIOS

—CONTINUED FROM PAGE 127

Monitor Speakers: Lakeside 2-way custom, JBL 4411, Yamaha NS-10M, Yamaha NS-10M-studio, Fostex RP80, Auratone, Visonik David 9000

Musical Instruments: Emulator II+, Roland Super JX10/PG800, Yamaha DX7, Fairlight CMI IIX, Yamaha C7 grand piano, Hammond B-3 organ w/Leslie, Minimoog/Memory moog, Emulator SP-12 drum machine, Linn II, Trace Elliot bass rig, Marshall JMP 100 100-watt and 4 x 12 cab, Roland JC120, Sonor 5-piece drum kit

Other MIDI Equipment: Yamaha TX816, Roland SBX80

Video Equipment: Complete audio-for-video sweetening utilizing Sony 3/4"

Other: (2) Wendel drum triggers, Fender Rhodes Suitcase 88, (9) API 550A EQs, Eventide Harmonizer, (2) Yamaha SPX90. Rates: Upon request.

Extras & Direction: Located at Americana Lake Geneva Resort, 90 minutes from Chicago, complete accommodations are available along with the following recreational facilities: two world class golf courses, horseback riding, outdoor/indoor tennis courts, boating, cycling, indoor/outdoor pools, racquetball, nautilus room, sauna, steam bath, tanning beds, skiing, an airport and much more. Recent clients include: T'Pau, The Bodeans, The Bears, Adrian Belew, Daryl Stuermer, Cliff Johnson, Gavin Christopher, Survivor

[24+] RUBINO'S SOUND STUDIOS

also REMOTE RECORDING

2524 Portage Mall

Portage, IN 46368

(219) 762-3169

Owner: James Rubino, Jr

Studio Manager: John Muzyka

[24+] SCHARREN STUDIOS

6591 Pilioid Rd.

Holland, OH 43528

(419) 866-1065

Owner: Steve Scharren

Studio Manager: Steve Scharren

Engineers: Steve Scharren, Tim Story

Dimensions: Studio 24 x 15, drum booth 10 x 7, "live" room 15 x 12, control room 15 x 10.

Mixing Consoles: NEOTEK 32 x 24 x 8 w/automation, Tascam Model 35

Audio Recorders: Soundcraft 762 MKIII 24-track w/delux auto locator, Nakamichi DMP-100/Sony Beta digital mastering set up, Fostex Series 80 8-track open reel, Tascam 80-8 8-track 1/2", Tascam 85-16B 16-track w/dbx, Otari 5050 BII 2-track, Tascam 42 2-track, Sony TCD-5M 2-track, Revox B77 2-track Cassette Recorders/Duplicators: Nakamichi MR-1, Nakamichi MR-2, Aiwa high-speed cassette duplicators, Sony K777 2-track cassette deck, Nakamichi 500 2-track cassette deck. Noise Reduction Equipment: dbx 180s

Synchronization Systems: Fostex 4000 Series complete system.

Echo, Reverb, & Delay Systems: DeltaLab DL-4, Lexicon PCM60, Ecoplate II, Lexicon PCM70 digital effects processor, MIDverb, SPX90s, DEP-5, etc.

Other Outboard Equipment: Aphex Aural Exciter, Aphex Compeller, Symetrix SG-200 gate, Symetrix 501 compressor, Sundholm stereo EQ w/parametric notch, filters, TR707 and 909 drum computers, LinnDrum, dbx 150, dbx 224, (2) dbx 160X comp/limiters, 3BX, Ibanez DM2000 programmable digital delay, Ibanez MSP 1000 comp/EQ/notch filter, DeltaLab DL5 harmonizer, Studio Technologies stereo simulator, Rockman, Drumulator, Boss pedals (all types), Gatex gate, dbx 3BX, Barcus-Berry Electronics, dbx 900 racks

Microphones: AKG: BT 330, 224E, D12E, 414s, E-V PL 77.76, BK-1, RE20, Beyer M101, Sony ECM-22, Crown PZMs, AKG C-24 stereo tube mic, Neumann U87As, and many more

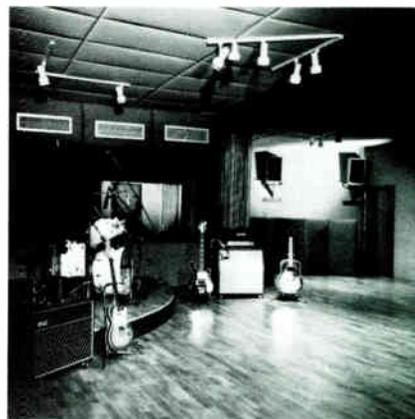
Monitor Amplifiers: Haller DH 500, Crown D-150

Monitor Speakers: (2) Boston Acoustics A-400, (2) Realistic Minimus-11, (2) JBL 4411, Auratone 5Cs, Yamaha NS-10s

Musical Instruments: Full 10-piece set of studio drums, Baldwin piano, (3) Ovation acoustic/electric guitars, G&L 2000 electric bass, Baldwin "Ode" Banjo, G&L and Kramer electric guitars, Les Paul custom, Fender amps, Chet Atkins electric classical guitar, Gibson ES 335, Memorymoog, DW6000, DX7, (2) Akai S900 samplers, plus just about any other instrument available upon request, including some of the finest studio musicians in the Midwest, Emulator II+ w/over 300 disks of factory and custom samples, Roland RD-1000 digital piano, Roland Planet-S, complete set of digital/MIDI drums using Tama pads, Roland Octapad and the Emulator and/or 707 for the best drum sounds around. Roland D-50, E-mu III coming this winter!

Other MIDI Equipment: Various sequencers including QX5, MC500, etc

Video Equipment: Sony 3/4" decks, NEC and Sony 1/2" decks, Mitsubishi Pro Cam-corder Rates. Call for quotes!



SEAGRAPE RECORDING STUDIOS
Chicago, IL

[24+] SEAGRAPE RECORDING STUDIOS

also REMOTE RECORDING

5740 N. Western Ave.

Chicago, IL 60659

(312) 784-0773

Owner: Tom Haban, Mike Konopka

Studio Manager: Audrey Haban

Engineers: Tom Haban, Mike Konopka, Herb Fields, Loudon Fass

Dimensions: Room 1 studio 50 x 25, control room 20 x 20, Room 2 studio 15 x 12, control room 12 x 7

Mixing Consoles: NEOTEK Series III 50 x 24, NEOTEK Series II 16 x 16

Audio Recorders: MCI JH-24 24-track, MCI JH-16 16-track, Otari MX 5050 2-track, Sony PCM-F1 2-track digital, Otari MTR-10 2-track 1/2" and 1/4"

Cassette Recorders/Duplicators: Otari DP 4050 cassette duplicator, Nakamichi 700 Nakamichi BX 100

Synchronization Systems: MCI JH-48 SMPTE auto-lock synchronizer provides 40-track audio recording and video sweetening w/stave

Echo, Reverb, & Delay Systems: Lexicon 200, Lexicon Super Prime Time, Lexicon 60, Eventide 949, MICMIX 515, TC-2290, Ecoplate II, MXR digital delay, MICMIX 305, MICMIX 121

Other Outboard Equipment: UREI 1176, Commodore 64 w/MIDI software, (2) Tapco Graphics, (2) Symetrix gates and limiters 2 channels, dbx 166 limiter, Aphex Type B Aural Exciter, Mini-Doc, Omni Craft gates 4 channels

Microphones: (3) Neumann U87, (2) Neumann U47, (2) Neumann KM84, (4) Sennheiser MD-421-U-5, RCA 44, (2) Crown PZM-30GP13, (2) Crown PX-18B, (4) AKG C451EB, (10) Shure (various models), (7) E-V (various models), Beyer M160N(c).

Monitor Amplifiers: (2) McIntosh MC2205

Monitor Speakers: (2) JBL 4430, (2) Yamaha NS-10, (2) JBL 4311, (2) Auratone 5C sound cubes, (2) B&W 801, (2) KLH28.

Musical Instruments: Yamaha CP70 piano, Hammond B-3, Mirage digital sampling keyboard, Casio CZ-101 keyboard, Oberheim DMX digital drum machine, Roland GR-300 guitar synthesizer, Roland Alpha Juno 1 keyboard synthesizer, Singlerland drum set, (2) Moog and Taurus bass pedals, St. Blues guitar, (3) Gibson guitars, (2) Fender guitars Harmony guitar.

Other MIDI Equipment: Syntech Studio I sequencing software w/Commodore C-64 computer and disk drive

Other: Yamaha SPX90, 6710 Vocoder, TEAC A2300 1/4-track recorder, Heath real time analyzer, (2) Roland RE-301 Space Echoes

Rates: 40-track \$100/hr., 24-track \$80/hr., 16-track \$65/hr., 2-track \$40/hr.

Extras & Direction: Seagrape is designed with fully floated walls and floors featuring slat resonators and broad band diffusers. No extra charge for use of any equipment or effects R/R and cassette high speed duplicating and packaging.

Nestled along the western shore of Lake Michigan, architect Robert Jones has created this stunning masterpiece. Located just 10 minutes from Chicago's famed Magnificent Mile and walking distance from an ample supply of moderately priced hotel rooms, Seagrape is the perfect studio for your project in today's era of shrinking budgets.

Other: Yamaha SPX90, 6710 Vocoder, TEAC A2300 1/4-track recorder, Heath real time analyzer, (2) Roland RE-301 Space Echoes

Rates: 40-track \$100/hr., 24-track \$80/hr., 16-track \$65/hr., 2-track \$40/hr.

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[24+] SELLER SOUND STUDIO INC.

5014 Peekskill Dr.

Sterling Heights, MI 48310

(313) 264-7500

Owner: Gary Spanola



Second in a Series

A Session with Murray Allen

What can you say about Murray Allen? Studio musician, master mixer, sound designer, digital disciple, raconteur, and a pivotal figure in the Chicago music and recording scene since the end of World War II. Long-time president of **Universal Recording Corporation**, he helped build the company into what he calls "the largest one-stop audio service in the country." Here are a few pithy observations from this voluble, outspoken, witty, and colorful walking encyclopedia of the recording industry.

On good sound

"Some people say, why have good sound? It's only a three inch speaker." Well, they're just lying to themselves because you can hear the difference on a two inch speaker. Just think how small a Walkman speaker is. You can hear the clarity or the distortion of the sound and everything else."

On working with ad agencies

"The front office is extremely important because there's so much service the client requires. It's a combination of engineering and the front office, not one or the other."

On digital recording

Digital was the start of the true recording business. Everything else was just fooling around. Analog not only reproduces the sound, but reproduces all the flaws of the storage medium as well--noise, dropouts, phase distortion... . In digital, when you reproduce the sound, you leave all the flaws of the storage device behind."

On the opponents of digital recording

"These are the people infected with 'Voodoo' ideas. They're people who are using a defense mechanism because they don't own a digital machine."

On choosing a supplier

"We want somebody who can deliver the product we want when we want it, and at competitive prices. We like suppliers who have a good relationship with their sources, so if we order equipment, we know we can get it. We have a good reputation and the people we deal with must have a good reputation too."

On AudioLine

"We want somebody who's professional and does their job as well as we do ours. I will say this about AudioLine. This is the most professional supplier I've ever worked with. They service me like I service my clients."

On working

"At one time, I used to mix sound during the day, play clarinet at a club until midnight, and then go back to Universal to edit tape. Life is too short to sleep."

On the future

"The future is very bright. Technology hasn't reached a plateau, it's just beginning."

AudioLine
AUDIOLINE, INC.

Our business is expertise

2323 Bluemound Road Waukesha, WI 53186 414/785-9166 or 312/449-9166

[24+] SEPTEMBER RECORDING

5210 E. 65th St.
Indianapolis, IN 46220
(317) 842-4955
Owner: John Strong, Rich Ains, Bob Airt
Studio Manager: Bill Mallers

[24+] 74TH ST. RECORDING STUDIO

5250 W. 74th St.
Minneapolis, MN 55435
(612) 835-9952
Owner: Paul Martinson, Scott Rvvard, Tom Lecher John Volinkaty, Don Bajus, Mike Jones
Studio Manager: Paul Martinson

[24+] SOLID SOUND INC.

also **REMOTE RECORDING**
1289 N. Dixboro Rd.
Ann Arbor, MI 48105
(313) 662-0667
Owner: R.G. Martens
Studio Manager: R.G. Martens

[24+] SOLID SOUND RECORDING STUDIO, INC.

also **REMOTE RECORDING**
2400 W. Hassell Rd., Ste. 430
Hoffman Estates, IL 60195
(312) 882-7446
Owner: Judd Sager
Studio Manager: John Townner, Phil Bonnet

[24+] SOUND FACTORY

302 NW 8th St.
Willmar, MN 56201
(612) 235-9104
Owner: Chet Prewie, Lowell Lundstrom, David Eichler
Studio Manager: Chet Prewie

[24+] THE SOUND FACTORY

also **REMOTE RECORDING**
14804 W. 117 St.
Olathe, KS 66062
(913) 829-2727
Owner: Mike Elrod, Gary West
Studio Manager: Gary West
Engineers: Warren Rhoades, Bill McWillie, Crayge Lindsay, Gary West.

Dimensions: Room 1: studio 28 x 30, control room 28 x 28.
Room 2: studio 5 x 10, control room 12 x 14.
Mixing Consoles: Trident 80-B 30 x 24, Tascam M-520 20 x 8,
Tascam M-208 8 x 4.

Audio Recorders: Sony/MCI JH-24 24-track, 3M M79 24-track, 3M M79 2-track, Studer A810 2-track, Studer B-62 2-track, Tascam MS-16 16-track.

Synchronization Systems: Adams-Smith Zeta Three.
Echo, Reverb, & Delay Systems: Lexicon 224X, Lexicon Prime Time 93 DDL, (2) Yamaha REV7, (2) Yamaha SPX90, Eventide 1745 DDL, (2) Roland SDE-2000 DDL, (2) Alesis MIDverb, Eventide 949 Harmonizer, Eventide Instant Flanger, UREI Cooper Time Cube.

Other Outboard Equipment: (2) Valley People Dyna-Mite, (2) dbx 165 compressors, (2) UREI 1176LN limiters, (2) Spectra Sonics comp/limiters, Audioarts parametric equalizer, (2) Altec 436C tube compressors, (2) Altec 322C tube limiters, (2) MXR pitch transposers, dbx 163 compressor/gate, Orban 2-channel de-esser.

Microphones: Neumann U47 tube, (2) Neumann U64 tube, (2) Neumann KM84, Neumann U87, (2) AKG C-12A tube, (2) AKG 414, (2) AKG 452eb, (2) AKG D-12, (10) Sennheiser 421, Schoeps/Telefunken CM65 tube, (3) Fostex M88RP ribbons and more.

Monitor Amplifiers: Crown SA-2/DC300, (2) Crown D-150, (3) Haller DH-220

Monitor Speakers: JBL 4435, (2) JBL 4411, (2) Yamaha NS-10M, custom JBL Auratones

Musical Instruments: (2) Prophet 2202, Prophet T8, Yamaha TX816, Yamaha DX7, Ensoniq ESQ-1, Emulator I, Yamaha QX1, Yamaha CS80, Yamaha CS40, Oberheim OB-8, Oberheim DSX, Oberheim DMX, Minimoog, Young Chang piano, Rogers drum kit, Simmons MTM MIDI trigger, Simmons pads, Fender/Gibson guitars

Other MIDI Equipment: Macintosh Plus w/Southworth, Jam Box 4, MIDipaint, Performer, Opcode, DX/TX editor librarian, Sound Designer 2000, Soft Synth and more, JL Cooper MIDI-mute 24 channels

Video Equipment: Sony 1800 camera, JVC 3/4" CR-6300 VTR.
Other: Marshall/Fender Dean Markley amps, Rockman.

[24+] SOUND IDEAS PRODUCTIONS

701 Douglas St.
Sioux City, IA 51101
(712) 255-9911
Owner: Kraig Wall
Studio Manager: Kraig Wall

NORTH CENTRAL**24+ TRACK**

STUDIOS

[24+] SOUND IMAGES

602 Main St., Ste. 222
Cincinnati, OH 45202
(513) 241-7475
Owner: Jack Streitmarter
Studio Manager: Terri Leedy

[24+] SOUND IMPRESSIONS, INC.

also **REMOTE RECORDING**
110 River Rd.
Des Plaines, IL 60016
(312) 297-4360
Studio Manager: Bill Holtane, C.M.S.
Engineers: Bob Hartman, John Nevin, Doug Brand.
Dimensions: Room A: studio 525 sq.ft., control room 300 sq.ft.
Room B: studio (isolation room) 225 sq.ft. Room C: studio (narration only) 40 sq.ft., control room 400 sq.ft.
Mixing Consoles: Soundcraft 1600 24 x 8 x 24 x 2, Ramsa WR-8816 12 x 4 x 2, Tascam Model 10 8 x 4.
Audio Recorders: Otari MTR-90 II 24-/16-track, MCI JH-110B 2-track, Scully 280-MS 4-/2-/full-track, Otari MX 5050 2-/full-track, TEAC A3440 4-track, Nagra III full-track, Ampex AG-500 2-track.

Cassette Recorders/Duplicators: Aiwa 3200, Akai GFX71.
Echo, Reverb, & Delay Systems: AKG BX20, Eventide Harmonizer, Eventide flanger, MICMIX XL-121, Lexicon PCM60, Effectron 1024 DDL, Valley People Dyna-Mite.
Other Outboard Equipment: UREI 1176LN limiters, Allison Kepex noise gates, Orban parametric EQ, dbx noise reduction, dbx 163 limiter, Delta graphic EQ, UREI 565, Audiovox Impulsers, Technics turntables, dbx 160X limiters, dbx 263X de-essers.

Microphones: Neumann: U87, U47, AKG: 414EB, C451, Shure: SM57, SM53, SM7, SM33; E-V: 654, 655; Sennheiser: 421, 441

Monitor Amplifiers: McIntosh, Crown, Kenwood, Eddcor.
Monitor Speakers: UREI 811A, JBL 4310, Altec A-7, Auratone, E-V Sentry 505, MDM-4 nearfield.
Musical Instruments: Yamaha grand piano, others available upon request

[24+] SOUND RECORDERS, INC.

also **REMOTE RECORDING**
206 S. 44th St.
Omaha, NE 68131
(402) 553-1164
Owner: John Boyd
Studio Manager: Marty Boyd

[24+] SOUND RECORDERS, INC.

also **REMOTE RECORDING**
3947 State Line
Kansas City, MO 64111
(816) 931-8642
Owner: John Boyd, Ron Dabbs
Studio Manager: Ron Dabbs

[24+] SOUND SUITE STUDIOS

14750 Puritan
Detroit, MI 48227
(313) 273-3000

Owner: John Lewis, Michael Grace
Studio Manager: Garzelle McDonald
Engineers: Mike Brown, Steve King, Tony Ray, Michael Grace.

Dimensions: Room 1: studio 24 x 44, control room 22 x 23.
Room 2: studio 13 x 22, control room 16 x 18. MIDI room: studio 13 x 22, control room 14 x 11.

Mixing Consoles: SSL SL4000E 48 x 32, MCI JH-528B 26 x 32, Yamaha 20 x 16 (MIDI room)

Audio Recorders: Otari MTR-90II 24-track, MCI JH-24 24-track, Otari MTR-12 2-track 1/2", MCI JH-110 2-track 1/2", MCI JH-110 2-track 1/4", Ampex AG440 2-track 1/4"

Cassette Recorders/Duplicators: Studer Revox 2-track, (4) Sony decks.
Noise Reduction Equipment: Dolby MH-24 rack, (2) Dolby 361A, (24) dbx cards

Synchronization Systems: (2) Lynx TimeLine.
Echo, Reverb, & Delay Systems: AMS RMX 1580s, digital delay sampler, Lexicon PCM70 digital processor, EMT 250 digital processor, EMT 240 Gold Foil reverb, Lexicon PCM42 digital delay, (3) Yamaha REV7, (2) Yamaha SPX90, Roland SRV-2000, ART DR1 digital effects, Delta "T" digital delay.

Other Outboard Equipment: (2) UREI 1176LN, (2) UREI LA-3A, (3) Pultec EQP1A, Pultec MEQ5, (4) dbx 160 limiters, Scamp rack, UREI 565T filter, (2) UREI 550 filters, ubx 900 rack, DeltaLab Effectron, (4) Kepex, Motown custom hi/lo filter sys-

tem, (2) Motown custom graphic EQs, (2) dbx 263X de-esser, Eventide Clockworks flanger, EXR Exciter, Goldline RTA, Vocal Stresser.

Microphones: (2) AKG 414, (4) Sennheiser 421, Sennheiser 441, (2) Neumann U87, (2) Neumann U47, (2) Neumann KM86, Neumann KM84, Neumann KM85, AKG 452EB, (2) Altec 195A, Sony 37-P tube, Shure mics and many more.
Monitor Amplifiers: BGW, Haller, Crown, Macintosh
Monitor Speakers: Westlake, Yamaha NS-10, Auratone, Tannoy, JBL 4311, JBL 4313, Altec 604E, UREI 809, anything upon request.

Musical Instruments: Steinway B 7' grand piano, Fender amps, E-mu SP12, Yamaha RX11, Roland Octapad, Roland DDR-30 drum module, LinnDrum, Kurzweil 250, Emulator II+HD, Roland D-50, Roland PG-1000, Roland MKS-80 module, Roland MPG-80 programmer, Matrix 6 module, Oberheim OB-8, Yamaha QX1, Yamaha TX416 rack, PR7 programmer, DX7, Roland 808 drum machine

Other MIDI Equipment: Macintosh 512K computer, JL Cooper MIDI link, SBX80 sync box.

Video Equipment: Complete audio-for-video sweetening, utilizing Sony S-850 3/4" video cassette recorders, TimeLine synchronizers.

Other: Tascam 16-track 1", Fostex.

Rates: On request

[24+] SOUNDSPACE INC.

also **REMOTE RECORDING**
126 Dayton St.
Yellow Springs, OH 45387
(513) 767-7353
Owner: Chris Hertzler

[24+] SOUND TREK, INC.

also **REMOTE RECORDING**
3727 Broadway St.
Kansas City, MO 64111
(816) 931-8735
Owner: Ron Ubel, Grant Schainost, Craig Rehmer
Studio Manager: Ron Ubel

[24+] SOUND TREK STUDIO V

9101 Barton
Overland Park, KS 66214
(913) 541-0302
Owner: Ron Ubel, Grant Schainost, Craig Rettmir
Studio Manager: Craig Rettmir



SPECTRUM SOUND STUDIOS
Saint Clair Shores, MI

[24+] SPECTRUM SOUND STUDIOS

also **REMOTE RECORDING**
29921-29927 Harper
Saint Clair Shores, MI 48082
(313) 776-6622

Owner: Spectrum Sound Studios, Inc.
Studio Manager: Tamara Kornak, Kal Sands
Engineers: Kal Sands, Steve Smith, Al Rude, Terry Connell, independents

Dimensions: Room 1(A): studio 22 x 17 x 10, control room 16 x 10. Room 2(A): studio 14 x 9 x 8. Room 3(B): studio 20 x 18, control room 18 x 12 x 10. Room 4(B): studio 18 x 34.

Mixing Consoles: Harrison MR-4 Series 36 x 24, Tascam Model 15 24 x 16.

Audio Recorders: Otari MTR-90 24-track, Tascam 85-16B 16-track w/dbx N.R., Technics 1520 2-track, Technics 1500 2-track, Tascam 42 2-track, Tascam 35-2 2-track.

Cassette Recorders/Duplicators: Tascam 122 cassette.
Echo, Reverb, & Delay Systems: Lexicon 200 digital reverb, Lexicon PCM70 digital reverb, Roland SRV-2000 digital reverb, Ursa Major Siargate 323 digital reverb, (2) Yamaha SPX90 digital signal processors, Alesis X:TC digital reverb,

Ecoplate II plate reverb, Lexicon Prime Time digital delay, DeltaLab 2048 Super TimeLine, (2) DeltaLab DL-4 TimeLine, DeltaLab DL-2 acoustic computer.

Other Outboard Equipment: UREI 1178 dual limiter, dbx 166 compressor/limiter, Valley People Dyna-Mites, Allison Gain Brains compressor/limiters, Gatequad noise gate, Syntovox 222 vocoder, (2) ATS exciters, MXR pitch transposer, Valley People 440 compressor/limiters.

Microphones: AKG "The Tube", (2) AKG C414EB, AKG C451EB, AKG D12E, AKG D222, (3) Beyer M500 N(C), (2) Crown GP30 PZM, (2) E-V RE20, Neumann U87, (2) Neumann KM86, Neumann KM84, (7) Sennheiser MD-421 U-5, (2) Sennheiser ME-81, (2) Shure SM57, Sony ECM-56F, RCA DX77

Monitor Amplifiers: UREI 6500, (2) UREI 539 room equalizers, GAS Grandson servoloop, (2) Sanyo (MOSFET) plus Series P-55

Monitor Speakers: UREI 813C, E-V Sentry 500, JBL 4312, JBL 4401, Yamaha NS-10M, Auratone 5.

Musical Instruments: Kurzweil K250 w/Macintosh computer and updates, Yamaha DX7 w/CX5M computer, Emulator, Yamaha FBO1 and Yamaha TX81Z FM sound generators, Linn-Drum (MIDI), Roland DDR-30 digital drums, E-mu SP-12, (2) Gretsch drum kits w/20 Paiste and Zildjian cymbals, Roland GR707 guitar and synth, Roland GR-77B bass and synth, Jackson soloist w/Floyd Rose tremolo, Fender Elite strato-caster, Fender Elite "P" bass, Marshall JCM800 amp, Laney AOR pro-tube amp, (2) Ampeg vintage bass amps (1959 and 1962), Gallien-Krueger 250ML stereo amp, Gallien-Krueger 200MB bass amp, (3) Marshall combos, Roland 77 Jazz Chorus

Rates: Upon request.

Extras & Direction: Digital 2-track, Sony 3-track w/SMPTE, fully equipped and air conditioned rehearsal studio, two comfortable lounges with stereo and television, etc. Clients include Michael J. Powell (Regina Belle, Billy Meadows), David Spradley (Renaud), Patti Smith, Lloyd Andlloyd, Kapp Ivory, Drew Abbott, J.R. Walker and the All-Stars, Meade Group, Inc, Geoffrey & Jeffrey, J. Walter Thompson, Bozell Jacobs Kenyon & Eckhardt, etc

[24+] STAR TRAX RECORDING INC.

15602 70th Ct.
Orland Park, IL 60462
(312) 429-2760

Owner: Star Trax Inc
Studio Manager: George Luf

[24+] STOKES SOUND INTERNATIONAL, INC.

also **REMOTE RECORDING**
100 Stokes Ln.
Hudson, OH
(216) 650-1669
Owner: A.J. Stokes, Jr.



STREETERVILLE STUDIOS
Chicago, IL

[24+] STREETERVILLE STUDIOS

161 E. Grand Ave.
Chicago, IL 60611
(312) 644-1666

Owner: James C. Dolan
Studio Manager: Cynthia Rowe

Engineers: 15+ 5 techs, Steve Kucisiel chief engineer
Dimensions: Studios: (1) 47 x 27 x 14, (2) 37 x 27 x 12, (The Suite) 14 x 15 x 12, (5) 14 x 13 x 8.75, (6) 14 x 10 x 8.75, (7) 10 x 10.5 x 8.75; Control rooms: (1) 25 x 16.5 x 11.5, (2) 24 x 18 x 10, (Suite) 21 x 22 x 10, (5) 20 x 16 x 8.75, (6) 17 x 14 x 8.75, (7) 18 x 13.5 x 8.22

Mixing Consoles: SSL 6040E 32 x 32 w/Total Recall, SSL 4048E 32 x 32 w/Total Recall, Neve 8128 48 x 32 x 48 mainframe w/Necam II, (2) Harrison 4032s 32 x 32 x 40 w/Autoset I, Neve 2118 6 x 4 x 2 w/custom discrete circuitry.

Audio Recorders: (3) Otari MTR-90 24-track, (4) MCI JH-24 24-track, (2) Studer A80 4-track, (2) Otari MTR-10 4-track, Otari MTR-12 4-track, (4) Otari MTR-10 2-track, center channel time code, (17) Studer B67 2-track, (2) Studer B77 2-track. **Cassette Recorders/Duplicators:** (4) Studer B710, (6) Nakamichi MR-2.

Echo, Reverb, & Delay Systems: (3) Lexicon 480L w/LARC, (3) Lexicon 224x w/LARC, (5) Lexicon PCM60s, (2) Lexicon "Prime Time" digital delay, Lexicon 92, (3) EMT 140 plate reverb, (2) EMT 240 Gold Foil reverb, (2) MXR digital delay, Eventide 1745 digital delay, (2) Korg SDD-2000 MIDI sampling digital delay units, (3) Yamaha REV7s, (3) Yamaha SPX90s.

Other Outboard Equipment: UREI 962 digital metronome, (4) UREI LA-4 comp/limiter, UREI LA-2A tube type limiter, (6) UREI 1176LN leveling amps, Allison Gain Brains, Kepexes, Orban/Parasound 516C dynamic sibilance controller, Orban 622B parametric equalizer, Pultec EQP-15 equalizer, Lang PEQ-1 program equalizers, White 1/3-octave EQs, EXR Aural Exciters, Aphex Aural Exciters, MXR Pitch Transposer, Eventide Harmonizer.

Microphones: All studios draw upon a microphone collection surpassing 100 in total that encompasses brand new as well as vintage models. Neumann, AKG, B&K, Crown, Beyer, E-V, Sony, Sennheiser, Pearl and Shure among many others.

Monitor Amplifiers: UREI, Hafler, BGW, Crown
Monitor Speakers: All rooms UREI Time Align 813s, 811s and 809s, Yamaha NS-10s, Auratone, Rogers, JBL and Tannoys, others also available

Musical Instruments: Synclavier digital music system (see extras), Steinway 6'4" grand piano, Yamaha 7'4" grand piano, Weber tack piano, Hammond B3 organ w/Leslie, Hohner clavinet, Moog 2034 poly synthesizer, Musser piano, Musser xylophone, Musser "One-Niter" vibes, Ludwig 25"27"28"29" tympanis, Fender Rhodes 88 Mark I, Fender Rhodes 73 Mark I, Ampeg B15N bass amplifier, Ampeg SB12 bass amplifier, (2) Roland cube 60 guitar amplifiers, (2) Sonor Signature drum sets, Emulator II, (3) Yamaha DX7, (2) Roland S-50s, Roland Super Jupiter, Roland Jupiter 6, Korg Poly 61M, Chroma, Ensoniq Mirage sampling keyboard, Ensoniq ESQ-1, Roland MSQ-100 and 700, Roland TR707 and 909, Yamaha RX11, Linn 9000, Casio CZ-101, Kawai K-3, R100.

Video Equipment: Complete audio-for-video services available, (7) Lynx TimeLine time code modules, Synclavier, Adams-Smith 2600 5-machine, Adams-Smith 2600 3-machine synchronizer, Audio Kinetics "Q.Lock" 3.10 synchronizing system, BTX 4600 synchronizer, BTX 4500 controller, Sony/MCI Type C 1" lback machine, Sony BVU-800 3/4" VCR, JVC CR850 3/4" VCR, (6) Sony 5800 VCRs, (2) Sony 5000 VCRs, (2)

SVT RGB 26" video monitors, Sony PVM-1900 TV monitors, (2) Panasonic CT-1910M TV monitor, Conrac 19" monitor.
Rates: Negotiable.

Extras & Direction: Streeterville's people and resources offer world-class audio for all applications, specializing in sound-to-picture services. 48/24-track mixing to 1" video. Retracking 1" and 3/4". Our Synclavier (100 kHz sampling) offers "Digital Foley Stage" plus music and SFX track creation. International and domestic satellite recording services afford limitless opportunities. Custom audio duplication/guaranteed traceable overnight nationwide distribution. Credits: Grammy winner "Showdown" Robert Cray/Albert Collins/Johnny Copeland, Dennis DeYoung, Ramsey Lewis, Richie Havens, Johnny Winter, Roy Buchanan, Koko Taylor, Lonnie Mack, James Cotton, Grand Staff, Tom Paxton, Bob Gibson, Jonathan Brandmeier, Natl. commercials: Budweiser, 7-Up, McDonalds, Bud Light/Spuds, Cherry 7-Up, Michelob, Strohs, Molson, Sears, Popeyes, 3 Musketeers, State Farm. Over two decades creating results for the music production communities in records, R-TV and film has blended Streeterville's people and facilities presently into "The Class of Chicago." Look for expansion of world-class equipment, facilities and services contoured to client needs and industry developments. Adding creative engineering excellence and support staff and services with a "family feel," achieves a studio atmosphere and performance that is second to none

[24+] STUDIO A

5619 N. Beech Daly
Dearborn Heights, MI 48127
(313) 561-7489

Owner: Studio A Recording, Inc.

Studio Manager: Marilyn Morgeson

Engineers: Eric Morgeson, John Jaszcz, Randy Poole, Terry Fedak.

Dimensions: Room 1: studio 40 x 30, control room 25 x 22 (John Stork Design). Room 2: MIDI room
Mixing Consoles: MCI JH-528 28 x 28 w/JH-50 automation, Soundcraft 200B 32 x 4.

Audio Recorders: (2) MCI JH-114 24-track, Mitsubishi X-80 2-track digital, MCI JH-110 2-track 1/2", Studer B-67 2-track 1/4", Sony PCM-F1 2-track digital.

Cassette Recorders/Duplicators: (6) Sony TC-K555 decks

Noise Reduction Equipment: dbx 24-track

Synchronization Systems: Audio Kinetics Pacer, Roland SBX-80

—CONTINUED ON NEXT PAGE

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Echo, Reverb, & Delay Systems: Klark-Teknik DN-70, AMS RMX-16, Lexicon 200, Ursa Major 8 x 32, Yamaha REV7, Lexicon Prime Time 93, DeltaLab CompuEffectron, (2) Yamaha PCM42, (3) Yamaha SPX90.
Other Outboard Equipment: (4) dbx 160X, (2) Valley People Dyna-Mites, (7) Valley People Kepex gates, (2) Focusrite 110 modules, Aphex Compellor, Eventide Harmonizer, (3) dbx de-esser, (2) Valley People Maxi-Qs, (2) dbx 160, Aphex Exciter
Microphones: AKG Tube, (2) Neumann U87, (4) AKG 414-EB, Neumann U47, (4) Sennheiser 421, (2) Crown PZM, (5) SM57/58, (2) Neumann KM84, AKG C-451E
Monitor Amplifiers: (2) Hafler P225, (2) Crown SPSA-2, (2) Crown D-150A
Monitor Speakers: (2) UREI 813, (2) Tannoy NFM-8, (4) Yamaha NS-10M, (2) Auratone
Musical Instruments: Synclavier music system 32 polyvoices, 16 FM voices, 160 meg Winchester sample to disk option, SMPTE and MIDI options, Roland D-50, Steinway 7' grand piano, Sequential Studio 440, Yamaha DX7IIFD, Prophet 2000, Korg EX-8000, Oberheim Matrix 12, Yamaha TX7, Korg CX-3, Roland JX8P w/programmer, Ludwig 5-piece drum set, Fender and Yamaha amps
Other MIDI Equipment: Roland GM-70 guitar interface
Other: Sound Ideas Sound Effects Library (Vol.1 & 2 Sound Ideas Sampler Library)
Rates: Call

[24+] STUDIO DELUX
 West Bloomfield, MI 48033
 (313) 855-2942
Owner: Rick Stawinski
Studio Manager: Bill McKinney

[24+] STUDIO M
 1301 16th St.
 North Chicago, IL 60064
 (312) 689-8277
Owner: Maurice Houston
Studio Manager: Jude Olson

[24+] STUDIO M MINNESOTA PUBLIC RADIO
 45 E. 7th St.
 St. Paul, MN 55101
 (612) 290-1453
Owner: Minnesota Public Radio
Studio Manager: Tom Mudge
Engineers: Tom Voegel, Tom Mudge, John Scherf, Scott Rivard, Preston Smith
Dimensions: Room 1: studio 45 x 35 x 30, control room 23 x 17 Room 2: studio 15 x 18, control room 12 x 14
Mixing Consoles: Neve 51 M/36 36 x 36 x 36 "vatican," MCI JH-636 VU automated 36 x 24 x 36
Audio Recorders: (2) 3M 32-track digital mastering system, Otari MTR-90 II 24-track (4) Otari MTR-10 2-track, MCI JH-110B 4-1/2-track, Otari MTR-12 w/SMPTE center stripe
Cassette Recorders/Duplicators: (4) Nakamichi I
Noise Reduction Equipment: Dolby A 34 channels, Dolby SR 2 channels
Synchronization Systems: BTX Cipher Digital Softouch Shadow interlock system w/JVC CR8250 3/4" video recorder
Echo, Reverb, & Delay Systems: (2) Lexicon 224X w/LARC, EMT 140, Ecoplate I, Ecoplate II, (2) Lexicon PCM42 delay, (2) Eventide 969 Harmonizer
Other Outboard Equipment: (4) Trident parametric EQs, (2) Eventide 969 Harmonizer, Marshall Time Modulator, (2) ADR complex limiter, (2) ADR recording Scamp rack w/17 mods, (4) LA-4A limiters, more.
Microphones: (6) Neumann U87, (6) Neumann KM84, (4) Neumann KM88, Neumann SM69, (4) Bruel & Kjaer 4006, (2) Schoeps CMT-56, (7) AKG C 452EB/CK1, (4) AKG 414, (7) AKG 567, (4) Sennheiser 421, (4) Shure SM57, (2) Shure SM58, (2) Shure SM81
Monitor Amplifiers: S80/SR 200 programmable, JBL 6290
Monitor Speakers: Genelec 1022A, JBL 4430s, Westlake BSM-4
Musical Instruments: Steinway 9' grand w/Alpha Acoustic, Rhodes 88 electric piano, Pearl drums w/Paiste cymbals, ARP 2600 synth
Video Equipment: BTX Cipher Digital "Softouch" Shadow interlock system, JVC CR 8250 3/4" video recorder, audio "sweetening" w/sync-to-video-recording, audio recording w/sync-to-video. Audio mixing and editing
Rates: Analog recording, \$125/hr., digital recording, \$140/hr., audio/video interlock rates upon request

[24+] STUDIO M/WORLD THEATER
 10 E. Exchange
 Saint Paul, MN
 (612) 290-1500
Owner: Minnesota Public Radio
Studio Manager: Tom Mudge
Engineers: Scott Rivard, Tom Mudge, Preston Smith
Dimensions: Stage/house 14 x 10
Mixing Consoles: Neve Series 51 36 x 12

NORTH CENTRAL 24+ TRACK STUDIOS

Audio Recorders: (3) Studer 810 2-track
Cassette Recorders/Duplicators: Nakamichi MR-1
Noise Reduction Equipment: Dolby A 8 channels
Echo, Reverb, & Delay Systems: Lexicon 200
Other Outboard Equipment: (3) dbx 903 compressor, (3) dbx 904 gates, (2) dbx 905 parametric EQ
Microphones: (13) AKG 452-EB, (9) Shure SM85, (4) E-V RE16, (2) AKG D160, (2) ECM-50, (2) B&K 4006, (4) PZM, (2) AKG 414EB
Monitor Amplifiers: JBL 6290
Monitor Speakers: (2) Genelec 1022A tramp, (2) Realistic Minimus 3
Musical Instruments: Roland BN100 bass amp, Yamaha guitar amp, Reed pump organ, Wuritzer pipe organ, Steinway 9' grand, Steinway 7' grand piano

[24+] STUDIO 300
 233 E. Erie
 Chicago, IL 60611
 (312) 664-6057
Owner: Ted Kay, Shelly Elias
Studio Manager: Joe Ott

[24+] STUDIOMEDIA RECORDING COMPANY
 1030 Davis St.
 Evanston, IL 60201
 (312) 864-4460
Owner: Consortum, Ltd.
Studio Manager: Benj Kanters, Scott Steinman
Engineers: Benj Kanters, Scott Steinman, David Appelt, Sam Fishkin, Jeff Meyer, Mike Weyna, Mark Harder
Dimensions: Room A: studio 600 sq.ft., control room 450 sq.ft., Room B: studio 325 sq.ft., control room 275 sq.ft. Room C: live room 375 sq.ft.
Mixing Consoles: A: Trident Series 80B 32 x 24 x 24; B: Trident Series 65 24 x 8 x 16.
Audio Recorders: A: MCI JH-16 24-track, MCI JH-110B 2-track, MCI JH-110B mono; B: Tascam MS16 16-track, Otari M5050 2-track, MCI JH-110B mono, Others: Tascam Series 70 8-track, Otari M5050 4-track.
Cassette Recorders/Duplicators: Technics RSM85 MKIIs, Nakamichi BX-125s.
Noise Reduction Equipment: Dolby A 24-track, Dolby A 2-track, dbx 2-track, dbx 16-track.
Echo, Reverb, & Delay Systems: Ecoplates I, II & III, Lexicon Model 200, Lexicon PCM60, Lexicon Prime Time, (3) Korg SDD 3000, Marshall Time Modulator, Eventide 910 Harmonizer, AKG BX10, MXR digital delay, MXR pitch transposer, Ibanez flanger/delay, Studio Technologies reverb processor and AN-1 AN-2 stereo simulator, Roland SRV-2000, (2) Lexicon Prime Time
Other Outboard Equipment: UREI LA-4, UREI 1176, UREI 1178, dbx 160, Gain Brain comp/limiters, Kepex and Orm; Craft noise gates, Orban de-esser, Furman parametric, White graphic EQs, EXR Exciter, UREI digital metronome, Audioarts parametric EQ, Drawmer noise gates, dbx 166
Microphones: Neumann tube, Neumann, AKG, Sennheiser, Beyer, Shure, E-V, Coles, Wright, Crown
Monitor Amplifiers: A: Threshold S1000s, BGW, Crown, B: Crown, BGW
Monitor Speakers: A: UREI 813, B: UREI 811B, Others: Yamaha NS-10, E-V Sentry 100, JBL 4311, JBL 4313, Auratones
Musical Instruments: Baldwin SF10 7' grand piano, Rhodes 88, Fender, Marshall and Hi Watt amps, Ashly/Crown Eastern Acoustics bass system, Gretsch 5-piece drum kit w/Zildjian cymbals. Hand percussion, Simmons SDS-7 available
Video Equipment: VHS and 3/4" U-matic playback and audio dub
Rates: Available upon request

[24+] SUMA RECORDING STUDIO
 also REMOTE RECORDING
 5706 Vrooman Rd.
 Painesville, OH 44077
 (216) 951-3955
 (216) 352-9802
Owner: Kenneth R Hamann
Studio Manager: Michael J. Bishop

[24+] SWEETWATER SOUND
 also REMOTE RECORDING
 2350 Getz Rd.
 Ft. Wayne, IN 46804
 (219) 432-8176
Owner: Chuck Surack
Studio Manager: Chet Chambers

[24+] SWELL PICTURES INC.
 233 E. Wacker Dr.
 Chicago, IL 60601
 (312) 649-9000
Owner: Judy Topel
Studio Manager: Garry Elghammer

[24+] TAKE 1 STUDIOS
 also REMOTE RECORDING
 4900 Euclid Ave.
 Cleveland, OH 44103
 (216) 431-1444
Owner: Jeffrey V. Kassouf
Studio Manager: Tom Creter

[24+] TANGLEWOOD RECORDING STUDIO
 also REMOTE RECORDING
 9520 W. 47th St.
 Brookfield, IL 60513
 (312) 485-0020
Owner: Tony Hugar
Studio Manager: Tony Hugar

[24+] THE STUDIO—32-TRACK
 also REMOTE RECORDING
 8431 Lydia
 Kansas City, MO 64311
 (816) 523-8199
Owner: Evan Smalley
Studio Manager: Evan Smalley

[24+] 3001 STUDIOS
 also REMOTE RECORDING
 3001 Indianola Ave.
 Columbus, OH 43202
 (614) 262-3001
Owner: Jeff Gastneau
Studio Manager: Dole Shaffer
Extras & Direction: The largest synthesizer/MIDI system in the area, SMPTE-based automation and synchronization, digital mixdown, dual multi-track and 60 rack spaces of processing gear, all at no extra charge. Our live recording area is perfect for powerful-sounding live drums and guitars. In addition, all customers have experienced programmer/engineers along with computerized patch libraries at their disposal to custom design their own sound 3001 is a studio complex run by musicians, for musicians. Our main room now includes a 48-input inline console, dual multi-track and audio/video lockup. If you are an artist looking for a creative atmosphere, or a video/film producer in need of a professional soundtrack, 3001 is the place for you 3001 Studios, the place where music grows.

[24+] TMK-ELIAS PROD. "STUDIO 300"
 233 E. Erie
 Chicago, IL 60611
 (312) 664-6057
Owner: Ted Kay, Sheldon Elias

[24+] TONE ZONE RECORDING
 1316 N. Clybourn
 Chicago, IL 60610
 (312) 664-5353
Owner: JP-USA
Studio Manager: Roger Heiss
Engineers: Roger Heiss, Roy Montroy, Goh Hotoda, independents welcome
Dimensions: Studio 40 x 20, control room 18 x 16
Mixing Consoles: Harrison MR-4 36 x 24
Audio Recorders: Otari MTR-90II 24-track, Otari MTR-12 2-track 1/4" and 1/2", Otari MX 5050BII 2-track
Cassette Recorders/Duplicators: (3) Tascam 122-B decks.
Echo, Reverb, & Delay Systems: Quantec Room Simulator, Lexicon 200 digital reverb, Lexicon PCM60 digital reverb, Studio Technologies Ecoplate, TC Electronics 2290 dynamic digital delay, Lexicon 92 digital delay, Lexicon Prime Time, Eventide 949 Harmonizer, DeltaLab DL-4, Roland SDE 3000 digital delay, Yamaha SPX90.
Other Outboard Equipment: (2) dbx 160X, (2) dbx 165A, (2) UREI 1176 compressors, Drawmer DS-201 noise gate, Symetrix 522 noise gate, Ormni Craft GT-4 noise gate, Orban 622B EQ, Ashly SC-66A EQ, UREI 964 metronome, UREI 1122 preamp, Studio Technology AN-2 stereo simulator
Microphones: Neumann, KM84, KM54, KM53, U47, U87, SM2, M49; AKG: 451, 460, 414, C-12A, C-24, C535; (4) Sennheiser MD-421; (4) Shure SM57, Crown PZM, E-V RE20.

Monitor Amplifiers: (2) UREI 6500, Hafler 500, (3) Hafler 220
 Monitor Speakers: (2) UREI 813-B, (2) UREI 813 (studio/play-
 back), (4) Yamaha NS-10, (2) Auratone cubes
 Musical Instruments: Yamaha C-7 grand piano, (2) Yamaha
 DX7 synthesizers, Sonor rosewood drum kit, a variety of guitars
 and synth are available upon request, LinnDrum machine,
 Simmons SDS-7 electronic drums, Wendel Labs Wendel Jr
 Other MIDI Equipment: Akai S900 sampler, Simmons TMI
 trigger MIDI interface
 Rates: Call for quotation, very flexible for block time

Mixing Consoles: MCI JH-528B 24 x 24 w/auto, Tascam 520
 20 x 8, Tascam 512 12 x 8
 Audio Recorders: Otari MTR-90 II 24-track, Tascam 60/8
 8-track, MCI JH-110B 2-track, Nakamichi DMP-100 digital
 2-track, Revox PR-99 2-track, Tascam 52 2-track, Otari MX
 5050B 2-track, Tascam 440B 4-track
 Cassette Recorders/Duplicators: Tascam 122B, Eumig
 FL1000
 Echo, Reverb, & Delay Systems: EMT 240, Lexicon 224XL,
 UREI 927, Ursa Major SST282, Lexicon PCM60
 Other Outboard Equipment: UREI 1176, UREI 546, UREI LA-
 3A, UREI LA-4, Eventide H949, Dolby, dbx
 Microphones: U47 FET, U48, U67, U87, KM83, KM84, SM57,
 SM81, SM5B, D-12E, C414, C-452, PZMs, RE16, M500
 Monitor Amplifiers: UREI, Technics, Crown
 Monitor Speakers: UREI 813, MDM-TA3, Auratone, Foxtex
 Musical Instruments: Yamaha 7' grand piano, Fender Rhodes,
 Rogers drums
 Video Equipment: U-matic, Beta, VHS, Proton monitor, Adams-
 Smith and Foxtex synchronizers
 Rates: Available upon request

[24+] UNITED RECORDING STUDIO
 4024 State Line
 Kansas City, KS 66103
 (913) 262-3555
 Owner: David H. McQuitty
 Studio Manager: Joel Hornbostel
 Engineers: Dann E. Haworth, Dan Billings, Mike Green
 Dimensions: Studio 24 x 20, control room 20 x 16
 Mixing Consoles: Harrison MR-4 36 x 24
 Audio Recorders: MCI JH-24 24-track, MCI JH-110 2-track,
 Tascam 70H8 8-track
 Echo, Reverb, & Delay Systems: Ecoplate I, Lexicon 224XL,
 Lexicon Super Prime Time, Yamaha REV7
 Other Outboard Equipment: (2) Eventide Harmonizers, dbx
 900 Series signal processing, UREI 1176 comp/limiter, Omni
 Craft gates
 Microphones: Neumann, AKG, Sennheiser, E-V, Shure
 Monitor Amplifiers: Hafler, Phase Linear
 Monitor Speakers: UREI 813B, Yamaha NS-10M, Auratone
 Musical Instruments: Steinway grand, drum kit, Hammond
 B-3 w/Leslie, piano, anything available w/notice for small fee
 Rates: Best studio at the best rates in the area

[24+] TRAX 32 RECORDING STUDIO
 also REMOTE RECORDING
 11249 N. Riverland Rd.
 Mequon, WI 53092
 (414) 242-9010
 Owner: Paul Edwards
 Studio Manager: Darrell Klompfiker

[24+] TRC MID-AMERICA RECORDING CENTER
 also REMOTE RECORDING
 5761 Park Plaza Ct.
 Indianapolis, IN 46220
 (317) 845-1980
 Owner: TRC Corp
 Studio Manager: Michael Bryant

[24+] TRI-ART RECORDING STUDIO
 also REMOTE RECORDING
 PO Box 567
 Bismarck, ND 58502
 (701) 223-7316
 Owner: Bill Townsend, Greg Nelson
 Studio Manager: David Swenson

[24+] TRIAD STUDIOS
 also REMOTE RECORDING
 1910 Ingersoll Ave.
 Des Moines, IA 50309
 (515) 243-2125
 Owner: Richard Trump, Bill Synhorst, Joe Borg
 Studio Manager: Richard Trump
 Engineers: Rick Condon, Tony Schmitt, Bill Synhorst
 Dimensions: Room A: studio 38 x 24, control room 22 x 21
 Room B: studio 18 x 21, control room 18 x 13 Room C: studio
 5 x 10, control room 10 x 10.



UNITED RECORDING STUDIO
 Kansas City, KS

[24+] UNITED SOUND SYSTEMS
 5840 Second Blvd.
 Detroit, MI 48202
 (313) 832-3313
 Owner: Don Davis
 Studio Manager: Pamela Riley
 Engineers: Michael Iacopelli, Rufus Harris, Steve King, Michael
 Moore, Tony Ray
 Dimensions: Room A: studio 35 x 28 x 25, control room 15 x
 12 x 10 Room B: studio 21 x 11 x 7, control room 16 x 14
 Mixing Consoles: Neve 8084 32 x 16 x 24, Neve 8108 32 x 24
 w/Necam
 Audio Recorders: Studer A800 24-track, Ampex MM-1200
 24-track, (2) Ampex ATR-102 2-track, Studer A80VU 2-track
 1/2"
 Noise Reduction Equipment: dbx, Dolby
 Echo, Reverb, & Delay Systems: Yamaha PCM70, Yamaha
 SPX90 II, Lexicon 224, AKG BX20, EMT 140, AMS, Yamaha
 PCM42
 Other Outboard Equipment: Scamp noise gates, dbx, UREI,
 Teletronix limiters, Lang, Pultec, Flickinger EQs
 Microphones: Neumann U87, U47, U67, KM84, AKG 451,
 414, Shure SM56, SM7, Sennheiser MD-421, Crown PZMs,
 E-V RE20

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HOT TRACKS FROM ACES

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 consoles.

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 equipment, contact the dealer nearest you:**



Power Studio Supply & Dist.
 13453 Hollo Oval
 Cleveland, Ohio 44136
 216-238-9426

Rock Studio Supply
 P.O. Box 5997
 Norman, Okla. 73070
 405-329-8431

Professional Audio & Video Systems
 106 Ontario St.
 Toronto, Ontario, Canada M5A-2V4
 416-364-4848

Monitor Amplifiers: Hafler, McIntosh, Crown.
 Monitor Speakers: UREI 813, Auratones, Yamaha NS-10M, Tannoy
 Musical Instruments: Baldwin SD-10 grand, Fender Rhodes, Pearl drums, Ludwig drums and Remo toms, vibes, glockenspiel, clarinet, Hammond B-3 and C-3 w/Leslie, Fender 300 bass amps, Fender Vibrolux guitar amp, LinnDrums, Yamaha DX7, Oberheim Matrix 12, Emulator, Vibrolux, Yamaha RX5, Yamaha Super JX
 Other MIDI Equipment: Yamaha SBX80 SMPTE to MIDI sync, MIDI Studio C—MIDI exclusive
 Video Equipment: On request
 Rates: On request



UNIVERSAL RECORDING CORPORATION
Chicago, IL

[24+] UNIVERSAL RECORDING CORPORATION
46 E. Walton
Chicago, IL 60611
(312) 642-6465
Owner: Murray R. Allen
Studio Manager: Foote Kirkpatrick

**NORTH CENTRAL
24+ TRACK
STUDIOS**

Engineers: Bill Bradley, Danny Leake, Bob Bennett, Mike Mason, Tom Miller, Bill Reis, Ed Golya, Jeff Palmer, Diane Haglung, Dave Lewis, Steve Wilke, Richard Chojnowski, Terry Schilling, Dave Mitchell.
 Dimensions: Room A: studio 45 x 60, control room 30 x 25. Room B: studio 20 x 40, control room 30 x 25. Room C: 15 x 20, control room 20 x 8. "Backroom": studio 9 x 12, control room 20 x 12.
 Mixing Consoles: Neve 8078 32 x 32, SSL 6000 32 x 32, MCI 628 28 x 24, (2) ADM film 16 x 8, Harrison Raven 32 x 24.
 Audio Recorders: Mitsubishi X-850 32-track, (2) Mitsubishi X-80 2-track digital, 3M 32-track digital, 3M 4-track digital, (4) MCI 24-track analog, (8) Ampex ATR 2-1/4-track analog, (16) Ampex 440 1-1/2-1/4-track analog, (4) Scully 1-1/24-track analog, Ampex 1200 16-1/24-track analog, Otari MTR-90 24-track, (2) Mitsubishi X-86, (2) Synclaviers.
 Echo, Reverb, & Delay Systems: Quantec, Lexicon 200, (6) EMT plates, four rooms, (3) Lexicon 224X, Eventide 2016, (3) 949 Harmonizers, Lexicon, Eventide, Lexicon 480X.
 Other Outboard Equipment: dbx, Dolby, UREI 1/3-octave, Orban parametrics, LA 2A-3A, 1176, AMS, Roland, Yamaha.
 Microphones: Neumann: U47, U67, U87, KM83, KM84, AKG: 414, 451, 421, 441, C-12, C-24; over 200 mics to choose from.
 Musical Instruments: Bosendorfer 9.5' Imperial grand piano, (3) Steinway grands, (3) Fender Rhodes, celeste, tympani, (2) Sonor drum kits, also Ludwig and Slingerland, tack piano, synthesizers, Hammond B3, Synclavier 32-out.
 Video Equipment: C format, BTX Softouch, BTX multi-machine sync, controllers, Shadow T, jam sync generators, house sync 1", 3/4", 2" audio.
 Rates: A: \$220/hr.; B: \$210/hr.; backroom: \$150/hr.; Softouch and digital: \$50/hr.
 Extras & Direction: Universal is located in the heart of the hotel, restaurant, night club area of Chicago, has an "in-house" Cantonese restaurant delivering to all studios. We arrange hotels and limousine service. Universal is one of the largest, full-service audio facilities in the world. With two film

mixing theaters, a video-sweetening facility, a cassette duplicating factory, and a location film crew, Universal offers the most complete audio service in the country. Among our most recent recording projects are albums by Tom Waits, Manowar, Luther Vandross.

[24+] THE UNIVERSITY OF IOWA—RECORDING STUDIOS, SCHOOL OF MUSIC also REMOTE RECORDING
2057 Music Building
Iowa City, IA 52242
(319) 335-1664
Owner: The University of Iowa
Studio Manager: Prof. Lowell Cross

[24+] WEST MINIST'R SOUND, INC. also REMOTE RECORDING
Route Five
Ft. Dodge, IA
(515) 972-4936
Owner: Keith Brown, Frank Wiewel
Studio Manager: Keith Brown

[24+] WESTWOOD SOUND STUDIO
4300 Watertown Rd.
Maple Plain, MN 55359
(612) 475-3152
Owner: James Johnson
Studio Manager: Jim Johnson

[24+] WOODLAND WEST RECORDING STUDIOS
20260 W. 114th Terr.
Olathe, KS 66061
(913) 829-WEST
Owner: Woodland West Inc.
Studio Manager: Jack Black

[24+] WORLDWIDE SOUND & VIDEO PRODUCTIONS also REMOTE RECORDING
202 W. Plum
Robinson, IL 62454
(618) 544-7898
Owner: Ron Wheeler
Studio Manager: Ron Wheeler

MidiMation

The affordable solution to AUTOMATION.

Finally there is an inexpensive, simple-to-operate, modular, full featured Automation System to retrofit any console at any budget. MidiMation, from JLC Cooper, gives **your** console all the power and all the features previously only available as built-in features on a few megabuck consoles. MAGI (Mixer Automation Gain Interface), MAGI VCA (dbx® VCAs), SAM (SMPTE AUTOMATION MANAGER), SAMDisk 3.5" floppy sub-system, and MIDI MUTE truly constitute a breakthrough in console automation.

Now, you can automate your studio starting for as little as \$549. And, like all JLC Cooper products, these grow with you — up to 56 channels! Buy only the features you need, as you need them, and add to your MidiMation system as your needs change. Best of all, MAGI, MAGI VCA, SAM, SAMDisk, and MIDI MUTE require no modification of your console.

* dbx is a registered trademark of the dbx Corp.

MidiMation, affordable state-of-the-art automation.

JL COOPER ELECTRONICS

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ZEM RECORDING STUDIO

ZEM RECORDING STUDIO
Cicero, IL

[24+] ZEM RECORDING STUDIO

3709 S. 60th Ct.
Cicero, IL 60650
(312) 656-1544

Owner: Edward Zajda
Studio Manager: Sue Zajda

Engineers: Ed Zajda, Jenniler Zajda
Dimensions: Studio 30 x 24, control room 16 x 10.

Mixing Consoles: Tangent 3216 24 x 16

Audio Recorders: Otari MTR-90 MKII 24-track, Ampex ATR-102 2-track

Cassette Recorders/Duplicators: (2) Akai GX-91

Echo, Reverb, & Delay Systems: Eventide H949 Harmonizer, DeltaLab DL-2, Acousticcomputer, Lexicon 224XL, Lexicon Super Prime Time.

Other Outboard Equipment: Dolby A System 361, (2) UREI 1176 comp, (2) dbx 160 comp, dbx 900 rack, Orban parametric, EXR Exciter, Aphex Aural Exciter.

Microphones: Neumann, AKG, Sennheiser, Shure, E-V, Sony
Monitor Amplifiers: Crown D75, (2) Bryston 4B.

Monitor Speakers: B&W 801F, Yamaha NS-10Ms, Auratones, B&W DM3000, B&W DM17.

Musical Instruments: Yamaha electric concert grand piano, Ludwig drums, Kurzweil 250 w/Apple Macintosh, E-mu SP-12 drum computer, Roland drum pads.

Video Equipment: Upon request.

Rates: No "extra charge" for all available equipment or musical instruments.

Extras & Direction: Our main goal is to give the highest quality of sound and service at a fair price to our clients.

x 16, 16 x 3 x 3 film post, Audiotronics 10 x 4 x 8, Electrodyne 16 x 8 x 16

Audio Recorders: Ampex MM-1200 8-/24-track, Ampex ATR-100 2-/4- and full tracks, Ampex ATR-440 2-/4- and full tracks, Ampex AG-350 full tracks, MCI JH-16 16-track 2", MCI JH-110 4-track, Sony 5003 2-track w/center track time code, Scully 280B 8-track, Scully 280 2-/4- and full tracks, Nagra 4.2 recorders, Otari MX70 8- and 16-track 1", Studer A80 1" layback, Tascam Model 34 4-track, Tascam Model 40-4 4-track, A/V format and NAB cart machine.

Cassette Recorders/Duplicators: Tascam 122B deck, Tascam 133 deck, Technics, Wollensak A/V

Noise Reduction Equipment: Dolby A, dbx Type I

Synchronization Systems: BTX Shadow and Fostex synchronizers, Fostex, BTX Cyper and 5400 SMPTE generators, Sony 5003s, center-track time code recorders w/reader/generator/chase synchronizer.

Echo, Reverb, & Delay Systems: EMT, Eventide, Lexicon, Audio Digital, DeltaLab, UREI, Orban

Other Outboard Equipment: UREI 1176, UREI 1178, dip filter, parametric and graphic EQ, digital metronome, Orban 516 de-essers, Orban 672 paragraphic, Orban 245E stereo synth, Valley People and Allison Gain Brain (I and II), Kepex (I and II), Valley People 440, dbx 160, dbx 165. Plus Studer telephone hybrid, Barcus-Berry Electronics 800, Omni Craft, White, Pul-

tec, Magna-Tech, Symetrix, Audio & Design Scamp, Primus/Ramko, Alesis, Polyfusion, Teletronix, Burwen, Kudelski, EXR, Audio Precision System One.

Microphones: Neumann, AKG, Schoeps, Sennheiser, Sony, PML, Shure, E-V, Beyer and RCA

Monitor Amplifiers: Crown Microtech 1000s, Crown Microtech 1200, Crown D150s, Crown 30-30s, UREI, Ramsa, QSC, McIntosh, Tapco and Altec.

Monitor Speakers: UREI 811, UREI 809, E-V Sentry III, JBL 4411, Altec 605, Altec A7, Yamaha NS-10, Fostex RM780, Auralone 5C.

Musical Instruments: Yamaha DX7, Moog and ARP synths, Hohner clavinet, Steinway grand, Musser celeste, Pearl drums. Video Equipment: Sony VPH-1020Q projection, Sony BVU-800 and 5800 U-matics, Ampex VPR80 1" C format recorder, JVC 6600 U-matics, Panasonic AG6300, NEC NTC 10B, VTC and lockbox capabilities.

Other: Magna-Tech 35/16mm, 3-/4-/6-track and stripe recorders and dubbers, 150 Series automated dialog replacement, resolvers distributors and recorders, Otari EC401 resolver, MTM 3-track and mono recorders, Magnasync recorders and dubbers, Westrex 35mm and 35/32 optical recorder, Philips and JAN xenon projection, Moviola upright and flatbed editors, 16mm edge and center-track capabilities. Rates: \$50 to \$285/hr.

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It's open. It's extraordinary. And it's for artists who can expect nothing but the best for their work in a \$10 million dollar facility with state-of-the-art accomplishments. Like a 12,000 sq. foot soundstage for film, video and live-action productions. Two remarkably equipped recording/mixing studios capable of 48-track audio/video recording. Plus, performance designed rehearsal and demo facilities. And support services that include everything from electronic mail to production planning.

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Soon to be known the world over for its great performances. And yours.



Paisley Park Studios

National Representative: Harry Grossman (213) 473-1564

Recording Services: Richard "Hawkeye" Henriksen (612) 474-8555

Stage Services: Red White (612) 474-8555

Circle #057 on Reader Service Card

NORTH CENTRAL

12-16 TRACK

STUDIOS

[16] ACE MOBILE RECORDING

also REMOTE RECORDING

221 Gage Ave.
Elkhart, IN 46516
(219) 293-3913

Owner: George E. Compton, Jr.
Studio Manager: George E. Compton, Jr.
Engineers: George E. Compton, Jr.
Dimensions: Studio 20 x 30, control room 10 x 30
Mixing Consoles: Tapco Panjo 7416 16 x 16, Tapco 8201 B 8 x 8, Tapco 8201 REB 8 x 8
Audio Recorders: Itam 1610 16-track w/dbx, Otari MX 5050B 2-track w/dbx, Crown CX 822 2-track w/dbx
Cassette Recorders/Duplicators: (2) Nakamichi LX-3, (4) Sanyo RD 520, (2) NAD 6050 C, (2) Sony WM-D6C (Professional "Walkman")

Noise Reduction Equipment: (10) dbx 150
Echo, Reverb, & Delay Systems: Brick plate reverb, Tapco 4400 reverb, Lexicon Super Prime Time digital delay
Other Outboard Equipment: Aphex Type B Aural Exciter, (3) Countryman direct boxes
Microphones: (2) Neumann U87s, (2) Neumann KM84s, (2) Sennheiser 441s, (2) Sennheiser 421s, (2) PML F92s, (2) Shure SM57s, (2) Crown PZM 30 gops, (2) Crown PZM 31s, (2) Sony ECM-22s, (2) E-V 1751s
Monitor Amplifiers: Crown PSA-2, Carver M 15, Carver M 400
Monitor Speakers: (2) UREI 813s, (2) Dahlquist PQM9s, (2) Dahlquist PQM5s
Musical Instruments: Kawai "tone customized" upright piano
Other: dbx computerized 20/20 analyzer/equalizer
Rates: Available upon request

[16] ACME AUDIO & RECORDING COMPANY

also REMOTE RECORDING

3821 N. Southport
Chicago, IL 60613
(312) 477-7333

Owner: Michael Rasfeld
Studio Manager: Jim Rasfeld

[16] ACTION CITY RECORDS

PO Box 302
Napoleon, OH 43545
(419) 533-4782

Owner: John L. Sharon Kuser
Studio Manager: John E. Church
Engineers: John Church, John L. Kuser, Mark Seedorf
Dimensions: Room 1: studio 32 x 32, control room 13 x 19, Room 2: studio 10 x 12, iso booth, Control room Dave Clark Design
Mixing Consoles: Ramsa WR8816 16 x 4 x 2
Audio Recorders: MCI JH-10 16-track, Otari 5050 MKII 2-track
Cassette Recorders/Duplicators: Awa D-W800, Hitachi D-W800, Nakamichi MR-1
Noise Reduction Equipment: dbx 224, Hush IIC
Echo, Reverb, & Delay Systems: Ibanez SDR-1000, Alesis XT C, ADA Digitizer, ADA 2FX-2, Ibanez DM2000, ART 01A, Ibanez DMD 2000

Other Outboard Equipment: dbx 160, dbx 166, Loft 400 gate/limiter, Ibanez MSP 1000, ADA Pitchra, Rockman sustainer, Rockman stereo chorus/delay, DOD EXR SP11 Projector R-860, (2) Ibanez GE301 1/3-octave, Bass Rockman
Microphones: Neumann TLM170, AKG 414EB, (4) AKG 535EB, (4) Sennheiser 421, (2) E-V PL20, (8) Shure SM57, (2) Shure SM58, AKG D-112, (2) Neumann KM84
Monitor Amplifiers: Crown 300A, Crown 150A
Monitor Speakers: JBL 4411, JBL L110, Toa 265ME, Auratone
Musical Instruments: Steinway grand piano, Ensoniq Mirage, Casio DZ-1 translator, Tama Techstar drums, Tokai and Schecter Teles, P-Bass, Alvarez acoustic, Dean Markley and Marshall amps, Yamaha RX11 drum machine
Rates: \$35/hr

[16] ACTV PRODUCTIONS

also REMOTE RECORDING

11934 Lorain Ave.
Cleveland, OH 44111
(216) 671-1711

Owner: ACTV Productions
Studio Manager: Rick Aylsworth
Engineers: Rick Aylsworth, Alex Koenig, John Nebe, Dave Shimp
Dimensions: Room 1: studio 20 x 30, control room 20 x 14, Room 2: control room 14 x 14
Mixing Consoles: Tascam M520 20 x 16, B F I 1290 12 x 4, Tascam M-208 8 x 4, Shure SE-30 3 x 1 field mixer, comprehensive MX-1001 field mic mixer, 3 x 2
Audio Recorders: Tascam MS16 16-track 1", Tascam 42B 2-track 1/4", Dokorder 7140 4-track 1/4", Astrocom Marlux 4-track 1/4", Foxtex 250 4-track cassette, Tascam 80-8 8-track 1/2"

Cassette Recorders/Duplicators: Nakamichi, Marantz PMD 360 field cassette
Noise Reduction Equipment: (2) dbx DX-8DS Type I noise reduction, Rocktron Hush II, dbx DX8 Type I
Synchronization Systems: Adams-Smith Zeta Three audio/video/MIDI synchronizer, Garfield Mini-Doc
Echo, Reverb, & Delay Systems: Roland DEP-5 digital effects processor, (2) Alesis MIDVerb II, DOD Electronics RDS 3600 digital delay system, DOD Electronics RDS 1900 digital delay system

Other Outboard Equipment: Rocktron RX2H exciter/imager/Hush II, (2) Rocktron compressor/limiter/leveler
Microphones: Shure, Audix, E-V, Audio-Technica, AKG
Monitor Amplifiers: Numark SA2200, B F I S300
Monitor Speakers: Toa 280-MC, Acoustic 806
Musical Instruments: Ensoniq Mirage, Casio CZ5000, Roland Juno 60, Siel DK600, Siel OR400, Yamaha FB01, Fender Stratocaster, Fender Telecaster, Yamaha RX11 drum machine, Yamaha RX15 drum machine, Roland SH-5 synthesizer, Gallien-Krueger 250ML
Other MIDI Equipment: Yamaha MJC8 MIDI patchbay
Video Equipment: (3) Panasonic AV-300 "M" format VTRs, (4) JVC 3/4" VTRs various models, (4) Panasonic 1/2" VTRs various models, Paltex ABR-1A edit controller, A-B roll all formats
Other: GML Proeleus digital video effects unit w/TBCs, (2) Panasonic NV-555 3-tube cameras, O'Connor and Satchler tripods w/fluid heads, 20,000 watts various lighting instruments, (10) Sony and Panasonic color monitors
Rates: Quite reasonable.

[16] AHDIS SOUND

also REMOTE RECORDING

307 E. Jefferson
Fairfield, IA 52556
(515) 472-5469

Owner: David K. Randall
Studio Manager: Jeff Rodarmel

[16] AJAX RECORDING TEAM

also REMOTE RECORDING

902 W. Wayne St.
Fort Wayne, IN 46804
(219) 426-0591
(219) 423-3479

Owner: Craig Harding, New September Company
Studio Manager: Jane Harding
Engineers: Craig Harding, Allen Kleinhans
Dimensions: Room 1: studio 9 x 19, control room 9 x 19, Room 2: studio 8 x 11
Mixing Consoles: TAC Scorpion 16 x 8, Hill Multmix 16 x 4
Audio Recorders: Otari MX-70 16-track, (2) Otari 5050B 2-track
Cassette Recorders/Duplicators: (2) Nakamichi BX-300
Noise Reduction Equipment: (2) dbx 155, Symetrix 501
Synchronization Systems: Various MIDI sync w/lape
Echo, Reverb, & Delay Systems: Lexicon PCM70 digital effects/reverb, Roland DEP5 digital effects/reverb, ART 01A digital reverb, AKG BX-10E reverb, DeltaLab DL-2, DeltaLab Effectron Jr

Fine
Audio
Production



AJAX RECORDING TEAM
Fort Wayne, IN

Other Outboard Equipment: Eventide Instant Flanger, Roland Dimension D, EXR 1 Exciter, Sescam parametric, Orban 672A Paraphoric, (2) UREI LA-4 compressor/limiters, dbx 165 compressor/limiters, (2) Valley People Dyna-Mites, (2) UREI 527 31-band graphic equalizers
Microphones: Neumann U89, Sennheiser 441, (3) Sennheiser 421, AKG 414, E-V RE20, (2) AT 111, Shure SM7, (2) Shure SM57s, Shure SM58, (2) AKG D-1000, (2) AKG D-200
Monitor Amplifiers: Yamaha P2201, Crown D-150
Monitor Speakers: JBL 4311s, Yamaha NS-10M, Auratone
Musical Instruments: Guild Starfire, Rickenbacker 12-string, Kramer stage bass, Guild D-50 acoustic, percussion instruments, Ensoniq ESQ-1, Yamaha RX11 drum machine, Yamaha DX7 synth, E-mu "E-Max" synth
Video Equipment: Quotes on video projects available concept, storyboarding, scripting, casting, crew, direction, post-production inclusive or in part
Rates: \$40/hr, block rates available
Extras & Direction: Fine Audio Production is the Ajax promise. We'll transform your audio concept into reality. Our track record includes award-winning television, radio and audio/visual soundtracks, as well as private artist albums, 45s and cassettes. Ajax Recording Team (A.R.T.) was formed in 1979. Our ongoing commitment to excellence—and its resultant success for our clients, has allowed us to expand to full 16-track production. Please request our demo cassette and sample our audio achievements. Discerning folks "cut their tracks" at Ajax.

[16] A.L.B.O. FOUNDATION

5246 Plainfield NE
Grand Rapids, MI 49503
(616) 364-9273

Owner: Keith David Gill
Studio Manager: Kathleen Gill

[16] ANGEL RECORDING STUDIO

4435 Mayfield Rd., #6
Cleveland, OH 44121
(216) 382-6036

Owner: Mark Luthardt
Studio Manager: Mark Luthardt

[16] ANTOR AUDIO SYSTEMS

PO Box 364
Elk Grove Village, IL 60007
(312) 593-5918

Owner: Duane A. Antor
Studio Manager: Christopher Rippel

[16] ARK RECORDING

PO Box 265
Wausau, WI 54402
(715) 355-1565
Owner: Mitch Viegut, Dave Sandon
Studio Manager: Mitch Viegut

[16] AUDIO GRAPHICS SERVICES also REMOTE RECORDING

1516 Ferris Ave.
Royal Oak, MI 48067
(313) 544-1793
Owner: Edward J. Wolfrum
Studio Manager: Susan E. Wolfrum

**Most mikes
make you
sound like
everybody
else.**

**You deserve
something
a little
better.**

This little mike gives your talent a big hand. Because it insures that your vocal sound comes through intact. The carefully-tailored response curve anticipates typical sound systems and hall acoustics. With an ATM5R the audience hears more YOU and less microphone.

With its advanced cardioid construction, the ATM5R gives your sound mixer more freedom to raise your vocal level to whatever loudness the music demands. Regardless of nearby monitor or side speakers. And without having to resort to drastic EQ "tricks" that distort your tone. Or the need to "force" your voice, just to be heard.

The ATM5R easily handles your dynamic range. And it doesn't change your vocal sound when you stray a little off mike. Yet it firmly rejects sound coming from the back. The ATM5R concentrates on you, so that you can concentrate on your performance.

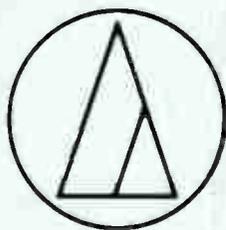
Handling and cable noise are also better controlled than with most microphones. And the small size of the ATM5R means less bulk between you and the audience.

You know how great you sound in the studio. Now you can put that same sound on the road. Test sing the ATM5R at your Audio-Technica sound specialist today.



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Condenser
Cardioid**

Actual
size



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[16] AUDIO SERVICES COMPANY INC.
also REMOTE RECORDING
511 E. Colfax Ave.
South Bend, IN
(219) 287-2111
Owner: P Ostrander, W Doolittle
Studio Manager: Phillip Ostrander

[12] AUDIOIMAGE RECORDING STUDIO
6665 Lancaster Ln. N.
Maple Grove, MN 55369
(612) 533-5726
Owner: Tim Van Tassel
Studio Manager: Tim Van Tassel
Engineers: Tim Van Tassel
Dimensions: Studio 18 x 30, control room 13 x 15
Mixing Consoles: Akai MG1214 12-channel mixer, Boss BX800 8-channel stereo keyboard mixer.
Audio Recorders: Akai M61214 12-track, Tascam 234.
Cassette Recorders/Duplicators: Sony TC-FX705 stereo.
Noise Reduction Equipment: dbx Type I.
Echo, Reverb, & Delay Systems: ART Proverb DR, Yamaha R1000 DR, Yamaha D1500 DDL.
Other Outboard Equipment: dbx 166 2-channel comp/lim, Ashly S635 quad noise gate, Tascam 32-point patchbay.
Microphones: (2) Sennheiser MD-421s, AKG D70 ME
Monitor Amplifiers: Haller DH-200, Audire "Legato" pre-amp
Monitor Speakers: ADS L470s
Musical Instruments: Ensoniq Mirage DSK digital sampling keyboard, Ensoniq ESQ-1 digital wave synth, Korg DW-6000 digital waveform synth, Roland TR-707 rhythm composer, Yamaha RX21L digital rhythm programmer, Yamaha FBO1 FM sound generator, Roland GM-70 & GK-1 MIDI guitar converter, Yamaha 620-110 studio guitar amp, Ibanez artist guitar, PS Wick cabinet grand, acoustic piano, Ovation legend acoustic/electric guitar, Roland JC-120 available, Boss HA-5 stereo headphone amp, Yamaha SF605 sound synth module
Other MIDI Equipment: Roland MPU-104 MIDI input selector, Korg KMT-60 MIDI thru box, Macintosh SE computer w/Mark of the Unicorn Performer, Yamaha CX5M computer w/MIDI recorder and FBO1 voicing software.
Video Equipment: NEC Hi-Fi stereo VHS VCR.
Other: MicroSoft Word word processing program for Mac SE, Full Paint graphics program for Mac SE, Image Writer II printer, Opcode Studio Plus Two Mac MIDI interface.

[16] AUDILOFT RECORDING STUDIOS
also REMOTE RECORDING
PO Box 7-11
Macks Creek, MO 65786
(314) 363-5432
Owner: B.J. Carnahan
Studio Manager: Brad Edwards

[16] AUDIOMATRIX RECORDING STUDIOS
also REMOTE RECORDING
29 S. Erie St.
Toledo, OH 43602
(419) 243-3000
Owner: David Mariasy
Studio Manager: Peter Gerhardinger

[16] AUGUST RECORDING STUDIO
Lindenhurst, IL
(312) 356-7134
Owner: Henry Robison
Studio Manager: Henry Robison

[16] AUTHENTIC AUDIO LAB
also REMOTE RECORDING
5147 Pine St.
Omaha, NE 68106
(402) 553-5334
Owner: J.D. Slezak
Studio Manager: J.D. Slezak

[16] AVATAR PRODUCTIONS
515 28th St., #106
Des Moines, IA 50312
(515) 282-9746
Owner: Avatar Productions, Ltd.
Studio Manager: Michael Meacham

[16] AVIDAY STUDIOS
also REMOTE RECORDING
16680 Prest
Detroit, MI 48235
(313) 836-2527
Owner: David Robinson
Studio Manager: Paul Allen

NORTH CENTRAL 12-16 TRACK STUDIOS

[16] BASEMENT BOYS STUDIO
801 Wheeler Rd.
Madison, WI 53704
(608) 241-5615
Owner: Dean Richard
Studio Manager: Dean Richard

[12] BKS ENTERTAINMENT, INC.
also REMOTE RECORDING
235 N. Benton St.
Woodstock, IL 60098
(815) 337-0133
Owner: "Bubba" Kim Sattler
Studio Manager: "Bubba" Kim Sattler

[16] BONZAI STUDIOS
984 Nennig Rd.
Neehah, WI 54956
(414) 725-4200
Owner: Jeffrey S Maroszek
Studio Manager: Jill Gajewski

[16] BRUNSONGS
154 Pershing, NE
Grand Rapids, MI 49505
(616) 363-5600
Owner: Rick Bruson
Studio Manager: Rick Bruson

[16] CANDLELIGHT STUDIO
also REMOTE RECORDING
740 N. Campbell
Chicago, IL 60612
(312) 276-5483
Owner: Bob Krutiak
Studio Manager: Bob Krutiak

[16] CEDAR RAPIDS MUSIC PRODUCTIONS COMPANY
also REMOTE RECORDING
3417 Center Point Rd. NE
Cedar Rapids, IA 52402
(319) 395-0438
Owner: John K. O'Brien
Studio Manager: John K. O'Brien

[16] CHICAGO'S HAPPININ' STUDIO
6725 S. Jeffery
Chicago, IL 60619
(312) 874-6843
Owner: Robert Garrett
Studio Manager: Robert Garrett

[16] CLAYTON STUDIOS INC.
also REMOTE RECORDING
1126 S. Big Bend
St. Louis, MO 63117
(314) 781-6200
Owner: Dick Ulett
Studio Manager: Robyn Goffstein

[16] CLEARVIEW STUDIOS
1205 Clearview Dr.
St. Charles, MO 63303
(314) 946-9050
Owner: Richie Callison
Studio Manager: Richie Callison

[16] CONCEPT PRODUCTIONS, INC.
7878 Big Sky Dr.
Madison, WI 53719
(608) 833-8273
Owner: Rod Barellmann
Studio Manager: Dan Geocaris

[16] CORNERSTONE RECORDING
703 S. 2nd St.
Milwaukee, WI 53204
(414) 643-0879
Owner: David Siebauer
Studio Manager: David Siebauer, Barbara Siebauer

[16] CREATIVE SPACE
107 S. Sesame St.
Bloomington, IL 61701
(309) 663-7274
Owner: Kurt Scheidenhelm, Tim Durham
Studio Manager: Kurt Scheidenhelm
Engineers: Kurt Scheidenhelm, Tom Watkins, Tim Durham
Dimensions: Room 1: studio 20 x 10, control room 10 x 6
Room 2: studio 10 x 6
Mixing Consoles: Carvin 1688 16 x 8
Audio Recorders: Fostex B-16 16-track w/remote, Ampex ATR-700 2-track.
Cassette Recorders/Duplicators: Sansui SC1330
Echo, Reverb, & Delay Systems: Yamaha REV7, Yamaha R1000, Yamaha SPX90-II, Orban 111B stereo spring
Other Outboard Equipment: (2) dbx 166 stereo compressor/limiter/noise gate, SDD-2000 sampling delay, Ibanez 1100 digital delay, Audio Logic Quad noise gate, DAX spectrum analyzer, GLI graphic equalizer, ADC graphic equalizer, Aphex Type C Aural Exciter
Microphones: (2) E-V PL20s, (2) Audio-Technica ATM-11, Sennheiser 441, (3) E-V 408s, (2) Shure SM57s, Beyer M-500.
Monitor Amplifiers: Sansui AU-11000, Crown D-150, Eddor HA 8000.
Monitor Speakers: E-V Sentry 500, B&W 110, Auratone 5-C.
Musical Instruments: Fender Telecaster, Gibson Pro-335, Fender Pro Reverb (pre CBS), Akai AX-80 synthesizer, Roland TR-909 drum machine, Washburn acoustic guitar, Suzuki acoustic guitar

[16] CROSSLINK PRODUCTIONS
2455 N. Star Rd., 3rd floor
Columbus, OH 43221
(614) 488-5993
Owner: James N. Cannell
Studio Manager: Michael Kvochick

[16] CUSTOM RECORDING STUDIOS
also REMOTE RECORDING
3829 Scott Ave. N.
Minneapolis, MN 55422
(612) 535-2587
Owner: Jim & LaVern Reynolds
Studio Manager: Jim Reynolds

[16] DAYBREAK MUSIC PRODUCTIONS
also REMOTE RECORDING
1500 Midway Ct., W102
Elk Grove Village, IL
(312) 228-7090
Owner: John Groppi
Studio Manager: Michelle Anderson

[16] DEMO GRAPHICS PRODUCTIONS
also REMOTE RECORDING
410 5th St.
Sioux City, IA 51101
(712) 255-5818
Owner: Russ Ehrisman, Steve Lange
Studio Manager: Russ Ehrisman

[16] DIAMOND MINE STUDIOS
also REMOTE RECORDING
3115 Bremen Dr.
Columbus, OH 43224
(614) 268-4792
Owner: Bright Moon Productions
Studio Manager: Chris Nye

[12] DIRT ROAD STUDIO
R.1, Box 200
Villa Ridge, IL 62996
(618) 342-6360
Owner: John L. Windings
Studio Manager: John L. Windings

[16] EALING MOBILE RECORDING, LTD.
only REMOTE RECORDING
709 W. Roscoe St.
Chicago, IL 60657
(312) 871-7793
Owner: Hudson Fair
Studio Manager: Hudson Fair

[16] KEN EARL PRODUCTIONS
590 Buckingham Way
Bolingbrook, IL 60439
(312) 985-0730
Owner: Ken Earl
Studio Manager: Ken Earl

[16] ECLECTIC EMPORIUM
 also REMOTE RECORDING
 18954 Roosevelt Ave.
 Lake Villa, IL 60046
 (312) 223-0189
 Owner: Ernie Garner
 Studio Manager: Ernie Garner
 Engineers: Ernie Garner
 Dimensions: Studio 17 x 20 x 9, control room 17 x 9 x 8.
 Mixing Consoles: Allen & Heath 1616D 16 x 8
 Audio Recorders: Fostex B-16 16-track, Otari 5050B 2-track.
 Cassette Recorders/Duplicators: Onkyo 2066 cassette
 Echo, Reverb, & Delay Systems: Lexicon PCM60, MXR-1000
 delay, Yamaha SPX90.
 Other Outboard Equipment: EXR SP-II projector, (2) dbx 166
 compressors
 Microphones: AKG 414, (2) Sennheiser 441, (2) Audio-Tech-
 nica 811, (3) SM57, (3) Countryman 202, (3) DOD direct
 boxes
 Monitor Amplifiers: Soundcraftsman RA-5501.
 Monitor Speakers: EA.W SCD-6000.
 Musical Instruments: DX7 w/EI, Mirage rack, Roland Juno 60,
 Kawai acoustic piano, MXR drum machine, clavinet, Wurli-
 tzer electric piano, Kawai K-3/K-5
 Rates: Open rate: \$20/hr., packages available

[16] ELEPHANT RECORDING STUDIOS
 also REMOTE RECORDING
 21206 Gratiot Ave.
 East Detroit, MI 48021
 (313) 773-9386
 Owner: Allen E. Abood
 Studio Manager: Allen E. Abood

[16] EMIR RECORDS/ELECTRONIC
 ENGINEERING & SUPPLY CO.
 also REMOTE RECORDING
 712 North St.
 Burlington, IA
 (319) 752-0381
 Owner: R.E. Mefford
 Studio Manager: A.I. Mefford

[16] E.T.C. MUSIC ENTERPRISES
 also REMOTE RECORDING
 25 W. 658 St. Charles Rd.
 Wheaton, IL 60187
 (312) 682-2600
 Owner: Jack Belford
 Studio Manager: Paul Kelly

[16] FAST TRAX RECORDING STUDIO
 2737 Baldwin St.
 Jenison, MI 49428
 (616) 669-1946
 Owner: Robert B. Reister
 Studio Manager: Colleen Horgan

[16] FORTEGA RECORDING STUDIO
 Mentor, OH
 (216) 942-7861
 Owner: Chris Butcher
 Studio Manager: Chris Butcher

[16] GOLDEN SOUND STUDIO
 Rt. 5, Box 112
 Festus, MO 63028
 (314) 937-5873
 Owner: David Steinhart
 Studio Manager: David Steinhart

[16] GRG RECORDING
 also REMOTE RECORDING
 Rt. 3, Box 3660
 Sheboygan Falls, WI 53085
 (414) 467-4756
 Owner: Greg Rakun
 Studio Manager: Greg Rakun

[16] HARTWOOD RECORDING
 4607 Jeffers Rd.
 Eau Claire, WI 54703
 (715) 834-5122
 Owner: John Hartzell
 Studio Manager: Ruth Hartzell

[16] HARVEST PRODUCTIONS
 3125-1/2 S. Logan
 Lansing, MI 48910
 (517) 887-6555
 Owner: Mark Miller, Steve Curran

[16] HG STUDIO
 21332 7 Mile Rd.
 Franksville, WI 53126
 (414) 425-3885
 Owner: Don Hunjadi, Gordon Hartmann
 Studio Manager: Don Hunjadi
 Engineers: Don Hunjadi
 Dimensions: Studio 25 x 11, control room 13 x 17.
 Mixing Consoles: Ramsa WR-T820 20 x 8 x 2 w/full metering.
 Audio Recorders: Tascam MS-16 16-track w/autolocator, Tas-
 cam 38 8-track, Tascam 32 2-track, Tascam 22 2-track, Gates
 1-track broadcast cart machine (play and record)
 Cassette Recorders/Duplicators: Onkyo TA-2066.
 Noise Reduction Equipment: dbx 150, dbx 155, Tascam
 DX4D, (2) Tascam DX8Ds.
 Echo, Reverb, & Delay Systems: Lexicon PCM60 digital re-
 verb, Alesis MIDverb II, DellaLab Effectron digital delay, Ro-
 land SDE-1000 digital delay, Eventide HM-80 harmonizer.
 Other Outboard Equipment: (2) dbx 160X compressor/lim-
 iters, PAIA stereo limiter, (2) dbx 263X de-essers, Aphex Type
 B Aural Exciter, PAA parametric EQ, Rane RE14 graphic EQ,
 (2) custom built noise gates w/key input.
 Microphones: AKG 414EB, Sennheiser MD-441, (2) Sen-
 heiser MD-421, (2) Shure SM58, Shure SM57, Audio-Tech-
 nica ATM21, (2) Audio-Technica ATM31, (4) Realistic con-
 densers, DOD active direct box, Whirlwind direct box.
 Monitor Amplifiers: Crown D75, Pioneer SX680, Tascam head-
 phone.
 Monitor Speakers: (2) JBL 4311B (control room), (2) JVC
 SK202 (studio), (2) Auratone 5C.
 Musical Instruments: Yamaha DX7, Roland digital piano, Ro-
 land S-50 sampler, Prophet 600, Oberheim DX drum ma-
 chine, others on request, extra charge for some instruments.
 Video Equipment: JVC CR6100U 3/4" recorder player, Quasar
 1/2" recorder player, 1/2" and 3/4" off-line editing on request.
 Rates: 16-track \$25/hr., 8-track \$20/hr., 2-track \$15/hr., video
 \$25/hr. and up.

[16] HIDDEN CITY RECORDERS
 26769 W. Hills Dr.
 Inkster, MI 48141
 (313) 563-9350
 Owner: Jim "Flash" Pashkot
 Studio Manager: Rae Pashkot

[16] HUBBARD STREET STUDIOS
 11 E. Hubbard
 Chicago, IL 60611

(312) 670-0110
 Owner: Jim Poulosom, Fred Reynolds

[16] IGL AUDIO
 Shore Acres, Box 100
 Spirit Lake, IA 53160
 (712) 336-2859
 Owner: John Senn
 Studio Manager: John Senn

[16] INLAND SEA RECORDING
 also REMOTE RECORDING
 2117 E. 5th St.
 Superior, WI
 (715) 398-3627
 Owner: Dave Hill
 Studio Manager: Dave Hill

[16] IT'S NO PROBLEM AUDIO
 also REMOTE RECORDING
 3537 W. Wolfram St.
 Chicago, IL 60618
 (312) 342-2290
 Owner: Susan Tyda

[12] JBL RECORDING STUDIO
 (SHORESIDE ENTERPRISES)
 also REMOTE RECORDING
 291 Donahue Beach
 Bay City, MI 48706
 (517) 684-5280
 Owner: John A. Lipkinski
 Studio Manager: John A. Lipkinski

[16] JMC RECORDING
 359 Stable Rd.
 Lagrange, OH 44050
 (216) 458-6871
 Owner: John M. Cerny
 Studio Manager: John M. Cerny

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NORTH CENTRAL
12-16 TRACK
STUDIOS

[12] KAYDON STUDIO'S
4391 N. Cottonwood Tr.
Hoffman Estates, IL 60195
(312) 991-8143
Owner: Don Wendel
Studio Manager: Don Wendel

[16] KENNETT SOUND STUDIOS, INC.
also REMOTE RECORDING
PO Box 602
Kennett, MO 63857
(314) 888-2995
Owner: Kennett Sound Studio, Inc
Studio Manager: Joe Keene

[16] KEYNOTE RECORDING STUDIOS
also REMOTE RECORDING
4322 Mahoning Ave.
Youngstown, OH 44515
(216) 793-7295
Owner: Richard M. Hahn
Studio Manager: Cheryl Lanza

[16] KHAN AUDIO SYSTEMS
also REMOTE RECORDING
1231 W. Barry
Chicago, IL 60657
(312) 935-5460
Owner: Gary A. Khan
Studio Manager: Carol Sopkin

[16] KLAVIER AUDIO ARTS
PO Box 67
Monroe, OH 45050
(513) 424-7296
Owner: Ron Crosby
Studio Manager: Bill Eisele

[16] LAKESIDE MEDIA
1437 W. Howard
Chicago, IL
(312) 274-8999
Owner: Bill Landow
Studio Manager: Victor Sanders

[16] LAKESITY RECORDING STUDIOS
2554 Boone Ave. S.
St. Louis Park, MN 55426
(612) 546-8331
Owner: Les & Laura Walstein
Studio Manager: Rob Genadek, Les Walstein

[16] LIGHTHOUSE PRODUCTIONS
also REMOTE RECORDING
2020 E. Camp McDonald Rd.
Mt. Prospect, IL 60056
(312) 823-8855
Owner: Chip Moore
Studio Manager: Dan Reifsnnyder

[16] LITTLE BEAR SOUND STUDIOS
4243 N. Levitt
Chicago, IL 60618
(312) 975-7123
Owner: Donald Spence
Studio Manager: Donald Spence

[16] LIVONIA SOUND RECORDING
16535 Rougeway
Livonia, MI 48154
(313) 522-7274
Owner: Henry J. Vartanian
Studio Manager: Henry J. Vartanian

[16] LTC MUSIC, INC.
also REMOTE RECORDING
7533 S. Phillips
Chicago, IL 60649
(312) 374-4606
Owner: James Rapier
Studio Manager: Don Reese

[16] MARS STUDIOS
also REMOTE RECORDING
32805 Miles Rd.
Chagrin Falls, OH 44022
(216) 248-8861
Owner: Bill Korecky
Studio Manager: Bill Korecky

[16] MAUER BROTHERS RECORDING STUDIO INC.
also REMOTE RECORDING
7933 N. 73rd St.
Milwaukee, WI 53223
(414) 354-5140
Owner: Mauer Brothers, Inc.
Studio Manager: Scott Schuelke
Engineers: Mark Mauer, Charlie Mauer, Scott Schuelke, independents
Dimensions: Studio 16 x 38, control room 19 x 21, drum booth 10 x 18, voiceover booth 7 x 8
Mixing Consoles: NEOTEK Series 1-E 16 x 8 x 16.
Audio Recorders: Tascam MS-16 16-track w/autolocator, Tascam 80-8 8-track, Tascam 25-2 2-track, Otari MTR-102 2-track w/autolocator, Scully 280-B 2-track
Cassette Recorders/Duplicators: (3) Nakamichi 480
Echo, Reverb, & Delay Systems: Ursa Major Space Station, Roland SDE-3000, Roland RE-201, SPX90
Other Outboard Equipment: Eventide 910 Harmonizer, Aphex Type II, GT-4 noise gate, dbx 161 stereo comp/limiter, Roland stereo phase shifter, Neptune 342 parametric EQ, MXR 15-band graphic EQ, (2) Technics SL1500 MkII & SL-B1 turntables, Orban 424A comp/limiter/de-esser
Microphones: AKG, Sennheiser, Shure, E-V, Neumann
Monitor Amplifiers: SAE 2600 (mains), SAE 2200 (ref.), Marantz 140s
Monitor Speakers: UREI 813-A, JBL 4301, JBL (custom built), Yamaha NS10M studio monitors.
Musical Instruments: Rogers 11-piece drum kit, Hammond B-3 w/Leslie, Yamaha DX7, any instruments you need.
Video Equipment: Full video services available on request.
Rates: Please call for rates.

[16] MEDIA SERVICES
also REMOTE RECORDING
Baha'i National Center
Wilmette, IL 60091
(312) 869-9039
Studio Manager: Charles Nolley

[16] METRO SOUND
5143 Brouse Ave.
Indianapolis, IN 46205
(317) 251-1638
Owner: Chris Rich
Studio Manager: Chris Rich

[16] METZ SOUND
also REMOTE RECORDING
1512 W. Berwyn
Chicago, IL 60640
(312) 989-1111
Owner: John I. Metzger
Studio Manager: John I. Metzger

[16] MIDI MAGIC BY RBJ PRODUCTIONS
PO Box 4443
Northbrook, IL 60065
(312) 498-1180
Owner: Ron Jacobson
Studio Manager: Ron Jacobson

[12] MIEL RECORDING
also REMOTE RECORDING
2115 Vermont Studio B
Blue Island, IL 60406
(312) 389-1213
Owner: Miel Inc.
Studio Manager: Mike Allison
Extras & Direction: Miel is a professional recording studio with a clean and friendly environment where creative talent can do their best work cost effectively. Our management and engineering staff are all pro musicians with years of experience on the road, in clubs, concert and theater productions. We have recorded country, blues, Top 40, hard rock and jazz bands. We have also recorded medieval, folk and opera singers. We also offer stereo video productions with hot edited inserts for promo and demo packages, orchestration and arrangements for songwriters and soloists and fresh ground gourmet coffee.

[16] MILLENNIAL RECORDING STUDIO
219 W. Main St.
Flat River, MO 63601
(314) 431-2703
Owner: David L. Lubbers

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A Mix Publication

[16] MILWAUKEE SOUND STUDIOS
also *REMOTE RECORDING*
610 N. Water St., Ste. 100
Milwaukee, WI 53202
(414) 272-7085
Owner: Mark D. Hejleniak
Studio Manager: Betty Samuelson

[16] MOBILE RECORDING CO.
also *REMOTE RECORDING*
4929 N. Ridgeway
Chicago, IL 60625
(312) 267-8666
Owner: John McCortney
Studio Manager: Lynette McCortney
Engineers: John McCortney
Dimensions: Studio 20 x 18, control room 16 x 14
Mixing Consoles: Biamp 2016 20 x 16 w/mega mix automa-
tion, Audio Developments AD 145 6 x 2, (2) Tascam Model 1 8
x 2
Audio Recorders: Otari MX-70 16-track, Studer A810 2-track,
(2) Revox A77 2-track, Sony PCM-501 2-track digital
Cassette Recorders/Duplicators: (25) Denon M-10
Synchronization Systems: Audio Kinetics Pacer
Echo, Reverb, & Delay Systems: (2) Yamaha SPX90, Lexicon
PCM42 delay, Master-Room XL-210 reverb
Other Outboard Equipment: (2) dbx 160X compressors
Microphones: (2) B&K 4006, (8) Shure SM81, (4) E-V RE16,
(2) Beyer M260, Audio-Technica 818
Monitor Amplifiers: Haller 500, Carver M1 OT
Monitor Speakers: (2) Norberg BCS 16, (2) E-V eliminators
Musical Instruments: Yamaha DX7, Yamaha RX11
Other MIDI Equipment: C-64 computer, Sonus 64 super se-
quencer, Passport MIDI interface, Apple Macintosh SE w/MIDI
interface
Video Equipment: Sony VO-5600 3/4" recorder, Sony DXC-
1640 camera, Commodore 1701 13" monitor
Rates: On request

[16] MODERN RECORDING SERVICE'S INC.
also *REMOTE RECORDING*
2201 Eldred Ave.
Lakewood, OH 44107
(216) 221-1133
Owner: John P. Walsh
Studio Manager: John P. Walsh

[12] MP STUDIOS
3418 Main
Skokie, IL 60076
(312) 677-3550
Owner: HRP Enterprises, Inc.
Studio Manager: Mike Polakoff
Engineers: Bradley Spalter, Timothy Baker
Dimensions: Room 1 studio 20 x 30, control room 15 x 25
Mixing Consoles: (3) Yamaha DMP7s 24 x 24 digital audio
processors fully automated, Akai MG12-14 14 x 12
Audio Recorders: Akai MG1214 14-track multi-track, Tascam
2-track 32 mastering deck, Sony PCM-501 2-track digital
recorder
Cassette Recorders/Duplicators: Awa AD-15, Aiwa F-660,
Akai GX-912
Noise Reduction Equipment: dbx Type 1 for multi-track and
Tascam 2-track mastering deck
Synchronization Systems: (2) SMPTE write sources
Echo, Reverb, & Delay Systems: Lexicon 224 w/LARC, (9)
Yamaha SPX90s, Lexicon PCM70, Yamaha REV7, Roland
DEP-5, TC-2250 Dynamic Digital delay, Roland SDE-3000,
ADA Pitchtrack
Other Outboard Equipment: Apex mono Compellor, (2) dbx
166 stereo compressors, dbx 263X de-esser, dbx 163X com-
pressor, (2) Tascam M1B, Klark-Teknik DM360 room EQs,
Scholz modules, Rane HC6 headphone console
Microphones: Neumann U89, Bruel & Kjaer 4007 high intensi-
ty omni directions, (2) Shure SM57, Shure SM96, AKG D-112
bass drum mic, AKG D-310, AKG D-125
Monitor Amplifiers: Carver PM-350, Kenwood M-2A, Tascam
PA-30B
Monitor Speakers: (2) UREI 809, (2) JBL 4406, (2) Pioneer
CSG-201
Musical Instruments: Emulator II+ digital sampler, Roland D-
50 linear synthesizer, Roland S-50 digital sampler, Yamaha
DX7, Yamaha DX7-IIFD, Roland MD-1000, Roland MKS-70
(Super JX module), Oberheim Matrix 6R, Ensoniq Mirage,
E-mu SP-1200 drum machine, Charvel Model 6 guitar, Charvel
Model 4 bass, Yamaha G90A acoustic guitar
Other MIDI Equipment: JL Cooper MSB+ MIDI patcher, 360
Systems MIDI patcher, Macintosh 512 800k drive fully loaded
w/software, Roland Octapad w/six external pads
Other: (3) AKG K240 monitor headphones, (2) Tripp line con-
ditioner/stabilizer, Crown phantom power supply
Rates: Available upon request.

[16] RICH MURPHY CREATIVE SERVICES
also *REMOTE RECORDING*
7878 Big Sky Dr.
Madison, WI 53719

(608) 833-4045
Owner: Rick Murphy
Studio Manager: Libby McHugh

[16] NEW ORIENT MEDIA
also *REMOTE RECORDING*
126 W. Main St.
West Dundee, IL 60118
(312) 428-6000
Owner: Bob Sandidge
Studio Manager: Bob Tonge

[16] NITWIT PRODUCTIONS
1107 W. 16th St.
Davenport, IA 52804
(319) 323-7347
Owner: Dan Schafnit
Studio Manager: Loo-Wee Schafnit

[16] PAPA LOU RECORDINGS
also *REMOTE RECORDING*
PO Box 37251
Cincinnati, OH 45222
(513) 242-8000
Owner: Louis M. Ukelson
Studio Manager: Buddy Griffin

[16] PARADISE SIGHT & SOUND
1620 S. Broadway
St. Louis, MO 63104
(314) 421-1211
Owner: Mark Slocombe
Studio Manager: Amy Rotan

[16] PAX RECORDING SYSTEMS
also *REMOTE RECORDING*
1041 Baldwin Dr.
Apple Valley, MN 55124
(612) 432-5841
Owner: Jeff & Lori Labelle
Studio Manager: Lori LaBelle

[16] PETERS SOUND RECORDING SERVICE
also *REMOTE RECORDING*
240 E. 242nd St.
Euclid, OH 44123
(216) 731-4171
Owner: Michael G. Peters
Studio Manager: Matthew 28

[16] PHASE ONE MEDIA CENTER
2415 E. Lombard St.
Davenport, IA 52803
(319) 359-3856
Owner: Terry Loder, Phil Hartley
Studio Manager: Scott D. Papich

[16] PIONEER RECORDING STUDIO
also *REMOTE RECORDING*
4238 Ramsgate
Bloomfield Hills, MI
(313) 855-1466
Owner: Gary A. Rubin
Studio Manager: Chris Ruggero

[16] PREMIER FILM VIDEO AND RECORDING CORP.
also *REMOTE RECORDING*
3033 Locust
St. Louis, MO 63137
(314) 531-3555
Owner: Wilson Dalzell
Studio Manager: Grace Dalzell

[16] PRESCO PRODUCTIONS
also *REMOTE RECORDING*
4366 W. 66th St.
Cleveland, OH 44144
(216) 749-7244
Owner: J.F. Presby Jr.
Studio Manager: J.F. Presby Jr.

[16] PRIME TIME RECORDING STUDIO
also *REMOTE RECORDING*
388 Lynndale Dr.
Akron, OH 44313
(216) 928-2313
Owner: Thomas M. Hanna
Studio Manager: Thomas M. Hanna

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[16] PROFOUND SOUND
693 Green Forest Dr.
Fenton, MO
(314) 343-4765
Owner: John Nolan
Studio Manager: John Nolan

[16] Q&R RECORDING STUDIO
1307 Ridge Ave.
Evanston, IL 60201
(312) 864-6655
Owner: Q Brown
Studio Manager: Steve Rashid

[16] RAINBOW RECORDING
30 Hilltop Lane, #10
Mankato, MN 56001
(507) 625-4027
(507) 625-7049
Owner: Michael Tolman
Studio Manager: Michael Tolman

[16] RAMONA STUDIO
also REMOTE RECORDING
646 Locust
Lawrence, KS 66044
(913) 842-9955
Owner: Ramona Records Inc
Studio Manager: Karl Hoffmann

[16] RAVE RECORDING
also REMOTE RECORDING
1932 S. Halsted
Chicago, IL 60608
(312) 738-0211
Owner: RRC
Studio Manager: Bob Chianelli

[16] REAL TIME RECORDING
also REMOTE RECORDING
1201 Jackson
Cincinnati, OH 45210
(513) 731-1935
Owner: David Erichson
Studio Manager: Peter Baer

[12] THE RECORDING RANCH
9910 Lisbon Rd.
Yorkville, IL 60560
(312) 553-5055
Owner: Craig W Cox
Studio Manager: Craig W Cox

[16] REEL TIME RECORDING
5822 W. Giddings
Chicago, IL 60630
(312) 286-5677
Owner: Mark Ignoffo
Studio Manager: Mark Ignoffo
Engineers: Mark Ignoffo, Kim Sattler
Dimensions: Studio 19 x 17, control 13 x 10
Mixing Consoles: TAC Scorpion
Audio Recorders: Otari MX-70 16-track 1" Akai 1212 12-track, Tascam 38 8-track 1/2", Otari MX 5050 Mark III 2-track 1/4", Tascam 32-2B 2-track 1/4"
Cassette Recorders/Duplicators: Yamaha MT44 4-track, Technics RSB 85
Noise Reduction Equipment: (2) dbx DX-40 4-channel units. Echo, Reverb, & Delay Systems: Lexicon PCM70, Lexicon PCM60, Lexicon PCM42 w/extended memory, MXR digital delay, Yamaha E1010 delay
Other Outboard Equipment: (2) dbx 163x compressor/limiter, dbx 263x de-esser, dbx 463x noise gates, dbx 166 compressor/limiter/noise gate, Furman QN4 4-channel noise gate, (2) Valley People Dyna-mite limiter/gate, Yamaha SPX90 multi-effects unit, Barcus-Berry Electronics 802 audio enhancer
Microphones: (2) AKG D12E, (2) Beyers M69, (3) Shure SM57, Shure SM81, Audio-Technica 2500D, E-V PL91
Monitor Amplifiers: Yamaha P2201, Soundcraft LA 2502
Monitor Speakers: (2) UREI 809, (2) Yamaha 5115, (2) Auratones
Musical Instruments: Young Chang acoustic piano, Hammond B-3, Yamaha CP30, Moog Opus, ARP Odyssey, Korg Poly 800, Roland 707 drum machine, Roland 727 percussion machine, Ludwig 5-piece drum kit
Other: Various phasers, flanges, chorus, overdrive and volume pedals
Rates: Simply the best!

NORTH CENTRAL 12-16 TRACK STUDIOS

[16] REELSOUND AUDIO PRODUCTIONS
also REMOTE REMOTE
25859 Mulroy Dr.
Southfield, MI 48034
(313) 356-2640
Owner: Jamie Ascenzo
Studio Manager: Dan Ascenzo

[16] RINGGER RANCH RECORDING
also REMOTE RECORDING
RR 1, Box 217B
Carlock, IL 61725
(309) 376-6001
Owner: Gary Ringger, Dennis Virkler
Studio Manager: Dennis Virkler

[16] RSC STUDIO
834 W. Webster
Chicago, IL 60614
(312) 935-2727
Owner: Bob Garritano
Studio Manager: Bob Garritano

[16] RSVP, INC.
also REMOTE RECORDING
7701 N. Teutonia Ave.
Milwaukee, WI 53209
(414) 354-6400
Owner: Linda Radtke
Studio Manager: Larry Hansen

[16] SCHOOLHOUSE STUDIOS
also REMOTE RECORDING
125 S. Lucus St.
Iowa City, IA
(319) 337-6311
Owner: John D Reasoner
Studio Manager: John D Reasoner

[16] SCHOOL OF MUSIC RECORDING STUDIO
also REMOTE RECORDING
455 N. Park St.
Madison, WI 53706
(608) 263-1888
Owner: Univ of Wis
Studio Manager: Jim Shuft

[16] SESSIONS INC.
27801 Euclid Ave.
Euclid, OH 44132
(216) 731-SONG
Owner: Linc Chamot, Jim Wunderle
Studio Manager: Linc Chamot, Jim Wunderle

[16] SHAMBALLA STUDIO
Box 4451
Springfield, MO 65808
(417) 831-5233
Owner: Lloyd Littlefield
Studio Manager: Lloyd Littlefield

[16] SHORT ORDER RECORDER
2269 Sheridan Rd.
Zion, IL 60099
(312) 746-3767
Owner: Gary Klebe, John Murphy, Jeff Murphy
Studio Manager: Jeff Murphy

[12] SIGN WAVE STUDIO
10504 Washburn Rd.
Orionville, MI 48462
(313) 627-6403
Owner: Hank Baxter
Studio Manager: Hank & Michele Baxter

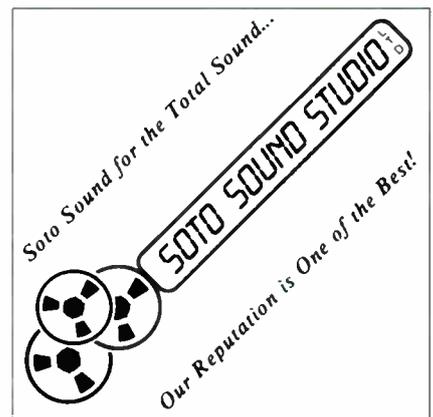
[16] SITAR'S SOUND STUDIO
also REMOTE RECORDING
280 E. Haven Ave.
New Lenox, IL 60451

(815) 485-2507
Owner: John L. Sitar
Studio Manager: Karen Sitar

[16] SKYLIGHT STUDIOS
3003 N. Snelling Ave.
St. Paul, MN 55113
(612) 631-5000
Owner: Skylight Satellite Network
Studio Manager: Curtis R. Olson

[16] SMART STUDIOS
1254 E. Washington Ave.
Madison, WI 53703
(608) 257-9400
Owner: Bulch Vig, Steve Marker
Studio Manager: Patricia Lew

[16] SOS PRODUCTIONS
753 Harmon Ave.
Columbus, OH 43223
(614) 221-0966
Owner: J. Scheiman, M. Sanborn
Studio Manager: R. Shkolnik
Extras & Direction: SOS Productions is a service-driven organization committed to excellence in full-service videotape and film production and post-production, providing real value in process and product to local, regional and national clients. An energetic blend of the technical and the human processes allows SOS Productions to be a strong contributor to the communications industry and its clients at all levels



SOTO SOUND STUDIO
Evanston, IL

[16] SOTO SOUND STUDIO
also REMOTE RECORDING
931 Sherman Ave.
Evanston, IL 60202
(312) 475-9556
Owner: Jerry and Claudine Soto
Studio Manager: Claudine Soto
Engineers: Jerry Soto
Dimensions: Studio 30 x 30 w/vocal booth, control room 15 x 25
Mixing Consoles: Sunn Magna 5000 24 x 4, Tascam Model 5 8 x 4, Tascam Model 5 EX 8 x 4
Audio Recorders: Tascam Series 70 8-track, Tascam 90-16 16-track, (2) TEAC 2340 4-track, Otari MX 5050 1/2-track, Ampex PR10 1/2-track, (2) TEAC
Cassette Recorders/Duplicators: (2) Hitachi cassette decks Echo, Reverb, & Delay Systems: MXR digital delay, MXR flanger, Tapco reverb, MXR pitch transposer, Brick Audio plate reverb, DOD digital delay, Eventide HM80 Harmonizer
Other Outboard Equipment: dbx 160, dbx 161 comp/limiter, dbx 164 stereo comp/limiter, Symetrix CL-100 compressor/limiter, dbx noise reduction, Soundcraft RP 2201-IR graphic equalizer, Philips 312 electronic turntable, Omni Craft Quad noise gate, Boss digital sampler, Alesis MIDiverb
Microphones: Sennheiser, AKG, Shure, E-V, Audio-Technica
Monitor Amplifiers: Yamaha P2200, QSC5 1, Technics SU730
Monitor Speakers: Altec Valentias, Auratone, Philips, Koss, transistor radio
Musical Instruments: Dr Rhythm, Simmons drums available upon request, Moog Rogue, Yamaha CP-10, guitar, keyboard and bass amps, Ludwig drums, Hammond B-3 organ (w/percussion), Leslie speaker, Fender Rhodes, Moog Prodigy synthesizer, Wuritzer baby grand, asst percussion, Gibson Les Paul "Gold Top", Epiphone bass, acoustic guitar, Roland organ/strings, Yamaha digital drum machine, Roland 707 drum machine, Sequential Drumtraks, Oberheim OB-Xa
Other MIDI Equipment: Commodore computer w/MIDI interface, Syntek software

Rates: 1-4-track, \$30/hr.; 8-track, \$33/hr.; \$150/5 hrs.; 16-track, \$40/hr. \$180/5 hrs. Lyrics set to music: 1 song, \$175; 2 songs, \$300.
Extras & Direction: Studio musicians available. Guitar, keyboard, arranging or production services available by Jerry Soto. Free video recording of any session! (Just bring a VHS cassette.) Soto Sound Studio offers complete professional music arranging and producing for songwriters in all styles of music. Soto Sound would also like to acknowledge all of the activity and excitement being generated in the Chicago music scene. The Chicago music coalition (CMC), the Chicago Songwriter's Assoc. (CSA), The Nashville Songwriters Assoc. (NSA) and two committees of the Chicago chapter of NARAS, Woman in Music (WIM) and the Engineering and Recording Society (EARS) and many other music related organizations have been networking and creating quite a buzz in the local music scene. Soto Sound is proud to be affiliated with these organizations. Come and see what the excitement is all about.

[16] THE SOUND KITCHEN
 Ford Rd.
 Canton, MI 48187
 (313) 981-5329
 Owner: Erik Webster, Tom Malinowski
 Studio Manager: Erik Webster

[16] SOUND TRAX +
 1000 W. 17th St.
 Bloomington, IN 47401
 (812) 332-7475
 Owner: Joseph T Wilson
 Studio Manager: Dr. Joe Sound

[16] SOUNDSTAGE 1 RECORDING SERVICES
 also **REMOTE RECORDING**
 13270 6 1/2 Mile Rd.
 Battle Creek, MI 49017
 (616) 979-1532
 (616) 979-3043
 Owner: James R. Cummings
 Studio Manager: Kim Rasey

tor, Pultec MEQ-5 mid-range tube EQ, Pultec EOP1 high/low tube EQ, Pultec EQH-2 high/low tube EQ, Ashly SC-50 4-band stereo parametric, Ashly SC-63 3-band mono parametric, Ashly SC-33 noise gate, 200 point TTY patchbay, Onkyo and AR turntables.
Microphones: (2) AKG C-12, (5) AKG C12-A, (2) AKG C28-A, AKG C24 (stereo), AKG C61, Neumann U47, Neumann M49, (2) Neumann KM53, (2) Neumann KM54, Neumann SM69 (stereo), Neumann SM2 (stereo), Schoeps MK221, (2) AKG CK-4 capsules (for modifying AKG C28-A or AKG C-60 mics to emulate AKG C-12 system), Sony C-500, (2) Beyer M160, (2) Sennheiser MD441, Sennheiser D421, Sony C-22, Beyer 300, E-V 676, E-V 666, (5) Shure SM58, (2) Shure 545
Monitor Amplifiers: (2) Yamaha P2200s, Yamaha P2050, McIntosh 50, Symetrix HA-10B, Biamp TC-120
Monitor Speakers: UREI 813B, Auratone, E-V 12-2A, E-VS15-3 (keys or bass).
Musical Instruments: Baldwin SD-10 9' concert grand piano, Fender Rhodes (rebuilt), Sonor drums (complete kit), Fender Twin guitar amp.
Video Equipment: Panasonic 16-track color monitor sync-lock, Sony SLHFR-70 1/2" Super-Beta, Sony SLHF-900 1/2" Super-Beta Hi-fi, Sony SLHF-750 1/2" Super-Beta Hi-fi, Sony RME-100V editor.

Rates: Upon request.
Extras & Direction: Sparrow Sound Design (SSD) is a musician-owned and operated recording studio, with a strong conviction for the need of musical/technical co-existence. Located just minutes from downtown Chicago, SSD offers an environment of quiet ambience and complete comfort. With an emphasis on album/CD/cassette production, SSD has worked within the rock, jazz, classical, blues, country and various new music idioms. Likewise, complete production of industrial/film narration and music, voice-over tapes, jingle demos and on-air commercial recording is available. Clients include: Mo'Ning, Dr. Charles Moore, Alex Ross, Johnny Britt, Ari Brown, Center for Net Television, Chicago Dance Medium, Colossal Nerve, Josie Falbo, Phoenix Talent, Don Moye, Aaron Freeman, Von Freeman, Jaime Gardiner, Willie Pickens, Dave Gordon, Stephen Hartman, Kitty Haywood, Clarendia Gaudio-Johnson, Joanna Klein, Ken Krause, John Magnan, Dick Marx, Jeff Morrow, Daniel O'Brien, Richard Redlin, Richard Schoen, Mary Stolper, Judy Storey, Ray Tate Wandachristine, Facets Multimedia.

[16] STAGE 4 PRODUCTIONS, INC.
 395 E. Elmwood Ave.
 Troy, MI 48063
 (313) 585-TAPE
 Owner: William T. Gutherie
 Studio Manager: Shades Kroll

[16] STERLING SOUND PRODUCTIONS VIDEO AND RECORDING STUDIO
 33018 Breckenridge Dr.
 Sterling Heights, MI 48310
 (313) 977-7829
 Owner: Richard F. Carver
 Studio Manager: Gordon F. Carver

[16] STUDIO "B"
 2215 Wilmette Dr.
 Rockford, IL
 (815) 398-4477
 Owner: Michael & Deborah Castronovo
 Studio Manager: Michael Castronovo

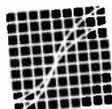
[16] THE STUDIO/GTK SYSTEMS
 26007 W. Warren
 Dearborn Heights, MI 48127
 (313) 277-2312
 Owner: Gary T. Kula
 Studio Manager: Gary Kula, Chris Walker

[16] STUDIO ONE
 also **REMOTE RECORDING**
 821 University Ave.
 Madison, WI 53706
 (608) 263-7928
 Owner: University of Wisconsin
 Studio Manager: Don Sieb



SPARROW SOUND DESIGN
 Chicago, IL

[16] SPARROW SOUND DESIGN
 also **REMOTE RECORDING**
 3501 N. Southport
 Chicago, IL 60657
 (312) 281-8510
 Studio Manager: Char Kirchoff
 Engineers: Joanie Pallato, Bradley Parker, Annette Schwarz, Chris J. Parker
 Dimensions: Studio 50 x 35, control room 15 x 30, isolation 10 x 11
Mixing Consoles: Custom designed mixer 36 x 16, (6) aux sends, (2) stereo headphone mixes, (3) mono headphone mixes.
Audio Recorders: Tascam 85-16 16-track 1" (rebuilt/modified) w/remote and autolocator, Ampex ATR-102 2-track 1/2" (remote and varispeed) 30 ips, Sony 501-ES 2-track digital, Technics 1520 2-track 1/4" (modified), TEAC 3440 4-track 1/4" (modified).
Cassette Recorders/Duplicators: TEAC V-7, TEAC V-750, TEAC 133 3-channel cassette/slide.
Echo, Reverb, & Delay Systems: EMT 140-S plate reverb w/remote, Yamaha REV7, Lexicon PCM60 digital reverb, Lexicon Prime Time, (2) Lexicon PCM41 digital delays, Technics 1506 tape delay, Furman RV-1.
Other Outboard Equipment: (2) UREI LA-2A tube limiters, (4) UREI 1176LN limiters, Ashly SL-50 limiter, Ashly SC55 stereo limiter, Pye stereo compressor/limiter, UREI 964 click genera-



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[16] SUN SOUND STUDIO
also REMOTE RECORDING
540 N. 32nd Ave.
St. Cloud, MN 56301
(612) 253-8652
Owner: Mitch Groethe
Studio Manager: Mitch Groethe

[16] SUNSET STUDIO
also REMOTE RECORDING
117 W. 8th
Hays, KS 67601
(913) 625-9634
Owner: Mark Meckel
Studio Manager: Mark Meckel

[16] SUTTMAN PRODUCTIONS
also REMOTE RECORDING
PO Box 72
Dayton, OH 45409
(513) 278-4601
Owner: Eric J. Suttman
Studio Manager: Eric J. Suttman

[16] SWEET SPIRIT STUDIO
730 Hamilton Ave.
Wheelersburg, OH 45694
(614) 574-8091
Owner: Rick Schweinsberg
Studio Manager: Rick Schweinsberg

[16] SYNCHRONIX, INC.
also REMOTE RECORDING
856 Lincoln Ave.
St. Paul, MN 55105
(612) 291-9121
Owner: Richard Grossman, Paul Musikov
Studio Manager: Madeleine Hart

NORTH CENTRAL
12-16 TRACK
STUDIOS

[16] SYNDER SYSTEMS
16638 E. Warren
Detroit, MI 48224
(313) 881-5167 (24 hrs.)
(313) 884-1790
Owner: Kenny Keys
Studio Manager: Paco Bell

[16] TAPE MASTERS RECORDING
3532 Washington Blvd.
Indianapolis, IN 46205
(317) 926-2025
Owner: Tom Reynolds
Studio Manager: Grant Kattmann

[16] THAYER MUSIC STUDIO
Korner Plaza
Thayer, MO 65791
(417) 264-3902
Owner: Darold Johnson
Studio Manager: Greg Ray

[16] T.K.O. RECORDING STUDIO
18902 Puritas
Cleveland, OH 44135
(216) 671-8476
Owner: Edward Salzgeber
Studio Manager: Edward Salzgeber

[16] TOBY'S TUNES, INC.
2325 Girard Ave. S.
Minneapolis, MN 55405
(612) 377-0690
Owner: Harley "Toby" Toberman
Studio Manager: Ms. Piggy
Extras & Direction: Twenty one music libraries on stereo tapes and CDs. Eight sound effects libraries on records and CDs. Plus, The James & Aster Supraphon Classical Music Library on stereo tapes. Toby's Tunes has the most extensive music and effects libraries for all your post scoring needs. Video sweetening with the Q.Lock Eclipse system locked up to our JVC 850 3/4" video player, Otari MX-70 16-track and Otari MTR-10 2-track with center-track time code. Best video sweetening in town. New! MIDI composing studio with Macintosh and Performer software. Roland S-50 sampling keyboard, SP-12 drum machine and stuff.

[16] TRACK RECORD STUDIOS, INC.
also REMOTE RECORDING
1561 Sherburne Ave.
St. Paul, MN 55104
(612) 645-9281
Owner: Lawellin & Freeberg
Studio Manager: Lawellin & Freeberg

[16] THE TRACKING STATION
also REMOTE RECORDING
3504 44th Ave. S.
Minneapolis, MN 55406
(612) 729-8712
Owner: Brad Stokes

[16] WEBSTER UNIVERSITY
also REMOTE RECORDING
470 E. Lockwood
St. Louis, MO 63119
(314) 968-7484
Owner: Webster University
Studio Manager: Elsie Voss

[16] WEST BANK SOUND
also REMOTE RECORDING
1413 Washington Ave. S.
Minneapolis, MN 55454
(612) 370-0098
Owner: Lawrence Fried
Studio Manager: Lawrence Fried

[16] WHITE HORSE RECORDING
also REMOTE RECORDING
620 15th St.
Moline, IL 61265
(309) 797-9898
Owner: Ron Spencer, Jeanne McKirchy-Spencer
Studio Manager: Jeanne McKirchy-Spencer

[16] WHITE ROSE RECORDING STUDIO
1053 N. Parker Rd.
Dexter, MI 48130
(313) 426-2120
Owner: Anthony Whipple
Studio Manager: Anthony Whipple

[16] WILDELIFE STUDIOS
72 Mallard Ln.
Wilmington, IL 60481
(815) 476-2464
Owner: Thomas Podnar
Studio Manager: Thomas Podnar

[16] LUTHER WILSON MUSIC CO.
also REMOTE RECORDING
312 S. Mill St.
Kansas City, KS
(913) 621-1676
Owner: Luther Wilson Jr.
Studio Manager: Luther Wilson Jr.

[16] WOOD N' NICHOLS
also REMOTE RECORDING
5002 Old Shakopee Rd.
Bloomington, MN 55437
(612) 882-0271
Owner: Wayne Wood, Michael Nichols

EQUIPMENT FOR SALE?

If you have equipment to sell—whether it's a single microphone or an entire studio—**Mix Classifieds** are the place to advertise. **Mix Magazine's** classified section is the biggest in the industry, and more than 75,000 audio and music pros read **Mix** every month!

When professionals need equipment, **Mix** is the first place they look. So if you've got gear you absolutely must sell, advertise in the magazine you can count on to get results. To place your ad, call Lauri Newman at (415) 843-7901, or use the order form in the back of this issue.

MIX THE RECORDING INDUSTRY MAGAZINE

2608 NINTH STREET, BERKELEY, CALIFORNIA 94710 (415) 843-7901

NORTH CENTRAL

4-8 TRACK

STUDIOS

[8] A & F MUSIC SERVICES
2834 Otsego
Pontiac, MI 48054
(313) 682-9025
Owner: Frank C. Merwin

[8] AARD-VARK RECORDING
also REMOTE RECORDING
335 S. Jefferson
Springfield, MO 65806
(417) 866-4104
Owner: Bill Jacobsen
Studio Manager: Bill Jacobsen

[8] A.B.E. RECORDING
also REMOTE RECORDING
701 Gladstone SE
Grand Rapids, MI 49506
(616) 243-5968
Owner: Paul Abid
Studio Manager: Bill Czyzyk

[8] ACES MIDNIGHT MUSIC
also REMOTE RECORDING
9368 Winston
Redford, MI 48239
(313) 537-2645
Owner: Ron Gulzeit
Studio Manager: Ron Gulzeit

[8] ALPHA
also REMOTE RECORDING
620 D'Lyn St.
Columbus, OH 43228
(614) 870-6661
Owner: Timothy Sheppard
Studio Manager: Timothy Sheppard

[8] ALPHA MUSIC PRODUCTIONS
also REMOTE RECORDING
Box 14701
Lenexa, KS 66215
(913) 441-8618
Owner: Glenn Major, Rich Hanson
Studio Manager: Brian Jennett

[8] AM TRAX
4905 White Lk. Rd.
Clarkston, MI 48016
(313) 625-5305
Owner: Ron Nelson
Studio Manager: Ron Nelson

[8] AMBIENCE DIGITAL RECORDING
only REMOTE RECORDING
Box 9455
Canton, OH 44711
(216) 456-3916
Owner: Dr. Lee Brooks
Studio Manager: Dr. Lee Brooks

[4] AMERICAN BUSINESS VIDEO
also REMOTE RECORDING
804 E. 38th St.
Indianapolis, IN 46205
(317) 925-7371
Owner: Bill Baker
Studio Manager: Art Baker

[8] ANDOVER AUDIO
also REMOTE RECORDING
2387 S. Coon Creek Dr.
Andover, MN 55304
(612) 757-6589
Owner: Don G. Erickson

[4] ARB SONICS
also REMOTE RECORDING
Two Fairway Dr.
Kincheloe, MI 49788
(906) 495-5197
Owner: Allen R. Burkett
Studio Manager: Penny G. Gorsuch

[8] ATMOSOUND
also REMOTE RECORDING
400 W. Richards Rd.
McConnelsville, OH 43756
(614) 962-6587
Owner: Atmosound
Studio Manager: Rick Shriver

[4] AUDIO & VIDEO ARTS
only REMOTE RECORDING
PO Box 3647, Rosedale Station
Kansas City, KS 66103
(816) 561-1878
Owner: Paul Gardocki

[2] AUDIO BY JOSEPH STUDIOS
also REMOTE RECORDING
6633 Glenway Dr.
West Bloomfield, MI 48322
(313) 851-1296
Owner: Joseph Housepian
Studio Manager: Darren Housepian

[8] AUDIO CONCEPTS, INC.
also REMOTE RECORDING
1653 Merriman Rd.
Akron, OH 44313
(216) 867-4448
Owner: Chris Jensen

[8] AUDIO IMAGE RECORDING
316 Washington St.
Brainerd, MN 56401
(218) 828-3601
Owner: Michael Moran
Studio Manager: Michael Moran
Engineers: Michael Moran, Todd Bobich
Dimensions: Room 1: studio 20 x 20, control room 15 x 20.
Room 2: studio 12 x 15 Room 3: studio 10 x 8
Mixing Consoles: Soundcraft 600 24 x 16, Studiomaster 16 x 4
Audio Recorders: Otari 5050 MKIII-8 8-track, Otari 5050 BII 2-track
Cassette Recorders/Duplicators: Nakamichi BX-125, Pioneer CT-F550
Noise Reduction Equipment: Rocktron 8-channel, dbx 150
Echo, Reverb, & Delay Systems: Ibanez SDR-1000+ digital reverb, Lexicon PCM60 digital reverb, Lexicon Prime Time delay, Ibanez delay/harmonizer.
Other Outboard Equipment: Symetrix comp/limiter, MXR comp/limiter, Valley People GateX, Barcus-Berry exciter, Loft parametric EQ, Yamaha guitar preamp, Yamaha bass preamp.
Microphones: (2) Neumann U87s, Shure SM7, (5) Shure SM57s
Monitor Amplifiers: Haller, BGW.
Monitor Speakers: JBL 4430, JBL 4412, Boston Acoustics A-40, Auratone 5C
Musical Instruments: Korg DSS-1 sampler, Ensoniq Mirage

sampler, Roland Juno-106, Yamaha RX11 drum machine, 360 Systems MIDibass, Roland DDR-30 electronic drum kit, Yamaha Tour Series drum kit, Steinberger bass, Korg SQD-1 sequencer, Fender Strat, Hammond C-3 w/Leslie, Conover mini grand piano.
Other MIDI Equipment: Passport sequencers and music scoring programs.
Rates: \$30/hr. Block time discounts.

[8] AUDIO MIXERS RECORDING CO. INC.
30 E. Huron St.
Chicago, IL 60611
(312) 943-4274
Owner: S. Schwartz

[4] AUDIO PRODUCTIONS
also REMOTE RECORDING
1845 N. Fairmount
Wichita, KS 67017
(316) 689-3188
Studio Manager: William Andrews

[8] AUDIO SERVICES
also REMOTE RECORDING
Oberlin College Conservatory
Oberlin, OH 44074
(216) 775-8272
Owner: Oberlin College
Studio Manager: Thomas W. Bethel

[4] AUDIO-VISUAL ASSOCIATES
also REMOTE RECORDING
4760 E. 65th St.
Indianapolis, IN 46220
(317) 255-6457
Owner: Bud Osborne
Studio Manager: Linda Osborne

[8] AUDIOACTIVE
5667 Glen-moor Cir.
Minnetonka, MN 55345
(612) 938-1423
Owner: Tom Garneau
Studio Manager: Tom Garneau

[8] AUDIOCOM, INC.
also REMOTE RECORDING
1825 Sylvania Ave.
Toledo, OH 43613
(419) 474-5793
Owner: J.J. Thomson

[4] AUDIOCRAFT RECORDING & SOUND
also REMOTE RECORDING
R2, Box 1179, E. Longlake Rd.
Wild Rose, WI 54984
(715) 258-6092
Owner: Martin Kurka
Studio Manager: Martin Kurka

AUTUMN BROOKE PRODUCTIONS
also REMOTE RECORDING
Rte. One, Box 305
Council Grove, KS 66846
(316) 767-5926
Owner: Jef Baker
Contact: Jef Baker

[8] J. AVEDISIAN PRODUCTIONS
6049 Ardmore Park Cir.
Dearborn Heights, MI 48127
(313) 278-8364
Owner: John Avedisian Jr.
Studio Manager: John Avedisian Jr.

[8] AVENUE RECORDING STUDIOS
28324 E. Main St.
Waterford, WI 53185
(414) 534-4309
Owner: Arthur V. Edstrom
Studio Manager: Arthur V. Edstrom
Engineers: Kathy Klotz, Arthur V. Edstrom.
Dimensions: Studio 12 x 22, control room 12 x 10.
Mixing Consoles: Ramsa WR-T820 20 x 8 w/meter bridge.
Audio Recorders: Tascam 38 8-track, Tascam 32 2-track.
Cassette Recorders/Duplicators: Nakamichi MR-2, Fostex X-15.
Noise Reduction Equipment: dbx 150.
Echo, Reverb, & Delay Systems: ART DR2a digital reverb, (3)

—CONTINUED ON NEXT PAGE

DeltaLab Effectron digital delay, SR&D stereo chorus delay, Ibanez 2024 digital delay
Other Outboard Equipment: Furman PL-8 power/filter/light, Aphex Aural Exciter, dbx 160x compressor/limiter, SR&D Over-drive/Sustainer, Rockman IIb
Microphones: E-V PL20, (8) Shure SM58, Unisphere I,II, Audio-Technica Pro-3, (2) PZM, RCA 770
Monitor Amplifiers: Crown 150IIa, Super Cue-12 12-channel stereo headphone amp Edstrom engineering
Monitor Speakers: E-V Sentry 100, Auratone 5C, AKG 240 headphones
Musical Instruments: Korg DSS-1 digital sampling synthesizer w/disk library, Roland DDR-30 digital drum set w/6 pads MIDI, Yamaha RX11 digital drum computer, Roland Juno-60, Yamaha CP20, Yamaha DX7 on request, Korg Poly 800 on request, Casio CZ-101 on request
Video Equipment: Kodak Camcorder 8mm video, JVC stereo 1/2" VTR
Other: (10) assorted guitars electric and acoustic, Onkyo CD player Last month's issue of *Mix* and *Electronic Musician*.
Rates: \$25/hr with block rates available

[4] THE AVTECH COMPANY, INC.
6023 N. Dixie Dr.
Dayton, OH 45414
(513) 890-7600
Owner: Joseph Russo
Studio Manager: M. Bruce Linebaugh

[4] BARKER STUDIO'S
also REMOTE RECORDING
117 S. Rockford Ave.
Rockford, IL 61108
(815) 399-2929
Owner: Dwayne Barker
Studio Manager: Dwayne Barker

[8] BAYOU RECORDING STUDIOS
also REMOTE RECORDING
6328 W. 95th St.
Oak Lawn, IL 60453
(312) 598-9200
Owner: Rich & Diane Renik
Studio Manager: Diane Renik

[8] BELL RECORDING
also REMOTE RECORDING
3730 Hillbrook Rd.
University Heights, OH 44118
(216) 932-3255
Owner: Jimmie Bell
Studio Manager: Jimmie Bell

[8] BIRD-ON-FIRE RECORDING
also REMOTE RECORDING
103 Lincoln Dr.
West Union, IA 52175
(319) 422-5677
Owner: Doug Koempel
Studio Manager: Betsy Kieckhaefer

[8] BLACK HOUSE STUDIO
2270 Garfield
Ferndale, MI 48220
(313) 398-4798
Owner: Mark Boker
Studio Manager: Mark Boker

[8] BODDIE RECORDING
also REMOTE RECORDING
12202 Union Ave.
Cleveland, OH 44105
(216) 752-3440
Owner: Thomas Boddie
Studio Manager: Dennis Boddie

[8] BODY ELECTRIC STUDIOS, INC.
PO Box 1491
Bolingbrook, IL 60439
(312) 759-9311
Owner: Brian Basilio
Studio Manager: Brian Basilio

[4] BRAN-TAN ALLEY
2139 N. 47th St.
Milwaukee, WI 53208
(414) 444-2404
Owner: Gary Tann
Studio Manager: Robert Brantley Jr

NORTH CENTRAL 4-8 TRACK STUDIOS

[8] BRAUNCO VIDEO INC.
PO Box 236, 1125 Huntington Ave.
Warren, IN 46792
(219) 375-3148
Owner: M. Braun
Studio Manager: M. Christiansen

[4] BREAK GLASS PULL HANDLE PRODUCTIONS
also REMOTE RECORDING
207 Auburn Ct.
St. Charles, IL 60714
(312) 584-1979
Owner: Steve M. Savanyu
Studio Manager: Mark J. Reno

[8] BROADCAST PRODUCTIONS OF AMERICA INC.
also REMOTE RECORDING
804 E. 38th St.
Indianapolis, IN 46205
(317) 925-7371
Owner: Bill Baker
Studio Manager: Art Baker

[2] BUGGTUSSEL
only REMOTE RECORDING
1659 Seven Trails Ct.
Okemos, MI 48864
(517) 349-7701
Owner: Kevin L. Blair
Studio Manager: Kevin L. Blair

[8] BURRELL RECORDING STUDIO
205 S. Myrtle St.
Edwardsville, IL 62025
(618) 656-8027
Owner: Ephraim Burrell

[8] CABOOSE PRODUCTIONS, INC
also REMOTE RECORDING
2204 Duke St.
Indianapolis, IN 46032
(317) 545-5165
Owner: Duke Luchtman
Studio Manager: Ellen Posson

[4] CASUAL RECORDINGS
also REMOTE RECORDING
18 Meridian Terr.
Paxton, IL 60957
(217) 379-3164
Owner: Steve V. Johnson
Studio Manager: Steve V. Johnson

[4] CELEBRATION ONE PRODUCTIONS
18253 Buckboard
St. Louis County, MO 63069
(314) 458-1819
Owner: Ronald Hitschler
Studio Manager: Ronald Hitschler

[2] CENTER VIDEO INDUSTRIAL CO., INC.
also REMOTE RECORDING
5615 W. Howard St.
Niles, IL 60648
(312) 647-8700
Owner: Stock Corporation
Studio Manager: Stephen B. Rudolph

[8] THE CHICAGO POST/AUDIO
222 W. Ontario
Chicago, IL 60610
(312) 951-0223
Owner: Jon J. Fistler
Studio Manager: Jim Cullen

[4] CHRISTIAN RECORDERS
also REMOTE RECORDING
1602 8th Ave. S.
Ft. Dodge, IA 50501
(515) 573-3710
Owner: Dave Cottrell
Studio Manager: Dave Cottrell

[8] CIRCLE M RECORDING STUDIO
307 N. Elson
Kirksville, MO 63501
(816) 665-9090
Owner: David Daniels
Studio Manager: David Daniels

[2] CLEARWATER AUDIO RECORDERS
only REMOTE RECORDING
Madison, WI
(608) 273-0012
Owner: John L. Mehne
Studio Manager: John L. Mehne

[8] CLOUD 10 RECORDING
1450 Coler
Ann Arbor, MI 48104
(313) 663-0222
Owner: Mike Gould
Studio Manager: Mike Gould

[8] COLONEL'S STUDIO
12017 Tindall Dr.
St. Louis, MO 63131
Owner: Gary M. Rich
Studio Manager: Bill & Sam Brindis

[8] COMMUNICATION RESOURCE CENTER
Wheaton College
Wheaton, IL 60187
(312) 260-5061
Owner: Wheaton College
Studio Manager: Bruce Knowlton

[8] CONTROL
also REMOTE RECORDING
703 Trumbull Ave., #110
Girard, OH 44420
(216) 545-8060
Owner: Chester Stout
Studio Manager: Chester Stout

[8] COOPERMUSIC AND MIDI SYNC
PRODUCTIONS STUDIO
also REMOTE RECORDING
514 S. Ingersoll, #3
Madison, WI 53703
(608) 258-8521
Owner: Richard Cooper
Studio Manager: Jonathan Cooper

[8] D.L. CORBET AUDIO SYSTEMS
also REMOTE RECORDING
4220 Cleveland Ave.
Dayton, OH 45410
(513) 258-2994
Owner: Donald L. Corbet
Studio Manager: Julie K. Corbet

[8] CORBETT STUDIO - WGUC
also REMOTE RECORDING
1223 Central Pkwy.
Cincinnati, OH 45214
(513) 475-4444
Owner: WGUC
Studio Manager: Bruce B. Ellis

[8] CREATIVE PITS
1219 W. Winnemac Ave.
Chicago, IL 60640
(312) 769-0273
Owner: S. Chompoo
Studio Manager: S. Chompoo

[8] CREEKBANK RECORDING INC.
also REMOTE RECORDING
RR 1, 11 Cardinal Woods
McCordsville, IN 46055
(317) 335-2673
Owner: William G. Livezey
Studio Manager: William G. Livezey

[8] CRYSTAL RECORDING AND SOUND
also *REMOTE RECORDING*
1825 E. Grand
Springfield, MO 65804
(417) 869-9552
Owner: Bert Jones
Studio Manager: Bert Jones

[8] CRYSTALIN RECORDING STUDIOS
also *REMOTE RECORDING*
5907 Pierce St.
Omaha, NE 68106
(402) 556-8170
Owner: Mike Mullaney
Studio Manager: Mike Mullaney

[2] DACE AUDIO-DIGITAL FINE ARTS RECORDINGS
only *REMOTE RECORDING*
1478 Brookfield Dr.
Ann Arbor, MI 48103
(313) 668-0002
Owner: David B. Anderson
Studio Manager: David B. Anderson

[4] SID DAVIS PRODUCTIONS
114 Five Oaks Ave.
Dayton, OH 45405
(513) 274-4732
Owner: Sidney O. Davis
Studio Manager: Sidney O. Davis

[8] DEER CREEK AUDIO ILLUSIONS
also *REMOTE RECORDING*
865 Clark Ave.
Webster Groves, MO 63119
(314) 962-7635
Owner: Sue Harwood
Studio Manager: Chris Harwood

[4] DOTT AUDIO/VIDEO/LIGHTING PRODUCTIONS
also *REMOTE RECORDING*
530 Railroad Dr.
Ainsworth, IA 52201
(319) 657-4159
Owner: Richard D. Dorothy
Studio Manager: Russ Carder

[8] DOWN THE ROAD STUDIO
also *REMOTE RECORDING*
13401 Lake Shore Blvd., Ste. 7
Bratenahl, OH 44110
(216) 249-2533
Owner: Terry Bell
Studio Manager: Tim Lucas

[4] DREAMLAND
2764 Corral Dr.
Arnold, MO 63010
(314) 296-3925
Owner: Rick Richardson
Studio Manager: Rick Richardson

[8] "EB" STUDIO
12 Maple St.
Shelby, OH 44875
(419) 347-5383
Owner: Eric A. Barkdull
Studio Manager: Eric A. Barkdull

[4] ELECTRIC LITE & SOUND
also *REMOTE RECORDING*
1025 Orchard Ave.
Aurora, OH 44202
(216) 562-4062
Owner: Mark Ireland, Mike Crossen
Studio Manager: Bob Myers

[8] ELECTRONIC PRODUCTION SERVICES
also *REMOTE RECORDING*
1840 N. Mich. Ave., PO Box 6236
Saginaw, MI 48608
(517) 754-4794
Owner: John L. Kilbourn

[8] 11-14 (ELEVEN FOURTEEN) PRODUCTIONS
also *REMOTE RECORDING*
1114 S. Busse
Mt. Prospect, IL 60056
(312) 981-9415
Studio Manager: Phil Mueller, Dennis Henkelman

[2] JEFF ELLINGSON PRODUCTIONS
913 Warwick Dr.
Cedar Falls, IA 50613
(319) 277-8535
Owner: Jeff Ellingson
Studio Manager: Susan Ellingson

[4] ETHAN STUDIOS
2809 W. 59th St.
Chicago, IL 60640
(312) 434-0958
Owner: Romanian Pentecostal Assembly
Studio Manager: Gabriel O. Somesan

[8] FANTASY FACTORY RECORDERS
PO Box 1164
Waukesha, WI 53187
(414) 548-0905
Owner: Michael Teed
Studio Manager: Michael Teed

[8] FIDDLESTRING PRODUCTIONS
also *REMOTE RECORDING*
Rt. 1, Box 19
Hermosa, SD 57744
(605) 255-4235
Owner: Alfred Svenson
Studio Manager: Alfred Svenson

[8] ROGER FRANCISCO PRODUCTIONS
also *REMOTE RECORDING*
805 Breen Dr.
Champaign, IL 61820
(217) 351-3532
Owner: Roger Francisco

[8] FREEDOM SOUND & LIGHT
1520 9th Ave. NE
Owatonna, MN 55060
(507) 451-1503
Owner: Ron Freiheit
Studio Manager: Ron Freiheit

[8] THE FRIENDLY DRAGON RECORDING STUDIO
RR 1, Box 230
Meredosia, IL 62665
(217) 584-1800
Owner: Dan Little
Studio Manager: Dan Little

[2] FULTON AUDIO
only *REMOTE RECORDING*
4428 Zane N.
Minneapolis, MN 55422
(612) 533-4266
Owner: R.W. Fulton
Studio Manager: R.W. Fulton

[4] FUTURE AUDIO
2528 Lytham Rd.
Columbus, OH 43220
(614) 457-0716
Owner: Jeff Neely, Gordon Lash
Studio Manager: Jeff Neely, Gordon Lash

[8] FUTURE SOUND EIGHT
also *REMOTE RECORDING*
3912 Kent
Royal Oak, MI 48073
(313) 549-6881
Owner: Doug & Maureen Garceau
Studio Manager: Doug Garceau

[8] GAZEBO PRODUCTIONS
also *REMOTE RECORDING*
107 N. Main
Galesville, WI 54830
(608) 582-2838
Owner: Mary Abel
Studio Manager: Jeanne Muraski

[4] GENERAL TELEVISION NETWORK
also *REMOTE RECORDING*
13225 Capital
Oak Park, MI
(313) 548-2500
Owner: Joan Binkow
Studio Manager: Gary Pillon



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[8] GREAT SOUNDS RECORDING
2024 Key West Dr.
Arnold, MO 63010
(314) 296-6577
Owner: Kevin Daniels
Studio Manager: Kevin Daniels

[8] GSI STUDIOS
also *REMOTE RECORDING*
9431 Engel Ln.
St. Louis, MO 63132
(314) 993-5713
Owner: Gary Sudin
Studio Manager: Pete Herbig

[4] HARVEST PRODUCTIONS
also *REMOTE RECORDING*
308 10th St. (PO Box 308)
Milford, KS 66514
(913) 463-5559
(913) 463-5403
Owner: Timothy C. Tiner
Studio Manager: Linda Teeter

[4] HARVEST PRODUCTIONS
also *REMOTE RECORDING*
8297 Hillpoint Rd.
Cross Plains, WI 53528
(608) 798-2223
Owner: Don Sieb
Studio Manager: Don Sieb

[8] HATCHERY STUDIOS
2175 Michael
Warren, MI 48091
(313) 754-1646
Owner: David Sell
Studio Manager: David Sell

[8] HEAVY SOUND PRODUCTIONS
6670 Brainard, Ste. 311
Countryside, IL 60525
(312) 352-9103
Owner: Sylvia Rose
Studio Manager: Douglas A. McKnight

[8] HEDQUIST PRODUCTIONS INC.
also *REMOTE RECORDING*
1007 E. Madison
Fairfield, IA 52556
(515) 472-6708
Owner: Jeffrey P. Hedquist

[4] HOFBRO HAUS RECORDING
7013 Lowell Dr.
Carpentersville, IL 60110
(312) 428-3395
Owner: Jeff & Mike Hofbauer
Studio Manager: Jeff & Mike Hofbauer

[8] HOLLY HILL RECORDERS
also *REMOTE RECORDING*
1209 W. 47th St.
Kansas City, MO 64112
(913) 268-5179
Owner: Jeff Johnson, Bart Biechle, Mike Miller
Studio Manager: Jeff Johnson

[4] HOMESTEAD RECORDING STUDIOS—HRS AUDIO
also *REMOTE RECORDING*
1628 St. Rt. 511 S.
Ashland, OH 44805
(419) 289-1109
Owner: Ken Williams, Jim Schwan
Studio Manager: Rhonda Williams, Liz Schwan

[4] IDH RECORDING
11424 Valley Ct.
Burnsville, MN 55337
(612) 894-6424
Owner: Israel Hill
Studio Manager: Israel Hill

[4] IDUMEAN MUSIC
2605 Merria Rd.
Stow, OH 44224
(216) 688-9144
Owner: James T. Schley-May
Studio Manager: James T. Schley-May

NORTH CENTRAL 4-8 TRACK STUDIOS

[8] IMPACT PRODUCTIONS
also *REMOTE RECORDING*
220 S. Williams St.
South Bend, IN 46601
(219) 233-8369
Owner: James A. Greulich

[8] INDEPENDENT RECORDING STUDIO
also *REMOTE RECORDING*
5914 Arrowhead Blvd.
Kokomo, IN 46902
(317) 455-0308
Owner: David B. Bentzler
Studio Manager: Teresa L. Bentzler

[8] INTERCONTINENTAL BALLISTIC MUSIC
only *REMOTE RECORDING*
Rt. 3, Box 286
Mt. View, MO 65548
(417) 934-6028
Owner: Peter M. Zoernig

[8] IVO SOUND RECORDERS
also *REMOTE RECORDING*
539 S. Baltimore
Hastings, NE 68901
(402) 463-5059
Owner: Don Robertson

[8] IVS SCHOOL OF MUSIC
722 Lake St.
Oak Park, IL 60301
(312) 848-3008
Owner: William Messner
Studio Manager: William Messner

[4] J-MARKET GROUP, INC./AUDIO
PRODUCTIONS DIVISION
also *REMOTE RECORDING*
912 E. 63rd St., Ste. 200
Kansas City, MO 64110
(816) 523-5444
Studio Manager: Jay E. Fowler

[8] JAY STAR STUDIO
(FORMERLY J.T. SOUNDS, 107 W. FIRST GAYLORD)
1419 Old 27 South
Gaylord, MI 49735
(517) 732-3700
Owner: James Tobin

[4] JORDAN ELECTRONIC MUSIC STUDIO
also *REMOTE RECORDING*
8786 Simpson Ct.
Cincinnati, OH 45040
(513) 398-7578
Owner: Tom Jordan

[8] JOYFUL
3925 Kirkshire SE
Grand Rapids, MI 49508
(616) 452-1616
Owner: Ron Holwerda
Studio Manager: Ron Holwerda

[8] JUNGLE STUDIOS
also *REMOTE RECORDING*
1719 S. 25th St.
Lincoln, NE 68502
(402) 477-8623
Owner: George Roberds

[8] JZAN PRODUCTIONS
R.R. 2, Box 783
Clinton, IN 47842
(317) 832-9434
Owner: Jerry Zanandrea
Studio Manager: Jerry Zanandrea

[4] KAYRON, INC.
641 Madison St.
Oak Park, IL 60302
(312) 386-0464
Owner: Hal Kaitchuck
Studio Manager: Hal Kaitchuck

[8] KENCRAFT RECORDING
also *REMOTE RECORDING*
6003 Michigan Ave.
Kansas City, MO 64130
(816) 333-9799
Owner: K. Haskins
Studio Manager: N. Schmunk

[4] KINDE ENTERPRISES 4-TRACK RECORDING STUDIO
15856 Frazho
Roseville, MI 48066
(313) 777-7505
Owner: George J. Kinde
Studio Manager: George E. Kinde

[8] KING SOUND
also *REMOTE RECORDING*
PO Box 102
Hurley, WI 54534
(715) 561-5449
Owner: Keith Polkinghorne
Studio Manager: Keith Polkinghorne

[8] KINGCRAFT AUDIO/VIDEO
also *REMOTE RECORDING*
1608 S. Mosley
Wichita, KS 67211
(316) 262-5741
Owner: Sammie L. King
Studio Manager: Sammie L. King

[8] K.I.P.
1400 W. 2nd, PO Box 747
Seymour, IN 47274
(812) 522-3333
Owner: Bill Klaes
Studio Manager: Bill Klaes

[4] KISHA/UNIVERSAL PRODUCTIONS
also *REMOTE RECORDING*
PO Box 1771
South Bend, IN 46634
(219) 272-3508
Owner: Ernie Scarbrough
Studio Manager: Ernie Scarbrough

[2] KITCHEN SYNC RECORDING
also *REMOTE RECORDING*
PO Box 20384
Indianapolis, IN 46220
(317) 257-6776
Owner: Eric T. Smith
Studio Manager: Eric T. Smith

[8] KLUGE COMMUNICATIONS, INC.
also *REMOTE RECORDING*
5350 W. Clinton Ave.
Milwaukee, WI 53223
(414) 354-9490
Owner: Douglas Kluge
Studio Manager: Dave Wysocky

[8] KNIPEKAMP PRODUCTIONS
2 Bruce Circle N.
Hawthorn Woods, IL 60047
Owner: Alberto Kniepkamp
Studio Manager: Alberto Kniepkamp

[4] LAB RECORDING STUDIO
also *REMOTE RECORDING*
8936 Kleinman
Highland, IN 46322
(219) 923-0074
Owner: Larry A. Brechner
Studio Manager: Carol Lynn Brechner

[8] LAND RECORDING STUDIO
also *REMOTE RECORDING*
1912 Heriford Rd.
Columbia, MO 65202
(314) 474-8141
Owner: Bob Pruitt
Studio Manager: Bob Pruitt

[4] LANGWICK PRODUCTIONS
also REMOTE RECORDING
 Rt. 2, Box 273R
 Big Lake, MN 55309
 (612) 263-6134
 Owner: Michael J. Langford
 Studio Manager: Michael J. Langford
 Engineers: Michael J. Langford, Royce W. Lerwick
 Dimensions: Studio 10 x 12, control room 10 x 12.
 Mixing Consoles: Akai 6 x 2, Tascam 4 x 2.
 Audio Recorders: Akai MG614 4-track plus SMPTE, Tascam 244 4-track, Fostex 20 2-track plus sync.
 Cassette Recorders/Duplicators: Tascam 122, Akai 101
 Noise Reduction Equipment: Integral dbx 1, Dolby B, C, NR.
 Synchronization Systems: Fostex 4050.
 Echo, Reverb, & Delay Systems: Alesis XT:C digital reverb, Alesis MIDlverb.
 Microphones: (2) Sennheiser MD-441U, E-V Dynamic 644, E-V DS35, Shure 5655D.
 Monitor Amplifiers: QSC 1200, Kawai KM-60 keyboard amp and monitor.
 Monitor Speakers: (2) JBL Cabaret (and house), (2) custom.
 Musical Instruments: Casio CZ-1 synth, (2) Casio CZ-101 synth, Akai VX-90 synth, Kawai R-100 drum machine.
 Other MIDI Equipment: Macintosh Plus w/printer, Opcode Studio Plus interface, 360 Systems MIDlmerge.
 Other: Opcode "Sequencer 2.5," Mark of the Unicorn Professional Performer sequencer, Mark of the Unicorn Professional Composer music notation, Electronic Arts deluxe music construction set, Opcode CZ editor/librarian.
 Rates: MIDI studio \$40/hr.

[4] LEGEND RECORDING STUDIOS
also REMOTE RECORDING
 PO Box 8604
 Madison, WI 53708
 (608) 244-7800
 Owner: American Music Co.
 Studio Manager: Dan Miller

[8] LINCOLN AVE. RECORDING STUDIOS
 R#1, Box 117, LI-325
 Oakfield, WI 53065
 (414) 921-2118
 Owner: Roger J. Palmer

[8] L-M RECORDING ENTERPRISE & PRAIRIE DREAMS PRODUCTIONS
also REMOTE RECORDING
 206 Locust
 Americus, KS 66835
 (316) 443-5181
 Owner: Lee C. Muller
 Studio Manager: Ron Sowers

[4] LOOSE NOOSE PRODUCTIONS
also REMOTE RECORDING
 6988 Edwards
 Belleville, MI 48111
 (313) 697-2661
 Owner: C.W. Wilson, Bob Hall
 Studio Manager: Kendall Stewart

[8] LOST NATION SOUND
 6 Storer St.
 Guysville, OH 45735
 (614) 662-5701
 Owner: Dave Aiken
 Studio Manager: Nancy Aiken

[8] MAGNETIC STUDIOS, INC.
also REMOTE RECORDING
 4784 N. High St.
 Columbus, OH
 (614) 262-8607
 Owner: John Fippin, Robin Gulcher

[8] MAXWELL RECORDS
 7012 W. 26th St.
 Minneapolis, MN 55426
 (612) 920-5347
 Owner: John Keen
 Studio Manager: Gregg Giswold

[8] THE MESSAGE MAKERS
also REMOTE RECORDING
 1217 Turner St.
 Lansing, MI 48906
 (517) 482-3333
 Owner: Terry N. Terry
 Studio Manager: B.J. Love

[4] MID-AMERICA SOUND
only REMOTE RECORDING
 120 Monroe
 Fort Atkinson, WI 53538
 (414) 563-3449
 Owner: Jim Eckhart
 Studio Manager: Jim Eckhart

[8] MIELKE WAY PRODUCTIONS
 5095 Westview
 Clarkston, MI 48016
 (313) 673-7143
 Owner: Dave Mielke
 Studio Manager: Dave Mielke

[8] THE MIRROR GROUP
also REMOTE RECORDING
 1226 Oakwood Ct.
 Rochester, MI 48063
 (313) 652-7790
 Owner: Rick Manasa
 Studio Manager: Mike Manasa

[2] MIRROR IMAGE PRODUCTIONS
only REMOTE RECORDING
 PO Box 10430
 Chicago, IL 60610
 (312) 975-0082
 Owner: Ken Rasek
 Studio Manager: Susan Rasek

[8] MOJATONA STUDIOS
 3159 N. Thomas Rd.
 Freeland, MI 48623
 (517) 781-4067
 Owner: Don Zeitler, Gary French
 Studio Manager: Don Zeitler

[4] MUSIC EXPRESS CHICAGO
 55 W. Chestnut, Ste 101
 Chicago, IL 60610
 (312) 951-0575
 Owner: John Bash
 Studio Manager: John Bash

[8] MUSIC MASTERS
 17 Ponca Trail
 St. Louis, MO 63122
 (314) 821-2741
 Owner: Tragrey Music Publishing
 Studio Manager: Greg Trampe

[4] MUSICO TECHNLAB
also REMOTE RECORDING
 160 N. Park Ave.
 Warren, OH 44481
 (216) 394-5605
 Owner: Heavy Mental Productions
 Studio Manager: Gary Boggess
 Extras & Direction: Built around the composer's specific requirements, this electronic music production studio is for the aesthetically minded. We produce masters of impressive fidelity using Otari MX 5050 4-track, Technics 1500 2-track, dbx 157 noise reduction, JBLs, UREI room EQ, Tascam 5A board with extensive patchbay, Symetrix 522 multiple purpose signal processor, Aphex Aural Exciter Type C, A/DA flanger, Roland SDE-2500 digital delay, Alesis XT:c and MIDlverb II digital reverb and effects, equalizers and more. Mics include: AKG C-414EB P48, PZMs, Shure SM58s and SM57s. Synths include: Polyfusion Series 2000 modular, Minimoog, and JX-8P Samplers include: 8-voice Emulator and Prophet 2000 (w/ 1Mbyte expansion) each with a large disk library. Sony 3/4" video deck available. Spacious 25 x 20 control room, 22 x 20 iso/studio and 40 x 60 live chamber! Cassette duplication. Specialization in original music and effects for animation, films, videos, slideshows, theatrical productions and performance artists. Composer/musician Gary Boggess is an independent arranger, producer and engineer. He has provided 13 years of service to clients like: PPG Industries, B.F. Goodrich, Classic Video, Perfect Pitch, Cleveland Playhouse, Kent State U. Theatre, Goldston Mime Foundation and several Christian demo and album projects. We're adding a synth module rack, full tilt MIDI/SMPTE via Mac Plus, Digidesign, music printing, 2-track digital mastering and Otari 16-track soon.

[8] MUSTANG STUDIOS INC.
also REMOTE RECORDING
 86 Erskine Ave.
 Youngstown, OH 44512
 (216) 788-2539
 Owner: Joe Bertin, Brenda Bertin
 Studio Manager: Joe Bertin

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 "The MegaMix system has given my studio a whole new meaning"
 Frank Serafine
 "I am very excited about incorporating MegaMix into my system"
 Herbie Hancock

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[8] NEW BREED RECORDING
2101 S. Circle Dr.
Ann Arbor, MI 48103
(313) 994-6524
Owner: Eric Lee
Studio Manager: Lovie Bradley

[8] NEW TRIER HIGH SCHOOL
385 Winnetka Ave.
Winnetka, IL 60093
(312) 446-7000
Owner: New Trier Bd. of Ed.
Studio Manager: James Warrick

[4] NIMZHEAD RUSH AUDIO
also REMOTE RECORDING
706 E. 1st St.
Fairmont, MN 56031
(507) 238-1035
Owner: Jonathan Denzene
Studio Manager: Jon Denzene

[8] NORTHERN LIGHT STUDIO
34 Todd-Lee Dr.
New Carlisle, OH 45344
(513) 845-0536
Owner: Garry L. Ball
Studio Manager: Garry L. Ball

[8] NORWEST COMMUNICATIONS INC.
also REMOTE RECORDING
123 S. Hough St.
Barrington, IL 60010
(312) 381-3271
Owner: Mark & Natalie Karney
Studio Manager: Mark Karney

[4] NOVA PETRA STUDIO
also REMOTE RECORDING
Box 1974
Janesville, WI 53547
(608) 756-0071
Owner: J.A. & D.R.S. Barrette
Studio Manager: Douglas Barrette

[8] ONE 5 PRODUCTIONS
PO Box 783
Waukesha, WI 53187
(414) 542-9691
Owner: Steve Conway

[4] OPLAND RECORDING
only REMOTE RECORDING
Route 7, Box 403
Sioux Falls, SD 57103
(605) 335-5940
Owner: Ken Eckert
Studio Manager: Verlyn Eckert

[2] ORCHARD HOUSE AUDIO
only REMOTE RECORDING
224 W. 27th St.
Minneapolis, MN 55408
(612) 870-1577
Owner: David Michel
Studio Manager: David Michel

[8] PANTHER RECORDING
2350 N. 81 St.
Wauwatosa, WI 53213
(414) 259-3975
Owner: David Barwick

[4] PARKER SOUND
2750 Braeburn
Rochester Hills, MI
(313) 375-9791
Owner: James W. Parker
Studio Manager: James W. Parker

[8] PARROT SOUND STUDIO
1659 Larchmont Ct.
Davis, IL 61019
(815) 248-2325
Owner: Jane A. Paine, Jeremy T. Paine
Studio Manager: Jane A. Paine

[4] PEARSON GROUP RADIO NETWORK
also REMOTE RECORDING

NORTH CENTRAL 4-8 TRACK STUDIOS

8465 Keystone Crossing, Ste. 295
Indianapolis, IN 46220
(317) 259-0163
Owner: Pearson Crahau, Fletcher Group, Inc.
Studio Manager: Jerry D. Curtis

[8] PEGASUS PRODUCTIONS
also REMOTE RECORDING
5551 Fairway
Fairway, KS 66205
(913) 432-1390
Owner: Claudia Branham
Studio Manager: Claudia Branham

[8] PENGUIN PRODUCTIONS
1026 Carole Ln.
St. Louis, MO 63021
(314) 394-0267
Owner: Richard Byron
Studio Manager: Richard Byron

[8] PIECES OF EIGHT RECORDING STUDIO
2144 E. Prairie Ave.
Decatur, IL 62521
(217) 429-0295
Owner: Barry & Susan Billman
Studio Manager: Barry Billman

[2] PILOT PRODUCTIONS
also REMOTE RECORDING
2821 Central St.
Evanston, IL 60201
(312) 328-3700
Owner: Chris Isely
Studio Manager: Bob Luce

[4] PLAYBACK SOUND SERVICES
only REMOTE RECORDING
2000 S. Clinton St.
Defiance, OH 43512
(419) 784-2877
Owner: Michael C. Winners
Studio Manager: Michael C. Winners

[8] PLUS ONE PRODUCTIONS
only REMOTE RECORDING
5868 E. 71st St., Ste. 201
Indianapolis, IN
(317) 549-3412
Owner: Jeff Gardner
Studio Manager: Jeff Gardner

[4] POWER SOUND RECORDING
also REMOTE RECORDING
PO Box 2632
Kalamazoo, MI 49003
(616) 372-1646
Owner: Timothy S. Buist
Studio Manager: Donna M. Buist

[8] PRAISE STUDIO
PO Box 303
Knox, IN 46534
(219) 772-6302
Owner: Rich Wallen
Studio Manager: Rich Wallen

[4] PRECISION AUDIO, INC.
also REMOTE RECORDING
18582 US 20
Bristol, IN 46507
(219) 295-7493
Owner: Sanford Swartzendruber
Studio Manager: Larry Becker

[8] PRIME TIME PRODUCTIONS
1212 Sycamore St., Ste. 24
Cincinnati, OH 45210
(513) 621-2684
Owner: Andrew Raut, Phil Amalong
Studio Manager: Darnell Watson

[8] PRIME TIME STUDIOS
also REMOTE RECORDING
1552 Cliff Rd., PO Box 11449
St. Paul, MN 55111
(612) 454-7673
Owner: Jim Barker
Studio Manager: Jim Barker

[8] PRODIGY PRODUCTIONS
also REMOTE RECORDING
PO Box 4656
Youngstown, OH 44515
(216) 799-8951
Owner: Paul J. Pomputa
Studio Manager: Paul J. Pomputa

[8] QUADRANGLE STUDIOS
also REMOTE RECORDING
04 Strauss EQ
Ann Arbor, MI 48109
(313) 769-1305
Owner: East Quad Music Co-op
Studio Manager: Stephen Kowalczyk, Rob Dunne
Engineers: Robert Dunne, Christopher Q. Evans, Charles Lever, Stephen Kowalczyk
Dimensions: Studio 11 x 18, control room 7 x 11.
Mixing Consoles: Tascam 312 12 x 4 x 8 x 2, Kelsey 8 x 2.
Audio Recorders: Otari MX 5050 8-track 1/2", TEAC 3340s 4-track 1/4", Tascam 246 4-track.
Cassette Recorders/Duplicators: Nakamichi BX-125
Noise Reduction Equipment: (2) dbx 150, (2) dbx 150X
Echo, Reverb, & Delay Systems: (2) Yamaha SPX90, ART DR2a, Korg SDD1000, (2) Ibanez HD 1000, Alesis MIDVerb II.
Other Outboard Equipment: Yamaha GC2020 compressor/limiter, Barcus-Berry Electronics 402 sonic maximizer, Rocktron Hush IIC noise reduction, (2) stereo graphic equalizers, MXR noise gate
Microphones: Shure SM57s, Shure SM58s, E-V PL9s, E-V RE16s, Sennheiser 421s, Realistic PZMs
Monitor Amplifiers: Crown DC-300a, Carver M-200+
Monitor Speakers: JBL 4401, JBL 4406, Infinity RS 10B.
Musical Instruments: Korg DW8000 synthesizer, Yamaha RX5 rhythm composer, Roland MRS-50 synthesizer, Roland TR-505 rhythm composer, Yamaha DX27/100 synthesizer, Yamaha OX5 sequencer, 415 string fretted/fretless basses, Dean Markley amplifier, Roland Jazz Chorus 77 amplifier, (2) Kawai pianos (upright)
Other MIDI Equipment: Akai MIDI patchbay, Yamaha MEP4 MIDI event processor.
Other: AKG headphones, Carvin 16-channel snake
Rates: \$15/hr base rate

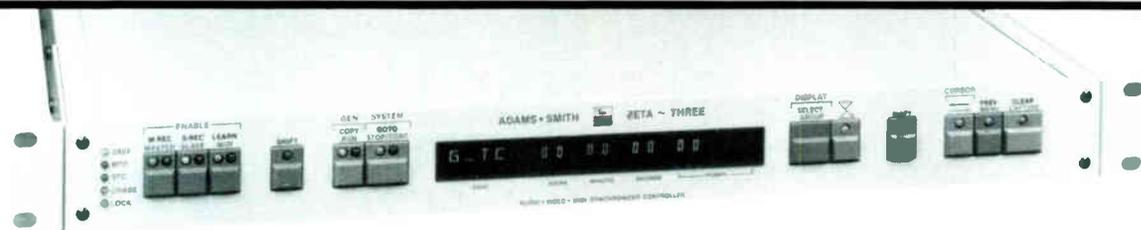
[8] RARE AIR RECORDERS
only REMOTE RECORDING
8626 Honeycomb Circle, #380
Canton, MI 48187
(313) 459-8457
Owner: Mark A. Raschke
Studio Manager: Mark A. Raschke

[8] REAL GONE RECORDING
1813 Euclid Ave.
Lincoln, NE 68502
(402) 475-6945
Owner: Terrill Clements
Studio Manager: Terrill Clements

[4] RECORDIO PRODUCTIONS
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6564 Goodman
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(913) 432-2349
Owner: Ed Treese
Studio Manager: Ed Treese

[8] REMOTE RECORDINGS
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St. Louis, MO 63110
(314) 664-6555
(314) 385-4354

[8] R/J RECORDING
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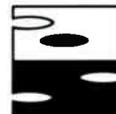
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(715) 267-6749
Owner: Richie Yurkovich
Studio Manager: Richie Yurkovich

[8] SATURN PRODUCTIONS
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Owner: Dave Gordon
Studio Manager: Brian Gephart

[4] SCHU-MAN STUDIO
also REMOTE RECORDING
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Chicago, IL 60660
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Owner: David G. Bragman
Studio Manager: Judith Ann Schust

[8] SEGWAY STUDIOS
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Studio Manager: Rob Baird

[8] SHACK RECORDING
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Studio Manager: Jill Kyles

[8] SINGLE SOUND STUDIO
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Studio Manager: Gene Fiero

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Studio Manager: Tom Bennett

[8] SONIC FLIGHT STUDIO
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Studio Manager: Gary Voigt

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Owner: Jan Erickson
Studio Manager: Bill Lubansky

[8] SOUND FIELD
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Wyoming, MI 49509
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Studio Manager: William Hendriksen, Jr.

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[8] SOUND LAB STUDIOS
also REMOTE RECORDING
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Studio Manager: Steve Beard

[8] THE SOUND PALETTE
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Milwaukee, WI 53210
(414) 444-8850
Owner: Keith Henrics
Studio Manager: Keith Henrics

[8] SOUND RESOURCES
1400 Energy Park Dr., #21
St. Paul, MN 55108
(612) 644-3660
Owner: Joey Johnson
Studio Manager: Michele Jansen

[8] SOUND SHOP RECORDING STUDIO
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Bayside, WI 53217
(414) 352-7766
Owner: Roger A. Roth
Studio Manager: Roger A. Roth

[8] SOUNDS FANTASTIC RECORDING
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(402) 786-3684
Owner: David Hedrick
Studio Manager: David Hedrick

[4] THE SOUTNAGE STUDIO
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Studio Manager: Donald E. Miller

[8] SPARKLE CITY STUDIOS
also REMOTE RECORDING
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Owner: Jack Pausch
Studio Manager: Jack Pausch

[8] STAGE 3 SOUND PROD. INC.
also REMOTE RECORDING
1901 W. 43rd St.
Kansas City, KS 66103
(913) 384-9111
Owner: Corp.
Studio Manager: Don Warnock

[8] STAR TRACKS
22375 Fairmount Blvd.
Shaker Hts., OH 44118
(216) 321-6801
Owner: Bankhurst Musical Enterprises
Studio Manager: Gregory H. Bankhurst

[8] STONE MUSIC COMPANY
7108 Fremont Ct.
Indianapolis, IN 46256
(317) 842-5403
Owner: Al Stone

[8] STUCKY AUDIO SERVICE
also REMOTE RECORDING
1412 W. 5th St.
Newton, KS 67114
(316) 283-7597
Owner: Homer Stucky
Studio Manager: Homer Stucky

[8] STUDIO A RECORDING
also REMOTE RECORDING
1108 Elizabeth
West Chicago, IL 60185
(312) 231-5018
Owner: Maurice Smeets
Studio Manager: Maurice Smeets

[8] STUDIO D CHRISTIAN RECORDING STUDIO
4114 E. 24th St.
Des Moines, IA 50317
(515) 265-8983
Owner: Dennis Dyer
Studio Manager: Dennis Dyer

[8] STUDIO G RECORDING
also REMOTE RECORDING
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Owner: Greg K. Glazier
Studio Manager: Mike Schoeps

[8] STUDIO 95
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[8] STUDIO 7
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Studio Manager: Shirley Faiella

[8] STUDIO 309
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Studio Manager: J. Samil, R. Sadowski

[8] SUNDANCE STUDIO
2925 E. Rome W. Rd.
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Studio Manager: Steve Meister

[4] THE SURREALIST FOUNDATION
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Owner: Ron Wartzok
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[8] SYN-COMP PRODUCTIONS, INC.
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Owner: Linda M. Lauer
Studio Manager: Michel A. Rothes

[8] SYNAPSE SOUND STUDIO
also REMOTE RECORDING
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Loudonville, OH 44842
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Owner: Fred R. Coffin
Studio Manager: Fred R. Coffin

[4] SYNDICATE SOUND
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165 Poland Ave.
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(216) 755-1331
Owner: Jeff Wormley
Studio Manager: Bob Cabuno

[2] TAB RECORDS
also REMOTE RECORDING
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Mequon, WI 53092
(414) 241-5641
Owner: Todd A. Boettcher
Studio Manager: Todd A. Boettcher

[4] TAPE II STUDIOS, INC.
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 St. Joseph, MI 49085
 Owner: Joel L. Motel
 Studio Manager: Joel L. Motel

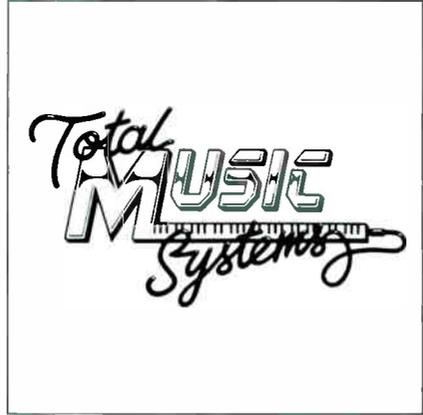
[2] TELLING THE TRUTH RADIO
 777 S. Barker Rd.
 Waukesha, WI 53186
 (414) 786-7051
 Owner: Elmbrook Church
 Studio Manager: Jay Richmond

[8] TELSTAR STUDIO
 also REMOTE RECORDING
 1339 Prairie Village Rd.
 Deerfield, WI 53531
 (608) 764-5987
 Owner: Thomas G. Fields
 Studio Manager: Thomas G. Fields III

[8] TOMSICK BROTHERS PRODUCTIONS
 21271 Chardon Rd.
 Euclid, OH 44117
 (216) 481-8380
 Owner: Ken & John Tomsick
 Studio Manager: Ken Tomsick

[8] TONE RECORDING SERVICES INC.
 also REMOTE RECORDING
 333 N. Michigan Ave.
 Chicago, IL
 (312) 951-8712
 Owner: Tony Sipusich
 Engineers: Tony Sipusich, Bob Keck.
 Dimensions: Room 1: studio 8 x 10, control room 10 x 18.
 Room 2: studio 16 x 8.
 Mixing Consoles: Custom 600 16 x 8 x 8.
 Audio Recorders: Otari 2-track, Otari 4-track, Otari 8-track,
 Ampex 440C 2-track, Ampex ATR-700 2-track, Nagra 4L,
 Nagra 3 SLO, resolver.
 Cassette Recorders/Duplicators: (2) Technics.
 Noise Reduction Equipment: dbx 154, dbx 155.

Echo, Reverb, & Delay Systems: AKG BX20E, AKG BX10E,
 Lexicon 92, Lexicon PCM41.
 Other Outboard Equipment: UREI 565T DIP filter, UREI 1176LN
 limiting amplifiers, Orban 672A parabolic EQ, dbx de-
 esser, Technics 1200 MK turntable, NEC Pro CD player, Omni
 Craft noise gates, Magna-Tech 16/35mm film recorders, UREI
 535 graphic EQ, Magnasync Moviola 3000 16mm insert
 recorder.
 Microphones: AKG, Shure, Sennheiser, Tram, Sony.
 Monitor Amplifiers: UREI, Crown.
 Monitor Speakers: UREI 809i, JBL 4311B, Auratone, Yamaha
 NS-10.



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[8] TOTAL MUSIC SYSTEMS
 also REMOTE RECORDING
 2325 Endicott St., #4
 St. Paul, MN 55114
 (612) 644-7102
 Owner: Ted Greenbaum
 Studio Manager: Michelle Dunkirk

Engineers: Ted Greenbaum, Bill Correll, Alan Jones, Michelle
 Dunkirk.
 Dimensions: Studio 27 x 16, control room 14 x 12.
 Mixing Consoles: Tascam M-520 20 x 16, Tascam M-208 8 x
 4, Studiomaster 8 x 4.
 Audio Recorders: Tascam 48 8-track, Tascam 388 8-track,
 Tascam 42 2-track.
 Cassette Recorders/Duplicators: Tascam 122B, Yamaha
 MT44 4-track cassette, Technics RSM222 dual cassette.
 Noise Reduction Equipment: (2) Tascam DX-4D dbx, Tascam
 DX-2 dbx.
 Synchronization Systems: Synchronous Technologies SMP/L
 system, SMPTE to MIDI, Roland SBX-80, Kahler Human Clock.
 Echo, Reverb, & Delay Systems: Lexicon PCM60 digital re-
 verb, Yamaha REV7 digital reverb, Roland SRV-2000 digital
 reverb, Lexicon PCM41 digital delay, Roland SDE-2500 digi-
 tal delay, Roland SRE-555 chorus/echo unit, Yamaha R1000
 digital reverb.
 Other Outboard Equipment: Yamaha SPX90 digital effects
 processor, (2) Yamaha GC2020 compressor/limiter, Symatrix
 SE-400 parametric EQ, Rane RE-14 14-band stereo graphic
 real time EQ.
 Microphones: AKG 414-EB/P48, AKG 451E, AKG D-12E, (5)
 Shure SM57, Shure SM58, (3) Shure PE86L, (2) Shure PE35L,
 E-V PL80, (2) Audio-Technica ATM 41A, (4) Audio-Technica
 ATM 63, (2) Audio-Technica ATM 31.
 Monitor Amplifiers: (2) Professional Audio Systems 400, QSC
 A5.1, BGW 750C.
 Monitor Speakers: Westlake BBSM-6, Fostex RM-765 w/SW-
 10 subwoofers, Auratone 5C, Yamaha NS-10.
 Musical Instruments: E-mu Emulator II, Roland D-50, (3) Yama-
 ha DX7, Ensoniq ESQ-1, Ensoniq Mirage, Roland JX-8P, Ober-
 heim OB-8, LinnDrum, Oberheim DX, Yamaha RX11 drum
 machine, Roland TR-727 Latin percussion machine, Roland
 MKB-1000 MIDI keyboard controller, Simmons SDS-7 5-piece
 electronic drum kit, Simmons MTM trigger to MIDI processor.
 Other MIDI Equipment: Yamaha TX816 FM digital synthesizer
 module, Roland MKS-80 Super Jupiter analog synthesizer
 mod, Roland MKS-20 digital piano module, Roland MC-500
 digital sequencer.
 Other: Macintosh SE w/Mark of the Unicorn Performer, and
 Passport Master Tracks software, Apple IIE w/DX Pro and
 assorted patch librarian software, Hammond B-3 w/(2) Leslie
 122, Yamaha Tour 6-piece drum kit, Mesa Boogie combo
 guitar amp, Marshall 100-watt head w/(2) Marshall 4 x 12
 bottoms, (4) Fender twin reverb guitar amps, (2) Roland JC-

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[4] T.R. SONICS
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Studio Manager: Thomas Tempel

[4] TRACK 1 RECORDING STUDIO
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127 Huron St.
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Studio Manager: Vivian M., Terry Minnich, Philip J.

[8] TRW STUDIOS
also REMOTE RECORDING
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(414) 794-1800
Owner: Mark Heller
Studio Manager: Mark Heller

[4] TWILIGHT PRODUCTIONS, INC.
also REMOTE RECORDING
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(913) 272-1593
Owner: Dan Lindquist, Lynn Parker
Studio Manager: Glenn Parker

[4] 2447 REHEARSAL CENTRE
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Chicago, IL 60614
(312) 929-1151
Owner: Lynda Eirmon
Studio Manager: Daniel C. Holm

[8] U.S. STUDIOS
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Minneapolis, MN 55403
(612) 870-8190
Owner: E. Ward Eames III
Studio Manager: John Manning

[8] THE VALLEY RECORDER
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Fergus Falls, MN 56537
(218) 736-2750
Owner: Maurice Skogen
Studio Manager: Mark Wallis

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[2] VEDANTA DIGITAL RECORDING
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W9643 Rucks Rd.
Cambridge, WI 53523
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Owner: Daniel Gomez-Ibanez
Studio Manager: Daniel Gomez-Ibanez

[4] VICTORY SOUND
1815 N. 7th St.
Terre Haute, IN 47804
(812) 238-9731
Owner: Dave Myers
Studio Manager: Dave Myers

[8] VIDEO ARTS, INC.
1440 4 Ave. N.
Fargo, ND 58102
Owner: Video Arts, Inc
Studio Manager: Art Phillips

[8] VIKING SOUND AND RECORDING
only REMOTE RECORDING
Box 250, 624 N. Delaware
Edna, KS 67342
(316) 922-7230
Owner: Richard D. Erickson
Studio Manager: Richard D. Erickson

[4] VILLA DEL GUIDO STUDIO
12007 W. Main St.
Huntley, IL 60142
(312) 669-5767
Owner: Margaret Hamill
Studio Manager: Steven Pappas

[8] VILLAGE MUSIC
also REMOTE RECORDING
Rt. 2
Stockton, MO 65785
(417) 276-3590
Owner: Larry Smith, Mike McGee
Studio Manager: Larry Smith, Mike McGee

[4] THE WATCHWORKS
also REMOTE RECORDING
8786-2 Maplewood
Berrien Springs, MI 49103
(616) 471-3058
Owner: G. Allan Clarke
Studio Manager: G. Allan Clarke

[4] WEIGEL HALL RECORDING FACILITY
also REMOTE RECORDING
304 Weigel Hall
Ohio State University
Columbus, OH 43210
(614) 292-7899
Owner: Ohio State Univ.
Studio Manager: Dr. Robert Lackey

[8] WHITEWATER STUDIOS
also REMOTE RECORDING
16651 Kangaroo Circle
Ramsey, MN 55303
(612) 424-5008
Owner: James Hersch
Studio Manager: James Hersch

[8] WILD OAT PRODUCTIONS
also REMOTE RECORDING
415 W. 2nd St.
Ashland, WI 54806
(715) 682-6464

[4] WILLER PRODUCTIONS
also REMOTE RECORDING
1655 Wells St.
Fort Wayne, IN 46808
(219) 426-1655
Owner: Charles Willer
Studio Manager: Kate Willer

[8] WJL RECORDING CENTRE
also REMOTE RECORDING
8460 Riverview
Dearborn Heights, MI 48127
(313) 563-2623
Owner: Walter Lipiec
Studio Manager: Walter Lipiec

[8] WOODEN NICKEL SOUND STUDIO
6844 Dickison Cemetery Rd.
Dunlap, IL 61525
(309) 243-7658
Owner: Donald J. Rosser
Studio Manager: Donald J. Rosser

[8] WOODMAN PRODUCTIONS
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just not that desirable. So all this purity that the industry has been talking about for years has turned out to be a real problem.

Now, for the sake of argument, let's assume you can keep the train digital all the way through all stages of sound recording and reproduction. Then you get to the theater, where you have to deal with the audience's ability to withstand pain: you can't be any louder than the audience is comfortable with. Now the simple fact is that in real life explosions and nuclear blasts are louder than anybody wants to experience. People want their experience in movies muted somewhat; but we want to create that impression of overpowering loudness.

Even this upper threshold varies because let's say, for example, that the dialog goes along at a certain loudness and then an explosion comes along. It sounds a lot louder, and is in fact louder, but not as much louder as it sounds. Let's say dialog goes along at 85 dB, which is the standard in the theater. At the mixing desk you set up for a level of 85. But when people start screaming or shouting on the track it doesn't go up to 110, it goes up to maybe 90. Explosions may go to 95. Sometimes levels go to 100 in 70mm.

My talking to you right now—let's say, that's 85 dB. If a 2,000-pound bomb were to go off outside, the ratio between that and my voice would be amazing: this bomb would be 250. There's just no way we're going to deal with that in film. We're going to make it sound very loud but it's only going to be 10 to 15 dB louder, at most, than the dialog.

Digital theoretically creates more of the opportunity to increase the dynamic range, but the audience can only bear so much, so you don't want it to be just like real life. There's not a great deal of value in having the sound levels just like reality.

Theoretically, if the chain is complete all the way down to the theater, the hardware limitations will be fundamentally removed for the most part. On the other end: how soft can we get with digital? Because the difference between loudness and softness creates that feeling of reality. An FM radio station, for example, has a very limited dynamic range: the DJ screaming and Bruce Springsteen coming right after him and then a commercial—where somebody's whispering for effect—all



Richard Beggs

are the same amplitude. There's not 5 dB of variation. And FM creates that upfront, charging sound.

Well, in a movie you want more variation to create the sense of realism. The very threshold of noise in the theater is the limiting factor on the bottom. Lucasfilm has gone so far as to create a theater ambience, that represents the theoretical noise floor of the average theater. And it's very high. You go over to Dolby's mixing stage and you turn it on and it sounds like a freight train going by. The level is something like 50 dB. So the value of digital in terms of dynamic range is largely lost.

Where digital's value comes in is in cleanliness and lack of distortion. The original digital tracks on *Cotton Club*, even when they went to mag, were the best sounding music tracks I had ever heard. I can only assume it's the saving of all of those mag generations.

So, in a word, all of the benefits of digital are not useful in the theater. The most doubtful, perhaps, are the dynamic range characteristics of the format, which is a mixed blessing.

Mix: Do you expect to be using more digital as time goes by?

Beggs: Yes. Eventually I hope to be working with an entirely digital mixing system.

Mix: What kinds of functions would you like to see future mixing hardware handling that present-day equipment does not perform?

Beggs: It would be a digital multi-track storage device and editing system, which would have a large memory capacity of about 24 to 36 tracks of ten minutes each. It would not be a processor *per se* but you could raise and lower volume and do a certain amount of EQ because it would have a mixing section. But in terms of putting a sound in and then getting some goof ball sound out, it wouldn't do that; you would rely on external gear for that. You should be able to put sound materials into it and manipulate them, going off line and copying and dumping them back in and still maintain first generation quality.

Any new technology I invest in should allow me to work as fast or faster, cost the same or less and give me a qualitative improvement over my present system. If those parameters are not met there's no reason for purchasing the new technology. Sometimes it's useful to do things even though they take longer and cost more, because that's how you learn. But in the business of making movies for deadlines and under budget constraints you can't do that. That's the business of research and development. ■

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Sound

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by Mark Herman

SOUND REINFORCEMENT NEWS

This summer and fall has been a banner sound reinforcement touring season. Every company that I spoke with seemed to have good news to report. For the first time in a while it appeared that there were enough touring acts and industrial shows to keep all the major and regional sound reinforcement companies working. And there is more good news—all my inside sources tell me that this coming January and February we will see a lot of acts taking to the road. The way it looks now we can expect a blockbuster winter touring season!

Audio Analysts keeps busy: **Billy Joel** came back from the Soviet Union and is now in Australia. . . **Heart** is out on tour until the end of December and plans to cross the Atlantic and continue in Europe in early '88. . . **Allison Moyet**, who enjoys a considerable following in England and Europe, was out on a small club tour of the East Coast before starting her big European tour. . . **Roger Waters** was using a quad system with five speaker clusters, left, right, mid left, mid right and rear center. Two engineers were required for the house mix. . . They also will be providing a quad sound reinforcement system for the upcoming **Rush** tour. Apparently the band was impressed with the quad sound while attending a show in New York City. Audio Analysts' **Albert Laccese** explains, "It looks like we are getting a lot of requests for extra special effect equipment for arena systems. The quad system features multiple speaker stacks for song intros, exits, special effects and sequencing. It's a new dimension. More and more artists are asking for that."

Tour notes from **Maryland Sound Industries**: **Whitney Houston** is on tour until the end of December. . . **Pink Floyd** is touring North America until

the end of December and then proceeds to visit Australia, Japan and Europe. . . **Luther Vandross** ended his tour in September. . . The second leg of **Dan Fogelberg's** tour is out from September through the end of November. . . **Cure** just finished their American dates and will be going to Europe. . . **Anne Murray** is on a national tour. . . **Patti Labelle** and **Peter Allen** are doing more dates. MSI's **Ron Smith** says, "It's one of the busiest seasons we've ever seen and it will be an excellent year for us". . . For the Bicentennial Constitution celebration in Philadelphia and Washington, DC, MSI provided sound reinforcement for the parade floats and **President Reagan's** speech.

Showco's three new Prism™ 360-degree speaker systems are presently being used by **Aerosmith**, **Eric Clapton** and **Boston**. **Genesis** just completed their tour and used the Prism system in Europe. Boston's original short tour keeps getting extended and Clapton's tour is to last nine months. . . Other Showco acts include **James Taylor**, **Santana**, **Farm Aid 3**, **Barbara Mandrell** and **Lynyrd Skynyrd's** first tour in ten years. . . Evangelist **Jimmy Swaggart** is preaching somewhere in South America and requiring sound equipment. . . **Bon Jovi** is being supplied with a monitor system and **R.E.M.** is using Showco's crew in Europe before returning for their North American tour.

For those of you unfamiliar with **Masque Sound & Recording Corporation** pay attention. This company in New York City is the largest Broadway musical and stage production company in the United States. For musicals they provide sound reinforcement, communications, radio RF and video equipment. . . The following is a quick look at some of their stage shows currently

in production in New York City. . . Director Hal Prince's show called *Rosa*. . . *Into the Woods* the new Steven Sondheim musical, *Anything Goes*, which is going into Lincoln Center. . . In December, *Phantom of the Opera* is coming into the Majestic Theater—it's the new Andrew Lloyd Webber show. The Tim Rice and Abba musical *Chess* will be coming over from England in January. They are also gearing up to put out the first national tour of *Les Misérables*. . . In addition to all this, **Tom Source** of Masque adds "We have four companies of *Cats* going. We have the New York company and three others out in various parts of the country." Asked what kind of equipment they use, Source says, "Predominantly we use Meyer speakers, Yamaha amplifiers, Cadac theater consoles and Yamaha PM3000s. *Les Misérables* is the first large musical in the United States to use John Meyer's SIM electronic real time analysis system. We are using his CP10 processors and SIM technology during setup of the shows. We just did that with *Anything Goes* as well". . . New equipment purchases are some of Yamaha's new REV5 digital delay/reverbs and some Meyer CP10 phase coherent parametric equalizers. They also just bought their eighth PM3000 and a couple PM1800s.

The **Jimmy Buffett** tour is taking a two-month break before heading out again in November. Buffett has been using **Sound Image** to provide sound reinforcement. A short tour and sporadic dates with **John Denver** kept a second main PA system working. **Tom Waits'** tour went out in October. . . Every year Sound Image provides in-house sound for the **Pacific Amphitheater** in Costa Mesa, CA, and **Humphreys'** 800-seat outdoor venue **Concerts by the Bay** jazz music series.

—CONTINUED ON PAGE 158

by Mark Herman

ON THE ROAD

SOUND COMPANIES, EQUIPMENT, ARTISTS & PERSONNEL ON TOUR

Artist Sound Company Tour Dates & Region	House Console Monitor Console	Main Speakers Subwoofers Main Amps	Monitor Speakers Monitor Amps Crossovers	House Engineers Monitor Engineers System Engineers
Aerosmith Showco Oct-April N. America	Harrison HM-5 32-ch. w/16-ch extender Harrison SM-5 32x16	80 Prism 12 Prism Subwoofer Crown	Showco 100, 200, 300, 400 Crown Showco	Toby Francis Fred Mueller Jeff McGinnis J.W. Roberts
David Bowie Clair Brothers July-Oct N. America cont-Australia & NZ	(2) Yamaha PM3000 40-ch Harrison SM-4 32x12	Two complete main PAs each with: 104 Clair S-4, 16 Clair C-4, Carver amps	Clair LP112, LP115 SAE, Crown Clair	Tony Blanc, Wade Evans, Bob Weibel, Tom Folehlinger RED TEAM: Mike Wolf, Blake Suib, Bob Miller, Sean McGovern, Barry Clair. BLUE TEAM: Steve McCale, Jim Ober, Kathy Sander, Bob Bickelman, Andy Sottile
Heart Audio Analysts June-Dec N. America cont—Europe	Soundcraft Series 4 40-ch Soundcraft Series 4 40x16	56 AA Arena 8 AA SW Phase Linear	AA 2x15, AA SF QSC 3800 JBL 5234	Richard Erwin, Thomas Holmes, Roger Binette, Bobby Huckaba, Mark Jay
Hiroshima Linear Sound Systems Sept-Nov N. America	Soundcraft Series 4 40-ch TAC Scorpion 30x12	12 Turbosound TMS 3 Hafler, QSC	Harbinger 514 Hafler, QSC BBS 360	Ira Malek Band's Michael Graphix Joshua Roberts
Bruce Hornsby & The Range Schubert Systems Group Sept N. America	Gamble Series EX 56-ch Gamble SC 32x16	56 SSG Steradian 20 SSG Sub 218 Carver	SSG M112, M115 Carver SSG	Mike Ferrara Alan Bonomo Bob Borbonus
Al Jarreau Schubert Systems Group June-Sept N. America	Gamble Series EX 56-ch Gamble SC 32x16	24 SSG Steradian 12 SSG Sub 218 Cerwin Vega	SSG M112, M115 Carver SSG	Mike Ferrara Gordon Jennings Bob Borbonas
Kool & the Gang Eighth Day Sound Systems March-Sept N. America	Soundcraft Series 4 40-ch Soundcraft 800B 32x8	48 Turbosound TMS 3 12 Turbosound TSW AB, Hafler	EighthDay Custom AB BBS	Mark Brnich Lenny Rosengard Rod Price Chip Lafferty
Pink Floyd Maryland Sound Industries Sept-Dec N. America cont—Aust, Japan, Europe	Yamaha PM3000 40-ch, Midas Pro 40 32 w/16 extender, Midas Pro-4 32-ch & Midas Pro 40	130 MSI Hi Pac/Low Pac ----- Crest 8001, 4001 SAE, Ramsa	MSI 2x12, 2x15 Crest 3501, 4001 MSI HS 301	Buford Jones, Seth Goldman, Steve Guest, Paul Giansante, John White, Jeff Scornavacca. QUAD TEAM: Mike Sturgeon, Bruce Emerick, Mark Dillion, John Muccardi
Starship Sound On Stage June-Oct N. America	Gamble HC 40-ch Gamble SC 32x16	24 Power Physics 543 ----- Crest	Power Physics Custom Crest SOS	Greg Price Richard Friedlander Fred Micera
Steppenwolf/Foghat/ Outlaws Wolf Sound Sept-Nov N. America	Soundcraft 1600 32-ch Soundcraft 400B 32x10	18 Meyer MSL 3 12 Meyer 650 Sub BGW, Perreaux	Meyer UM 1 BGW 750 Meyer	Band's Band's Peter Crockford, Michael McNeil, Ken Rust
Roger Waters Audio Analysts Aug-Sept N. America	Soundcraft Series 4 40-ch & Yamaha PM3000 40-ch Gamble SC 32x16 & Soundcraft Series 4 40x16	40 AA Arena, 24 AA S3 8 AA SW QSC 3800	AA 2x15, AA SF QSC 3800 JBL, BSS 340	Gary Bradshaw, Pete McDowell, Robin Fox, Michael Caron, Dan Schreiber, Mike Mule, Paul Parker

SOUND · ON · STAGE

—FROM PAGE 156, SOUND ON STAGE

Miami-based **Wolf Sound** has been out with the **Steppenwolf/Foghat/Outlaws** national tour in September and October. Both the main and monitor systems feature Meyer speakers and Soundcraft consoles. . . Wolf is one of the first American companies to use Perreux Pro amplifiers.

The news from **Hood Industries** in Cleveland, Ohio, is that they had a monitor system out with **The Replacements**. An original 24-channel Walker

(now DDS) monitor console was used. They also had some regional dates with the popular loudmouth comedian **Sam Kinison**. Some of their recent national one nighters include **John Hiatt, Allan Holdsworth, Diane Schuur** and the **Hoodoo Gurus**. New purchases of ten Crest 3001 and ten Crest 4001 amplifiers have been added to power Hood's custom designed McCauley-loaded speaker cabinets.

Regional touring has been keeping **Sweet Sound** busy with clients **Pat Travers, Christian comedian Mike Waranky, Greg Voltz** (formerly of

Petra), **Leon Russell, Edgar Winter** and **Blue Cheer**. **Jeff Sweet** explained that his Oregon-based company has developed a very efficient custom compact speaker system and is looking at expanding their touring presence.

David Bowie's latest tour is being handled by **Clair Brothers**. Two identical main PA arrays, designated Red & Blue, with 120 cabinets each, leap-frogged across America with a universal console and monitor system. After the three-month North American stint, the tour will continue in Australia and New Zealand with Japan remaining a distinct possibility. . . Other Clair acts were **U2, Kitaro, Fleetwood Mac, The Outfield, Kenny Rogers, Michael Jackson, France Gall, Johnny Hallyday** and **Tina Turner**.

In San Francisco, **Photo and Sound** announced that they have purchased a new flying Meyer sound system (eight MSL3s and eight UPAs) powered by eight Crest 4001 amplifiers. Photo & Sound primarily does commercial and industrial type shows in the places like the SF Civic Auditorium, the Moscone Center and the Civic Center. The new Meyer system is to be used for West Coast industrial shows. . . Also in SF, **AB Sound** has just purchased a Harbinger monitor system from Linear Sound. AB Sound provides the sound equipment and engineers for the Last Day Saloon nightclub in San Francisco and other venues are needed.

Kenny Loggins used **A-1 Audio** of Hollywood, CA, to supply a Meyer sound system for his seven-week, 30-city tour that began in mid-July. The tour marked the debut of A-1's new integrated flying array. According to A-1 Audio owner **Al Siniscal**, "The entire system has been able to be flown in 'record' times with minimal manpower." The new system comprised of A-1's new patent pending flying apparatus and Meyer MSL3s, UPA1s, USW1s and 650R2s, remains largely intact for transport, eliminating lengthy assembly time and maximizing truck space. Loggins' long-time studio engineer, **Terry Nelson**, handled the house mixing while monitor engineer **Alan Richardson** oversaw the stage duties.

The historic **Apollo Theater** in New York City recently purchased a new **Turbosound** system featuring 16 TMS-4 enclosures. New Jersey-based **Thunder and Lighting** was responsible for

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the installation at the famous Harlem theater. The new speakers are part of a comprehensive refurbishment program which will transform the theater into a top-level audio/video/television center for live performances and broadcasts.

Eighth Day Sound Systems has been very busy this past touring season with their main client, **Kool & the Gang**. Other tour clients include **Twisted Sister**, **Jethro Tull**, **Ashford & Simpson** and **Squeeze**. Eighth Day is also doing regional touring with **Johnny Mathis** and **Frank Sinatra**. According to **Tom Arko**, "We are capable of fielding three complete touring systems simultaneously. Last fall we had Ashford & Simpson, Kool & the Gang, and the Russian rock and roll band **Stasnamin** all out at once." As you know, most Russian bands can't come to America. Stasnamin is the last name of the lead singer whose father *coincidentally* holds an important position as the Transportation Secretary in the Soviet Union. By the way, all the shows were sold out... **Food** for thought? Arko adds, "We just finished six days at one

of the largest food fairs in the country. It is called the **National Rib Cookoff** and it featured such acts as **John Caferty**, **Eddie Money** and a host of others. This was outdoors in Cleveland and had about 30,000 people in the evenings. Another food festival we are doing is **Cleveland A La Carte**, a five-day restaurant show with several different stages."

Mr. Fix-it... How's your **Soundcraft** mixing console? Does it need any repairs? If so, a man to contact is **Tony Marra** of **TLM Electronics** in Pleasantville, NY. Call (914) 769-6423. He specializes in Soundcraft console repair as well as other electronic work. Tony has over 12 years of experience in the sound biz with such groups as Ted Nugent, Aerosmith, Elvis Costello and many more. TLM offers a module mail-in program where individual input and output modules can be sent in, tested, repaired and sent back quickly and economically. Marra has a very complete testing and repair facility based on an Audio Precision System One running off an IBM PC.

Up north in Canada... In the province of Ontario, audio company **Handsome Dan** announced that they have ordered a Soundcraft 8000 house console and a Soundcraft 500 monitor console... Also upgrading their existing equipment is **Meriachee Audio Productions** of Edmonton, Alberta. According to **Gary Hamilton**, they have taken delivery of two more TAC Scorpion 32-channel house consoles and plan to do a **Connie Scott** tour in association with **FM Systems**... In Vancouver, British Columbia, **Jason Sound Industries** is providing rehearsal equipment and gearing up for the upcoming **Loverboy** tour.

As part of the United States Constitution Bicentennial celebration, **Capron Inc.** of Hyannis, MA provided sound reinforcement for a free **Ray Charles** concert on September 12 at the Esplanade in Boston. Two main sound towers with an additional three delay towers covered the event attended by an estimated crowd of 100,000 people... All you skiers out there should know that Capron provides sound rein-

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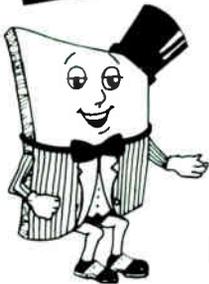
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SOUND · ON · STAGE

forcement and communication equipment for several national professional ski tours.

Little Steven who was opening for U2 and Peter Gabriel in Europe, and doing some side touring on his own, used equipment provided by **Andrews Audio Tours**. For the European dates a complete Meyer monitor system, a 40 x 16 Audioarts/Wheatstone M16 monitor console, and a 40-channel Yamaha PM3000 house console were used in conjunction with the main act's PA. **Mike Sinclair** engineered the house mix and **Bill Fertig** the monitors. Little Steven's short club tour of the East Coast used this same gear along with a small amount of Meyer MSL3s and 650 subs for the mains... In August, Andrews Audio also provided their services for New York City's month-long **Lincoln Center Outdoor Series**. Many different types of music are performed on four different stages. Three of the stages feature Community Light & Sound CS70 & CS60 cabinets purchased from Andrews Audio earlier in the year. The largest stage used Andrew's Meyer system. Sound reinforcement was also provided for the **CEBA Awards** (Creative Excellence for Black Audiences) held at the New York Hilton on October 15.

The **Ravinia Festival**, held in a park located in a northern suburb of Chicago, is the summer home of the Chicago Symphony Orchestra. Every night of the summer classical music is played using a house system. Once a week a national pop oriented act is brought in and the sound reinforcement is provided by **Gary Gand Sound** of Northfield, IL. In August they did week-long regional tours with **Pia Zadora** and **Andy Williams**. A 40-channel Yamaha PM3000 along with a Soundcraft 200 for strings, was used for the house mix. Both tours incorporated a 40-piece backup orchestra... Every year Gary Gand Sound puts on a trade show for musicians and consumers. Last year Jan Hammer was the featured guest. One of this year's guest performers was **Nyle Steiner**, inventor of an electronic wind-to-MIDI instrument... They also recently installed a new sound system at historic **Wrigley Field**, home of the Chicago Cubs baseball team.

Pro Media has installed meeting and ballroom sound systems featuring Altec speakers for the SF Hilton and Sacra-

mento Hyatt hotels. The San Francisco-based company also installed a sound reinforcement system for the **Anchorage Performing Arts Center** in Alaska. In September they did sound reinforcement for a series of outdoor pop concerts for the Sacramento Symphony as well as the Opera in the Park shows in San Francisco's Golden Gate Park.

Oakland's **Linear Sound Systems** just finished a two-month tour with the jazz fusion band **Hiroshima**. Locally, some of the national act one-nighters that required sound reinforcement included **Ricky Skaggs**, **Joe Luis "El Puma" Rodriguez**, **Big Brother & the Holding Company**, **Wire Train**, **Dave Brubeck** and the **Everly Brothers**. A Summer of Love concert with '60s era bands **Big Brother, It's A Beautiful Day**, **KBC** and **Country Joe** was held in Golden Gate Park on September 12 with Linear providing sound.

Industrial trade shows are the bread and butter for **Phoenix Audio Visual**. **Mike Reese** of Phoenix AV says "Most of our work is done in civic centers, ballrooms, venues that incorporate multimedia and visual projection. It's usually corporate work." Recently they did an outdoor desert show with **James Brown** for a convention of several thousand French... New equipment purchases include a Renkus-Heinz monitor system and several M1 cabinets. Reese on the Renkus-Heinz, "Those M1s are great. We love them because we don't have to haul out a mountain of equipment and we're still able to get a good sound and loud pressure level from them."

Florida sound company **Turn of the Century Productions** provided a monitor system for this past summer's **Three Dog Night** and **America** tour. **Frank Zaccaro** also reports, "Some of the recent one-nighters that we have provided sound reinforcement for include **The Fixx**, **Cutting Crew**, **Wang Chung**, **Crowded House**, **Fabulous Thunderbirds**, **Gregg Allman Band** and **Robin Trower**. Our main touring client is **Wayne Newton** and we expect to resume his tour soon." Turn of the Century has two sound systems composed of JBL loaded proprietary speaker cabinets, Crest, QSC, and Crown amps, and Soundcraft consoles. ■

Author Mark Herman co-owns Hi-Tech Audio, a Northern California-based sound reinforcement company specializing in console rentals.

Boston's Third Stage Tour: A Different Approach

At first glance, it looked like any other rock megatour: rows of semis parked outside the stage entrance; a huge 92-box Showco Prism speaker system hung inside the cavernous Oakland Coliseum; and on stage—the usual double-kick rock drumset at center, mountains of keyboards at stage right, a seemingly endless collection of perfectly maintained vintage and custom guitars just off stage left, and of course the ubiquitous wall of slant-top guitar amps forming a semicircle behind the band.

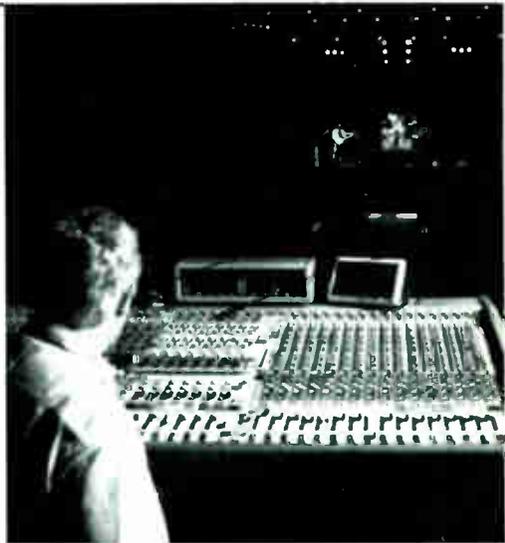
On closer examination, something quite different was happening. An oscilloscope placed on top of a guitar stack seemed somewhat out of place, but most obvious was the absence of instrumental mics. Other than the Shure SM58s used for vocals, and a couple of AKG condensers on hi-hat and drum overheads, no mics were visible anywhere. Since Boston founder Tom Scholz is also perhaps equally well known as the inventor of the Scholz Research & Development Rockman modules, it is no surprise that his processors are used on all guitars, bass and keys onstage, thus obviating the need for miking amplifiers.

Guitarist Gary Pihl notes that going the direct route offers many advantages besides getting rid of feedback problems: "By going direct with the Rock Modules, you eliminate the speaker. In a standard amplifier setup, if you move a mic just an inch one way or another around the cone of the speaker, you can completely change the sound, and who wants to worry about tweaking the sound to get it right every night? Onstage, we can play as loud or as quiet as we want—we don't have to worry about playing at a certain level so the speaker will distort to the particular sound we want to achieve. I'd have a hard time going back to a regular amplifier, with all those problems. I've got plenty of old tube amps—some nights they sound great, and the next night it's stinko, and you never know why. Eliminating those problems and achieving a consistent sound night after night is

the greatest."

Pihl went on to explain that what appeared to be slant-top guitar cabinets were actually custom enclosures containing two 12-inch woofers and a high frequency horn and driver with a passive crossover. "It's really quite a hi-fi system—full range—and it's intended to duplicate the PA sound on stage," adds Pihl. Each of the cabinets is also equipped with an LED attached to the front grille, to indicate at a glance whenever any cabinet is active.

I was puzzled by the lack of mics on tour drummer Doug Huffman's eight-piece Ludwig kit, and drum tech Rob Kern pointed out the dual XLR outputs fitted to each drum shell. These are connected to separate piezo transducers inside the drums which are foam-packed and act only as triggering pads. Backstage, behind the drum riser are two racks containing identical gear, each equipped with a Yamaha PMC-1 pad-to-MIDI converter, Akai S900 sampler (playing the stock Akai drum samples) and Rane MM12 matrix sub mixer. The com-



Showco mixer M.L. Prociasek runs a soundcheck during the Boston tour.

plete redundancy of the drum system—from dual triggers in each drum to the dual MIDI racks—ensured a fail-safe approach, and was even augmented by an uninterruptible AC power supply feeding the system.

—George Petersen

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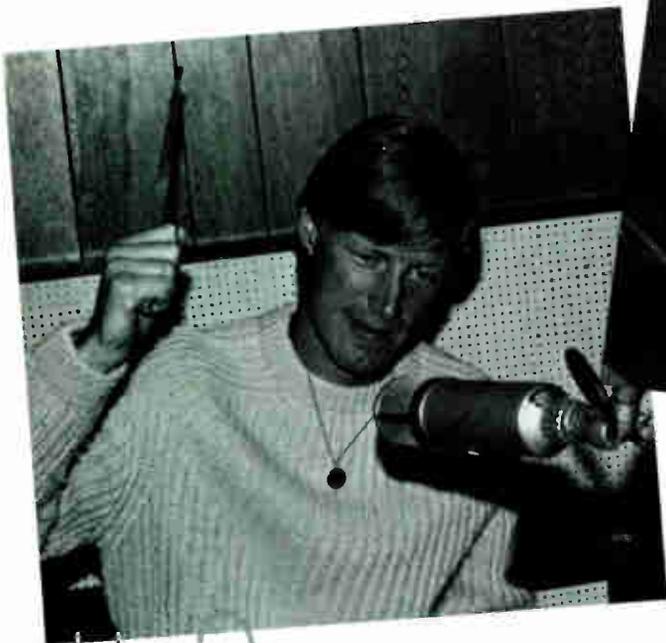
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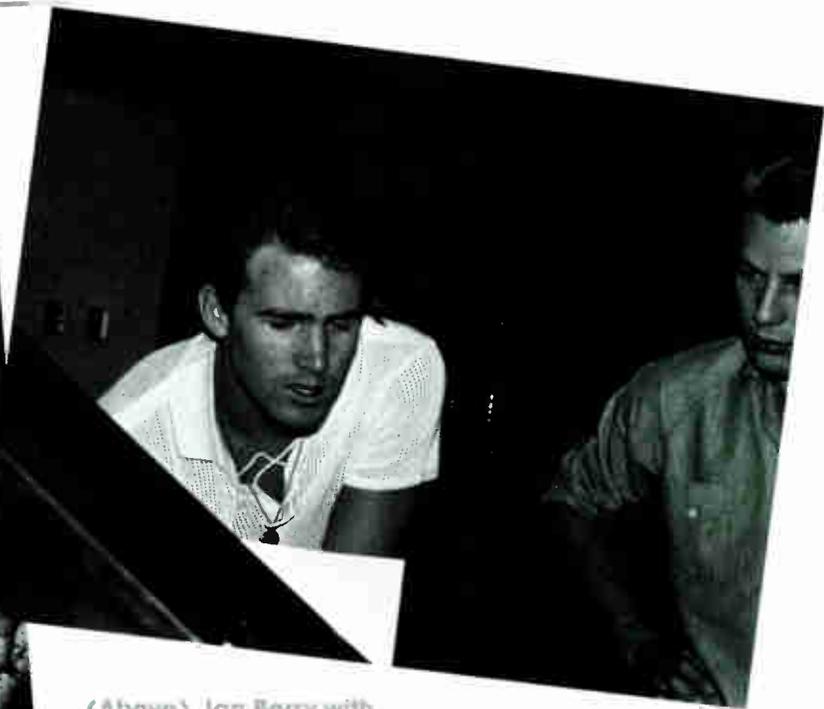
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(Above) Jan Berry with session keyboardist Larry Knechtel

(Left) Dean Torrence



Up & Down with Jan and Dean

by Hal Blaine with David Goggin

In this chapter from his forthcoming autobiography, session drummer Hal Blaine traces surf music legends Jan and Dean on the road from triumph to tragedy.

The year was 1963 and I was really starting to get busy in the studios. Because of my work with H.B. Barnum and some major arrangers and artists, my name started to mean something in Hollywood.

I was married to the woman I considered to be my first real wife. We had started out in a small apartment on Fuller Avenue, but now I was successful enough to realize one of my life's ambitions: to own a house that I could call my "home." I had spent most of my life in ghettos and tenements, but now my wife and I could afford a full-blown 25-room house in the Hollywood Hills—just the two of us in a mansion with nearly an acre of land. I was five minutes from every studio in Hollywood and not more

than 20 minutes from any of the movie studios.

Living close to the studios in Hollywood was a great plus for me. I soon learned that when a 20- or 30-piece

They were just a couple of college kids from decent middle class homes. Jan and Dean personified the California Dream: sports cars, blond hair, tall and muscular images; the epitome of the young surfer image.

orchestra was sitting in a studio and the drummer hadn't shown up after ten or 15 minutes into a session, it was time to call a replacement in a hurry. Because I was the closest and was getting a name for myself, I was always the first one called. If I was at home, I could be at the studio in five minutes, sitting at the other drummer's kit, ready to do the date or at least sit in until he showed up. Each time it happened to me I did, in fact, get to finish the date and was paid premium for doing it.

When I got a personal call from Jan Berry of Jan and Dean, I had very little knowledge of the duo. Jan was a very promising composer/arranger/singer. He was young and handsome and was studying medicine. Dean, who was even more striking, if that was possible, was studying architecture. They were just a couple of college kids from decent middle class homes. Jan and Dean personified the California Dream: sports cars, blond hair, tall and muscular builds; the epitome of

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Len Feldman—db magazine
September/October—1986



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the young surfer image.

Although they hadn't yet become major stars, it was written all over them. When we walked through the parking lot at United/Western Studios, we would pass school girls coming home, and these young kids would swoon shamelessly, do double takes and often follow them to their cars. It was amazing to me. I had experienced this phenomenon working with Tommy Sands, but he was already an established teen idol. Jan and Dean were just starting out.

Well, within a couple of years they had become stars, just as many of us predicted, thanks to the success of "Surf City," "Little Old Lady from Pasadena" and some other million-sellers. By then they had beautiful Bel Air homes and everything that comes with wealth and stardom. After playing on their records, I was asked to do a couple of road trips with them, and I never saw such a crowd scene in my life. Everyone stood for the entire show, screaming with delight and crying with anxiety. Many of the girls would collapse from the hysteria and be sent to hospitals in ambulances.

Jan was a hard-head, Dean was a softy. Where Jan was often belligerent, Dean was always soft-spoken. You could almost see a halo floating over Dean's long, blond hair. With Jan, you could imagine the horns that went along with his sometimes devilish manner. But we all got along great, and fun was the bottom line. I couldn't wait to get out on the road and do concerts with them.

I remember once we were working in Seattle for Pat O'Day and Tom Hulet, two very prominent promoters of the day. When we arrived at the auditorium, the crowds were massive. It took an entire team of cops to get us through the mob and up to the backstage area where kids were standing 50 deep. The cops left us there, and we did our best to get through and pushed our way to the private door. We started pounding to get in, but these backstage cops were used to hearing pounding and nobody answered the door.

Jan and Dean were both wearing their stage costumes: surfer T-shirts which made them look just like the kids who were trying to get in. After pounding and screaming at the top of my lungs, a cop finally opened the door to peek out. I told him that these were the stars of the show and

that we had to get in. But the cop didn't believe me.

That's when Jan stepped in and started swearing at this big policeman. The fists started flying, and the cop had Jan on the ground and handcuffed in nothing flat. He called for a black and white to take him downtown. "You're under arrest, punk, and that's that!" And through it all, Jan was calling this big ox every name in the book. I did my best to convince this officer that if Jan were arrested there would be a riot the likes of which Seattle had never seen, but I was talking to deaf ears.

I somehow managed to get Dean and me through the door and went looking for Pat O'Day. I found him in the production office, and he came out and finally convinced the sergeant that there would be a major riot if the show was cancelled. The show went on as scheduled, and it turned out to be an incredible performance.

After the concert we all gathered at a dinner house where the sergeant and his men were the guests of Pat O'Day, Tom Hulet, and Jan and Dean. The good policeman couldn't wait to get autographed pictures and albums for his kids, plus a few photos taken with Jan and Dean for his den. I guess all's well that ends well.

It wasn't too long after that explosive evening that Paramount Pictures signed Jan and Dean to a film contract. They were going to be the new Laurel & Hardy. Jan and Dean had both spent time in Santa Monica with Stan Laurel shortly before his death. They were Laurel & Hardy freaks and fashioned a lot of their comedy antics on those classic routines.

On the first day of shooting they were on location in the San Fernando Valley rehearsing a train sequence. Two trains were to come together while Jan and Dean were walking on the railroad tracks. This was actually to be the last scene of the film, the closing shot. There would be a narrow escape for the kids as the two trains slammed on their brakes and stopped within inches of each other. The rehearsals went off without a hitch, and then the director called for action.

The cameras started rolling and the trains approached. Somehow, the brakes went out on one of these monstrous locomotives, and the trains smashed together. It was like an atomic blast as thousands of tons of

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PHOTO JASPER DAILEY

Hal at Jan and Dean's stage drums

steel collided. People went flying into the air and landed like rag dolls, many of them unconscious. Dean had managed to get off the tracks before the crash, but Jan wasn't so lucky. He looked at his leg and saw that it had been nearly severed by a wheel. With blood gushing from veins and arteries just below the knee, Jan put his medical school training to work. He fashioned a tourniquet from his belt and, in the midst of all the confusion, dragged himself almost a quarter of a mile across a desert area to the highway and flagged down a passing motorist.

The driver rushed Jan to the Northridge Hospital and the first thing that he heard was the doctor mumbling something about amputation. Jan gave strict orders that he would not allow an amputation until his doctor could be called in for a consultation. Jan's orthopedic doctor, Dr. Robert Grant, was also his professor at UCLA. When Grant arrived from the West Hills hospital, he told Jan that no one would amputate. And with that, Jan collapsed.

With his leg in a cast he went back to college, but it was still onward and upward for Jan and Dean. Through all the time we spent recording, overdubbing, mixing and the like, the two were still students doing their school thing by day and recording at night. The Paramount movie was scrapped,

but 20th Century Fox began talking to them about some other film possibilities. After all, these kids were hot on the music scene and seemed destined for movies.

Jan called me one day and said, "Hal, how'd you like to be a movie star with us?" I answered, "You gotta be kidding!" In a couple of days I received a script titled *Jan and Dean on the Road*. It was a clever pilot to be directed by William Asher (of the *Lucy* shows and *Bewitched*). My role was "Clobber," the drummer (talk about typecasting). I had worked for some years before at Paramount as an extra and a bit player. I was familiar with the film business and had done photo doubling for Sal Mineo and some stunts for Yul Brynner. I really enjoyed working in films, and the salaries were great.

After a few meetings with Asher at Fox, everything was set. The Jan and Dean show was to be a weekly series about their life on the road and all the trials and tribulations of a rock act. There would be a lot of comedy and pathos, and, of course, plenty of rock and roll. We would also be recording the music for the show. The pilot called for a number of locations all over the country with a huge concert in San Diego to wind it up. It was a couple of months' work, and we were being treated like royalty by one of the biggest studios in the world. Even my

wife was along to enjoy the ride. This was really the big time—limos, make-up men, publicity shots; the works.

Our first day of shooting was at a special section of TWA's terminal at L.A. airport, where they had mock-ups of their planes. As my limo approached the area I saw a lot of police cars with their red lights flashing. I thought maybe there had been a plane crash, but no—Jan and Dean had decided to come out early that morning and race their cars all over the runways before anyone else arrived. These dummies almost shut down the picture before it got started! Once again they were told they were going to jail and it took a lot of convincing by Bill Asher and the powers at Fox to cool out the police. Jan and Dean had a knack for effortlessly getting into trouble.

Well, we finally got things straightened out and began working. It was a ball and went well from that point forward. My big part usually consisted of their actor "manager" asking, "Clobber, have you got the music?" to which I replied, "Have I got the music?!" We shot at airports all over the country and the "manager" would keep asking me if I had the music. I would always answer, "Have I got the music?!" After a few more exchanges I would be running off the plane and Jan and Dean would ask, "Where ya going, Clobber?" I would deadpan to the camera and say, "I forgot the music." This was my big gag.

Each night after our shooting was done I sat up half the night with Jan and helped him cram for his medical finals that were coming up as soon as we got back to L.A. I coached him on pharmaceutical formulas, the scientific names of the bones in the body, etc. I was fascinated by this side of Jan's life and it amazed me how well he could study both his medicine and his script. He seemed to have a photographic memory.

We wound up in San Diego for the final concert sequence and did an unbelievable live show. I got most of the session players from The Wrecking Crew flown down from L.A. and acted as bandleader. It was a wild time—there were thousands of screaming kids and it was good money for everyone.

We went to a couple of screenings and everyone agreed that the show would be a hit and we would all be gainfully employed at 20th Century Fox for some years. As soon as the

pilot was in the can we started to record again.

A typical session with Jan and Dean began with a call from Jan asking me to get the Crew together. I would then get Arlyn Henry, the owner of Arlyn's Answering Service, to call the gang. Arlyn and her girls used to put out the contractor's calls because we contractors, being a busy bunch of people, could not sit for a day or two by the phone waiting for everyone to get their messages and call back, accepting or rejecting the session. With Jan it was usually, "I want to record tomorrow—any problem?"

Plenty of problems! Getting seven or eight busy guys together for a session was almost impossible, especially getting Earl Palmer and me scheduled to do double drums. We were the busiest drummers in town, each of us working four or five dates a day, so we usually had to make it a late session—very late. I usually tried to get Earl on the phone personally to coordinate our schedules before having Arlyn contact the rest of the band.

The double drums was an idea that Jan had because he used to like to overdub a second track of drums exactly like the first. This presented a lot of problems, so he finally settled for the obvious: two drummers. Earl and I played everything in unison—every fill, every backbeat. We rehearsed our parts as one, and talked about what we'd play on each drum: the toms here, the snare here, etc. I don't think anyone used dual drummers on tracks before that, and it really started something.

The rest of the session players on those dates usually consisted of Glen Campbell, Billy Strange and Tommy Tedesco on guitars; Bill Pitman on Danelectro bass; Carol Kaye or Ray Pohlman on Fender bass; and Larry Knechtel, Glen D. Hardin or Don Randi on piano. Other players we used frequently included Jimmy Bond, Red Callender and Lyle Ritz on upright bass; Joe Osborne on electric bass; Al Casey, David Cohen, Michael Deasy and Don Peake on guitars; and Julius Wechter on percussion. Liberty Records spent a fortune on these two hit-makers and was surrounding them with the best musicians in Hollywood.

The sessions were always fun, with many ending in the early morning hours and finding us in various states of giddiness and exhaustion. I remember one night in particular when

someone had brought in a couple cases of beer and five pounds of shelled peanuts. Needless to say, by about two in the morning everyone was feeling pretty good. Then Glen Campbell started throwing peanut shells at Billy Strange, who in turn started throwing beer cans at Tedesco. Before you knew it, the mini-war was on and everyone joined in with beer cans and peanut shells flying all over the place. Between the flying debris and the passing of gas in that tiny Studio Three at Western, it smelled like the gas company had broken a main and it looked like the circus had left town without cleaning up. What a mess. That night, The Wrecking Crew really lived up to its name.

During this time, Jan was in finals and about to start interning. After being in school all day, he'd record half of the night and study the other half. I knew that it was taking its toll, but I never knew how much. Jan called one morning and said that he'd see me that night after school. I was just leaving for work, and he was on his way to the draft board and then classes. He was getting a medical student draft deferment from Uncle Sam. It was the

last time we would speak for months to come.

About ten in the morning one of the engineers came into the studio and told us that he had just heard the news that Jan had been killed. Jesus. We were all in a state of shock. I made a few calls and finally got Lou Adler, who said that he had heard about the accident but that Jan was alive—barely—at the UCLA Medical Center. They couldn't tell us anything except that he was undergoing brain surgery.

There were many accounts of the accident, but the official story seems to be that Jan had made a turn from a stop sign in Beverly Hills and somehow his Corvette Stingray slid under the back of a parked truck. This was "Dead Man's Curve"—for real. His skull was cracked open, and the police pronounced him dead at the scene. After the paramedics arrived they found weak signs of life and rushed him to the UCLA Med Center, where the neurosurgeons took over.

The doctors didn't give Jan much hope; they doubted he would ever come out of his deep coma. He was in intensive care for a long, long time

—CONTINUED ON PAGE 181

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MUSIC STORES

Circle #071 on Reader Service Card

by Craig Anderton

MIDI ACCESSORIES

SIMPLIFYING YOUR MUSICAL LIFE

MIDI, as we all know, is wonderful. And MIDI, as we all know, has a problem or two. One of these is the escalating need for features. As in so many other aspects of life, the more you get, the more you want—and once you get more than a couple pieces of MIDI gear together, you find yourself not just plugging in a couple of musical instruments, but creating a *system*.

Chances are you'll find yourself needing an extra box or two to help the system run more smoothly, so this month, we'll talk about MIDI accessories. Due to the large number of manufacturers involved, rather than try and mention everybody we'll go for a more generic approach (with a couple of exceptions). For current prices, specs and availability, check out the ads and articles in *Mix* and *Electronic Musician* magazines.

MIDI Mergers

These mix two or more MIDI signals together into (typically) one or two outputs. Applications include having two musicians "jam" into a sequencer (most sequencers only let you record from one source at a time); mixing timing data from a drum machine or sequencer and melodic data from a MIDI controller, usually with the idea of feeding both into a sequencer; and allowing a MIDI instrument to receive data both from a controller (e.g. keyboard, MIDI guitar, etc.) and a computer. The latter is particularly useful with some patch librarians and editors, as you can make changes on the computer and then play the MIDI controller to hear the results of those changes.

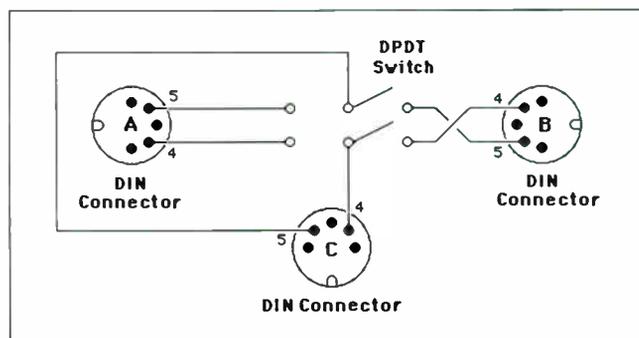
MIDI Switchers

These are basically switching matrices that let any given MIDI output drive any combination of MIDI inputs (sometimes a merger will be included so that you can let two MIDI outputs drive any combination of MIDI inputs). The main purpose of a MIDI switcher is to give pushbutton control over signal routings, thus eliminating MIDI cable plugging/unplugging. For example, for some situations you might want a sequencer to serve as a system's master controller; other times, maybe a keyboard would be more appropriate. Or perhaps you double on keyboard and MIDI guitar, and want to switch between the two. With a MIDI switcher, all these options are just a button-press away.

MIDI Mappers

The term "mapper" was originally coined by Brian Parsonnet at Axxess to describe a MIDI do-all box he had designed (and which is now distributed by Intelligent Music). Mapping essentially involves two main functions: note and pitch redefinition, and cross modulation. The former lets you process the notes coming from a master keyboard, sequencer, or other source

This MIDI switch box is a nifty accessory that can be easily fabricated with simple parts. By connecting a MIDI controller's output to jack "C," you can switch between the MIDI inputs of two sources plugged into "A" and "B." If only one source is used, the unit functions as a MIDI on/off box. Schematic courtesy *Electronic Musician* magazine.



ARTWORK: CHUCK DAHMER

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of MIDI channels, which program numbers will be selected on those channels, even whether notes played on the keyboard will call up different notes or combinations of notes (such as playing a single-note bass line and having octaves and fifths come out). Cross modulation allows one controller (pitch bend, modulation wheel, velocity, etc.) to affect other synth parameters such as filter cutoff or master volume; in fact, *any* synth parameter that you can access over MIDI is fair game for cross modulation. Another possible cross modulation application would be to "map" a control pedal to change modulation if you needed to use both hands on the keyboard, and therefore couldn't change the modulation wheel. Many devices now include mapping-related features, but having a single stand-alone box that performs all these functions can be a real "session saver" with MIDI-intensive setups.

MIDI Cable Testers

With the complexity of MIDI gear these days, when something doesn't work the usual tendency is to reach for the

manual or assume operator error. But MIDI cables can go bad just as easily as regular cables, and a tester will help weed out the bad ones.

MIDI On/Off Switch

These are so simple to build that most of the ones I've seen are homemade. All we're talking about here are two paralleled MIDI jacks and a switch that interrupts one of the connecting wires between the two jacks. Applications? Well, suppose you're feeding an expander module from a master keyboard, and you want the keyboard to play solo from time to time. You could change MIDI channels, or issue a message over controller 07 to turn down the expander module. . . or you could just flick the MIDI on/off switch and be done with it.

MIDI Data Monitoring Computer Programs

What range of velocity values does a keyboard produce? When you hit that tom-tom button on a drum set, what MIDI note number results at the MIDI output? Over which controller number does a synth's control pedal send data? To answer these questions, you

need a "MIDI oscilloscope" that shows you not volts and frequencies, but rather, what kind of MIDI data is flowing down the MIDI lines. While several programs are available—and some instruments even have MIDI monitoring built-in—Kurzweil has posted their Macintosh MIDI analysis program on the PAN telecommunications network, where the program can be downloaded for free. Even in the current age of nifty shareware, getting a program like this for nothing but connect-time charges gives new meaning to the word "value."

MIDI Program Change Footswitches

So you've got all those wonderful MIDI-controlled signal processors glistening in your studio, obediently awaiting your next Program Change command. Are you, in your expensive high-tech environment, going to reach over and punch a bunch of buttons? Of course not. Program change generators come in all shapes and sizes—from little battery-powered things the size of a cigarette pack (the Alesis MPX), to foot-switch devices intended for forward-thinking MIDI guitarists. Having centralized control over program changes saves time and energy, and impresses clients to no end.

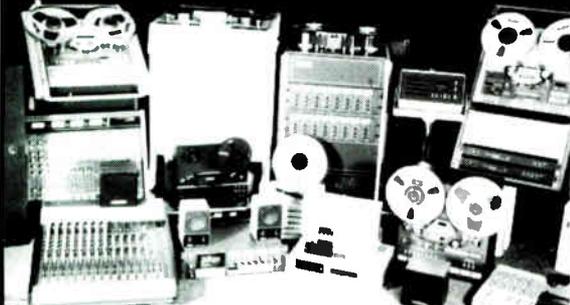
MIDI-Controlled Audio Patchbay

We're not talking about something that will replace the world of wire in your control room. But there are devices (from Ibanez, Peavey and presumably others) that will let you take a bunch of pre-MIDI effects, patch 'em into a MIDI-controlled "patchbay," and assign which effects will be in (and which will be out of) the signal path, as determined by standard MIDI Program Change commands. Yes, you don't have to trade in all those cool MXR effects after all!

There are many more MIDI accessories, of course, but I'm out of space and besides, enough trees have given their lives to bring you this installment. Until then, be creative and have fun with all this stuff. ■

Craig Anderton is the editor of our sister publication Electronic Musician, and is guitarist/keyboardist for the synth band Transmitter, as well as author of numerous books and articles for MIDI users.

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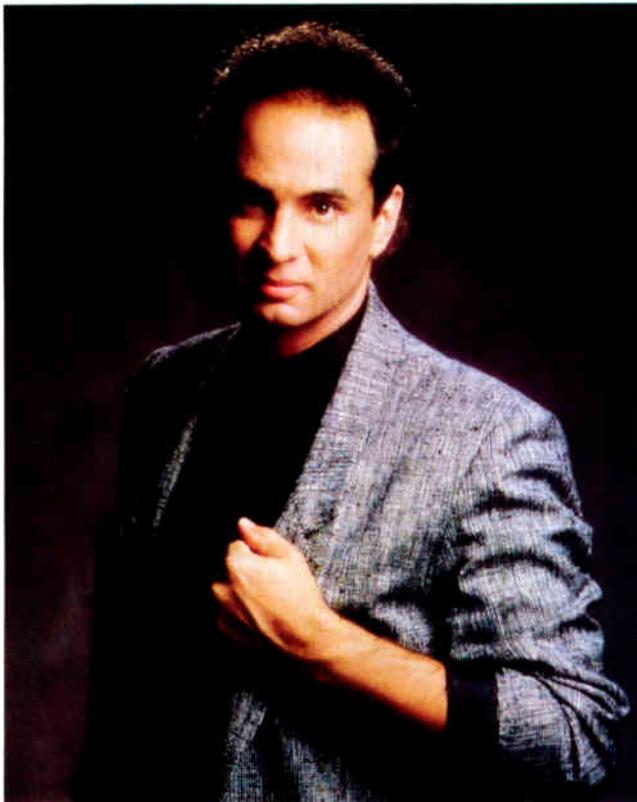
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MICHAEL OMARTIAN: "CONVERSATIONS" FROM ABOVE

by Bruce C. Pilato

Finally, Michael Omartian can rest. After 15 years of producing, writing, arranging and playing on hit records for everyone from Rod Stewart to Barbra Streisand—not to mention half a dozen Grammy nominations and awards—Omartian has finally made the album that has been his lifelong dream and ambition.

Conversations, an all-instrumental album released last summer on Reunion Records, is one of the first Christian *instrumental* albums. Though some may find that concept a little

hard to grasp, Omartian—a born-again Christian—says the inspiration for these songs and this recording came directly out of his faith in God.

"I feel the music that comes out of me is emanating from the Almighty," Omartian says. "I didn't feel like I needed to put a label on it. I just felt like it was something I was doing."

Sounding something like George Winston meets Bruce Hornsby backed by the London Philharmonic, *Conversations* is a collection of piano melodies built around full-bodied arrangements. Although many listeners might want

to put the album in the currently popular "new age" category, Omartian doesn't hear it that way. "A lot of people have latched on to that genre," he says, "but I prefer to look at this as a classically oriented album."

Despite less than five years of formal classical training, Omartian wrote and played the music of *Conversations* with all the subtle skill of a proficient classical musician. He claims his ability to do this further reinforces his belief that the album was a result of a gift from the Lord.

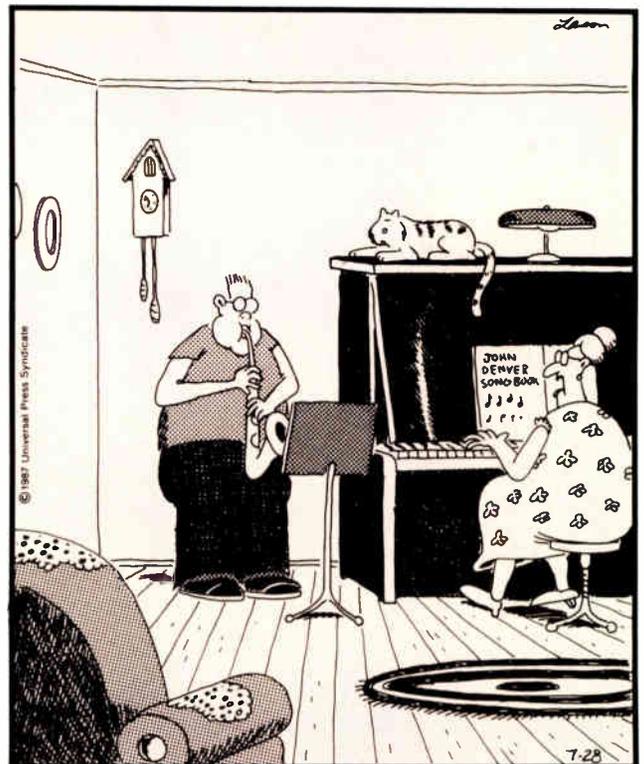
"One day I was sitting in my living room playing my piano. I hadn't even

thought about doing a record and I just decided to bring a little tape recorder in and see what was going on. All of a sudden, I just started playing the song that became 'The Call,' and I developed the rest of the album from there in a short period."

One of the album's most intense songs is the Bach-flavored "Festival of the Dance," which lasts nearly eight minutes. That song, says Omartian, "was inspired while I was watching a Dodgers baseball game. This melody just came into my head and I ran into the other room and started writing it. In two hours it was finished."

THE FAR SIDE

By GARY LARSON



"Blow, Howie, blow! ... Yeah, yeah, yeah!
You're cookin' now, Howie! ... All right! ...
Charlie Parker, move over! ... Yeah!"

With years of string and horn arrangements behind him, Omartian created a synthesized orchestra—and he even panned the instruments in the mix to recreate the stage positioning of a standard orchestra. “It’s nice to have that separation and room to breathe so that everything isn’t cluttering everything else,” he says.

But the most remarkable attribute of *Conversations* was the fact that Omartian wrote, arranged and recorded the entire album in the same time that most artists demo a few songs: from start to finish, the album took only 80 hours!

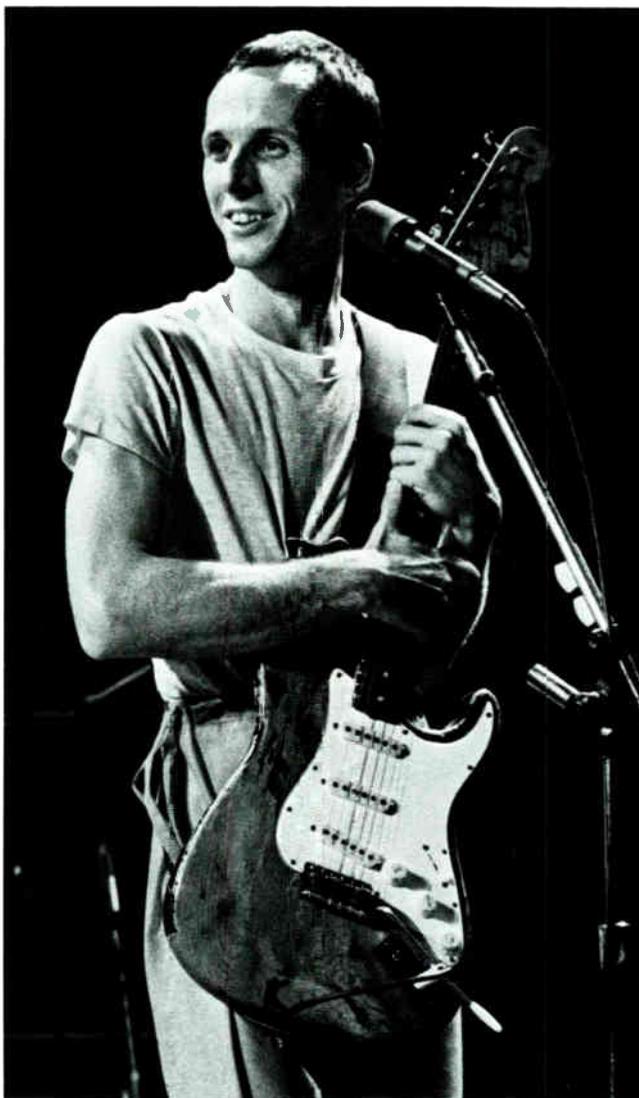
“I didn’t have any idea what I was going to do recording-wise until I got into the studio. I really do feel this album was a gift of inspiration from Him. Things started coming really fast.”

All the recordings began with Omartian’s grand piano, and the overdubs were built from there. He played every instrument on the album, including the percussion.

According to Omartian, all except two of the piano tracks were recorded on the first take. “I wanted to get the feeling of being involved in a live performance, [as if] I had one shot to do it in.”

Omartian had a MIDI’d grand piano and employed a variety of sounds. The piano was recorded on eight tracks and used a combination of Yamaha and Roland equipment, as well as some Emulator II. “We had the basic piano and we went for a lute, a

—CONTINUED ON PAGE 174



ADRIAN BELEW TAKES A SHOT AT POP

by Josef Woodard

Guitarist Adrian Belew has somehow been cast as a resident fringe character, court guitar player for rock music of the outer limits. With his group The Bears, a different side of the multi-faceted Belew emerges: that of the tasteful pop craftsman. Belew, veteran songster and sound pioneer, whose

offbeat guitar playing has been heard with Frank Zappa, David Bowie, Talking Heads, on his own wide-ranging solo LPs, *et al*, is finding new meaning in the pop world. After 11 years sporadically playing with the band, Belew is announcing to the world that he is, in heart and deed, a Bear. Their debut album, on Primitive Man records, was followed by a

national tour this spring. It’s all part of Belew’s new master plan: to launch “a world class pop band.”

“I wanted to now delineate between my solo records being more personalized, esoteric statements of my own feelings and The Bears being the collective views and feelings of four people. The band, from the beginning, determined it wanted to make popular music. We’ve always felt we would do that together real well. We decided to develop kind of a trademarked, singular approach—a Bears sound.”

Having played together for years and worked out material on the road, things went smoothly once the band went into Royal Recorders, a 32-track digital studio in Lake Geneva, Wisconsin (where Belew now lives with his family). “It was probably the easiest album I’ve ever been a part of. In the studio it went very well. We broke the band down; even though we wanted to keep it a live sounding band, we didn’t overdub a lot of extra parts or anything. But we did do the band in segments—bass and drums first, guitars second and vocals last.”

For the more individualistic aspect of Belew, proceed directly to his third and most recent solo album; *Desire Caught By the Tail* is a collection of unusual instrumental works for wavy layers of guitar sound, in all its Belewian definitions. “There wasn’t much of a response raised from the album—at least I haven’t read or heard much

—CONTINUED ON PAGE 175

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MUSIC · NOTES

—FROM PAGE 173, MICHAEL OMARTIAN

Fender Rhodes and a harpsichord sound. On every track we sort of varied the sound that was MIDI'd to the piano. I was able to bring up one aspect of the sound for a particular part of a song and then change it for another.

"That was fundamental; we tried to stay pretty consistent as far as the piano sound was concerned. We did change things here and there, but for the most part, those were the three sounds that we used."

Omartian credits much of the success of the album to Erich Bulling, who programmed most of the synthesizers and sound sampling keyboards with him. The basis for much of the synthesizers was Omartian's DX system.

"We had a DX-1 and a Teac 816 rack. We used a Roland digital piano and a Matrix 12 system [Oberheim] rack mount. We just MIDI'd things together to get that sound of an orchestra. Outside of the grand piano itself, the only thing that was live was the percussion. The tympani was real."

The album was recorded and mixed in July of last year at Lion Share Studios in Los Angeles, where he did Rod Stewart's *Camouflage*. "I like it a lot," he says. "You can get a large sound out of a small room with the technology there."

The record was made on a Mitsubishi 850 32-track digital recorder, although Omartian never used more than 26 tracks on any one song. An EMT-250 was used to get the large concert hall effect that appears throughout.

• • •

After years of session work and arranging, Omartian landed a staff producer's job at ABC Records in 1975. Two years later, he accepted a similar job at Warner Bros. Records.

It was there in 1977 that Omartian heard a demo tape by singer-songwriter Christopher Cross. "Chris had been sending tapes to Warners for quite a while. I heard it with fresh ears and I remember responding to it immediately. Then I looked around the room (filled with Warner's A&R staff) and I could see no one was interested. Everyone was burned out on the kid, they'd heard him over and over for so many years."

But Omartian persisted and eventually Warners let him do the project. After it was finished, however, they sat

on it for several months and debated whether or not to release it. They finally issued the album in January of 1980.

Today, with 6 million copies sold, it remains among the most successful debut albums of all time. It put Omartian in a position to write his own ticket. "The success of that really blew my mind," says Omartian in retrospect. "Up until then, I had never experienced that kind of success as a producer."

Omartian remained with Warners through 1984. His last project for the label, Rod Stewart's rock comeback, *Camouflage*, yielded two Top 10 singles and re-established Stewart once again with FM radio programmers who had abandoned him after "Da Ya Think I'm Sexy?"

A problem occurred as that album was nearing completion. Omartian could not condone the lyrical content of one Stewart original, "Bad For You," and he insisted his name be removed from that track as producer and a disclaimer be printed on the cover that said: "Please note the lyrical content of 'Bad For You' does not reflect the views of Michael Omartian, a born-again Christian."

"I really felt bad that had to be the thing that ultimately happened. It was really a matter of interpretation. I have a lot of people looking pretty closely at me and putting me under a microscope. They look at me as a credible person who believes what he's saying and keeps a certain profile.

"I really had to weigh it and think how I would get out of this. After five months of hard work with this guy I didn't think the solution was to take my name off the entire album and say 'We're done; we're through.' This seemed to be the only logical thing to do and he was cool about it. In fact, he was much cooler about it than I thought he'd be."

A born-again since 1965, Omartian is perfectly capable of doing secular recordings as well as gospel. "People like to separate things. I tend not to look at things in terms of labels; what I do is what I do. I've always done gospel albums; I've always done secular albums. To me, it's a natural flow. I don't have a hangup about songs that don't have to do with the way I feel spiritually."

Omartian's biggest successes have been his secular pop records. In addition to Cross, Stewart and Debby Boone, Omartian wrote and produced

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"Tell Me I'm Not Dreaming," the 1985 duet by Jermaine and Michael Jackson. He also wrote and produced "She Works Hard For the Money" for another born-again artist, Donna Summer, and produced one song with Whitney Houston.

In 1986, he produced ex-Chicago vocalist Peter Cetera's multi-platinum *Glory Of Love*, which includes Cetera's duet with Amy Grant, "Next Time I Fall In Love," for which Omatian again received another Grammy nomination.

With a record of successes and his sincere personal beliefs, Michael Omatian has become selective about who and what he produces. "The principle for me is not just dollars and cents," he says. "It has to be music that really gets me before I'll get involved." ■

—FROM PAGE 173, ADRIAN BELEW

about it. I felt there was a time in my life when I really needed to discover the art of my own music. Doing it with musical pieces and trying to stretch the voice of guitar itself was really a challenge for me. Probably that will be what my solo albums will lean more towards, leaving The Bears to be the other side of the things I like to do. Well, you can't stay in one place too long, you know."

He pieced the record slowly in his home studio, practicing the art of studio collage technique. "The first side was planned ahead and then simply orchestrated. I wrote it all out on an acoustic dobro, in fact. The B side was almost entirely studio paintings, buildings things up and working with them from there. I like both those processes quite a lot."

But such an esoteric scheme is not the quickest route to a mass audience, is it?

"No, it isn't, and in the last few years, I've shed all responsibility for that," he laughs. "I really don't know much about current trends. I actually stay away from them; I'm not a big TV watcher or radio listener, so I probably know less about what's going on in music than people would imagine—pop music, that is. But that leaves my mind clearer for what I like to do."

In his inveterate search for new sounds and guitaristic quirks, Belew has ventured into the synthesizer realm. "The main instrument I use is a digital guitar synthesizer, the Roland GR700. It allows me to create a whole

library of my own sounds, to refine them and store them. That was the way I created what I called my own orchestra worth of sounds for *Desire Caught By the Tail*. For The Bears, I chose to continue on in that mode, but simply to kind of limit my palette by saying 'okay, this dozen sounds here are the ones which I'll weave through the entire album.'"

"In The Bears, we felt that part of our sound would be to have these exotic Eastern overtones that flow through the music. Placing those on top of a pretty normal song structure is one of the things we like best to do."

While the basic Bears approach, harmonically and rhythmically, belongs to the language of pop, certain oddball timbres and unexpected modalities jump up from the mix—echoing the post-*Sgt. Pepper's* era Beatles. Belew acknowledges a debt to the Liverpoolians. "We like that style. Rob and I love singing that way. We thought the two-man singing combination was really special for us—sort of a modern Lennon/McCartney approach."

The Bears, despite its broad sonic penumbra, remains a band only slightly affected by the temptations of digital sampling and the like. "I prefer creating my own sounds, but I do find that sampling in the studio atmosphere is very useful at times. For instance, on the tune 'Fear is Never Boring,' we wanted to put our own backwards Satanic singing message. Rob and I sang about a restaurant we ate at. It was 'Bears like to eat at Ralph's,' then we sampled that, turned it around backwards and put it back in the song a couple of times. In an instance like that, it's simply quicker and it sounds better, so it's a good thing to do.

"As far as sampling other instruments, that doesn't appeal to me so much. I really enjoy analyzing, dissecting and creating my own sounds. If I want a bass clarinet, I enjoy trying to figure out what elements make up a bass clarinet and try to make my guitar sound like that. But I don't limit myself, I do use sampling in different instances."

Belew lines up on both sides of the synthetic vs. "genuine" polemic, using both his GR700 and his trusty, twang-bar equipped Stratocaster running through his Roland JC120 to generate his animalistic sounds. From whence did his thirst for the unusual come?

"It came about from this point of

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view: after I'd learned a lot of other people's guitar styles, I realized that, in order to find my own voice, I would have to stop doing all those things, to break the habit. I consciously made an effort for years to do that. What I found that I liked to do instead was make unusual sounds. And it so happens that when you experiment with fuzz-tones and flangers and other things, quite often the sounds you come up with sound similar to an elephant or something, at least for me they did.

"When I first started playing guitar at age 16, I just wanted to be a songwri-

ter. I didn't really play electric guitar. Soon thereafter, there came a whole flood of people like Jimi Hendrix and Jeff Beck—the really great guitarists of the '60s. They were so influential and made it so much more fun and really fueled my desire. I would have to say, for certain, it was Jimi Hendrix, Jeff Beck, George Harrison, Eric Clapton, people of that era. Still, there isn't anyone who has surpassed Jimi Hendrix yet."

After his initial break, playing with Frank Zappa in 1977, word of Belew's fresh bag of sounds and uncanny musicality spread. His work on Bowie's *Lodger* and the Talking Heads' *Remain*

in Light represented a new functional guitar language. Yet, for all the experimental zeal and ear-twisting tones, Belew's ideas were woven neatly into the production fabric. "It was a discovery time for me. I was finding out how to get my guitar to feed back correctly and do certain things that I had been working on for a long time. Suddenly it seemed to come into focus and they were actually happening. I remember recording 'Red Sails,' thinking 'wow, I've got this great new guitar sound.' It was real inspiring. Same thing with 'The Great Curve.' It was the right moment for that kind of guitar playing and my style.

"In both those cases, it was Brian Eno producing. Brian, I always felt, had a very good effect on my guitar playing. He would bring unusual moments out of me. When we did the *Remain in Light* album, I ran through my effects one at a time, and he got visibly excited by it—'oh, we'll use this here and we'll use that there.' I'd say 'wait a minute, I've got this too.' He was good at that. I think he's a very good producer."

Other artists have, over the years, called upon that Belew sound—half electronic, half physical, half man, half rhino. His work on Laurie Anderson's *Home of the Brave* (he of the rubber axe) and on Paul Simon's *Graceland* are recent examples of his outside duty. But the life of a studio player is far from his mind.

"I never really pictured myself as a studio musician at all. I always felt my contribution was very specific and, in a sense, limited in that way. It was not one of my goals to become a studio musician. I went from one project to the next because they were there and were good opportunities that I wanted to take advantage of."

Perhaps his most significant opportunity thus far was as the fourth cog in Robert Fripp's second generation grouping of King Crimson. In its tumultuous three-album history, the band asserted some of this decade's more probing, sometimes pompous and usually magnetic rock constructs. But no one said it would be easy.

"King Crimson was a real important band for me personally in that it opened up a lot of doors," Belew recalls. "It allowed me to become a singer, frontman, writer, and so on. All those guys remain real close friends and there are still possibilities of do-

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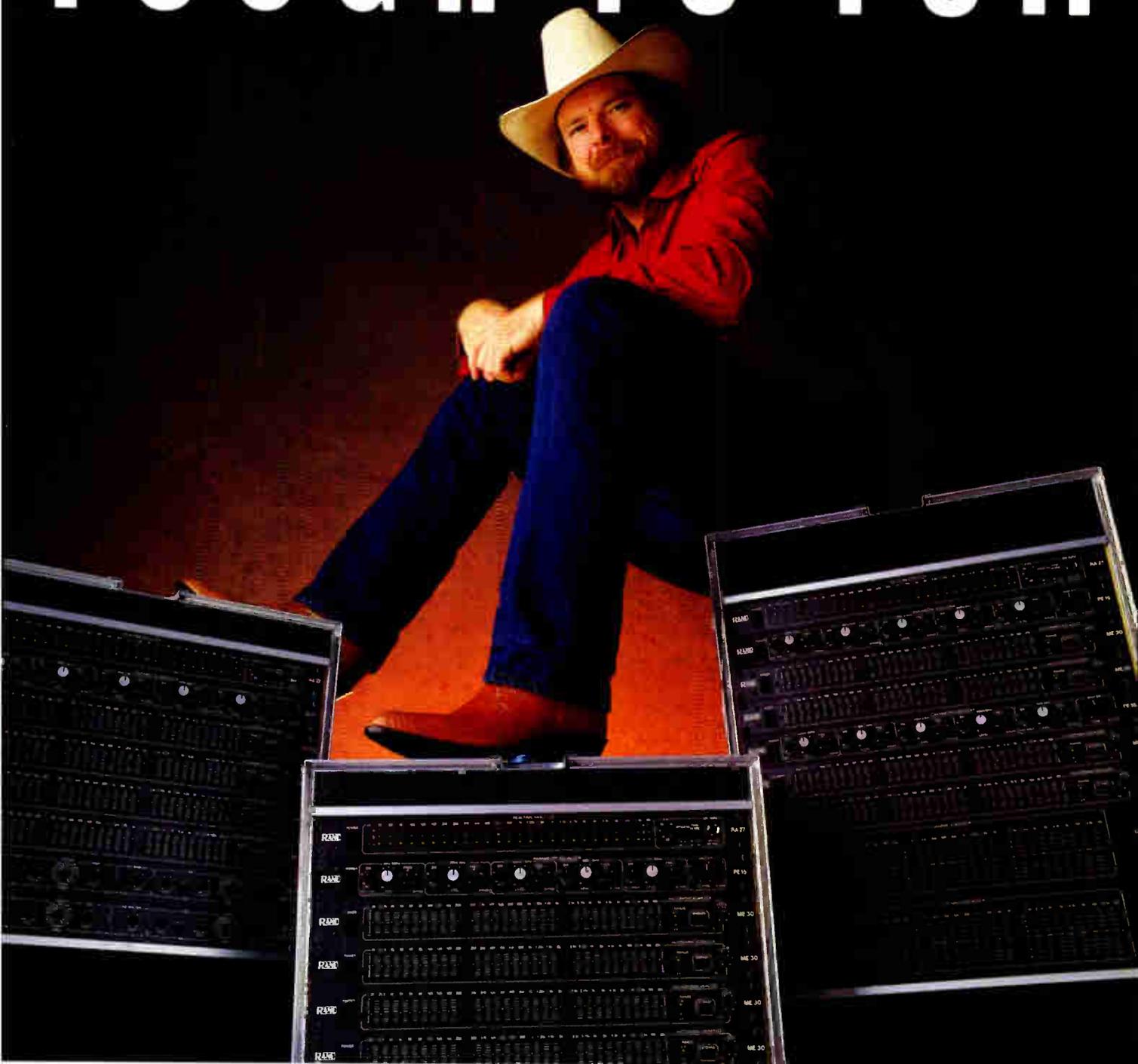
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ing things in the future in whatever groupings. Whether King Crimson does anything again is a whole different question. I felt that we accomplished what we set out to do. I don't think Robert feels that way. He feels that only the *Discipline* album was worthy. To me, personally, I find there are some great moments on all three albums. Generally, after I've recorded something, I grow to like the nuances and imperfections of it quite a lot. That's how a lot of music is for me."

By contrast with King Crimson, The Bears' musical ambitions are more clearly defined, its goals more readily identifiable. Belew is approaching it with a patience borne of wisdom. "I think we're going to do this for a long, long time and we can take our time to do it. There's no rush. The band has enormous potential to me. We do it on and off more in the way that King Crimson worked. We'll tour now for nine weeks and we probably won't see each other for two months. We'll come back together and we'll write some songs, it goes on and on. It refreshes and renews it all the time." ■

A FISTFUL OF JOHN ZORN

by Josef Woodard

A decade ago, John Zorn was a blissful pariah, working out his improvisational credo in the quietly burgeoning New York new music fringe. A saxophonist obsessed with sonic adventures, Zorn often played game calls or made strange vocal exhortations in the line of duty. Inquiring minds wanted to know: was this man an inspired gadfly or a gimmick-monger?

In these late, pluralist '80s, Zorn has come of age in ways even he probably wouldn't have predicted. Would you believe the pages of *Rolling Stone*? Zorn graced a recent issue as the token "hot avant garde" musician, just as he figured logically into *Time* magazine's cover piece on the New York scene last fall. Currently, Zorn can be heard on two LPs, his own *Cobra* (Hat Art) and *Voodoo*, by the so-called Sonny Clark Memorial Quartet (Black Saint). But much of Zorn's sudden rise from the underground hinges on his elaborate,

studio-hip project *The Big Gundown*—a set of fascinating treatments of music by Italian film composer Ennio Morricone (*Fistful of Dollars*, *Once Upon a Time in America*, *The Mission* and a multitude of others). Released on the Icon label and distributed by None-such, the LP signals the end of anonymity for Zorn.

It also displays a studiocraft of a rare and vivid order. Judging from the record and his striking piece on Hal Willner's Kurt Weill tribute, *Lost in the Stars*, Zorn's manic energies have shifted from the spontaneity of the moment to the realization of intricately organized pieces in the studio. By turns zany, haunting and kaleidoscopic, *The Big Gundown* is some wild *musique concrète* for the post-modern, post-multi-track epoch.

For Zorn, the logic is not purely musical: "I really love movies," he says over lunch in midtown Manhattan. "I always have. These pieces are like movies for me. And there's another piece I'm doing dedicated to Mickey Spillane—very cinematic, almost like I'm writing a movie, a series of 60 scenes, and I literally write the scenes out, and then I score music to each scene. But I'm inventing a movie myself. If I were really doing a soundtrack, I would be restricted by the time of each image, the image itself, directors, you know, intentions, what they want... I score it the way I want, and it becomes something really visual. I think I've always been interested in the relationship between what you see and hear."

Embarking on his Morricone project, Zorn had a delicate task at hand. "I had three things to deal with, really. The first one was the musical material which Morricone had written, just this bare skeleton which I would take off the record. In the case of 'Battle of Algiers,' this bass line runs all the way through it. Maybe I'd take whatever melody was there and counterline and the bridge.

"The second thing would be the actual reinstrumentation, deciding when to use different instruments; instead of a string orchestra, use an organ, instead of a trumpet, use an oboe, you've got someone whistling and harmonica, but still have it pertain to the mood of the piece. The third thing was to take the film—scenery, image, setting, mood—and using that as a basis for improvisation, personalizing it.

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MUSIC · NOTES

And it's also partly bringing it up to date, using the technologies we have today.

"A lot of the sounds these musicians have developed on their instruments are their own language, involving them in some way into the orchestrations. One thing Morricone's music works off of is an interest in sound. His ear for sound is incredible, what he did in the mid-'60s with the guitar, jew's harp, harpsichord... the guy is really tremendous.

"I stayed away from the masterpieces—*The Good, the Bad and the Ugly* or *A Fistful of Dollars*. They are unbelievably perfect. There's no point in doing them. So I picked tunes I felt I could get the mood of and maybe go further with."

Zorn's strategy in the studio involved the careful organization of discrete sections of material—much in the manner of film editing, using dissolves, scissor cuts and a sort of sonic montage. But, though the arrangements might appear to be the result of extensive tape manipulation, Zorn reports otherwise. "Tape cuts don't work be-

cause once you cut, the tape, you're tacked into a different space.

"It's something that was very common in tape music in the late '50s and early '60s, and that stuff is gone forever. We're never going to listen to that shit again, it's garbage. It was great as an experiment, and it led us to a new place, but it's just too hard on your ear."

Zorn's textural palette extends from the acoustical purity of Toots Thielemans' whistling and harmonica to various tape sources and sundry electric implements. "To just use electronic instruments is going to be much too tiring on the ear. The trick is mixing the acoustic and the electric. That's why orchestration is my specialty. It's what I really loved, even as a kid."

Beyond aesthetic matters, Zorn had to arrange a myriad of conflicting musicians' schedules. It took a year to finish the album, from the time he first stepped in Radio City Music Hall Studio to completion. There also were adjustments to be made with producer and Icon Records CEO Yale Evelev, concerned about the optimum results on a limited budget.

Evelev had initiated the concept.

and badgered Zorn into creative submission. Zorn recalls some rough relations during the early sessions. "To make a good album, you need slow tracks and fast tracks, hot tracks and cool tracks. In overdubbing, we'd lay the first few things down and it would not sound like anything. To me, it's all there because I would hear the eventual piece in my head. But Yale, who was putting all this money into it, was wondering what was going on. So there were some tensions from the beginning.

"But when we got to the mix, Yale really started doing his job. He has really good ears. He was there during the mix and he wanted good sound quality. He can really hear those things, come up with suggestions. He took tapes home after every mix and re-equalized them on his home equipment to see if he could hear anything we didn't catch. But it was like a psychodrama.

"It's that kind of cathartic experience that made us closer. At the end of the project, we were either never going to see each other again or become brothers. Fortunately, it worked out." ■

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—FROM PAGE 167, JAN AND DEAN

and then finally put into a private room, where he remained comatose, kept alive by IVs in both arms, oxygen tubes in the nose and a 24-hour nurse sitting with him. His folks had already been through unimaginable hard times—they had lost a daughter in a swimming pool accident and another son in a mountain climbing accident. Faced with this latest disaster—just a few months after Jan had gotten out of his leg cast—they selflessly spent most of their time by his side.

None of us expected Jan to live. Every conversation in the studios turned to Jan Berry. Each day seemed bleaker, but then one day word came that he had opened his eyes for the first time—he had come out of the coma!

I started visiting the hospital as much as possible. I'd just sit there next to the bed, talk to Jan as if he were completely coherent, and he'd look at me with a blank stare. One Sunday afternoon I was sitting there talking about records and what I had done during the week. It was my usual conversation with him and, of course, I wasn't getting any response. I bent over to say "See you next time," when his arm came up and hugged my neck and pulled me down against his face. This was his first movement since the accident. I called everyone waiting outside in the hallway, and they all came running. It was quite a day. I cried like a baby, and so did everyone else.

Little by little, Jan began to recover mentally and physically. His entire right side was paralyzed—right arm, right leg, even his right eye. Sandy Melvoin, his nurse, moved into the Bel Air home and worked full time. The best specialists in the world were consulted, but still he was given no real hope for a full recovery because he had sustained so much brain damage. He could speak only very slowly, almost like a 3-year-old. He remembered nothing. His music was gone. His medical knowledge was gone. He was unfamiliar with his surroundings. He didn't comprehend any of the records we would play for him. It was total amnesia, which was a very sad thing to see. He had grown very thin and didn't look anything like the young, handsome man we had known.

Eventually, Jan was sent to Rancho Los Amigos, a special hospital for therapy. After months as a regular patient, and then an outpatient, he be-

gan to walk—a sad, sick person's walk, but at least a walk. He got around with a crutch and dragged his right foot behind him, while his right arm just hung from the shoulder socket.

Then he started remembering things. It was only little things at first, but soon his memory started coming back in big chunks. We started talking music again and the day came when he wanted to start recording.

Jan was feeling pretty good now. He was sometimes childlike, but he remembered more and more, and finally started to laugh again. Rancho Los Amigos embedded an electrical

impulse device in his right leg to help stimulate movement, and he wore a small control box on his belt. He was so proud of that—he'd demonstrate the magic box by showing us his dragging leg and then, after switching on the box, his leg would straighten and he could walk by himself. Before long he was driving a car again.

Dean, in the meantime, had developed a successful graphics company and had set his sights on a new career. Jan continued to improve and eventually he and Dean were even able to perform again, though the days of superstardom were gone. ■



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IT'S *HOT* UP THERE!



Le Studio's engineer Glen Robinson at the console, within the Andre Perry Group compound in Quebec.

by Linda Jacobson

This year our round-up of Canadian recording facilities does double duty. We called on studios coast-to-coast to chat about their response to Canada's booming film/TV industry—and also to check up on the effects of government subsidization and FACTOR, the Foundation to Assist Canadian Talent on Record.

Established in '81, FACTOR was the Canadian radio broadcast industry's response to federal regulations regarding radio content. They were told their programming must contain a certain amount of Canadian material, but they had trouble finding that material. Six major broadcasters decided to pool their money and create a fund to boost the recording of homegrown music. The funds are administered via the Canadian Independent Record Production Association (CIRPA).

Until last year, FACTOR funds came from the private sector. Then the feds decided to get involved to further stimulate the recording industry. Over the next five years, the Department of Communications will give FACTOR \$25 million; if Canadian musicians weren't aware of FACTOR before, they are now!

Of the varied FACTOR programs, the first one established was the loan award. A band submits a demo tape and theoretical recording budget to a jury of industry pros. If they judge the band worthy of investment, FACTOR lends half of the projected cost. Should the ensuing album sell, the band must repay the loan. If, however, after two years the album makes no money, CIRPA writes off the loan. FACTOR-funded projects such as pop star Kim Mitchell's new album and video are the type of money-makers that compensate for money-losers.

Then there's the New Talent Demo award, designed to help new artists produce quality demo tapes, essential in trying to secure a record contract. This award, actually a contract between FACTOR and a recording studio, consists of \$1,500 in studio time. The act submits a rough demo tape, and if selected, FACTOR sends them the name of a studio near their home (any of about 50 professional 16- and 24-track studios involved across Canada). The band gets 24 to 32 hours of studio time, along with 2-inch and ¼-inch tape. If you deal with a studio that normally charges \$240 an hour, 32 hours is worth much more than the \$1,500 the studio gets from FACTOR.

The broadcasters and the government each put up half of the funds for the loans and awards, but three other programs are strictly government-sponsored: the Music Video Loan, for producers who have released records and have a current single; the International Touring Loan, for which artists' managers (rock and country, so far) apply for 25% of their projected U.S./European tour loss; and the Radio Syndication Loan, for independent producers who develop great ideas for shows. The various provincial governments get involved, too, promoting activity in their provinces.

In 1985 FACTOR gave out 333 New Talent awards and 156 FACTOR loans; in 1986, they gave out 442 New Talent awards and 300 FACTOR loans. FACTOR expects to distribute a total of 1,000 awards and loans by the end of '87.

Let's move on to the studio scene and find out what's happening. . . .

Quebec

In the Laurentian mountains outside Quebec is Studio Vert, whose owner Pierre Tremblay knows well how helpful the government can be. "We've received five grants totaling about \$140,000 from both federal and provincial governments," he says. "The federal grant is a job-creating program. We got two of those and spent the money on equipment and salaries, hiring six people. We applied by presenting a project to the feds, which must be an expansion or something that creates jobs. In our case, it was sophisticated MIDI software."

The grants let Studio Vert bring in three full-time composers to work on the Kurzweil, Akai S900 sampler, Yamaha DX7s, Moog and Roland keyboards, and acoustic and electronic drums. The studio runs three computer systems: the Apple Mac for working with the Kurzweil and Akai; the IBM-PC for sequencing; and the Atari ST for creating and storing DX sounds. While MIDI-oriented, the 24-track analog recording/digital mixdown facility also recorded albums this year for the bands Bundock and The Box (their LP's already gone gold).

Studio Vert now aims to increase their jingle and film work, scoring to

A LOOK AT THE BOOM IN CANADIAN RECORDING

¾-inch video using Audio Kinetics and Roland MIDI/SMPTE sync systems. However, "the market here is not big enough to just focus on jingles or films. You have to have a wider range," says Tremblay. Towards that end, he added a house next door to lodge clients, and his staff has created sounds for sale; "we're making and releasing a percussion bank for the Akai S900."

Studio Vert has recorded many FACTOR demo projects over the past year. "Before that, I think musicians were not aware of FACTOR. It was the producers, doing big projects with established artists. Now with FACTOR's bigger budget, more people know about it. So we're hearing many more artists on the radio, a lot more Quebec artists. Also, before there were only five or six producers locally. Now there are many more, creating their own labels and therefore investing in new artists."

Tremblay just applied for a new grant and plans to move into automation, mass storage on optical disk, video post-production, and creating sound banks for satellite and modem transmission to interested parties. The grant requires he match 50% of the funds. No problem: "Business is picking up. Investors show lots more interest, because they're seeing the music industry as a feasible financial venture."

In Quebec's Morin Heights resides the growing audio/video empire of Andre Perry—Le Studio, Andre Perry Video, and the new Premiere Television. With branches in Washington, DC and the San Francisco Bay Area, the world-class recording and production facility considers itself a trend-setter. And rightly so. Perry's partner Yael Brandeis says their success is due not only to technical and creative talent and vision, but because of "the boom in all audio-visual documents being done

here. It is a big growth industry."

Since shooting occurs at Andre Perry Video, Brandeis says, "it's desirable for the producer/director to do post-production on the premises. All our video post is done in our new self-contained Synclavier suite. You can put it on audio tape in the suite, and of course interface with VCR and VTR. Right now we're expanding the room to put in a Foley stage so we're not limited to synthesized and sampled sounds."

The Synclavier suite handles a variety of TV/film scoring/SFX projects, including laugh tracks for regional sitcoms, and music for Canadian and U.S. TV commercials. Film scoring clients include the BBC, working on the film *And Then You Die*. Another dimension of Perry's stronghold is 3-D computer graphics, via a newly purchased Wavefront system.

Brandeis says they set up Premiere Television to produce specials and

Dissent in Vancouver

"The problem with FACTOR is that when the record's finished it sits on the shelf, because the band doesn't have the facilities or equipment to market it or any money left to take it to distributors," asserts Geoff Halton, marketing director of Mushroom Studios in Vancouver. "Distribution is a severe problem because Canada is so spread out, and all the marketing know-how and decision-making in the Canadian music business is in Toronto. It's just too expensive in terms of trips and long-distance phone calls to Toronto to get a distribution deal. FACTOR is throwing money away because they don't have a marketing allocation within the fund."

In response, Halton and other like-minded souls have formed the Cultural Industry Task Force of British Columbia. The Task Force is a small, active and vociferous group of film industry, book publishing and recording industry people. Halton claims the Toronto-based CIRPA is a partisan group of producers that

doesn't care what happens on the other side of the country. So the Task Force is developing other ways for federal and provincial government to help support BC creativity.

"In BC there is a lack of management, publicity and promotion people in the cultural industries, and we don't have independent record labels to any great extent," Halton says. "It's difficult for an artist to become established outside of BC. We're trying to stimulate that by lobbying the government to provide mechanisms that will stimulate the business."

"Our immediate goal is to set up an Economic Regional Development Agreement (ERDA) between the federal and provincial governments whereby they ante up matching sums of money to stimulate our economy's cultural industry sector. The provinces of Quebec, Ontario and Manitoba have ERDAs. But the federal government minister who started this moved into another department, and in the shuffle BC fell through the cracks. We're reviving what was thought to be a dead issue.

"Once ERDA is implemented, it will provide funding to start up record labels, which I'm advocating as a way to stimulate the economy because they don't require a lot of capital expense. As it stands now, the BC government has committed to \$17 million. They're saying, 'We will make our money available—if the federal government comes through.' The federal government, which would administer the funds, says 'we agree in principle. However, we don't have the money within the Department of Communications.'

"The government gives touring and recording assistance to classical artists, dance companies, symphony orchestras, but it doesn't cover the commercial sector. So we're saying, 'The music business is great, we can make lots of money, help us! When you get a Bryan Adams, or a Loverboy who in one year has gross sales of \$47 million—that is money that comes back in here. There's tremendous need for ERDA and we have a good case, because we can make a lot of money, and stimulate employment.' —L.J.



One of the multi-purpose 24-track control rooms at Blue Wave in Vancouver. The studio accommodates large orchestras, but finds itself synthesizing, sampling and sequencing more and more film scores these days.

mini-series for international TV; "one mini-series we're starting work on features Rene Levec, our ex-prime minister. We're also shooting a show in Paris with Daniel Lavoie, a hot singer in France and Canada. The tape comes back here for post." Music recording hasn't taken a back seat; Le Studio just finished recording tracks with Men Without Hats and Keith Richards.

Toronto

Headquarters of Canada's biggest ad agencies, production companies, and record labels, Toronto is also home to dozens of studios.

"I read in the *Toronto Star*," says Saved By Technology owner Jim Burgess, "that Toronto is the second largest film production facility in North America, following New York. L.A. is number three, in terms of overall amount of production. A couple of years ago the American companies would shoot here and take the film to L.A. to finish production, but now the trend is to finish it in Toronto. We're trying to get into music and effects for film, everything from specialized MIDI production to sound effects design."

Since changing focus two months ago from recording work to production work, Saved By Technology business is "going gangbusters," claims Burgess. "The recording wasn't profitable, so we decided to be a production facility. And we're seeing an increasing demand for specialized production services within the realm of electronic and computer music. For instance, we've contracted to create libraries for

sampling applications for the Sound Ideas CD library. We're doing many corporate A/V soundtracks, a huge area in Toronto. We're also finding an increasing demand from performing artists, such as the group Rush, to put together automated MIDI systems for tours so they can recreate their albums on stage."

Saved By Technology is also a retail store involved in computer music and sound. Because of the vibrant film industry, business has flourished via assembling complete computer music production systems for film and jingle composers. "Our store is seeing a whole new market area: MIDI-based sound effects and post-production systems for audio facilities using samplers and software," says Burgess. As Canada's only Apple "value added" retailer, he says film music composition and SFX assembly software programs are much in demand.

Last year Toronto's Manta Sound, a full-service audio complex, installed digital multi-track recorders and a one-inch video layback system for film and jingle work. This year they completed construction on a 24-track analog post-production facility, Studio 4. Manta VP Sy Potma says their goal was to handle audio projects from start to finish for film and video. The result? "We're doing video and film scoring with up to 60-piece orchestras, and a massive amount of commercial scoring.

"For many years we didn't do any post-production," notes Potma. "But our steady commercial clients like J. Walter Thompson and Ogilvy & Mather

all need some post-production, and for years they said they wanted to do it here. In fact they used our scoring control rooms to do it, which weren't really set up for that.

"We're also doing music scoring, lay-ins and mixing for a local network series called *Danger Bay*. Much of the music we do is electronic. So we just opened a music composition room, Studio 5, which is for MIDI scoring and based on the AMS AudioFile, which is compatible with both digital recording formats. While we intend to further our sound effects and post-production work, we'll also use the AMS to pursue digital album mastering. Because even with all the film activity, our album work has expanded."

TV and film clients have booked Master's Workshop solid through November '88. Doug McKenzie reports that the facility's edit suites are overtaking recording studio space, a happy problem which will be solved upon completion of a current expansion. The audio recording and post-production complex will pack a total of 14 production rooms including 11 24-track edit suites (three of them digital) plus four mixing theaters (including a stereo TV mix room), all in 12,000 square feet of Toronto real estate.

Soundmaster, the sister company of Master's Workshop, designed and markets the PC-based Soundmaster editing/synchronization system for which they'll soon release a fully operable MIDI port. "We have quite an extensive range of MIDI keyboards," says McKenzie.

One such device is the Fairlight Series III, which the studio uses extensively to create sound effects. "We're using it for an exciting TV series, *Captain Power & the Soldiers of the Future*, developed by Ventura Productions in Toronto for the Mattel toy company. In fact, we're its sound supervisors. They already sold 20 countries, and Canada will air it Saturday night, prime time. The show will launch a new Mattel toy line and combines live action with overlaid computer animation. The animation is plotted, then the live action is shot, so the two match. You can just watch the show or play with it using the toys—which interact with the images on screen. They're toy guns which a kid will point at the screen and score points by hitting the bad guys, who shoot back. It's all done with infrared. And the production value is incredible,

—CONTINUED ON PAGE 192

By Bruce C. Pilato

GEORGE HARRISON

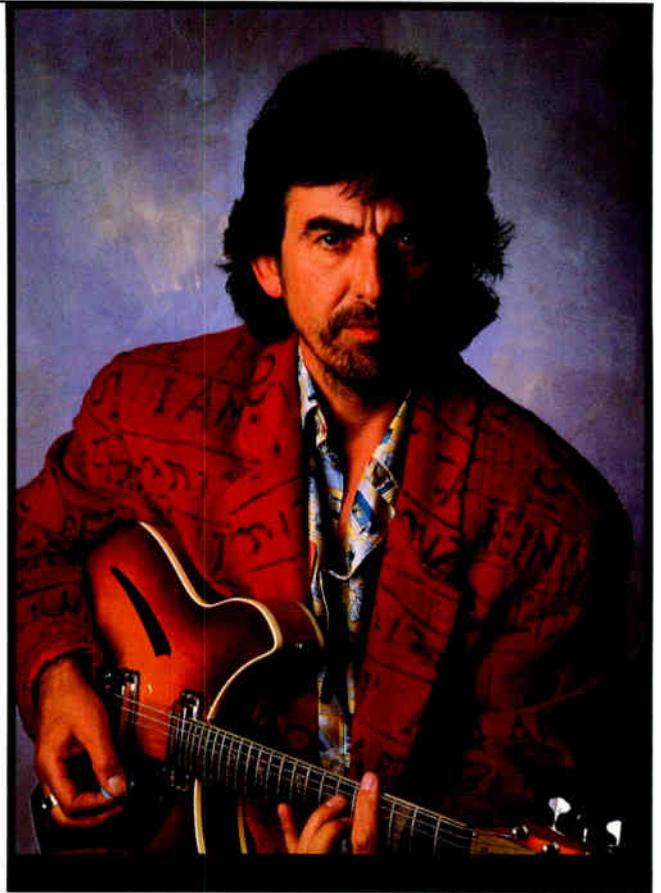
HERE COMES THE SUN AGAIN

It's 11 a.m. on a sunny Wednesday in Burbank, California. A young employee of Warner Bros. Records' publicity department comes racing down the hall pushing everyone and everything out of his way. Eventually, he reaches the doorway of one of the offices and blurts out: "George has arrived; he doesn't have anything black to wear for the photo session, and, also, he'd like some tea!" Within seconds, the entire fourth floor of the company is buzzing. Bodies fly into action; one in search of dark T-shirts, another for some freshly brewed tea with sugar. And in the midst of this chaos, in a plush conference room only a few yards away, George Harrison sits unfazed, smoking a Marlboro.

At 44, George Harrison is a man who has seen and experienced more than most of us would in several lifetimes. After a humble, working class upbringing in Liverpool during the '40s and '50s, eight years of spectacular Beatle insanity, and an inconsistent solo career, Harrison, at middle age, is finally a happy man. He no longer fights with his celebrated past, and, for the first time in a long time, he is looking optimistically towards the future.

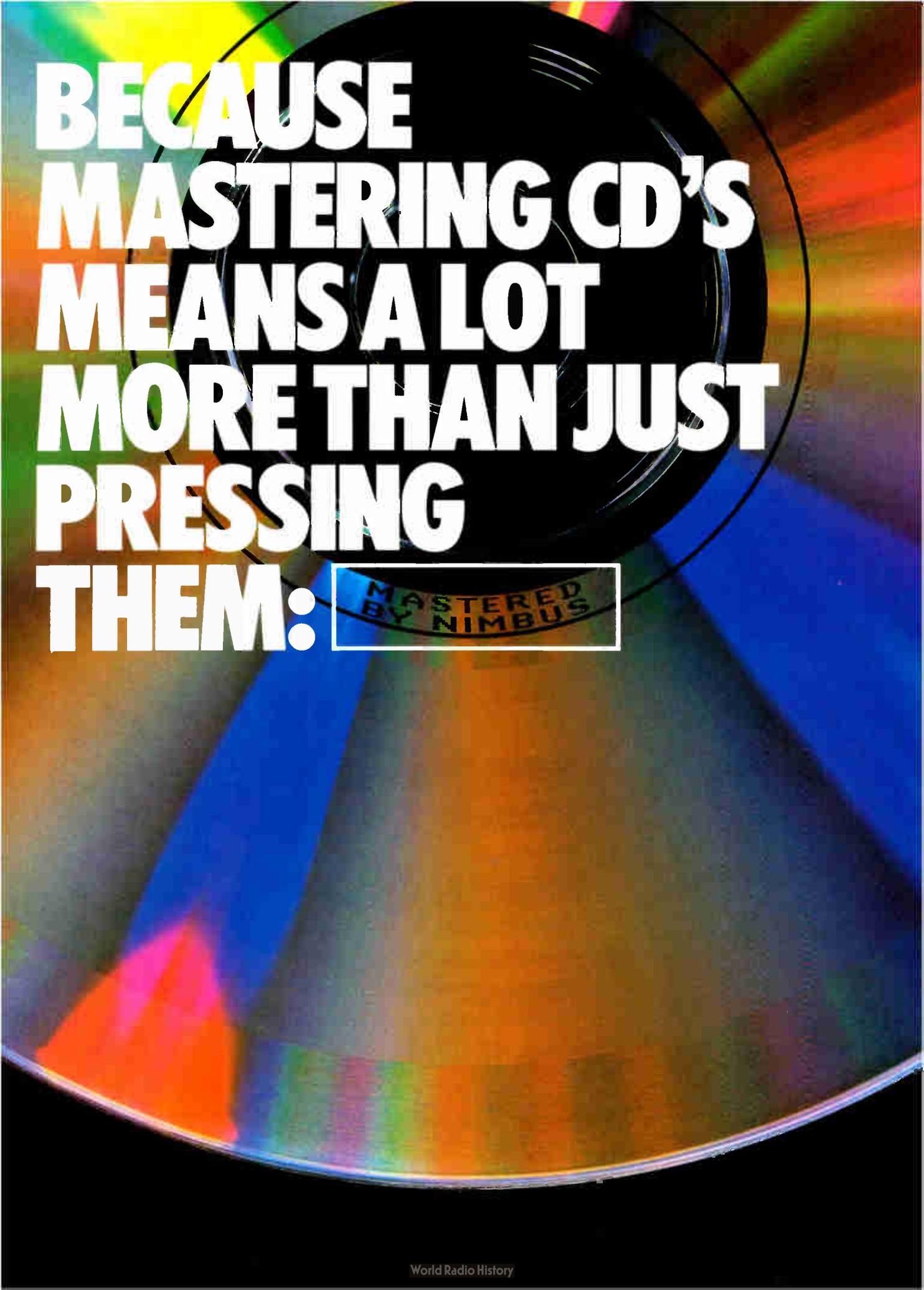
With an active 9-year-old son and homes in both Hawaii and England, Harrison finds his greatest solace in a simple family life. He has been happily married for nearly ten years to Olivia, his second wife. Even the intense paranoia he suffered after the murder of John Lennon has begun to fade. At last, here comes the sun.

After the much publicized and ugly



breakup of The Beatles in 1970, Harrison gathered both critical and commercial success with the release of *All Things Must Pass*, a monumental three-record collection of songs. A few more hits followed, but by the mid-'70s, his career began to wane, as the quality of his solo records became uneven.

In 1979, Harrison opened Handmade Films, a small production company based in London. He began un-



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derwriting a select number of films, including Monty Python's *The Life of Brian*, which has grossed nearly \$115 million to date. Today, the company is thriving, despite having produced the biggest bomb of 1986, Madonna's *Shanghai Surprise*.

Harrison announced his retirement from the music industry in 1982 after the indifferent response to his last album, *Gone Troppo*, but he gradually began to reappear on other people's records and at a few concerts with coaxing from the likes of Dave Edmunds and ELO's Jeff Lynne.

This year, with the help of Lynne, he has written and released *Cloud Nine*, arguably his strongest album since *All Things Must Pass*. Featuring an all-star cast that includes Ringo Starr, Eric Clapton, Elton John, Ray Cooper, Jim Horn, Dave Edmunds and Lynne, the record seems likely to re-establish Harrison on the contemporary music charts. As important, though, Harrison is genuinely excited about making music once again.

Mix: After your last album, *Gone Troppo*, you announced that you were retiring from the music business to concentrate on film production. What made you come back?

Harrison: Well, I didn't really retire; I just said that. I was a bit tired of the way the business was, and also, the way I was feeling about it. It seemed that five or six years ago everybody was going crazy. No one seemed to know what was gone on. The disc jockeys and program planners and even the record companies weren't sure. Everyone was into this void as to what music was supposed to be. You no longer seemed to be able to just do what you did. It was as if you were being asked to fashion yourself to suit the tastes of program planners or sponsors of radio programs. They were telling me things like: "A hit record is a song about love lost or gained between 14- and 20-year-olds." And I just said, "Christ! Do I gotta be like that? I can't do that!"

So, I thought, sod it! I've got a film company as well and I was doing all these films and I've also got a boy growing up and I like to enjoy my life. So, I thought I'd just back out of it gracefully for a while and just see. So, now it's been five years since *Troppo*

and it's gone very quick. I haven't really stopped doing anything. I continually write songs and a couple of times a year I go in my studio. I make up tunes, bung them on the 24-track and make very fast demos, mix them on cassette. I have loads of songs.

Mix: How did Jeff Lynne end up co-producing the album and co-writing some of the songs?

Harrison: When I came around to feeling it would be nice to do this album, I was thinking about it a couple of years ago—I didn't want the total responsibility of having to write all the songs, be the artist, be the producer, mix it all, etc. So, I thought I could really enjoy doing this album if I could get some help from somebody. But who can help me? In the past I had really only worked with George Martin

put it in "the now."

So, I had a brainwave and I thought of Jeff Lynne. There's not a lot of people that I know, and I didn't even know Jeff at the time, either. So I asked a mutual friend, Dave Edmunds, that if he ever spoke to Jeff Lynne would he mention to him that I was interested in meeting him. A few months later he rang me and told me Jeff was going to be around, so I called him and we just started hanging out and meeting occasionally. Last year I was busy in the studio doing the soundtrack to this catastrophe called *Shanghai Surprise*, and during that time Jeff was coming around. Anyway, we spent a lot of time hanging around before it came to the point of making this album.

It's a long time working in the studio and I didn't want to have him commit himself to something that he might

"I was afraid to get some producer who would make my album full of gated, reverbed snare drums and DX7s, because I'm sick of that. I'm not into that at all."

in the old Beatle days and I worked briefly with Phil Spector, which ended up being more trouble than it was worth. I also did one album with Russ Titelman, from Warner Bros. and that was very nice and he was very helpful, but there was always this question of trying to find someone who could put input in, get the best out of me, and at the same time, not swamp me with his own ego. I was afraid to get some producer who would make my album full of gated, reverbed snare drums and DX7s, because I'm sick of that. I'm just not into that at all. It had to be someone who would take the best of the past and whatever I could do and

not be sure about doing. It just happened gradually. We got in the studio last January and it's just been a total pleasure working with him. I think it was absolutely the best decision that I ever made about having a partner in the studio.

Mix: What made Jeff different than the other producers you've worked with?

Harrison: Well, for me, Jeff is a great songwriter and a great musician, but not a highly technical musician. He's more like me, a jungle musician; he plays by feel. He's got a good ear and uses good discrimination in his choice of sounds and instruments. At the same

time, his favorite music is basically all the old stuff, all the old chords from all the old pop music. I've always thought that since the early '70s that Electric Light Orchestra—which was really Jeff; he wrote, produced and sang everything—had taken off from where The Beatles were at with "I Am The Walrus" and those sort of things, particularly the cellos. He made all this ELO music which was sort of like a continuation, in a way, of all the stuff that we'd done. We have similar likes and dislikes, and we're both guitar players, as well.

Mix: ELO was slammed by some critics as being a Beatles rip-off. Isn't it ironic that some of the music on your album, especially the strings and the backing vocals, might now be construed as sounding more like ELO than The Beatles?

Harrison: Yeah, it could be. But we don't have that much strings on this album. There's one track that has a little string violin line in it, and we have cellos, basically on "When We Was Fab," which we wrote together.

I started writing that song thinking that I wanted to write a tune like those in the late '60s, like a "Fab" song. And I immediately thought of Ringo, because he had to be the drummer and it was to go, "One, two... chakha, cha, chakha cha," [Harrison imitates Ringo's beginning drum fill from "I Am The Walrus"] and then Jeff and I wrote that tune and it lay there amongst the other tracks. And as we worked on the rest of the album that one was always like the joker in the pack. After we'd done quite a bit of work on the other songs, we kept digging that one out and adding something to it.

But the main thing that we did that could sound like ELO that I hear, is that Jeff and I did big backing voices. The sound of Jeff's voice mixed with mine works really well because it doesn't really sound like him or me. I've done that in the past, such as on *All Things Must Pass*, which was all me doing backing voices. But I think the quality of the sound now [has made a big difference]. Plus, we have more tracks to work with, because in 1970 when I did that, I was doing the back-ups on a 16-track, so we were more limited.

There are a couple of very much Jeff-influenced things, such as the little

Oberheim wobbly bit. And there's no question about it, Jeff was in ELO and Jeff is very much part and parcel of this album. I think it's a good mix, though it's not overpowering. You wouldn't think that it's me singing for the ELO. It's still very much my album. Then again there are songs that we wrote together and there are songs that I asked him to write specifically for me.

Mix: You rock pretty hard on this record, especially on "Wreck Of The Hesperus" and "Devil's Radio." In fact, on "Wreck Of The Hesperus" you sing, "I'm still kicking." Were you afraid that people were thinking you were too old to rock and roll?

Harrison: Nah, it's a joke. I mean, I like the tune; it's a good dance rock and roll tune, but I don't know, sometimes I just write strange lyrics. I can't help it.

Mix: What is "The Wreck Of The Hesperus?"

Harrison: "The Wreck Of The Hesperus" was actually a poem; a very old Victorian poem about this shipwreck. It's pretty obscure in America, but in England my mother and various people would always say, "Well, you look like the bloody wreck of the Hesperus!" and it's just one of those things that sticks in the back of your head. It was only a couple of years ago that I found out that it was actually a poem about a shipwreck. It's just saying, "No, I'm not the Wreck of the Hesperus." We are getting older; I'm getting old and it says, "Gettin' old as Methuselah." It's a joke lyric.

Mix: We've seen you popping up at a lot of concerts lately, including the Prince's Trust Concert with Ringo. Are you getting ready to tour? There have been a lot of rumors.

Harrison: Let's put it this way: I'm not opposed to doing concerts occasionally. The problem is, you can't do concerts occasionally. By the time you get a band together, rehearse it, get all the lighting and road crew and all that, it's like going on an expedition up the Himalayas. You've got to make sure you've got all your oxygen tents and stuff, you know? And then you just have to do a whole load of shows and I don't fancy spending a year or six months of my life in little motels in Philadelphia and places. It can be great fun and there are moments on stage

that are brilliant and I really enjoy them and the fun of being in a band and all that. And then, it's such hard work that I really do think it's a young man's job.

Mix: Is there any sampling on this record? Fairlight, Emulator, etc.?

Harrison: There is one little bit of Emulator, which is the koto on "Breath Away From Heaven," which is a song I wrote originally for *Shanghai Surprise*. And I believe "Got My Mind Set On You" had a little bit of a piano sound that was sampled. But we avoided all that stuff like the plague. I wanted to make it with real drummers, real guitars, real pianos, and the only synthesizer as such is an old Oberheim that Jeff played.

Mix: Your first solo records like *All Things Must Pass* and the other stuff you did around the time you worked with Phil Spector were very successful. How do they sound to you now?

Harrison: I still like most of the songs, but the mixes on *All Things Must Pass* sound to me like chaos. It's just swimming in echo.

Mix: But that was always Phil Spector's style.

Harrison: Yeah, it was. I think if I wanted to change those things, what I'd do is put up the 24-track and probably end up singing them better and I'd probably end up mixing them a bit more ballsy and less echoy.

Mix: Why didn't you remix it for the CD if you were so unhappy?

Harrison: Well, I'm not *that* unhappy about it. It still has its charm. But, anyway, that's out on EMI/Capitol and as far as that goes, it's sort of out of our hands. They just put it out however they feel.

Mix: Some of the records you made later were critical and commercial flops. Do you regret making these albums?

Harrison: No, not at all. You see, I did *All Things Must Pass* straight out of The Beatles and I did it with so many tunes because I had such a backlog. We had everything. We had two drummers, six acoustic guitar players, I mean it was Phil. We had all these acoustics and drummers and people with tambourines and shakers, and horn players and huge backing voices and strings and the whole bit. It was like the full

biscuit.

And after that, I made a point of doing *Living In The Material World* more like a small group. You know, just Ringo and Jim Horn on various tracks, and just keyboards and guitars basically. I just kept it small.

Mix: It was hard to outdo *All Things Must Pass* because that album offered so much material you had been storing for years in The Beatles.

Harrison: Yeah, and also, I had the people ready and looking to buy my album. It was like a novelty. It was a big thing. *All Things Must Pass* was right after The Beatles and that mania was still existing. I rode upon the wave of that largely.

Then a couple of years went by and people became blasé. It's just not the same being a solo artist as it is being a Beatle. This is why this album, for me, is more than just getting help with the production. With Jeff, it was like being in a group again. It was like having a band, even though it was just the two of us doing it, basically. You've got someone to bounce off. If you need to get an opinion, you've got it.

It's that group feeling, on the production side, like it used to be in The Beatles, because no matter what anyone thinks, the four of us and George Martin were always contributing ideas and putting things in. As time goes by, people start forgetting just exactly how much input each one did put in. A lot of it was big group effort and it's hard to follow that and go solo—be the writer, the producer and the performer. It all became a bit too heavy on me. I did that tour [in 1974] and wiped myself out and then they slagged me off in the newspapers.

Then I did an album that was full of depressing songs because I was stuck in California and it was the first record that I had done in a foreign studio and I had to take all my equipment home every night. You know, I work at home now and I have a board and it's all plugged in and I don't have to do all that. Then I made an album with Russ Titelman, which was sort of nice and it had a few things on it, but, by that point, the business was changing and they didn't even play them on the radio. That resulted in me thinking, "There's no point in me spending half my life in the studio writing all these tunes and recording them." Unless I went out and tap danced all across



PHOTO: RONALD KATZ/COURTESY OF HBO

At the Prince's Trust concert, George is joined by Elton John and Eric Clapton.

America on every TV station, bragging as you have to do. Quite honestly, I was tired of all that. I'd done it. And so my record sales suffered a lot.

But things change in your life. I'm really happy now and I can do these interviews because I'm interested in it. I'm happy and I'm not depressed anymore. It's cool and this record is good. I'd like people to hear it and I'll do my bit to get it known.

Mix: When did The Beatles first realize how to utilize the studio as an instrument in itself?

Harrison: It slowly built up to it. We used to think, "If we could just get in the studio and make a record, that's it!" We got in there and made "Love Me Do," which sold enough records to get it to #17 in England, which was enough for EMI to ask us back. We went back in and did "Please Please Me," which was a #1 hit—not in America at that time but all over Europe and Britain. Then we did the album in one day and by the time we had had that #1 hit, we came back to the studio and they were all smiling. [He affects a stuffy British accent] "Oh, hello boys. Welcome back!" Then we got another hit, and another hit, and another hit. And then, we started to get a little bit of power. We had a powerbase and we could start grabbing onto the faders. I mean, they only had four, and we all had one each! [Laughs] We had full treble and bass on everything. That's all they had, really. The American records [were always better]. When we got to 4-track machines, they were into 8- and going to 16-track in America.

We were always thinking, "Well, how do we do that double-tracked-sounding voice like Bobby Vee without wasting tracks? We've only got four." Back then, there was a guy who's now the head of Abbey Road Studios named Ken Townsend. He was a maintenance guy there, so we spoke to him and he was the one who invented taking the signal off the sync head and putting it through another machine, or through his little VSO varispeed, and that's how we got that ADT, automatic double track. If you did a few movements with it, then it automatically became phasing and flanging. Everytime we went back to the studio we would say, "Hey, let's have that thing back that you made." And Ken would say, "Oh, I've chucked that away, but I've got another one." And it would be totally different and would make it more swishy or more flangy.

So this stuff built up to the point where we decided to pack in touring because the mania had just been too much. Then, we went in the studio and because, I suppose, of certain substances that had been going around our heads during that period, we began hearing other things we never heard before. We had more ideas, just crazy ideas and that's why those records did that. We just went in the studio and that was our escape.

Mix: How much credit do you give George Martin for the success of The Beatles?

Harrison: Well, if it wasn't for George Martin, we would never have gotten

—CONTINUED ON PAGE 193

this is like Star Wars plus!"

Captain Power is mixed to stereo from 24-track; the last episode boasted 1,200 different sound effects, all generated and some manipulated to picture in the Fairlight domain. Besides that, Master's Workshop edits and post-produces sound for several U.S. and Canadian TV series and movies. Another unique project was tracking and mixing sound for the IMAX feature film *Heartland* ("the first done digital beginning to end") for a new IMAX theater in Winnipeg, Manitoba. The theater has a playback system which interlaces three CD players for six tracks of digital sound. The project involved mixing down from digital multi-track through the Sony 1630 processor to 3/4-inch video, creating three 2-channel tracks which then went out for CD processing.

McKenzie says his facility indirectly benefits from Telefilm, a fund set up by the federal government to promote film production in Canada. "They pump money into a project which is usually matched, dollar for dollar, by other parties. The restriction is that a certain amount of creative Canadian involvement is mandatory. But that's not so restrictive, because there's so much Canadian talent."

Alberta

"Calgary is a small market, with only 600,000 people. A studio here can't specialize in just one area. While ours was constructed for album production, that wasn't enough. So we started looking into audio-for-video, and expect that part of our business will be substantial in a year." So says Steven Graupe, owner of Smooth Rock Studios in the bilingual city of Calgary, Alberta. There are three 24-track facilities in Calgary, but only Smooth Rock is fully equipped for audio-for-video.

Smooth Rock just installed an Audio Kinetics Eclipse editor and Q.Lock 4.10 synchronizer, a 3/4-inch VTR and a 1/4-inch layback system for film scoring, dialog replacement and other post work. The first client to use the system was Pioneer Pictures for the film *Paradise Bungalows*. Graupe says, "We did all the music for it, and some sound effects and dialog replacement—most of it was location sound. We recorded a lot of pop/rock tunes for it, performed by bands from Alberta. It also has incidental music we wrote here using MIDI gear [Emulator II+, SP-12,

Simmons MTM system].

"Alberta is seen as a good location for film work," adds Graupe, "and several films have been shot here including *Superman I and II* and *Gunsmoke*." Alberta is also the site of the 1988 Winter Olympics, "which has been very good for us. We digitally recorded the national anthems for all the participating countries, using the Mitsubishi at our concert hall in town. Right now we're in production for all the opening and closing ceremony music. We're also working on a training film for the Canadian National Ski Team."

Smooth Rock currently hosts many demo projects, about 10% of which are subsidized by FACTOR. That's why we also spoke with Joan Graupe, Smooth Rock's FACTOR liaison who helps bands fill out FACTOR applications. She notes, "We're involved in the loan awards, which represent substantial amounts of money, and the demo awards, which are less money but include a small amount to hire a guest producer who will work for less. In that case, the band gets to use our studio and we get paid for materials and federal sales tax. Applying for the demo award is simple. But for the loan award, they want to know you can handle large sums of money and have done it before, that you're not wearing rose-colored glasses, and that you have a marketing plan so the record doesn't sit in the closet. FACTOR is very business-oriented, and the group should act as if they were contacting a record company or bank, because it is that tightly controlled.

"The people who win the demo award get to use an acoustically correct facility with up-to-date technology, quality people, and enough time to make a good product," continues Graupe. "It lets us get involved with artists at the early stages of their career, and deal with talent that needs fine-tuning. And we get to build a relationship with a potential regular client."

Vancouver

Vancouver is fast becoming the Hollywood of the Great White North—a versatile, cost-effective port of call for the L.A. film industry. Canada's attractive exchange rate and competitive industry pricing along with Vancouver's accessibility and large pool of musical, creative, and technical talent have lured major L.A. film studios. Stephen J. Cannell's company is filming several TV series and movies-of-the-week in

the province; Paramount's been lodged there firmly for a year; Disney and MGM continually shoot up there.

Cannell Films of Canada, Ltd. set up shop in Vancouver last November. Temporarily renting facilities so they can produce and post the Fox Network series *21 Jump Street* and shoot the CBS series *Wiseguy*, the company awaits receipt of district clearances before breaking ground for their new facility. Dubbed North Shore Studios, the complex will handle Cannell projects, and also be available for rent by other production companies. Its seven sound stages and 100,000 square feet of production, post-production, and support facilities and offices will create dozens of jobs.

According to Cannell rep Lisa Smith, Vancouver's abundant "environmental features" beckon Hollywood filmmakers. "Vancouver can represent mountains, beaches, country, and city, all within a 25-mile radius. For the show *JJ Starbuck*, Vancouver represented Chicago, New York, San Francisco and L.A. Other than that, it seems our producers think L.A. has been filmed to death. People here are more receptive to the film industry. They don't mind going around the traffic detours downtown, whereas in Los Angeles there's a lot more difficulty and red tape. And the dollar is much stronger up here."

About 30% stronger—and that can go a long way when paying union musicians' fees for an orchestra. The recording studios in Vancouver, not surprisingly, are cashing in on all this.

Mushroom Studios, for example, redesigned their facility early this year so they could handle 50-piece orchestral scores for TV and film, and took on their first such project in March. While relying upon a steady stream of rock/pop album projects, Mushroom Studios is now seeing much interest from the States for soundtrack work. Especially since award-winning Canadian film score composer Michael Conway Baker sought a Vancouver studio to handle his orchestral recording projects, and chose Mushroom. Adds studio manager Linda Nicol, "With all the movies being shot up in BC, this is our opportunity to see if we can get more soundtrack work."

Mushroom's first TV project was producing the entire score and soundtrack for the first TV movie shot completely in British Columbia, *Intimate Betrayal* for NBC (shown in Canada and the U.S.). They also created soundtracks

for Empire Pictures' upcoming film *The Caller* (starring Malcolm McDowell), and for MGM's sequel to *The Dirty Dozen*. In each case, the studio tracked and mixed all-acoustic instrumentation on 24-track analog, and scored to picture on studio and control room monitors (using a 3/4-inch video copy of the film). Then the tape flew to L.A. for ADR and one-inch layback.

Also in Vancouver is Blue Wave Productions, a multi-purpose facility with two 24-track rooms and a third to be on-line in January. Each room is capable of audio/video sync, and the studio recently added an Audio Kinetics Eclipse editor to their Q.Lock 4.10 sync system.

Blue Wave now handles their music projects by night; by day they service TV, video, radio and film clients. Owner Tom Lavin notes that Studios A and B are set up for 45-piece orchestras, "but we haven't done much of that. More and more film scores are sampled, synthesized and sequenced." That's why their new room will be a computer-based studio with a complement of synthesizing, sampling and sequencing systems, a CD sound effects library, and one-inch video lay-

back gear.

"The last international film score composed, arranged, and produced here was *My American Cousin*," says Lavin. "We recently did a soundtrack completely with the Emulator II for *Til Death Do Us Part*, a horror film released in Europe and Japan. And I've just signed for five low-budget Canadian feature-length films."

Asked to comment on governmental support, Lavin says, "we're not getting any tax breaks. In fact, the conservative federal government has altered the tax structure to make it less favorable, from the executive producer's perspective, to invest in feature-length films and TV movies. Which should mean that less of that money looking for a tax shelter would find itself in the movie area, which in turn should mean less business for the studios. But the opposite is happening. There's been so much commercial success lately with the sale of Canadian product, and the movie business is booming."

Blue Wave hosts a growing number of FACTOR projects, notably pop/rock Canadian mainstay Trooper, who have sold four million records over the past decade. Lavin often serves on FACTOR

juries and responds to the suggestion that FACTOR errs by not covering anything beyond recording costs (see sidebar) by saying "FACTOR won't give out funds unless the band has some sort of distribution and marketing plan." However, Lavin says, "All the changes in FACTOR policy have deterred people from applying. They changed the rules so often, no one could keep up. But it's finally leveled off. FACTOR has helped the major Canadian record companies, which seemed to be an arm of the American companies, releasing American product. It's greatly helped independent labels, but I'm not sure it's having the effect the feds wanted, in terms of getting it across the border. It *has* increased the amount of music industry activity here and that's great—there are many talented artists. And I don't speak as a Canadian, because I'm an American." ■

When not working as assistant editor of Mix, Linda Jacobson desktop-publishes several newsletters and freelances as a photographer and tech writer. Her sign is Cornucopia with Jellybean rising.

PLAYBACK

—FROM PAGE 191, PLAYBACK

into the studio because we were already turned down at EMI. George has the credit for at least giving us the chance. As it worked more and more, he was like the headmaster and we were like the pupils. But we got more and more credibility by our own ideas working, in conjunction with George Martin. But then, he was more open. I must say that for him. He was always open to our suggestions. He thought we were crazy, and I think he *still* does but, at the same time, the ideas worked.

Mix: How do you feel today about the years of Beatlemania, 1963 through 1966?

Harrison: It was crazy. It was fun at first. Everyone likes to be popular, I think. It was a big thrill being young kids and being loved, or chased, by so many people. But, it became much more than any of us had ever dreamed of. It got to the point where it was just ridiculous. We just didn't get a moment's peace for all those years! It just got to the point where it was making us crazy, so we had to draw the line

somewhere. That's when we decided to stop touring. That was the first wave of getting ourselves out of the potential danger zone. All the limos that were getting crushed, and planes that were catching on fire. You know, it was all kinds of madness. And then, there were all the riots everywhere we went. They were like race riots; Manila, Japan and Montreal. It was all this stuff and it became a very nerve-wracking experience just going from A to B. So, we stopped that and went in the studio.

Mix: Has time and, perhaps, John's death, healed the wounds that The Beatles suffered during the breakup years, with all the lawsuits and bad mouthing?

Harrison: Yeah. We're all friends. Ringo and I have always been friends, except for half an hour once, and I think we always will be. Paul and I had a couple of years where we didn't talk much to each other, but Paul has also, I think, become much more grown up about it. It may be a funny thing to say, but after his movie *Give My Regards To Broad Street* was such a big flop, I think it was a good thing for him. It

sort of humbled him a bit and opened him up a bit more. So, we're good friends and we see each other when we can. I haven't seen him this year because I've been in the recording studio.

Mix: What do you think of The Beatles CDs?

Harrison: So far I haven't heard one that I enjoyed more than I liked the original vinyl.

Mix: Is there anything you want to set the record straight on? Any rumors you'd like to put to rest?

Harrison: There are always rumors and there are always silly things happening. I just go about my life in a very uncomplicated way. On the outside, all these things seem very complicated, but I've just learned you have to get a balance between getting overexcited and being totally bored. ■

Bruce Pilato is a Rochester, NY-based freelance music journalist, husband and father. He is also a serious video collector who has amassed a library of hundreds of titles.

CANADIAN

STUDIOS

[24+] **ACADEMY SOUND**
602 12 Ave. SW
Calgary, Alberta, T2R 1H1 Canada
(403) 269-1356
Owner: Target Programmes
Studio Manager: Lanny Williamson

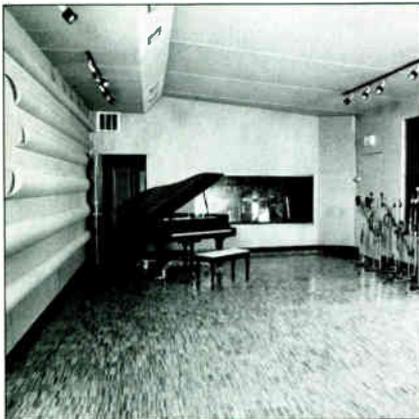
[24+] **ADB RECORDING STUDIOS**
3880 de Courtrai Ave.
Montreal, Quebec, Canada
(514) 340-1994
Owner: 159758 Canada Inc
Studio Manager: Al DiBouno

[24+] **AMBIENCE RECORDERS**
220 Rideau St.
Ottawa, Ontario, Canada
(613) 236-5282
Owner: Phil Bova
Studio Manager: Janet Kirby

[24+] **BLUE WAVE PRODUCTIONS LTD.**
34 W. 8th Ave.
Vancouver, B.C., Canada
(604) 873-3388
Owner: Tom Lavin
Studio Manager: Gary Wood

[24+] **CAMTEK AUDIO PRODUCTIONS INC.**
15112-116 a Ave.
Edmonton, Alberta, T5M 3W8 Canada
(403) 452-6910
Owner: Cam Guse, Sandi Guse
Studio Manager: Sandi Guse

[24+] **CENTURY 21 STUDIOS**
also **REMOTE RECORDING**
1085 Salter St.
Winnipeg, Manitoba, Canada
(204) 334-4304
Owner: John & Harry Hildebrand
Studio Manager: John Hildebrand



CHERRY BEACH SOUND LIMITED
Toronto, Ontario

[24+] **CHERRY BEACH SOUND LIMITED**
16 Munition St.
Toronto, Ontario, M5A 3M2 Canada

(416) 461-4224
Owner: Carman Guernieri, Rob Natale
Studio Manager: Joan Culbert
Engineers: Marc Lappano
Dimensions: Studio 35 x 20, control room 20 x 19.
Mixing Consoles: Sony MXP-3032 32 x 32.
Audio Recorders: Studer A80 24-track, (2) Studer A810 2-track, Sony PCM-701 digital.
Cassette Recorders/Duplicators: Nakamichi MR-1, Sony TC-K6
Noise Reduction Equipment: (2) Dolby 361s
Synchronization Systems: Sony automaton
Echo, Reverb, & Delay Systems: Lexicon PCM60 digital reverb, AMS reverb/delay, Yamaha REV7.
Other Outboard Equipment: (2) Kepex Gain Brain II, UREI LA4 compressor/limiter, (2) Orban compressor/limiter, (2) Kepex Max; Q equalizers, Klark-Teknik DM22 11-band stereo graphic equalizer, Mitsubishi video cassette recorder, Sony PCM-701 digital converter
Microphones: (2) Neumann U89, (2) Sennheiser MD-421, (2) Sennheiser MD-409, (2) Crown PZM-315, (2) AKG 460, (2) AKG 330BT, AKG D12E, AKG D224E, (2) Shure SM58, Shure SM57, (2) AKG C414
Monitor Amplifiers: Bryston 2B, (2) Bryston 4B
Monitor Speakers: JBL 4435 monitors, Yamaha NS-10M reference monitors, Auratone reference monitors
Musical Instruments: Gretsch drum set, Yamaha DX7, Korg SDD-3000 DDL, Yamaha 5'7" grand piano
Video Equipment: Mitsubishi video cassette, Sony KV25X-UR11 XBR monitor
Rates: \$125/hr.

[24+] **COMFORT SOUND RECORDING STUDIO**
also **REMOTE RECORDING**
26 Soho St., Ste. 390
Toronto, Ontario, M5T 1Z7 Canada
(416) 593-7992
Owner: Doug McClement
Studio Manager: Doug McClement
Engineers: Corby Luke, Gabe Lee, Andrew St. George, Stephen Traub
Dimensions: Control room 19 x 19.
Mixing Consoles: MCI JH-636 36 x 24 automated, Soundcraft Series II 32 x 4
Audio Recorders: Ampex MM-1200 24-/16-track, Fostex B16 16-track, Otari MTR-1211 4-track, Technics RS-1500US 2-track, Sanyo Beta Hi-Fi w/Sony PCM-701
Cassette Recorders/Duplicators: (10) Sony TCK-81s
Echo, Reverb, & Delay Systems: Lexicon 200, Lexicon PCM60, Yamaha REV7, Lexicon PCM41, Effectron 1024, Fostex 250, DeltaLab, AKG, BX20, Lexicon PCM70
Other Outboard Equipment: Eventide Harmonizer, (4) dbx 160 compressors, ADR stereo compressor, UREI 1176 stereo compressor, Aphex Compellor, Ursa Major Space Station, (2) Ashly parametric EQs, Yamaha graphic EQ, Soundcraft graphic EQ, Omni Craft GT4 noise gate, (2) Ashly noise gates, Eventide Instant Phaser, Orban de-esser
Microphones: Telefunken U47 tube, (2) Neumann U87, (3) AKG 451, AKG D12E, (2) Sony ECM-22P, (5) Sennheiser 421, (4) Sennheiser 441, Sennheiser 104, (3) Crown PZM, E-V RE20.
Monitor Amplifiers: Amcron DC300A (bridged)
Monitor Speakers: HZ, Yamaha NS-10, Auratone
Musical Instruments: Baby grand piano, Emulator II, DX7, Juno 60, Gretsch 5-piece drums, misc. percussion, Simmons pads
Video Equipment: JVC 8250 3/4" recorder, BTX synchronizer, Proton monitor, Panasonic camera.
Rates: Not as much as you'd think.

[24+] **DABEN ENTERPRISES LTD.**
also **REMOTE RECORDING**
992 Hubrey Rd., Unit #5
London, Ontario, N6N 1B5 Canada
(519) 685-0075
Owner: Dan Benn
Studio Manager: S. Doug Sandercock

Engineers: David N. Chauk, Dan C. Benn, Randy Wilson
Dimensions: Studio 27 x 18, control room 22 x 14
Mixing Consoles: Tascam M-600 32 x 16 w/patchbay
Audio Recorders: Tascam ATR-80-24 24-track, Tascam ATR-60/2T 2-track, MCI JH-110 2-track
Cassette Recorders/Duplicators: Tascam 122MKII, (4) Sony and TEAC decks, Tascam T-2640/MS duplicator, Tascam T-2640/2S duplicator (high speed)
Noise Reduction Equipment: (2) dbx 166, (3) dbx 463x, (2) dbx 163x, dbx 263
Synchronization Systems: Tascam ES50, Tascam ES51, Fostex 4030, Fostex 4035, Steinberg SMP24 MIDI/SMPTE converter
Echo, Reverb, & Delay Systems: Lexicon PCM60 digital reverb, DeltaLab DDL, Boss analog delay, Yamaha REV7 digital reverb, other systems available on request
Other Outboard Equipment: Loft 410 dynamics processor, Orban 418A stereo limiter, Orban 536A sibilance controller, Ashly SG33 dual noise gate, Yamaha guitar preamp
Microphones: Neumann U87, (2) AKG 451, AKG 330, AKG D12E, AKG D1000E, AKG 414, (2) Sennheiser 441s, (2) Sennheiser 421s, Sennheiser 427, Shure SM57, Sony C-48, other microphones available on request
Monitor Amplifiers: (8) BGW, Yamaha, Crown, TEAC
Monitor Speakers: (2) JBL 4430 studio monitors, (2) Yamaha NS-10, (2) Altec Model 19s, Fostex 6301, (2) JBL 8216
Musical Instruments: Akai S-900 digital sampler, Korg DW-8000 synthesizer, Yamaha FB01, Seil FX-80, Roland TR727 drum machine, Roland TR707 drum machine, Fender Chroma synthesizer, Lado, Fender, Sigma, Vantage guitars, Yamaha, Peavey, Fender amplifiers, acoustic drum kit, Simmons electronic drum kit, set of full size congas
Other MIDI Equipment: Mac Plus computer w/Mastertracks software, Atari ST computer w/Dr. Ts KCS software, Akai ME30P MIDI patchbay, Steinberg SMP-24 MIDI/SMPTE converter
Video Equipment: JVC CR6650U 3/4" recorder, (2) Beta and VHS machines, Hitachi video monitors
Other: TEAC PD-200 compact disc player, complete CD sound effects library, Heintman acoustic piano
Rates: Rates available on request

[24+] **EASTERN SOUND**
48 Yorkville
Toronto, Ontario, M4W 1L4 Canada
(416) 968-1855
Owner: Standard Broadcasting
Studio Manager: Kevin Evans
Engineers: Kevin Evans, Don Dickson, Tom Henderson
Dimensions: Studio 1: 50 x 35, studio 2: 35 x 21, studio 3: 15 x 12
Mixing Consoles: Neve 8068 32 x 16 w/Necam I, Neve 8050 24 x 16, Neve 5305 12 x 4
Audio Recorders: (2) Studer A80 24-track, Ampex MM-1200 24-track, Studer A80 8-track, (4) Studer A80 2-track 1/4", Studer A80 2-track 1/2", Studer A810 2-track 1/4" center track T/C
Cassette Recorders/Duplicators: JVC, Sony
Noise Reduction Equipment: Dolby A 24-track in both 24-track rooms, Dolby A 2-track in studio 1
Synchronization Systems: (2) EECO, Soundmaster/Shadow
Echo, Reverb, & Delay Systems: (2) Yamaha REV7, (2) Lexicon PCM42, Lexicon PCM60, AMS, (3) EMT stereo
Other Outboard Equipment: Fairchild compressor, (2) UREI LA-2A, (2) UREI 1176 limiter, (6) Drawmer DS-201 noise gates
Microphones: Neumann, AKG, Sennheiser, Shure, E-V, RCA
Monitor Amplifiers: Bryston
Monitor Speakers: JBL 4350, JBL 4311, Yamaha NS-10, Auratone, B&W 801
Musical Instruments: (2) Yamaha grand pianos, Fender Rhodes, B-3 organ, Celestion, Fairlight Series III
Video Equipment: (2) JVC 8250 address track 3/4", (2) Ampex VPR-80 1"
Other: Full video post-production/editing facilities available at VTR Productions

[24+] **E.M.A.C. SOUND RECORDING STUDIOS**
343 Richmond St.
London, Ontario, Canada
(519) 667-3622
Owner: Electronic Media Arts Corp.
Studio Manager: Robert Nation

[24+] **ENDEL STUDIOS**
146, Ch. des Patriotes
St. Charles Sur Richelieu, PQ J0H 2G0 Canada
(514) 584-3155
Owner: Endel Corp. Ltd.
Engineers: Raymond C. Fabi, J.A. Roussel
Dimensions: Studio 25 x 25, control room 25 x 20
Mixing Consoles: Soundcraft 2400 24 x 24, Soundcraft 200B 16 x 4
Audio Recorders: Soundcraft 760 MKII 24-track, Sony PCM-F1 2-track digital, Studer A80 2-track, Otari 5050 2-track
Cassette Recorders/Duplicators: TEAC CX cassette
Echo, Reverb, & Delay Systems: Lexicon 480L, Lexicon PCM70, Lexicon PCM60, Roland SRV-2000, Yamaha REV7,

ART DR-1 (MIDI), (2) Roland delays, ADA delays, Master-Room, (2) Yamaha SPX90.

Other Outboard Equipment: (2) Drawmer 1960 (tube), (4) Drawmer 201 noise gates, BSS DPR402 comp., (2) dbx comp./limiter, Symetrix 501 comp./limiter, (2) Loft 440, (8) Audio Logic noise gates, (4) Loft gates/comp/limiter, Ashly audio stereo parametric EQ, (2) Roland DIM "D", Loft 450, Roland SBF325 stereo flanger, Roland vocoder, ElectroSpace processor.

Microphones: AKG 414EBs, Beyer, Sennheiser, Neumann. **Monitor Amplifiers:** HH Electronic VS MOSFET 800, Audio & Design, Quad.

Monitor Speakers: UREI 813s, AR 18s, Yamaha NS-10, Auratones, Toas.

Musical Instruments: Yamaha TX816, Emulator II (300 disks), (2) Oberheim xpanders, Oberheim DPX1 player (200, Mirage disks, 300 E-mu II disks), Memorymoog (MIDI), OBX-a, JX8P, DX7, Roland D-501 and programmer (linear), MKS20 digital piano, Minimoog, Akai 612, Yamaha KX88, E-mu SP12 turbo, TR727, TR808, DMX (MIDI), Roland MKS-80 Super Jupiter and programmer, Oscar, CS80, ARP 2600, Polymoog.

Other MIDI Equipment: Apple Mac Plus (Performer/MIDI Paint/blank drumfile/DX-TX patch editor, Sound Designer/Soft-synth/Total Music) w/40 megabyte hard disk, MKS900 (channelizer/filter), Yamaha MJC8 MIDI patchbay.

Other: Jam Box-4 (SMPC read/write/regenerate), SBX80, Southworth interface.

Rates: Available upon request.

[24+] GHETTOVALE PRODUCTIONS LTD

Ottawa, Ontario, Canada

(613) 737-9478

Owner: Leslie Howe

Studio Manager: Leslie Howe

Engineers: Cal Koskovich

Dimensions: Studio 14 x 20, control room 18 x 20.

Mixing Consoles: Mitsubishi Westar 36 x 24 4-way parametric EQ, PC automation LED meters.

Audio Recorders: MCI JH-24 24-track, MCI JH-24-16 16-track, Revox PR-99 2-track, Sony 501-ES 2-track digital, Technics SVP-100 2-track digital.

Cassette Recorders/Duplicators: Aiwa ADF-770.

Synchronization Systems: Audio Kinetics Pacer/pad.

Echo, Reverb, & Delay Systems: Lexicon 480L, AMS RMX-16, Lexicon PCM70, Yamaha REV7, Yamaha SPX90, TC Electronics 2290 delay/sampler/32 sec., Korg DRV-3000.

Other Outboard Equipment: Valley 415 DSP de-esser, (2) dbx 165A compressor, Aphex Compellor, (3) Valley People GateX 4-channel gates, Drawmer DS-201X stereo gate, Aphex Type

"C" Exciter, (2) API 550 EQ, Ashly SC-33 stereo gate.

Microphones: Neumann TLM170, Neumann KM84, Neumann U89, AKG D-12E, Shure SM57, (3) Sennheiser 421, Sennheiser ProfiPower.

Monitor Amplifiers: (2) Bryston 4B, Bryston 2B.

Monitor Speakers: (2) Westlake BBSM-12, (2) Yamaha NS-10, (2) Auratone T-6, (2) JBL 4315B 4-way.

Musical Instruments: E-mu II, E-mu SP-12, Oberheim Xpander, Yamaha DX7/512 RAM, Yamaha DX7II/512 RAM, Roland JX-8P, Yamaha TX216, Oberheim Matrix-6, Yamaha QX-1 sequencer, Sycologic M-16 16 x 16 MIDI matrix, Roland MSQ-700 sequencer.

Other MIDI Equipment: (6) Roland pads, Roland Octapads.

Rates: Real cheap!

[24+] GLENWOOD ACCESS STUDIOS

also REMOTE RECORDING

#12-12840 Bathgate Way

Richmond, BC, Canada

(604) 278-0232

Owner: I.C.A. Institute of Communication Arts

Studio Manager: Linda McCann

[24+] GOEDE STUDIOS

also REMOTE RECORDING

9336 49 St.

Edmonton, Alberta, T6B 2L7 Canada

(403) 468-1747

Owner: Darryl Goede

Studio Manager: Leo Liersch

Engineers: Colin Lay, Dan Cherwonik, Jamie Kidd.

Dimensions: Room 1: studio 36 x 26, control room 21 x 17.

Room 2: studio 11 x 8, control room 11 x 9. Room 3: control room 12 x 9.

Mixing Consoles: Neve 8036 24 x 8, Soundcraft 400B 15 x 8.

Audio Recorders: Lyrec TR532 24-track, Otari MX-5050 8-track, (2) Ampex ATR-100 2-track, Otari MTR-10 2 audio 1

SMPTe (center-track), Otari MTR-10 2-track, Tascam 40-4 4-track.

Cassette Recorders/Duplicators: Nakamichi, Technics.

Synchronization Systems: Audio Kinetics Q.Lock w/Eclipse editor and 4 machine interface.

Echo, Reverb, & Delay Systems: AMS RMX-16, Klark-Teknik DN 780, EMT 240, AMS DMX 15-80S w/11.5 sec. sampling.

Eventide 949 Harmonizer, Yamaha DDL, Marshall Time Modulator.

Other Outboard Equipment: Neve compressors, A&D Vocal Stressors, Kepex II gates, Aphex B, dbx compressors.

Microphones: Neumann U87s, Neumann U47, Neumann

KM84s, AKG 414s, AKG C34, Sennheiser 421s, Sennheiser 211s, E-V RE20, Shure SM57s, Shure SM81, Sony ECM-50s.

Monitor Amplifiers: Bryston 4B, Crown D150s.

Monitor Speakers: UREI 813, E-V Sentry 500, E-V Sentry 100, JBL Control 1, Auratone.

Musical Instruments: Emulator II, Young Chang grand piano, Ludwig drums, Rhodes suitcase, synths by Yamaha, Roland, Oberheim, Yamaha RX5 drums.

Other MIDI Equipment: Macintosh SE computer w/"MIDI Paint" sequencer.

Video Equipment: JVC 6650 3/4" video, NEC monitors, JVC monitors, RCA camera.

Rates: On request.

[24+] GRANT AVENUE STUDIO

38 Grant Ave.

Hamilton, Ontario, L8N 2X5 Canada

(416) 522-5227

Owner: Bob Doidge

Studio Manager: Maureen Doidge

[24+] HIGH STREET PRODUCTIONS

3805 Weston Rd.

Weston, Ontario, M9L 2S8 Canada

(416) 748-2970

Owner: A. Winfield, J. McGrath

Studio Manager: Aubrey Winfield

[24+] INCEPTION SOUND STUDIOS

3876 Chesswood Dr.

Toronto, Ontario, M3J 2W6 Canada

(416) 630-7150

Owner: Chad Irschick, Jeff Wolpert

Studio Manager: David Stinson

Engineers: Chad Irschick, Jeff Wolpert, Michael Haas.

Dimensions: Studio 18 x 26 plus piano iso booth and drum room, control room 19 x 17.

Mixing Consoles: MCI 536 36 x 32.

Audio Recorders: MCI JH-24 24-track, MCI JH-110 2-track, Otari MTR-12 4-/2-track, Sony PCM-701 2-track digital.

Cassette Recorders/Duplicators: (3) Sony TC-K777 cassettes.

Echo, Reverb, & Delay Systems: AMS RMX16, Publison America IM90, EMT 240, live chamber, (2) Lexicon Prime Time, Yamaha REV7, (2) Effectrons 1024, Echotron 4096.

Other Outboard Equipment: Eventide 949 Harmonizer, Aphex compellor, Publison stereo compress/expand, (2) Valley People 610, (2) Orange County, (2) dbx 160, UREI 1176, UREI

—CONTINUED ON NEXT PAGE

ASK THE
PROS

WE SPEAK YOUR LANGUAGE.

ADR • Conforming • Digital dubbing • Dual multitrack
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Scoring • Telecine—we do this every day, just like you...(yes, weekends too!)

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SONY DIGITAL/ANALOG—Consoles, Recorders and Editing Systems

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LYNX—Time code modules, synchronization and controllers

SANKEN MICROPHONES—Quality second to none

BOSS—Synchronization controllers from Alpha Audio

FOCUSRITE—Equalization from Rupert Neve

AUDIO INTERVISUAL DESIGN

LOS ANGELES

(213) 469-4773

Telex 315254, IMC 581

LA4, (4) Kepex II, Trident parametric EQ, (2) UREI parametric EQ, (4) Ashly parametric EQs, Barcus-Berry Electronics 202E, EXR Exciter.

Microphones: Neumann: U87, U47, U47 tube, KM84s, KM86s; AKG: 414s, 452s, D12, "The Tube"; Sony Tube C-37s; B&K 4007; Sanken CU41, Shure SM57; Beyer: M500, M360, M130; PZM 30-5, 31-5, E-V RE20.

Monitor Amplifiers: Bryston, BGW, Crown, AB Systems.
Monitor Speakers: Fostex modified w/JBL drivers, Yamaha NS-10, Auratone 5C/T5/T6, ESS.

Musical Instruments: 1929 Steinway 9' concert grand piano, 1964 Fender jazz bass.

Video Equipment: Post: Adams-Smith 2600 for three machine lock, JVC 3/4" VTR.

Rates: On request.

[24+] INNER CITY SOUND STUDIOS

1212A Winnipeg St.
Regina, Saskatchewan, S4R 1J6 Canada
(306) 569-1212

Owner: Cory Halverson
Mixing Consoles: Upgrading.
Audio Recorders: Studer A80 MKIV 24-track, Studer A820TC 2-track plus time code, Ampex ATR-102 2-track, (2) Otari 5050B 2-track

Cassette Recorders/Duplicators: Alpine AL90, Otari DP 4050 duplicator 1-2 stereo, (2) Recorder 30 ips mono 1-7 mono. Echo, Reverb, & Delay Systems: (2) Klark-Teknik DN780, Yamaha REV7, AKG BX 20E, Lexicon Prime Time, Yamaha D1500, Korg SDD-3000

Other Outboard Equipment: Eventide H910, Aphex Aural Exciter, Orban 526A de-esser, Orban 412A limiter, (4) Yamaha GC2020, (2) Allison Gain Brains, Allison Kepex, (4) Loft limiter/gates, Klark-Teknik DN332 equalizer.

Monitor Amplifiers: Crown Micro-tech 1200, Amcron D150, NAD 2140

Monitor Speakers: (2) UREI 813C, (4) Yamaha NS-10, (2) Auratone.

Musical Instruments: Yamaha piano, Hammond B-3 w/Leslie, Yamaha drum kit, MIDI suite containing: Yamaha RX11, Roland Juno 106, Yamaha DX7, Yamaha MIDI rack w/TF1 modules, Yamaha TX81Z generator, Oberheim Matrix 6R.

Other MIDI Equipment: IDM computer, (2) Roland MPU-105 selectors.

Video Equipment: (3) Sony 5850 3/4" machines w/timebase correction, Grass Valley switcher, selector w/Waveform and video monitors.

[24+] KARISMA RECORDING INC.

also **REMOTE RECORDING**
9 Kirkland Blvd., Ste. 102
Montreal, Quebec, H9J 1N2 Canada
(514) 695-2548

Owner: Marcel Gouin
Studio Manager: Marcel Gouin

[24+] KENSINGTON SOUND

170A Baldwin St.
Toronto, Ontario, M5T 1L8 Canada
(416) 593-9607

Owner: Mike Alyanak
Studio Manager: Vezzi Tayyeb

[24+] KINCK SOUND

128 Manville Rd., #22
Scarborough, Ontario, Canada
(416) 751-8163

Owner: Fred Kinck Petersen
Studio Manager: Fred Kinck Petersen

[24+] LA MAJEURE INC.

1110 Bleury, 4th Floor
Montreal, H2Z 1N4 Canada
(514) 871-9585

Owner: Luc Fontaine, Sylvain Lefebvre
Studio Manager: Sylvain Lefebvre

[24+] LE GRAND SALON

1565 Iberville
Montreal, H2K 3B8 Canada
(514) 527-2325

Owner: Don Cole
Studio Manager: Jean Claude Beliveau

[24+] LE STUDIO

201 Perry
Morin Heights, Quebec, J0R 1H0 Canada
(514) 226-2419

Owner: Public Company, principal shareholders Andre Perry, Yael Brandeis
Studio Manager: Francine Mercure
Engineers: Glen Robinson, Claude Allard.

2 4 T R A C K

CANADIAN

STUDIOS



LE STUDIO

Morin Heights, Quebec

Mixing Consoles: SSL 4000E console.
Audio Recorders: JVC BP90 2-track digital w/editor, Studer 800 24-track, Studer A80 2-track 1/2", Otari MTR-90-24 24-track, Studer A820 2-track w/time code center-track

Cassette Recorders/Duplicators: (3) Studer A710
Noise Reduction Equipment: Dolby
Synchronization Systems: (4) Lynx TimeLine

Echo, Reverb, & Delay Systems: AMS DMX, AMS RMX, Lexicon 224XL, Yamaha REV1, Yamaha REV7, Yamaha SPX90, YDD 2600 delay, EMT plates, DeltaLab Effectron, DeltaLab Compu-Effectron.

Other Outboard Equipment: (7) Le Studio custom tube EQs, (3) RCA BA6A tube limiters, (2) Loft 440, (2) dbx 161, (2) UREI LA-3A, (2) UREI 1176, (2) Neve 2254/E compressors, plus many more.

Microphones: AKG, Shure, Sennheiser, Neumann, Mayer, E-V, Schoeps, Studer, Western Electric, Sony.
Monitor Amplifiers: Studer, McIntosh, BGW, Yamaha, Le Studio custom.

Monitor Speakers: UREI 813, UREI 809, Yamaha NS-10, AR-18S

Musical Instruments: Synclavier 32-voice 16-output and 4-track direct to disk, Yamaha concert grand 9', Yamaha 816 MIDI rack, Yamaha KX76 MIDI keyboard.

Other MIDI Equipment: Yamaha QX1 MIDI sequence recorder.
Video Equipment: Complete 1" post-production, services w/computer graphics, shooting stage, paint box and studio post.

[24+] LES STUDIOS MARKO (1983) INC.

910 Lagauchetiere Est.
Montreal, Quebec, H2L 2N4 Canada
(514) 282-0961

Owner: J. Clifford Balson
Studio Manager: Line Duhamel
Engineers: Serge Lacroix, Serge Gaudel, Serge Ouellet, Sylvain Jacob, Richard Belanger, Jean-Philippe Gelinias.

Dimensions: Studios: (A) 42 x 32, (B) 20 x 22, (C) 20 x 18, (D) 20 x 16; control rooms: (A) 30 x 22, (B) 20 x 22, (C) 20 x 22, (D) 20 x 16

Mixing Consoles: NEOTEK IIIC 48 x 24, Sound Workshop 30 28 x 24, Sound Workshop 34 32 x 24

Audio Recorders: (2) Otari MTR-90 24-track, (2) Otari MTR-12 4-track, Otari MTR-12 2-track super analog, (2) Otari MTR-10 4-track, (4) Otari MTR-10 2-track, (2) Otari MTR-12 2-track, Otari MTR-80.

Echo, Reverb, & Delay Systems: EMT 240, Lexicon 224LX, Lexicon Super Prime Time II, Eventide H949, Ursa Major SST-282, Roland SDE-3000, Yamaha SPX90, Lexicon PCM60, Roland DEP-5, Lexicon PCM70.

Other Outboard Equipment: Valley People Dyna-Mite, Symetrix 501, Symetrix 522, Symetrix 528, EXR Exciters, Aphex Compellor, Roland SBX-80, Korg SDD-3000, Aphex C.

Microphones: Choice of over 50 microphones: Neumann, Sennheiser, AKG and others.
Monitor Amplifiers: Bryston.

Monitor Speakers: JBL 4435, JBL 4430, JBL 4425, ADS L-980.

Musical Instruments: Yamaha 9' piano.
Video Equipment: Lynx TimeLine synchronizers, JVC CR-8250, Sony PVM-1900 3/4" VCR monitors and NEC 40" monitors, Scimitar editor controller (5 machines).

Other: MTM 16 and 35 projector and pick-up recorder, (4) duffers.

Rates: From 2-track at \$90/hr. to 24-track/video interlock at \$220/hr.

Extras & Direction: We have two audio editing suites, each equipped with Scimitar Editor, 24-track, Otari MTR-90, Studer 810, 2-track, Digital VHS Sound Library, NEOTEK Editing Console Model "Escence," compact disc sound effects library. Also we have an M&E selection room with all the possible sound effects and music-stock you need.

[24+] LISTEN AUDIO PRODUCTIONS

308 Place D'Youville
Montreal, Quebec, H2Y 2B6 Canada
(514) 842-9725

Owner: George Morris
Studio Manager: Carole Akazawa

[24+] THE LITTLE MOUNTAIN SOUND STUDIOS LTD.

201 W. 7th Ave.
Vancouver, B.C., V5Y 1L9 Canada
(604) 873-4711

Owner: Bob Brooks
Studio Manager: Alison Glass

[24+] MAGDER STUDIO

793 Pharmacy Ave.
Toronto, Ontario, M1L 3K2 Canada
(416) 752-8850

Studio Manager: P. Bonish

[24+] MANTA SOUND COMPANY

311 Adelaide St., E.
Toronto, Ontario, M5A 1N2 Canada
(416) 863-9316

Studio Manager: Lu Ann Leonard
Engineers: Gary Gray, John Naslen, Ron Searles, Rick Starks, Andrew Hermant

Dimensions: Room 1: studio 20 x 13, control room 20 x 17
Room 2: studio 60 x 44, control room 20 x 19. Room 3: studio 24 x 20, control room 15 x 20. Room 4: studio 12 x 10, control room 13 x 20.

Mixing Consoles: MCI 538D 50 x 32 w/Diskmix II, Neve 8068 32 x 32, Westar 36 x 32 w/Compumix PC, MCI 528C 28 x 24 w/Diskmix II, TAC Matchless 26 x 24.

Audio Recorders: (3) Mitsubishi X-850 32-track digital, (3) Studer A80 24-track analog, (2) Mitsubishi X-86 2-track digital, Studer A80 2-track and mono, (3) Studer A810/TC 2-track, AMS Audiophile 8-track hard disk recorder digital.

Cassette Recorders/Duplicators: Nakamichi BX-1, Nakamichi BX-2, Ken A. Bacon Associates RTDS x12

Noise Reduction Equipment: Dolby "A."
Synchronization Systems: (5) Soundmaster 4 systems, (2) Lynx TimeLine, Studer TLS 4000.

Echo, Reverb, & Delay Systems: EMT 140S, AMS RMX16, AMS DMX 15-80s, Yamaha REV7, Yamaha SPX90, Lexicon PCM70, Marshall AR-300.

Other Outboard Equipment: Pullec EQ, Neve EQ, Teletronix, UREI, Fairchild Instruments, dbx, Drawmer, Aphex Compellor
Microphones: AKG, Altec, E-V, Neumann, Sennheiser, Sony, Schoeps

Monitor Amplifiers: Bryston, Studer, McIntosh.
Monitor Speakers: (3) Manta Electronics MS 2.10 tri-amped, (2) Manta Electronics MS 1.10.

Musical Instruments: (3) Yamaha C-7 grand pianos, Hammond A-100 organ.
Video Equipment: (3) Sony 5850 3/4" VCRs, (3) JVC CR850U 3/4" VCRs, Studer A80 layback to 1" video.

Rates: Contact studio manager.

[24+] MARIGOLD PRODUCTIONS

PO Box 141, Station S
Toronto, Ontario, M5M 2L6 Canada
(416) 484-8789

Owner: Rich Dodson
Studio Manager: Mary-Lynn Dodson

[24+] MASTER'S WORKSHOP CORPORATION

306 Rexdale Blvd., #7
Rexdale (Toronto) Ontario, Canada
(416) 741-1312

Owner: Doug J. McKenzie
Studio Manager: Jim Frank

[24+] MASTERTRACK LTD.

35A Hazelton Ave.
Toronto, Ontario, M5R 2E3 Canada
(416) 922-4004

Owner: Ian Jacobson
Studio Manager: Andy Condon

[24+] MCCLEAR PLACE RECORDING STUDIOS

also **REMOTE RECORDING**
225 Mutual St.
Toronto, Ontario, Canada

(416) 977-9740

Owner: Robert Richards

Studio Manager: Hayward Parrott

[24+] METALWORKS RECORDING STUDIO

3611 Mavis Rd., Unit #5

Mississauga, Ontario, L5C 1T7 Canada

(416) 279-4008

Owner: The Metalworks Recording Studios, Inc.

Studio Manager: Alex Andronache

Engineers: Ed Stone, Hugh Cooper, Noel Golden, Dave Dickson.

Dimensions: Studio 22 x 50 (2 iso booths), control room 22.5 x 19.

Mixing Consoles: MCI JH-652 LM 52 x 24.

Audio Recorders: (2) Studer A800 16-/24-track, (2) Studer A820 2-track (1/4" and 1/2"), MCI JH-110B 2-track (1/4" and 1/2"), Revox 1/4-track 1/4"

Cassette Recorders/Duplicators: (2) TEAC 122B cassettes Echo, Reverb, & Delay Systems: Lexicon Prime Time II, AMS digital delay/harmonizer w/stereo sampling, Sony DRE-200, Yamaha REV-1, Yamaha REV7, Lexicon PCM42, Ursa Major Space Station, EMT 140 tube and solid state plates, Klark-Teknik DN780.

Other Outboard Equipment: (2) UREI LA-4s, (2) dbx 160Xs, (2) UREI 1176 LNs, (2) Neve 2254/As, UREI 1178 stereo limiter, Orange County vocal stessor, (4) Orange County compressor/expander/gates, (2) Drawmer DS201 noise gates, (2) Symetrix gates, Orban de-esser (3 channels), (2) LA-2A limiters, (4) Pultec tube EQs, (16) Neve 1064 outboard strips EQs, Eventide Harmonizer, Marshall Time Modulator, AMS phaser, Roland Dimension "D" chorus, Panscan, Aphex Type B Aural Exciter, Adams-Smith synchronizers, (2) API 5502 EQs.

Microphones: Neumann U67, Neumann U89, Neumann U87, Neumann KM84, Shure SM58, Shure SM57, E-V RE15, E-V RE20, Crown PZM, Sennheiser 421, Sennheiser 441, Beyers M500, AKG 567E, AKG C535EB, AKG C460B, (cki capsule), AKG C452EB (cki capsule), AKG C451EB (cki capsule), AKG C422 (stereo), AKG C414EB-P48, AKG D224E, AKG Tube, AKG D112

Monitor Amplifiers: Crown.

Monitor Speakers: JBL 4350s (modified), JBL 4312s, Yamaha NS-10Ms, Minimus 7s, Auratones.

Musical Instruments: Yamaha grand piano, assorted synthesizers and drum machines available on request.

Video Equipment: Available upon request.

[24+] MONTCLAIR SOUND

also REMOTE RECORDING

91 Montclair Ave.

Toronto, Ontario, M5P 1P5 Canada

(416) 488-0603

Owner: B.W.M. Enterprises Ltd.

Studio Manager: Barry McVicker

[24+] MONTREAL SOUND STUDIO

5000 Buchan, Ste. 601

Montreal, Quebec, H4P 1T2 Canada

(514) 738-1300

Owner: GCH Productions Ltd.

Studio Manager: Janet Norman

[24+] MUSHROOM STUDIOS

also REMOTE RECORDING

1234 W. 6th Ave.

Vancouver, B.C., V6H 1A5 Canada

(604) 734-1217

Owner: Charlie Richmond

Studio Manager: Linda Nicol

Engineers: Dave Ogilvie, Dale Penner, Rob Porter, Rolf Hennemann, Keith Stein.

Dimensions: Room 1: studio 50 x 30, control room 15 x 20. Room 2: studio 14 x 20. Room 3: studio 15 x 11

Mixing Consoles: Richmond Sound Design 48 x 22 x 8 VCA sub-groups w/30 Universal Audio preamps.

Audio Recorders: Studer A80 III 24-track, Studer A80 II 16-track, Studer B67 2-track, Ampex ATR-100 2-track (1/4" or 1/2" heads), Revox A77 1/2-track, Revox A77 1/4-track, (2) Sony PCM 2-track digital, Nagra III mono film sync.

Cassette Recorders/Duplicators: (6) JVC KD-A11 recorders/players, JVC DD-9 recorder/player.

Noise Reduction Equipment: (2) Dolby 361 noise reduction, (10) RSD VCF noise gates/filters, (5) Allison Kexpe noise gates, (10) RSD VCA noise gates, (3) Roger Mayer RM80X noise gates, Burwen DNF-1200A dynamic noise filter.

Synchronization Systems: Q.Lock

Echo, Reverb, & Delay Systems: EMT 240 "Gold Foil" plate reverb w/remote, Eventide H910 Harmonizer digital effects unit, Lexicon 224 4.4 digital reverb w/30 programs, Lexicon Prime Time 93 digital effects, Lexicon 480L digital reverb, Yamaha SPX90, Lexicon 224 XL w/LARC, MICMIX Master-Room reverb, Yamaha REV7, RSD APA-120 echo chamber amps, sound barrier concord live echo chamber loudspeakers, UREI Time Cube analog delay unit, (2) stereo acoustical echo chambers, Korg SDD 2000 programmable MIDI sampling delay.

Other Outboard Equipment: (2) Allison Gain Brain, (3) Furman

PO-3 parametric equalizers, (3) Langevin graphic equalizers, (6) Langevin high and low-pass filters, LT Sound CLX-2 dual comp/limiter/expander/de-esser, (2) MXR auto flangers, NEI 341 4-band parametric equalizer, Orban Parasound 516EC de-esser (3 channels), (6) RSD graphic equalizers, Technics SH9010 10-band paragrahic equalizer, Universal Audio 175B tube limiter, Universal Audio 176 tube limiter, (2) Universal Audio 550A, high- and low-pass filters, (3) UREI 1176LN compressor/limiters, JVC L-A31 direct drive turntable, IFL CDH-100 "Memory Pack" lighting controller.

Microphones: AKG C-12, AKG C-61, AKG D-12E, (2) AKG D-24E, AKG D-202E, (2) AKG D-224E, AKG D900E, (2) Beyers MC-713, (2) B&K 4007, (4) E-VRE15, E-V RE20, (4) E-V 635A, E-V 671b1, (4) Neumann KM84, Neumann KM85, (3) Neumann U47, (7) Neumann U87, Milab CL-4, Milab DC-63, Milab DC-73, Milab F-69, Milab VM-41, Crown PZM, RCA 77XB, (2) RCA 10001, (8) Sennheiser MD-421U, Sennheiser MD-441U, (3) Shure SM57, (3) Shure SM58, Sony C-17B, Sony C-37A, Sony C-38B, Sony C-57, Sony C-220A, Sony ECM-22P, Sony ECM-377, (2) Synchron/Fairchild AU-7A, Sanken CU41.

Monitor Amplifiers: (2) RSD APA-368 180-watt amplifiers, (8) RSD APA-128 60-watt amplifiers.

Monitor Speakers: (2) Altec 604E w/Time Aligned horns, (4) Mastering Lab crossovers for all 604Es, (2) Altec 604E (studio playback), (2) Auratone 5C Super Sound Cubes, (2) Yamaha NS-10 monitor speakers, (2) BIC Ventun Formula 5 loudspeakers, (2) Realistic Minimus-7 loudspeakers, (2) Visonik Ambassador 100 (Big David) loudspeakers.

Musical Instruments: Yamaha C-7 7' grand piano, Fuehr & Stemmer upright piano, Marshall 4' x 12" loudspeaker cabinet, Polytone bass amplifier, Tama drum kit including 14 x 22 kick w/Ludwig 201 pedal, 18/14/13 toms w/Remo heads, Ludwig 402 snare, Pearl cymbal stands, Paiste 2002 hat, Traynor Mate bass amplifier, (2) keyboard stands, Emulator II w/Apple Macintosh.

Video Equipment: Audio Kinetics 210 Q.Lock video synchronizer, Electrohome ECD-2504 25" color video monitor, high intensity rear projection screen, Sony 1/4" video player, Sony Beta VCR, Sharp VHS, Sanyo Beta VCR.

Other: (50) pairs headsets, (2) compact disc players.

[24+] OCEAN STUDIOS

also REMOTE RECORDING

1758 W. 2nd Ave.

Vancouver, BC, V6J 1H6 Canada

(604) 733-3146

Owner: The Ocean Sound Corporation

[24+] PERCEPTIONS RECORDING STUDIO

11 Canvarco Rd.

Toronto, Ontario, M4G 1L4 Canada

(416) 423-9990

Owner: 450564 Ontario Limited

Studio Manager: Peter Akerboom

Engineers: Peter Akerboom, independents.

Dimensions: Studio 34 x 21 x 14 containing two isolation booths, control room 19 x 14 x 12.

Mixing Consoles: Sound Workshop Series 34.

Audio Recorders: Studer A80 24-track, Sony PCM-701 Pro 2-track digital, Tascam 80-8 8-track, TEAC 3440 4-track, TEAC A6100 2-track.

Echo, Reverb, & Delay Systems: Lexicon PCM60, MICMIX XL-305, EMT-type plate reverb, Roland SDE-1000 DDL, Delta-Lab DL-4 DDL, Omni Craft GT-4 noise gates, (2) dbx 165 comp/limiters, (2) dbx 163 comp/limiters, assorted parametric and graphic EQs, Scamp rack.

Other Outboard Equipment: AMS digital reverbs, delays, Eventide Harmonizers, all available at reasonable rental rates.

Microphones: AKG C-414EBs, AKG 451Es, AKG D-12, Sennheiser 421s, Sennheiser 441s, E-V RE20, E-V RE15, E-V 635AC, Shure SM57, Shure SM58.

Monitor Amplifiers: Bryston.

Monitor Speakers: JBL Custom 4333, Yamaha NS-10s, Auratone, Bose 301.

Video Equipment: Complete audio/video sweetening, utilizing JVC 1/4" VCR w/Studer TLS 2000 tape lock system, 1/4" video to audio, audio to audio interlock, SMPTE time code readers, generators, synchronizers.

Rates: 24-track \$80/hr.; w/TapeLock \$120/hr. Block rates available on request.

[24+] PHASE ONE RECORDING STUDIOS

3015 Kennedy Rd., Unit #10

Scarborough, Ontario, M1V 2W3 Canada

(416) 291-9553

Owner: Doug Hill, Paul Gross

Studio Manager: Michele Thon

Engineers: Lenny De Rose, Joe Primeau, Randy Staub, Bill Kennedy, Earl Torro.

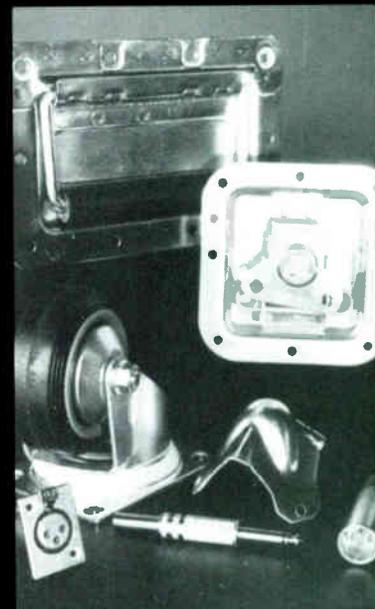
Dimensions: Room A: studio 50 x 30, control room 20 x 20. Room B: studio 30 x 30, control room 20 x 20.

Microphones: (5) Neumann U87, (2) Neumann U88, (2) Neumann ICM84, (2) Neumann U47 tube, (6) Sennheiser 421, (4) Shure SM57, (5) AKG 452, (2) AKG 414, E-V RE20, E-V RE15, (4) Crown PZM, Studer stereo, etc.

—CONTINUED ON NEXT PAGE

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Monitor Amplifiers: Crown, Micron, Phase Linear, Bryston.
Monitor Speakers: JBL custom (Studio A), custom Meg monitors (Studio B), Yamaha NS-10, Tannoy.
Musical Instruments: Yamaha C-7, B-3 organ, guitar amps, Simmons drums, other equipment available upon request.
Video Equipment: JVC 3/4" video w/lock to 24-track.
Other: LA-2, LA-3, LA-4, UREI 1176, dbx 160, Pultec, Lang, Massenburg, Neve EQs, Lexicon 224, Lexicon 224XL, AMS phaser, AMS reverb, AMS Harmonizer, Eventide Harmonizer, Yamaha SPX90, Yamaha REV7, Yamaha EMT140, Roland 3000, Lexicon 41, Lexicon 42.
Rates: Studio A \$110/hr., \$1,250 lockout, studio B \$170/hr., \$180 48-track.

[24+] THE PHOENIX RECORDERS INC.
1295 W. Broadway
Vancouver, B.C., V6H 3X8 Canada
(604) 736-3316
Owner: George McNeill
Studio Manager: George McNeill

[24+] PROFILE SOUND STUDIO LTD.
3448 Commercial St.
Vancouver, B.C., V5N 4E8 Canada
(604) 875-6821
Owner: Profile Sound Studio Ltd.
Studio Manager: Don Ramos
Engineers: Don Ramos, Steve Waines, Cec English, Dan Dudra.
Dimensions: Studio 33 x 25, control room 18 x 25.
Mixing Consoles: Harrison 3232C 28 x 28 w/automated muting.
Audio Recorders: MCI JH-24 24-track, MCI JH-45 24-track, Scully 280-4 2-track, Otari 5050B 2-track, Sony PCM-601 2-track, Sony 3202 2-track dash digital.
Cassette Recorders/Duplicators: Nakamichi.
Echo, Reverb, & Delay Systems: Lexicon 224, Yamaha REV7, Yamaha SPX90s, Yamaha D1500, DeltaLab DL-4.
Other Outboard Equipment: (4) dbx 160s, (2) dbx 161s, Altec 438C, Kepex II, SAE stereo parametric EQ, (2) NEI stereo parametric EQ.
Microphones: Neumann U87, Neumann U89, Neumann U64, Neumann U47, AKG D-12, AKG D-202E, AKG C451, Sennheiser MD-421, Sennheiser K-3U, Sony ECM-33P, Sony C-37, Shure SM81, Shure SM57, Shure SM58, RCA DX77.
Monitor Amplifiers: BGW, Phase Linear.
Monitor Speakers: Altec 604s w/UREI woofer, Yamaha NS-10M, Tannoy NFM8, Auratones.
Musical Instruments: Slingerland set, Young Chang 1969 6'2" grand, Fender Precision Bass.

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Studio Manager: Trevor Wiens

[24+] QUEST RECORDING STUDIO
215 Toronto Ave.
Oshawa, Ontario, L1H 3C2 Canada
(416) 576-1279
Owner: Paul LaChapelle
Studio Manager: Paul LaChapelle
Engineers: Paul LaChapelle
Dimensions: Room 1: studio 30 x 35, control room 27 x 24.
Room 2: studio 27 x 14.
Mixing Consoles: Westar 42 x 24 automated hard disk, 8 aux sends.
Audio Recorders: Studer A80 MKIV 24-track, (2) Studer B67 2-track.
Cassette Recorders/Duplicators: (2) Sony 3-head decks.
Echo, Reverb, & Delay Systems: Lexicon 200 digital reverb, (2) Yamaha REV7 digital reverb, Yamaha SPX90 digital reverb, AKG BX20 reverb, AMS DDL Harmonizer, Lexicon Prime Time, Digi Tech 7.6 sec. delay/sampler, Marshall Time Modulator.
Other Outboard Equipment: (2) Symetrix 501 compressors, (2) Symetrix 561 gates, ADR Compex stereo, (2) Drawmer dual gates, Ashly dual gate, (2) Ashly SC50 compressors, Ashly parametric EQ, ADR dual de-esser, Rocktron Exciter/Hush II, Aphex Type C exciter.
Microphones: (2) Neumann U87, Neumann U47, Neumann U89, E-V RE20, (6) Sennheiser 421, (2) AKG C-61 (tubes), (2) Crown P2M, AKG D224, (3) Sony ECM-22, Shure SM57, other assorted AKG, E-V, Philips condensers.
Monitor Amplifiers: Crown DC300, Crown D150, Crown D40, Dynaco.
Monitor Speakers: UREI 813, Yamaha NS-10, Minimus-7.
Musical Instruments: Yamaha C3 grand piano, Fender Precision Bass, Fender Super Reverb amp, various speakers, Mini-moog, upright piano, E-mu SP-12 drum machine.
Rates: \$70/hr. Canadian.

[24+] RETTBERG MIDI MUSIC PRODUCTIONS
1333 Bloor St., Ste. 1508
Mississauga, Ontario, L4Y 3T6 Canada
(416) 629-2009
Owner: Rob Rettberg
Studio Manager: Rob Rettberg

[24+] THE ROOM
3615 Weston Rd., Unit 10
Weston, Ontario, M9L 1V8 Canada
(416) 746-ROOM
(416) 746-8375
Owner: David Platt, Angelo Civerio
Studio Manager: David Platt
Engineers: Angelo Civerio, David Platt.
Dimensions: Studio 24 x 14, control room 22 x 22.
Mixing Consoles: Amek Angela 36 x 24
Audio Recorders: Otari MTR-9011 24-track, Studer A80 1/2-track mastering, Revox PR-99 1/2-track.
Cassette Recorders/Duplicators: (2) JVC KD-V6 recorders.
Echo, Reverb, & Delay Systems: (2) ART reverbs, Yamaha PCM60, (2) Yamaha SPX90, Yamaha REV7, Yamaha PCM42, Korg SDD-2000.
Other Outboard Equipment: (2) dbx 166, (2) Drawmer gates, (2) Rane PE 15 parametric EQ.
Microphones: Neumann, AKG, Sennheiser, Shure.
Monitor Amplifiers: Carver, Yamaha.
Monitor Speakers: JBL 4435 w/modified crossovers, Yamaha NS-10, Auratones.
Musical Instruments: Akai S900 sampler, Roland JX-8P, Roland MKS-20 digital piano, Roland D-50, Yamaha DX7, Yamaha TX7, Yamaha DX100, Roland Octapads, Yamaha KX88 controller.
Other MIDI Equipment: Mac Plus Performer software, DX/TX patch librarian, Pro Composer, Roland SBX-80 sync box, Akai ME 30P MIDI patchbay.
Video Equipment: JVC 6650 3/4" video (modified), Sony 2710 Beta Hi-Fi, Toshiba Blackstripe monitor.
Rates: \$90/hr. block rates upon request.

[24+] ROUND SOUND STUDIOS INC.
357 Ormont Dr.
Toronto, Ontario, M9L 1N8 Canada
(416) 743-9979
Owner: Round Sound Studios Inc.
Studio Manager: Victor J. Rivera

[24+] SCORE
409 King St. W.
Toronto, Ontario, M5V 1K1 Canada
(416) 598-2260
Owner: John Forbes
Studio Manager: Carolynne Saxton

[24+] SESSIONS WEST 24-TRACK RECORDING STUDIO
#10, 1916 30th Ave. NE
Calgary, Alta, T2E 7B2 Canada
(403) 250-1709
Owner: Rick Worrall
Studio Manager: Rick Scott

[24+] SMOOTH ROCK STUDIOS LTD.
#1-D, 624 Beaver Dam Rd. NE
Calgary, Alberta, T2K 4W6 Canada
(403) 275-6110
Owner: Steve Graupe
Studio Manager: Joan Graupe
Engineers: Steve Graupe, Terry Cashion, Trent Stocker.
Dimensions: Studio 1, 100 sq.ft., control room 600 sq.ft.
Mixing Consoles: MCI JH-636 36 x 36 x 24, w/Digital Creations Diskmix, using IBM XT host computer and Princeton color monitor.
Audio Recorders: MCI JH-24 24-track multi-track w/autolocator, Otari MTR-12 Series II 2-track w/center track time code, MCI JH-110 2-track, MCI JH-110i 2-track, Mitsubishi X-86 2-track digital 1/4".
Cassette Recorders/Duplicators: (6) Awa M700B decks (real time).
Noise Reduction Equipment: (2) Dolby SR (spectral recording) cards, (2) Dolby "A".
Synchronization Systems: Audio Kinetics Q.Lock 4.10 3(E) and Q.Link w/Eclipse editor.
Echo, Reverb, & Delay Systems: AMS RMX-16 w/remote and light pen, Lexicon 224, Lexicon Prime Time, Audicon plate w/remote, (2) Roland DEP-5 multi-effects processor, Publison

America DHM 89B2 delay/pitch shift.
Other Outboard Equipment: (2) UREI LA-4, (2) dbx 160, (2) Neve 32254G compressors/limiters, UREI 1176, (2) Valley People 430 Dyna-Mites, UREI Instant Flanger, Kepex 4 channels.
Microphones: (4) AKG 414, (2) Neumann U47, (2) Neumann U87, (6) AKG 451, AKG Tube, (3) Crown P2M, (2) E-V RE20, (2) E-V CS15, Sony C-37, (2) Sennheiser 421, (2) Sennheiser 441, Neumann KM88, Beyer M500, (6) Shure 57, etc.
Monitor Amplifiers: (2) Crown DC-3000, (2) Crown DC-150, Yamaha P2002, Lantec PPX-900.
Monitor Speakers: (2) Hideley/Sierra Audio SM-III w/TAD drivers, (2) Yamaha NS-10s, (2) JBL 4311s.
Musical Instruments: E-mu Emulator II+, E-mu SP-12 w/turbo, Yamaha C-7 grand piano, Hammond B-3 organ w/Leslie cabinet, Milestone drum kit, percussion instruments.
Other MIDI Equipment: Simmons MTM (MIDI-Trigger-MIDI) signal processor.
Video Equipment: JVC 6650 3/4" U-matic w/JVC RM70U remote (modified for second audio channel punch-in), NEC PM2571 color monitor (center-mounted), NEC CT1450 color monitor (mobile).
Rates: Canadian: recording \$85/hr.; mixing \$95/hr., with synchronization \$35/hr. extra, plus materials and taxes, if applicable.

[24+] SOLAR AUDIO & RECORDING
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6065 Cunard St.
Halifax, Nova Scotia, Canada
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Owner: Russ Brannon
Studio Manager: Harold Tsistinas

[24+] SOUNDS INTERCHANGE INC.
506 Adelaide St. E.
Toronto, Ontario, M5A 1N6 Canada
(416) 364-8512
Owner: Syd Kessler, Saim Sachedina
Studio Manager: Peter Mann

[24+] SPOT SHOP STUDIO INC.
also REMOTE RECORDING
1720 W. 2nd Ave.
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Owner: David Hoole
Studio Manager: Mark Scott

[24+] STUDIO MULTISONS INC.
1208 Beaubien E., #107
Montreal, Quebec, Canada
(514) 272-7641
(514) 272-8794
Owner: J. Bigras, R. Duberler, P. Usrmatte
Studio Manager: Raymond Du Berger

[24+] STUDIO PLACE ROYALE INC.
141 St. Paul St. W.
Montreal, H2Y 1Z5 Canada
(514) 844-3452
Owner: Brown & Rodrigue
Studio Manager: Stanley Brown
Engineers: N. Rodrigue, S. Brown, J. Smith.
Dimensions: Room 1: studio 20 x 10, control room 20 x 30.
Room 2: studio 20 x 16.
Mixing Consoles: AHB Syncon 24 x 24, AHB 12-2 12 x 2.
Audio Recorders: Otari MTR-9011 24-track 2", Scully 284 8-track 1", Otari MTR-10 2-track, Otari 5050 4-track, Scully 2-track, Scully 1-track.
Cassette Recorders/Duplicators: Akai, Sony.
Synchronization Systems: BTX (3 slaves sync).
Echo, Reverb, & Delay Systems: Lexicon PCM70, Space Station, Powertran delay.
Other Outboard Equipment: (4) Kepex gates, (2) Neve comp/lim., Delta de-esser, UREI filter set.
Microphones: (2) AKG 414EB, Neumann U87, (2) Neumann U67, Shure SM81, (6) various dynamics.
Monitor Amplifiers: Bryston 4B, Bryston 2B.
Monitor Speakers: (2) Tannoy HPD 15", (2) Tannoy NFM8, Auratone 5".
Musical Instruments: Juno 106, Roland S-50.
Video Equipment: JVC 3/4" VCR, JVC 1/2" VCR, (5) monitors 9" to 28", Sony/MCI 1" layback VTR.
Other: SFX on tape and CD (over 10,000), stock music library (over 10,000 cuts), SMPTE time code generators/readers.
Rates: \$75/hr. to \$150/hr.

[24+] STUDIO SECRET
1180 St. Antoine W., Ste. 407
Montreal, Quebec, H3C 1B4 Canada
(514) 866-6091
Owner: 115537 Canada Inc.
Studio Manager: Andre Boileau
Engineers: Luciano Arcarese, Costa Koskoletos, Mike Brown.
Dimensions: Studio 20 x 25, control room 15 x 19.

Mixing Consoles: Soundcraft 1600 24 x 8.
 Audio Recorders: Studer A80 MkIV 24-track, Tascam 85-16 16-track, Tascam 80-8 8-track, Studer A810 2-track, Otari MX-5050B 2-track.
 Echo, Reverb, & Delay Systems: Klark-Teknik DN780, Lexicon PCM70, Yamaha SPX90, MICMIX Master-Room X210, Delta-Lab CompuEffectron CE1700.
 Other Outboard Equipment: Ashly (compressors/limiters), Symetrix (gates/compressors/limiters), Valley People (gates), Orban stereo synthesizer, Aphex Aural Exciter, ADA 1280 digital delay.
 Microphones: Neumann, AKG, Shure, Sennheiser, Audio-Technica.
 Monitor Amplifiers: Bryston 4B.
 Monitor Speakers: Tannoy SRM-12B Super Red.
 Musical Instruments: Samick grand piano, Yamaha DX7, Drumulator, Ludwig drum kit, various guitar and bass amplifiers, various guitars and basses.
 Other MIDI Equipment: MIDI computer.
 Other: Drum booth, guitar booth.
 Rates: 24-track \$60/hr., 16-track \$40/hr., 8-track \$25/hr.

[24+] STUDIO TEMPO INC.

0707 Charlevoix
 Montreal, Quebec, H3K 2Y1 Canada
 (514) 937-9571

Owner: Yves LaPierre, Bernard Sott, Francois Cousineau, J.M. Benoit

Studio Manager: Dawn Corbett

Engineers: Ian Terry, Michel Lachance, Denis Barsalo, Francois Deschamps.

Dimensions: Room 1: studio 40 x 30, control room 25 x 21. Room 2: studio 32 x 20, control room 32 x 22.

Mixing Consoles: Amek G2520 28 x 16 x 24, Helios custom 32 x 8 x 24

Audio Recorders: Studer A800 MkIII 24-track, Studer A812-2-TC-VU 2-track + TC, Studer A810-1-P-VUK-HS 1-track + pilot, Otari MX 70-8 8-track, Otari MTR-12II-4 4-track, (2) Otari MTR-12II 2-track + TC, 1-track + pilot.

Cassette Recorders/Duplicators: (2) Nikko NC1000C, (2) Aiwa AD-3700, Technics RS-M85 MKII.

Noise Reduction Equipment: Dolby "A" M-16, (2) Dolby "A" or "SR" 361, Dolby "A" 301.

Synchronization Systems: CMX Cass 1 w/Adams-Smith 2600 3 machine and 32 fader automation, BTX Shadow w/Shadowpad, BTX Cypher SMPTE generator/reader/character/insert-er/GPI.

Echo, Reverb, & Delay Systems: EMT 140S, (3) MICMIX Master-Rooms, Lexicon 224, Lexicon Prime Time, Lexicon PCM70, (2) Lexicon PCM42, Roland SDE-3000, Roland SRV-2000, Yamaha REV7, Yamaha SPX90.

Other Outboard Equipment: Aphex Compellor, dbx 166, (2) A&D F760X, (2) dbx 160, (2) UREI 1176LN, (10) Allison, Kepex and Gain Brains, (4) parametric EQs, Orban Parasound de-esser, Eventide Omnipressor, Eventide Instant Phaser.

Microphones: Neumann TLM170, (3) Neumann U47 FET, (4) Neumann U87 FET, (2) AKG C414 ULS, AKG C412, (4) AKG C451, (2) Crown PZM, (2) E-V CS-15, (2) Studer SKMS-U, Schoeps SKS 501-U stereo, (28) Shure, Sennheiser, E-V, Beyer.

Monitor Amplifiers: QSC, Sima, Studer, Quad, CAZ-Tech.

Monitor Speakers: (2) Studer 2706, custom house monitors, JBL 4401, JBL 4311, JBL 4310, (2) Auratone EPI.

Musical Instruments: Yamaha grand piano.

Video Equipment: (2) JVC CR 8250-U 3/4", (5) video monitors.

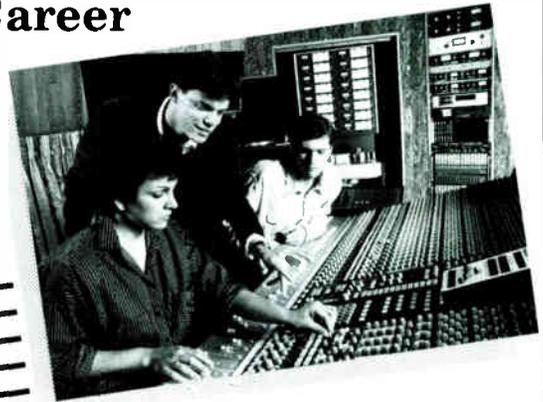
Other: (2) digital metronomes, Amber spectrum analyzer

Rates: \$90 to \$210/hr. Canadian, depending on studio and format.

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MIX
THE
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MAGAZINE

2 4 T R A C K

CANADIAN

STUDIOS



STUDIO 306
Toronto, Ontario

[24+] STUDIO 306

306 Seaton St.
Toronto, Ontario, M5A 2T7 Canada
(416) 968-2306

Owner: Brian Mitchell

Studio Manager: Brian Mitchell

Engineers: Mike Rowland, Bob Cobban, Dan Kuntz, John Smithbower, Mark Stafford.

Dimensions: Studio 45 x 22, control room 24 x 19

Mixing Consoles: Neve 8016 24 x 24

Audio Recorders: Studer A80 MKIV 24-track, MCI JH-110 4-track, MCI JH-110A 2-track, Ampex 440 2-track

Cassette Recorders/Duplicators: Akai GXC-570D 2-track

Noise Reduction Equipment: (2) Dolby A 361

Synchronization Systems: Postex 4030 synchronizer w/4035 controller, Telcom T5010 SMPTE time code generator/reader, UREI 964 digital metronome.

Echo, Reverb, & Delay Systems: EMT 140 stereo plate, AKG BX20 stereo reverb, Yamaha REV7 digital reverb, Eventide 1745M 4-channel digital delay, DeltaLab Super TimeLine, Yamaha SPX90

Other Outboard Equipment: (3) Pultec MEQ-5 mid-range equalizer, (5) Pultec EQP-1A3 program equalizers, (4) UREI LA-3A leveling amplifiers, (4) UREI 1176LN limiting amplifiers, (2) API 525 compressor/limiters, Valley People 610 stereo compander/noise gate, ADR F769X-R Vocal Stressor, (2) Allison Kexep noise gates, EXR stereo Exciter Eventide H910 Harmonizer

Microphones: (5) Neumann U87s, (3) Neumann U67s, (2) Neumann U47s, (2) Neumann KM84s, (2) AKG 414s, (2) Sony C-37s, (3) Sennheiser 441s, (4) Sennheiser 421s, E-V RE20, (2) Schoeps SM5, (3) AKG D20

Monitor Amplifiers: Briston B4, Briston B3, (2) Crown DC 300A

Monitor Speakers: (2) Altec Lansing Super Reas (modified), (2) JBL 4333, (2) Yamaha NS-10M, (2) Auratone 5C Super sound cubes

Musical Instruments: Steinway 7' grand piano, Hammond B-3 organ w/Leslie, Heintzman tack piano

Video Equipment: JVC 6650 (modified for independent recording on either audio track)

Other: Technics SL-P1200 CD player

Rates: \$90/hr or \$125/hr. with video lock.

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(514) 472-2841

Owner: Michel Bibeau

Studio Manager: Michel Bibeau

[24+] STUDIO VICTOR INC.

1050 Rue Lacasse
Montreal, H4C 2Z3 Canada
(514) 932-9340

Owner: A. Paquette G. Plon

Studio Manager: A. Paquette

[24+] STUDIO WEST CANADA LIMITED

502 45th St. W.
Saskatoon, Saskatchewan, S7L 6H2 Canada
(306) 244-2815

Owner: Wayne Wilkins, Blaine Wilkins

Studio Manager: Wayne Wilkins

Engineers: Clarence Deis, Don Warkentin, Brian Orsted

Dimensions: Studio 25 x 50, control room 20 x 30

Mixing Consoles: MCI JH-636 36 x 24 automated, Allen & Heath System 8 16 x 16

Audio Recorders: MCI JH-114 24-track w/AL 111 remote autolocator, MCI JH-110 2-track (15/30 ips), (2) Otari MX 5050II 2-track, Sony SL-2700 Beta Hi-Fi VCR, Sony PCM-F1 digital audio processor, MCI JH-114 8-track w/16-track head stack, Studer Revox PR-99 2-track

Cassette Recorders/Duplicators: (3) Nakamichi MR-1 Pro recorders

Echo, Reverb, & Delay Systems: AMS RMX-16, Klark-Teknik DN 780, Audicon "The Plate," Yamaha SPX90, Lexicon PCM60, (2) Master-Room B, AKG BX-10E

Other Outboard Equipment: AMS DMX 15-80S w/dual harmonizer, sampler, full MIDI control, Yamaha SPX90, (4) DeltaLab, (4) Valley People 610 dual compressor/expanders, (8 channels), Roland Dimension D, Eventide Instant Flange, UREI 4-band stereo parametric equalizer, UREI 535 graphic equalizer, Klark-Teknik DN60 real time spectrum analyzer, Aphex Aural Exciter

Microphones: Neumann, AKG, E-V, Beyer Dynamic, Shure, Crown PZM

Monitor Amplifiers: Amcron Microtech 1000, JBL/UREI 200W, HH Electronic v800 MOSFET, (2) HH Electronic 100D, Briston 2B

Monitor Speakers: UREI 813 Time Aligns, Tannoy DC 1000, Yamaha NS-10, JBL 4312, Auratones.

Musical Instruments: Yamaha C7 grand piano, Yamaha custom Record Series drum kit, keyboards, samplers and other instruments available on request.

Other MIDI Equipment: AMS DMX 15-80S w/dual harmonizer and MIDI

Rates: Book rate \$125/hr. Hourly rates vary according to the volume of hours purchased at one time. Figures do not include taxes. Free accom. in block bookings

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Owner: Doug Wong, Ken Bird, Curtis Smith

Studio Manager: Doug Wong

[24+] TRITON SOUND STUDIO INC.

3886 Chesswood Dr.

Toronto, M3J 2W6 Canada

(416) 638-3869

Owner: Steve Dell'Angelo, Jody Ellis

Studio Manager: Steve Dell'Angelo

[24+] UNIVERSAL RECORDING INC.

also REMOTE RECORDING

2190 W. 12th Ave.

Vancouver, BC, V6K 2N2 Canada

(604) 734-2922

Owner: Robert Leong

Studio Manager: Robert Leong

[24+] WAXWORKS PRODUCTIONS

Albert St., Box 299

St. Jacobs, Ontario, N0B 2N0 Canada

(519) 664-3311

Owner: Jim Evans

Studio Manager: Stephen Morris

[24+] WELLESLEY SOUND STUDIO INC.

106 Ontario St.

Toronto, Ontario, M5A 2V4 Canada

(416) 364-9333

Owner: Roger Siermin, Jeff McCulloch

Studio Manager: Gerry Mark

Engineers: Jeff McCulloch, Roger Siermin, Tod Cutler

Dimensions: Room 1: studio 23 x 20, control room 21 x 19. Room 2: control room 17 x 14.

Mixing Consoles: Soundtracs CM4400 28 x 24 x 2 w/CMS2 automation, Tascam M16 24 x 16 x 2.

Audio Recorders: Sony/MCI JH-110 24-track, Studer A80 2-track (30 ips), Tascam 85-16B 16-track, Tascam 52 2-track, Sony 701-E 2-track digital.

Cassette Recorders/Duplicators: (10) Sony TC-FX25, (3) Sony TC-FX310, Sony TC-FX220.

Noise Reduction Equipment: Tascam DX-16B dbx, dbx 155 4-channel
 Synchronization Systems: Roland SBX-80
 Echo, Reverb, & Delay Systems: Lexicon 200, Sony DRE-2000, Lexicon PCM70, Lexicon PCM60, Yamaha REV-1, Yamaha REV7, Lexicon Super Prime Time, Lexicon PCM42, Lexicon PCM41, AMS 1580s dual sampler, Roland DEP-5, Yamaha SPX90, Loft Series 440
 Other Outboard Equipment: dbx 166, Orban 622B parametric EQ, Orban de-esser, Orange County comp/lim/gate, Symetrix 522, RCA tube compressor, Barcus-Berry 202, (2) Kepex II, Valley People 610, (2) dbx 160
 Microphones: AKG Tube, AKG 414, AKG 451, AKG D-12, Sennheiser 421, Sennheiser 441, Neumann U87, Sony ECM-56, Shure 57, Crown PZM
 Monitor Amplifiers: Crown, AB Systems, Studer
 Monitor Speakers: (6) Yamaha NS-10Ms, (2) UREI 813, (2) Auratone, (2) Rogers LS35A
 Musical Instruments: Full set of Ludwig drums, full line guitars and basses, assorted percussion, Yamaha DX7, Prophet 2002 plus w/1 meg memory expansion, Oberheim Matrix 6R, Akai 612 sampler module, Prophet 5 w/MIDI retrofit, Roland Octapad, Yamaha TX816 rack, Oberheim Xpander, Sequential Circuits Drumtraks drum machine.
 Other MIDI Equipment: Yamaha MJC8 MIDI patchbay, Apple Macintosh Plus computer MIDI system w/Performer V 2.0 software
 Video Equipment: Sony V.O 2600 3/4" stereo video recorder reproducer, Beta video recorder reproducer, 14" color monitor, B&W 14" monitor, (3) B&W 12" monitors, amber 14", green screen 14"
 Rates: On request Contact Gerry Mark

[24+] WINFIELD SOUND STUDIOS
 3805 Weston Rd.
 Weston, Ontario, M9L 2S8 Canada
 (416) 748-2969
 Owner: 627883 Ontario Inc
 Studio Manager: Aubrey Winfield

[24+] THE WYCHWOOD STUDIO
 644 Christie St.
 Toronto, Ontario, M6G 3E7 Canada
 (416) 651-1260
 Owner: Stan Meissner
 Studio Manager: Rags Schnauzer

[24+] ZAZA SOUND PRODUCTIONS LIMITED
 322 Dufferin St.
 Toronto, Ontario, M6K 1Z6 Canada
 (416) 534-4211
 Owner: Paul Zaza
 Studio Manager: David Appleby

16 TRACK

[16] ARAGON SOUND
 11 W. 2nd Ave.
 Vancouver, BC, Canada
 (604) 879-0522
 Owner: Howard Fitzgerald
 Studio Manager: Howard Fitzgerald

[16] AUDIO NOVA (MULTI-TRACK PRODUCTIONS)
 15612 79 A. Ave.
 Edmonton, Alberta, T5R 3H7 Canada
 (403) 486-5206
 Owner: Richard M. Brown
 Studio Manager: Richard M. Brown

[16] BLUE JACKET
 9 Davies Ave.
 Toronto, Ontario, M4M 2A6 Canada
 (416) 369-4383
 Owner: Greg Fraser
 Studio Manager: Greg Fraser

[16] BROCK SOUND PRODUCTIONS
 576 Manning Ave.
 Toronto, Ontario, M6G 2V9 Canada
 (416) 534-7464
 Owner: Brock Fricker
 Studio Manager: Brock Fricker
 Engineers: Robert Folkes-Hanson, Brad Haenel, Dale Clyne, Kevin Jensen.
 Dimensions: Room 1: studio 14 x 12, control room 10 x 12.
 Room 2: MIDI studio, control room 10 x 12. Room 3: MIDI

studio, control room 10 x 12. Room 4: MIDI studio, control room 9 x 12.
 Mixing Consoles: Trident Trimix 16 x 8, Tascam Model 5 20 x 4, (6) Fostex 2050 10 x 2
 Audio Recorders: (2) Studer A80VU MKI 16-track, Studer A810 2-track SMPTE +, Ampex AG-440 2-track, Otari MX 5050 4-track 1/2", Sony PCM-F1 2-track digital.
 Cassette Recorders/Duplicators: TEAC Z-3000, (4) TEAC V-450X
 Noise Reduction Equipment: (2) Dolby "A" Series 361, dbx 155 (4-channel)
 Synchronization Systems: (2) Dolby 361 "A" N.R., dbx 155 (4-channel).
 Echo, Reverb, & Delay Systems: Roland DEP-5 digital reverb/effects, MXR O1A digital reverb, (2) Alesis MIDIVerb digital reverb/effects, Roland SDE-3000 digital delay, DeltaLab ADM-1024 digital delay, Yamaha SPX90 digital reverb/effects, Yamaha REV7 digital reverb/effects, Klark-Teknik SA-20 spring reverb
 Other Outboard Equipment: Aphex Compellor, (2) dbx 163 limiter/compressors, Polyfusion Prograph programmable 15-band EQ, Aphex Nova Systems exciter, HP/LP filter set, (4) Tascam PE-20 parametric EQs, Dynafex NR filter, Phase Linear autocorrelator NR filter, (2) Akai MIDI delays/filters
 Microphones: Neumann U87, (2) Neumann KMS85, AKG C-414EB, AKG C-452/CK-1, AKG C-452/CK-2, (3) Shure SM57, AKG D-12E, E-V PL76, (2) Crown PZM, AKG C505, Sennheiser 421U.
 Monitor Amplifiers: (2) HH MOSFET M-900, Crown D-150A, Crown D-75
 Monitor Speakers: (2) Tannoy SRM 12B Super Reds, (10) Yamaha NS-10M, (2) Auratone 5C sound cubes, (2) Thiel 01 reference spkrs
 Musical Instruments: Emulator II+ HD w/CD ROM, (3) Yamaha TX416, PPG Wave 2.2, Roland S-50 sampling synth, Ensoniq Mirage, (5) Yamaha DX7, (3) Roland MKS-30, (9) Roland MKS-7, Roland JX-3P, (9) drum machines, Roland D-50 synth, (2) Prophet-5 synths, total of 90 synths, kybds and drum machines.
 Other MIDI Equipment: (5) Mac+ computers w/Opcode MIDI-mac, (5) IBM PCXT w/MPU-401s, SBX80, (5) Roland MKB-200 control keyboards and octapads.
 Video Equipment: Studer A80VU-3 LB/C 1" video layback, Sony VO-5850 3/4" VCR, Sony VO-5800 3/4" VCR, Sony SLHF-900 Beta VCR, Sony SL-2000 Beta VCR.
 Other: Steinway 6'8" grand, acoustic drums and cymbals, acoustic and electric guitars, Musicman electric bass, (3) guitar amps: Marshall, Roland and Traynor
 Rates: \$45/hr music; \$55/hr voice-overs, \$90/hr tapelock (Canadian funds)

[16] BULLFROG RECORDING STUDIOS
 also REMOTE RECORDING
 2475 Dunbar St.
 Vancouver, B.C., V6R 3N2 Canada
 (604) 734-4617
 Owner: Bullfrog Recording Company Ltd.
 Studio Manager: Frederic Koch, Maggie Scherf
 Engineers: Alan Rempel, Bart Gurr, Gerry Gagnon.
 Dimensions: Main studio 17 x 20, isolation booth 10 x 12, MIDI studio 12 x 20, control room 13 x 16
 Mixing Consoles: Soundcraft 1624 16 x 16 x 2.
 Audio Recorders: Ampex MM-1100 16-track 2", (2) Otari MX 5050 8-track 1/2", Otari MX 5050 2-track, TEAC 25-2 2-track, Studer Revox A700 2-track, (2) Sony PCM-F1 2-track, Fostex A-8 8-track 1/2"
 Echo, Reverb, & Delay Systems: (2) Roland SRV-2000 digital reverb, AKG BX10 (modified), Lexicon Prime Time, Roland SDE-2500 digital delay, (2) Yamaha SPX90.
 Other Outboard Equipment: Roland Compu-Editor w/30 channels of automated level control, Audio & Design Recording Scamp system, UREI 1176 limiters, dbx 160 compressors, Orange County equalizers, comp/limiters, vocal stresser/de-esser, Aphex Nova Systems Aural Exciter, Omni-Q TL2 tape lock system for time code synchronization, Roland SBX-80 MIDI/SMPTE sync box.
 Microphones: Neumann U87s, AKG C-34 stereo, Sennheiser 421s, Sennheiser 441s, AKG 414, Sony C-37, Shure, Fostex, E-V
 Monitor Amplifiers: Phase Linear/Quad tri-amplification w/ Crown crossovers
 Monitor Speakers: JBL custom designed 4-way, Tannoy NFM-8, Yamaha NS-10, E-V Sentry 100s, Auratone
 Musical Instruments: Yamaha grand piano, Roland HP400 electric piano, Fender Rhodes, Pearl drums, JX3P, JX8P and other MIDI equipment.
 Rates: From \$35 to \$50/hr. Discounts available for block bookings.

[12] GOOD EGG PRODUCTIONS
 also REMOTE RECORDING
 71 Bank St., # 507
 Ottawa, Ontario, Canada
 (613) 233-7698
 Owner: Ric Marrero
 Studio Manager: Christopher Mayo

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[16] GREAT SHAKES PRODUCTIONS
PO Box 512, Station "W"
Toronto, Ontario, M6M 5C2 Canada
(416) 789-5856
Owner: D.D. Hill
Studio Manager: D.D. Hill

[16] IN-LINE STUDIOS
16 Craigmere Crescent
Toronto, M2N 2Y3 Canada
(416) 226-5624
Owner: Wayne O'Brien, Gerald O'Brien
Studio Manager: Wayne O'Brien

[16] INSPIRATION RECORDING STUDIO
PO Box 220
Laprairie, Quebec, J5R 3Y2 Canada
(514) 659-1772
Owner: Richard Loder

[16] INTERPLAY PRODUCTIONS
409 King St. W., 3rd Floor
Toronto, Ontario, Canada
(416) 463-4622
(416) 593-0034
Owner: Pat Novotny, Pat Coleman
Studio Manager: Paul Novotny

[16] INTIMATE SOUNDS LTD.
also *REMOTE RECORDING*
6315 Metral Dr.
Nanaimo, BC, V9T 2L8 Canada
(604) 390-3421
Owner: Scott Littlejohn
Studio Manager: Scott Littlejohn

[16] KIRKLAND SOUND RECORDING
also *REMOTE RECORDING*
11 Summit Ave.
Kirkland Lake, Ontario, P2N 1M6 Canada
(705) 567-3847
Owner: Bob May
Studio Manager: Bob May

[16] LES STUDIOS J.D. INC.
705 Wilson
Sherbrooke, Quebec, J1L 1M4 Canada
(819) 563-6635
Owner: Julien Provencher
Studio Manager: Denis Aubin

[16] LOWE-KEY PRODUCTIONS
2550 E. Pender St.
Vancouver, BC, V5K 2B5 Canada
(604) 253-2096
Owner: Edward A. Lowe
Studio Manager: Greg Reid

[16] MCLEAN HANNAH LTD.
154 Sanford Ave. N.
Hamilton, Ontario, L8L 5Z5 Canada
(416) 526-0690
Owner: Dan McLean/Paul Hannah
Studio Manager: John C. Hosszu

[16] M.E.S. MUSIC EQUIPMENT SALES LTD.
34 Parkdale Ave. N.
Hamilton, Ontario, L8H 5W8 Canada
(416) 545-0404
Owner: Bill Longley
Studio Manager: Lucio Zoccolillo

[16] MISE-EN-SON
3471 39th Ave. P.A.T.
Montreal, Quebec, H1A 3Y6 Canada
(514) 642-9988
Owner: Claude Daze
Studio Manager: Claude Daze

[16] MUSIC INDUSTRY ARTS
FANSHAWE COLLEGE, D1042
PO Box 4005
London, Ontario, N5W 5H1 Canada
(519) 452-4470
Owner: Educational Facility

[16] MYSONICS
40 Barbodos Blvd., #9
Scarborough, Ontario, M1J 1L1 Canada

1 2 & 1 6 TRACK CANADIAN STUDIOS

(416) 265-8550
Owner: Richard Gozdziński
Studio Manager: Frank Watt

[16] ORCHARD STUDIO
8672 Heritage Rd.
Norval, Ontario, Canada
(416) 451-2804
Owner: David Ferri
Studio Manager: David Ferri

[12] PIZZAZZUDIO
1063 Spadina Rd.
Toronto, Ontario, Canada
(416) 489-9555
Owner: Barry Lubotta
Studio Manager: Barry Lubotta

[16] POLYAUDIO
also *REMOTE RECORDING*
PO Box 2203
Chicoutimi, Quebec, G7G 3W4 Canada
(418) 549-7862
Owner: Les Productions Polyaudio
Studio Manager: Gilles Lapierre

[16] PREMIER RECORDINGS LTD.
also *REMOTE RECORDING*
8530 - 190 St.
Edmonton, Alberta, Canada
(403) 487-3083
Owner: Mel Gargus
Studio Manager: Mel Gargus

[16] PRODUCTIONS BOF
4833 De L'Esplanade
Montreal, Quebec, H2T 2Y8 Canada
(514) 279-9489
Owner: F. Hamel
Studio Manager: A. Geoffroy

[16] PRODUCTIONS C.E.M. INC.
also *REMOTE RECORDING*
240 Hotel de Ville
Chicoutimi, Quebec, Canada
Owner: Now Lucrative Organization
Studio Manager: Christian Bouchard

[12] RADIANT SOUND
also *REMOTE RECORDING*
290 Shuter St.
Toronto, Ontario, M5A 1W7 Canada
(416) 363-5695
Owner: Brian Lepine
Studio Manager: David Bush

[16] RAINBOW RECORDING STUDIOS
8407 Stanley Ave., #5
Niagara Falls, Ontario, Canada
(416) 356-2234
Owner: Warren Parker
Studio Manager: Alison Young

[16] REACTION STUDIOS
72 Stafford St.
Toronto, Ontario, Canada
(416) 865-9468
Studio Manager: Ormond Jobin, Darrell Gasparini, Robi Banerji
Engineers: Robi Banerji, Darrell Gasparini, Ormond Jobin.
Dimensions: Studio 36 x 20 plus iso booth, control room 15 x 20.
Mixing Consoles: Soundcraft 1600 Series 32 x 24.
Audio Recorders: Ampex MM1200 16-track 2", Ampex AG-440 2-track 1/4" 1/2-track (modified), Sony PCM-601ESD digital, Sony SLHF900 Beta Hi-Fi, (2) Sony TC-FX210, Nikko ND-750.
Echo, Reverb, & Delay Systems: (2) AMS RMX16, AMS DMX15 80S, Lexicon PCM70, Lexicon PCM60, Lexicon PCM42, Yamaha REV7, DeltaLab Electron 1024 DDL.
Other Outboard Equipment: AMS DM2-20 tape phase simulator, (2) dbx 160X comp/lim., UREI 1176 lim., Valley People

Galax 4 in 1.
Microphones: Neumann, AKG, Sennheiser, Sony, Beyer, Shure.
Monitor Amplifiers: (2) Bryston, AB Systems
Monitor Speakers: Fostex RWO LS-3, Auratone QC-66, JBL
Musical Instruments: Akai S-900 sampler, Yamaha FX5 drum machine, Yamaha TX812, Yamaha CS5, (2) Ensoniq Mirage, Roland TR-727, Weinbach baby grand, Fender Rhodes, TAMA 10-piece drum kit with Paiste, Zildjian and Sabian cymbals, Roland JC amp, Fender Twin, Gallien-Krueger, Peavey.
Other MIDI Equipment: Apple Macintosh Plus 800k int./ext. drive, Roland SBX-80.
Rates: \$50/hr. Block rates available.

[16] REDWOOD STUDIOS
24 Redwood Ave.
Toronto, Ontario, Canada
(416) 462-9127
Owner: Mark Goodall
Studio Manager: Mark Goodall

[16] REEL TIME RECORDERS LTD.
also *REMOTE RECORDING*
Site 84, Comp 2, RR #1
Bedford, Nova Scotia, Canada
(902) 422-8567
Owner: Chuck & Mary O'Hara
Studio Manager: Chuck O'Hara

[16] SERAPHIM SOUND STUDIO
also *REMOTE RECORDING*
266 E. 1st St.
North Vancouver, BC, V7L 1B3 Canada
(604) 985-0177
Owner: Soren Lonnquist
Studio Manager: Paul Bastow, Soren Lonnquist

[16] SON-ART
5230 Begin
St. Hubert, Quebec, J3Y 2P9 Canada
(514) 676-0636
Owner: Jocelyn Bournival
Studio Manager: Jocelyn Bournival
Engineers: Jocelyn Bournival, Frederic Salter, independants.
Dimensions: Room 1: studio 16 x 20, control room 16 x 12.
Room 2: studio 14 x 16. Room 3: studio 6 x 8.
Mixing Consoles: Studiomaster modified 32 x 16 x 2 c/w 192 crosspoints patchbay, Peavey MC-12 12 x 2 x 2 for submix.
Audio Recorders: Tascam 90-16 16-track c/w remote 1", dbx I, Technics RS-1500 2-track, Sony 601 digital processor.
Cassette Recorders/Duplicators: Sony duplicator, Sony cassette deck.
Noise Reduction Equipment: (16) dbx I, (2) dbx II.
Synchronization Systems: Fostex 4050.
Echo, Reverb, & Delay Systems: Lexicon PCM60 digital reverb, MIDVerb II digital reverb, 3' x 6' plate reverb, Roland digital delay, Roland chorus/phaser/flanger, Yamaha SPX90, (3) spring reverb unit.
Other Outboard Equipment: (2) Audio Logic MT-44 quad noise gate, (2) Audio Logic MT-66 stereo compressor/limiter, Fostex 3070 compressor/limiter stereo, computer spectrum analyzer, (2) 16-band graphic equalizers, Technics Linear turntable, Technics CD player.
Microphones: AKG C-452, AKG CK1, (2) Sennheiser MD-421, (2) AKG D-320, AKG C-414, E-V RE20, (2) Shure SM58, (2) Ramsa, PZM.
Monitor Amplifiers: (2) McCurdy, LXI.
Monitor Speakers: (2) Ramsa WSA-70K, (2) Altec, (2) Yamaha NS-10M, (2) Earth, (2) Minimus 7.
Musical Instruments: Roland MKB-1000 MIDI controller 88 wooden keys, Roland MKS-20 digital piano, Roland S-50 sampler, Roland TR-707 drum, Roland TR-727 percussion, Korg EX-800 synth/sequencer, Korg Poly Ensemble S, Yamaha analog synth, others available on request.
Video Equipment: Panasonic AG-6500 Hi-Fi editor, RCA VJ-T-275 Hi-Fi recorder, Panasonic full pro-line available on request.
Rates: Call for rates.

[16] SOUNDPATH PRODUCTIONS LTD.
1100 Invicta Dr., Units 20 & 21
Oakville, Ontario, Canada
(416) 842-1743
Owner: Bill Drew
Studio Manager: Rick Lighthouse

[16] STUDIO JACASSON INC.
4450, rue St-Denis, bureau 200
Montreal, Quebec, H2J 2L1 Canada
(514) 844-6667
Owner: Jean-Jacques Bourdeau
Studio Manager: Jean-Jacques Bourdeau

[16] STUDIO S.G.
also *REMOTE RECORDING*
15 High St.
St. George, Ontario, Canada
(519) 442-6734
Owner: JIMCO
Studio Manager: Jerry MacDonald

[12] WALTERS FAMILY STUDIOS (WFS)
RR #3
Bright, Ontario, N0J 1B0 Canada
(519) 463-5559
Owner: Walters Family
Studio Manager: Darren Walters

4 & 8 TRACK

[8] ACCUSONIC
70 Bathurst St.
Toronto, Ontario, Canada
(416) 368-1262
Studio Manager: Paul Gallienne

[8] ALBATROS RECORDING STUDIO
11870 Jean-Masse St.
Montreal, Quebec, H4J 1S3 Canada
(514) 332-1317
Owner: Richard Murray
Studio Manager: Richard Murray

[8] ALDON SOUND-4-STUDIOS
also *REMOTE RECORDING*
1449 Redwood Ave.
Windsor, Ontario, N9C 3P2 Canada
(519) 256-3900
Owner: Don Lazurek
Studio Manager: Don Lazurek

[8] ATLANTIC MULTIMEDIA RECORDING STUDIOS
also *REMOTE RECORDING*
17 Shibu Ct.
Fredericton, N.B., Canada
(506) 474-1180
Owner: Dick Hughes
Studio Manager: Kevin Herring

[8] ROLAND BESSETTE
also *REMOTE RECORDING*
5759 Pellan
Brossard, Quebec, Canada
(514) 659-4833
Owner: Roland Bessette
Studio Manager: Roland Bessette

[8] BISON RECORDING LTD.
also *REMOTE RECORDING*
311 Kenny St.
Winnipeg, Manitoba, Canada
(204) 233-4464
Owner: Howard A. Kazuska
Studio Manager: Lucette Boulet

[4] CHROMEDIA PRODUCTIONS
also *REMOTE RECORDING*
50 Place Cote Vertu, #116
Saint Laurent, Quebec, Canada
(514) 331-5816
Owner: Dom. Vocisano
Studio Manager: Dom. Vocisano

[4] CLJ ENTERPRISES
109 Baldwin St., Ste. 3
Toronto, Ontario, M5T 1L7 Canada
(416) 977-5824
Owner: Csaba L. Jaszberenyi
Studio Manager: Y.

[8] COONEYTUNES/SESSIONS RECORDING STUDIOS
also *REMOTE RECORDING*
1070 Bleury, # 301
Montreal, H2Z 1N3 Canada
(514) 397-8819
Owner: Ian Cooney
Studio Manager: Herb Gilman

[4] CURRENT PROJECTS
also *REMOTE RECORDING*
51 Macdonell Ave.
Toronto, Ontario, M6R 2A3 Canada
(416) 533-6829
Owner: Ian Murray
Studio Manager: Ian Murray

[8] GRAMMA "T" STUDIOS
10533 Fundy Dr.
Richmond, BC, V7E 5K8 Canada
(604) 272-0664
Owner: Keith Lowe
Studio Manager: Sharon Lowe

[2] LE SONOGRAPHE
also *REMOTE RECORDING*
C.P. 146
Val Belair, Quebec, G0A 1G0 Canada
(418) 843-4082
Owner: Maurice Lebel
Studio Manager: Maurice Lebel

[2] LE SONOMAIRE
also *REMOTE RECORDING*
246 St. Elzear Blvd. E.
Laval, Quebec, H7M 4A2 Canada
(514) 668-0638
Owner: Claude Corbeil
Studio Manager: Claude Corbeil

[8] LE STUDIO DU PARC ENR.
392 LaTour
St-Jean-Sur-Richelieu, Quebec, Canada
(514) 348-9359
Owner: Robert Rheault
Studio Manager: Robert Rheault

[8] LES PRODUCTIONS PIERRE JEAN JACQUES INC.
750, Notre-Dame O, Ste. #4
Victoriaville, Quebec, G6P 1T8 Canada
(819) 758-4000
Owner: Jacques Bilodeau-Pierre Pothier
Studio Manager: Pierre Pothier
Engineers: Pierre Pothier, Bruno Frechette
Dimensions: Studio 15 x 10, control room 15 x 13.
Mixing Consoles: Studiomaster 16-8-12 16 x 8.
Audio Recorders: Fostex A-8 8-track, Fostex A-2 2-track
Cassette Recorders/Duplicators: Nikko ND-620.
Echo, Reverb, & Delay Systems: Yamaha REV7, Fostex 3050
digital delay, Fostex 3180 reverb, (2) Akai ME 10D MIDI digital
delay, Alesis MIDverb.
Other Outboard Equipment: Compressor/limiter/expander/
gate/ducker, Symetrix 522, Fostex 3030 graphic equalizer.
Microphones: Shure, Sennheiser, AKG, E-V.
Monitor Amplifiers: Fostex 600.
Monitor Speakers: Sony APM-750, AKG LSM-50, Sennheiser/
Fostex headphone.
Musical Instruments: Roland S-10 sampler, Roland Juno-106,
Roland Juno-II, Yamaha DX7, Yamaha DX27, Akai S-612 digi-
tal sampler w/MIDI-280 disk drive, acoustic and electric guitar,
electric bass.
Other MIDI Equipment: Roland MC-500 Micro-composer.
Rates: \$30/hr.

[8] MUSIC GALLERY
also *REMOTE RECORDING*
1087 Queen St. W.
Toronto, M6J 1H3 Canada
(416) 534-6311
Studio Manager: Paul Hodge

[8] N.B. STUDIO
also *REMOTE RECORDING*
1731 Centennial
North Battleford, SK, S9A 3J2 Canada
(306) 445-7085
(306) 445-4880
Owner: Dennis Cann, Pat Smith, Angie Delaire, Lindsay Parkin-
son
Studio Manager: Dennis Cann
Dimensions: Studio 800 sq. ft., control room 20 x 15, vocal
isolation booth 10 x 8.
Mixing Consoles: Yamaha 1608 16 x 8.
Audio Recorders: Otari 5050 Mark III 8-track, Otari 5050 Mark
III 2-track.

Echo, Reverb, & Delay Systems: (2) Yamaha REV7, Yamaha
SPX90.
Other Outboard Equipment: Loft compressor/limiter/gate, (2)
Yamaha 1/3 octave EQs, Nakamichi cassette.
Microphones: AKG 414, Shure SM57s, Shure SM58, Senn-
heiser 421, Beyer Dynamics.
Monitor Amplifiers: Halfer, NAD.
Monitor Speakers: JBL 4411s, Auratone 5Cs.
Musical Instruments: Yamaha CP70 electric grand, Roland
MK-20 piano module, Yamaha DX7, TX7, QX7 sequencer,
E-mu Drumulator, Roland DDR-30 electric drums.
Video Equipment: Sony 8mm (to Beta or VHS) w/editing facili-
ties primarily for live recording and promotional packages.
Rates: \$35/hr, block booking rates available upon request.

[8] PALINDROME RECORDING SERVICES
200 University Ave. W.
Waterloo, Ontario, Canada
(519) 886-2567
Owner: CKMS-FM
Studio Manager: Bill Wharrie

[2] PAVANNE AUDIO (DIGITAL RECORDING)
also *REMOTE RECORDING*
Box 7, Place du Parc
Montreal, Quebec, H2W 2M9 Canada
(514) 270-8394
Owner: N. Fraser
Studio Manager: N. Fraser

[8] PERFECT SOUND
132 Ivanhoe Crescent
Pointe Claire, Quebec, H9R 3Z8 Canada
(514) 697-0235
Owner: Fred Grindley

[8] RAYLAX
65 St. Andre
Longueuil, J4H 1K5 Canada
(514) 463-2333
Owner: Dean Laxton
Studio Manager: Luke Charest

[2] REDFERN SOUND
also *REMOTE RECORDING*
387 Winona Dr., Unit 2
Toronto, Ontario, M6C 3T4 Canada
(416) 656-4772
Owner: Ross Redfern
Studio Manager: Frank Smith

[8] RIGHT TRACKS PRODUCTIONS LTD.
226B Portage Ave., Sub PO 18
Saskatoon, Saskatchewan, S7H 0Y0 Canada
(306) 933-4949
Owner: Lyndon Smith, Tim Wachowicz
Studio Manager: Lyndon Smith

[8] SEA PRODUCTIONS
115 Torbay Rd., Unit B2
Markham (Toronto)
Ontario, L3R 2M9 Canada
(416) 475-2078
Owner: Archy Hachey, Ed Telycenias
Studio Manager: Archy Hachey

[8] SHAG SOUND STUDIO
6 Leeds St.
Toronto, Ontario, M6G 1N7 Canada
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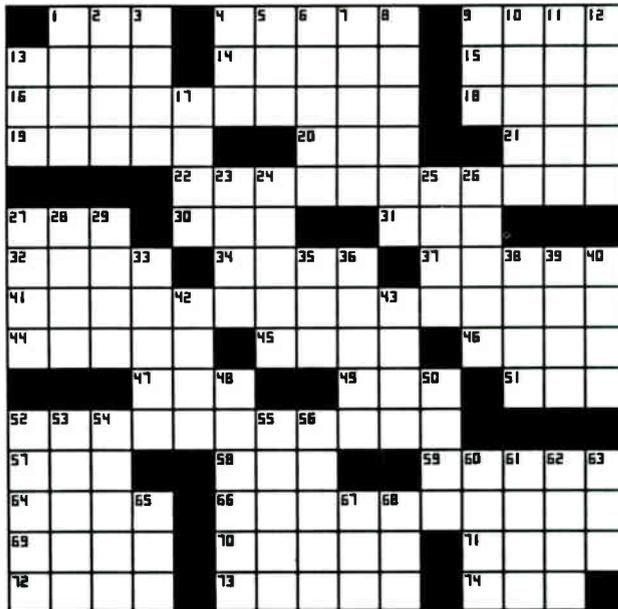
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MIX WORDS



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PRESSURE LUCK

ACROSS

1. Assc.
4. India province
9. Drop cloth
13. Image
14. ___ Dame
15. See 32A
16. Pattern of sound distribution from a speaker
18. Rosalind Russell role
19. Got in the game
20. Kind of chance or sound
21. Golf start
22. Bending of sound as it passes an object
27. Neg. neg.
30. Pub quaff
31. SE Asian
32. Cupid
34. Angers
37. Kind of element
41. Ups and downs of sounds.
44. Wounds
45. Greek architectural feature
46. Cartoon strip
47. "___ Magic"
49. Samba town
51. Radio format
52. What a flawless sound is
57. Poetic above
58. Billy Joe song
59. Area which revolted and caused the Persian wars
64. Saucy
66. Bending of sound as it passes from one medium to another
69. "___ Skvinsky Skvar"
70. Foils
71. Needle case
72. "___ la vie!"
73. Word with boot or guitar
74. Donkey

DOWN

1. One-eyed Norse god
2. Pause
3. Stand open
4. Noise reduction on some home units
5. Old multi-track abbr.
6. Not relaxed
7. In a riotous way
8. Not physical
9. Certain chapeau
10. Famed violin
11. Famed suitor
12. Fix feathers
13. Apple cider girl
17. Dutch commune
23. Bones for Elvis to shake
24. Primitive plants
25. Roman censor
26. Doughnut
27. ___ up (invigorates)
28. Cookie
29. Glide
33. Small hank of yarn

35. Time zone
36. Take to the warehouse
38. Turkish title
39. Part of a Tennessee train
40. Hebrew weight
42. Fast fliers
43. "Paperback Writer" flipside
48. These are found on 24D
50. Of the ear
52. Theme
53. Thread
54. Tapestries
55. Expert
56. Send to a colleague
60. Great Barrier island
61. What a pettifogger picks
62. Chits
63. Cuckoo
65. Nobel invention
67. Tumeric
68. Viper

Solution to October Mix Words



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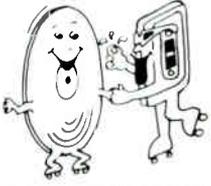
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—FROM PAGE 82, VIDEO NEWS

Audio Production Techniques for Video

AUTHOR: David Miles Huber

PUBLISHER: Howard W. Sams

PAGES: 356, PRICE: \$29.95

Audio Production Techniques for Video is written for audio and video professionals who want to stay on top of the advancing technology. Huber is an engineer, author and instructor in professional recording. His intention behind the book is "to bridge the gap of knowledge that exists between the professional audio and video communities."

Huber's presentation is detailed and instructional, the style fluid and technical. It is illustrated profusely with supporting diagrams, charts and photographs. In the introduction, Huber takes us through the video production and post-production process. This is followed by a methodical X-ray view of audio-for-video production and post-production. The second chapter deals with the audio tape recorder, the videotape recorder, magnetic re-

recording media, and the tape transport as the workhorse devices in the recording chain. This section includes an excellent tutorial on the digital ATR, the videotape recorder and digital video technology.

Chapter three is an extensive survey of synchronization, the most critical building block in the audio-for-video post-production environment. This includes an examination of time code, phase-locking, and setup for audio for video and film production and post-production using time code. Next we are treated to a thorough analysis of the production methods and devices used in the audio production-for-video process. Microphones, miking techniques and special-purpose microphones are reviewed as the key elements in the head end of the recording chain. He sums it up by saying "time code is still the most accurate and cost-effective means for producing sound for film and video."

In sequence with a typical project we next deal with audio post-production for video. This includes a study of the multi-track ATR in production

and post-production, the music recording facility, signal-processing equipment and the audio production console. The final chapter overviews videotape and digital audio editing. Once the audio and video segments have been assembled, the most demanding aspect of post is the electronic editing to assemble the production. The prevention and troubleshooting of time code problems is covered in the appendices, along with definitions and standards of SMPTE, VITC and the Pilot System. The book concludes with a helpful glossary and bibliography. *Audio Production Techniques for Video* is a nuts-and-bolts manual that really delivers the goods.

These and other books on the subject are available from good technical bookstores or the Mix Bookshelf. ■

Lou CasaBianca's interests lie in the areas of advanced music, motion picture and television production, interactive authoring and visual design, and the application of computer systems in media production. He recently established the New Media Learning Center in San Francisco.

—FROM PAGE 12, SESSIONS

produced and engineered; **Eddie Ashworth** did additional engineering... At **Conway Recording Studios** in Hollywood **David Lee Roth** was in mixing his new album for Warner Bros. Behind the board were **Magic Marino** and **Steve Vai**...

SOUTHWEST

At **Planet Dallas**, projects included the modern soul of **Claude McCann** and **How to Kiss**, and solo artist **Ben Ramsey**. All finished demos for major labels, with **Patrick Keel** producing and **Rick Rooney** engineering... Tucson favorites **Thai Pink** were in that city's **Sound Factory** tracking for A&M Records with producer **Mike Bowers** and engineer **Steve English**. Also at the Sound Factory, the **Silver Sage Band** completed music for ten segments of PBS' *Great Chefs of the West* series. The band produced, with English once again engineering... **Sunrise Sound** in Houston hosted **Scott Gertner**, who cut his album *Queen of the Boulevard* there for Chelsea Records. Gertner and **Jeff Davang** co-produced, while **Les Williams** engineered... At the **Fire Station** in San

Marcos, TX, **Will & the Kill** was in working on an album for MCA with **Joe Ely** producing. And Ely did mixdown sessions for his own *Lord of the Highway* LP at the Fire Station...

STUDIO NEWS

Joseph Tarsia, president of **Sigma Sound Studios** of Philadelphia, and **Peter Pelullo**, president of **Alpha International Recording** announced plans to consolidate their studio operations and to jointly develop a total music product service facility. The new venture will operate under the name **Sigma-Alpha Entertainment Group, Inc.** and headquarters will be located at 212 North 12th Street, Philadelphia, PA 19107... **Razz Records** of NYC has opened a new production studio. The 16-track facility will be used primarily to develop products for the Razz label as well as other acts and projects. It is primarily a MIDI room with emphasis on sequencing and sampling... Logitek has recently delivered two custom-built audio consoles to **Associated Press Broadcast Services**, for use at AP's network control center in Washington, DC. Each console included

the capability to provide up to 12 independent mix-minus feeds, for use during programs featuring various correspondents at different remote locations... **Twin Oaks Studios** in Rocky Point, NC, have added a D&R 4000 Series Console. The console is in a 40-input mainframe shortloaded with 26 input modules. With a total of 52 inputs in the remix mode, the console will be an asset to the new Sonus Masterpiece Software and the upcoming addition of 24 tracks... **Sound On Sound Recording**, previously a 16-track facility, has moved to a new 3,000-square-foot facility at 322 West 45th Street in Manhattan. It is now a 24+ track studio designed by Benchmark Associates, and featuring a NEOTEK Elite 40-channel console and MCIJH-24 multi-track... **Eldorado Recording** in Hollywood has taken delivery of a new Neve 8232 recording console; in addition, the main studio has been completely renovated, adding three isolation rooms to the already existing 25-foot x 40-foot studio... **The Enterprise** (Los Angeles), recently installed two Studer A820 24-track multi-channel recorders and one Studer A820 2-track deck... **Audio Recording Studios** in Cleveland recently installed a Sony MXP-3036 computerized, 36-input console...

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