

OCTOBER 1986
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THE RECORDING INDUSTRY MAGAZINE

Mix

Backstage at Late Night

**Directories:
North Central
Recording
and
Canadian
Studios**

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Stevie Wonder Onstage
Jingle Production
John Entwistle
Post-Script
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STUDIOS



This month's cover: Royal Recorders (formerly Sound Summit) is that rare facility that offers a first-rate studio in a true resort setting: beautiful Lake Geneva, Wisconsin. So when clients aren't availing themselves of the studio's SSL 4000E console, Studer and Mitsubishi (32-track and 2-track digital) recorders, copious outboard gear and microphones, not to mention the top-notch engineering staff, they can enjoy a full range of sporting activities, including golf, riding, tennis, swimming and more.

Photo by: Sandy Ostroff/Sandoz Studios.
Corner photo: David Letterman



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he SMPTE Convention, to be held later this month in New York's Jacob Javits Convention Center, has become an increasingly important event for the audio community. Whereas the Society of Motion Picture and Television Engineers once had very little to do with sound-oriented professionals, the last few years have changed all that and now we find a very strong audio presence in the midst of Cameraland.

We have made this issue one that represents a meeting of the minds between the sound and visual media.

Among our features this time, Greg DeTogne digs into the development of stereo TV, with an article on its progress and problems. Dan Daley slipped backstage long enough to score his report from the *Late Night* show on how David Letterman's crew has maintained its pioneering role in stereo broadcast and audio chicanery. At the studio end, Linda Jacobson has contributed a survey on the use of the videocassette recorder in the control room.

"Post-Script" gets its start this month. This section of *Mix* will concentrate on the fast moving post-production side of the industry, sometimes providing a case history of a project, other times updating news or presenting the occasional tutorial. Keep an eye on it and let us know what you'd like to see there.

Directory-wise, this issue takes a look at the recording studios of the North Central U.S., from Ohio to Nebraska and Michigan to Missouri, with reports on recording in the Heartland. We also zoom in on Canada and its thriving music and recording scene.

Bruce Nazarian, our "In Sync" wizard, wanted to let his readers know that he is on a two month leave while he relocates his life and studio to New York City. His column will return in December.

A final note... You might notice the announcement in this issue of the first *Mix* Annual Directory of Recording Industry Facilities and Services, to be released in February. This often requested premium-bound book of *Mix* listings all in one place will include some very special editorial on the year in review and the one to come. We'll let you know more about that shortly.

Keep Reading,

David Schwartz
Editor/Publisher

CURRENT

SSL Merges with U.E.I.

Solid State Logic Ltd., the British-based high end audio console manufacturer, has announced a merger with the U.E.I. Group, a British Public Limited Company whose largest member is the video graphics and digital effects specialists, Quantel.

According to SSL officials, the merger is intended to advance the development of entirely digital audio/video production systems by the detailed cooperation of the engineering teams now under the U.E.I. umbrella. Colin Sanders, who remains as chairman and managing director of SSL, added that "In the tradition of U.E.I., each company in the Group will continue to operate in a largely autonomous manner."

A privately owned business formed in 1969, Solid State Logic has grown to become a world leader in computer-assisted audio mixing systems, based on the success of their SL 4000 E Series Master Studio System and their SL 6000 E Series Stereo Video system. SSL currently employs a staff of approximately 300. Much of their current activity is centered around digital audio research and preparation for the production of the SSL Digital Studio System, which will incorporate disk-based digital audio storage and editing based on an SSL designed and built 24 bit digital audio processor capable of handling 1,000 million instructions per second.

Beside the Quantel holding, U.E.I. also includes Link Systems, a specialist in technology for scientific, medical and industrial analysis; and Cosworth Engineering, high performance engine designers and developers of precision engineering and casting technology. Total volume in U.E.I.'s last fiscal year was 95 million English pounds, with 62 percent of their business being exported.

SMPTE Confers in New York

The Jacob K. Javits Convention Center in New York City will host the 128th Technical Conference and Equipment

Exhibit of the Society of Motion Picture and Television Engineers (SMPTE), October 24 through 29. This year's exhibit of professional motion-picture, television and pro audio equipment is expected by convention organizers to draw in the neighborhood of 300 high technology companies occupying nearly 800 booths. The Society expects attendance to exceed last year's Los Angeles conference which attracted nearly 16,000. Technical paper presentations and an extensive SMPTE Awards program will highlight the festivities.

Harold J. Eady, outgoing president of the nearly 9,000 member SMPTE organization, points to the D-1 video standard as one of this year's major SMPTE accomplishments. The D-1 video tape standard format for digital television tape recording was developed by the Society in cooperation with the European Broadcast Union (EBU) and approved by the International Radio Consultative Committee (CCIR) in April.

Another high point of the SMPTE year came in the creation of an ad-hoc group to document specifications and promote equipment compatibility for the 1125 line, 60 Hz high definition television system. The group's documents will define the colorimetry, optical/electronic conversion, scanning parameters, blanking waveforms and other details of the 1125/60 high definition television signal. Formation of the high definition group follows the CCIR's recent inability to adopt the 1125 line as a standard due to opposition from several European nations who operate at 625 lines and would have a more difficult conversion.

For more information on SMPTE and the upcoming conference, contact their offices at (914) 761-1100.

AES to Meet in L.A.

The 81st Audio Engineering Society Convention will be held November 12 through 16, with over 450 exhibit booths at the Los Angeles Convention Center and other action, in the way of

demonstration rooms, lectures and workshops, spilling over into the Los Angeles Hilton Hotel. Among other highlights of the event, Stan Cornyn, president of The Record Group, will be the keynote speaker at the AES Awards Banquet, addressing engineers on the developments and opportunities in interactive compact disc (CD-I) technology. The Awards Banquet will also be highlighted by a special presentation from the infamous and lovable Firesign Theatre. For more information on this convention, contact the AES office at (212) 661-8528.

ElectroSound/Mitsubishi to Build CD Plant

A shareholders agreement has been signed by the ElectroSound Group and Mitsubishi Corporation of Japan to construct and operate a compact disc manufacturing plant in the Dallas, Texas area. Memory-Tech, Inc., the new venture, will employ Mitsubishi's input in design and construction, and ElectroSound's marketing and management experience in the 12 million unit per year facility. The plant, which is also being designed to produce CD-I and CD-ROM product, is scheduled to be in operation by summer, 1987.

WGBH to Broadcast Digital Audio

Boston's PBS television station, WGBH, has been granted permission by the Federal Communications Commission to experiment with broadcasting digital audio during their afternoon programming using Sony's PCM-F1 Digital Audio Processor to convert audio into video. Listeners will need a video cassette recorder and a PCM digital audio processor to receive the high quality audio. WGBH technicians will be encoding the audio into a video format and transmitting it on Channel 44, where viewers/listeners can use a VCR to feed the video to the digital processor, decode the audio and play it on their home stereo. The experiment will run through the end of October. ■

GET ON TRACK!

Whether you're recording original music scores, layering up sound effects, or synchronizing to video or film for audio-post sweetening, you need a tape recorder that's built especially for your new and exciting business. The MX-70 is the perfect multitrack for the synthesizer oriented studio tied together with MIDI.

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So if synthesizers with MIDI, or SMPTE with film and video, is part of your business, check the specs and don't settle for less than the MX-70. Call your nearest Otari dealer for "Technology You Can Trust".

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World Radio History

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INDUSTRY NOTES

Curtis Chan has been named product manager of component digital recording at *Sony Broadcast Products Company*. . . **Ted Birchfield** and **David Stewart** have been designated co-winners of *Ampex Corporation's* 1986 Manufacturing Man of the Year for their work to improve Ampex 456 professional audio mastering tape. Also at Ampex, **Mark L. Sanders** has been appointed vice president of marketing and new technology, and **Donald F. Bogue** has been named vice president and general manager of Ampex's Audio-Video Systems Division. . . The **James B. Lansing Award** has been presented to **Jerry Hogerson**, of *Star Enterprises*, Yorba Linda, CA, for sales excellence of JBL Professional products. . . **Orion Research, Inc.** has moved to new quarters at 4650 W. 160th St., Cleveland, OH 44135, (800) 82 AUDIO. . . **Greg Brown** has been appointed audio-visual division manager at *Capron Incorporated* of Needham, MA. . . **Harrison Systems, Inc.** has announced the appointment of **Bradley Broadcast Sales**, Gathersburg, MD; **Broadcast Supply West**, Tacoma, WA; and **Crouse-Kimzey**, Ft. Worth, TX, as new dealerships for their broadcast consoles. . . **John A. Merton III** has been appointed general manager at *Ryder Sound Services*, in Hollywood, CA. . . **Rupert Neve Incorporated** has added **Phil Wagner** as eastern regional sales manager. . . **Michael A. Brigida** has been named associate professor of music synthesis at Boston's *Berklee College of Music*. . . **Gary Dietrich** has been appointed production director at *Eastern Acoustic Works, Inc.*, in Framingham, MA. . . Former service technicians from the defunct *Linn Electronics* have formed *Forat Electronics*, offering service and modifications to Linn equipment. They are at 11514 Ventura Blvd., Studio City, CA 91604, (818) 763-3007. . . **Calzone Case Co.** has added **H.P. Marketing** of Littleton, CO, and **Northmar** of Seattle, WA to their force of rep firms. . . **Bruel & Kjaer Instruments, Inc.** has relocated its Northern California office to 363-B Vintage Park Drive, Foster City, CA 94404, (415) 574-8100. . . **Andre Perman** has joined *Meyer Sound* to head up a new corporate division to pursue research and development of SIM-CAD™ measurement instrumentation for SIM™ analysis and equalization of reinforcement loudspeaker systems. . . **SUNN**, recently acquired by *Fender Musical Instruments Corp.*, has shifted their new 27,000 sq. ft.

manufacturing plant into gear in Lake Oswego, OR. . . **Jeffrey N. White** has been promoted to national sales manager, professional products, and **Jacquelynn Hebrock** was named product manager at *Audio-Technica*. . . **Steve Ostrow** has been promoted to vice president of sales and marketing of *National Video Center/Recording Studios, Inc.*, in New York City. . . **Instant Replay Video and Film Productions**, of Cincinnati, OH, has announced the addition of **Luanne Allgood** as senior account executive. . . **Broadscore Music**, in Beverly Hills, CA, has added **Harvey Kubernik** as contractor and **Anne Graham** as programmer and design consultant. . . **Shelton Leigh Palmer & Co.** has relocated to 19 West 36th St., New York, NY 10018. . . **J.P. Farrell** has been appointed executive director of electronic laboratory services at *Pacific Video*, in Hollywood, CA. . . **BMA**, far west distributor of audio and video products has added **Meg Parker** as Bay Area sales representative. . . **Warren Harris** has announced the formation of *Audio-Craft Engineering*, a professional audio equipment service center specializing in tape recorders and mixing consoles, at 30 Pamaron Way, Suite A, Ignacio, CA 94947, (415) 883-8434. . . **Technidisc, Inc.**, of Troy, MI, has named **Mark Sidge** sales rep for the midwestern U.S. . . At *International Audio Inc.*, the Arlington Heights manufacturer of *ALPHA Audio Cassette Duplicators*, **Richard P. Mally** has become president/general manager, **Margaret Googe** is now marketing manager and **Ray Bogosh** has become sales manager. . . **George Rosenfeld** has been appointed account executive at *Kenneth A. Bacon Associates*, in Novato, CA. . . **Michelle Polette** has been named sales/marketing manager and **Karen Eggemeyer** has been promoted to service representative at *Midwest Custom Record Pressing*, in Arnold, MO. . . **Steve Landin** recently joined *Amek Systems and Controls*, in Salford, England, as head of test. . . **Martin J. Stein** has been appointed vice president of marketing for *Cubicomp Corporation*. . . *Professional Sound Corporation*, of North Hollywood, CA, has become the exclusive importer and distributor for the Swiss manufacturer, *Sonosax-SA*. . . **AHB** (Allen & Heath Brenell Ltd.) has won the British Design Centre Award for its CMC Computer Assisted Mixing System. . .

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SESSIONS

SOUTHWEST

Omega Audio of Dallas, was selected to provide all audio recording and post-production for an historic HBO special honoring music great **Fats Domino**. The special was entitled **Fats & Friends**. . . At **Goodnight Dallas**, MCA artist **Robert Brookins** recorded vocal tracks with **Stephanie Mills** for his upcoming album. The song, "In The Night," was produced by **Louil Silas**, with Goodnight engineer **Don Seay** at the NEVE console. **David Gray** assisted. . . **The Ranch Recording Studio's** remote truck, Mobile One, of Duncan, OK, recorded **Shekinah** live in concert in Wichita, KS, with **Larry Funk** engineering and **Mark Edwards** assisting. The truck then moved on to Edmond, OK, to record **St. John's Choir**, with Edwards engineering and **Paul Leach** assisting. . . At **Dallas Sound Labs**, **Al Jardine**, producer and vocalist with the **Beach Boys**, recorded lead vocals for a single entitled, "Lady Liberty," which was released to coincide with the Statue of Liberty dedication festivities. Engineering the sessions was Beach Boys veteran engineer **Jeff Peters** and Dallas Sound Lab's **Ron Lagerlof**, who handled all SSL computer functions and tape machine control. . .

SOUTHEAST

At **Treasure Isle** in Nashville, **Ricky Skaggs** put the finishing touches on his new album for CBS with **Ed Seay** engineering, and **Tom Harding** and **Tom Der** assisting on the project. Also, San Francisco-based rockers, **The Beau Brummels** recorded tracks and did pre-production work with Harding producing and Der engineering. . . At **the Soundshop** (Nashville), **Bobby Goldsboro** and producer **Timmy Tappan** recorded a Christmas album for Spectra Records. Meanwhile **Exile** continued work there, produced by **Buddy Killen** with **Pat McMakin** engineering. . . At **International Sound** in North Miami Beach, the band **Viktim** was in with **John Haag** at the board and **Victor DiPersia** assisting. . . **Paul Davis**—songwriter, performer, and producer—completed a song for Tri-Star Productions movie **About Last Night** at **Stargem** in Nashville. **Joe Bogan** engineered for Davis while **Skip SoRelle** operated the Synclavier. . . Producer **Danny Jones** put the final touches on a classical guitar album featuring **John Stover** for Spectrum Records at **Cotton Row Recording** in Memphis. . . Spanish singer-songwriter **Miguel Rios** began work on a new album under the direction of producer **Tom Dowd** at **Muscle Shoals Sound Studios**. . . **Marti Jones** cut tracks for a new

A&M release at **Reflection Sound Studio** (Charlotte, NC) with **Don Dixon** producing and **Mark Williams** engineering. . . **Julio Iglesias** was in **Criteria Recording Studios** (Miami, FL) doing vocal overdubs for his new album for CBS. **Ramon Arcusa** was behind the SSL board, assisted by **Lee Shapiro**. . . At **New Age Sight & Sound** in Atlanta **Kerry Livgren**, former keyboardist/guitarist of Kansas, digitally edited and sequenced the second album for his new group, **A.D.**; and **Issac Hayes** recorded the theme song for Turner Broadcasting Systems' Moscow '86 Goodwill Games. The project was produced and engineered by **Bill (Dr. Troll) Tullis** and assisted by engineer **Bill Allgood**. . . Projects at **New River Studios** in Ft. Lauderdale included **James Last** and **Astrud Gilberto** with her band in recording their new album for PolyGram Records. The project was co-produced by **James & Ron Last** and **Astrud Gilberto**, with **Ted Stein** engineering, assisted by **Teresa Verplanck** and **Dave Barton**. . .

NORTHWEST

Returning to the source of past successes, several artists are once again back at **Mushroom Studios** in Vancouver. **Doucette**, with a previous hit LP from the studio, was in for demos with the **Danny Tripper Band**. And **Long John Baldry** completed an album with L.A. producer **Jimmy Horowitz** (Rod Stewart, Air Supply). Engineering was by **Rolf Hennemann**. . . **The Flips**, San Francisco's "off-the-wall a capella" quartet, are putting the finishing touches on their upcoming album. Recorded at **Emerald City Studios**, the eight-song LP is being co-produced by the group, **Pete Heimlich** and engineer **Gary Mankin**. . . At **Astral Sounds Recording**, San Jose, sessions included the soundtrack for the musical **Yup It Up**, written by Roy Zimmerman, under the musical direction of Lem Jay Ignacio, and engineered by **Greg Bright**. . . **Shrapnel Records' Mike Varney** was in Cotati, CA studio **Prairie Sun Recording** producing **Driver's** LP with **Steve Fontano** engineering, **Dino Alden** and **Randy Vance** assisting. . . **Paul Kantner**, **Marty Balin**, and **Jack Casady** have been at **The Plant** in Sausalito recording tracks for their upcoming Arista LP release. Co-producing with the band is engineer **Jim Gaines**. Assistants on the project are **Rick Sanchez** and **Robert Missbach**. . . At **Inside Trak Studios** in Burnaby, British Columbia, chief engineer **Dave Slagter** with assistant **Gary Tole**, have been working together on several projects, including **Morgan Cryar's** new album **Fuel on the Fire**, produced by **Roy Salmon**; and a couple of mixes for **Doug Ben-**

nett's new album. . . **Huey Lewis & The News** completed four months tracking and overdubbing their new album at **Studio D Recording** in Sausalito, CA. **Jim Gaines** and **Robert Missbach** engineered with **Jim Verecke** assisting. . . At **Triad Studios** in Redmond, WA, "Good Time Charlie" **Danny O'Keefe** was in to record a song for a KEZX album project, with **Lary Nefzger** and **Mike Tortorello** engineering. . . At **Avalanche Recording** in Northglenn, CO **Jock Bartley** (Firefall) completed his newest project with his new band, **ESP**. . . **Marty Balin**, **Maria Muldaur**, **Dan Hicks**, **New Riders** leader **Marmaduke** and **David Jenkins**, to name a few, were the featured voices for a full length film soundtrack **The Rockabyes** recently completed at **Hyde St. Studios** in S.F. The film (about a puppet rock band) was produced by **Boots Houston** and **Bob Heyman**. **Ricky Lee Lynd** engineered. . . At **Music Annex** in Menlo Park, CA, a multi-image promotional show for **Avant Garde Optics Inc.** and **Focus Communications Group** was produced by **Russell Bond**. It has already won the BPAA Production Excellence award. . . At **CD Studios** in S.F. northern California's **True West** completed its third LP (their first for CD Records), titled **Hands Of Fate**. The album was produced and engineered by **Gary Hobish** with assistance from **Trey Sabatelli**. Also, **Impulse F**, an all-female group, was in cutting a five-song EP with **Bill Cutler** producing and **Gary Mankin** engineering with **Deanne Franklin** assisting. . . The resilient Berkeley band **The Natives** signed long-time local producer/performer **Greg Gumbel** to produce their first LP, to be titled **East of the Equator**. The album, on Gumbel's Meticulous Records label, is being recorded at **The Emeryville Recording Company**, with **Randy Rood** engineering. . . In at **SRO** (Sound Recording Organization) in SF last month was the Nathan/Tyler PBS documentary **Entrepreneurs**. The 90-minute film was mixed by SRO president **Luther Greene**. . . At **Villa Recorders** in Modesto, CA recent activity included a 19-song demo for **Collective Hands**. . .

NORTH CENTRAL

Things have been busy at **Royal Recorders** in Lake Geneva, WI. **Daryl Stuermer**, noted guitarist with Phil Collins and Genesis, has been in continuing work on his solo project along with Mark Torroll drumming. Engineering the sessions was **Phil Bonanno** with **Dan Harjung** and **Jim Bartz** assisting. . . Between concert appearances at Pine Knob, the **Beach Boys** and **Al Jardine**, took time to mix "Lady Liberty" in **Producers Color Serv-**



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ice's new Audio Post II. PCS is in Detroit. . . At *Paragon* in Chicago, **Charles Colbert** and **Bob Mayes** produced music and voice for the radio commercials for the *First Annual Gospel Music Festival* which took place at Christ Universal Temple. The event was co-sponsored by the Chicago Chapter of the National Academy of Recording Arts and Sciences and the Gospel Music Academy. . . At *Sparrow Sound Design* in Chicago **Cliff Colnot** (of Colnot/Fryer Music) handled the musical arrangements for an album of seasonal chamber music by *Espre*. . . *Serious Nature* completed recording at *Take 1 Studios* in Cleveland, laying down the back-up vocals for their new single and cassette EP. **Kevin Valentine** engineered the sessions. . . At *Studio A* in Dearborn, MI, **The Boneheads** overdubbed vocals with producers **Rob Nusbaum** and **Al Haddad**, **Eric Morgeson** behind the console, **Bill Brooks** assisting. . . *The Moody Blues* completed a live mix for a Westwood One Radio Network concert at *Beachwood Studios* in Cleveland. Band members **Justin Hayward**, **John Lodge** and **Pat Moraz** joined engineer **Dale Peters** at Beachwood to produce material recorded during their current tour of the states. . . **Annie Matheson** did final overdubs on her new album at *Jewel Recording Studios* in Cincinnati. Her producer was **C. Blaine Bowman**; engineer was **Jr. Bennett**. . . At *Seagrape Studios* in Chicago, **Umoja** and **Umani Nyah** of the Jamaican reggae group *Ekkli*s added finishing touches to several selections with help from engineer **Mike Konopka**. Some of the material was originally tracked in Jamaica at Bob Marley's *Tuff Gong Studios*. . . **Tom Tom 99**, famed for his arranging work with artists such as Phil Collins and Earth, Wind, & Fire, isn't letting the mics grow cold at *Tone Zone Recording* in Chicago, as he and engineer **Goh Hotoda** continue production on several projects including: horn overdubs for Reliant Records artist **Don Davis**. Also currently underway with co-producer **Berneice Williams**, are R&B tracks featuring the vocal work of singer Bobby D. . . D.J. International Records of Chicago recently had one of its hot new artists, **Bam Bam**, record his latest, "Dance to the Beat" at *Soto Sound* in Evanston, IL. The sessions were engineered by **Jerry Soto** and **Bruce Gomez**. . .

SOUTHERN CAL

Burton Cummings finished tracking and mixing his new songs at *Studio II* in Culver City with **Jason Wolchin** engineering. . . **John Fogerty** has been working on tracks for a new LP at *Capitol Studios* in L.A. with engineer **Jeffrey Norman** and assistants **Gary Hollis** and **Judy Clapp**. . . At *The Complex Studios* in West L.A. work continues in Studio C, with **George Massenburg** mixing for **Linda Ronstadt**, **Emmylou Harris**, and **Dolly Parton's Trio** album. . . At *Evergreen Recording Studios* in Burbank, Walt Disney Productions was in with composer Charles

Fox. **John Richards** engineered with assistance from **Mike Hatcher** and **David Marquette**. . . Ex-Tubes singer Fee Waybill has been tracking at the *Village Recorder's* Studio D for an upcoming LP. Fee is producing with **Thom Wilson** engineering. . . **Chico DeBarge** was in LA's *Skip Saylor Recording* recording a single with producer **Gary Taylor** for Motown Records. **Skip Saylor** was behind the board with **Tom McCauley** and **Joe Shay** assisting. . . At *Record One* in Sherman Oaks, **Laura Branigan** cut vocal tracks for an upcoming film project. **David Kershenbaum** produced with **John Guess** and **Clif Jones** engineering. . . At *Artisan Sound Recorders* in Hollywood **Rod Stewart** overdubbed lead vocals and horns with producer **Bob Ezrin** and engineer **Peter Lewis**. . . *Sound Image Studio* in North Hollywood, had producer/artist **Mont Seward** in cutting tracks for Quest Music with **Elliott Peters** and **Conley Abrams** at the board. . . **Robert Palmer** has been recording tracks for an upcoming Island Records LP at *Cherokee Studios* in Los Angeles with producer **Bernard Edwards**. Edwards produced Palmer's recent chart hit, "Addicted to Love". . . At *Headway Studios*, in Westminster, CA **Bill Medley** (formerly of Righteous Brothers) completed cutting tracks for his upcoming project with **Steve Kempster** engineering. . . **Berlin** was in *One on One Recording* in North Hollywood tracking and overdubbing with some interesting people such as David Gilmour and Ted Nugent. **Bob Ezrin** is producing the act, with **David Tickle** engineering and **Jeff Bennett** assisting. . .

NORTHEAST

Music & Sound Design Studio in Bridgewater, NJ, recently completed the production and duplication of an audio-cassette training program for the Girl Scouts, produced by **Bill Milbrodt**. . . *Omega Studios* in suburban Washington, D.C. played host to the *United States Naval Academy* who completed a double album of their various bands (including the 100-piece Drum and Bugle Corps) with owner **Bob Yesbek** engineering. . . At *39th Street Music* in NYC **Stephen Broughton Lunt** produced a 12-inch single for MCA records featuring **Brenda K. Starr** singing "What You See Is What You Get," **Andy Wallace** engineering, **John Paul Cavanaugh** assisting. . . Recording at *Pyramid Sound Studios* in Ithaca, NY are **The Rods**. **Carl Canedy** is producing with **Alexander Pericalas** engineering. . . After finishing two months of tracking in Stowe, Vermont for **Deep Purple's** forthcoming LP, the *Le Mobile* remote truck moved on to Connecticut to record overdubs for the project at the residence of producer **Roger Glover**. . . Singer **Scott Anderson** has a contemporary Christian project in the works at *Azimuth Recording Studio*, Newfield, NJ. It is being produced and engineered by **Mark Schultz**. . . At *Music a la Carte*, **Rene** and **Yvette Barge** finished the production of a :30 jingle for Southern

Bell's *The Real Yellow Pages* to be aired in the Miami Hispanic market. . . At *Shakedown Sound* in Manhattan, **Arthur Baker** finished his 12-inch mix of **Jeffrey Osborne's** "Room With A View" for A&M Records, and has been producing and mixing two new 12-inch releases for Criminal Records. **Dave Ogrin** engineered the Jeffrey Osborne mix and **Dave Sussman** engineered Whiz Kid and Rockers Revenge. . . MCA recording artist **Kenia** was in at *Sound Heights* in Brooklyn working on the final mixing stages of her second album project. The album was digitally mixed with the talents of producer **Peter Drake**. Engineering and mixing was **Vince Traina** with assistants **Abdu Malahi**, **Wayne Koehler**, and **Gary Collins**. . . **Gary Corbett** and **Leslie Ming** were in at *Unique Recording* in NY mixing **Regina's** upcoming album for Atlantic Records. **Phil Castellano** engineered the project. . . At *Quad Recording* in NYC, **Nyte Shift** was in recording tracks for their LP on EMI/Manhattan Records, called *Boys Night Out*. **Randy Muller** produced with engineering by **Dave Ogrin** and **Tom Gartland**. . . At *Polymedia* in Boston **Houghton Mifflin** scored an original music track with composer **David Kowal**. The four minute video will be used by the College Marketing Division to promote various Houghton Mifflin titles throughout the country. . . **Reggie Lucas** has been producing CBS artist **Rebbie Jackson** at his new studio, *Quantum Sound* in Jersey City, N.J. with **Joe Ferla** at the board. . . Still at work at *E.A.R.S.* (East Orange, NJ), seven days a week no less, has been Columbia Recording Artists **Third World**, at work on their follow-up album to *Sense of Purpose*, which was also done in it's entirety at Eastern Artists. Handling the tag team engineering chores have been **Dave Dachinger** and **Dave Rowe**, assisted by **Tom Vercillo** and **Ernie Dimeo**. . . **Louis X. Erlanger**, aka **Junior X**, former guitarist with Mink DeVille, was in at *I.N.S. Recording* in NYC mixing the latest material from *The Slamhound Hunters*. **Kevin Reynolds** engineered the sessions. . . *Sound Heights* in Brooklyn, NY had the rock act **A.R.Q.** in doing final mixes on various titles which are being included in the group's initial EP project. On hand were producers **Martin Schneider** and **Eric Stuart**. Mixing and editing was done by **Questar Welsh** with **Abdu Malahi** assisting. . . At *Normandy Sound* in Warren, RI, engineers **Tom Soares** and **Karl Rasmussen** assisted by **Ralph Petraca** and **Mic Stern** mixed **John Cafferty & The Beaver Brown Band's** single "Voice of America's Sons" for Scotti Brothers records and Walt Disney Productions' soundtrack for the hit movie *Cobra* starring Sylvester Stallone. . .

STUDIO NEWS

Terminal Recording Studios in Jackson, MS, took delivery of a new Sony MCI JH-24 track tape recorder. Other new additions include: a Sony PCM F-1 digital processor, Lex-
—CONTINUED ON PAGE 81

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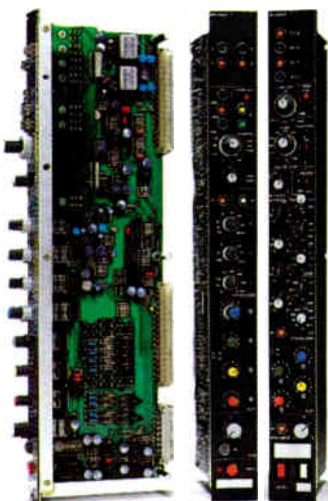
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prices. Choose from 10 different metering modules, 3 multi-track monitor options (including separate monitor EQ), mono or stereo faders, audio subgroups, automation compatible VCA groups, video switcher interfaces, subgroup reassignment modules, up to 3 solo systems, multi-function test generator, input selectors, limiters, compressors, patchbays with bantam or 1/4" systems, and up to 10 auxiliary busses.



Basic input modules feature 3 or 4 band EQ, microphone/line inputs, 5 pre/post-fade auxiliary sends, and channel overload indicators. Options include transformerless mic pre-amps on a subcard, separate transformerless TAPE input for remix, stereo input modules, stereo EQ, internal stereo X-Y/MS active matrix, stereo blend control, dual line inputs, variable HP and LP filters, user defined panel switches, and the list goes on.

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entire 900 console frame design is consistent with the advanced module design. A completely independent signal reference ground system assures preservation of individual circuit CMRR figures. The result is overall noise performance compatible with digital recording.

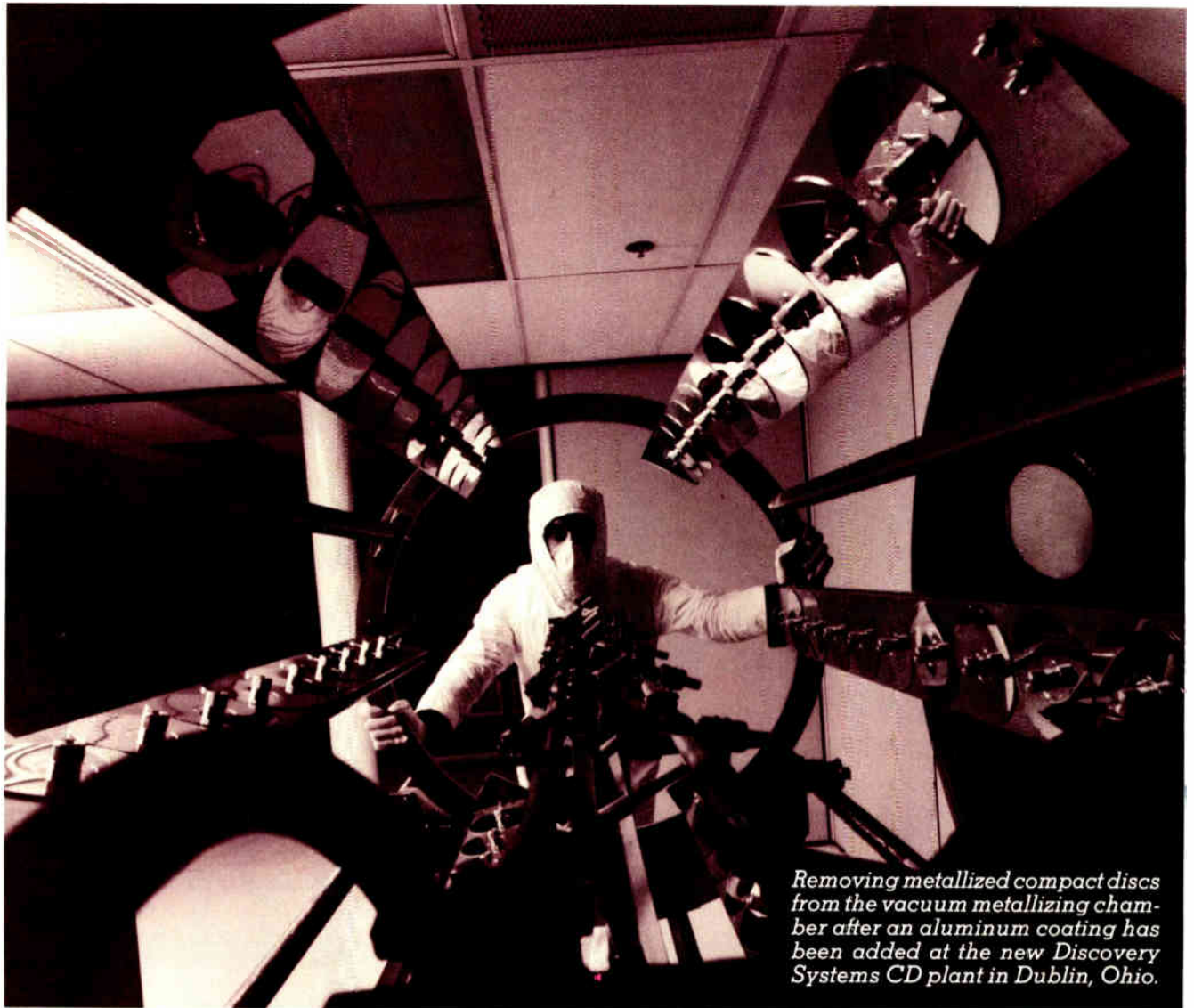
As time goes by. All 900 consoles adhere to strict Studer standards for precision and reliability. The frame is built on a rigid channel and brace structure, and each module uses pin-and-socket Eurocard connectors. Frame connectors are mounted on longitudinal master boards with solid support from horizontal and vertical frame members. All components, switches and pots are commercial/industrial grade from the best U.S. and European manufacturers. In sum, a 900 is built to last as long as a Studer recorder.

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For more information on Studer consoles, call or write: Studer Revox America, Inc., 1425 Elm Hill Pike, Nashville, TN 37210; (615) 254-5651.

STUDER REVOX

INSIDER · AUDIO



Removing metallized compact discs from the vacuum metallizing chamber after an aluminum coating has been added at the new Discovery Systems CD plant in Dublin, Ohio.

PRESSING PLANS

by Ken Pohlmann

About a year ago, I surveyed the state of affairs in compact disc manufacturing. I pegged worldwide pressing capacity at about 45 million discs, from plants located in Japan, Europe, and the U.S. Along with industry observers, I noted a manufacturing shortage; there simply wasn't enough disc pressing capacity to handle the demand.

Of course, discs didn't disappear from the shelves, no black market appeared for Wham! CDs, but the shortage quietly made its effect known.

Catalog expansion did not occur as rapidly as record labels hoped it would. Moreover, at the end of the distribution chain, waiting months for discs to appear, the consumer couldn't get the titles he really wanted to buy. He bought less desirable titles, and deferred some purchases. By some estimates, there was demand for 75 to 85 million CDs in 1985, but less than 50 million were manufactured.

Clearly it is a seller's market for discs, and venture capitalists and corporations are responding with sizeable investments in new pressing facilities. After lagging behind Europe and Ja-

pan, interest has been especially strong in the U.S. Will the under capacity problem be solved? Will over capacity result? What is current market share for the CD, and what expectations are forecast for the future? Will conventional injection molding techniques remain the staple? Whatever happened to alternative methods? Because things are happening so fast and furiously, I figured Insider readers would want to know about it.

Manufacturers have steadily increased player production to meet demand. Ironically, that has led to a glut of players on the market, particularly



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in the low-end price range. I've seen discounted players selling for as little as \$88, retail. On the other hand, because of the large amount of required capital and long start-up times, disc manufacturing facilities require more planning, and investment courage, and thus present the most critical element in the growth equation.

Presently, 16 manufacturing facilities supply the bulk of the disc market: CBS/Sony, Toshiba/EMI, JVC, Denon, Sanyo, Japan Central Tape Agency, and Matsushita in Japan, Polygram, Nimbus, M.P.O. ICM, Toolex-Alpha, and Sonypress in Europe, and Digital Audio Disc Corporation, LaserVideo, and 3M (CD-ROM only) in the U.S. Actual production capacity is a difficult number to come by. Actual

mathematically-minded, that's a 200 percent increase in CDs. The Terre Haute plant opened two years ago, with a capacity of less than 300,000 discs per month. Since then, over 10 million CDs have been pressed. Together with expansion plans at its Japanese plant, Sony claims that it will overtake Polygram as the largest producer of CDs.

Polygram's plant in Langenhagen, West Germany is the world's largest CD pressing plant, and could produce over 44 million CDs this year (that's about 120,000 daily). They have doubled the number of injection/compression presses to 60, and decreased cycle time from 35 to 22 seconds. Also, metalization and final QC have been streamlined. The plant is running three

of existing facilities, other corporations, start-up, and established, have announced plans to construct new mastering and pressing facilities. Foremost is the announcement of a co-venture by Phillips and DuPont to invest more than \$150 million in optical disk manufacturing. The new company, Philips/DuPont Optical, is already aiming at sales of \$1 billion, or 25 percent of the projected market, by 1990. By 1990, the venture is expected to have a capital investment of \$500 million, a \$60 million research and development budget, and 3,500 employees. Plans call for six pressing plants worldwide, producing 200 million optical disks annually. In an opening gambit, the partners are readying a CD pressing plant in Kings Mountain, North Carolina with production slated to begin in 1987.

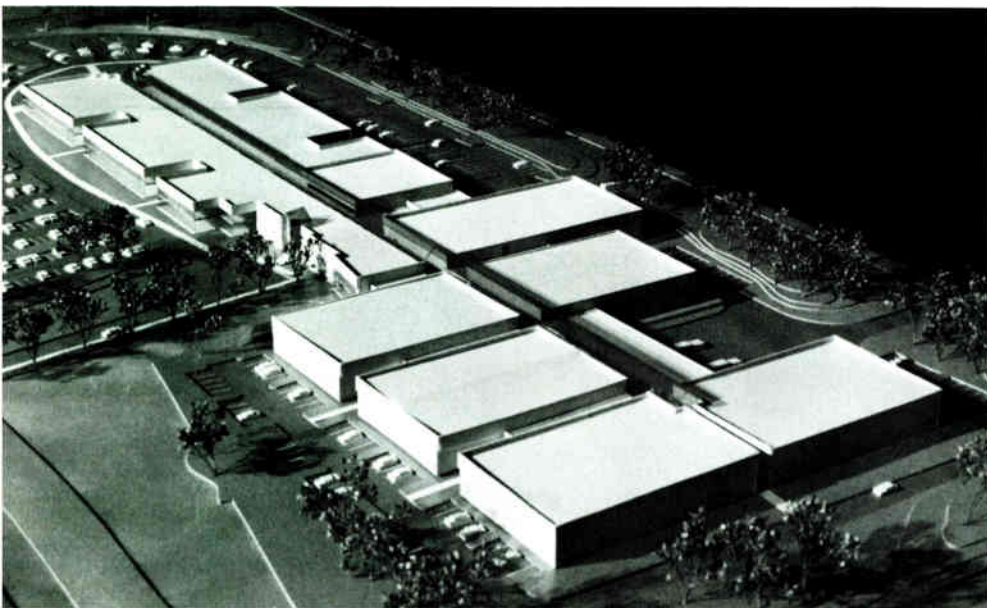
There are numerous other start-ups planned, both here and abroad. Several record labels have announced plans to go into the high tech manufacturing business themselves. Polygram has joined forces with Sunkyoung Chemicals Ltd. to establish a CD plant in Chunan, South Korea. A first year production target of three million discs has been set.

Warner Communications is adding CD pressing facilities to its already existing record plant in Olyphant, Pennsylvania, to produce 14 million CDs annually. Another CD operation is planned for its Alsdorf, West Germany facility, targeted at seven million CDs.

Capital Industries-EMI Inc., a unit of Britain's Thorn-EMI Ltd., has announced plans to add CD pressing to its Jacksonville, Illinois record plant, with capacity of about seven million discs. EMI Music has started pressing at their plant in Swindon, England, with a target annual production capacity of ten million discs. Musitech is preparing a plant in Abergavenny, Wales, and Distec is in pilot production at their Horsham plant, targeting 15 million CDs.

Denon America, Inc. is building a CD plant, to be located in Madison, Georgia. Initial production is put at 12 million CDs, with an increase to 18 million. CBS Records has announced that its New Jersey LP plant will be retooled for CD manufacturing.

Numerous other CD plants are in the works. Discovery Systems, Inc. is readying its facility in Dublin, Ohio. Capacity is planned for six million CDs annually, with possible expansion to ten million. Additional plans call for satellite pressing plants, using the main plant's mastering systems, to be operated by independent record labels. U.S. Digital Disc Corporation has selected a site in uptown, New York City, and plans to open a pressing facility



Discovery Systems facilities management site plan showing modular disc manufacturing plants for volume compact disc users in the recording industry.

production is always less than capacity, some factories boldly overestimate their capacity, and others are secretly forging ahead with expansion. However, whatever the actual number of discs being delivered to dealer's shelves, there is agreement that the quantities are still insufficient. Fortunately, moves toward expansion are rapidly increasing all of the numbers.

Sony's Digital Audio Disc Corporation, in Terre Haute, Indiana, has announced plans to double production from one million discs per month to 2 million by the end of 1986, and double production again to 4 million discs per month by the end of 1987. For the

shifts, seven days a week. Production could reach 60 million by 1987.

Nimbus, the first CD plant in the U.K., has announced plans to increase production at their facility in Monmouth, Wales, from ten million to 25 million discs in 1987. They are hard at work on a 24,000 square foot facility in Cwmbran, Wales, with plans for a capacity of 31 million CDs.

LaserVideo, Inc. in Anaheim, California, has an annual production capacity of two million discs. With parent company Quixote Corp. they are forging ahead with a larger facility in Huntsville, Alabama with a projected annual capacity of 60 million CDs.

Shape, Inc. in Kennebunk, Maine, has started commercial pressing, and plans expansion, with custom pressing and CD-ROM as specialties. Projections call for ten to 20 million CDs annually, in their new 100,000 square foot facility in Sanford, Maine.

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**COMPANY PLANT
NAME LOCATION**

Capitol-EMI	Jacksonville, IL
CBS Records	New Jersey
Cinram, Ltd.	Scarborough, Canada
ComDisc	Los Angeles, CA
Denon	Madison, GA
Digital Audio Disc	Terre Haute, IN
Digital Images	Washington, DC
Discovery Systems	Dublin, OH
Disque Americ	Drummondville, Canada
JVC	Tuscaloosa, AL
Laser Logic	Southern CA
Laser Video	Anaheim, CA
Laser Video	Huntsville, AL
Nestor International	Hauppauge, NY
Night Thunder	Meriden, CT
Orik Corp.	Southern CA
Philips/Dupont	Kings Mountain, NC
Polar Audio	Pittsburgh, PA
Praxis	Mississauga, Ontario
Shape Optimedia	Kennebunk, ME
Technidisc	Troy, MI
3M	Menomonie, WI
US Digital Disc	State of NY
WEA	Olyphant, PA

*Real and imagined CD pressing plants in the U.S. and Canada
(Digital Recording Report)*

with annual CD production of 17 million discs. Electro-Sound and Mitsubishi will co-venture a CD plant in the U.S. Southwest, with 12 million capacity beginning in 1987. Other plants in progress include Danish Big Ben in Sweden, Stet in Italy, and a plant in Czechoslovakia.

Given the current worldwide production capacity, plans for plant expansion, and plans for new facilities, extrapolation of current increases, and the varying timetables involved in expansion and start-up, we might estimate the growth of CD production. Loosely, current production might increase by 100 million each year through 1990.

Such an increase seems impressive, but will it meet the consumer's demand for CDs? To estimate the growth curve of a technology as explosive as the compact disc, only the broadest conjectures are appropriate. Nevertheless, we might base some guess on past sales figures of discs and players, and temper them with growth curves experienced in two related fields, the analog cassette, and video tape recorders.

First, let's estimate CD player sales, based on past sales figures. Annual player sales in 1990 could reach ten million units in the U.S., and 20 million units worldwide. Player population in the U.S. would then total about 30 million, and about 60 million worldwide. If anything, that is probably a very conservative estimate; markets have a way of exploding. For example, the dollar sales of VCR players rose from 65 million dollars in 1976 to 2.162 billion dollars in 1983.

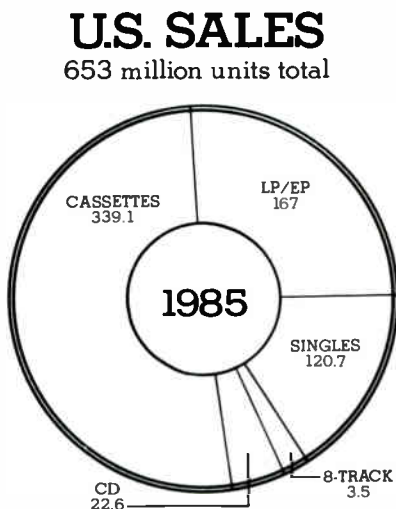
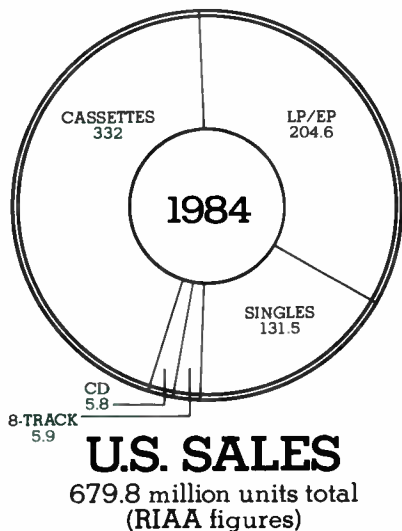
If ten CDs are sold for each of the 60 million players, that amounts to annual disc sales of 600 million by 1990. That's a big number for such a small disc, but again, there is historical precedent: for example, domestic prerecorded cassette sales exploded from 76 million dollars in 1973 to 1.812 billion dollars in 1983.

The bottom line: using his crystal ball, Jan Timmer, president of PolyGram International, predicted that CD sales worldwide would reach 700 million units by 1990, and 1.2 billion units (400 million in the U.S.) by 1995.

Thus, if presently announced plans for production increases and new production result in growth of 100 million CDs annually, supply may not quite meet projections for continuing demand. Unless production increases are stepped-up, the capacity curve could continue to fall short of demand. Of course, there is nothing as imprecise as forecasting, everything from hemlines to the price of oil effects people's buying habits, but the numbers

—CONTINUED ON PAGE 86

Pre-recorded music sales in the U.S. in '84 and '85.





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B A S I C S

by John M. Woram

By the end of last month's column, I had accounted for about half (that is, 42) of the 80 bits that the SMPTE time code assigns to each video frame. As a one-sentence review, the code counts hours, minutes, seconds and frames.

Hr:Min:Sec:Frame

12: 09: 59: 29 is followed by
 12: 10: 00: 00 (normal frame count at minute 10)
 and
 12: 10: 59: 29 is followed by
 12: 11: 00: 02 (drop-frame count at minute 11)

MORE SMPTE TIME CODE

Now let's see what to do with the leftovers.

At 30 frames per second, a one-hour monochrome program will contain 108,000 frames. However, the NTSC color system uses a frame rate of 29.97 frames per second. This gives us 107,892 frames per hour, which is 108 frames less than the monochrome standard.

Since the time code reader counts frames, this means that a counter that thinks there are 30 frames per second will need a little more than 60 minutes to count off 108,000 frames. At 30 frames per second, the additional time taken by those 108 frames will be:

$$\frac{108 \text{ frames}}{30 \text{ frames/second}} = 3.6 \text{ seconds.}$$

The Drop-Frame

To get things back to a 60-minute hour, we can instruct the time code system to drop (that is, to not count) two frames at the beginning of each minute, giving us;

$$108,000 \frac{\text{frames}}{\text{hour}} - 60 \frac{\text{minutes}}{\text{hour}} \times 2 \frac{\text{frames}}{\text{minute}} = 107,880 \frac{\text{frames}}{\text{hour}}$$

This works a little too well, for now we're 12 frames under our goal of 107,892 frames per hour. To make the final correction, the system is programmed to drop the two frames per minute as indicated, except at the start of minutes 00, 10, 20, 30, 40 and 50. This adds $6 \times 2 = 12$ frames to the count, giving us the required 107,892 frames per hour.

When this drop-frame code is in effect, the following sequences will be seen:

The Drop-Frame Bit

To indicate the presence or absence of drop-frame code, bit 10 is designated as the Drop-Frame flag. The bit is set at 1 to indicate drop-frame code, and at 0 if drop-frame is not used.

The Color-Frame Bit

Although optical film may be spliced at any frame, color videotape may only be edited at the beginning of every other frame. So if the frame sequence is designated A, B, A, B, . . . , an edit can be made at any frame B/A junction, but not at a frame A/B junction. If an edit is made between frames A

Bit 11 in the 80-bit time code word is the so-called color-frame flag. It is set at 1 to indicate that the time code sequence matches the color video signal's frame characteristic, so that the SMPTE frame count matches the video frame as follows:

00 01 02 03 04 05 06...
 (SMPTE frame count)
 A B A B A B A...
 (Video frame characteristic)

Unassigned Bits

In addition to the assignment of bits 10 and 11 as drop-frame and color-frame flags, four additional bits have been reserved by the SMPTE for future use. Until otherwise assigned, these bits (27, 43, 58 and 59) are set at 0.

User-Assigned Bits

So far, we've defined the use of the following bits: ↴

Bits	Used to define	Total
1 - 4, 8, 9	Frames	6
10, 11	Drop-Frame, Color-Frame	2
16 - 19, 24 - 26	Seconds	7
27	Unassigned (zero)	1
32 - 35, 40 - 42	Minutes	7
43	Unassigned (zero)	1
48 - 51, 56 - 57	Hours	6
58, 59	Unassigned (zeroes)	2
64 - 79	Sync Word	16
	total	48

This leaves 32 bits, in eight groups of four bits each, left over. These are defined as User Bits, and are available to be used as required. (More on this later.)

Recording the Time Code

Is SMPTE time code an analog or a digital signal? It certainly is.

On the off-chance that doesn't say it all, let's get into a little trouble by having a closer look. An audio signal is recorded on a digital tape recorder in PCM format; superficially it looks like a square wave of continuously varying frequency. If you've ever listened

and B, an onscreen horizontal picture shift may be seen, if the resulting edit produces a sequence such as ABA BAABAB or ABABBABAB. (The trouble spots are underlined.)

If the even-numbered SMPTE time code frames correspond to A frames (and therefore odd-numbered frames are B), the correct edit points can be observed from the time code itself. In other words, edits can be made at the start of frames 00, 02, 04 . . . but not at frames 01, 03, 05 . . .



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to one it's not very musical, and one tune sounds pretty much like any other. In fact, if you can name that tune... Anyway, on playback the PCM signal is converted back to analog, and you know the rest.

The SMPTE time code is already a digital signal, with a very low sampling rate of 2,400 Hz. But unlike digital audio, each sample contains just one bit of information. So the bit rate is 2,400 bits per second. If one listens to the code, it will sound like an audio square wave fluctuating within the 1,200 Hz (all zeros) to 2,400 Hz (all ones) range. Of course, these range limits are never reached, since neither a single frame word, nor the 30 of them within one second, will ever be all zeroes or all ones.

So, how does one record a reasonably low-frequency "audio" square wave? Should it be run through an A/D converter, so that it can be recorded just like any other digitized audio signal?

While working on that aspect of recording time code, don't forget the tape factor. Analog tape is optimized for low-frequency (analog audio bandwidth) non-saturation recording. By contrast, digital tape is designed for high-frequency PCM saturation recording only. So, what do you do with a signal that combines the low frequencies of analog with the PCM coding of digital?

On a strictly-analog recorder, the time code signal is recorded at a compromise level which is not too high to cause crosstalk, nor too low to be read back. In New York City, Sid Zimet's Audioforce, Inc. is a major supplier of digital rental machines, and is often involved in both analog and digital time code work. Zimet recommends setting up the analog system, and gradually dropping the time code level until the reader just fails to respond. Then raise the level about 5 dB. That should be high enough to reliably read the code, yet low enough to keep it from bleeding into the analog audio tracks.

Most digital multi-channel recorders have a dedicated time code track, as well as one or more other auxiliary data tracks. In theory, the time code could go on any of these tracks, but the dedicated track is usually set up to make it difficult to accidentally erase the code later on. The track is optimized to read zero crossings; that is, the points at which the waveform crosses from positive to negative, and vice versa. Within reason, it doesn't really matter what shape the waveform is in, just so long as the zero-crossing transitions between—and in the case of a digital 1, in the middle of—each bit cell can be read.

The code is recorded and played back as is; that is, without A/D and D/A conversions. However, you could also record the time code on one of the regular digital audio channels, in which case the conversions would be made. Sometimes this is done by the white-knuckle crowd, who want to have a second/backup/safety code, as insurance against the unthinkable happening.

And now and then you may find a multi-channel tape which contains more than one complete audio program. In this case, each program may need its own time code, and so a spare digital audio channel gets reserved for this purpose.

Time code on a regular digital audio channel does have the disadvantage of not being readable if the channel is muted while the machine is shuttling back and forth, or otherwise getting up to speed.

"On an analog recorder, the time code signal is recorded at a compromise level which is not too high to cause crosstalk, nor too low to be read back."

Time Code and Assembly Editing

In any kind of post-production work, a master tape may be assembled from program segments copied from several sub-masters. Each sub-master has its own time code, and unless there was an extraordinary amount of pre-production time code planning (which is unlikely), there will be innumerable time code conflicts. For example, there will be something recorded on every sub-master at say, 2 minutes, 37 seconds, etc. One of these will eventually come before the other, and sooner or later there will be an edit that wants to go from 4:03 to 2:37, and so on.

Having a tape in which 2:37 comes after 4:03 isn't going to do much for the time code reader, especially when it tries to find the punch-in that comes at 3:02, which is definitely before 4:03—unless it's after 2:37—or maybe it's somewhere else.

To get around this sort of horror story,

the master tape gets its own time code, recorded continuously along its entire length. The code is recorded continuously along its entire length. The code is recorded prior to using the tape for assembly editing. Then the program—only from each sub-master (whose codes were also pre-recorded) is copied onto the master, where it becomes identified with the new time code when any additional work needs to be done.

And when it's all finished, you discover that a segment in the middle of the master tape isn't really right. Now all you have to do is guess where the segment really begins and ends, and then do a re-edit.

Using User Bits

Here's where those user bits on the master tape can come to the rescue. Since they're just lying there doing nothing, the time code from each sub-master can be copied to them, as the sub-master is copied to the master tape. Now—or rather, three weeks from now—you can read the time code in the user bits to see where that section of program came from.

A Long-Line Time Code Application

When two machines are run in sync, they don't necessarily have to be in the same room, or even in the same state. During a recent NAB convention in Las Vegas, Bell Labs wanted to do an A/B comparison between two machines. To keep it interesting, only the master machine would be on the convention floor. The slave deck would be in a Bell Labs facility. The facility would be in Holmdel, which is not exactly next door to the convention center. As a matter of fact, it's in New Jersey.

Audioforce arranged the setup. The Las Vegas master transmitted the time code via satellite to New Jersey, where Zimet sat next to slave machine B. He started it, with an offset of about four seconds, to account for the time it takes time code to fly from Las Vegas to New Jersey, plus the time for the machine B audio to find its way back to Vegas. Once the two machines were locked in sync, the demo continued. For about a week.

That application suggests a bunch of others. Think of the singer who can't make it on time to a studio on the other side of the world. Just transmit the audio-plus-code to wherever, and sing along onto a separate tape. Then ship the vocal tape back to wherever everything else is, and transfer it to the same master reel. If there's not enough room for it, so what? Leave it on its own reel. But just don't lose it—time code can't take care of everything. ■

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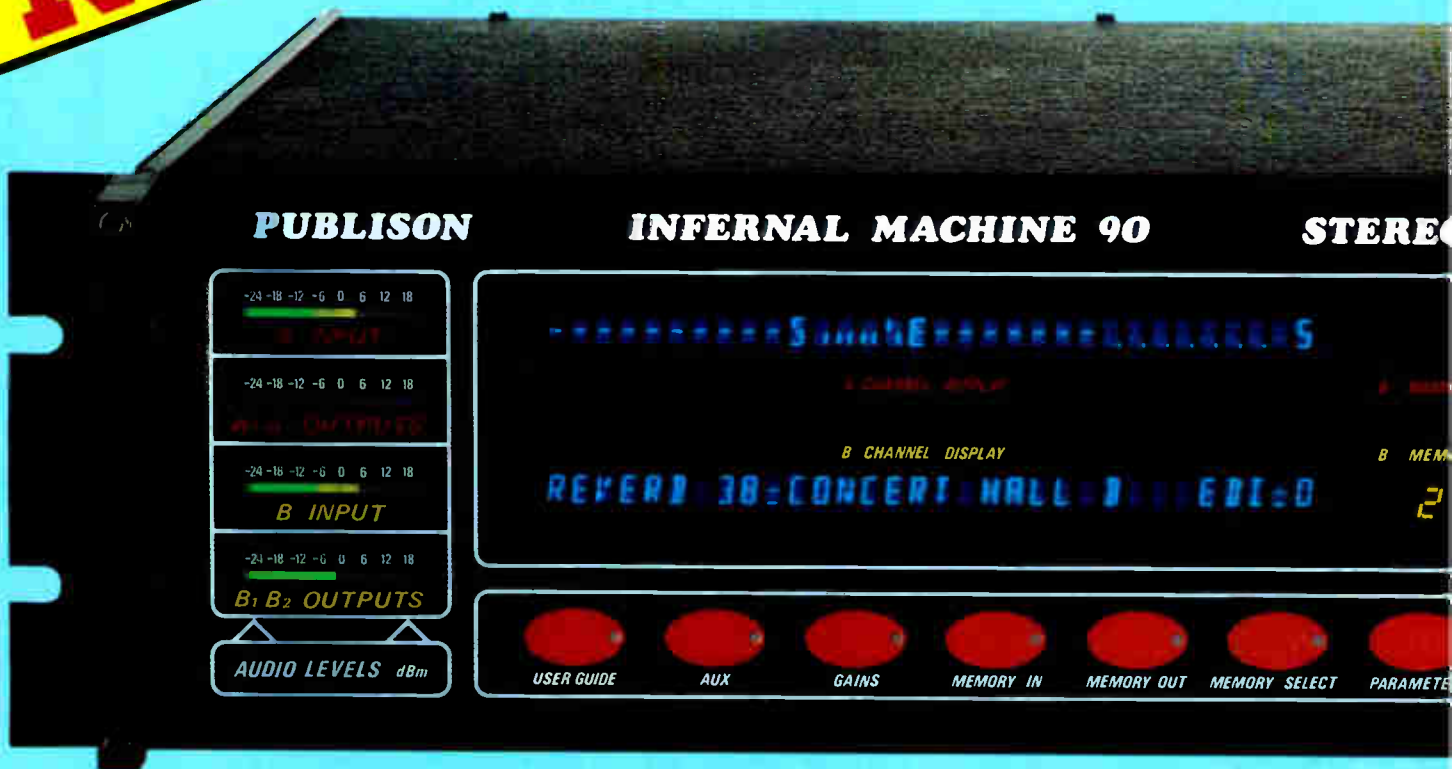
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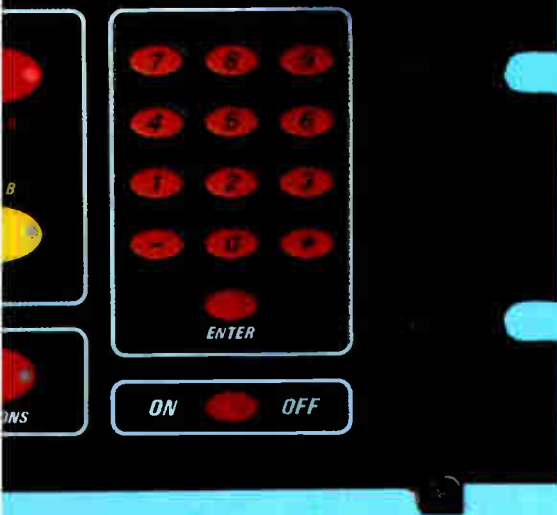
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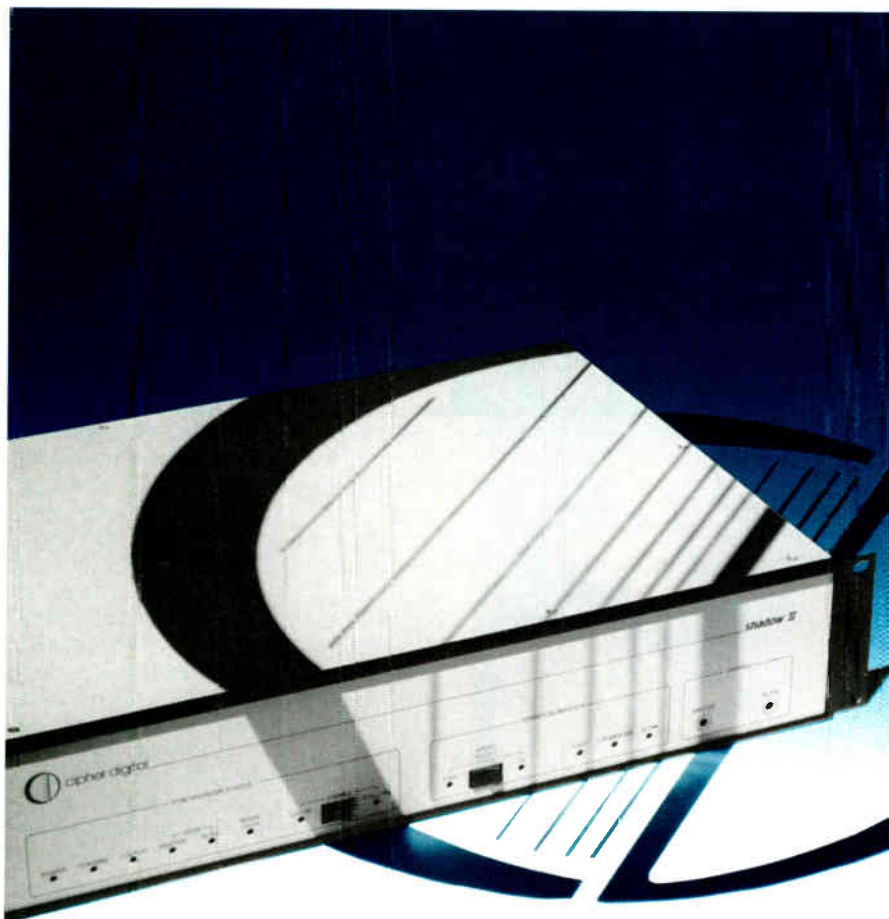
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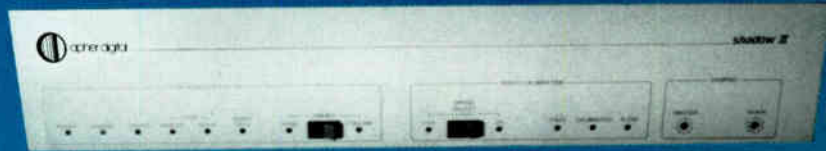
involves equipment upgrades and replacements. Start with your audio monitors, then take time and experiment. Effective multi-channel sound is a function of art as well as science, of technique as well as technology. The capital costs involved in new consoles, multi-track machines, and audio signal processors are considerable, particularly when compared with the prices you were paying ten years ago. The key success is measuring the return on your investment. This must be calculated in terms of overall quality, which your audience will increasingly expect, and most importantly, in terms of production efficiency, which your operation demands."

In 1982, Oxford, England-based Solid State Logic introduced the SSL Stereo Video System, which was the first computer-assisted audio console designed specifically for stereo television soundtrack production. It gives television audio engineers precise control over 128 different sound sources simultaneously while adjusting tone, loudness, and the stereo position of each sound individually. After the individual sounds are processed, they can be combined into groups of related sounds, which can then be divided into stereo submixes, which each consist of only part of the soundtrack (i.e., one submix may have all of the speaking parts, another music, and a third effects).

This process of grouping and sub-mixing permits the engineer quickly to control the overall mix of dozens of individual sounds by using only a few controls. As a further aid, the unit houses an onboard computer which controls all of the audio and videotape machines involved in the process. Another part of the computer holds all of the engineer's level adjustments in memory, which lets the soundtrack be built up in sections. Yet another computer stores the positions of all of the control panel's 6,500 knobs and switches in the event that the process needs to be duplicated at a later date.

Streeterville Studios in Chicago took delivery on this country's first SSL 6000E equipped with onboard stereo EQ. "We can contour EQ changes in real time to SMPTE time code on an individual instrument or on stereo program material," Streeterville's Jim Dolan, Jr. says. "What this means is that if we have a musical score on a video production that starts out very quiet and soft, and then builds up to a ballsy ending with tremendous orchestration and many voices, we can now add time-changing EQ contours into the program that brighten up the top, and as the track builds, backs off and smooths out the hard edges in real time."

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San Francisco-based Orban Associates currently manufactures a host of stereo television broadcast hardware. Among them are a SAP Generator (left), a stereo generator (top right), and an audio processor containing a loudness controller and Hilbert clipper.

are presently many major manufacturers of essential stereo transmission components ranging from synthesizers to audio time base correctors. San Francisco-based Orban Associates claims to have a lock on approximately 70 percent of the broadcasting market in their area of manufacture. Right now, they are building products ranging from an automatic stereo synthesizer to stereo generators and an audio processing system which includes a loudness controller, high frequency limiter, and a Hilbert-Transform clipper among other things.

"The idea that you have to rip everything out and start from scratch to go stereo is a total myth," Howard Mullinack, Orban's marketing and sales manager says. "We've found that a station can be on the air for about \$20,000. For that amount, you can get a stereo synthesizer, audio processing in stereo, a stereo generator, and some monitoring capability. Over a period of time, you can upgrade the rest of your studio, but, in my opinion, it's not desirable to do everything at once,

because we're looking many years down the line before everything is produced in stereo. There will be tons of mono source material to deal with for quite some time. Taking your time about converting will also give television engineers a period to adjust and learn how to use the medium. One of the greatest stumbling blocks is simply understanding what's going on."

Understanding is a key element while stereo television is in its neophyte stages. For that reason, many in the recording world have taken to offering those in stereo television production consulting services. Murray Allen, president of Universal Recording Corporation is one such person. "In my role as a consultant, I teach good film techniques," Allen says. "Producers shouldn't pan the hell out of program material, and the dialogue should come out of the center. Ambient sound effects should be in stereo, and fly-by sound should be panned. Also, since there aren't that many stereo sets in homes yet, everything should be listened to in mono. That way, there will

be no margin for an accident."

Technically, phase problems generally plague television engineers working with stereo for the first time. Unlike mono, every wire in a stereo broadcast has a meaning. Even if there's one miswired pin, everything could go out of phase. Additionally, a big problem with stereo is that you may have a signal for a left channel traveling 100 feet, and one for your right channel traveling for miles through another routing switcher. By the time both signals get back to the same point, a phase problem can easily develop. There are devices available for phase correction, but there is still a lot to be discovered on the engineering end.

Regardless of the problems associated with start-up stereo television broadcasts, one thing remains certain: the technology is here to stay. Consumers will no doubt latch on to the concept and hold it up as an American icon equal to the automobile and automatic dishwasher. Now, it's up to the engineers to sit down, retool, and deliver the goods. ■

VCR'S IN THE CONTROL ROOM



by Linda Jacobson

Here's the scoop. You run a magnificent 24-track studio. Your regular clients include musicians, a couple of local radio stations, and the biggest ad agency in town. Lately, however, you're hosting more and more jingle producers and industry marketing consultants. They want you to create and enhance "state-of-the-art" sound for video footage that's already shot and edited. Time to quit visiting the VCR rental house (their stuff's been around the block a few times, anyway), and buy your very own, brand new, control room U-matic. Maybe a hi-fi VHS or Beta machine, too? Better get some advice.

If you contact the pro audio dealer Audioline (formerly known as Flanner's Pro Audio) in Waukesha, Wisconsin, you'll probably be hooked up with Colin Wood. He's the Audioline service manager, and resident audio-for-video expert. And he would say to you...

"When you buy a VCR for video work-print playback while building soundtracks, there are always critical trade-offs. We recommend selecting one that has search and still-frame control capabilities, so you can slow the video right down to a crawl. It's also desirable to have a third address track, for time code, to facilitate stereo layback. Or if it's desired to layback

the final audio to 3/4-inch tape, which is often required in industrial video.

"Often, people have already bought the very basic 3/4-inch VCR in the Sony line, the VO-5600, which was probably the wrong choice. It doesn't have search capability, and search is highly desirable when you're doing audio-for-video. We recommend one in the Sony 5800 series, or the 5850 (edit recorder) if you want more extensive editing facilities.

"Although the most economical machines do not have search control, they can be slaved to a multi-track tape recorder that has extensive search and cueing facilities, if they're locked via a state-of-the-art synchronizer system such as the Adams-Smith. So that's the trade-off; save money on the VCR and you'll spend it on the synchronizer. It's better to have the VCR with search facilities. It's easy enough to get one; the VCR market is very competitive, and the machines are available at a markdown. There are many video dealers that sell gear at a discount.

"We're seeing an increasing number of studios locking more multiple arrays of transports, such as one-inch, 3/4-inch, and audio machines; interlocking up to five machines for editing purposes is now possible, with the availability of the Adams-Smith compact controller. A lot of people are getting into more sophisticated audio production work for video because of that.

"Half-inch isn't commonly used, but the Panasonic AG-6300 is coming into vogue now. That's VHS, but a more professional type machine (with search and external sync) than systems for the home.

"In the U-matic category," opines Wood, "Sony is the best way to go. They invented the format, they've got the biggest range of machines, and they're very competitive in quality and price."

With this in mind, *Mix* surveyed a small sampling of 24+-track studios in the North Central region of the States. We asked each studio rep the same questions: what kind of A/V work does your studio handle, and what percentage of all projects does that represent? How and why did you choose your particular VCR brand and/or model, and did you purchase it from an audio or video dealer?

Survey says...

"We handle a lot of industrial film scoring work, stuff that's been trans-

ferred to 3/4-inch video. At least one third of our work is this stuff, including for Amway, Dow Chemical, General Motors, and Upjohn. Michigan is really industrial," reports studio manager Glenn Brown of Audiograph Productions in Okemos, Michigan (near Lansing). "We use a Sony VO-5850 and an older VO-2610, both 3/4-inch U-matics, along with an Adams-Smith synchronizer. We've had a VCR for quite a while, though the 5850 is new. The 2610 didn't send pulses, so we had to wait longer for it to cue up, wait for it to see code from the other machine. So we got the 5850, because it follows tach pulses. It's totally in sync, even in rewind mode.

"We also needed the ability to freeze-frame and look at the video in crawl mode, to find specific time code reference points. We got the Sony—from a local video dealer—because it's just one of the standards in the industry, and it's reliable. A good machine.

"Eventually it would be nice to have a one-inch machine, a Sony BVH, but that's not as important as having a new console, or new digital audio machines. We spend most of our money on new audio gear. And we can do pretty much everything with 3/4-inch; anyway, for layback, most clients take it down to Grand Rapids or Detroit."

Speaking of Detroit, that's where Pearl Sound Studios, owned by Ben Grosse, has been using a video machine for about six months—for a rather different purpose. Ben reports, "I have a VCR we're using for digital recorder transport, a Sony Hi-Fi Beta, the SLH-450. It's a digital audio recorder we use for album work. About 20 percent of our projects, which are mostly rock and roll and R&B, go that way. What was important when I got it? Well, I'm not using the audio portion, I'm using the video portion to store digital audio data. I needed a Beta machine for PCM recording, and I got a good price on it from an audio/video dealer in New York. It's got some functions that are good for digital recording, such as a PCM switch that changes the error detection. I'm eventually going to get a 3/4-inch machine, but right now all our time is going to album work, so I have no real need for it."

Likewise, not all the large studios own VCRs—some still rent them. One example is Royal Recorders, at the Americana Lake Geneva Resort in Wisconsin (recent clients include Adrian Belew, Cheap Trick, Chuck Man-



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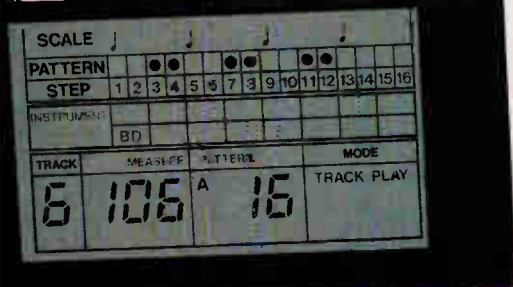
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PATTERN

CLEAR SCALE LAST STEP INST. METRO

CLEAR BACK FWD LAST MEAS

TRACK

MODE PLAY

TEMPO MEAS

PATTERN GROUP

A B C

1 2 3

TRACK NUMBER

LEVEL

DOWN UP

TEMPO

VOLUME

START/STOP

LOW CONGA (1) HI CONGA (2) TIMBALE (3) LOW COWBELL (4) HI COWBELL (5) HAND CLAP (6) CRASH CYMBAL (7) RIDE CYMBAL (8)

BASS DRUM (9) SNARE DRUM (10) LOW TOM (11) MID TOM (12) HI TOM (13) RIM SHOT (14) CLOSED HI-HAT (15) OPEN HI-HAT (16)

LEVEL (17) ACCENT (18) ENTER (19)

LIGHT HEAVYWEIGHT

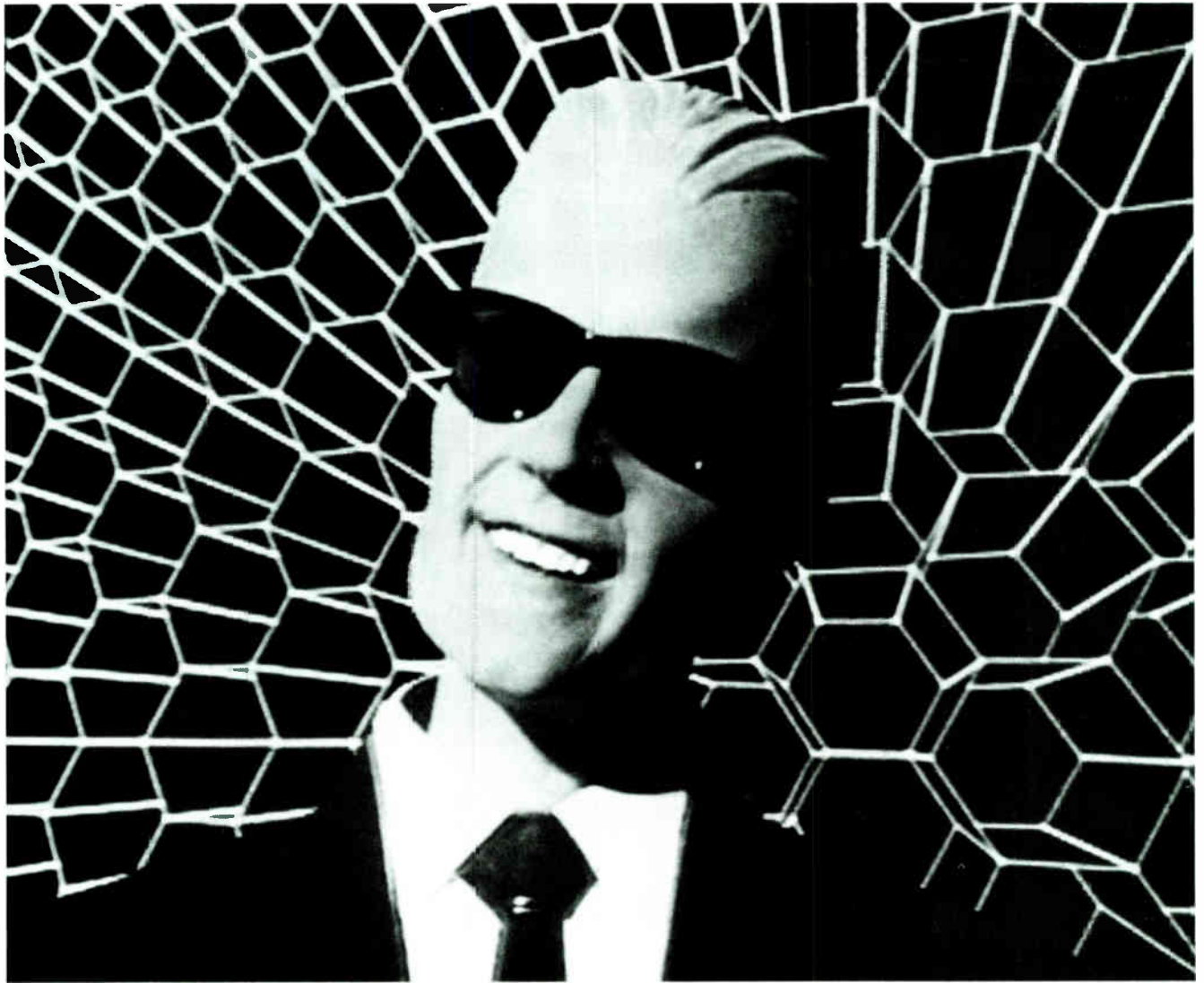
Weighing in at only 950 grams (that's 2 lbs. 2 oz. to us), Roland's spunky new TR-505 Rhythm Composer sports a winning combination of traditional drum-kit and Latin Percussion instruments. But don't let its small size and modest price fool you—the TR-505 boasts heavy-weight digital PCM samples of kick, snare, toms, handclaps, high hats, cymbals, timbales, congas and cowbells—16 voices in all to give your rhythm tracks, rehearsals or live performances a punchy professional drum sound and feel. Behind all this brawn is a sophisticated computer brain with more than enough smarts and memory to make this drum machine your ally in the fight against boring drum programming. Program 48 of your own drum patterns (in real-time or step-time) or take advantage of 48 useful preprogrammed patterns—either way you're off and drumming right away. The large LCD display helps you keep track of every beat and performance parameter. But that's not all, our new champ still has a few moves you haven't seen. The TR-505 is a thoroughly modern MIDI instrument loaded with MIDI features and controls including an ability to respond to dynamic drum parts. Battery or AC powered, the versatile TR-505 scores an easy Technical Knock-Out over the competition. But don't say we didn't warn you—this little powerhouse will knock your socks off!

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MAX HEADROOM

CLEARANCE FOR TAKE OFF

by Dan Daley

Imagine, if you c-c-can, E.T. with a wit as quick and sharp as David Letterman's, a delivery as rapid-fire as Robin Williams' in full mega-schizoid hyper-gear, an irreverence rivaling Richard Pryor's. Now throw in a promo blitz and marketing campaign that makes the little interplanetary runt look like a box lunch extra from Central Casting.

Go home, E.T. Hello, Max Headroom. Max, the shuttering digital/mechanical anthropomorph of the Cinemax cable channel's video-talk show, *The Max Headroom Show*, is rapidly becoming as ubiquitous as E.T. without being nearly as cloying. Perhaps an evolu-

tionary portent of things to come in an ethically-deficient nuclear world, Max Headroom has launched a British invasion of technology and hard-core hip humor that would make both Ian Fleming and Monty Python proud.

Born/created/developed in 1985 by British producer Peter Wagg, Headroom, the part-computer, part-human ultimate talking head, has concluded a domestic deal with *Time/Life*-owned Cinemax, which puts him/it in charge of the half-hour, bi-weekly talkshow carried on the movie channel. But that's just for starters: ABC-TV has signed him for a pilot for the network. Along the way, the raucous robot has also become the subject of two U.K.

best-sellers, a T-shirt that outsells all but Madonna's, an Art of Noise video and single, a line of cosmetics, a computer game and a very serious deal with Coca-Cola ("C-C-Catch the wave") to work as pitch-android.

Regarded by some cynical pundits as the next century's Johnny Carson, Headroom is part beast/part man, constructed of a latex mush poured over the face of Canadian actor Matt Frewer, who portrays Headroom (the process takes four hours and Frewer has said he thinks of it as "facial rape"), and computer technology including sampling and real time voice pitch modulation using the same computer

—CONTINUED ON PAGE 141

GETTING LATE NIGHT WITH DAVID LETTERMAN

ON • THE • AIR



**“We’re
Doing
Television,
Not
Brain
Surgery”**

by Dan Daley

It's a Monday afternoon and the turgid humidity that has smothered New York City most of the summer shows no sign of either remorse or retreat. Looming over Fifth Avenue, the imposing structure of 30 Rockefeller Plaza, home of NBC, sits squatly in the center of this tourist mecca. But insomniacs and night owls know better than to hang out in the vicinity too long—you might get hit with an errant verbal missile thrown from the eighth floor, distorted abuse projected by a bullhorn. You could be an innocent victim of a long and weird feud. “It’s only a joke,” taunts the voice through the bullhorn.

Somewhere in this legendary building—which is to broadcasting what the Brill Building is to songwriting—is a man who is being sued for a million dollars by a woman who claims he has libeled her dog, ruining its show biz career. And somewhere near him are the people who make sure this man gets on national television four nights a week.

The person in charge of the audio portion of *Late Night With David Let-*

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terman is rubbing his eyes at 2:30 in the afternoon. He's been at the studio since 6 a.m., as usual for a Monday while the show shares Studio 8H with *Saturday Night Live* and NBC Sports, and notes that there is still a run-through to be done before the show begins its one-hour taping at 5:30 that afternoon. And while the gap-toothed comic host of early morning mayhem likes to describe Mondays as the day "we just don't care," Paul Johnston, head audio engineer for this circus of sophisticated sarcasm, looks forward to the fact that he will have as much time to get levels and sounds on the band as most engineers have to get their coffee right.

Paul Johnston does admit to feeling

overwhelmed at times. The soft-spoken Brooklyn College graduate says, "We literally have a half an hour to do all the musical parts on the show, including musical guests. The band doesn't show until 4:00 or 4:30. Most people get three hours to think about miking a drum; we get three minutes. It's literally one-pass audio. Sometimes I'm getting levels on the band when they're doing their audience warm-up. At any minute all hell can break loose. If I've learned anything over the past four years, I've learned to be quick."

He leans back and adds, "But like David says, we're doing television, not brain surgery."

Having started out on the tech crew as an assistant on Letterman's abor-

ative morning show back in 1980, Johnston, who took over the console in 1982, feels an affinity for the quick-witted, abrasively funny celebrity. And he especially identifies with the band that has made *Late Night America's* first rock and roll talk show. "We, [band leader] Paul Shaffer and I, decided that we didn't want to sound like other shows," he declares. "We grew from a very simple four-piece band using only a few effects. In the beginning it sounded very dry and rough, but it expanded and the sounds began to evolve. We've taken the band's music, which is sort of an oldies/Philly-type sound—and updated the sounds. Basically, that's where Paul's music comes from. We're not into drum machines and heavily synthesized sounds. We're not into anything that sounds slick. And that's very characteristic of the show itself. That's how David wants it."

It's a love/hate relationship of the sort that many engineers have with good musicians: exuberance versus headroom. "Volume is a constant problem," Johnston laments. "You have to understand that they're feeling the energy and they want to play loud. My problem is when I have to get vocals; we're in such close confinement here—it's not an outdoor stadium—and often the SPL levels start affecting the vocals."

The band (Shaffer, bassist Will Lee, drummer Anton Fig and guitarist Sid McGinnis) is set up on the left side of cavernous studio 8H, which they share with other NBC shows while *Late Night's* real home, 6A, undergoes extensive renovations, including the addition of a new console. Surrounded by video monitors in his comfortable nook to the left of the main control room, Johnston surveys the aging Neve console that has served NBC well over its nine-year life. "This was the first one in the building. Neve built them for NBC's specs," he says, adding that the network's parent company, RCA, has stopped making broadcast equipment. The board is a straightforward 36x2, with a 20x20 matrix and 16-bus capability, although Johnston says he usually uses eight.

Since *Late Night* is the first NBC show to use a house rock band, (*Saturday Night's* doesn't play with guests) the task has fallen to Johnston to acquire the sorts of outboard gear to accommodate the music, a task confounded by NBC's red tape. "Music has changed in the last five years, and so have we," he says. "Paul started out with a B-3 and a Yamaha piano, and now he also has an Oberheim OB-X and a Kurzweil. We have to keep the sounds on the show contemporary."

A Lexicon 224 digital reverb was

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Johnston's first victory. Other items have dribbled in, although some, like the Yamaha REV7 are rented for the time being.

Since time is at such a premium on the show, Johnston has developed some standard miking techniques for the *Late Night* band, which also give him an edge over the inherent anathema of compressed television sound for high-spirited, high-dB rock and roll. There is a Sennheiser 421 on the kick drum, an SM81 on the high hat and two 414s for overheads. The snare is tight-miked with two SM57s which Johnston routes through the REV7s "gated reverb" preset, (which he says adds fatness to the snare), then finally through the Lexicon's Concert Hall setting. Vocal mics are Audio-Technica ATM 41s, with Sennheiser 416 super cardioids on the booms.

The band is monitored at the station just behind and to the right of the bandstand. A Yamaha 1516 16-channel mixer handles foldback duties, with the band's E-V floor monitors sent through matrix buses, since Johnston feels that those are more discrete and provide better individual mixes than the program buses. "They're like any band," he says with a trace of pride. "They always ask for more monitor, then they play louder, then they ask for more, then play louder. It's a constant battle." There's no one volume culprit, says the engineer. "It depends on who's in the mood that night."

"Well, we're very loud," says guitarist Sid McGinnis, "but I wouldn't say we're too loud. I'd say we're loud enough. It definitely gives Paul less control over us, and we like kind of having a little control over ourselves," he adds with a laugh. "Dave never complains. The second day I was on the job I noticed my amp was aimed directly at him. I said, 'Dave am I killing you?' and he said, 'Naw, turn it up if you want. You guys do what you want over there.'

"The natural ambience of all the open mics keeps it from sounding canned. I really think the key to that is that we do play loud, which is probably the opposite of what Paul Johnston would say."

McGinnis, who characterizes himself and his mates as "a television garage band," says Johnston always asks them to play the show's theme to check levels and that now and then the band will ask him to make a 2-track recording of the soundtrack so they can review the sounds. "We watchdog ourselves," is the way he puts it.

Guest artists—either those plugging a record or appearance, or simply sitting in—having to accept the constraints that Johnston must work with, and most do so graciously. "The best people come in with the attitude that they're not trying to reproduce their record. That makes things very uncomplicated. If they need an effect or two on their voice, that's fine, but if we

have to spend 15 minutes getting a sound on their voice, that's half of all the time we have." He said he rarely encounters ego problems with guest performers

Stand-up comics are a staple of *Late Night* and Johnston has to contend with them, too. "I like to mic comedians off the boom because I can hear the house. If I close-mic someone, it sounds very dead. The first time [clamorous comedian] Sam Kineson was on the show he told me, 'I scream.' I said fine and he screamed and I set the compression. Then we went to air and it was ten times louder—the needles pegged and it was quite distorted. I thought to myself, 'Thanks a lot.'"

Johnston has a Lexicon program called "Small Room" for comics who prefer hand-held mics. "In that case, during a commercial I'll take the Lexicon from the band and give it to the mic and give it a little bit of that program."

Down on the set, amid the clutter of the pre-show setup (a handtruck bears the Letterman-esque inscription, "Toulouse Lau-truck"), Johnston further explains the problems of limited resources. "I have to be wary of real estate on my console," he says. "This is a comedy show first, a music show second, and skits take up any number of channels for mics. I could do more miking of the band, but I have to watch running short. Between guest performers and the comedy, I'm always in conflict

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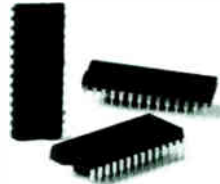


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with the main show in that respect."

While David Letterman has had fun at NBC's expense over the implementation of stereo broadcasting, it's less than funny to Johnston. "One day RCA decided that we were going to go stereo, just like that, with very little communication between operators and management," he recalls. "One day we were mono, the next we were stereo. They had to rewire the grid for stereo. The board, an old Neve, is stereo, but unfortunately it doesn't have any pan pots, so I either hard right or hard left things or run them in the middle. And after some experimenting, I add effects returns on the opposite channels to balance things out. It's all done on two buses."

Johnston feels the reason for the move to stereo was RCA's entry into the consumer stereo television set market. He's ambivalent about it: "It hasn't been a major hit, but it hasn't hurt anything either."

But stereo TV has added to his workload; since most households sets are still mono—and will be for some time if his prognostications are correct—Johnston has to constantly check mixes in both modes. "When you add left and right together to get a mono mix, you get a 3dB buildup in the middle. They had the same problem when records went from mono to stereo: when you played a stereo record on a mono record player, you had that buildup, and there was nothing you could do about it. If you have a piano lead going in a band and it's a stereo mix and you go back to mono, that piano will be 3dB hotter than the rest of the mix. There's not much you can do about it except try to compensate ahead of time. You also have to watch your phase meters, because if you don't and you go to mono, nothing will be there at all."

Standing there on the floor, Johnston's gaze comes to rest on the desk that occupies the floor. Atop it is an old-fashioned bullet-type microphone, an RCA DX77, which replaced the C414 that was the original Letterman desk mic. Johnston had squirreled the antique away years before and pulled it out as a prop for a '50s sketch on the show a couple of years ago. It caught the host's fancy and has been there ever since, installed—rather unceremoniously—on the air one night by a crew with a drill and bit.

The unpredictability of the show and its peripatetic host is a source of both amusement and frustration for Johnston. "It drives me crazy when David decides to get up while the cameras are rolling and go across the hall to *Live At Five* [a local NBC quasi-news program Letterman takes pleasure in interrupting]. He doesn't tell us ahead

of time. Fortunately, we've had a lot of success with our RFs [wireless mics]. He's totally unpredictable. He gets up and walks out to the elevator banks [where Letterman occasionally runs elevator races] and there's a dead spot there. If he enters it, he's gone. The mic goes dead and that's dead air. One night he walked out and said, 'I'm leaving' and that was it, he left the show. And I'm sitting in the booth wondering, 'Now what?'"

Johnston points out that all the audio monitors in the area in dressing rooms and hallways are on a matrix so he can individually turn them off to prevent feedback loops as Letterman prowls the corridors while on the air.

But this is all characteristic of what makes *Late Night* what it is, according to Johnston. Everything, from skits to music to whimsical jaunts around the building, are relatively unrehearsed and spontaneous, reflecting the personality of Letterman. "The show goes out the way it comes out," mused Johnston. "That's the way David wants it. He doesn't want editing. If we make a mistake, then so be it. That's his theory."

(Edits are done in the case of censor's bleeps or if a scheduled and announced guest is bumped, as per instructions from NBC's legal department).

Back behind the set, in a small room underneath what seems like miles of tubular steel scaffolding, are the cramped quarters of Howard Vinitzky, *Late Night's* resident sound effects engineer. He's the one responsible for seeing to it that when Letterman throws a pencil through a set window behind him, we hear the sound of glass breaking. Or the sound of foghorns. Or the sound of... well, whatever captures Howard's fancy at the moment.

Leaning over his Ramsa WR8616, he's surrounded by scores of tape carts with titles like "Vomit," "Donkey Snorting and Burping," "Rabid Weasel" and "Electronic Jive." Vinitzky, who sort of looks like Gary Trudeau might have drawn him, is mulling over the fact that on this night's production memo there is a "Stump Howard" segment slated, in which audience members call out their favorite effect. "That just gets me crazy," he says, with a deadpan voice. "I'm really in a hot seat when I do this. I have to run around and find the cart. You don't have much time and you have to translate what they're talking about. Somebody says 'spring' and I have to look through my 'boings.'"

Vinitzky recently acquired a Sound Ideas CD effects library, which cuts down on his trips to the NBC master library. "They pretty much leave the choices up to me," he says. "But there are things I always have to have on standby, like breaking glass or the

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Thrill-Cam." (There is no point in trying to explain the Thrill-Cam here. Watch the show.)

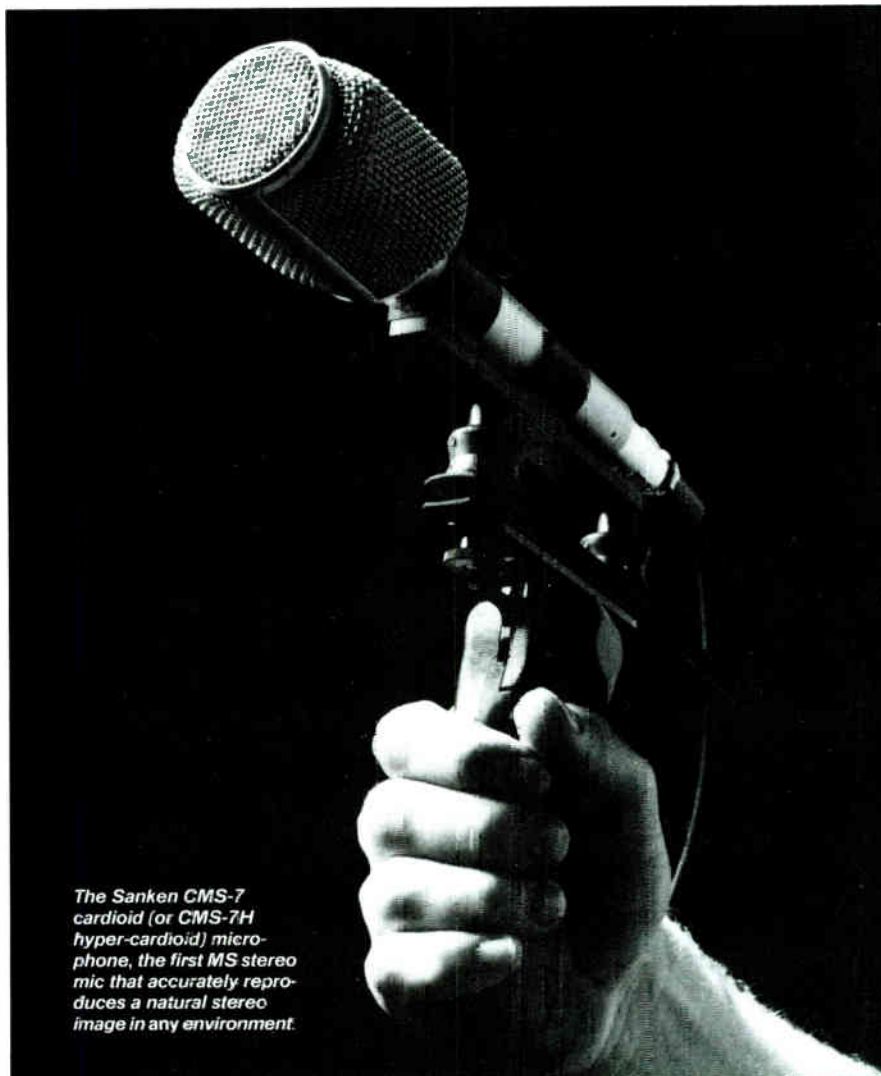
Recording the home grown sound effects is a strictly analog affair at *Late Night*. New England Digital once brought one of their Synclaviers over for Howard to use in hopes of selling one to NBC. "It was nice," Howard says, "but I think I hit those people with a lot of things they hadn't run into before because of the nature of the show. Mainly, the Synclavier has worked with music or post-production, so having to do things live was a whole different thing. One thing that was great was having so many sounds, but the problem was if you wanted to have four different things up at once and different levels you had to do all this programming. And when the cues are as spontaneous as they are on this show, it slowed you down."

Howard has contemplated sampling devices, but says the money isn't available for such a move at the moment.

He seems 'blase' about his collection, but when asked which is his favorite, Howard's eyes brighten. "One of our all-time weird ones is 'Penny Through the Head.' We wanted to get the sound of what it would be like if a penny was dropped off the Empire State Building through somebody's head. We made that one with a scissors going through a cantelope close-miked. I like that one."

When Johnston returns, there is a quick trip down the stairs to *Late Night's* once and future home, Studio 6A, where the new SSL SL-6000 console has been installed and is being debugged. In addition to a rack for more outboard gear, the new control room has MDM TA-2 near field monitors, UREI 802s and the ubiquitous Auratones. There are two Aphex Compellers (stereo compressors) and an additional Lexicon DDL waiting there. Among the modifications to the console are record functions which have been turned into after-fader listens. While the console is computer-capable, no automation was installed since, according to Johnston, "we don't really see a need for it on the show right now."

As the 5:30 taping time approaches, Paul Johnston heads back down to the set to find Letterman so he can put the host's wireless mic on. He mentions that he's the only one Letterman allows to do this task. "David's a very shy guy," he says as he goes. "One time I was very busy and I had one of my guys do it. David came up and said, 'I'd like you to do it,' I told him I was kind of busy and he said, 'I'd like you to do it.' That was my cue to say, well, I guess I wasn't that busy after all."



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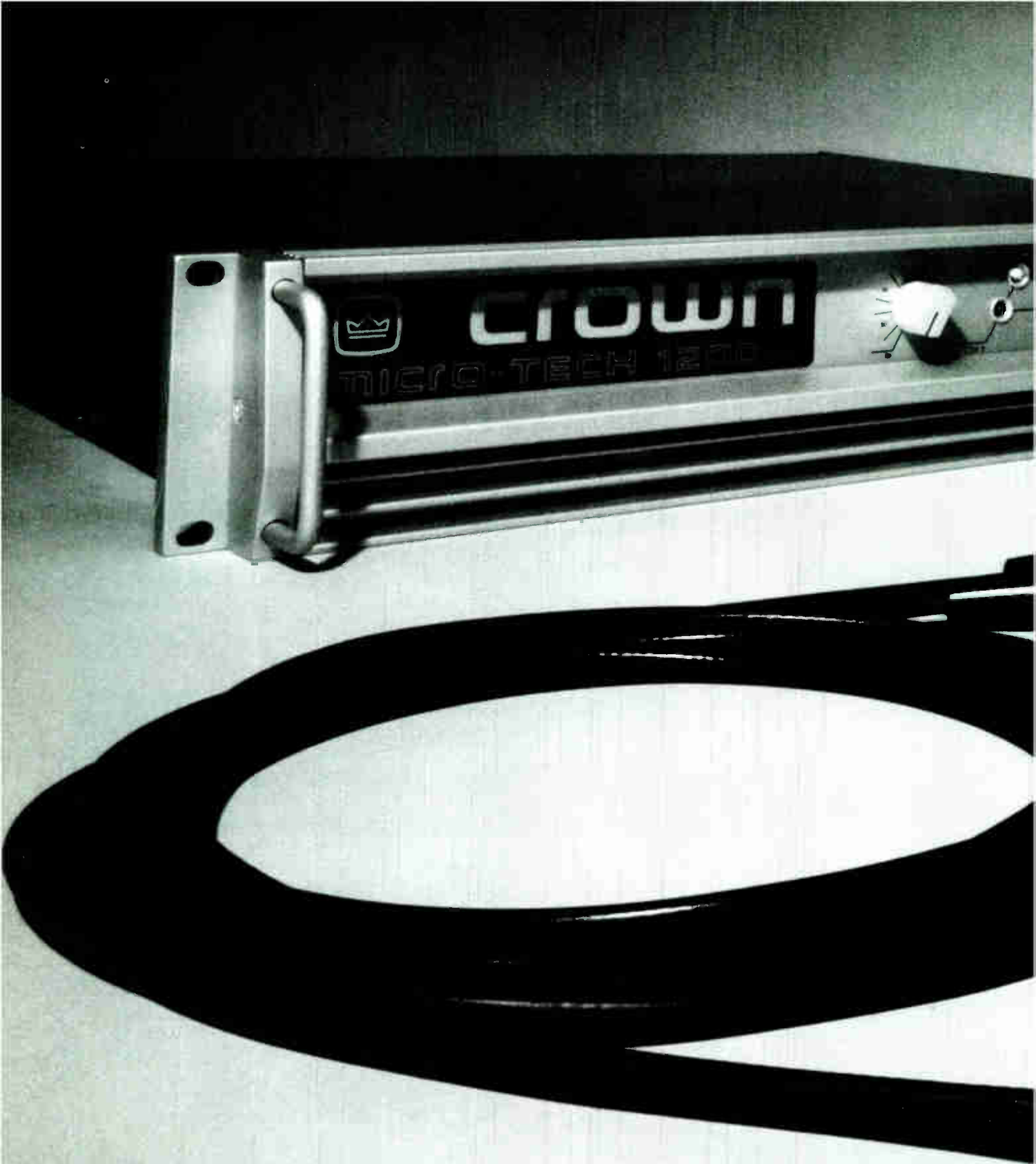
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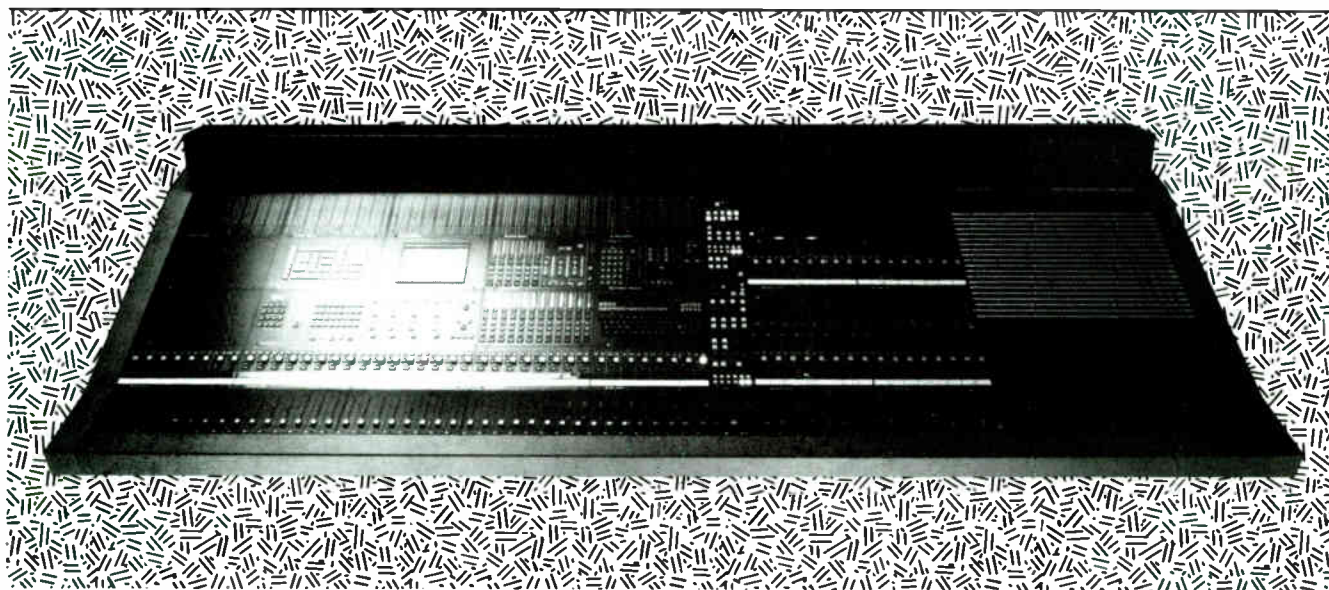


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INTERNATIONAL UPDATE:



APRS OBSERVATION

A Personal View

by Richard Elen

This article does not claim to offer a complete or even partial review of the APRS 1986 Exhibition, and should not be taken as such. It concerns itself instead with items that caught the author's attention.

The Association of Professional Recording Studios (APRS) is the British equivalent—and forerunner—of SPARS, and for the past 19 years it has presented an annual exhibition of hardware and services for the recording business. The APRS exhibition, in that time, has become one of the most important items in the British—indeed the European—industry calendar.

In previous years, the exhibition has been held in venues which it seemed, all too quickly, to grow out of. This year it was held at one of London's major exhibition centers, Olympia 2 in Kensington. And at last it looks as if the event has found a home that will contain it—at least for a year or two longer.

The 19th APRS show was also marked by other changes. In previous years only silent displays have been possible; this year a "sound village"

The APRS Exhibition has become one of the most important events in the British—indeed the European—industry calendar, and the 1986 APRS was unquestionably the best ever.

employed soundproofed (though not necessarily air-conditioned) booths for demonstrations in one area of the hall.

It was unquestionably the best APRS ever. It had rather the air of the exhibition aspect of an AES Convention—all the more cause to worry about next year, when the European AES and the APRS both come to London within weeks of each other—an obviously unfortunate juxtaposition. Who will want to exhibit at both? And who in the industry will have the *time* to visit both? The obvious solution—that APRS handles the exhibition and AES the convention, and that they combine their resources—has apparently been rejected, inadvisedly in my opinion. The result is likely to be that the APRS—the major crowd puller in the country as far as the industry is concerned—will emasculate the exhibition aspect of the AES Convention. As is often the case in our industry, collaboration would have been so much better...

A dearth of new hardware

In some ways, it has been a pretty quiet time recently for the hardware side of the industry. Studios have been doing well—in the UK at least—and seem to have many of the things they

(Photo above) Trident unveiled their Di-An, an impressive black beast with a wide range of facilities.

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World Radio History



Mitsubishi's Adrian Bailey (left) and industry legend George Martin toast the latter's order of four digital recorders for his Air Montserrat studios.

want, and manufacturers do not seem to be in the mood to foist too many new items on unsuspecting potential clients. So it was not too much of a surprise to see few truly new pieces of equipment on view, although in some cases products previously seen elsewhere were on show in Britain for the first time.

One major new introduction was in the console field, however: Malcolm Toft and his team at Trident Audio released the *Di-An*, an impressive black beast with a wide range of facilities. Says Malcolm, "It's an assignable console. When we access a channel with the 'access' button, we bring on-line three panels. One deals with input routing, mic/line, and panning. Next to that is an equalizer panel, which has four-band EQ with 16 frequencies in each range, with three bandwidth settings on each one. There are also swept 12dB/octave high-pass and low-pass filters. The last panel contains the auxiliary sends: there are 24 of those on each channel, and you can gang them together for stereo.

"The system is linked to a program of events. We can reset and store every function on the console 512 times dur-

"I've been a fan of digital recording since I first heard about it many years ago, and I think it's got to be the way of the future."
—George Martin

ing a mix, and it takes 20 milliseconds to completely reset and restore every function on the console."

This is a static automation facility rather than a dynamic one. A number of fader automation packages can be interfaced with the console for such applications. But with the rapidity of recall of the "snapshots", a number of dynamic automation functions can be carried out. It should be noted that of the 512 events, 128 can be different console snapshots.

"The philosophy of the console," Toft continues, "is based on the premise that when you are making a recording, you often want to set parameters, like the EQ on a snare drum for example. Seldom do you need to record the movement of an EQ setting."

The console settings—which include four on-board memories for EQ per channel and monitor—can be programmed into an events list and activated by SMPTE time code values, as one would expect.

Behind the system are some very clever ideas, and some very careful thoughts. First, it is an assignable console, but not a virtual one. The *Di-An* takes the form of a split-group board,

with a certain number of input channels and a certain number of groups. The novelty is entirely in the control surface, which offers rapid access via digital control to what is, underneath, quite conventional analog audio circuitry, derived from the tried and trusted TSM. This is no bad thing. And the questions of assignability have been tackled well. Routing is always visible on all channels simply by using numbered illuminated panels where the routing buttons would normally be. There is an "Auto-Gain" system which sets the mic gain for you automatically: just ask the band to play for half a minute and you have your gain structure right, an idea I've been hoping to see implemented for years.

Before the Di-An was unveiled, Trident had sold two to the States. By the end of the APRS exhibition, they were well on the way to their first half-dozen.

Soundcraft also had a new console on show, the TS-12, designed to replace the 2400 with an in-line design similar to that in the larger TS24. Alongside it was the improved 8000C PA console. And on the front of the stand, on show in Britain for the first time (it was unveiled at the Montreux AES) was the Saturn multi-track. It's an impressive machine, and likely to give the MTR-90 a run for the money. Saturns seemed to be turning up all

"Before the Di-An was unveiled, Trident had sold two to the States. By the end of the APRS Exhibition, they were well on the way to their first half-dozen."

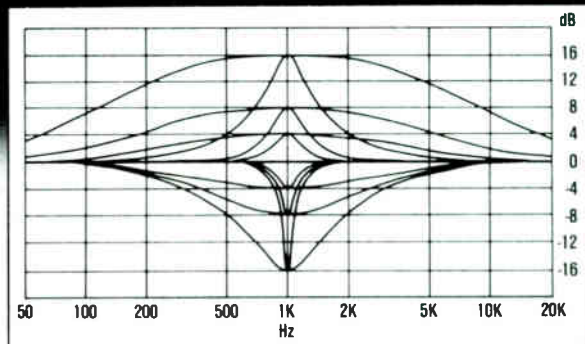
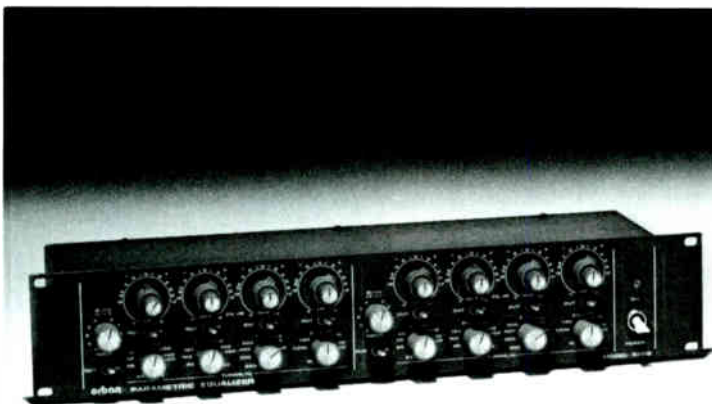
over the show, interfaced to various devices including the Audio Kinetics Eclipse.

On the peripheral equipment side, there was the Lexicon 480L. Whether this has appeared elsewhere or not, I don't know...but it is very versatile, rather like a super-enhanced pair of totally independent 224XL systems—including digital reverb, effects, and comprehensive sampling facilities. The 480L is controlled by the same LARC as your 224X. Four analog outputs; 1610-compatible digital I/O with 44.1 or 48 kHz sampling rate.

Brian Zolner of Lexicon showed me the system. "You truly have two ma-

chines that you can call upon, with full digital processing, and the ability to transfer, for example, samples between your digital machine and the unit, without leaving the digital domain." The same LARC will control a 480L and a 224XL. A 68000 microprocessor is at the heart of the 480L—talking to, of all things, a bunch of Z80s!

The system also has a comprehensive MIDI interface, with the "Dynamic MIDI" facilities first found on the PCM70. So, for example, you can control the wet/dry mix with your keyboard modulation wheel as well as merely changing patches from your synth keyboard or sequencer.



Nice curves.

One look at the curves of the Orban 622B Parametric Equalizer will show you its power. Few equalizers on the market today can offer this unique combination of corrective narrowband notching (-40dB) and gentle, musical broadband shaping. That's because Orban's "constant-Q" design emphasizes non-interaction between EQ parameters and gives you the power to get your sound just right—without compromise.

But EQ curves don't tell you everything. Talk to any of the thousands of users who rely on the legendary 622B to solve problems every day. They'll tell you that it's also the best-sounding, most flexible equalizer you can own.

Use it in production for problematical tuning chores and notch filtering or on monitors in sound reinforcement for feedback suppression. It's a real job-saver.

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Meanwhile, upstairs, George Martin was at the Mitsubishi booth, announcing the purchase of no less than four digital recorders for his Air Montserrat studio: two X-850 32-track machines and a pair of X-86 stereo machines. "I've been a fan of digital recording since I first heard about it many years ago," he says, "and I think it's got to be the way of the future. We held off for a long time ordering any particular piece of equipment, and a great deal of evaluation was done by our technicians before we decided on Mitsubishi."

Martin feels that 32 tracks is a major advantage, and, of course, he feels that the sound is excellent. He and his

technicians have listened carefully and made their decision as to what system they believe to be "the best." But off the manufacturer's stand, and out of the public eye, George Martin has the same feelings as most people: that two digital open-reel formats is not the way it should be. "I think it's stupid," he says. "At least we're down to two standards now...but that's still one too many."

It's that stupidity which will fill Dolby Laboratories' coffers over the coming years. There have been "analog's last gasps" before—in fact it could have been me who wrote a magazine coverline some years ago referring to "the last analog multi-track?" under a pic-

ture of a Studer A-800 (or was it an ATR-124...?). Dolby's Spectral Recording is less a last gasp, more a rejuvenation. The company spent most of its effort at APRS ferrying potential customers off to a local studio to hear the wonders first hand—for the first time "in public" in Britain.

OK, perhaps Dolby SR is less realistic an investment if you run a major studio complex and feel obliged to a) invest in sufficient SR cards to potentially replace all 400 Cat 22s you already have, or b) offer digital multi-track...but for single-room, middle-market studios all over the world it will be a boon, and will enable many people (as many people as possible in my view) to avoid the fateful day of ordering a digital open-reel machine until they can be sure it'll play back at the studio across town, just like 24-track analog does today.

It needed a company like Dolby to come up with such a system, of course. The Telefunken (now ANT) telcom c4 system outclassed Dolby A (and everything else) when it emerged, and in its latest incarnation—on demonstration by Audio Design Calrec at APRS to stunning effect (on Sean Davies monitors it could hardly do otherwise)—it offers 118 dB dynamic range.

I use telcom myself, and I like it very much. It claims to be a "European standard" for noise reduction, and certainly a lot of people use it and like it. But however good it is, it doesn't have the familiar Dolby name and reputation. I haven't had the chance to do comparisons, but I wouldn't mind betting that Dolby SR and the new telcom c4 are indistinguishably excellent. And they both come in Dolby-rack-compatible cards.

But ANT isn't Dolby, and I suspect it will be the name that counts. Yet the underlying point—that at least one good reason for all the interest in Dolby SR is that there is a lack of agreement in the digital arena—will hopefully not go unnoticed. Two high-class analog noise reduction systems we can cope with: you can rent them in if necessary. Not quite the same is a digital multi-track at over \$100,000 to buy and around \$1,000 a day to rent.

I, for one, resented discovering that I couldn't use my favorite studio—or, alternatively, my favorite mixdown room—for my next project because the budget won't run to renting the machine that one place doesn't have, if I work digital multi-track. I'm doing it telcom analog instead, and I can use both.

Even after the best of exhibitions—and APRS is one of the best—the Real World dawns all too soon. ■

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1 The MC 740 Studio Condenser is ideal for critical analog and digital recording situations because it is virtually inaudible — no self-noise, coloration or sonic footprint of any kind.

2 All five of the MC 740's pickup patterns have equally uniform and identically transparent frequency response curves — a unique achievement for a large diaphragm condenser design.

3 Like our ribbon mics, the MC 740 eliminates the icy, strident quality typical of condensers to reproduce voices and instruments with uncharacteristic warmth and intimacy.

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Here's a partial rundown of why the MP 24 just made the competition obsolete. Nine stereo inputs (three phono and six line)

are accessed through four stereo mixing buses, each with its own 4-position selector switch and Alps studio grade 60mm slider. Crossfade is completely assignable via another 60mm slider and two selector switches. Then there's

separate mic and program EQ, mic and program loops, master balanced outputs, zone and booth outputs, light trigger output, cue system... whew! And that's not the half of it.

Those in the know are already saying our MP 24 will be the industry standard. But why be modest? We think it'll be the king. Rane Corporation, 6510 216th Southwest, Mountlake Terrace, WA 98043. 206/774-7309.



Circle #025 on Reader Service Card

World Radio History

IT'S A JINGLE OUT THERE

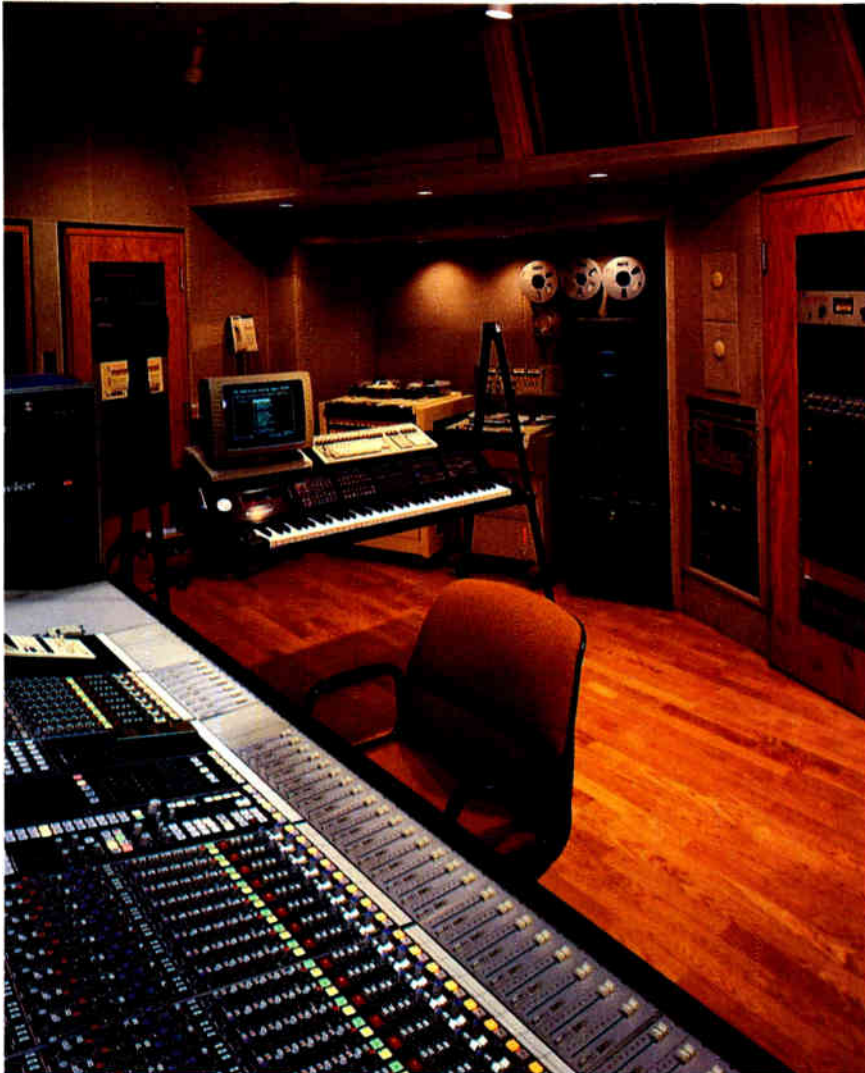
by Linda Johnson

"Jingle: (jing-gel) n. A simple, repetitive, catchy rhyme or tune."

If the above definition is any indication, it's obvious that the creators of the American Heritage Dictionary haven't been listening to the radio or watching the boob tube lately. Jingles

today are far from simple—either in the way they're produced or in the quality of the finished product. Rinky-tink ditties have been replaced by record-quality mini-songs. Indeed, at times it is difficult to tell if the music blasting out of radios and TVs is promoting toothpaste or selling rock stars.

Located in Chicago, Streeterville Studios has seven different recording suites; the control room below is equipped with an SSL console and a brand new Synclavier music system.



Mix recently approached representatives from 13 facilities in the nation's hottest jingle region—the Midwest—and found that with the growing demand for slick-sounding commercials, jingle and record producers are finding themselves using similar equipment and methods as these two music worlds collide.

Sound Images Jack Streitmarter

Located in Cincinnati, Sound Images specializes in jingle production, doing national and regional spots for Coke, Bristol-Meyer, ComAir Airlines and others. President Jack Streitmarter reports that business has been great since opening two new 24-track MCI 636 LEDE rooms in July.

How is the jingle market changing?

The production quality of jingles has come a long way in trying to keep up with the times. The ad agencies, producers and creative people are listening so much to the top hits and current sounds that when they come to us now, they really want a creative, different idea. Producers are more trained in knowing what they want. Their direction is a lot more clear. I'd say the only way jingle companies can fail nowadays is in weak creativity because they certainly have the capabilities around them to do anything on tape.

What methods are being used to create jingles today?

Synthesizers are becoming a big force in the market. Originally, when they first came in, they were perceived as a cheap and fast way to do jingles instead of a creative way. Now, it's turning into a creative process. People who just own machines and aren't good writers are falling to the side, and the good writers with machines seem to be getting the work.

I also see a resurgence in acoustic music. Some of our projects where people have had the choice to go synths vs. acoustics, we've been told to go acoustic, which is more costly. But they seem to be willing to spend more for creativity. We're finding that we can finally compete with facilities on the coasts because the demand for quality is so widespread now. In fact, we've even had the fortune to have some big name rock groups [such as Krokus] come in to use our studio.

How have you geared your studio for jingle production?

We've been able to afford two new rooms only because of the abundance of jingle work. And we've moved into a building that has become a broad-

—CONTINUED ON PAGE 60

The producer's choice . . .



AMEK ANGELA
M42 OBJ 28/24

Maybe it is AMEK's reputation for reliability. Or maybe it's the ANGELA's wide variety of frame configurations and the ease of access to all of the console's controls. Or it could be the fact that an ANGELA gives you all of the features of a computerized console without the excessive cost. The real reason AMEK has supplied so many ANGELAs to today's leading producers is its outstanding sonic quality.

A truly talented producer realizes that the bells and whistles on a console do not make a hit. It is the sonic quality, ease of operation and the really usable features which allow you to reach your creative goals. All ANGELAs feature dual signal paths through each module, so with just a 28 input ANGELA, you can have as many as 68 possible line inputs. ANGELAs are available with up to 62 inputs with 48 track routing and full metering!

ANGELA's versatility and

ergonomic layout have also made them very popular with On-air broadcasters and post-production facilities. The availability of stereo modules and such standard features as the stereo analog sub-groups with three modes, in-place solo in the monitor and channel, and mute grouping give the ANGELA automation-like operation at no additional cost. And, any ANGELA can be readily automated, now or when the need arises, with any of the popular automation systems.

Audiophile performance, AMEK reliability and value, and configurations to fit any requirement have made the AMEK ANGELA the choice of the producers with the "golden ears." Drop us a line, or give us a call . . . we'll drop a few names of satisfied ANGELA owners. It really is the producer's choice.



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Why Leading from Tape

The Synclavier Tapeless Studio™ is available today!

Start with the industry-proven Synclavier Digital Audio System. Now available with a 32 track digital sequence recorder, 32 megabytes of high-speed RAM and on-line storage support for up to 2000 megabytes of sampled sounds.

The Direct-to-Disk System can be added at any time. Operation is simple! The system is controlled by the Synclavier's keyboard control panel. The easy-to-use interface provides all standard tape recorder functions, and more!

The finest quality 16-bit A/D conversion processes and output filtering technology available are combined with variable "stereo" sampling rates of up to 100kHz to offer audio fidelity unequalled by any other system.

The Direct-to-Disk System stores large volumes of digitally coded information on formatted winchester hard disks. Once stored, this information can be accessed randomly at any point in the recorded program material. This random access technology provides virtually instant rewind and sophisticated editing features that would be impossible using conventional technology.



Finally the true potential of the digital studio can be realized. No longer are you limited to storing and retrieving digital data on media designed for outdated tape technology. The Direct-to-Disk Multi-Track Recording System by New England Digital uses multiple, high capacity, winchester hard disk drives for data storage.

When comparing the Direct-to-Disk System with standard tape-based digital recording there is a dramatic difference. For example, the Direct-to-Disk System does not need error correction. Its negligible error rate contrasts sharply with tape-based digital recorders which require error correction software to compensate for error rates of up to 180,000 bits per hour. This dramatic difference in data integrity illustrates New England Digital's commitment to quality and audio fidelity.

Expanding the system is simple. Start with as few as tracks for overdubbing vocals or live instruments onto your Synclavier sequences; add on more tracks and recording time as needed. With configurations of up to 16 tracks an almost half an hour of recording time large multi-track projects can be easily completed. With the Synclavier advanced hardware and software architecture, you always have the option to expand.

We invite you to stop by any one of our offices, worldwide for a complete demonstration of this amazing product.

Studios Have Changed to Direct-to-Disk™

"The Synclavier,® combined with the new Direct-to-Disk™ Multi-Track Recording System, provides us with the most compact, reliable, upgradeable, and high fidelity recording environment available today. For video-post, Foley, or music recording, it's a product which offers us tremendous benefits, both sonically and financially."

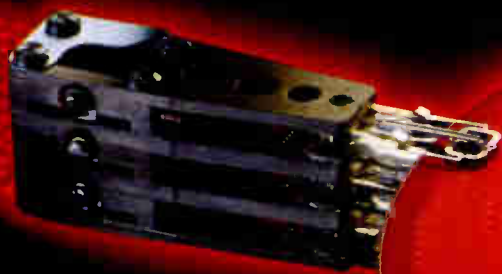
Murray Allen, President, Universal Recording Corporation

Using today's advanced computer technology, the Synclavier Tapeless Studio now offers more than just the ability to synthesize and create music. Now you can record "live audio"

simultaneously onto as many as 16 separate tracks. Dialogue, effects, vocals, and/or music tracks can be SMPTE synchronized and edited with word processing-like control at a single workstation.

The fidelity, speed, and flexibility of this system make the Synclavier Direct-to-Disk Multi-Track Recording System truly the most powerful digital audio system available today.

For a complete information package, including an audio cassette demonstrating the Synclavier and the Direct-to-Disk System, send \$5.00 to New England Digital Corporation, Box 546, White River Junction, Vermont 05001.



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World Radio History

—FROM PAGE 56, *JINGLE*

cast media center [The Gwynne Building]. It's in the heart of several ad agencies. And what's happening is the ad agencies are starting to dress up their audio because of the advances in video technology. Before, we used to write jingles and farm them out to production companies. Now we're able to do that all in-house, which has been the biggest expansion for our company.

Alliance Recording Al Hurschman

A year and a half ago, Alliance Recording in Whitmore Lake, MI (near Detroit) moved to a new facility designed with jingle production in mind: it contains a control room with keyboard setup, an area dedicated to composition, and complete computer interface between rooms. Owner Al Hurschman says business has been great, with the studio doing radio and television jingles for Blue Cross, Coke, Delta Airlines and the Detroit Tigers.

What trends have you seen recently in jingle production?

We're seeing more and more interest in good music. A lot of the producers are younger and they're a lot more in tune with modern music; if you can get people singing the tune, they'll remember the product, and vice versa. So producers are mixing the music up a lot higher than the voice.

How are you catering to the demand for high quality sound?

A large portion of our jingles are generated with synthesizers. We still bring in studio musicians, but the bulk of the track is typically composed on a computer and then that provides the basis for the track. Then later we put on real drums, horns, strings, voice or whatever.

Using synthesizers is definitely a way to cover a lot of territory without having to bring in musicians. Still, I have definitely seen a trend in getting away from very synthetic-sounding tracks. We typically use a drum computer for effects or as a guide track, but invariably we'll put real drums on it because they just sound so much better.

With the use of more synthesizers and electronics, would you say there's a factor of time that people want to get in and out as quickly as possible?

It's been a real struggle to show jingle clients that if they want to compete on the big advertising level, they need to put that money and time into production. A lot of them are now spending so much money on their visual production that they're slowly

but surely learning that the audio has to keep pace.

Good music is part of good commercials, and clients are going to studios that can give them that, not only in the quality of the recording, but in the quality of the compositions, too.

Audio Recording Studios Bruce Gigax

Studio manager Bruce Gigax reports that business has been excellent at Audio Recording Studios in Cleveland, with work on jingle projects for TRW, Glidden Paints and the Ohio Lottery. In July, a subsidiary called Sleeping Giant dedicated to scoring and post-production was put on-line to accommodate the growing demand for television jingle production.

How is the jingle market changing?

It's changing as far as what clients will spend for what they want, and we're finding that people are looking more towards doing synchronized music—less needle drop. In the end, the electronic aspect actually allows us to give the client a good product at a lower price than he would've had to pay a few years ago because we now have one musician doing everything.

A year ago we went from a Fairlight Series I with a few other units, none of which talked to each other, to a completely MIDI-controlled system through a Mac computer. We still have all the functions we had before, it's just arranged differently. For half the price of what the Fairlight cost back in '83, we have a much more flexible system. And since we had the equipment and the writers, we decided to go into business and do it ourselves with Sleeping Giant. Now, we're able to collect the creative and production fee instead of just the per hour amount. Jingles are now the biggest part of our business.

Are the demands of your clients more sophisticated than they used to be?

Yes. A number of our clients have been all over the country doing production and they fully understand what can be done. I find the more educated the client is, the easier he is to get along with. He doesn't come in saying "Hand me effects out of thin air." He comes in prepared, saying "Here, let's try this."

Chicago Trax, Al Ursini

Since moving to a larger facility ten months ago, Al Ursini of Chicago Trax says that business has been excellent. Though record work is their mainstay, Ursini says that radio jingle production is on an upswing, keeping them busy on projects for the likes of McDonald's, Coke, Sprite and Afro Sheen.

How is the jingle market changing?

Jingle clients are now demanding the same things as record clients. They want it to sound like the music they're hearing on the radio. When jingle people come in nowadays, they want their product to sound like a record, they don't want it to sound like the jingles of five to ten years ago, where you've got the band real low and the vocal way out front so every word can be heard plugging the product. Today, jingle clients want the vocals down and gated snare drum sounds way out front—like a record.

Have you designed your studio to specifically cater to this style of work?

Yes, because it's not just jingles that have gone in this direction; it's basically in all music today.

When we sat down to design this new place, we set it up specifically for this. We put all our outboard gear behind the console in a rack that doubles as a table with tie lines for all the drum machines and what-not. The market has been going towards synthesized sounds for the past year. I haven't seen a drummer in here on a jingle for at least a year. Everyone comes in with drum machines, synthesizers and sequencers. They work it out at home and bring it in and we plug it in. The track is laid in just a couple of hours. The only thing they do live in the studio is vocals, voice overs and maybe a guitar player will come in.

Streeterville Studios Jim Dolan

Jingle production takes up the major percentage of daytime work at Streeterville Studios in Chicago, IL. President Jim Dolan reports that his seven-studio facility has been busy with commercials for 7-Up, McDonald's, Stroh's Beer and United Airlines.

How is the jingle market changing?

We personally have really been getting involved in the electronic sampling world. We purchased a Synclavier system this August, and we're seeing a steady increase in processing and production of materials that have been done off-line in producer's studios, where they are coming in with MIDI information and sequencing it and downloading it into the Synclavier.

Would you say traditional methods are becoming something of the past?

No, it's just that there's lots more potential in marrying electronic sounds and live sounds through sampling. It doesn't necessarily take the players away, it just allows the production to be executed a little differently. The Synclavier offers lots of different pro-



"TOMORROW'S STANDARD"

STANDARD (stan' dêrd), *n.* 1. Something established as a rule or basis of comparison in measuring or judging quality, value, capacity, extent, etc. 2. Something used by general agreement as a type, model, or pattern.

Peavey's all new PVM™ 38 and PVM™ 45.
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duction tools and capabilities to us, to execute all the diverse fronts we cover—records, radio and TV, sound effects, and so on. We're also very much involved in house music, and the Synclavier is showing itself to be a good creative tool.

How have your methods and approaches changed in jingle production?

One thing is we're doing music to picture, from top to bottom, finishing the commercial without ever having to leave the tape format. That's something that's been available for the last five years, but has become much more in demand in the past couple of years.

From the production side of what we are offering our clients, the Synclavier and electronic work allows us to create more projects like records for commercials.

Studio A Recording Eric Morgeson

Though record work is their primary source of business, Eric Morgeson of Studio A Recording in Dearborn Heights, MI says that radio and TV jingle projects have been abundant lately. Some recent clients included Chevy, K-Mart, A&W, and Pontiac.

How is the jingle market changing?

The quality, the arrangements, the production and the performers being used are about the same as what our record clients want. The length of the finished product is just shorter for jingles.

What methods are being used to get the finished product?

I see a lot of individuals who are becoming much more of a key-man operation, where one or two people will be responsible for delivering a whole ad campaign to a client. So there seem to be much smaller groups of people, and I think it has to do with the efficient use of arranging and orchestration techniques, and synthesizers are a big part of that.

We have a Synclavier here and an excellent keyboardist who just came on staff. So a lot of our clients are working primarily with a small rhythm section and then the bulk of the tracks are completed with voices and synthesizers as opposed to larger arrangement sections. We've had the Synclavier for five years, but originally our advertising clientele weren't that keen on it, and now they're starting to get into it. It's real cost-effective, and simple.

Universal Recording Murray Allen

With jingles representing 80 percent of his business, owner Murray Allen

of Universal Recording in Chicago reports that business is booming. A new Synclavier system went on-line in April to cater to the abundance of jingle productions.

How is the jingle market changing?

Whatever way the music business goes today, that's the way the jingle business will go. Jingle production is getting more and more efficient. What you would do on a record date that would take eight hours, you've got to do in about an hour for a jingle date—and get the same quality. One thing I see happening is that the *quantity* of jingles being made seems to be plateauing out. There are a lot of revisions in post-production work; in other words, you do a basic commercial, but there might be more versions of it down the road.

How are you catering to the needs of your jingle clients?

We've got just about everything on the market today in here. This is a totally equipped studio. Our new Synclavier room is one of the biggest in the country. This just shows you the kind of things that we have to do to cater to the jingle business.

Ambience Recording Gerard Smerek

At Ambience Recording in Farmington Hills, MI, close to a quarter of a million dollars was recently invested in redoing the control room, designed by George Augspurger, as well as putting in a fully automated SSL board. Chief engineer Gerard Smerek reports that Ambience has been "heavily into" jingle production for the last three years, doing radio and television commercials for the likes of Whirlpool, Chevy and Dodge.

How is the jingle market changing?

It's definitely a lot more sophisticated. With all the new technology and synthesizers, if you don't like something, it's so easy to change it. Before, you got stuck because you already cut all the tracks and spent all the money; now, you can experiment until you're blue in the face and not spend that much money. You get a drum machine and a guy with four or five synthesizers, and it will cost you maybe \$500, whereas before it would've cost double that.

The technology is allowing for a lot of changes. It's sophisticated. It lets you really stretch things out—experiment without spending millions. The use of synthesizers has been tremendous. Now, with all this gear, the producer can sit at home, get down a lot of the idea he wants and then come in and very cheaply simulate what the

finished product is going to sound like at probably a quarter of the price.

Jor-Dan, Inc., Dan Zimbelman

Though radio and TV jingles are a small portion of his business, owner Dan Zimbelman of Jor-Dan, Inc. in Wheaton, IL says that he's done spots recently for Bell Telephone, Bic pens and United Airlines. According to Zimbelman, because the studio is 30 miles west of Chicago, Jor-Dan attracts jingle producers who want to be in an environment that is quiet and out of the mainstream.

How are the approaches to jingle production changing?

Jingle clients are very much in tune now with developing current sounds. And that means more AMS units and more stereo echo returns on a mix. Six years ago, we had one echo unit; now we have tons more, which is getting into record-like mixing. The jingle producers are certainly getting much more into spending more time on mixing.

What sort of instruments are your clients using these days?

We use a lot of synthesizers. We as a facility do not invest in keyboard and instrumental equipment per se because there's so much rental equipment around. What we also do on occasion is have one of the really good composers in the Midwest—Steve Shaffer—bring in his complete Synclavier system. Most of the players these days are so specialized that they carry their own stuff.

Tone Zone Recording Larry Bishop

Located in Chicago, Tone Zone Recording has been busy with jingles for both television and radio, according to booker Larry Bishop. Some recent accounts included Heinz, Hasbro, Three Musketeers, Levi's and several others.

How is the jingle market changing?

Everything is very faddish. In other words, if McDonald's comes out with a techno-pop commercial that utilizes a certain type of soundtrack, everybody follows.

What type of jingle is popular right now?

The dance-type commercial, where there's a dance sequence. The larger corporations tend to employ a couple of varieties of commercials, like a dance format and maybe a Pepsi/Coke type of war. As far as the musical beds that accompany those, it's generally something that has a dance, techno-pop sound.

T H E • 1 9 8 6



WHAT: The 1986 Technical Excellence and Creativity Awards

WHEN: Thursday, November 13, 1986
7:00 - 11:00 P.M.

WHERE: Hyatt Regency Ballroom
Downtown Los Angeles, California

If you're a member of the professional audio and music community, and you plan to be in Los Angeles during the 81st AES Convention, the Publishers of *Mix* invite you to attend the 1986 TEC Awards Celebration. These awards, as nominated and voted by you, the subscribers of *Mix* Magazine, honor outstanding achievements by individuals and companies in all facets of audio and music during the past year.

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Acknowledgement of receipt of ticket order will be sent immediately. Tickets will be sent in October 1986.

What source of music are you using?

Mostly synthesizers. Truth is, synthesizers are pretty much taking over the jingle market. A very standard setup when we do commercials here is the producer will bring in an Emulator II or hire a keyboardist who has one, and generally everything is done through him. The only time we bring in anything outside of a keyboard player is if the producer really feels it's warranted, and typically that is just a guitar player.

What are jingle producers demanding these days?

Generally, they don't necessarily want the studio to have a lot of key-

boards, but they want an adequate setup for keyboards. We do most of the synthesizer work right in the control room. We have a large patch bay built right in with 18 inputs, so we bring the keyboards in and the producer works right there.

Sound Suite Recording Studios Garzelle McDonald

Located in Detroit, Sound Suite Recording Studios is in the heart of one of the largest advertising communities in the country. Studio manager Garzelle McDonald reports that business is definitely booming, adding that their new SSL board has been put to good use lately on jingles for Wendy's, Cadillac, and It's Fresh products.

How are the demands of jingle producers changing?

Because we have state-of-the-art technology to actually service them, we find that more jingle producers now have the budget to use more technology—synths, drum machines and lots of processing. They're treating their jingles as though they were making albums now. They're demanding the same outboard equipment that record producers are. And the fact that we have an SSL attracts a lot of jingle producers. Our business has increased 200 percent mainly because of the interest in the board. They can get more work done, and the processing of sound is cleaner.

Would you say fewer live players are being used in jingle production?

Yes, more or less, because we've got Emulators that can duplicate sounds so exactly that the need for an orchestra or musicians to come in is less. With the state-of-the-art equipment, the musician's role is lessening. One synthesist can now put together the whole track.

What are the primary concerns of jingle producers today?

Seeing that there's an increase in music, they're trying to keep the sound appealing to the youth market. Clients want a facility where they can get those sounds. They want very high quality sound, so they have to have state-of-the-art gear. Speaking of which, we would not survive without Hy James. We rely on them for everything as far as renting, buying and maintenance.

Creation Audio, Terry Grant

Since remodeling the studio and installing a fully digital Sony 3324 multi-track recorder last year, Terry Grant of Creation Audio in Minneapolis reports that the jingle business is alive and well. Songs for General Mills NorWest Banks were recently produced there.

How is the jingle market changing?

Jingle production now parallels record production. Production needs for jingles are now the same as records, and we have all the equipment for both types of production: Publison to AMS to Lexicon. Most of our jingle productions involve—just like Top 40 music production—the MIDI interconnections and all the standard gear. We've found that our best jingle people are observing the music industry and using the same complements. A lot of the same players and arrangers that work in record production are now also working in jingle production. People are putting a lot more time, money and creativity into jingles today.

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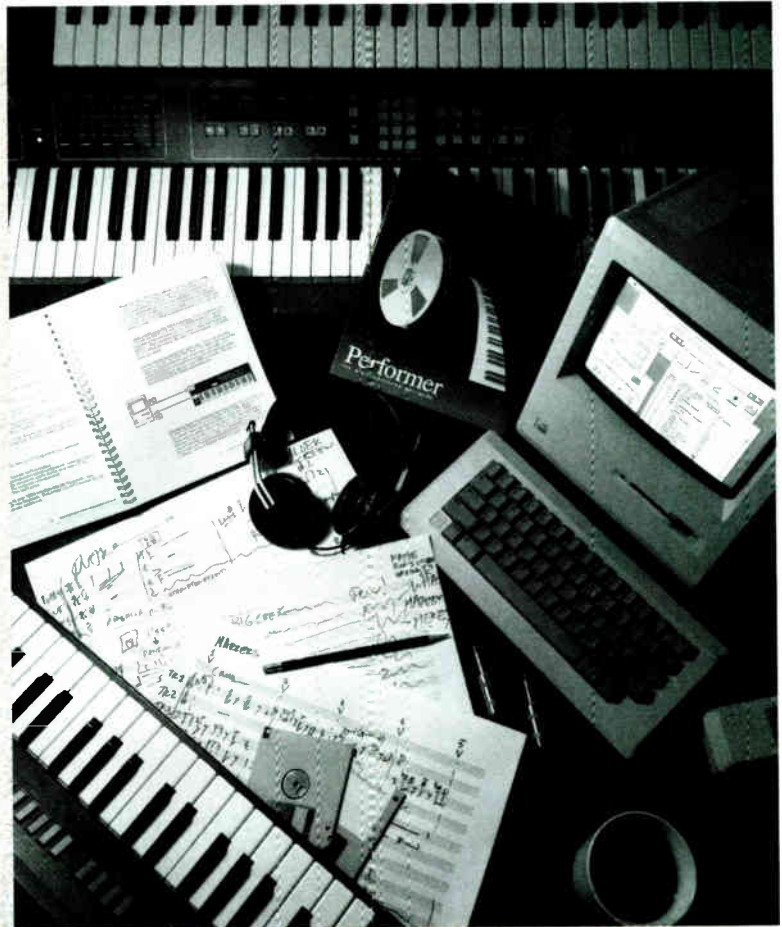
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SOUND ON STAGE

by Hank Lam

The motivation for superstar tours is usually financial gain. Yet, sometimes, someone with a vision or idea may forsake the profit motive and produce a show as an endeavor of love. What makes the difference between the shows that succeed and those that fail, between those that leave significant memories and messages, and those that are momentary, passing events?

Throughout the summer and fall of 1986, the Stevie Wonder tour, "In Square Circle," is traveling the U.S. It's a tour comprised of musicians and craftsmen—all artists and gentlemen—working with feeling for a man with vision, a creator of stage "magic."

In the middle of the concert hall sits an island of technology, a stage that resembles a compact disc player, with revolving turntables and glowing red pushbuttons. Two stacked turntables are rimmed with the latest in musical instruments, and above flies the Maryland Sound audio system. Four Aquastar video projection screens face the audience, and on two sides of the auditorium sit speakers for a quad sound display. Hidden from view, below the twin turntables, sits the largest Synclavier music system and library known on the road. As the show is described by Bob Bralove, the man responsible for translating Steve and Morris' perspectives of audio and visuals into electronics: "Everybody responsible for any aspect of the show was called upon to contribute creatively." The words "exciting," "experimental," and "vibe" are frequently used by the staff and crew to express the energy level and feeling for the production.

What follows are sketches of some of the key players in this wonderful traveling musical extravaganza.

Craig Melvin is the stage monitor mixer. To support the onstage audio, he uses four Yamaha PM 2000s, consoles, inputting 20 lines from the stage, and routing up to 22 sub-mixes throughout the house. Onstage, there are 12 monitor mixes, containing the performer's audio and the cues of a video synched 16-track playback machine. Miniature wireless headphones, the micro-monitors, carry stereo fold-back to the singers.

Dave Leister and Jim Sanders, quad mixers and tape operation:



PHOTO: HANK LAM

THE STEVIE WONDER TOUR

IN SQUARE CIRCLE

What are the differences between the quad mix and the house mix?

"In the quad situation there's a time problem, so I try to take everything that is not percussive—strings, horns, keys—and use them as a fill and ambience, as a natural reverb sound, just to complement the house in most situations. Now there are some effects that are very high in the quad, like a jet airplane intro, Synclavier programs like a couple of cars, traffic, then voices and strings, to be spun around the room. You don't have the time problem where you have a steady, smoothly played instrument.

"We have the original Pink Floyd board from the *Dark Side of the Moon* tours. It's really made for front/rear situations, but here, we play theater in the round. Each channel has a joystick. Basically, this is image placement."

How many inputs?

"All of Stevie's keyboards, switched between the other keyboards, plus effects and sounds from the tape, and the background vocals. I'm putting a Yamaha M916 [mixer] up here and will take all the keys. Steve has got the tape mix going to the stage in his headphones. That's what Jim's doing, sub-mixing tape into the monitor boards, for Stevie and the stage monitors."

What is the effect you're going for?

"I do what I feel is right. I keep it subtle and ambient. This is the 12th show, we go through mid-October, so we work it out as we go, between house and quad, so it's not a conflict for Jim. We have a total of two Harrison's five PM2000s, the Midas quad, and a Yamaha 916 for the effects. The 16-track is sub-mixed into a PM2000; one to Stevie's headphones through the wireless', the stage monitors, the quad, the house. But basically it's for the band."

The tape doesn't make it to the audience?

"No, it's for the band. Although after the show, as the band leaves the stage, the tape goes to the house with house sounds."

How many possible inputs from the stage?

"About 80."

Tonight, on stage, there are three Yamaha DX7s, one Korg RK100, one Yamaha grand piano, two PPG Wave 2.3s, two Kurzweils, one Synclavier, two Super Jupiters, one Emulator II, and four Yamaha TX816s. Including Steve, there are four keyboard players.

Details of "In Square Circle" set: twin turntables vary audience perspectives, while remote controlled video camera (on pedestal in lower shot) allows unobtrusive coverage of Stevie.

Paul Medeiros, keyboard technician:

"Steve's grand piano is a Yamaha C-5 with a 4-chain MIDI system put in, MIDLED to a Roland digital piano module and a Yamaha TX816 rack. We also have three C-ducers represented, and a AKG 414 mic, all mixed down to stereo, so Steve can choose to play off the piano or the Roland MSK-20, or, off the Synclavier, selected by Stevie, and Bob Bralove, from underneath the stage. There's a Helpinstill mixer box to control the piano onstage, and to avoid long wires to the controls; we don't want a lot of stuff up there. We mix it down to stereo too, here [under the stage]."

You're routing the signals from below?

"We mix the Helpinstill, C-ducers and AKG mic down here. Six channels of the piano to stereo and one MIDI, a Forte Music MIDI Mod. . . Bob will change the Synclavier keyboard programs, then Steve turns to another instrument; everything is setup. The DX7 plays a drum machine [Linn 9000], too."

From the time the lights go down, till the end of the show, the audience is involved with the music. Looking out over the crowd, people of all ages are standing, clapping their hands, and singing along.

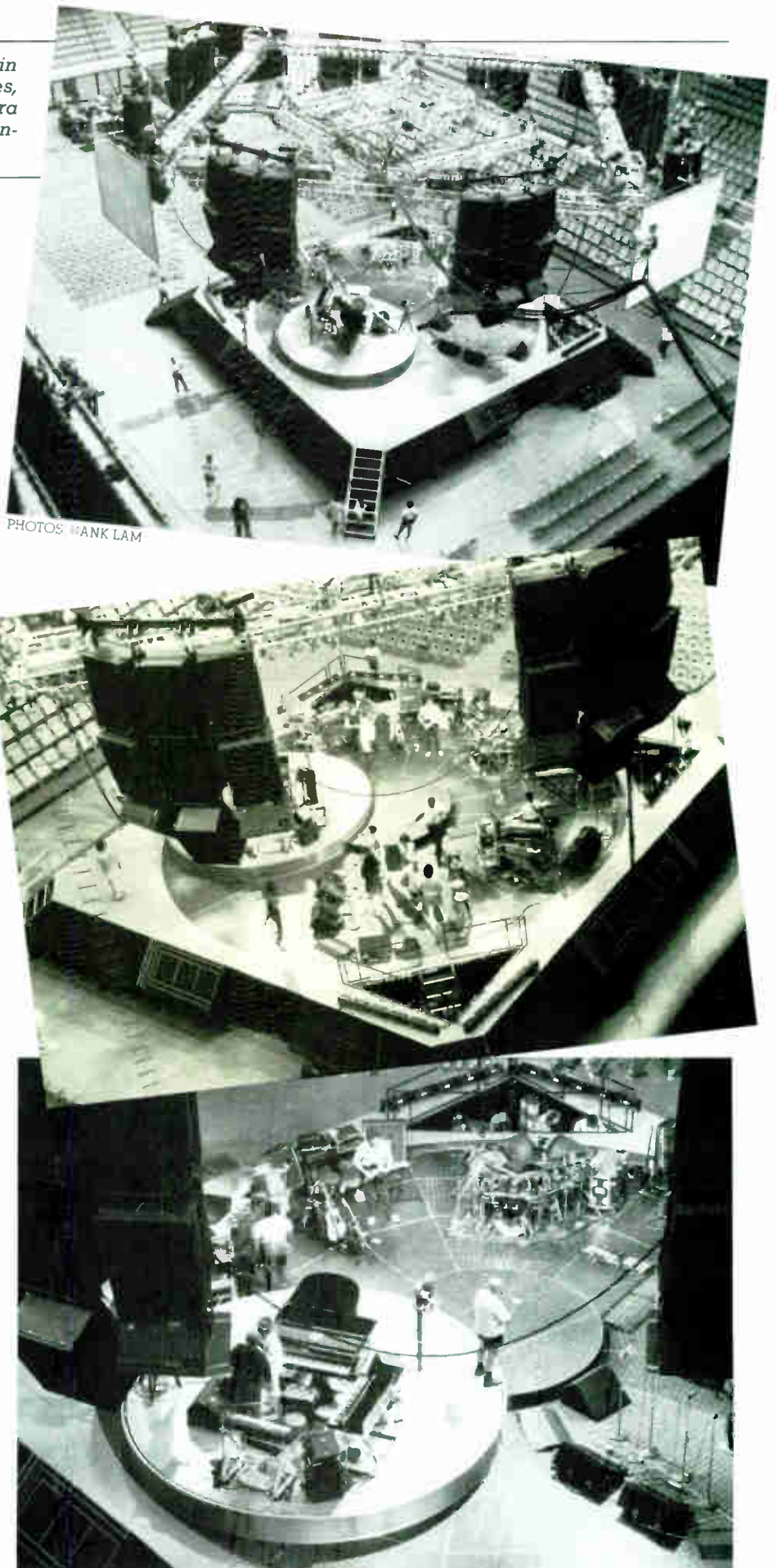
Bob Higgins, video technical director/switcher:

"When Bob Bralove and I first started working on the video pieces, he really wanted to make sure that we understood the vibe. All the technology followed the sense of that vibe, falling into place. The most technologically 'on' thing we're doing is the opening—we're synching videotape to a 16-track audio tape to live; all the mediums. And we have all remote cameras, including the one flown camera; we call it our monkeycam, a la David Letterman. It's taken a couple of weeks of shows to get all the bugs out of this stuff, different technology all jammed together!"

"This is a performance, no question. The opening is synched, everything else is on the fly. If it comes out timed just right, it's because we all hit the buttons at the right time. It's Stevie's show, but we're all performing."

What about coordination with MIDI?

"It's not a bad idea, but it's a bad idea to tie too many things all at once.





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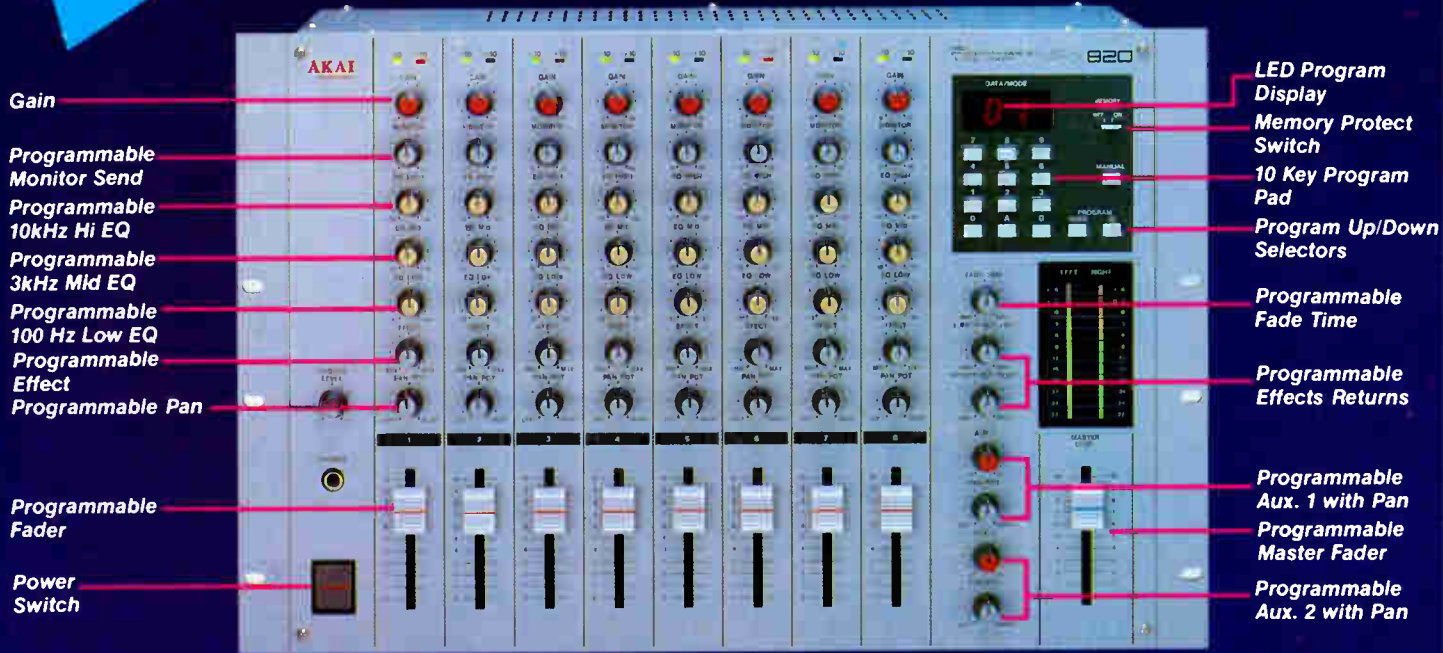
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What if something goes down and everything freezes? We have already worried about that, with the Otari 16, the Timeline Lynx synchronizer and the BVU800. But it's possible if Steve thinks it, because all this technology is coming out of his mind, all the ideas. He tells us what kind of idea he wants and we try to catch up."

Allan Muir, video director:

"I'm a television director. Right now I'm on staff with KCET, which is the PBS station in Los Angeles. With this show, I only come out on certain dates. On Monday, Tuesday and Wednesday, I go back home to L.A. and do my staff job there. I don't have a day off between now and the middle of October.

"The tour's very organized. We are here to enhance, to magnify the image on the stage, and by doing that, we have to work in concert with everybody else, so I don't have the control of the program that you normally have. It's a little harder in some respects.

"With some of the songs, like 'I Just Called To Say I Love You,' we built a whole four-minute piece of film. We bought stock footage—seasonal changes, the countryside, bird dives—and integrated Stevie into that picture. The picture stays the same for all the shows, however some nights I use all of it, some I don't; it rolls with the music. Sometimes I just stay with Stevie.

"The opening, which is hand claps to the beat, is used to integrate the audience into the show right off the top, so they start following the hands on the screen. If there is a direction from Stevie, I'm following it through his music. There is a set that he does follow, but it's not a television show. I

cut it like a television show, although there are a couple of numbers I don't put up on the screen at all—they're so incredible onstage—the lighting, the staging—that I just take the screens to blue. I don't really want people to have their eyes on the screens all the time."

What can you tell us about the technical end?

"I think this is the first time anybody's gone on tour with a remote setup. The camera and projection system were designed by Masai Enterprises. There are no cameramen on stage. The four cameras pan, tilt, zoom, and focus by remote control. The major stage revolves twice 360 degrees, then back, and Stevie's stage goes opposite, so, I've got two cameras on Stevie's stage because he's got three

keyboards. We have a camera on a periscope-type trombone that hangs down from the truss, and another in the audience. We get some interesting things with the cameras, because with the stage moving and the cameras blocked, we get the impression of some incredible truck shots, because of the moving stages. There's no wobble."

How many are in the video crew?

"We have four camera controllers, running Ikegamis, a technical director, a video operator, and two projection screen people. The T.D. is the switcher. We aren't recording the show now, but there's talk about a special.

"Freewheeling is one of the things I'm enjoying. I've been doing music for 22 years, and in the old days of live-on-tape, you did it once. That's what this is. With a television show, I've lost the impression of who the viewers are, and what they are doing at home, but here, we're all in the same place and that's exciting. It's amazing to me that Stevie can grasp the technology as an artist, and to make such good use of it. I didn't think Stevie would have much to say about what went on up on the screen, but he does. It's very interesting—he can't see the audience but he can feel them, and has the sense of what's going on."

The musicians in Stevie's band are Isaiah Sanders, keyboards, Nathan Watts, bass and keyboard, Dennis Davis, drums, Ben Bridges, guitars, and Brad Buxer, keyboards. They are accompanied by one male and three female background vocalists.

Brad Buxer, keyboard artist:

What does Stevie want you to get across with the music, and what artis-

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World Radio History

tic liberties did he give you?

"The objective is to make the music sound like the record but to not sound stale. We can add, we have a lot of liberties. Steve listens to the show every night; we record it on a Betamax F1. Now that we've been around a while, he trusts us, so everyone does a lot of extra things. We're supposed to bring more to it than would be there if it was just a tape or record playing. It's a nice situation because it's not like 'gee, can I get away with this extra part,' it's supposed to be a creative thing.

"The technology today is such that anybody can sound like a record on-stage, but that's not the vibe at all. When we go on stage, all of the music is live, and different sounds, extra stuff is added. Steve will do songs the band has never rehearsed, so the song is just an outline. It's like a nightclub and he's the bandleader. It's fun.

"I believe we are at the absolute forefront of what is happening live. I don't think anyone is doing the things we are. Stevie's got the largest Synclavier system in the world. We take the SMPTE and MIDI as far as it's yet been taken. . . we're not in a dark closet thinking these things, because at Steve's studio, Wonderland, we're around people who lead the industry, like Thomas Dolby."

How long did you rehearse before the tour?

"The sounds have been programmed for a long time. We've all been playing on the records for years. We've had years to program and rehearse. The thing that takes the time is sound designing and sculpting.

Dennis Davis, drummer:

How do you like the technology available to you on this tour?

"Last year I hated the drum machines and computers, but this year it's fun, because I understand them! I had to learn to play them with confidence.

"I play a Gretsch kit, interfaced with a Prophet 2002 and a Simmons SDS-5, through an MTM trigger and Octapad. But the Octapads need redesign—they're too sensitive."

Ben Bridges, guitar:

"I work in a totally keyboard-oriented society, even on the records. I get a chance to come up creatively with my own parts on just about everything. I have a chance to do everything I've always wanted to do. I play classical, rock, jazz, funk. Plus I have a chance to write. I had two songs on Steve's records. Over the years, we've developed a good relationship, so he likes what I'm doing.

"I have an Ibanez IMC 1 MIDI controller onstage and a DX7 at home. I modified some of my own sounds to work with a guitar trigger. There's no guitar on the track tapes, so it allows me complete freedom."

What changes have you seen?

"I've seen amazing changes—the band has gotten smaller, all the technology has finally taken over. Steve tried to make these transitions years ago; it wasn't ready for him. . . all the sequence and samples. He's happier now than on any earlier tours."

Why?

He has more control over what everybody is hearing in the audience. More control over what is going on with his music. He's got such great ideas and he wants it a certain way. This tour is the closest to what he wants to do. The vibe is really up! It's perfectly balanced so there's plenty of high visibility for each member of the group, enough space, and everybody is receptive to each other. We all take a good part in the musical side of the tour. Everybody feels like they've got something important to do. They're not just sidemen or technicians.

"Stevie has got the most positive message of anybody else that's out there on the pop scene right now. The message is just so positive all the time;

"We are at the absolute forefront of what is happening live. I don't think anyone is doing the things we are . . ."

always something socially relevant. It's uplifting music to play. The technology is there, the visual scene is there, but the basic message we're all trying to put across creates an atmosphere of 'we're really doing something special.' You can sense that. Even on the world tours, you get people who speak different languages, standing

up and singing. That makes for some magical moments.

"I'm a real purist. If you look at my pedals, I don't have a lot. A touch of wah, a digital delay. I like the stuff to be in the amp. I like straight-ahead clean sounds. I don't trust a lot of things in line. I have a Gallien Krueger head on a Marshall box and play a Telecaster all night!"

Stevie Wonder speaks to the audience: "The most important words in the world are: 'Please,' 'Thank you,' and 'I Love You.'"

Bob Bralove:

What do you call your profession?

"Synthesist and sound designer. I do scores and composing. I'm doing sound design and composition now for *The Twilight Zone*. I'm a composer."

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—CONTINUED ON PAGE 205

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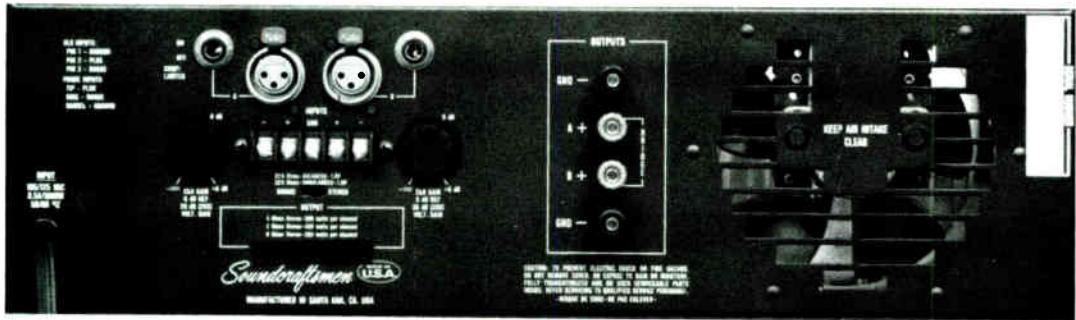
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World Radio History



Catero outside the San Francisco Music Fair, where his record company hosted a booth.

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the jungle just beyond the civilized studio domain.

We met at the Catero Records booth at the San Francisco Music Fair—a convention for the industry: instrument

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said, "Mr Catero, do you know the difference between progress and change? Very few things progress; it is mostly just change. Progress is when you keep the best of the old and add the best of the new. What happens in society—they abandon the old and take the new. Mr. Catero, you are a talented man—you should not concern yourself with the difference between good and bad. It's not for you. For you the difference should be between good and better."

I am very fortunate to have been surrounded with great people like this man—and I listen carefully to them. Another great man, Leo Kulka—who runs the College for Recording Arts—said to me, "In any endeavor, the best results are always accomplished in an atmosphere of mutual respect." For every album that I've worked on, I have felt that recording is a team effort. I wish more people felt this way.

Bonzai: Weren't you part of the team on Chicago's first LP?

Catero: Yes, I engineered their first album and I think I can take credit for the concept of the two-record album set that they made popular. As was typical, we recorded a certain amount of material, and at the end of the session, the producer and the band started arguing about what would be on

the album. There were very strong feelings and they couldn't come to an agreement. So, I turned to Jimmy Guercio (their producer) and said, "Listen, why don't you put out a double record?" He said there wasn't enough material for two records, so I suggested we use their guitar track that sounded like a racing car. It was a cut we recorded one day while we were having lunch. Everybody had ordered pizza and while we were sitting in the control room, the guitar player, Terry Kath, went out into the studio, turned up his amp as loud as it could go and started doing feedback and distorted sounds. It was so weird, I just opened up all the mics and asked the tape operator to record it. I wanted Terry to hear it when he came back in. So, we had this on tape, and I suggested we use it for the double album. Jimmy said it wasn't music—but I really felt it was great stuff.

So, Guercio says that Columbia is not going to go for a double set because the public wouldn't pay ten dollars for an unknown band, which was double the five dollar album price in those days. I said Columbia should put out two records and just charge the additional price to pay for the pressing of the second disk. It would be like a discount package. They had a meeting and did it and it worked.

Bonzai: What was it like working with Janis Joplin?

Catero: She was incredible. It's no secret—she used to drink her Southern Comfort a lot, and used to be drunk a lot, but I tell you, I don't think it ever affected her performance. In those days, we recorded live, band and vocals. Every time Janis did a take she would kill. She sang incredibly and the people in the booth were just stunned because she gave it all. She'd come in drenched with sweat, and we'd listen back and hear all sort of mistakes from the band. Eventually, for the Cheap Thrills album, the producer said we would have to record the album in concert because the band was not used to working in the studio. We went to the Grande Ballroom in Detroit and you've heard the results—she was amazing. In fact, the audience was so stunned—they had never heard anything like it before—that they barely applauded. It wasn't because they didn't like it; they just didn't know what to make of it. So, back in New York where we mixed the album, we recorded secretaries, engineers, and other people in the hall whistling and clapping and shaking tambourines to make the album sound believable as a live concert. We also had to fix the instruments a little, but we got a good album.

Bonzai: You must have some interesting outtakes in your private collection.


Catero: Well, I'm not too big on outtakes, but I have a lot of recordings that were not released. I have the audition tape for Peter, Paul & Mary, and a recording of Beverly Sills that was never released because she wasn't completely happy with her performance. I kept a tape of Barbra Streisand's "People" session because I found it interesting. You can hear her talking to the musicians. She was another complete professional from the very first session. While at Columbia, I kept tape copies of most of the things I worked on—like Chicago, and Blood, Sweat & Tears. I have tapes of those albums.

Bonzai: Are they still playable? Haven't they disintegrated by now?

Catero: No—they sound great. You heard the Dylan tape. If you take care, a tape will last 200 years. You might want to make a copy after a century or so, but if it's safely stored, it should last 200 years before it's useless.

Bonzai: How do you store tape?

Catero: Flat wound is the most important thing. Not just wound, but wound like when the tape is new and you can touch the edge and it feels like a solid piece. You have to store it that way,



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because it packs tighter than a molecule of water. Tape has iron oxide on it, and what does iron do? It rusts. Leave it exposed to moisture and tape will oxidize, and ultimately the tape will lose its tensile uniformity and buckle—so, you get a 'whoosh' as it goes past the heads. I store all my tapes in plastic bags, flat wound, in a fairly cool place. They'll last a lifetime. Whoever inherits what I have can deal with it later, and transfer it to digital—but that's no guarantee either. Digital is a lot more sensitive to decay because the information is at a much higher frequency and the incidence of deterioration affecting reproduction is much greater. The tape may last 200 years, but they'll have trouble digitally decoding and reproducing those high frequencies. After 20 or 30 years, I think dropouts will cause serious problems.

Bonzai: How did you make the transition from New York to San Francisco?
Catero: As an engineer, I got as high as I could go at Columbia. I was respected by everybody there, was dealing with the big wigs, and was on the verge of becoming an executive. Well, I just don't want to be an executive. I don't want to sit at a desk and tell people what to do. I want to be with musicians. I studied piano when I was

young, but I was terrible. But I love music and that's why I became an engineer.

David Rubinson was a producer at Columbia and we worked together almost exclusively. They wanted him to be one of their top producers—which means that he would produce people who didn't need producing, like Tony Bennett, Peggy Lee, Barbra Streisand. He wanted to bring people from the grass roots—uneducated, inexperienced—and to create artists. Columbia wanted to give that role to some young bloods, so he left Columbia and made me an offer I couldn't refuse. We came out here and teamed up with Bill Graham in management and promotion, and Brian Rohan, a top record business lawyer. We started Fillmore Records and San Francisco Records, recorded groups like Cold Blood and Tower of Power, but the company only lasted about a year. David and I continued to do records together for years afterward, though, at his Automatt Studios, in San Francisco.

When Rubinson had to leave producing because of his heart attack, I went freelance as an engineer. But I had always had something in the back of my mind. I wanted to start a record company and work with people who really deserved to be recorded. I felt

that this was the time to give it a try. I thought if David Geffen can call his company Geffen Records, I can call mine Catero Records. It's a respected name in the business and it sounds pretty good.

In the past two and a half years, we have gathered 18 acts on the label. Of course, I'm learning the hard way. There is nothing I don't know about making records—but I know very little about promoting, selling, and distributing. I've had some setbacks. A lot of people have tried to help me, but a lot of people have screwed me—maybe not intentionally, but just because I wasn't sharp enough. So, I'm learning.

Bonzai: Who are a few of the artists on your label?

Catero: We have Terry Garthwaite—she used to be with the Joy of Cooking. She has created a beautiful blending of contemporary folk and jazz. Dick Hindman, musical director of The American Conservatory Theater here in The City—a superb pianist. Cyrille Verdeaux, formerly with Polydor in Europe, a blend of French background coupled with East Indian influences. My label is basically jazz, New Age music, and a few other styles. I don't want to be pigeonholed. For instance, I have the Nuclear Whales Saxophone

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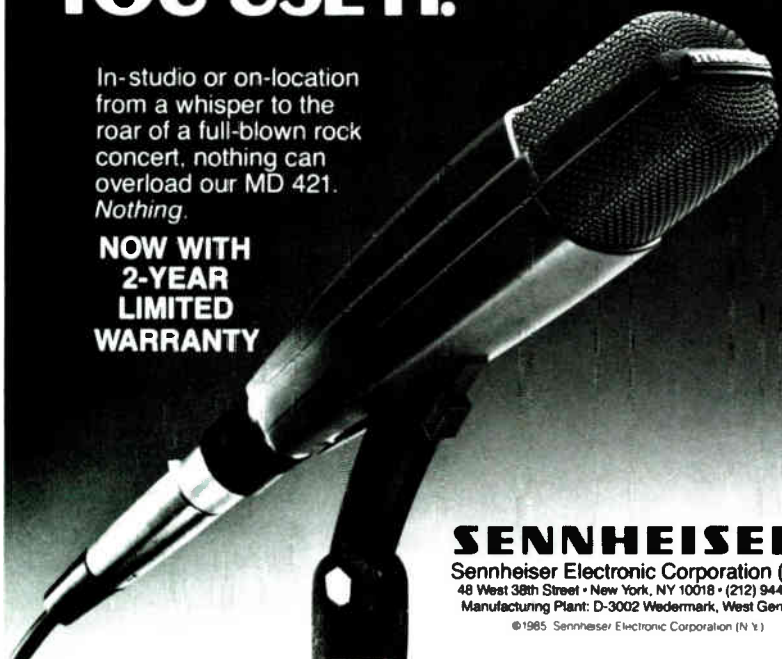
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Orchestra—which is an incredible ensemble that plays jazz, classical, ragtime—great fun. And the Rhyth-o-Matics, which is world beat/Afro/ska. I think this was the first World Beat album released. It's produced by Bob Johnston, who worked with Dylan. I do most of my recording at Music Annex—a very good studio. And a very fortunate thing has happened. Fantasy Records is distributing and manufacturing the three New Age titles on the label.

Bonzai: Are your records hard to find?
Catero: It can be difficult at this time, because I've had distribution problems. But hey, if people go into a record store and start screaming and kicking because they want Catero records, believe me—it will help. Or they can write to me at 1301 Chestnut St., San Carlos, CA 94070. The records are all audiophile quality, pressed in West Germany at great expense, but I believe in quality.

Bonzai: Are you the engineer on all your records?

Catero: Most of them, but some have been recorded elsewhere. Some people have shopped around and then have come to me. My motto is, "If it's commercial it's probably on the charts; if it's good, it's probably on Catero Records." I am not putting down the majors—their concern is to be commercial. My first priority is that it be good and if it's commercial, all the better.

Bonzai: Are you also a producer now?

Catero: I am sometimes a co-producer, but I am first and foremost an engineer. I can help in conceptualizing for record, but I am not a producer who takes a raw band and develops them.

Bonzai: So you've really found your role in this business?

Catero: Yes, and I enjoy doing it. I tell people who want to get into this business, don't get in because you want to be a star, not because you want to make money—the only reason you should get in the music and creative arts is because you love what you do. This way, doing it is its own reward. Even if you don't get rich, you will not be disappointed. I practice what I preach, while I'm sometimes financially dying on my feet. I love what I do; I love music, I enjoy sharing. I am a preserver—I love preserving the work of these artists. Even if the records didn't sell, it is recorded and someday somebody will pick one up and say, "This is incredible. Thank God somebody cared enough—not for the dollar—but to put it down on wax," as they say. ■



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Circle #040 on Reader Service Card

—FROM PAGE 12, STUDIO NEWS

icon PCM70, Yamaha REV7 and more... Major renovations have begun at **ARS Recording Studio** in Alsip, IL. The acquisition of a brand new Amek Angela desk in 32x24 configuration has been augmented by the addition of a Lexicon 200, etc... **Fred Jones Recording Services** in Hollywood, CA has added a second audio post for film and one-inch video sweetening room... **The Ranch Recording Studio** of Duncan, OK, took delivery on their new remote audio truck, promptly dubbing it Mobile One. The truck features a modified Yamaha RM-2408 console and Tascam MS-16, 16-track deck, plus a full array of outboard gear and microphones... **New York City's Digital Music Center** has added **Kevin Cosgrove**, formerly a product specialist with Musication, to its production/education staff... The Recording Arts Department at the **University of Southern California** took delivery of a custom 32 channel mixing console which was donated by Herb Alpert and A&M Records. The console was built by A&M from API, Quad Eight and custom-made components and was used in one of their mixdown studios until the beginning of remodelling operations which began in January of this year... **Prairie Sun Recording** in Cotati, CA took delivery of the Publison Infernal Machine 90... **Dragon Studios**, in Redwood City, CA upgraded to 24-track status on August 1, adding an MCI JH16/24 recorder with auto-locate II; MCI

JH-636-32VU console with JH50 automation; MCI JH-110B 2-track and white room equalization to complement the existing UREI 813B/Hafler P500 monitoring system... **Jolie Barbieri, John Ramo and Zenon Slawinski**, the award-winning creative team at **Sonic Images, Inc.** has opened a new 24-track audio and video production facility in Washington D.C. featuring two fully equipped LEDE designed control rooms, the Q.Lock Eclipse for precision audio/video synchronization and audio sweetening, and more... **Dutchman Sound Labs** is a new mobile 8-track recording facility operating in the greater Western Massachusetts area. Their primary market is the "demo" recording and lower-to-middle budget release customers. Their equipment roster includes a Studiomaster 16x4x2 mixing console, Tascam 80-8 multi-track recorder, and much more. For other information write Dutchman Sound Labs, 52 Frederic St., Springfield, MA 01119, or call (413) 783-3765... **Reflection Sound Studios**, Charlotte, NC, has recently enlarged and rebuilt control room A, adding an adjacent isolation booth and all new wiring by Monster (Series One) and Mogami cable. Acoustic consulting by Steven Durr... **Cantrax Recorders** of Long Beach, CA recently purchased a Studer A820 mastering machine. Other additions are Valley People Stereo Dyna-Mites and JBL biradial monitors... Equipment acquisitions at **Spectrum Studios** in Portland included three Yamaha

REV7 digital reverb units, three ADR FX-769-R Vocal Stressers and three UREI LA-3A compressors... After many years of providing high quality 8-track one-inch recording, **Bay Records Studios** of Alameda, CA has added 16-track 2-inch facilities. This has been accomplished by the purchase and installation of a Bimix 20-in by 16-outboard and an M79 16-track recorder... Despite living in Switzerland, **David Bowie** decided to buy British when he walked into his local dealer in Montreux, Switzerland. He bought an AHB (Allen and Heath Brenell) CMC 24 which offers the "CARS" facility—Computer Assisted Routing (and muting) System. The CMC has 24 channels for 16-track recording, other versions are also available, and the mixer will be used in a studio Bowie is constructing at home... **Spectrum Studios** of Portland, Oregon says construction has begun on a more extensive facility that will have 20,000 sq. ft. of space, parking for 25 cars and is just seven blocks west of their current location. Russ Berger of Joiner-Rose Group in Dallas, TX is designing the four-studio complex. Plans include a spacious music studio with automated mixing and digital mastering; an audio sweetening for video studio with Foley capabilities; two excellent broadcast production studios; music and sound effects scoring suite; and tape duplication room...

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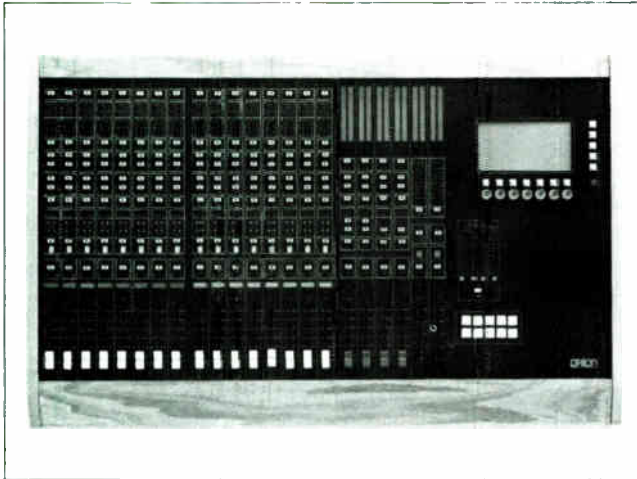
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World Radio History

P R E V I E W



Orion AMU Television Mixer

The AMU Series of television audio mixing systems from Orion Research of Cleveland, OH, is designed expressly for TV broadcast, production, post-production and remote applications. Available in 8 to 32 stereo input versions, the AMU includes stereo: aux sends, monitors, submasters, and masters; the optional 7-band EQ is also stereo.

Other standard features include "ReMem," a recall memory system enabling storage, and reset of up to 32 console setups; "SoftMap," an input-to-fader routing, allowing any fader to control any input; and a CRT output to display any software-selectable functions. Prices range from under-\$13,000 for the 8 input model to under-\$48,000 for the 32 channel version, with a plug-in serial interface for video editors available as an option.

Circle #042 on Reader Service Card



Sequential Studio 440

Sequential, of San Jose, CA, has introduced the Studio 440 audio system controller, a versatile unit combining 12-bit linear 32-sound sampling, a powerful drum machine, 40,000 note MIDI sequencer, and an audio/visual post-production tool. The Studio 440 features a 3.5-inch double sided disk drive for reliable data transfers and an SCSI port (Small Computer Systems Interface) provides for future expansion via hard disk or CD-ROM systems. The internal sampler is equal in quality to that in Sequen-

tial's Prophet 2000; analog and digital controls allow for sample modification, and samples can be accessed via the on-board sequencer, 8 pressure/velocity sensitive sound pads, external MIDI keyboards/devices, or a trigger input jack. Sampling rates vary from 15.625 kHz (with 33.6 second duration) to 41.667 kHz (12.6 second samples).

The Studio 440 can sync to five different sources: internal; external SMPTE slaving; external MIDI clock; external MIDI time code; and five external clicks of 96, 48, or 24 ppqn. The unit is priced at \$3999, and an optional post-production software package from Digidesign is now in development.

Circle #043 on Reader Service Card



Peavey MD-II/MD-IIB Series Mixers

The new MD-II and MD-IIB mixers from Peavey Electronics, Meridian, MS, are moderately priced stereo consoles available in 8, 12 and 16 input versions (model MD-II) and in 12/16 input configurations with transformer balanced outputs (MD-IIB models). Features on all mixers in the series include balanced XLR and 1/4-inch inputs, pre-EQ effects patch loop, 3-band channel EQ with semi-parametric midband, long-throw 100mm faders, built-in Accutronics 6-spring reverb system, top-mount patching for easy visibility, and a socket for an optional mixer lamp.

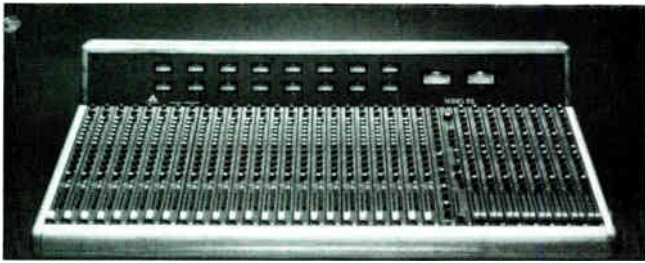
Circle #044 on Reader Service Card



Aphex Compellor/Aural Exciter

Aphex Systems of North Hollywood, CA is now shipping their new combination Compellor/Aural Exciter (Model 303). The new single rack height product utilizes the model 301 monaural Compellor for complete dynamics and gain control and the basic circuitry of the modular Aural Exciter model 9001 to produce dramatically improved clarity, dimension and character. The unit features balanced inputs and outputs, using XLR type connections. Suggested price is \$949.

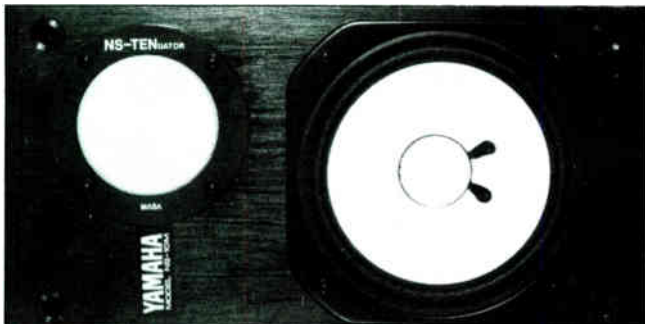
Circle #045 on Reader Service Card



Trident Series 65 (16)

Los Angeles based Trident Audio USA has announced the Series 65 (16) multi-track recording console, a new addition to their 65 Series of mixers. The new version is available in six frame sizes (from 16 to 56 inputs) with 16 discrete output buses and 16-track monitoring of the tape returns. Other features include separate mic and line inputs with phase reverse, 4-band EQ with variable high pass filter, eight auxiliary sends, auto muting, solo in place, monitor fader reverse, direct outputs and four echo returns. Pricing begins at \$10,200.

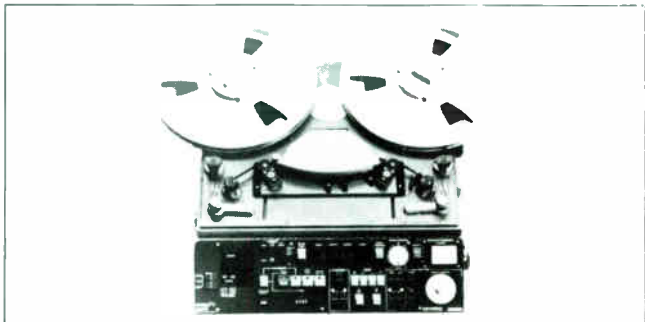
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NS-TENUator

The NS-TENUator from Miller Audio Services/Accessories, Culver City, CA, is an add-on device designed for the popular Yamaha NS-10M reference speakers. Many engineers cover the tweeters with tissue or other materials in order to attenuate the high end. Usually using white masking tape, this set-up looks jury rigged in otherwise well-designed control rooms. The NS-TENUator neatly holds Kimwipes, tissues, or other filtering materials against the tweeters of the Yamaha NS-10M. Using Yamaha's existing mounting holes, the NS-TENUator can be installed or removed in five minutes, requiring only a screwdriver. It is made from steel, finished in jet black to match the Yamaha cabinet, and are priced at \$15/pair.

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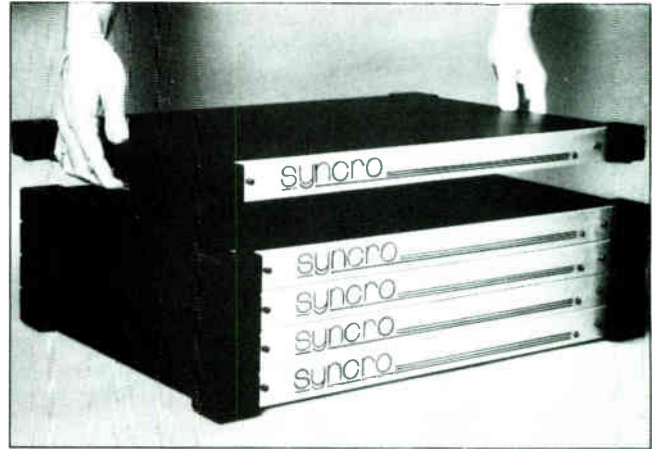


Nagra T-Audio-TC with RS-422 Port

The T-Audio-TC (for time code) recorder from Nagra/Kudelski, New York City, includes an RS-422 remote serial port and special software allowing post houses to edit

audio in parallel with video, increasing the available number of tracks and maintaining high sound quality. The new software emulates Ampex and Sony VTRs, so the T-Audio-TC responds to the edit controller's commands in the same way as the VTR, while ignoring any video-specific commands, and software emulating other major VTRs is now under development.

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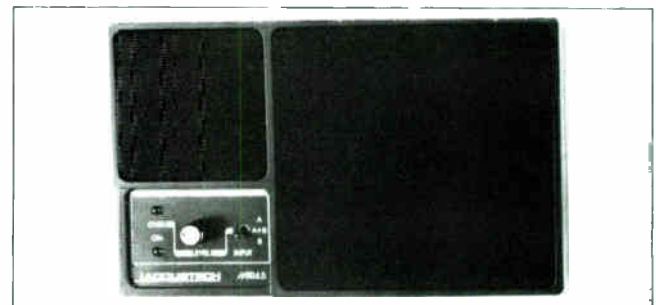


Soundmaster Editing/Sync System

Soundmaster International of Toronto, Canada, have introduced the Soundmaster Integrated Editing System incorporating Syncro programmable machine synchronization. Controlled by the IBM PC-based Soundmaster software, Syncro communicates with the host computer via its 5 MHz data bus and each Syncro contains an 8088 and 8087 microprocessor and onboard RAM to support edit list multi-tasking. "Smart" machine-mounted interfaces allow for universal cabling and modular construction facilitates rapid field expansion to 16 or more units.

Features include variable speed lockup for 1/3 to three times play speed, programmable closures for external device control, keyboard designation of master machine, simultaneous synchronization of all international time codes, and the capability to servo the master to an external sync source. Suggested price for a three machine control system is \$12,915 (U.S.) including cables and interfaces.

Circle #049 on Reader Service Card



Acoustech MTR 4.5 Monitor

The Acoustech MTR 4.5 from ElectroMedia Marketing (Farmington Hills, MI) is a powered monitor speaker that can be used freestanding or mounted next to a waveform monitor in a Tektronix™ dual rack assembly. Two switchable balanced inputs are provided, and an internal 55 watt amplifier drives the magnetically shielded 4.5-inch speaker with up to 102 dB SPL at one meter. The MTR 4.5 is priced at \$495.

Circle #050 on Reader Service Card



SENNHEISER MKH40P48

by David Dugdale

Every once in a while, a design comes along where you can't help but ask, "why isn't everybody else trying this?" This was the question I asked myself when reviewing the Sennheiser MKH40.

The MKH40 incorporates a combination of two design concepts: a pressure gradient, symmetrical transducer for increased sensitivity and low distortion at high sound pressure levels; and the RF principle for low self-noise output and also high output level. It's not surprising with the advantages of both design concepts to see excellent results on paper (specs) and in the studio.

Sennheiser's commitment in expanding the dynamic range of their microphones is evident when looking at the noise ratings on the MKH40. With digital recording, much attention is now placed on the noise created by the transducer and the enclosed amplifier circuit. One way Sennheiser has improved noise characteristics is by increasing the mic's sensitivity, with a symmetrical transducer using two stators instead of one, which in turn, doubles the sensitivity. With an additional back plate (second stator), two equal air gaps are formed. As the

diaphragm is deflected, a push-pull arrangement is present, much like the arrangement in electrostatic loudspeakers. As the diaphragm is displaced, the acoustic impedances of the air gaps are affected opposite to each other. Any distortion caused by curvature of the diaphragm at high levels will cancel, and the total air gap impedance will remain constant.

In the past, RF condensers were thought of as being unreliable and somewhat noisy, but with continual refinements, RF condensers are now known for their low self-noise output. Also, the RF design is capable of higher output levels than conventional condenser microphones, for better immunity to interference in long cable runs.

Essentially, the RF principle utilizes a capacitor microphone applied to a radio frequency oscillator. Pressure waves hitting the diaphragm result in frequency modulations of the oscillator. From there, the signal is demodulated, and an audio signal is present.

This RF design offers several advantages over conventional approaches. In conventional condensers, a fixed charge is put on the diaphragm allowing the output voltage to change in proportion to the relative change in capacity. To increase the sensitivity of this microphone, the bias voltage on

the capsule must increase, but it is limited by the noise and distortion due from arcing which is usually aggravated by high humidity. With the RF design, high sensitivity can be achieved very easily, in fact line level signals can be produced if so desired. In the RF design, no polarizing voltage is used, therefore the microphone is less susceptible to the attraction of dust and other particles, which degrades microphone performance.

The MKH40 comes in a handsome black finish with a windscreen and a microphone clip to match. Finally someone has designed a microphone clip that slides on tight and secure, without sliding and turning around. It has a selectable 10 dB pad and a 6 dB per octave rolloff switch at 120 Hz to compensate for proximity effect. The MKH40 has a frequency response going from 40 Hz up to 20 kHz, with a high sensitivity of 25 mV/Pa which converts to -32 dB (0 dB = 1 V/microbar), and a low noise rating of 12 dBA (16 dBA for equivalent RMS SPL (DIN45-500)). The small size and dark appearance (less reflective) make the microphone somewhat unnoticeable in concert situations. Dimensions are 25mm in diameter by 150mm long. The suggested list price is \$685.

So the reader can get some approximate idea of how the MKH40 sounds; I have compared it with many common condenser microphones that are closely rated in characteristics. Realizing that each individual microphone on the market has its own characteristic sound, I hope to present this subjective evaluation in such a way that the reader can get an idea of the MKH40s sound, in relation to microphones you are familiar with.

When the MKH40 is put along side the closely related AKG 451, both microphones have similar frequency response, polar patterns and diaphragm size. Both pairs were then placed in an X-Y coincident stereo pair, with each pair at a 100 degree angle compensating for placement in relation to the stage. Both sets of microphones were a few inches apart, with the same orientation to the stage. The concert to be recorded consisted of orchestra chamber music in a fairly live concert hall.

During the first piece, I was surprised to hear only very small differences between the two sets of microphones. While the MKH40 had a little more

punch in the low end, the AKG 451s showed just a little more high end than the MKH40. Both microphones sounded very clear in the upper range of the strings. The biggest difference came with applause. The MKH40 rejected more off axis sounds, with less coloration than the AKG 451s.

Next, I tried the Sennheisers in a close miking situation. I compared them with the Shure SM81 in an X-Y pair over the hammers of a Steinway grand piano, placing the two sets of microphones as close together as possible. In the final analysis, the MKH40 gave a more accurate representation of the piano sound than did the SM81s, and gave a fuller stereo image.

In the few weeks I had my review samples, I lent them out to many other engineers interested in using them. The first thing I noticed was most everyone headed straight for the nearest drumset they could find. The comments I received back mostly consisted of praised reviews, being an excellent microphone for the drum kit, especially when used as overheads. In a digital recording session I had a chance to use them for drums myself, finding their ability to handle transients very well, with cymbals ringing through crystal clear. I was surprised to see just how sensitive the MKH40s were. Even with the 10 dB pad employed on the microphone, and the 30 dB pad on the mixing console used, I still had to bring the preamp all the way down on the console, and use less than unity gain on the channel fader.

In the next close miking situation, I was interested in how they sounded on vocals (in this case, a female vocalist). I placed a Neumann U47 up next to the Sennheiser, and had her sing into each microphone separately, singing at the same distance from each microphone. With the vocalist singing mostly in the upper register of her voice, the producer was looking for a clean vocal sound without a chesty quality. I noticed the clarity in the Sennheiser, while the Neumann had a warmer sound. The Sennheiser also handled the popping "p"s a little better. In the final decision on vocal tracks, the Sennheisers were chosen by the producer for their clean, accurate reproduction.

I spent many times A-B'ing back and forth, listening to many different studio condenser microphones. I found myself leaving the MKH40s on most of the time when I would sit back and listen. In a wide variety of applications, from chamber music to a closed miked drum kit, the MKH40 proved itself to be a highly versatile microphone for the studio. Its unique features make it stand apart from the competition. ■

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—FROM PAGE 20, PRESSING PLANS

suggest that more and bigger CD pressing plants will be needed in the future. That prediction is placed in a conservative light when it is considered, the problem is compounded. As those markets develop, the demand for discs will increase even more, thus necessitating even more pressing capacity.

It seems possible that the continued strong growth forecast for the CD in future years could tax the current facilities and their current plans for expansion, as well as new facilities. Because of a lead time of 18 to 24 months required to bring a CD plant on-line, it is imperative that new pressing facilities enter the planning stage now.

Exactly how many plants will be needed, employing how many people, requiring how much investment capital? Those are particularly difficult questions to answer, especially with the wild card of alternative pressing methods. Several small R & D companies are working hard on photo-thermographic transfer methods; if and when perfected, they would offer considerable advantages in cost and rate of CD production over the injection molding method now commonly employed. How close to actuality are these new methods? No one (maybe not even the researchers) knows for sure, but one company, DOCDATA, has announced production of 500,000 CDs in 1986, undoubtedly to iron out

the bugs in their manufacturing process. Comdisc, in Los Angeles, California, inventor of another proprietary manufacturing method, remains optimistic but has not publicly announced plans for mass production of discs. If and when these new methods are commercialized, the pressing picture could change radically.

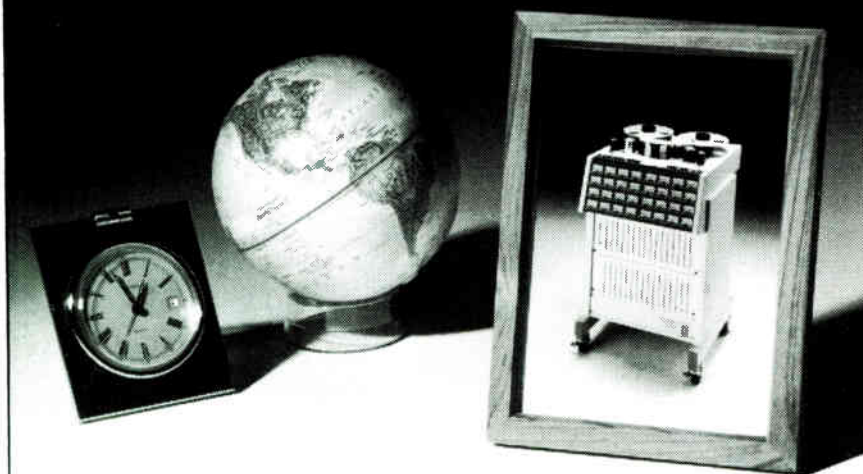
Finally, and perhaps most intriguing, is the simple question of perspective. As phenomenal as the compact disc phenomenon has been, one must remember that it is still only a tiny fraction of the market. As the figure shows, CD sales accounted for only 5.8 million unit sales of the 679.8 million unit sales in 1984, and 22.6 million unit sales of the 653 million unit sales in 1985, of the American prerecorded music market. CDs account for a small percentage of the market, but it's growing fast. When one considers that the CD could account for half of the market by 1990, it is clear that CD pressing plants have their work cut out for them.

Audio Rumor Central

Rumor Central is spending most of the month of August at the beach. (Unfortunately, by the time you read this in October, my tan will have long ago faded.) Nevertheless, a few tidbits washed up on the sand, corked inside a Beck's beer (dark) bottle. *AES-Music*: Rumors about of an AES conference on music technology, to be held in the spring. I'll bet attendance probably dwarfs that of regular conventions. *Mickey and Friends*: Disney-World in Orlando, Florida held a technical seminar and lecture series in July, with numerous manufacturers attending, representing the growing entertainment segment of the audio/video industry. Look for more clout from this growing part of the industry. *CD Non-Standard*: Of course, everybody's confused about the difference between CD-ROM and CD-I, but disc manufacturers are still confused about music CDs. There is disagreement on how to place the PQ subcode; the result is chopped beginnings and endings of tracks—an annoyance, and clear violation of the high tech aesthetics of the compact disc. Consumers are starting to complain—particularly given the prices of CDs. This clearly points to the need for further education, and consensus, on the part of the manufacturers involved. Hopefully, Sony and Philips will police this situation.

Do you have information or rumor for Insider Audio? Each month's hottest tip wins a special *Mix* prize. Come on—send it in! Contact Ken Pohlmann, University of Miami, P.O. Box 248165, Coral Gables, FL 33124, Telex 519308, or *Mix* at (415) 843-7901. ■

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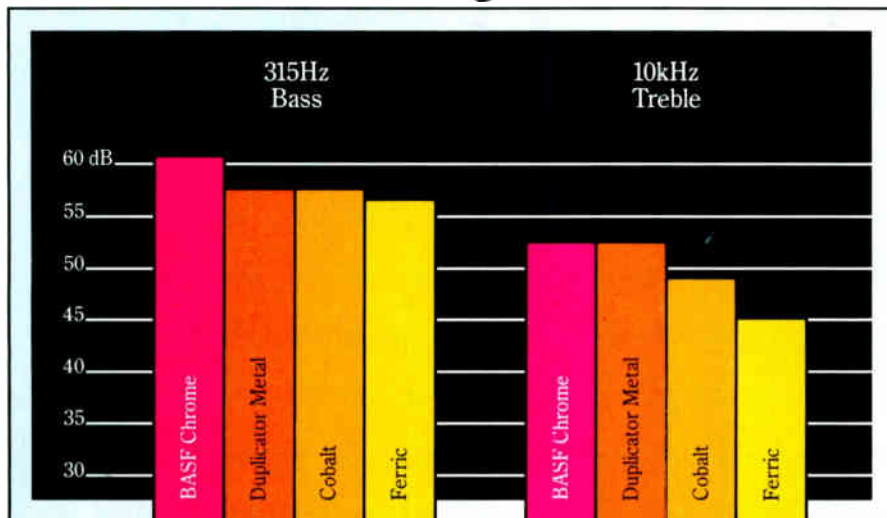
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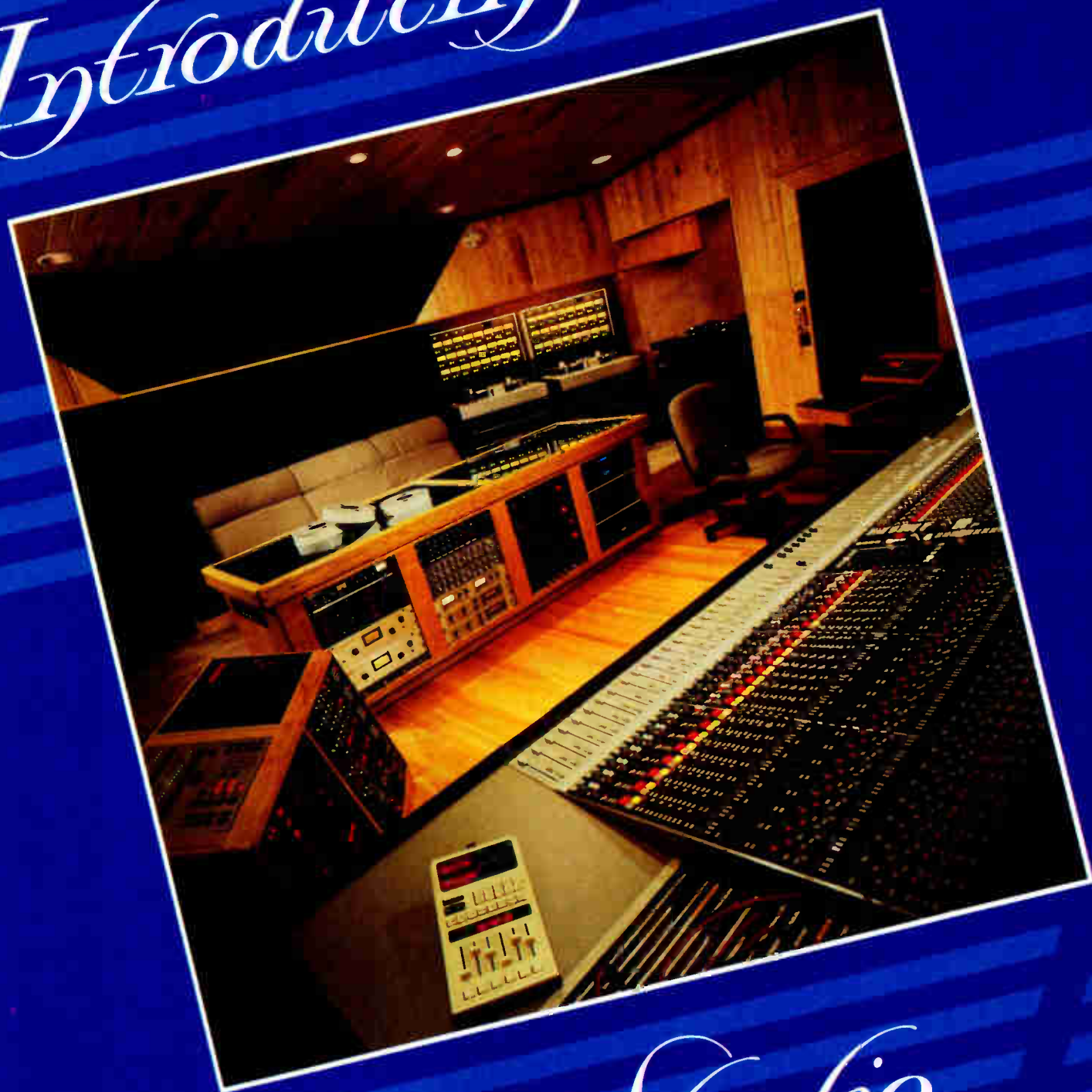


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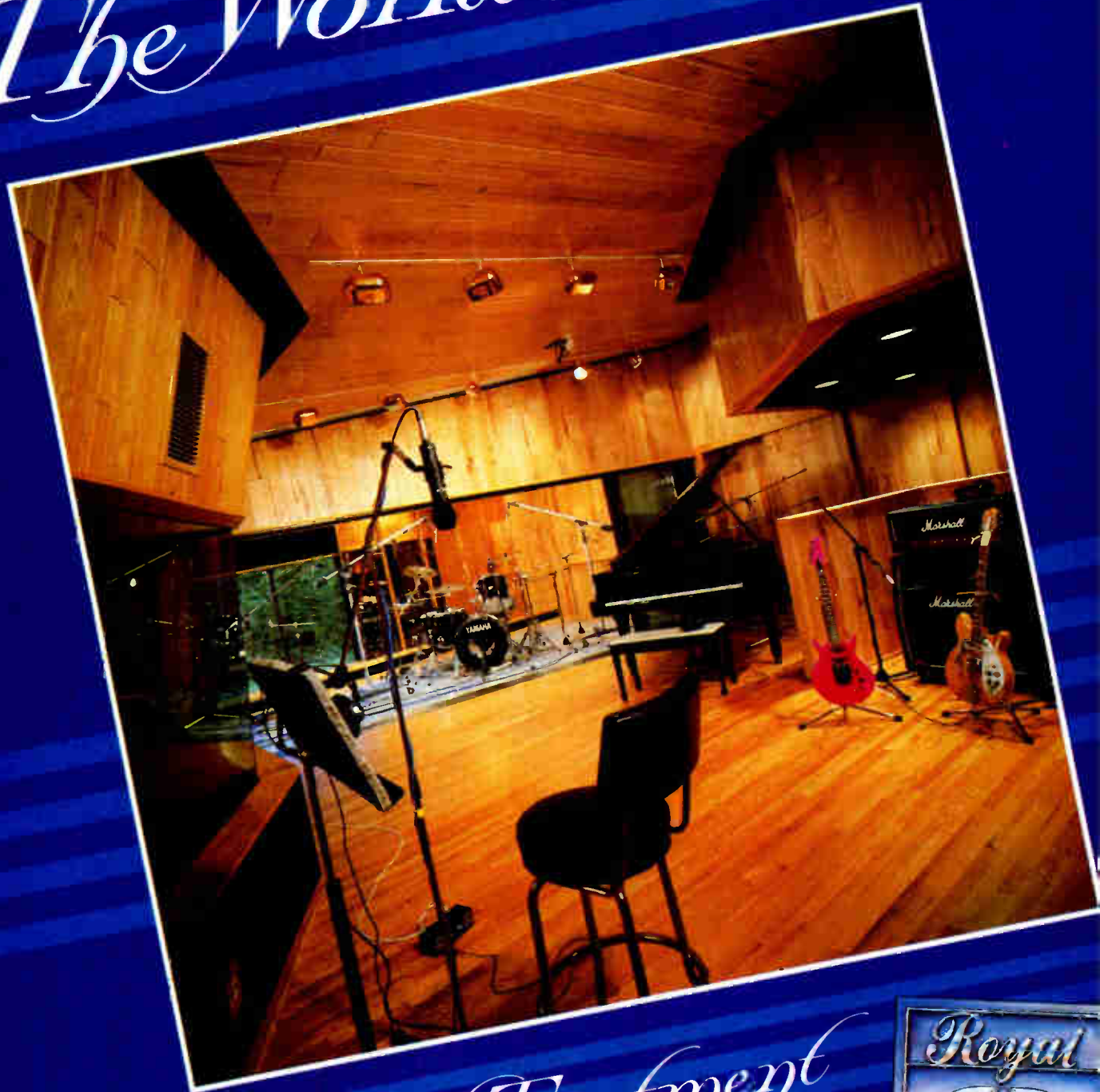
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POST-SCRIPT

Dallas Sound Lab, Studio C



DIGITAL/VIDEO INTERLOCK

by Ron S. Lagerlof and Rusty Smith

This month we begin Post*Script, a column written by *Mix* readers that addresses various aspects of the quickly moving post-production industry. In this area of *Mix*, we will take a close look at how engineers and producers are dealing with the complexities of bringing audio and video together in the studio. Your suggestions are welcome.

Digital audio, the buzzword of the 1970s. Digital recording was in its infancy, and as it grew, so did the surrounding technology, and it was hailed by many in the music industry as the new way to make records. But alas, the demise of the record industry in the late '70s caused many a studio to falter, and some to fail, leading the owners of the remaining facilities to ask themselves, "What are we going to do next?"

"Diversify!" That's what they all said.



Find other ways to market the studio and develop a new, fresh client base. This meant having to invest in still more hardware; video machines, time code generators and synchronization equipment. Thus, the key phrase for the '80s: Video Audio Post-Production (VAPP).

In this highly volatile industry, we have seen trends come and go, but

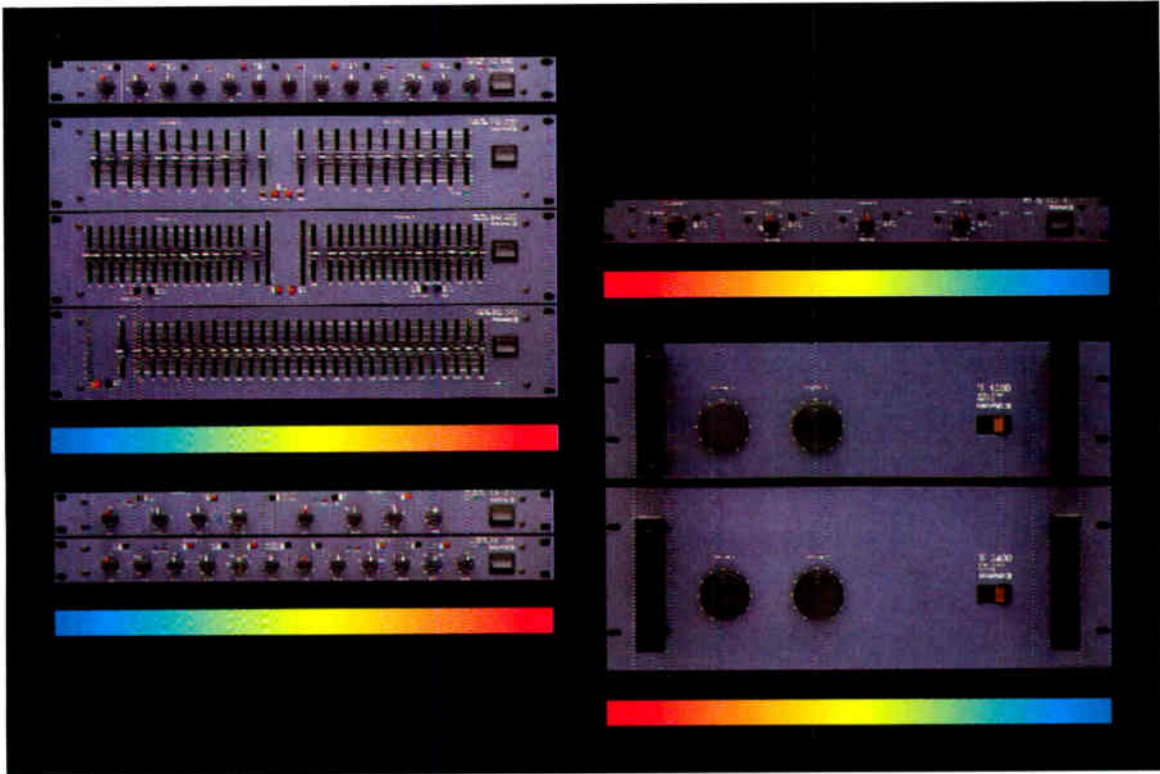
digital audio and VAPP remain high on the techno-totem pole of many of today's leading studios.

So the question now is, "How do we get these two guys together and make them work for us?" A marriage made in heaven, right? Well, almost. We must first look at some important considerations before interfacing the handy digital multi-track to our handy video recorder via the handy synchronizer.

Aspects of Interlock

Let's get down to basics. Interlocking analog audio recorders to video machines is easy, as long as you are slaving the audio machine. Syncing analog recorders to digital audio machines is easy, as long as the digital is the master. The problem is encountered when we try to slave digital or video machines to analog, or a non-resolved master. What we have here is your basic failure to communicate, or "Get yo' mama to chase the VCR!"

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er must resolve its control track to its sync source, whether an internal crystal or an external video signal generator (genlocked). Digital audio recorders, much like video machines, also record a control track which must also be resolved either to its crystal, or to an external source in order for them to playback the audio. Any old analog machine will just roll right along and spit out audio regardless of what speed it was recorded and played back at. Digital, on the other hand, will only un-mute; that is, it will only put out audio when the machine has reached full speed and stays there for a length of time. If it tries to slow down or speed up, as an analog machine would in order to stay locked to its video master,

it mutes until its speed again becomes stable.

So again the question, "How are we gonna get these two guys together?"

The Digital/Video Connection

We have established that both video and digital audio machines will accept an external sync source. It would be nice if they would clock to the same reference. Fortunately, most machine manufacturers have provided us with an external sync input that accepts a composite video signal from the house sync generator. With the synchronizer in the "auto" mode, once the machines achieve frame-sync, the synchronizer switches over to phase-sync and looks at the leading edge of

the time code waveform, instead of the frame numbers. At this point, the synchronizer "lets go" of the digital transport, and the speed of the slave is governed by what it is receiving at its sync input. As long as the rates stay the same, the machines stay in sync.

Sony's VCLK (video clock) board for the PCM-3324 will allow the machine to be genlocked to an external reference of composite video (NTSC or PAL/SECAM), or a square wave of 24/50/60 Hz. In addition, the now available VSU-3310 option accepts nearly all control signals and allows truly variable speed operation, making the 3324 behave much like an analog transport when controlled by a synchronizer.

(Most presently available synchronizers will interface with the Sony. However, certain revisions of the machine's operating software may require modifications or circuit changes in the synchronizer interface in order to let the machine lock up. At the Dallas Sound Lab, we are currently using two separate systems to sync the 3324 to video in which mods to both systems were required after installing the current revision software.)

Dallas Sound Lab Operations

Primarily used for music recording and scoring to picture, Studio A houses the Solid State Logic 6000E console and Audio Kinetics Q.Lock 3.10 synchronizer system for slaving the Sony 3324 to picture from a Sony VO-5850 3/4-inch video recorder. Mixing with the SSL computer is handled with the addition of the Frame Jog Card, (available from SSL) which allows the 5850 to act as master. (The computer time code source, independent of code source to the synchronizer, may be either the digital or video machine's.) The Q.Lock is paralleled through the "Frame Jog" interface and is selected in cascade mode so that the 3324 will chase the video machine as it is commanded by the console. In addition, the MCI/Sony one-inch "C" format audio layback machine may be selected as a second slave to facilitate sending the two-channel mix directly to the one-inch video master.

In Studio C, where most of the editing/assembly work is carried out, the lock-up system is the BTX Softouch computer controller, handling three Shadow synchronizers and a Cypher time code generator/reader/events controller. Here, still another possibility exists. A JVC 8250U 3/4-inch recorder carrying digital audio data from a Sony PCM-10 two-channel digital processor can be slaved to the VO-5850/3324 link for further editing capability.

This adds another variable, and po-



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Ian Eales: Ian has served as technical audio consultant and as engineer for numerous rooms on the west coast. Ian's work includes David Foster's "Best Of Me" LP and Sheena Easton's "Kept Secret". Ian has worked extensively with Al Jarreau, including his latest album "High Crime".



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Dallas Sound Lab, Studio A

tential problem, to the scenario. While not considered a professional machine, the PCM-10, an EIAJ format processor like the Sony F-1, has exceptional sound, rivaling the audio quality of conventional analog recorders, and when used in a situation such as this, keeps generation loss to a minimum. However, it still does not have the ability to be genlocked to an external source, giving it an unreliable rate at which it puts out the information to the VCR. The solution here is to pre-stripe the video tape with black burst (or color bars), simultaneously laying time code, then inserting the digital data over the video portion of the tape. Since the video machine is already resolving during the insert, playback of the PCM material is possible once we lock the two (or three) machines together.

Application With Video

This system works particularly well, and has been used on several projects of varying nature and complexity, including a multi-screen, audio-visual presentation for U.S. government contractor, General Dynamics, entitled "Star Performer," centered around the F-16 fighter jet.

Studio A was the scene for recording of the original music score to picture, with the 3324 locked to house sync while chasing a Sony 5850 via the Q.Lock 3.10. Mixdown had the 3324 resolving to house-sync, and being master to the SSL console computer. The stereo mix went to PCM F-1 (in the aforementioned manner) and also to half-inch 4-track with the same time code, for back-up and subsequent video editing.

Once the three final edited one-inch video masters (which would ultimately

"The use of digital recorders has forever changed our perception of sound as it is reproduced in the various media we are exposed to daily."

appear on separate screens) were combined to a single 3/4-inch video cassette with master time code, the editing of sound effects, music and narration/dialog would then be com-

pleted in Studio C.

Sound effects were brought in on several reels of 1/4-inch audio tape to be transferred, dubbing directly to the PCM-10 while logging locations and times. Now, with two of the major elements on stereo digital audio, the assembly process could commence.

The 3324 was again locked to the video master, this time with the BTX Shadow/Softouch system. The music and effects were layed over to the 24-track, along with other narration and sync-sound in typical edit/assembly fashion with the exception that another video recorder bearing the two-channel digital audio was being used as a source for the elements.

As the show would be projected panoramically over three screens, requiring separate one-inch video tapes, three separate stereo pairs of tracks were available for audio, allowing the respective balances of music, effects and dialog to be controlled within the theater environment. This presented another problem: how to simultaneously "layback" the three sets of mixes to their respective one-inch masters. Since there were enough open tracks on the 3324, stereo mixes of music, SFX and dialog/narration were recorded back onto itself, then merely transferred one set at a time to the individual one-inch video tapes.

Film Editing and Mixing

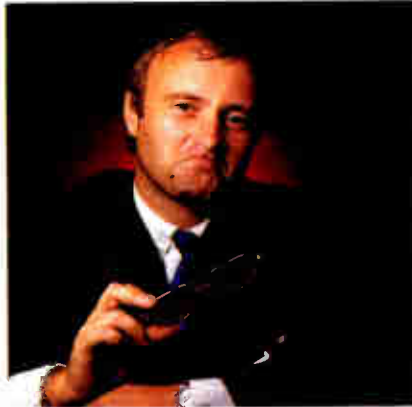
This system is not exclusive to videotape and has worked equally well in the film medium. *Computer Beach Party*, a feature film shot on the Texas coast and slated for theater release this fall, has been referred to the Dallas Sound Lab for transfers of the original music score to mag film. The director, Gary Troy, of Southwest Motion Pictures, intended to edit and dub music, SFX and dialog in the traditional film manner. After explaining our method of editing to digital multi-track, and mixing direct to mag, he said, "Let's do it!"

The film's work print was transferred to 3/4-inch video on a Rank Cintel flying spot scanner. This not being a one-to-one transfer actually reduces the film speed from the U.S. frequency of 60 Hz to the NTSC color video rate of 59.94 Hz, potentially presenting another sync problem. The sync sound that had previously been transferred to mag, therefore, had to also be slowed down by the same amount. This was made possible with the use of the box available from Audio Intervisual Design, called the "Stripper." When fed SMPTE time code of a 29.97 fps rate (59.94 field rate), it puts out a 59.94 Hz sine wave used to drive the pilot input of the master mag recorder, hence slowing down its servo

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the songs were mixed to half-inch 4-track along with time code derived from a "freewheeling" generator at its internal crystal rate of 30 fps. Nagra mixes with 60 Hz pilot were made simultaneously for playback on the set. The 4-track tapes, when resolved to a 29.97 fps time code, would then sync up with no problem when transferred direct to the digital multi-track. The remainder of the music score was transferred to the PCM-10 two-channel digital recorder and assembled as needed to the 3324 masters in the final editing form.

the required amount. (The time code generator which normally puts out 30 fps code, when genlocked, puts out this 29.97 fps code.) Again, since the time code generator, the 3324 and the VO-5850 are all looking at the house sync generator, there exists a common reference of 59.94 Hz. (A master may also be raised in speed [and pitch] by locking its 29.97 fps time code to a 30 fps color-bars tape. However, this does not work well with digital.)

The next order of business involved dialog replacement. Some of the ADR work had already begun in the film world. It was therefore necessary to

transfer this to the PCM-10, to eliminate unnecessary analog generations, for subsequent editing to the final digital multi-track master. All additional ADR loops were recorded to a half-inch analog 4-track (Dolby A) with time code and later assembled to the 3324. The use of the analog machine in this case was justified by the additional track capability and the need to advance or retard certain lines a frame or two with a greater degree of efficiency than would otherwise be possible.

The music was next to be transferred. Two scenes showed a band performing (lip-synched) on camera. For these,

One of the neatest advantages of digital recording is that of gapless punch-ins, fired frame-accurately from the BTX, facilitating the butt edits required in film editing of sound effects. Sound effects were re-recorded, in stereo, to the 3324, from sources that included compact disc dubbed from the Sound Ideas CD SFX library, and custom recorded effects, (ie. jeep sounds from one of the staff's hot-rod-ded, V-8 equipped CJ-5), as well as foley work done in an adjacent isolation booth. Room tones were captured from location sound tapes, sampled, edited into loops and stored to disk using the Akai S612 MIDI sampler. These loops, and additional sound ef-

—CONTINUED ON PAGE 176

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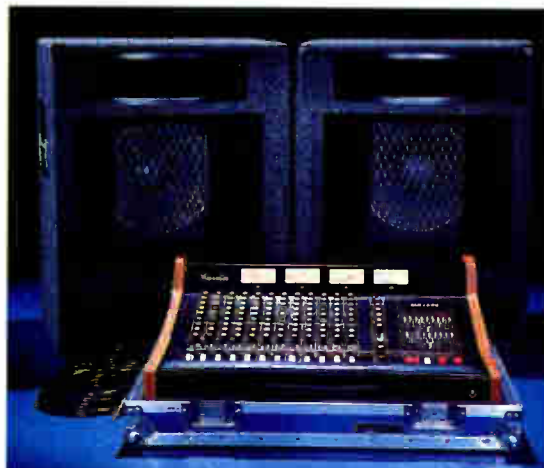
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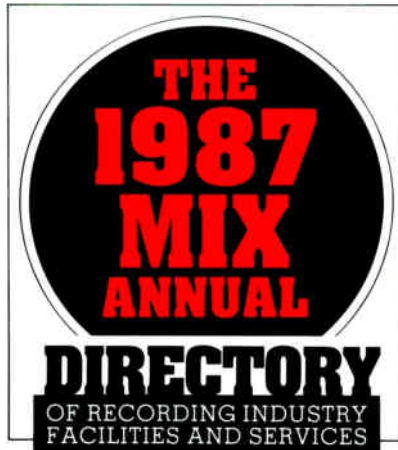
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Room "A" at Metro Studios in Minneapolis features an automated Trident 80B console (30x24x24); SOTA CF-2000 4-way, all-cone monitors; and a Chris Huston design. Metro keeps busy with about 50 percent commercial/jingle/post-production work, and fills the rest of their schedule with music clients such as Suburbs, Melvin James, and Mazerati—all of whom worked on LP projects at the studio recently. Photo by: Laurie Allen

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124	24+ TRACK STUDIOS

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.

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- SL504 Voices, Flute-Vocal
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- SL506 Strings 1
- SL507 Brass
- SL508 Harp Gliss, Cello Viola, Pan Pipes
- SL509 Pizz Strings, Eastern, Kalimba, Piza Strings
- SL510 The Island—Steel Drum, Shaker, Island Bell, Bass Marimba
- SL511 Bell JVT, Strings, String Bell 1, String Bell 2
- SL512 Guitars, Fuzz Guitar 4, 4-in-1 Guitar, Fuzz Guitar 1, Fuzz Guitar 2
- SL513 EFX1 Baby, Lotus, Zipper, Can, Gong, Glass

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All studio information listed has been supplied to *Mix* by studios responding to questionnaires mailed in May 1986. 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 use by the studios.

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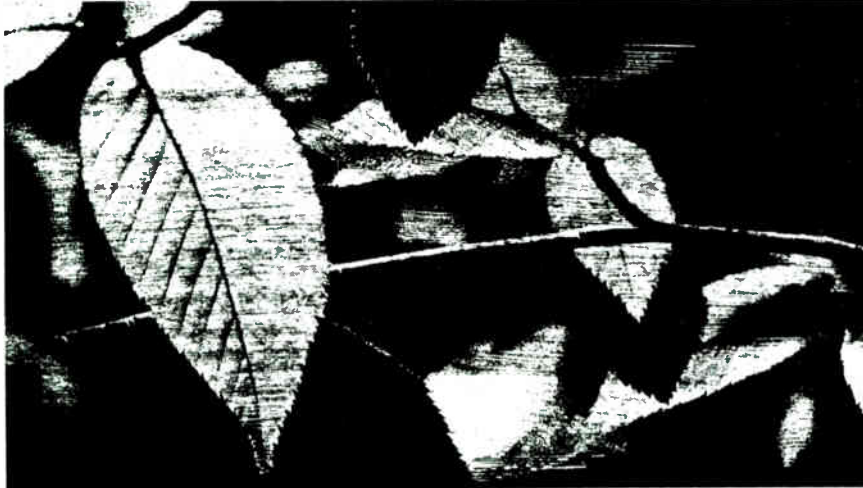
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NORTH CENTRAL



4 & 8 TRACK STUDIOS

[8] **A&F MUSIC SERVICES**
2834 Otsego, Pontiac, MI 48054
(313) 682-9025
Owner: Frank Merwin
Studio Manager: Frank Merwin

[8] **AARD-VARK RECORDING, INC.**
also **REMOTE RECORDING**
335 S. Jefferson, Springfield, MO 65806
(417) 866-4104
Owner: Bill Jacobsen
Studio Manager: Bill Jacobsen

[8] **A.C.E.S. MIDNIGHT MUSIC**
also **REMOTE RECORDING**
9368 Winston, Redford, MI 48239
(313) 537-2645
Owner: Ron Gutzeit
Studio Manager: Ron Gutzeit

[8] **ADMARK INC.**
3630 Burlingame Rd., Topeka, KS 66614
(913) 267-4712
Studio Manager: Barry Busch

[8] **AEROSTAR PRODUCTIONS**
4410 MacIver Ave. NE, St. Michael, MN 55376
(612) 497-3151
Owner: Bill Correll, Jo Correll
Studio Manager: Bill Correll
Engineers: Bill Correll
Dimensions of Studios: Rm. #1: 8 x 10; Rm. #2: 10 x 12;
Main rm.: 25 x 15.
Dimensions of Control Rooms: 10 x 18.
Tape Recorders: Tascam 48, 8-track; Tascam 42, 2-track;
Tascam 122B, cassette.
Mixing Consoles: Tascam M-520, 20 x 8 x 2; Tascam
M-208, 8 x 4 x 2.
Monitor Amplifiers: PAS 400s, QSC 5.1s.
Monitor Speakers: Fostex RM 765 w/ SW 10 subwoofers,
Auratones, Yamaha 4115s.
Echo, Reverb & Delay Systems: Yamaha REV7, Roland
SDE-2500 DD, Roland SRV-2000 reverb, (2) Roland SRE-
555.
Other Outboard Equipment: Yamaha comp./limiter
GC2020s, DOD R-835 crossovers, Rane RE14 EQs, Tascam
DX-40, (3) dbx1 noise reduction, Rane HC6 head-
phone console, Compaq computer, Roland MPS music
processing system, SMPTE/MIDI conversion "SMPL Lock"
equals unlimited virtual tracks via MIDI, DX/TX and Rol-
and programming software.
Microphones: AKG 414s, D12E, 451s; Shure SM57s,
SM58s; Audio-Technica, Telex.
Instruments Available: DX7, TX8/16, Super Jupiter, MKS-
30, MPG-80 programmer, MKB-1000 MIDI controller, Rol-
and Axis MIDI controller, Yamaha RX-11 drums, Yamaha
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[4] **AGM PRODUCTIONS**
also **REMOTE RECORDING**
1067 Tuxedo, St. Louis, MO 63119
(314) 961-1998
Owner: Alan Maltaghat



AJAX RECORDING TEAM
Fort Wayne, IN

[8] **AJAX RECORDING TEAM**
902 West Wayne Street, Fort Wayne, IN 46804
(219) 423-3479
Owner: Craig Harding
Studio Manager: Jane Hennial
Engineers: Craig Harding, independents
Dimensions of Studios: Studio A: 9 x 19, Isolation Booth
9 x 11.
Dimensions of Control Rooms: 9 x 19
Tape Recorders: Ampex 440C 8-track; (2) Otari 5050B 2
track; Nakamichi 580 cassette deck; Nakamichi 300 cas-
sette deck.
Mixing Consoles: Sound Workshop Logex 8, 12 x 8 x 2.
Monitor Amplifiers: Yamaha P2201 (Control Room), Ses-
com (headphones).
Monitor Speakers: JBL 4311s, Yamaha NS-10M, Aura-
tones.
Echo, Reverb & Delay Systems: AKG BX10 reverb, Del-
taLab DL2, DeltaLab 1024, tape delay.
Other Outboard Equipment: Eventide Instant Flanger,
(2) UREI LA4 comp./limiters, MXR dual 15 band EQ, (2)

MXR 31 band EQ, Valley People Stereo Dyna-Mite, EXR-1
Exciter, (2) dbx 155, Goldline GL-30 RTA, Rock mini amp,
Sescom parametric EQ, Countryman & Associates direct
boxes, (2) Acoustic 150 guitar amps, Dwarf amp, the usual
assortment of foot actuated effects.
Microphones: Sennheiser 421s, 441; Neumann U47, U87;
AKG 414-EB, 220s, D-1000s; Shure SM7, SM57s, SM58s;
Electro-Voice RE20; Audio-Technica condensers
Instruments Available: Fender Telecaster, Kramer Stage-
master Bass, Rickenbacker 12-string, Guild Starfire, tam-
bourines, claves, cowbell, maracas
Video Equipment & Services: Offered in conjunction
with custom video of Fort Wayne. Equipment: (3) Sony
cameras, (2) 3/4-inch U-Matic recorders, time base correc-
tor, Quanta Font Q-7A character generator, Lowell lights
Services: A/B roll capability, on location special effects,
creative scripts/storyboard service available. Rates: \$800/
8 hr. day on location, includes director, cameraman, light
crew, sound engineer, key gaffer and grip.
Rates: \$25/hr. recording, \$15/hr. mixing, free set up,
block rates available.

[4] **ALLOY REHEARSAL STUDIOS**
950 N. Rand Rd. Ste. 204, Wauconda, IL 60084
(312) 526-3399
Owner: Mark Kernes
Studio Manager: Dan Kernes

[8] **ALPHA MUSIC PRODUCTION**
P.O. Box 14701, Lenexa, KS 66215
(913) 492-4005
Owner: Glenn Major, Rich Hanson
Studio Manager: Rich Hanson, Brian Jennett

[8] **ALPHA RECORDING STUDIOS**
also **REMOTE RECORDING**
620 D'Lyn St., Columbus, OH 43228
(614) 870-6661
Owner: Timothy Sheppard
Studio Manager: Timothy Sheppard

[8] **AMBIENCE DIGITAL RECORDING**
also **REMOTE RECORDING**
P.O. Box 9455, Canton, OH 44711
(216) 456-3916
Owner: Lee Brooks
Studio Manager: Anne Brooks

[8] **A.M.S. LOCATION RECORDING**
only **REMOTE RECORDING**
P.O. Box 4354, St. Paul, MN 55104
Owner: Jim Higbee
Studio Manager: Jim Higbee

[8] **ANDOVER AUDIO**
also **REMOTE RECORDING**
2387 S. Coon Creek Dr., Andover, MN 55304
(612) 757-6589
Owner: Don G. Erickson
Studio Manager: 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] **ARS NOVA-RECORDING STUDIO**
also **REMOTE RECORDING**
6511 S. Kilpatrick, Chicago, IL 60629
(312) 585-4789
Owner: Anthony Rulo, Peter Rulo
Studio Manager: Anthony Rulo, Peter Rulo

[4] **ARTUR MERIWETHER, INC.**
also **REMOTE RECORDING**
1529 Brook Dr., Downers Grove, IL 60515
(312) 495-0600
Owner: Warren Ganung
Studio Manager: Bruce Johnson

[8] **ASTRONOTE RECORDING STUDIOS**
103 Arkansas Ave., Lorain, OH 44052
(216) 288-4468
Owner: Chns Steagall
Studio Manager: Renae Steagall

[8] **ATMOSOUND**
also **REMOTE RECORDING**
400 W. Richards Rd., McConnelsville, OH 43756
(614) 962-6587
Owner: Atmosound
Studio Manager: Rick Shriver

[8] **AUDIO ACOUSTICS**
114 S. Michigan Ave. Ste. 5, Saginaw, MI 48602
(517) 790-7520
Owner: J.L. Kilbourn

[8] **AUDIO ASSOCIATES**
also **REMOTE RECORDING**
3200 'O' St. Ste. #2, Lincoln, NE 68503
(402) 474-3111
Owner: Steve Rall, James Rupert
Studio Manager: James Rupert, Steve Rall

[8] **AUDIO IMAGE RECORDING**
316 Washington St., Brainerd, MN 56401
(218) 828-3601
Owner: Michael Moran, Todd Bobich
Studio Manager: Michael Moran
Engineers: Michael Moran, Todd Bobich
Dimensions of Studios: 20 x 20 x 12, 10 x 8 x 12 (iso.), 15 x 10 x 12 (piano room).
Dimensions of Control Rooms: 15 x 20 x 12.
Tape Recorders: Otari 5050 MKIII-8, 8-track; Otari 5050B-2, 2-track; Nakamichi BX-125, cassette; Pioneer CT-F550, cassette.
Mixing Consoles: Soundcraft 600, 24 x 8 x 16; (2) Studiomaster 16 x 4 x 2.
Monitor Amplifiers: Hafler, BGW, Phase Linear.
Monitor Speakers: JBL 4430, Boston Acoustics A40, TEAC, Auratone 5C.
Echo, Reverb & Delay Systems: Lexicon PCM60, MIC-MIX XL-210, Ibanez and Electra digital delays, Ibanez SDR-1000 stereo digital reverb.
Other Outboard Equipment: Symetrix and MXR compressors, DOD, MXR and Loft EQs, dbx noise reduction, EXR exciter.
Microphones: Shure SM7, (2) SM80s, (6) SM57s, (2) SM58s; AKG D-12E; Sony.
Instruments Available: Ensoniq Mirage, Juno-106, Casio CZ-1000, Hammond M-3, Conover mini grand piano, Steinger bass, MIDI Bass, Roland DDR-30 electronic drums, Yamaha drums, Korg and Passport sequencers and score software, Yamaha RX-11 drum machine, assorted guitars and basses.
Rates: \$30/hr. Call for block time rates.

[8] **AUDIO MIXERS RECORDING COMPANY, INC.**
30 E. Huron St., Chicago, IL 60611
(312) 943-4274
Owner: Steven Schwartz
Studio Manager: Steven Schwartz

[4] **AUDIO PRODUCTIONS**
also **REMOTE RECORDING**
1845 N. Fairmount, Wichita, KS 67208
(316) 689-3188
Owner: Wichita State University
Studio Manager: William Andrews

[8] **AUDIO TAPE PRODUCTIONS**
also **REMOTE RECORDING**
413 W. Cherry St., P.O. Box 428
Potterville, MI 48876
(517) 645-7561
Owner: Dean Bredwell
Studio Manager: Patricia Bredwell

[4] **AUDIO-VISUAL ASSOCIATES**
4760 E. 65th St., Indianapolis, IN 46220
(317) 253-8562
Owner: Bud Osborne
Studio Manager: Linda Osborne

[8] **AUDIOCOM, INC.**
also **REMOTE RECORDING**
1825 Sylvania Ave., Toledo, OH 43613
(419) 474-5793
Owner: Jim Thomson
Studio Manager: Sandy Dunham

[4] **AUDIOCRAFT RECORDING & SOUND**
also **REMOTE RECORDING**
Rt. 2 Box 1179, Wild Rose, WI 54984
(715) 258-6092
Owner: Martin Kurka
Studio Manager: Martin Kurka

[4] **AUDIOGRAPHICS**
also **REMOTE RECORDING**
13801 E. 35th St., Independence, MO 64055
(816) 254-0400
Owner: Gerald W. Riegler
Studio Manager: Randy Hermance

[8] **AUDIOVISIONS**
only **REMOTE RECORDING**
P.O. Box 823, Brighton, MI 48116
(313) 227-1758
Owner: Lee Farmer
Studio Manager: Lee Farmer

[4] **AUTUMN BROOKE PRODUCTIONS**
Rt. 1 Box 305, Council Grove, KS 66846
(316) 767-5926
Owner: Jef Baker
Studio Manager: Jeff Baker

[8] **J. AVEDISIAN PROD.**
6049 Ardmore Park Cir., Dearborn Heights, MI 48127
(313) 278-8364
Owner: John Avedisian
Studio Manager: John Avedisian

[8] **AVENUE RECORDING STUDIOS**
28324 E. Main St., Waterford, WI 53185
(414) 534-3247
Owner: Arthur V. Edstrom
Studio Manager: Arthur V. Edstrom

[4] **THE AVTECH COMPANY, INC.**
6023 N. Dixie Dr., Dayton, OH 45414
(513) 890-7600
Owner: Joseph S. Russo
Studio Manager: M. Bruce Linebaugh

[4] **BALL COMMUNICATIONS, INC.**
also **REMOTE RECORDING**
1101 N. Fulton Ave., Evansville, IN 47710
(812) 428-2300
Owner: Martin A. Ball
Studio Manager: M. Sanner

[8] **BASTET PRODUCTIONS**
1716 N. Prospect Ave., Milwaukee, WI 53202
(414) 271-6677
Owner: David Myler
Studio Manager: Thomas Mathea

[8] **BCR CHRISTIAN RECORDING**
also **REMOTE RECORDING**
114 E. Fauble, Durand, MI 48429
(517) 288-6180
Owner: Randy Bowen
Studio Manager: Randy Bowen, David Bowen, Lon Winters

[2] **BENNETT LABORATORY, INC.**
also **REMOTE RECORDING**
2553 Cleveland Ave., Columbus, OH 43211
(614) 267-7007
Owner: John Coffey
Studio Manager: John Coffey

[4] **BIRCHWOOD STUDIOS**
1806 Como Ave. SE, Minneapolis, MN 55414
(612) 623-3055
Owner: Don Diez
Studio Manager: Don Diez

[8] **BIRD-ON-FIRE RECORDING**
also **REMOTE RECORDING**
103 Lincoln Dr., West Union, IA 52175
(319) 422-5677
Owner: Doug Koempel
Studio Manager: Betsy Kieckhafer

[4] **BKS ENTERTAINMENT INC.**
P.O. Box 99, Crystal Lake, IL 60014
(815) 455-5498
Owner: "Bubba" Kim Sattler
Studio Manager: "Bubba" Kim Sattler

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[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 R. Boddie
Studio Manager: Dennis R. Boddie

[8] BOWLING GREEN STATE UNIVERSITY
RECORDING STUDIOS
also REMOTE RECORDING
College of Musical Arts, Bowling Green, OH 43403
(419) 372-8405
Studio Manager: Burton Beerman

[8] BRAUNCO, INC.
also REMOTE RECORDING
1125 Huntington, P.O. Box 236, Warren, IN 46792
(219) 375-3148
Owner: Elaine B. Braun
Studio Manager: Kathleen Herbert

[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

[8] DON BROWN STUDIOS
1830 Vinton Ave., Portsmouth, OH 45662
(614) 353-3763
Owner: Don Brown
Studio Manager: Joseph Ferguson

[8] BROWN INSTITUTE RECORDING STUDIO
2225 E. Lake St., Minneapolis, MN 55407
(612) 721-2481
Owner: National Education
Studio Manager: Tim Peterson, Rick Garber

[8] BURRELL RECORDING STUDIO
205 So. Myrtle St., Edwardsville, IL 62025
(618) 656-8027
Owner: Ephraim Burrell
Studio Manager: Ephraim Burrell

[8] CABOOSE PRODUCTIONS, INC.
also REMOTE RECORDING
2204 Duke St., Indianapolis, IN 46205
(317) 545-5165
Owner: Duke Luchtman
Studio Manager: Ellen Posson

[4] CELEBRATION ONE PRODUCTIONS
10140 Conway Rd., Ladue, MO 63124
(314) 997-6356
Owner: Ronald Hitschler
Studio Manager: Ronald Hitschler

[8] CHANCE PRODUCTION STUDIOS
also REMOTE RECORDING
P.O. Box 27181, Lansing, MI 48909
(517) 372-8191
Owner: Chris Andrews
Studio Manager: Chns Andrews

[4] C.H.B. PRODUCTIONS
only REMOTE RECORDING
31204 Birchlawn, Garden City, MI 48135
(313) 425-1510
Owner: Christopher H. Bay
Studio Manager: Christopher H. Bay

[8] CLARK BROADCAST CONSULTANTS
515½ W. Gallatin St., Vandalia, IL 62471
(618) 283-4053
Owner: Neil F. Clark
Studio Manager: Bill Oliver

[8] CLOUD 10 RECORDING
also REMOTE RECORDING
1450 Coler, Ann Arbor, MI 48104

NORTH CENTRAL



4 & 8 TRACK STUDIOS

(313) 663-0222
Owner: Mike Gould
Studio Manager: Mike Gould

[2] CMU PUBLIC RADIO
also REMOTE RECORDING
PBC/CMU, Mt. Pleasant, MI 48859
(517) 774-3105
Owner: CMU Public Radio
Studio Manager: Dan Bracken

[8] COLONIAL'S STUDIO
12017 Tindall Dr., St. Louis, MO 63131
Owner: Gary M. Rich
Studio Manager: Gary M. Rich

[8] COMMERCIAL FEATURES, INC.
also REMOTE RECORDING
3650 Washington Blvd., Indianapolis, IN 46205
(317) 926-5570
Owner: Paul and Jean Bender
Studio Manager: Jean Bender

[8] COMMUNICATIONS WORKSHOP
also REMOTE RECORDING
222 So. 9th St., Minneapolis, MN 55402
(612) 347-1700
Owner: Campbell-Mithun Advertising
Studio Manager: Fred Street

[8] CONSERVATORY AUDIO
also REMOTE RECORDING
173 W. Lorain St., Oberlin, OH 44074
(216) 775-8272
Owner: Oberlin College
Studio Manager: Thomas W. Bethel

[8] CONTROL
only REMOTE RECORDING
703 Trumbull Ave. #110, Girard, OH 44420
(216) 545-8060
Owner: Chester Stout
Studio Manager: Chester Stout

[8] COOPERMUSIC + MIDI SYNC PRODUCTIONS
514 S. Ingersoll St. #3, Madison, WI 53719
(414) 351-9170
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 Ellis

[8] CORPLEX
6444 N. Ridgeway Ave., Lincolnwood, IL 60645
(312) 673-5400
Owner: Carter Ruehrdanz
Studio Manager: Carter Ruehrdanz

[4] CRYSTAL CLEAR RECORDING
also REMOTE RECORDING
572 Marengo Ave., Marengo, IA 52301
(319) 642-7702
Owner: Tim Rice
Studio Manager: Tim Rice

[8] CRYSTALIN RECORDING STUDIOS
also REMOTE RECORDING
5907 Pierce St., Omaha, NE 68106
(402) 556-8170
Owner: Mike Mullaney
Studio Manager: Mike Mullaney

[8] DEER CREEK AUDIO ILLUSIONS
865 Clark Ave., Webster Groves, MO 63119
(314) 962-7635
Owner: Susan Harwood
Studio Manager: Chris Harwood

[4] DELTAK
also REMOTE RECORDING
1751 W. Diehl Rd., Naperville, IL 60566
(312) 369-3000
Studio Manager: Don Olynkyk

[4] DIGITECH SOUND RESEARCH
Mid City Station, P.O. Box 338, Dayton, OH 45402
(513) 224-3146
Owner: Raye Guy Turner
Studio Manager: Raye Guy Turner

[8] DIGITRAC RECORDING STUDIO
also REMOTE RECORDING
1067 Mt. Vernon Plaza, Columbus, OH 43204
(614) 252-8737
Owner: Chris Dawkins, Cornell Scott
Studio Manager: Cornell Scott

[4] DOTT INFLUENCES
also REMOTE RECORDING
530 Railroad Dr. Ainsworth, IA 52201
(319) 657-4159
Owner: Richard D. Dorothy
Studio Manager: Richard D. Dorothy

[8] DOWN THE ROAD STUDIO
13401 Lake Shore Blvd. Ste. #7, Bratenahl, OH 44110
(216) 249-2533
Owner: Terry L. Bell
Studio Manager: Terry Ross

[4] D.R. PRODUCTIONS
also REMOTE RECORDING
704 Crompton, St. Louis, MO 63126
(314) 962-4753
Owner: Douglas R. Smith
Studio Manager: Douglas R. Smith

[4] DRAGON'S LAIR STUDIO
5212 N. 48th Ave., Omaha, OH 68104
(402) 455-8104
Owner: Mark E. White
Studio Manager: Mark E. White

[8] EB STUDIO
12 Maple St., Shelby, OH 44875
(419) 347-5383
Owner: Eric A. Barkdull
Studio Manager: Eric A. Barkdull

[8] EDEN PRODUCTIONS
9610 Vaughan, Detroit, MI 48228
(313) 836-0756
Owner: David and Elaine Sanders
Studio Manager: David Sanders

[8] EDGE ENTERPRISES
2731 Hills-Miller Rd., Delaware, OH 43015
(614) 369-1476
Owner: Craig Markley
Studio Manager: Craig Markley

[2] JEFF ELLINGSON PRODUCTIONS
913 Warwick Dr., Cedar Falls, IA 50613
(319) 277-8535
Owner: Jeff Ellingson
Studio Manager: Susan Ellingson

[8] EUROPA RECORDING STUDIO
also REMOTE RECORDING
 100 1st St., Noble, IL 62868
 (618) 723-2518
 Owner: Jeff D. Gordon
 Studio Manager: Jeff D. Gordon

[4] EVEN STEVEN PRODUCTIONS
also REMOTE RECORDING
 630 Independence Dr., Davenport, IA 52806
 (319) 391-6113
 Owner: Steve Landreth
 Studio Manager: Steve Landreth

[8] FAITH RECORDING STUDIO
also REMOTE RECORDING
 4252 Bingham, Dearborn, MI 48126
 (313) 281-3436
 Owner: A. J. Amore
 Studio Manager: Monte Amore

[8] FAST FORWARD SOUND DESIGN
 4747 N. Kenneth Ave., Chicago, IL 60630
 (312) 685-4815
 Owner: Louis Czynowski
 Studio Manager: Lucien Brajer
 Direction: Fast Forward is an 8-track/MIDI facility geared towards complete demo and jingle productions including composition, arrangements, overdubs, re-mixing and effects. In addition, we provide a broad spectrum of musical and non-musical sound environments for film and video sweetening. Using the latest in digital sound processing and sampling equipment enables us to offer a cost-effective, yet elaborate array of sounds and music.

[8] FIDDLESTRING PRODUCTIONS
also REMOTE RECORDING
 Rt. 1 Box 19, Hermosa, SD 57744
 (605) 255-4235
 Owner: Whiskey River
 Studio Manager: Stnngbean Svenson

[4] FLIGHT RECORDING STUDIO
 4052 W. 124th Terr., Leawood, KS 66209
 (913) 491-0816
 Owner: Jim Lammers
 Studio Manager: Jim Lammers

**[8] RICHARD FOSTER STUDIOS—
 FILM PRODUCTION**
 157 W. Ontario, Chicago, IL 60610
 (312) 943-9005
 Owner: Richard and Deborah Foster
 Studio Manager: Adam Griswold

[4] ROGER FRANCISCO PRODUCTIONS
also REMOTE RECORDING
 805 Breen Dr., Champaign, IL 61820
 (217) 351-3532
 Owner: Roger Francisco
 Studio Manager: Roger Francisco

[2] FULTON AUDIO
only REMOTE RECORDING
 4428 Zane Ave. 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 Nelly, Gordon Lash
 Studio Manager: Jeff Neely, Gordon Lash

[8] FUTURE SOUND 8
also REMOTE RECORDING
 3912 Kent, Royal Oak, MI 48073
 (313) 757-4516
 Owner: Doug Garceau
 Studio Manager: Doug Garceau

[8] GAZEBO PRODUCTIONS
 107 N. Main St., Galesville, WI 54630
 (608) 582-2838
 Owner: Mary Abel, Abel & Associates
 Studio Manager: Lynn Foster

[4] GENERAL TELEVISION NETWORK
also REMOTE RECORDING
 13225 Capital Ave., Oak Park, MI 48237
 (313) 548-2500
 Owner: Joan Binkow
 Studio Manager: Gary Pillon

[8] GREAT EMPIRE PRODUCTIONS
also REMOTE RECORDING
 4200 N. Old Lawrence Rd., Wichita, KS 67219
 (316) 838-9141
 Owner: Wichita Great Empire Broadcasting
 Studio Manager: Keith Foster
 Engineers: Keith Foster, Tony Michaels
 Dimensions of Studios: 17 x 22.
 Dimensions of Control Rooms: 12 x 17.
 Tape Recorders: Otari (auto locator and session cont.) MX 5050III, 8-track; (2) Scully w/ varied speed 280-B, 2-track; TEAC Z-5000 cassette.
 Mixing Consoles: NEOTEK Series I, 16 x 8.
 Monitor Amplifiers: Crown Micro-Tech 1000.
 Monitor Speakers: Altec 844As, Speco DMS-2s.
 Echo, Reverb & Delay Systems: Orban 111-B dual reverb, Eventide delay.
 Other Outboard Equipment: Eventide 969 Harmonizer, dbx 160 gate/comp./limiter, (4) dbx 180-A and (2) dbx 180 noise reduction units, Technics SP-15 turntable.
 Microphones: (4) Neumann U87s, (4) Sennheiser MD-421s, (2) AKG C-451 EBs.
 Instruments Available: Roland Juno II and Emulator II keyboards, Roland TR-707 and DDR-30 drum systems, Peavey electric guitars and amps, and Ovation acoustic guitars. Numerous effects and pedals. Call for availability.
 Video Equipment & Services: Freelance TV and A/V production.
 Rates: \$60/hr. Package rates available.

[8] GROUP II AUDIO
also REMOTE RECORDING
 1480 Dublin Rd., Columbus, OH 43215
 (614) 488-0621
 Owner: Bill Biegler, Dan Mowbray
 Studio Manager: Mark E. Snider

[4] G.S. COMMUNICATIONS
also REMOTE RECORDING
 P.O. Box 161, Matteson, IL 60443
 (312) 534-5961
 Owner: Gerald Scrutchions
 Studio Manager: Gerald Scrutchions

[8] GSI STUDIOS
also REMOTE RECORDING
 9431 Engel, St. Louis, MO 63132
 (314) 993-5713
 Owner: Gary Sudin
 Studio Manager: Pete Herbig

[4] HARVEST PRODUCTIONS
also REMOTE RECORDING
 8297 Hillpoint Rd., Cross Plains, WI 53528
 (608) 798-2223
 Owner: Don Sieb
 Studio Manager: Don Sieb

[4] HEDQUIST PRODUCTIONS, INC.
also REMOTE RECORDING
 1007 East Madison, Fairfield, IA 52556
 (515) 472-6708
 Owner: Jeffrey P. Hedquist
 Studio Manager: Andrew MacKenzie

[8] HERO PRODUCTIONS
also REMOTE RECORDING
 P.O. Box 963, Brighton, MI 48116
 (313) 229-4971
 Owner: Miro J. Anderson
 Studio Manager: Miro J. Anderson
 Engineers: Miro J. Anderson
 Dimensions of Studios: 10 x 25.
 Dimensions of Control Rooms: 10 x 25.
 Tape Recorders: Fostex A80, 8-track; Fostex A20, 2- and cue-tracks; Hitachi D-85, cassette.
 Mixing Consoles: Fostex 450, 8 x 4 x 2; Biamp 1682, 16 x 2.
 Monitor Amplifiers: Crown, BGW.
 Monitor Speakers: Yamaha NS-10M, Auratone, Advent, AKG K-141 headphones.
 Echo, Reverb & Delay Systems: Yamaha REV7.
 Other Outboard Equipment: Aphex Aural Exciter Type C, dbx 166, misc. flangers, compressors, gates and eqx.
 Rates: Please call.

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[8] HIDDEN CITY RECORDERS
26769 W. Hills Dr., Inkster, MI 48141
(313) 563-9350
Owner: Flash Pashkot
Studio Manager: Ree Pashkot

[4] HORIZON SOUND
also REMOTE RECORDING
1602 8th Ave. S., Fort Dodge, IA 50501
(515) 573-3710
Owner: David Cottrell
Studio Manager: David Cottrell

[4] HOT ROD'S HI-FI/HOT ROD'S DIVINE SPLICES
also REMOTE RECORDING
2014 N. Kenmore Ave., Chicago, IL 60614
(312) 348-8000
Owner: Mark "Hot Rod" Trollan
Studio Manager: John Calhoun

[8] MICKEY HOWELL, INC.
also REMOTE RECORDING
5159 E. Main St., Kalamazoo, MI 49004
(616) 388-5582
Owner: Mickey Howell
Studio Manager: Mickey Howell

[8] HUBBARD STREET STUDIOS
also REMOTE RECORDING
11 E. Hubbard St., Chicago, IL 60611
(312) 670-0110
Owner: Jim Poulson, Fred Reynolds

[4] IDUMEAN MUSIC
also REMOTE RECORDING
2605 Merria Rd., Stow, OH 44224
(216) 688-9144
Owner: James T. Schley-May
Studio Manager: Tim Schley-May

[8] IMPACT PRODUCTIONS
also REMOTE RECORDING
220 S. William St., South Bend, IN 46601
(219) 233-8369
Owner: James A. Greulich
Studio Manager: James A. Greulich

[8] INDEPENDENT RECORDING STUDIO
also REMOTE RECORDING
5124 S. Webster St., Kokomo, IN 46902
(317) 455-0308
Owner: David B. Bentzler
Studio Manager: Teresa L. Bentzler

[4] INDUSTRIAL FILM GROUP, INC.
also REMOTE RECORDING
5018 W. Balmoral Ave., Chicago, IL 60630
(312) 725-2504
Owner: Robert J. Buhl
Studio Manager: Donna Buhl

[8] IVO SOUND RECORDERS
also REMOTE RECORDING
539 S. Baltimore, Hastings, NE 68901
(402) 463-5059
Owner: Don Robertson
Studio Manager: Noah Zark

[8] J-LEE RECORDINGS
1337 Walnut St., Evansville, IN 47714
(812) 425-0138
Owner: Johnny Hailman
Studio Manager: Johnny Hailman

[8] C.A. JACKSON JR. REMOTE RECORDINGS
only REMOTE RECORDING
4033 A. Lafayette Ave., St. Louis, MO 63110
(314) 664-6555, 385-4354
Owner: Chester A. Jackson Jr.

[2] JOY 107FM
11308 Tamaro Dr., Cincinnati, OH 45242
(513) 248-1072
Owner: Cincinnati Broadcasting Co.
Studio Manager: Joe Bradley

[8] JOYFUL NOISE RECORDING
3925 Kirkshire SE, Grand Rapids, MI 49508

NORTH CENTRAL



4 & 8 TRACK STUDIOS

(816) 452-1616
Owner: R. Holwerda
Studio Manager: R. Holwerda

[8] J.T. SOUNDS
107 W. First St., Gaylord, MI 49735
(517) 732-3700
Owner: James Tobin
Studio Manager: James Tobin

[8] JZAN PRODUCTIONS
P.O. Box 783, Clinton, IN 47842
(317) 832-9434
Owner: J.L. Zanandrea

[4] KAYRON, INC.
641 Madison St., Oak Park, IL 60302
(312) 386-0464
Owner: Hal Kaitchuck
Studio Manager: Eleanor Kaitchuck

[8] KENCRAFT RECORDING STUDIOS
also REMOTE RECORDING
6003 Michigan Ave., Kansas City, MO 64130
(816) 333-9799
Owner: K.R. Hoskins
Studio Manager: Nancy Schmuck

[8] KEYNOTE RECORDING STUDIOS
also REMOTE RECORDING
4322 Mahoning Ave., Youngstown, OH 44515
(216) 793-7295
Owner: Richard M. Hahn
Studio Manager: Margaret M. Hahn

[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

[4] KISHA/UNIVERSAL PRODUCTIONS
also REMOTE RECORDING
P.O. Box 1771, 520 S. Frances
South Bend, IN 46634
(219) 234-1619
Owner: Ernie Scarbrough
Studio Manager: Ernie Scarbrough

[8] KITCHEN SYNC RECORDING
also REMOTE RECORDING
P.O. Box 20384, Indianapolis, IN 46220
(317) 257-6776
Owner: Eric T. Smith
Studio Manager: Eric T. Smith

[4] KLAES IMAGE PRODUCTIONS
1400 W. 2nd St., P.O. Box 747, Seymour, IN 47274
(812) 522-3333
Owner: Bill Klaes
Studio Manager: Bill Klaes

[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 Rd., Highland, IN 46322
(219) 923-0074
Owner: Larry A. Brechner
Studio Manager: Carol Lynn Brechner

[8] LAKESIDE MEDIA
1437 W. Howard, Chicago, IL 60626
(312) 274-8999
Owner: Bill Landow
Studio Manager: Victor Sanders

[8] LAB RECORDING STUDIO
also REMOTE RECORDING
1912 Heriford Rd., Columbia, MO 65202
(314) 474-8141
Owner: Bob Pruitt
Studio Manager: Bob Pruitt

[8] LIGHTHOUSE PRODUCTIONS, INC.
also REMOTE RECORDING
2020 E. Camp McDonald Rd., Mt. Prospect, IL 60056
(312) 823-8855
Owner: Chip Moore
Studio Manager: Dan Reifsnnyder

[8] LOGIC SOUND RECORDING STUDIO
424 Orchard Lake Rd., Pontiac, MI 48053
(313) 332-1557
Owner: Tyrone Parker
Studio Manager: Tyrone Parker
Engineers: Tyrone Parker, Mike Ross.
Dimensions of Studios: 40 x 25.
Dimensions of Control Rooms: 24 x 12.
Tape Recorders: Otari MX5050 Mark III, 8-track; Otari MX5050B II, 2-track; Tascam 122 cassette, Pioneer RL1011, 2-track.
Mixing Consoles: NEOTEK Series IE, 16 x 8 x 2 w/168 point patch bay; Carery Studio Series, 12 x 2.
Monitor Amplifiers: Crown DC300A, Crown D-75.
Monitor Speakers: JBL 4312, Auratone 5C.
Echo, Reverb & Delay Systems: Lexicon 200 digital reverb, DeltaLab CompuEffectron, DeltaLab Effectron I 1020.
Other Outboard Equipment: EXR Exciter, (2) dbx 160X comp./limiter, dbx 166 comp./limiter, Orban gated compressor/limiter, de-esser 424A, (2) Omni Craft noise gates, (4) dbx 150 noise reduction.
Microphones: AKG: (2) 414 EB, D190, D12, 1000; Electro-Voice (2) RE16, RE10, RE15, RE11; Shure: (7) SM58, (2) SM57.
Instruments Available: Oberheim DX drum machine Tama Techstar electric drum set, Slingerland drum set, Korg Poly 61, Korg DW 6000, Korg 8000, Yamaha DX7, Fender Precision Bass, Fender Strat, Fender 75 amp, Peavey KB 100 amp.
Rates: 8-track: \$30/hr.

[4] LOOSE NOOSE PRODUCTIONS
also REMOTE RECORDING
597 S. Wagner Rd., Ann Arbor, MI 48103
(313) 662-6555
Owner: C.W. Wilson
Studio Manager: Bob Hall

[8] LOST NATION SOUND
6 Storer St., Guysville, OH 45735
(614) 662-5701
Owner: Dave Aiken
Studio Manager: Nancy Aiken

[8] L.T.C. MUSIC INC.
also REMOTE RECORDING
7533 Phillips, Chicago, IL 60649
(312) 374-4606
Owner: James Rapier
Studio Manager: Don Reese

[8] MAGNETIC STUDIOS, INC.
also REMOTE RECORDING
4784 N. High St., Columbus, OH 43214
(614) 262-8607
Owner: John Fippin, Robin Gulcher
Studio Manager: John Fippin, Robin Gulcher

[8] MASTER TRACKS
518 N. Main, Mt. Prospect, IL 60056
(312) 255-2404
Owner: Alan and Paul Shively
Studio Manager: Alan and Paul Shively

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There's nothing better than a \$1,000-plus condenser microphone to capture every performance detail. If you can afford it. But what if you can't?

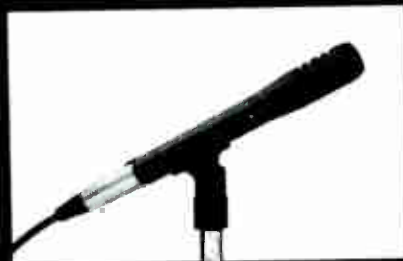
Listen to some very talented musicians and mixers who recently tested the new ATM33R condenser cardioid from Audio-Technica. They told us the sound was almost identical to their big-bucks favorites. They liked the wide dynamic range and

uniform off-axis response. The ability to use any standard phantom-power source from 9V to 52V, and the famed *Road Tough* construction were also definite plusses.

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more ATM33R microphones in a demo studio, at no more investment than one expensive condenser.

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(216) 686-2600

[8] MAXWELL RECORDS
7012 W. 26th St., St. Louis Park, MN 55345
(612) 920-5347
Owner: Gregg Giswold, John Keen
Studio Manager: John Keen

[8] THE MESSAGE MAKERS
also REMOTE RECORDING
1217 Turner, Lansing, MI 48906
(517) 482-3333
Studio Manager: David Joslyn

[4] MID-AMERICA SOUND
only REMOTE RECORDING
120 Monroe St., 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: David Mielke
Studio Manager: David Mielke

[8] MILLS AUDIO & RECORDING CO.
5960 Dueber Ext. East Sparta, OH 44626
Owner: Joy L. Mills, Jr.
Studio Manager: Joy L. Mills, Jr.

[8] MINSTREL MUSIC LTD.
7656 N. Milwaukee Ave., Niles, IL 60648
(312) 965-2550
Owner: Henry Kern
Studio Manager: Anthony Rivera

[8] THE MIRROR GROUP
1226 Oakwood Ct., Rochester, MI 48063
(313) 652-7790
Owner: Rick Manasa
Studio Manager: Mike Manasa

[8] MOUNTAIN WIND PRODUCTIONS
21 W. 551 N. Ave., Lombard, IL 60148
(312) 629-3261
Owner: Tom Egan
Studio Manager: Tom Egan

[2] MSU SCHOOL OF MUSIC
RECORDING SERVICES
also REMOTE RECORDING
217 Music Bldg., Michigan State University
East Lansing, MI 48824
(517) 355-7674
Owner: Michigan State University, School of Music
Studio Manager: John T. McDaniel

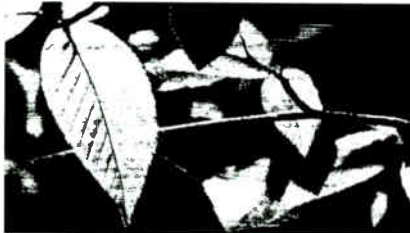
[8] MTH STUDIO
10000 S. Aberdeen, Chicago, IL 60643
(312) 239-8462
Owner: Michael Howard
Studio Manager: Amelia Howard

[8] MUSICIANS WORKSHOP
only REMOTE RECORDING
717 S. Stough, Hinsdale, IL 60521
(312) 986-8120
Owner: Ken Martin

[4] MUSICO TECHNILAB
also REMOTE RECORDING
160 N. Park Ave., Warren, OH 44481
(216) 394-5605

Owner: Heavy Mental Group
Studio Manager: Gary Boggess
Extras: Built around the composer's specific requirements, this electronic music production studio is for serious film/video producers. We produce masters of startling fidelity using Otari 4-track, Technics 1500 2-track, dbx, JBL, UREI room EQ, TEAC 5A (w/h-slew), extensive patchbay, Symetrix 522, Aphex Type C, flangers, delays, equalizers, AKG 414-P48, Shure 58s, 57s and PZMs. Synths include Polyfusion Modular, Minimoog, Roland JX-8P, Emulator I, Prophet 2000 w/expansion and huge disk library. Sony 3/4-inch video deck available. Spacious 25 x 20 control room. 22 x 20 iso/studio and 40 x 60 hall for REAL reverberation! Cassette duplication.
Direction: Specialization in original music and effects for film, video, slideshow and theater soundtracks. Twelve years service for clients like PPG, Babcock & Wilcox,

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4 & 8 TRACK STUDIOS

Classic Video, B.F. Goodrich, Cleveland Playhouse, Perfect Pitch, Kent State U Theater and many Christian demo/album projects. We're planning to add a synth module rack, full tilt MIDI/SMPTE sync via MacPlus, Digidesign, music printing, 2 track digital mastering and Fostex 16 track soon.

[8] M.Y. RECORDING STUDIO
4519 South Hills, Cleveland, OH 44109
(216) 741-6453, 221-9788
Owner: Dennis Yurch, Tom Melter
Studio Manager: Dennis Yurch

[4] NIGHTINGALE-CONANT CORPORATION
also REMOTE RECORDING
7300 N. Lehigh Ave., Chicago, IL 60648
(312) 647-0300
Owner: Nightingale Conant Corporation
Studio Manager: Douglas D. Durham

[8] NORWEST COMMUNICATIONS INC.
also REMOTE RECORDING
123 S. Hough St., Barrington, IL 60010
(312) 381-3271
Owner: Mark Karney
Studio Manager: Mark Karney

[4] NOVA PETRA STUDIO
also REMOTE RECORDING
Box 1974, Janesville, WI 53547
(608) 756-0071
Owner: DRS & J.A. Barrette
Studio Manager: Douglas Barrette

[4] THE OHIO STATE UNIVERSITY
AUDIO RECORDING PROGRAM
also REMOTE RECORDING
School of Music, OSU, 1866 College Rd.
Columbus, OH 43210
(614) 422-7899
Owner: OSU
Studio Manager: Robert B. Lackey

[8] ONE 5 PRODUCTIONS
P.O. Box 783, Waukesha, WI 53187
(414) 542-9691
Owner: Steve Conway
Studio Manager: Steve Conway

[8] 1114 PRODUCTIONS
also REMOTE RECORDING
1114 S. Busse, Mt. Prospect, IL 60056
(312) 981-9415
Owner: Phil Mueller, Dennis Henkelman
Studio Manager: Phil Mueller, Dennis Henkelman

[4] OPLAND RECORDING
also REMOTE RECORDING
Rt 7 Box 403, Sioux Falls, SD 57103
(605) 335-5940
Owner: Ken Eckert

[2] ORCHARD HOUSE RECORDING
only REMOTE RECORDING
224 W. 27th St., Minneapolis, MN 55408
(612) 872-7943
Owner: David Michel
Studio Manager: David Michel

[8] PACIFIC TALENT STUDIOS
P.O. Box 213, Frankfort, IL 60423

(815) 469-1721
Owner: Blake Clifford
Studio Manager: Blake Clifford

[8] PANTHER RECORDING
2350 N. 81 St., Wauwatosa, WI 53213
(414) 259-3975
Owner: David Barwick
Studio Manager: David Barwick

[4] PARKER SOUND
1673 Holland, Birmingham, MI 48008
(313) 540-8231
Owner: Jim Parker

[4] PEARSON GROUP RADIO NETWORK
also REMOTE RECORDING
8465 Keystone Crossing Ste. 295, Indianapolis, IN 46240
(317) 259-0163
Owner: Pearson Graham & Fletcher Group Advertising Inc.
Studio Manager: Jerry Curtis

[8] PEGASUS PRODUCTIONS
also REMOTE RECORDING
3006 E. 7th St., Kansas City, KS 64124
(816) 483-3407
Owner: Claudia Branham
Studio Manager: Leslie Buzan Franks

[8] PENGUIN PRODUCTIONS
1026 Carole, Ellisville, MO 63021
(314) 394-0267
Owner: Richard A. Byron
Studio Manager: Richard A. Byron

[4] PHOTO COMMUNICATION SERVICES, INC.
also REMOTE RECORDING
6410 Knapp NE, Ada, MI 49301
(616) 676-1499
Owner: Michael Jackson

[8] PIECES OF EIGHT RECORDING STUDIO
2144 E. Prairie Ave., Decatur, IL 62521
(217) 429-0295
Owner: Barry and Susan Billman
Studio Manager: Barry Billman

[8] PLUS ONE PRODUCTIONS
only REMOTE RECORDING
5868 E. 71st St. Ste. 201, Indianapolis, IN 46220
(317) 549-3412
Owner: Jeffrey Gardner
Studio Manager: Jeffrey Gardner

[2] POLYCOM TELEPRODUCTIONS
also REMOTE RECORDING
201 E. Erie St., Chicago, IL 60611
(312) 337-6000
Owner: Richard Jablonski
Studio Manager: Gene Cosentino

[4] PRECISION AUDIO INC
also REMOTE RECORDING
18582 US 20, Bristol, IN 46507
(219) 295-7493
Owner: Sanford Swartzendruber
Studio Manager: Larry Becker

[8] BUD PRESSNER RECORDING
4839 Broadway, Gary, IN 46409
(219) 884-5214
Owner: Bud Pressner
Studio Manager: Bud Pressner

[4] PRO AUDIO ENGINEERING
only REMOTE RECORDING
22 Grand Park Blvd., Athens, OH 45701
(614) 593-8767
Owner: Alan W. Rollins
Studio Manager: Tom Henderson

[4] PRO RECORDING SERVICE
also REMOTE RECORDING
13709 Mapleleaf Dr., Garfield Heights, OH 44125
(216) 662-1435
Owner: Bruce Leslie
Studio Manager: Bruce Leslie

[4] PRO SOUND & LIGHTING
also REMOTE RECORDING
 150 Wendell Rd., Reynoldsburg, OH 43068
 (614) 927-5318
 Owner: Dutch Plegler
 Studio Manager: Dutch Plegler

[8] PRO VIDEO
also REMOTE RECORDING
 325 Lake Ave. S. Ste. 605, Duluth, MN 55805
 (218) 727-4112
 Owner: Jack Lind
 Studio Manager: Jerry Keldor

[8] PRODIGY PRODUCTIONS
also REMOTE RECORDING
 P.O. Box 4656, Youngstown, OH 44515
 (216) 799-8951
 Owner: Paul J. Pompura, James J. Gumina
 Studio Manager: Paul J. Pompura

[8] PRODUCTION WAREHOUSE
 3290 S. St. Rd. 446, Bloomington, IN 47401
 (812) 333-5559
 Owner: Kenneth L. Ware
 Studio Manager: K.L. Ware

[4] PROGRAMMING TECHNOLOGIES, INC.
 6666 N. Lincoln Ave., Lincolnwood, IL 60645
 (312) 676-9400
 Owner: William P. Bennett, Stanley J. Roy
 Engineers: Ramesh S. Iyer, Robert F. McNaughton
 Tape Recorders: (8) Otari MX5, MX5050, 2-track; Ampex 440, 4-track; Nakamichi MR-1, cassette 2; TEAC 234 cassette 4; Tascam 122, cassette 2.
 Mixing Consoles: Tascam M-35, 8 x 4; TEAC 5, 8 x 4.
 Monitor Amplifiers: Crown SA.30, D.40, D.60.
 Monitor Speakers: Genesis, Auratone.
 Echo, Reverb & Delay Systems: Echo-plate, Eventide 969.
 Other Outboard Equipment: dbx 162 comp./limiters, dbx 161 comp./limiters, dbx 160 comp./limiters, Orban Sibilance Controller 536-A, 526-A, Dolby B330 Series, Sony PCM 501-ES, Orban EQs 674-A, Orban EQs 672-A, UREI Parametric 545, UREI Notch Filter 565, Studio Technologies, Inc. stereo simulator.
 Microphones: (2) Shure SM7s.
 Instruments Available: Narration industrials only.

[4] RARE AIR RECORDERS
only REMOTE RECORDING
 6300 W. Michigan A-16, Lansing, MI 48917
 (517) 323-4182
 Owner: Mark and Karen Raschke
 Studio Manager: Mark Raschke

[8] REAL GONE RECORDING
also REMOTE RECORDING
 1813 Euclid Ave., Lincoln, NE 68502
 (402) 475-6945
 Owner: Terrill J. Clements
 Studio Manager: Terrill J. Clements

[8] REEL ALBUM
 2885 Snow Rd., Berrien Springs, MI 49103
 (616) 473-6220
 Owner: Harold and Paul Brinley
 Studio Manager: Harold Brinley

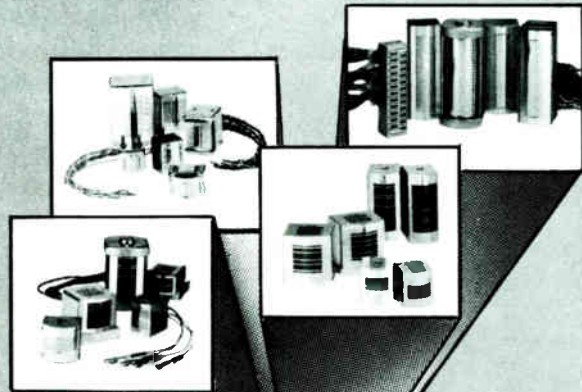
[8] REEL PRODUCTIONS
also REMOTE RECORDING
 2705 Flicker Lane, Rolling Meadows, IL 60008
 (312) 259-1312
 Owner: Steve Moronick
 Studio Manager: Steve Moronick

[8] RENWOOD RECORDING STUDIO
 3510 60th St., Kenosha, WI 53142
 (414) 654-3376
 Owner: George Renner
 Studio Manager: George Renner

[8] RIX RECORDING
 3521 Herschel View Ln., Cincinnati, OH 45208
 (513) 831-2774
 Owner: Jim Rixey
 Studio Manager: John Davis

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(312) 584-4657
Owner: Richard J. Peck
Studio Manager: Richard J. Peck

[8] RY RECORDING
Rte #1 Box 44, Willard, WI 54493
(715) 267-6749
Owner: Richie Yurkovich
Studio Manager: Richie Yurkovich

[8] SATURN SOUND
also REMOTE RECORDING
1721 N. Dayton/Coach House, Chicago, IL 60614
(312) 337-6898
Owner: Dave Gordon
Studio Manager: Brian Gephart

[4] SCHU-MAN STUDIO
also REMOTE RECORDING
1823 W. Granville Ave. #4-A, Chicago, IL 60660
(312) 338-4992
Owner: David G. Bragman
Studio Manager: Judith Ann Schust

[8] SINGLE SOUND STUDIO
also REMOTE RECORDING
7555 Orek, Brighton, MI 48116
(313) 231-9345
Owner: Gene Fiero
Studio Manager: Gene Fiero

[8] SMART STUDIOS
1301 E. Washington, Madison, WI 53703
(608) 257-9400
Owner: Steve Marker, Butch Vig
Studio Manager: Butch Vig

[8] SOLAR SOUND SERVICES
also REMOTE RECORDING
2630 S. Harvey Ave., Berwyn, IL 60402
(312) 484-4876
Owner: Bill Daly
Studio Manager: Vilma Treo Daly

[8] SOLO STUDIO
Box 20, Bagley Ave., Bagley, WI 53801
(608) 996-2260
Owner: Tom Bennett
Studio Manager: Tom Bennett

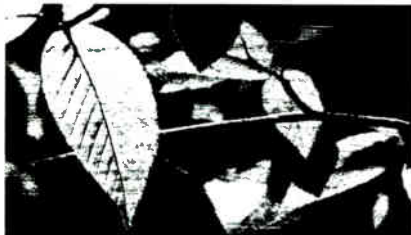
[8] SOUND CONCEPTS
also REMOTE RECORDING
142 Sanborn St., Michigan City, IN 46360
(219) 874-9041
Owner: Duane and Cathy McKee
Studio Manager: Duane McKee

[8] SOUND CORE MUSIC
also REMOTE RECORDING
715 S. University, Carbondale, IL 62901
(618) 457-5641
Owner: Joe Castrejon
Studio Manager: Dave Levitt

[4] SOUND CREATIONS
P.O. Box 12, Metropolis, IL 62960
(618) 524-7147
Owner: Michael W. Reineking
Studio Manager: J. Miller, Jr.

[8] SOUND 80
also REMOTE RECORDING
4027 IDS Center, Minneapolis, MN 55402
(612) 339-9313
Owner: Jan Enckson
Studio Manager: Bill Lubansky

NORTH CENTRAL



4&8 TRACK STUDIOS

[4] SOUND EXPECTATIONS
also REMOTE RECORDING
45 Stringham Rd., Battlecreek, MI 49017
(616) 968-9029
Owner: Doug Ward, Greg Haynes
Studio Manager: The Fish

[4] SOUND FIELD
2280 Antwerp S.W., Wyoming, MI 49509
(616) 245-7299
Owner: William Hendriksen, Jr.
Studio Manager: William Hendriksen, Jr.

[8] THE SOUND PALETTE
6219 W. Richmond Ave., Milwaukee, WI 53210
(414) 444-8850
Owner: Keith Henrics
Studio Manager: Keith Henrics

[8] SOUND RESOURCES
1400 Energy Park Dr. Ste. 21, St. Paul, MN 55108
(612) 644-3660
Owner: Joel P. Johnson
Studio Manager: Joey Johnson

[8] SOUND SHOP RECORDING STUDIO
9250 N. Sleepy Hollow Lane, Bayside, WI 53217
(414) 352-7766
Owner: Roger A. Roth
Studio Manager: Roger A. Roth

[4] SOUND SYSTEMS/BREAK GLASS
PULL HANDLE PRODUCTIONS
also REMOTE RECORDING
163 Forest Hill Dr., Avon Lake, OH 44012
(216) 933-7633
Owner: Steve M. Savanyu
Studio Manager: Mark J. Reno

[8] SOUNDMASTER RECORDING STUDIO
P.O. Box 276, Port Byron, IL 61275
(309) 523-3262
Owner: Wade A. Calvert
Studio Manager: Wade A. Calvert

[8] SOUNDQUEST RECORDING STUDIO
also REMOTE RECORDING
28W384 Gary Mill Rd., Winfield, IL 60190
(312) 293-0513
Owner: Kevin Brauer, Bob Nicholson
Studio Manager: Kevin Brauer

[4] SOUNDVISIONS
also REMOTE RECORDING
P.O. Box 2055, River Grove, IL 60171
(312) 453-1829
Owner: Bruno Strapko
Studio Manager: Julie Strapko

[4] THE SOUNTAGE STUDIO
only REMOTE RECORDING
P.O. Box 391098, Solon, OH 44139
(216) 232-7926
Owner: Paul C. Miller
Studio Manager: Donald E. Miller

[8] SOUTH RIVER RECORDING
also REMOTE RECORDING
1395 Hwy 65/69, Indianola, IA 50125
(515) 961-3925

Owner: Michael Lawyer
Studio Manager: Michael Lawyer

[8] SPARKLE CITY STUDIO
1048 Woodland Trails, Fenton, MO 63026
(314) 343-1139
Owner: Jack Pausch
Studio Manager: Jack Pausch

[8] STACK RECORDING
10260 S. Nicholson Rd., Oak Creek, WI 53154
(414) 764-9680
Owner: Wayne R. Zwicke
Studio Manager: Wayne R. Zwicke

[8] STAGE 3 SOUND PROD. INC.
also REMOTE RECORDING
1901 W. 43rd St., Kansas City, KS 66103
(913) 384-9111
Owner: Don Warnock
Studio Manager: Don Warnock

[8] "STARNORTH" STUDIO
1137 Lake Ave., Wilmette, IL 60091
(312) 256-8093
Owner: Mark Hoffman
Studio Manager: Mark Hoffman

[4] STERLING QUALITY SOUND
also REMOTE RECORDING
7830 S. Keeler Ave., Chicago, IL 60652
(312) 582-5282
Owner: Jeffrey Sterling
Studio Manager: Jeffrey Sterling

[4] STILL VOICE RECORDS
3041 Sumter Ave S., St. Louis Park, MN 55426
(612) 927-0451
Owner: Alan A. Goldberg
Studio Manager: Alan A. Goldberg

[8] STONE MUSIC COMPANY
also REMOTE RECORDING
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 'D' RECORDING
8237 Parkside Ave., Morton Grove, IL 60053
(312) 967-8729
Owner: Steve Delano
Studio Manager: Steve Delano

[8] STUDIO G RECORDING
also REMOTE RECORDING
214 S. Bemiston Ave., St. Louis, MO 63105
(314) 727-0770
Owner: Greg Glazier
Studio Manager: Greg Glazier

[4] THE STUDIO/GTK SYSTEMS
26007 W. Warren, Dearborn Hts., MI 48127
(313) 277-2312
Owner: Gary T. Kula
Studio Manager: Ken P. Kula, Tony A. Marroco, Jeff Dennis

[8] STUDIO 95
also REMOTE RECORDING
250 W. Court St. Ste 300E, Cincinnati, OH 45202
(513) 241-9500
Owner: KDW Radio Associates
Studio Manager: Jim Stitt

[8] STUDIO ONE, INC.
645 N. Michigan, Chicago, IL 60611
(312) 337-5111
Owner: Kirk Johnson
Studio Manager: Karin Lahey

[8] STUDIO 7
also **REMOTE RECORDING**
16591 County Home Rd., Marysville, OH 43040
(513) 644-8295
Owner: Doug Faiella
Studio Manager: Shirley Faiella

[8] STUDIO 309
309 S. College St., Danville, IL 61832
(217) 442-8232
Owner: R. Sadowski, J. Smail, J. Wasser
Studio Manager: J. Samil, R. Sadowski

[8] SUBSTATION EIGHT
2053 S. Kennison Dr., Toledo, OH 43609
(419) 382-3905
Owner: Kevin Meade
Studio Manager: Kevin Meade

[8] SUBTERRANEAN SOUND
P.O. Box 2411, Overland, MO 63114
(314) 429-2858
Owner: Walt Whitney
Engineers: Walt Whitney
Dimensions of Studios: 20 x 20.
Dimensions of Control Rooms: 30 x 30.
Tape Recorders: Otari 5050BSD, 8-track; Otari MX-5050
BII, 2-track; Sansui PCXI Incode, 2-track; Sanyo Beta Hi-fi
7200, 2-track.
Mixing Consoles: Ramsa 8118, 18 x 4 x 2.
Monitor Amplifiers: Sony.
Monitor Speakers: Fostex RM-865s, Auratone 5Cs.
Echo, Reverb & Delay Systems: Lexicon PCM70, Prime
Time II, ART DR1.
Other Outboard Equipment: Rocktron RX2H Exciter/
noise reduction, (2) dbx 155s (8-track), Yamaha GC2020
limiter, Furman parametric EQ, Mutron Bi-phase.
Microphones: Sennheiser 441, MD21, Shure 57, PZM.
Instruments Available: Prophet 2000, TX7, Akai S612
sampler, Roland MSQ-700, Casio RZ-1 drum machine,
Roland GR-300 guitar synth, various percussion instru-
ments.
Video Equipment & Services: Beta Hi-fi video.
Rates: \$30/hr.

[8] THE SUMMIT
Rt. 1 Box 136, Mayetta, KS 66509
(913) 966-2682
Owner: Les Roediger
Studio Manager: Les Roediger

[8] SUN SOUND STUDIO
also **REMOTE RECORDING**
540 32 Ave. N., St. Cloud, MN 56301
(612) 253-8652
Owner: Mitch Groethe, Craig Groethe
Studio Manager: Mitch Groethe

[8] SUNDANCE STUDIO
2925 E. Rome West Rd., Chillicothe, IL 61523
(309) 579-2142
Owner: Steve Meister, Phil Borland
Studio Manager: Steve Meister

[8] SUNSHINE STUDIOS
1800 N. Meridian St. Ste. 102 lower level
Indianapolis, IN 46202
(317) 926-5222
Owner: Dave Lucas, John M. Valant
Studio Manager: Pete A. Saetre, Cathy Shoemaker

[8] SUPER DIAMOND PRODUCTIONS
also **REMOTE RECORDING**
10537 Elk Ave., Cleveland, OH 44108
(216) 761-4777
Owner: Charles F. Mines, Delia Mines
Studio Manager: Charles F. Mines

[4] THE SURREALIST FOUNDATION
also **REMOTE RECORDING**
1636 Lakehurst Dr., Fort Wayne, IN 46815
(219) 749-0996
Owner: Ron Wartzok
Studio Manager: Ron Wartzok

[8] SYNAPSE SOUND
also **REMOTE RECORDING**
316 T.R. 2352, R.D. #1, Loudonville, OH 44842
(419) 368-3352
Owner: Fred R. Coffin
Studio Manager: Tom Harmon

[4] SYNDICATE SOUND & LIGHTING
311 Poland Ave., Struthers, OH 44471
(216) 755-1296
Owner: Jeff Wormley
Studio Manager: Richard Parker Jr.

[2] TAB RECORDS
also **REMOTE RECORDING**
2018 W. County Line Rd., Mequon, WI 53092
(414) 241-5641
Owner: Todd A. Boettcher
Studio Manager: Todd A. Boettcher

[4] TANGENT STUDIOS
1804 Oakland, Mt. Vernon, IL
(618) 242-6105
Owner: David Davenport
Studio Manager: David Davenport

[8] TAPE TRANSPORT/REMOTE RECORDERS
only **REMOTE RECORDING**
3 Meadow Ct., Champaign, IL 61821
(217) 359-8762
Owner: Lohm Landreth
Studio Manager: John Landreth

[4] TAPE II STUDIOS
also **REMOTE RECORDING**
1999 S. Valley View Dr., St. Joseph, MI 49085
(616) 428-2021
Owner: Joel L. Motel
Studio Manager: Joel L. Motel

[4] TECH SERVICES
3617 Eliot Ln., Madison, WI 53704
(608) 249-5681
Owner: Daniel A. Swadley
Studio Manager: Daniel A. Swadley

[8] TELSTAR STUDIO
also **REMOTE RECORDING**
2622 Badger Ln., Madison, WI 53713
(608) 273-8232
Owner: Thomas G. Fields III
Studio Manager: Doug Jones

[4] TIN ROOF RECORDERS
also **REMOTE RECORDING**
110-3 Racine, Rapid City, SD 57701
(605) 348-3507
Owner: Ken Verheecke
Studio Manager: Ken Verheecke

[8] TNT RECORDING
3701 N. Oakwood Ave., Muncie, IN 47304
(317) 284-3414
Owner: Clifford Tretick, Drew Tretick
Studio Manager: Clifford Tretick

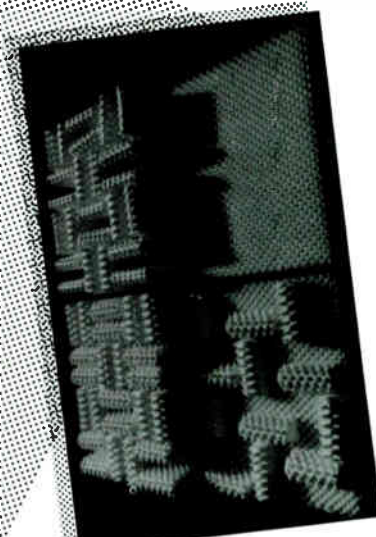
[8] TOM'S RECORDING SERVICE
4215 N. 62nd St., Milwaukee, WI 53216
(414) 462-6428
Owner: Thomas Mahnke

[8] TOMSICK BROTHERS PRODUCTIONS
also **REMOTE RECORDING**
21271 Chardon Rd., Euclid, OH 44117
(216) 481-8380
Owner: Ken Tomsick
Studio Manager: John Tomsick

[8] TONE RECORDING
also **REMOTE RECORDING**
222 W. Ontario, Chicago, IL 60611
(312) 951-8712
Owner: Tony Sipusich
Studio Manager: Jim Cullen
Engineers: Tony Sipusich, Mike Minuskin.
Dimensions of Studios: 8 x 10.
Dimensions of Control Rooms: 10 x 16, 16 x 12.
Tape Recorders: Sony MCI1H 110B-2, 2-track; Sony MCI
JH 110C-8, 8-track; Otari Mark III MX 5050, 4-track;
Ampex 440C-2, 2-track; Ampex 700 ATR, 2-track; Tascam
Nagra III and IV 34, 4-track.
Mixing Consoles: Trident Series 70, 16 x 8 x 8; custom
600, 16 x 8 x 8.
Monitor Amplifiers: UREI 6500, Crown D75s, and D150s.
Monitor Speakers: UREI 811B, JBL 4311, Auratone 5C.
Echo, Reverb & Delay Systems: AKG BX10E and 20E,
Lexicon 92.

—LISTING CONTINUED ON NEXT PAGE

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centerville, oh.45459

Circle #071 on Reader Service Card

—FROM PAGE 115

Other Outboard Equipment: UREI 1176 LN limiters, dbx 157 and 154, Orban 672A-2, Paraphonic EQ, Techniques 1200 MK turntable, Orban de-esser 536A, USA Gatex-four channel, Techniques cassette decks.
Microphones: Shure, Sony, Sennheiser.
Instruments Available: JVC 8250, Lynx time code module.
Rates: Call for quotes.

[8] TOUSANA RECORDING
also REMOTE RECORDING
8825 S. Oglesby Ave., Chicago, IL 60617
(312) 731-6297
Owner: Louis Tousana Jr.
Studio Manager: Frank Stone

[4] T.R. SONICS
also REMOTE RECORDING
7531 Lima Rd., Ft. Wayne, IN 46818
(219) 489-4297
Owner: Thomas Tempel, Rick Blain
Studio Manager: Thomas Tempel, Rick Blain

[4] TRACK ONE RECORDING STUDIO
also REMOTE RECORDING
127 Huron St., Elyria, OH 44035
(216) 322-3984
Owner: Edward R. Minnich, David W. Holt
Studio Manager: Vivian M. Terry-Minnich

[4] 2447 REHEARSAL CENTRE
2447 N. Ashland Ave., Chicago, IL 60614
(312) 929-1151
Owner: Lynda Elimon
Studio Manager: Daniel C. Holm

[4] TWILIGHT PRODUCTIONS, INC.
also REMOTE RECORDING
P.O. Box 4121, Topeka, KS 66604
(913) 272-1593
Owner: Dan Lindquist, Lynn Parker
Studio Manager: Megan Murphy

[8] UNDERGROUND RECORDING
287 Bensley, Calumet City, IL 60409
(312) 891-5531
Owner: K.L. Fuehrmeyer
Studio Manager: P. Dahlman

[8] U.S. STUDIOS
314 Clifton Ave., Minneapolis, MN 55403
(612) 870-8190 ext. 413
Owner: U.S. Companies
Studio Manager: Brian Wright

**[8] THE VALLEY RECORDER/
VALLEY ACOUSTICS CO.**
only REMOTE RECORDING
1015 N. Union, Fergus Falls, MN 56537
(218) 736-2750
Owner: Maurice A. Skogen
Studio Manager: Maurice Skogen

[2] VEDANTA DIGITAL RECORDING
only REMOTE RECORDING
W9643 Rucks Rd., Cambridge, WI 53523
(608) 764-8082
Owner: Daniel Gomez-Ibanez
Studio Manager: Daniel Gomez-Ibanez

[4] VERA RECORD COMPANY
2139 N. 47th St., Milwaukee, WI 53208
(414) 444-2404
Owner: Gary Tanin
Studio Manager: "E" Tanin

[4] VILLA DEL GUIDO STUDIOS
12007 W. Main St., Huntley, IL 60142
(312) 669-5767
Owner: Maggie Hamill, Steve Pappas
Studio Manager: Steve Pappas, Maggie Hamill

[4] WALLS HAVE EARS
also REMOTE RECORDING
2466 N. Frederick Ave., Milwaukee, WI 53211
(414) 962-4662
Owner: William Stace
Studio Manager: William Stace

[4] THE WATCHWORKS
also REMOTE RECORDING
203 N. Maplewood, Berrien Springs, MI 49103
(616) 471-3058
Owner: Stormwatch Productions
Studio Manager: G. Allan Clarke

[8] WESTEND STUDIOS
Box 194, Hays, KS 67601
(913) 628-2157
Owner: M.E. Miller
Studio Manager: Jan Miller

[8] WHCO RADIO
also REMOTE RECORDING
P.O. Box 255/Hwy. 154 West, Sparta, IL 62286
(618) 443-2121
Owner: J.L. Scheper
Studio Manager: Mike Arnold

**[8] WHEATON COLLEGE-
COMMUNICATION RESOURCE CENTER**
Wheaton College, Wheaton, IL 60187
(312) 260-5061
Owner: Wheaton College
Studio Manager: Dan Smith

[8] WHITE ROOM PRODUCTIONS
7168 N. Graham Rd. Ste. 140, Indianapolis, IN 46250
(317) 841-0002
Owner: Dane K. Nash, Kenneth G. Nash
Studio Manager: Dane K. Nash
Engineers: Jeff Gardner, Dane Nash.
Dimensions of Studios: 14 x 12 w/10-foot ceilings.
Dimensions of Control Rooms: 14 x 14 w/10-foot ceilings.
Tape Recorders: TEAC 80-8, 8-track; TEAC 32, 2-track.
Mixing Consoles: Ramsa WR8816, 16 x 4 x 2.
Monitor Amplifiers: Crown DC 300 and 150.
Monitor Speakers: JBL 4412 and Auratone n.f.m.
Echo, Reverb & Delay Systems: MasterRoom XL-121 REV, DL-4 delay.
Other Outboard Equipment: Omnicraft Gt-4 noise gate, Apex Aural Exciter, Moog Parametric EQ.
Microphones: Neumann U47 FET, AKG C-451E, ATM 853, EV RE10 and EV 635.
Rates: \$55/hr. 8-track; \$35/hr. 2-track.

[8] WHITEWATER MUSIC STUDIO
also REMOTE RECORDING
16651 Kangerod Circle, Anoka, MN 55303
(612) 441-5846
Owner: James Hersch
Studio Manager: James Hersch

[8] WIELAND & BALGAVY ADVERTISING
P.O. Box 573, 211 Fraser St., Kawkaulin, MI 48631
(517) 684-6773
Owner: Brad Wieland
Studio Manager: Dennis Balgavy

[8] WILD OAT PRODUCTIONS
also REMOTE RECORDING
415 W. 2nd St., Ashland, WI 54806
(715) 682-6464
Owner: Thomas Blain, Andrew Noyes
Studio Manager: "The Music Center" Ashland, WI

[4] WILLER PRODUCTIONS
also REMOTE RECORDING
1655 Wells St., Ft. Wayne, IN 46808
(219) 426-1655
Owner: Charlie Willer
Studio Manager: Lucy Hagan

[8] WISE GUYS RECORDING STUDIO, INC.
also REMOTE RECORDING
5000 Wyoming Ave. Suite 121, Dearborn, MI 48126
(313) 582-5988
Owner: Dennis George, Greg Stevens
Studio Manager: Dennis George

[8] W.J.L. RECORDING CENTER
also REMOTE RECORDING
8460 Riverview, Dearborn Heights, MI 48127
(313) 563-2623
Owner: Walter Lipiec
Studio Manager: Walter Lipiec

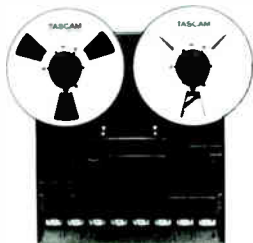
[4] WONDER PUG PRODUCTIONS
also REMOTE RECORDING
1330 E. Rand Rd. #43, Des Plaines, IL 60016
(312) 298-8938
Owner: Peter W. Krampert
Studio Manager: Peter W. Krampert

[8] WOODEN NICKEL SOUND STUDIO
6844 Dickison Cemetery Rd., Dunlap, IL 61525
(309) 243-7658
Owner: Donald J. Rosser
Studio Manager: Donald J. Rosser

[4] WOODMAN PRODUCTIONS
also REMOTE RECORDING
1109 Greenfield Ln., Mt. Prospect, IL 60056
(312) 398-2095
Owner: Lowell S. Woodman
Studio Manager: Woody Woodman

RECORDING EQUIPMENT

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Circle #072 on Reader Service Card

World Radio History

CASE:

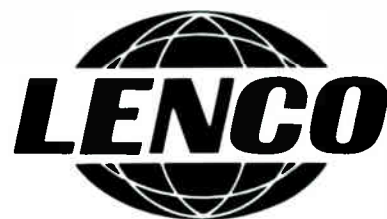
The Lenco engineers have emerged from a 2-year R & D program with an **EXTRAORDINARY** Power Amp they have called the "MPA-2100". It is a **PROFESSIONAL MONITOR POWER AMP** that is designed specifically for use as a **MONITOR AMP** - to be employed in high quality Monitor Systems!

Much time has been spent in evaluating this amp in comparison tests against other amps that are popularly accepted as "monitor" amps, and the Lenco Developmental Professionals have concluded that **NO OTHER AMP STACKS UP TO THE Lenco MPA-2100 Professional Monitor Amp!**

MPA-2100

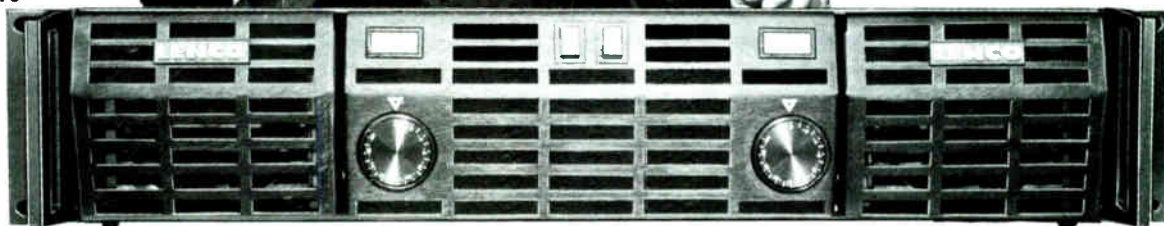
PROFESSIONAL MONITOR POWER AMPLIFIER

by



YOU

BE THE JUDGE!



Lenco judges this product to be the best monitor amp available anywhere, but they wish to take the evidence to support this claim to the

SUPREME JUDGE — YOU, THE PROFESSIONAL USER!

EVIDENCE? *Let's open with these facts:*

#1. SPECIFICATIONS

Outstanding! (Especially where they count the most in good monitor systems.)

SLEW RATE: 700 V/ μ S (or better)

DAMPING FACTOR: 600 (20-20KHz)

RESPONSE: 1 Hz to 100 KHz (flat)

THD: 0.005% (1KHz, 8 Ohms)

TIM Distortion: Unmeasurable (Especially good for monitoring DIGITALLY RECORDED MATERIAL)

- **MODULAR** - Amp Channel Modules are built into "drawers" that allows them to be extracted for inspection without removing its mainframe from the rack.

- **NO WIRING HARNESS** to deteriorate the Audio Signal by inductance problems. All audio pathways are in circuit board etch.

- **SAFETY** - Amp goes to a "shutdown" status if DC or parasitics invades the signal line.

#2. FEATURES

- **FRONT-END COOLING**

(Eliminates much of the problems of amps overheating caused by stacking, and in-wall mountings.)

#3. RELIABILITY - Maintenance Free!

This amp is designed to give years and years of faithful, professional service.

A **5-YEAR WARRANTY** is included with each Amp.

Only a partial list of our evidence is presented here. For **ADDITIONAL EVIDENCE**

CONTACT: Jim Rhodes, Audio Product Manager

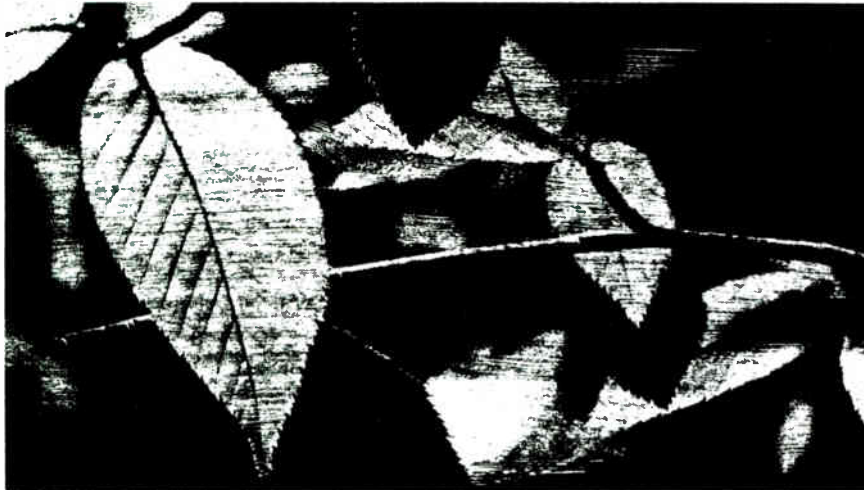
LENCO, INC., 300 N. MARYLAND, JACKSON, MO 63755

(800)325-8494 or (314)243-3147; TWX: 910-760-1382

After you have examined and evaluated ALL the Evidence on the MPA MONITOR AMP, then . . . **WE WANT TO HEAR YOUR VERDICT!**

(P.S. And we'll be happy to accept your orders for the new MPA along with your verdict!)

NORTH CENTRAL



12/16 TRACK STUDIOS

[16] **ACME RECORDING STUDIOS**
also REMOTE RECORDING
3821 N. Southport, Chicago, IL 60613
(312) 477-7333
Owner: Michael Rasfeld
Studio Manager: Les McReynolds

[16] **ACTION CITY RECORDS**
P.O. Box 302, Napoleon, OH 43545
(419) 533-4782
Owner: John & Sharon Kuser
Studio Manager: John E. Church

[16] **ALTERNATIVE MUSIC PRODUCTIONS**
1107 W. 16th St., Davenport, IA 52804
(319) 323-7347
Owner: Daniel Schafnit
Studio Manager: Daniel Schafnit

[12] **AMERICAN ARTISTS STUDIO**
312 Washington Ave. N., Minneapolis, MN 55401
(612) 339-4741
Owner: Owen Husney, Ron Soskin
Studio Manager: Alison Cummings

[16] **ANGEL RECORDING STUDIO**
4435 Mayfield Rd., Suite #6, South Euclid, OH 44121
(216) 382-6036
Owner: Mark Luthardt
Studio Manager: Mark Luthardt

[16] **ARK RECORDING STUDIO**
4905 1/2 Lilac, Wausau, WI 54401
(715) 355-1565
Owner: Mitch Viegut, Dave Saindon, Air Kraft
Studio Manager: Mitch Viegut

[16] **AUDIO ART**
403 S.W. 8th St., Des Moines, IA 50309
(515) 282-0473
Owner: Audio Art, Inc.
Studio Manager: Roger Hughes

[16] **AUDIO ASSOCIATES**
117 S. King St., Xenia, OH 45385
(513) 372-1365
Owner: Kym Yanley
Studio Manager: Jeff Friend

[16] **AUDIO GRAPHICS**
also REMOTE RECORDING
1516 Ferris Ave., Royal Oak, MI 48067
(313) 544-1793
Owner: Edw. J. Wolfrum
Studio Manager: Susen E. Wolfrum

[16] **AUDIO RAINBOW SOUND STUDIO INC.**
also REMOTE RECORDING
1158 Prairie Rd., Aurora, IL 60506
(312) 859-DISC (3472)
Owner: Grant Stampler
Studio Manager: Grant Stampler

[16] **AUDILOFT RECORDING STUDIOS**
also REMOTE RECORDING
P.O. Box 7-11, Macka Creek, MO 65786
(314) 363-5432
Owner: B.J. Cornahan
Studio Manager: Brad Edwards

[16] **AUTHENTIC AUDIO LAB**
also REMOTE RECORDING
5147 Pine St., P.O. Box 6063, Omaha, NE 68106
(402) 553-5334, 553-5327
Owner: Joseph D. Slezak
Studio Manager: Joseph D. Slezak

[16] **AVATAR PRODUCTIONS**
515 28th St., #106, Des Moines, IA 50312
(515) 282-9746
Owner: Michael A. Meacham
Studio Manager: Michael A. Meacham

[16] **AVIDAY STUDIO**
16680 Prest, Detroit, MI 48235
(313) 836-2527
Owner: David Robinson
Studio Manager: David Robinson

[16] **BASEMENT BOYS STUDIO**
801 Wheeler Rd., Madison, WI 53704
(608) 241-5615
Owner: Dean Richard
Studio Manager: Dean Richard

[16] **BELL AUDIO/VIDEO, INC.**
2131 S.W. 36th St., Topeka, KS 66614
(916) 273-0756
Owner: Steve Roach, Dennis White
Studio Manager: Steve Roach
Engineers: Steve Roach, Dennis White.
Dimensions of Studios: Studio: 25 x 20; drum booth: 8 x 10; video: 12 x 24.
Dimensions of Control Rooms: 9 x 12 audio and video control room.
Tape Recorders: Tascam MS-16, 16-track; Tascam 80-8, 8-track; Revox B-77 MKII, 2-track; TEAC C3RX cassette; TEAC V-316 cassette.
Mixing Consoles: Ramse WR 8816, 16 x 16 x 4 x 2; E-V portable ELX1 4 x 1.
Monitor Amplifiers: Yamaha, Soundcraftsman.
Monitor Speakers: E-V Interface, Auratone 5Cs.
Echo, Reverb & Delay Systems: Yamaha REV7, Korg

SDE-3000, DOD delay; Furman RV-1.
Other Outboard Equipment: Valley People 610, Furman compressor, (4) Ashly noise gates, Phase Linear parametric, Biamp 10-band stereo EQ, 24 channels of dbx noise reduction.
Microphones: AKG 414; E-V PL20 and PL80; (2) Shure 57s, 85L; Sennheiser 441; Beyer 210.
Instruments Available: (3) Strats, Les Paul, Gibson 335, Gibson SG, Fender P-Bass, Guild D50, Sigma 12 string, Yamaha DX7, Camco drums w/Tama snare, grand piano, Yamaha RX11.
Video Equipment & Services: JVC 8250, 5550, KY 210 (3 tube) camera, CEL digital effects Adams-Smith sync and readers. Computerized editing synched to 16 tracks of audio, JVC 4900 w/time code portable recorder.
Rates: Video: \$75/hr.; 16-track audio: \$45/hr.

[16] **BODY ELECTRIC STUDIOS, INC.**
Bolingbrook, IL 60439
(312) 260-0220
Owner: Brian Basilio

[16] **BRUNSONGS**
154 Pershing, NE, Grand Rapids, MI 49505
(616) 363-5600
Owner: Rick Brunson
Engineers: Rick Brunson
Dimensions of Studios: 12 x 22.
Tape Recorders: Tascam MS-16, 1-inch 16-track; Fostex A-2, 1/2-inch 2-track; (2) Akai 6X-F31 cassettes.
Mixing Consoles: Ramse WRT-820, 20 x 16 x 12.
Monitor Amplifiers: (2) Crest 3001.
Monitor Speakers: E-V 100A, Yamaha NS-670, Auratone C5.

Echo, Reverb & Delay Systems: Ecoplate III, Lexicon PCM70, (2) Effectron 64, Effectron 256, Roland Space Echo 301.
Other Outboard Equipment: Aphex Aural Exciter type B, Fostex limiter/compressor 3010, dbx Type II noise reduction 16 tracks, dbx expander, compressor.
Microphones: Assorted Neumann, E-V, Audio-Technica, Shure.
Instruments Available: Kimbell grand piano 6'3", Yamaha DX7, TX7, (2) Memorymoog, OB-8, Korg Poly 61, Oberheim DX drum machine plus stretch and various chips. Ludwig drums and roto-toms 360 MIDI-Bass, Gibson Les Paul, Yamaha acoustic guitar, Fender amps. E-mu II available upon request.
Rates: Available upon request.

[16] **CANDLELIGHT STUDIOS**
also REMOTE RECORDING
740 N. Campbell, Chicago, IL 60612
(312) 276-LITE, 276-5483
Owner: Bob Krutiak
Studio Manager: Mary Krutiak

[16] **CEDAR RAPIDS MUSIC PRODUCTION CO.**
also REMOTE RECORDING
3417 Center Point Road N.E., Cedar Rapids, IA 52402
(319) 395-0438
Owner: John K. O'Brien
Studio Manager: John K. O'Brien

[16] **CENTRAL STUDIOS**
also REMOTE RECORDING
275 N. Lexington, Central High, St. Paul, MN 55104
(612) 645-9217
Owner: St. Paul Schools
Studio Manager: Ben James

[16] **CLAYTON STUDIOS, INC.**
also REMOTE RECORDING
1126 S. Big Bend, St. Louis, MO 63117
(314) 781-6200
Owner: Richard Ulett
Studio Manager: Robyn Goffstein

[16] **CONCEPT PRODUCTIONS, INC.**
also REMOTE RECORDING
2984 Triverton Pike, Madison, WI 53711
(608) 271-2606
Owner: C. Dan Geocaris
Studio Manager: Rod Bareimann

[16] **C.R.O.**
Ste. 530 Merchants Bank Bldg. Muncie, IN 47305
(317) 286-2008
Owner: Sound Influence
Studio Manager: D.N. Howell

[16] **CROSSLINK PRODUCTIONS, INC.**
also REMOTE RECORDING

2455 North Star Rd. 3rd floor, Columbus, OH 43221
(614) 488-5993
Owner: James N. Cannell
Studio Manager: Fred "Fritz" Mossman

[16] CUSTOM RECORDING STUDIOS
also REMOTE RECORDING
3829 Scott Ave. No., Minneapolis, MN 55422
(612) 535-2587
Owner: James and Bunny Reynolds
Studio Manager: James Reynolds

[16] DAYBREAK MUSIC PRODUCTIONS
also REMOTE RECORDING
1500 Midway Ct., Elk Grove Village, IL 60007
(312) 228-7090
Owner: John Groppi
Studio Manager: Michelle Anderson

[16] DIAMOND MINE STUDIOS
3115 Bremen Dr., Columbus, OH 43224
(614) 268-4792
Owner: Bright Moon Productions
Studio Manager: Chris Nye

[12] DIRT ROAD STUDIO
R1. Box 12, Villa Ridge, IL 62996
(618) 342-6692
Owner: John L. Windings
Studio Manager: John L. Windings

[16] DOMAIN COMMUNICATIONS
also REMOTE RECORDING
289 Main Place, Carol Stream, IL 60188
(312) 668-5300
Owner: Edward Elliott
Studio Manager: Pete Tumas

[16] KEN EARL PRODUCTIONS
590 Buckingham Way, Bolingbrook, IL 60439
(312) 472-6550
Owner: Ken Earl
Studio Manager: Ken Earl



ECLECTIC EMPORIUM
Lake Villa, IL

[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 of Studios: 17 x 20 x 9
Dimensions of Control Rooms: 17 x 9 x 8
Tape Recorders: Fostex B-16, 16-track; Otari 5050B, 2-track; Onkyo 2066, cassette.
Mixing Consoles: Allen & Heath 1616D, 16 x 8.
Monitor Amplifiers: Soundcraftsman RA-5501.
Monitor Speakers: E.A.W. SCD-6000.
Echo, Reverb & Delay Systems: Lexicon PCM60, MXR-1000 delay.
Other Outboard Equipment: EXR SP-II projector, (2) dbx 166 compressors.
Microphones: AKG 414, (2) Sennheiser 441, (2) Audio-Technica 811, (3) SM57, (3) Countryman 202, (3) DOD direct boxes.
Instruments Available: DX7 with E1, Mirage rack, Juno 60, Kawai acoustic piano, MXR drum machine, clavinet, Wurliizer electric piano.
Rates: Open rate: \$22/hr., packages available.

[16] ELEPHANT RECORDING STUDIOS
also REMOTE RECORDING
21206 Gratiot Ave., E. Detroit, MI 48021
(313) 773-9386
Owner: Allen Abood, John Giaier
Studio Manager: Allen Abood, John Giaier

[16] FAST TRAX RECORDING STUDIO
2737 Baldwin SW, Jenison, MI 49428
(616) 245-3976
Owner: Robert Reister
Studio Manager: Robert Reister

[16] FORTEGA RECORDING STUDIO
Mentor, OH 44060
(216) 942-7861
Owner: Chris Butcher
Studio Manager: Chris Butcher

[16] FRONTIER RECORDING
also REMOTE RECORDING
RR # 5, Patterson Dr., E. Peoria, IL 61611
(309) 266-5504
Owner: John M. Holm
Studio Manager: John M. Holm

[16] GEMINI STUDIO PRODUCTIONS
also REMOTE RECORDING
2816 W. 98th St., Evergreen Park, IL 60642
(312) 636-2729
Owner: Anthony W. Spear
Studio Manager: Paul Zappavigna

[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] GROOVESVILLE PRODUCTIONS, INC.
also REMOTE RECORDING
15855 Wyoming, Detroit, MI 48238
(313) 861-2363
Owner: Will Davis
Studio Manager: Mike Iacopelli

[16] HARTWOOD RECORDING
4607 Jeffers Rd., Eau Claire, WI 54703
(715) 834-5122
Owner: John E. Hartzell
Studio Manager: Ruth E. Hartzell

[16] HEART BEAT RECORDING
2623 N. Troy, Chicago, IL 60657
(312) 227-2972
Owner: David Dillon, James Meyer
Studio Manager: David Dillon
Engineers: Bob Carter, David Dillon.
Dimensions of Studios: 14 x 12, 12 x 10.
Dimensions of Control Rooms: 18 x 12.
Tape Recorders: Tascam MS16 w/dbx, 16-track; Tascam 3300 2T, 2-track; TEAC C3RX cassette.
Mixing Consoles: Soundcraft Series 600, 16 x 8.
Monitor Amplifiers: Haller. Crown.
Monitor Speakers: UREI 809s, Yamaha NS-10Ms, Auratones.
Echo, Reverb & Delay Systems: Yamaha REV7.
Other Outboard Equipment: dbx compressor/limiters, noise gates, graphic EQ.
Microphones: AKG 414s, Sony condensers, AKG dynamics.
Instruments Available: Oberheim Matrix 6, Yamaha TX7, Akai S-900 sampler, IBM PC w/640 K and Personal Composer software, library of 4,000 DX7 sounds, SMPL system.
Video Equipment & Services: Sony Beta Hi-fi.
Rates: \$30/hr.

[16] HG STUDIO
21324 7 Mile Rd., Franksville, WI 53126
(414) 425-5211
Owner: Don Hunjadi, Gordon Hartmann
Studio Manager: Don Hunjadi
Engineers: Don Hunjadi
Dimensions of Studios: 25 x 11 w/8.5 x 11 drum booth, 5 x 3.5 vocal booth.
Dimensions of Control Rooms: 13 x 17.
Tape Recorders: Tascam MS-16 w/autolocator 16-track w/dbx; Tascam 38, 8-track w/dbx; Tascam 32, 2-track w/dbx; Tascam 22, 2-track w/dbx; Onkyo cassette; Gates record and play cart machine.
Mixing Consoles: Ramsa WR-T820 w/full metering, 20 x 8 x 2.

Monitor Amplifiers: Crown DC-75, Crown D-60 Pioneer SX680, Tascam headphone amp.
Monitor Speakers: JBL 4311 B (control room), Auratone 5C, JVC SK 202 (studio).
Echo, Reverb & Delay Systems: Lexicon PCM60 digital reverb, Alesis MIDiverb digital reverb, DeltaLab Effectron digital delay, Roland SDE 1000 digital delay, Eventide HM-80 Harmonizer, Roland echo.
Other Outboard Equipment: dbx 160X comp./limiter, Paia stereo limiter custom built compressor, Aphex Type B Aural Exciter, Aphex Type C Aural Exciter, Rane RE14 graphic EQ, PAIA parametric EQ, custom built noise gates, dbx 150 Type I noise reduction, dbx 155 Type I noise reduction, Tascam DX8D dbx Type I noise reduction.
Microphones: AKG-414EB, Sennheiser MD441, (2) Shure SM57, (2) Shure SM58, (2) Audio-Technica ATM31, Audio-Technica ATM21, (4) Realistic condensers, DOD and Whirlwind direct boxes.
Instruments Available: Yamaha DX7, Roland digital piano, Prophet 600, Oberheim DX drum machine, others on request, extra charge for some instruments.
Video Equipment & Services: Satellite earth station, Quasar VHS recorder (mostly for entertainment).
Rates: 16-track: \$25/hr.; 8-track: \$20/hr.; block rates available.

[16] INLAND SEA RECORDING
also REMOTE RECORDING
2117 E. 5th St., Superior, WI 54880
(715) 398-3627
Owner: Dave Hill
Studio Manager: Dave Hill

[16] IRISH SAXE, INC.
also REMOTE RECORDING
1719 W. Washington St., Appleton, WI 54914
(414) 735-0800
Owner: Ed Saxe, Keith Irish, Mitch Irish

[16] THE ISLAND
4533 Akins Rd., No. Royalton, OH 44133
(216) 237-6314
Owner: S. Godwin
Studio Manager: S. Godwin

[16] IT'S NO PROBLEM AUDIO
also REMOTE RECORDING
3537 W. Wolfram, Chicago, IL 60618
(312) 342-2290
Owner: Susan Tyda
Studio Manager: Susan Tyda

[16] JBL RECORDING STUDIOS
(Shoreside Enterprises)
291 Donahue Beach, Bay City, MI 48706
(517) 684-5280
Owner: John B. Lipinski
Studio Manager: John B. Lipinski

[16] JGM RECORDING STUDIO
also REMOTE RECORDING
5401 W. Kamerling St., Chicago, IL 60651
(312) 261-2277
Owner: Lito Manlucu
Studio Manager: Lito Manlucu

[16] TOM JONES RECORDING STUDIOS
also REMOTE RECORDING
220 South Broadway, Rochester, MN 55904
(507) 288-7711
Owner: United Audio Corporation
Studio Manager: Dan Thomas

[16] JORDAN ELECTRONIC MUSIC
467 Rockcliff Circle, Dayton, OH 45406
(513) 277-2293
Owner: Tom Jordan

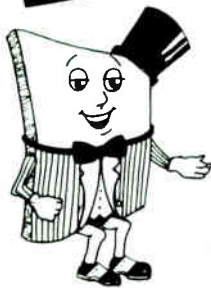
[16] KENNETT SOUND STUDIOS, INC.
also REMOTE RECORDING
P.O. Box 602, Kennett, MO 63857
(314) 888-2995
Owner: Kennett Sound Studios, Inc.
Studio Manager: Joe Keene

[16] KHAN AUDIO SYSTEMS
also REMOTE RECORDING
1231 W. Barry, Chicago, IL 60657
(312) 935-5460
Owner: Gary Khan, Ron Jacobson
Studio Manager: Joan Moss

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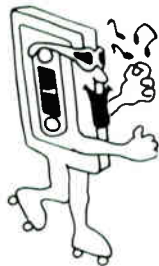
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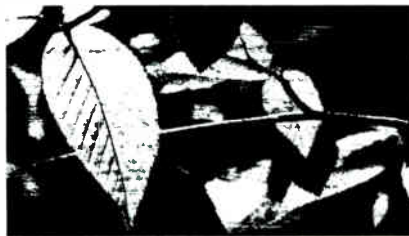
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12/16 TRACK STUDIOS

[16] **KLAVIER AUDIO ARTS**
P.O. Box 67, Monroe, OH 45050
(513) 424-7296
Owner: Ron Crosby
Studio Manager: Bill Eisele

[16] **LAKESITY RECORDING STUDIOS**
2554 Boone Ave S., St. Louis Park, MN 55426
(612) 546-8331
Owner: Les A. Walstein
Studio Manager: Bob Nelson, Rob Genadek

[16] **LAUSCHE RECORDING STUDIOS**
also **REMOTE RECORDING**
9526 Winton Rd., Cincinnati, OH 45231
(513) 521-0015
Owner: Lou Lausche
Studio Manager: Lou Lausche

[16] **LITTLE BEAR SOUND STUDIO**
1410 Berleau Ave., Chicago, IL 60614
(312) 975-7123
Owner: Donald Spence
Studio Manager: Donald Spence

[12] **LITTLE BIG TRACKS**
also **REMOTE RECORDING**
6518 Tahoma, Chicago, IL 60646
(312) 792-3807
Owner: Jeff Orrell
Studio Manager: Jeff Orrell

[16] **LIVONIA SOUND RECORDING**
16535 Rougeway, Livonia, MI 48154
(313) 522-7274
Owner: Henry J Vartanian
Studio Manager: Henry Vartanian

[16] **L-M AUDIO/VIDEO RECORDING**
also **REMOTE RECORDING**
206 Locust, Americas, KS 66835
(316) 443-5181
Owner: Lee C Muller
Studio Manager: Lee C. Muller, Gene Morrow

[16] **LOOKING GLASS STUDIO**
3754 W. Merrimac, Hanover Park, IL 60103
(312) 830-2660
Owner: Ripsongs Ltd.
Studio Manager: Christopher Rippele

[16] **MARS STUDIOS**
also **REMOTE RECORDING**
32805 Miles Rd., Chagrin Falls, OH 44022
(216) 248-8861
Owner: William S. Korecky
Studio Manager: William S. Korecky

[16] **MARX PRODUCTIONS INC.**
also **REMOTE RECORDING**
3100 W. Vera Ave., Milwaukee, WI 53209
(414) 351-5060
Owner: Byron Marx
Studio Manager: Robert Marx

[16] **MASTERTRAX CREATIVE MUSIC
PRODUCTIONS & RECORDING STUDIOS**
also **REMOTE RECORDING**
1844 "N" St., Lincoln, NE 68508
(402) 474-7540
Owner: Tom Larson

Studio Manager: Kurt Labenz
Engineers: Kurt Labenz, Tom Larson, Brad Colerick
Dimensions of Studios: Studio A: 650 sq. ft w/8 x 12 iso booth; Studio B: 8 x 8 dead room.
Dimensions of Control Rooms: Studio A: 330 sq. ft.; Studio B: 11 x 10.
Tape Recorders: MCI JH-114, 16-track; TEAC 40-4, 4-track; Scully 280B, 2-track; Otari MX-5050, 2 track; Ampex 440, 2-track.
Mixing Consoles: Interface Series 316, 16 x 16 x 2; Hill Audio Series B3, 8 x 4 x 2.
Monitor Amplifiers: Audionics of Oregon.
Monitor Speakers: E-V Sentry 500, Auratone cubes.
Echo, Reverb & Delay Systems: Lexicon 200 digital reverb, Roland SRV-2000 digital effects processor, Ecoplate III plate reverb, Yamaha SPX90 digital effects processor, DeltaLab digital delay, DeltaLab digital delay loop.
Other Outboard Equipment: Aphex Aural Exciter Type B, Valley People Dyna Mite noise gates, Spectra Sonics comp./limiters, dbx comp./limiters, dbx noise reduction on all machines.
Microphones: (4) Neumann U87, (2) Neumann KM84, (2) AKG 414, AKG D12E, (5) Sennheiser 421, Sennheiser 441, Shure SM57.
Instruments Available: Steinway Model M grand piano, Yamaha DX7, SCI Prophet 2000, Roland Juno 1, Roland TR707 Rhythm Composer, Fender Rhodes electric piano, Pearl drum set, Southworth Total Music, Mark of the Unicorn Performer and Composer w/512K Macintosh
Rates: Call for quote

[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 of Studios: 16 x 38; 10 x 18 drum booth; 7 x 8 voiceover booth.
Dimensions of Control Rooms: 19 x 21
Tape Recorders: Tascam MS 16 w/autolocator, 16; Tascam 80-8, 8; Tascam 25-2, 2; Otari MTR-10 w/autolocator, 2; Scully 280 B, 2.
Mixing Consoles: NEOTEK Series 1-E, 16 x 8 x 16.
Monitor Amplifiers: SAE 2600 (mains), SAE 2200 (ref.), Marantz 140s
Monitor Speakers: UREI 813-A, JBL 4301, JBL (custom built) Echo, Reverb & Delay Systems: Ursa Major Space Station, Roland SDE-3000, Roland RE-201.
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, (3) Nakamichi 480 cassette decks, (2) Technics turntables (SL1500 MkII, SL-B1).
Microphones: AKG, Sennheiser, Shure, E-V, Neumann.
Instruments Available: 11 piece Rogers drum kit, Hammond B 3 w/122 Leslie, Yamaha DX7, any instruments you need
Video Equipment & Services: 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
Owner: Baha'i National Center
Studio Manager: Charles Nolley

[16] **METRO SOUND**
also **REMOTE RECORDING**
5143 Brouse Ave., Indianapolis, IN 46205
(317) 251-1638
Owner: Chris Rich
Studio Manager: Chns Rich

[16] **METZ SOUND**
1512 W. Berwyn, Chicago, IL 60640
(312) 989-1101
Owner: John I. Metzger
Studio Manager: John I. Metzger
Engineers: John I. Metzger
Dimensions of Studios: Studio A. 21 x 18 x 10; Studio B: 10 x 10 x 8 (drum booth).
Dimensions of Control Rooms: 18 x 15 x 9.
Tape Recorders: Ampex (modified Studer A800 concept) MM1100 transformerless, 16-track; TEAC 80-2, 2-track; Revox (w/Inovonics electronics), 2-track; Pioneer (w/Inovonics electronics) RT 2022, 2-track; Akai HX-1 cassette; TEAC 3440, 4-track.
Mixing Consoles: Sunn (modified MCI concept) SPL 2216, 16 x 16 x 4 x 2.
Monitor Amplifiers: Sunn SA20.
Monitor Speakers: Jensen JBL custom.
Echo, Reverb & Delay Systems: MXR digital delay, Am-

pex custom tape analog delay.

Other Outboard Equipment: MXR compressor/limiter, dbx NR Type 1 150-180.

Microphones: Sennheiser 421, AKG 412, Shure SM57, E-V RE18.

Instruments Available: Piano, Hammond organ.
Rates: \$40/hr., package deals of all kinds available.

[16] **MILWAUKEE SOUND STUDIOS**
610 N. Water St. Ste. 100, Milwaukee, WI 53202
(414) 272-7085
Owner: Mark D. Heleniak
Studio Manager: Betty Samuelson

[16] **MIXED MODES PRODUCTIONS**
254 Durand, East Lansing, MI 48823
(517) 351-3340
Owner: Dennis G. Jablonski
Studio Manager: Dennis G. Jablonski

[16] **RICK MURPHY CREATIVE SERVICES**
also **REMOTE RECORDING**
The Meridian Bldg., 2984 Triverton Pike
Madison, WI 53711
(608) 274-2825
Owner: Rick Murphy
Studio Manager: Rick Murphy

[16] **NEW ORIENT MEDIA INC.**
126 W. Main St., W. Dundee, IL 60118
(312) 428-6000, (800) 223-9473
Owner: Bob Sandidge
Studio Manager: Bob Tonge

[16] **NORTHWESTERN COLLEGE RADIO NETWORK**
(Northwestern Productions)
3003 N. Snelling Ave., Roseville, MN 55113
(612) 631-5000
Owner: Northwestern College
Studio Manager: Curt Olson

[16] **PAX RECORDING SYSTEMS**
also **REMOTE RECORDING**
1041 Baldwin Dr., Apple Valley, MN 55124
(612) 432-5841
Owner: Jeffrey and Lon LaBelle
Studio Manager: Lon LaBelle

[16] **PERFECTION RECORDING INC.**
also **REMOTE RECORDING**
P.O. Box 5731, Akron, OH 44372
(216) 253-2987
Owner: Perfection Recording Inc.
Studio Manager: D'Antoinette Burketh

[16] **PETERS SOUND RECORDING SERVICE**
also **REMOTE RECORDING**
240 E. 242nd St., Euclid, OH 44123
(216) 731-4171
Owner: Michael G. Peters
Studio Manager: M.G.P.

[16] **PHASE I MEDIA CENTER**
2415 E. Lombard St., Davenport, IA 52803
(319) 359-3856
Owner: Terry Loder, Phil Hartley
Studio Manager: Scott D. Papich, Terry Loder

[16] **PIONEER RECORDING STUDIO, INC.**
also **REMOTE RECORDING**
4238 Ramsgate, Bloomfield Hills, MI 48013
(313) 855-1466
Owner: Gary A. Rubin
Studio Manager: Chris Ruggero

[16] **POGO RECORDS RECORDING STUDIO**
also **REMOTE RECORDING**
35-37 Taylor St., Champaign, IL 61820
(217) 351-8155
Owner: Invisible, Inc. (Mark Rubel, Roger Prillaman)
Studio Manager: Mark B. Rubel

[12] **POLKATIME RECORDINGS**
Box 59, Mishicot, WI 54228
(414) 794-1800
Owner: Terry L. Koutsky
Studio Manager: Terry L. Koutsky

[16] **PREMIER FILM AND RECORDING CORP.**
also **REMOTE RECORDING**
3033 Locust, St. Louis, MO 63103
(314) 531-3555
Owner: Wilson Dalzell
Studio Manager: Wilson Dalzell

[16] **PRESCO PRODUCTIONS**
also **REMOTE RECORDING**
4366 W. 66th St., Cleveland, OH 44144
(216) 749-7244
Owner: John F. Presby, Jr.
Studio Manager: John F. Presby, Jr.

[16] **PRIME TIME RECORDING STUDIO**
also **REMOTE RECORDING**
557 Marview Ave., Akron, OH 44310
(216) 376-2934
Owner: Thomas M. Hanna
Studio Manager: Thomas M. Hanna

[16] **Q & R RECORDING STUDIOS**
1307 Ridge Ave., Evanston, IL 60201
(312) 864-6655
Owner: Q. Brown
Studio Manager: Steve Rashid

[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**
800 N. Clark St., Chicago, IL 60610
(312) 337-1302
Owner: R.R.C.
Studio Manager: Bob Chianelli

[16] **REELSOUND AUDIO PRODUCTIONS**
also **REMOTE RECORDING**
25859 Mulroy Dr., Southfield, MI 48034

(313) 356-2640
Owner: James Ascenzo, Dan Ascenzo
Studio Manager: James Ascenzo
Engineers: Jamie Ascenzo, Barry Warner
Dimensions of Studios: 30 x 30 + vocal booth and drum room.

Dimensions of Control Rooms: 10 x 12.
Tape Recorders: Tascam 8516-B, 16-track; ACES MT225, 1/2-inch 2-track; Technics 1520, 1/2-track; Technics SV100, digital audio processor; (2) Sanyo RD-5370, 3-head cassette decks; TEAC 3340, 4-track.

Mixing Consoles: Ramsa WR-T820, 20 x 8 x 2 (28 channels on mixdown).
Monitor Amplifiers: Sanyo Plus P55, BGW Model 100, Soundcraftmen 5001.

Monitor Speakers: Auratone 5C, Eastern Acoustic MS-50, Electro-Voice 100s.

Echo, Reverb & Delay Systems: Ecoplate III, Ursa Major SST-282, Yamaha REV7 and SPX 90, ART 01a, Fairchild 658, Korg SDD 2000, Roland SDE 1000, Loft 440, six other digital delays.

Other Outboard Equipment: USAudio Galex, Symetrix SG200, CL150, Rocktron RX2H, (2) dbx 161, Symetrix SE400 parametric EQ, (20) channels of dbx Type I noise reduction.

Microphones: Neumann U87; AKG P48, D12E, D200E1; Beyer M101, Sennheiser 421, 441; Shure SM81, SM57, SM58; PZMs; E-V RE20, CS15E, Pearl DX98; Sony ECM 23F; Altec 670A.

Instruments Available: Yamaha DX7, Sequential Prophet 2000, Korg Poly 800, Rhodes stage piano, Knabe 5'7" grand piano, Yamaha RX11, Pearl 5-piece drums, 13 Zildjian cymbals, Simmons SDS8, Carvin X60 tube amp, other amps, guitars etc.

Video Equipment & Services: 3/4-inch, Beta and VHS playback units, Contel monitor and 1/2-inch VHS video camcorder, used for creating music for industrial and commercial video etc.

Rates: Call for rates.

[16] **RINGGER RANCH RECORDING**
also **REMOTE RECORDING**
225 E. Elmhurst, Peoria, IL 61744
(309) 688-4621
Owner: Dennis Virkler, Gary Ringger
Studio Manager: Dennis Virkler

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[16] **ROCK SERVICE**
 also **REMOTE RECORDING**
 2500 N. 77th Ct., Elmwood Park, IL 60635
 (312) 452-5594
 Owner: Chris Kirby
 Studio Manager: Sherrie Kirby

[16] **ROME RECORDING STUDIOS**
 also **REMOTE RECORDING**
 1414 E. Broad St., Columbus, OH 43205
 (614) 253-4418
 Owner: Jack Casey
 Studio Manager: Jack Casey

[16] **ROSEWOOD SOUND STUDIOS, INC.**
 also **REMOTE RECORDING**
 716 Oakland Rd. N.E., Cedar Rapids, IA 52402
 (319) 364-5658
 Owner: Martin R. Stramel
 Studio Manager: Martin R. Stramel

[16] **RUBINO'S SOUND STUDIO**
 also **REMOTE RECORDING**
 2524 Portage Mall, Portage, IN 46368
 (219) 762-3169, 762-1664
 Owner: James Rubino, Jr.
 Studio Manager: John Muzyka

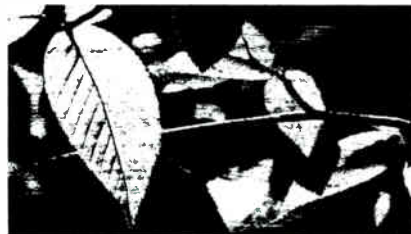
[16] **RYANSOUND RECORDING STUDIO**
 also **REMOTE RECORDING**
 5080 Larchmont, Detroit, MI 48204
 (313) 897-6402
 Owner: Ryan & Randy Wimbley
 Studio Manager: Raymond Wimbley
 Engineers: Rick Guinyard, Robert Jamison, Dave Sanders, Raymond Wimbley
 Dimensions of Studios: 25 x 12
 Dimensions of Control Rooms: 12 x 12
 Tape Recorders: Tascam 8516B, 16; Otari 1/2 MX5050-B MKII, 2; TEAC 1/4 A2000, 2; (3) Sharp RT100 cassette decks.
 Mixing Consoles: Tascam Model 15B, 20 x 8; TEAC Model 1, 8 x 2.
 Monitor Amplifiers: Spectro Acoustics, Sony, Technics.
 Monitor Speakers: Klipsch Heresy, Yamaha NS10M, Auratone Sound Cubes 5C.
 Echo, Reverb & Delay Systems: Lexicon PCM60, MXR digital delay, DOD digital delay, ADA digital delay, ART 01a digital reverb.
 Other Outboard Equipment: dbx 160X comp/limiter, Valley People 530 dual Dyna-Mite, Aphex Exciter, UREI graphic EQ, MXR flanger-doubler, Omni Craft noise gates, dbx noise reduction, Korg SDD 1000 ddi sampler, Yamaha SPX90 effects processor.
 Microphones: AKG 414, AKG D190, AKG 452, E-V PL20, E-V 635A, E-V lavalier mics, Shure SM57s, Shure lavalier mic, Sennheiser 421, TEAC PE100.
 Instruments Available: Fender Rhodes 73, Sequential Circuits, Oberheim OB8, LinnDrum computer, Fender Precision Bass, Yamaha dx-100, Korg DW-8000, Prophet 2000, Fender Princeton amp, Slingerland drum kit.
 Rates: \$40/hr, block rates available.

[16] **SCHOOL OF MUSIC RECORDING STUDIO**
 455 N. Park St., Madison, WI 53706
 (608) 263-1888
 Owner: Univ. of Wisconsin
 Studio Manager: James Stuh

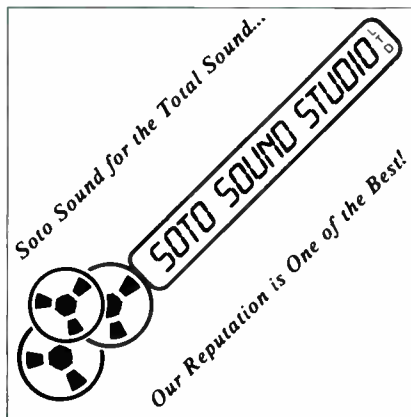
[16] **SLOCOMBE SOUND CO.**
 also **REMOTE RECORDING**
 1560 S. Broadway, St. Louis, MO 63104
 (314) 421-1211
 Owner: Mark Slocombe
 Studio Manager: Amy Rotan

[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 of Studios: 30 x 30 w/ vocal booth
 Dimensions of Control Rooms: 15 x 25
 Tape Recorders: Tascam Series 70, 8-track; Tascam 90-16, 16-track; (2) TEAC 2340, 4-track; Otari MX5050 1/2-track; Ampex PR10 1/2-track; (2) TEAC; (2) Hitachi cassette decks.
 Mixing Consoles: Sunn Magna 5000, 24 x 4, Tascam Model 5, 8 x 4, Tascam Model 5 EX, 8 x 4.
 Monitor Amplifiers: Yamaha P2200, QSC 5.1, Technics SU730.
 Monitor Speakers: Altec Valencias, Auratones, Philips, Koss, Transistor radio.

NORTH CENTRAL



12/16 TRACK STUDIOS



SOTO SOUND STUDIO
 Evanston, IL

Echo, Reverb & Delay Systems: MXR digital delay; MXR flanger, Tapco reverb; MXR pitch transposer; Brick Audio plate reverb; DOD digital delay; Eventide Harmonizer HM80.

Other Outboard Equipment: dbx 160, 161, comp/limiter, 164 stereo comp/limiter; Symetrix CL-100 compressor/limiter; dbx noise reduction; Soundcraftsman RP 2201-R graphic equalizer, Philips 312 electronic turntable, Omni Craft Quad noise gate, Boss digital sampler, Alesis MIDI-verb.

Microphones: Sennheiser, AKG, Shure, Electro-Voice, Audio-Technica.

Instruments Available: Dr. Rhythm, Simmons drums available upon request, Moog Rogue, Yamaha CP-10, guitar, keyboard & bass amps, Ludwig drums, Hammond B-3 organ (w/percussion), Leslie speaker, Fender Rhodes, Moog Prodigy synthesizer, Wurliizer 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 Drumtracs, Oberheim OB-Xa.

Rates: 1-4-track, \$30/hr.; 8-track, \$33/hr., \$150/5 hrs.; 16-track, \$40/hr, \$180/5 hrs. Lyncs set to music: 1 song, \$175; 2 songs, \$300.

Extras: Studio musicians available, guitar, keyboard, arranging or production services available by Jerry Soto. Free video recording of any session! (Just bring in a VHS cassette).

Direction: We can arrange your lyrics to music, record your voice on your song and more. We record virtually every type of music, and also handle projects for Warner Bros., ABC TV, Walter Payton and "The Fridge." We have secured contracts with blues labels in London, England, and Vienna, Austria, as well as with recording blues greats Buddy Guy, Johnny Dollar, Brewer Phillips, Lefty Dizz, Eddie Clearwater and others. We also record many other styles: rock, funk, reggae, R&B, Latin, Greek, House Music soundtracks for plays and dance groups, and even people from India! You name it, we record it! In closing, we're proud to say, through hard work and dedication, we've become one of Chicago's most popular studios. We also thank our clients who have made this dream...a reality.

[16] **SOUND ADVANTAGE**
 417 E. Payson St., Pontiac, IL 61764
 (815) 844-3792
 Owner: Chuck Wright, Gregory Harms
 Studio Manager: Gregory Harms

[16] **SOUND TRAX +**
 also **REMOTE RECORDING**
 1000 W. 17th St., Bloomington, IN 47401
 (812) 332-7475

Owner: Joseph T. Wilson
 Studio Manager: Joseph T. Wilson

[16] **SOUNDSTAGE I RECORDING**
 also **REMOTE RECORDING**
 13270 6 1/2 Mile Rd., Battie Creek, MI 49017
 (616) 979-1532
 Owner: James R. Cummings
 Studio Manager: Sandra Towers



SPARROW SOUND DESIGN
 Chicago, IL

[16] **SPARROW SOUND DESIGN**
 also **REMOTE RECORDING**
 3501 N. Southport, Chicago, IL 60657
 (312) 281-8510

Owner: Bradley Parker-Sparrow, Joanie Pallatto
 Studio Manager: Bradley Parker-Sparrow
 Engineers: Bradley Parker-Sparrow, Joanie Pallatto
 Dimensions of Studios: Studio 50 x 35 Isolation: 10 x 11.
 Dimensions of Control Rooms: 15 x 30

Tape Recorders: Tascam 85-16 (remote and auto locator) 1-inch, 16-track; Ampex ATR-102 (remote and vari-speed) 30 ips 1/4-inch and 1/2-inch 2-track; Sony 501ES digital, 2-track; Technics 1520 (modified), 1/4-inch 2-track; TEAC (modified) 3440, 1/4-inch 4-track; Technics 1506 (modified), 1/4-inch 4-track; TEAC V-7 and V 750 cassettes; TEAC 133 3-channel cassette/slide

Mixing Consoles: Tascam Model 15 (modified), 24 x 16 x 16; Biamp 1282, 12 x 3.

Monitor Amplifiers: Main: Yamaha P2200. Studio: Yamaha P2050; Cue 1 McIntosh 50 Cue 2: Symetrix HA-10B; Cue 3 and 4 Biamp TC-120

Monitor Speakers: Control room: UREI 813B, Auratones. Studio playback: E-V 12-2A and E-V S15-3 (keys or bass).
Echo, Reverb & Delay Systems: EMT 140-S plate reverb w/remote; Lexicon PCM60 digital reverb; Yamaha REV7; Lexicon Prime Time; (2) Lexicon PCM41 digital delays; Technics 1506 tape delay; Furman RV 1.

Other Outboard Equipment: (1) UREI LA-2A tube limiters; (4) UREI 1176 Ashly SL-SE limiter; Pultec MEQ-5 mid-range tube EQ; Pultec EQP-1 high/low tube EQ; Pultec EQH 2 high/low tube EQ; Ashly SC-33 noise gate; Ashly SC-50 4-band stereo parametric; Ashly SC-63 3-band noise gate; Ashly SC 50 4-band stereo parametric; Ashly SC-63 3-band mono parametric; UREI 964 click generator; 200 pot TTY patchbay; Onkyo and AR turntables

Microphones: Tube: (2) AKG C12; (5) AKG C12-A; (2) AKG C28-A; AKG C24 (stereo), AKG C61; Neumann U47; M49; (2) KM54, (2) Neumann SM69 (stereo); Neumann SM2 (stereo); Schoeps MK221. Also: Neumann U89; (2) Beyers M160; (2) Sennheiser MD441; Sennheiser D421; Sony C-22; Beyers 300; (2) E-V RE 16; E-V RE-15; E-V RE-55; E-V 676; E-V 666; (7) Shure SM58; (2) Shure 545; (4) Audio-Technica 813, (2) 811, 601

Instruments Available: Nine-foot Baldwin concert grand piano (Model SD-10); rebuilt Fender Rhodes, Sonordrums (complete kit); Fender Twin guitar amp.

Video Equipment & Services: Panasonic color monitor, 16-track Sync-lock; Sony SLHF R 1/2 inch Super-Beta; Sony SL5800 1/2-inch Beta 1/2" x 3/4"

Rates: Upon request.

Extras: 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 productions, SSD has worked within the rock, jazz, classical, blues, country and various new music idioms. Like wise, complete production of industrial/film narration and music, voice-over tapes, jingle demos and on-air commercial recording is available.

Direction: Clients include: Body Politic Theater, Blue Rid-

er Theatre, Johnny Britt, Ari Brown, Center for New Television, Chicago Dance Medium, Colossal Nerve, Josie Falbo, Don Moye, Aaron Freeman, Von Freeman, Jaime Gardiner, Dave Gordon, Stephen Hartman, Kitty Haywood, Clarena Gaudio-Johnson, Joanna Klein, Ken Krause, John Magan, Dick Marx, Lani Meeker, Jeff Morrow, Daniel O'Brien, Richard Redlin, Cindy Rose, Richard Schoen, Mary Stolper, Judy Storey, Ray Take, Wandachnstine, Dave Wolf.

[16] **STERLING SOUND RECORDING**
33018 Breckenridge Dr., Sterling Heights, MI 48077
(313) 977-7829
Owner: Richard F. Carver
Studio Manager: Richard F. Carver

[16] **STUDIO ONE**
821 University Ave., Madison, WI 53706
Owner: WHA Radio
Studio Manager: Don Sieb

[16] **SUITE 16**
5725 Brookpark Rd., Parma, OH 44129
(216) 398-5544
Owner: Andy Kolbus, Rod Stafford
Studio Manager: Rod Stafford

[16] **SUNRISE SOUND RECORDING STUDIO**
also **REMOTE RECORDING**
6724 Camden Ave. N., Minneapolis, MN 55430
(612) 566-6454
Owner: Denny L. Johnson
Studio Manager: Denny L. Johnson

[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**
P.O. Box 72, Dayton, OH 45409
(513) 278-4601
Owner: Eric J. Suttman
Studio Manager: Eric J. Suttman

[16] **SYN-COMP PRODUCTIONS, INC.**
P.O. Box 6478, Champaign, IL 61821
(217) 352-0509
Owner: Linda L. Lauer
Studio Manager: M. Rothes

[16] **SYNDER SYSTEMS**
also **REMOTE RECORDING**
16638-40 E. Warren Ave., Detroit, MI 48224
(313) 884-1790, 881-5167 (24 hrs.)
Owner: Ken M. Snyder
Studio Manager: Chns Billy

[16] **TAPEMASTERS**
3532 Washington Blvd., Indianapolis, IN 46205
(317) 925-2025
Owner: Tom Reynolds

[16] **THAYER MUSIC STUDIO**
Korner Plaza, Thayer, MO 65791
(417) 264-3902
Owner: Darold Johnson
Studio Manager: Greg Ray

[16] **THORNAPPLE SOUND RECORDING STUDIO**
also **REMOTE RECORDING**
3221 Thornapple, Columbus, OH 43229
(614) 476-0233
Owner: Brian Douple, Stephen Carter
Studio Manager: Stephen Carter
Engineers: Stephen Carter, Brian Douple, Kevin Knapp, freelance: Doug Edwards.
Dimensions of Studios: A: 19 x 21 x 12; B: 20 x 22 x 14.
Dimensions of Control Rooms: 13 x 17 x 7-10 (variable ceiling).
Tape Recorders: 3M M-56, 16-track; Tascam 70-8, 8-track; Tascam 70-4, 4-track; TEAC A-6100, 2-track; Onkyo, TEAC, Hitachi cassettes.
Mixing Consoles: Carvin (modified) MX-1688, 24 x 16 x 8 x 2.
Monitor Amplifiers: Bose, Marantz, Dynaco (tube), Tascam.
Monitor Speakers: JBL4311, Yamaha NS-10, custom-built 3-way monitors, Auratones.

Echo, Reverb & Delay Systems: Yamaha SPX 90, plate reverb, Fairchild 659 reverb, ART, Lexicon PCM41, MXR digital time delay, Electra EP 250.
Other Outboard Equipment: MXR Pitch Transposer, Spectra Sonics comp./limiters, Altec 438C compressors, Furman EQs.
Microphones: AKG, Sennheiser, Beyer, Shure, E-V, PZM, Sony.
Instruments Available: Weber baby grand piano, any instrument available with notice, Kurzweil 250 rental available.
Rates: 16-track: \$30/hr.; 8-track: \$25/hr.

[16] **TOBY'S TUNES, INC.**
2325 Girard Ave. So., Minneapolis, MN 55405
(612) 377-0690
Owner: Harley "Toby" Toberman
Studio Manager: Ms. Piggy the Dog
Extras: Twenty music libraries all on stereo tape. Eight sound effects libraries on LP and CD. Q.Lock Eclipse time code lock up system. Just in... the James & Aster Supraphon classical music library!
Direction: Toby's Tunes has the most extensive music and sound effects libraries for all your post-scoring needs. We now have the Q.Lock Eclipse system locked up to our JVC 850 3/4-inch video player, Otari MX-70 16-track and MTR-10 2-track with center track time code. Best video sweetening in town.

[16] **TRACK RECORD STUDIOS**
also **REMOTE RECORDING**
1561 Sherburne Ave., St. Paul, MN 55104
(612) 645-9281
Owner: Norton Lawellin, "Red" Freeberg
Studio Manager: Red Freeberg

[16] **TRW STUDIOS**
also **REMOTE RECORDING**
1414 16th St., Two Rivers, WI 54241
(414) 794-1800

Owner: Mark Heller
Studio Manager: Mark Heller

[16] **WHITE HORSE RECORDING**
also **REMOTE RECORDING**
620 15th St., Moline, IL 61265
(309) 797-9898
Owner: Jeanne McKirchy-Spencer, Ron Spencer
Studio Manager: Ron Spencer

[16] **LUTHER WILSON MUSIC CO.**
312 S. Mill St., Kansas City, KS 66101
(913) 621-1676
Owner: Luther Wilson Jr.
Studio Manager: Luther Wilson Jr.

[12] **WRIGHTRACKS RECORDING STUDIO**
217 W. Main St., Carbondale, IL 62902
(618) 529-1899
Owner: Michael Wright
Studio Manager: Michael Wright
Engineers: Jackie D'Ambrosio
Dimensions of Studios: 16 x 18, 12 x 10.
Dimensions of Control Rooms: 9 x 24.
Tape Recorders: Akai MG 1212, 12-track; TEAC 2300, 2-track; Nakamichi cassette.
Mixing Consoles: Tapco 7408, 8 x 4; Akai MG 1212, 12 x 2.
Monitor Amplifiers: Crown.
Monitor Speakers: Yamaha.
Echo, Reverb & Delay Systems: ART 01 A digital reverb, Yamaha 1500 digital delay.
Other Outboard Equipment: Yamaha compressor/limiter, Ashly compressor/limiter, TEAC graphic EQ.
Microphones: Beyer 600, 500, 400; E-V RE20, PL9, PL7, PL5.
Instruments Available: Emulator II sampling keyboard, E-mu SP-12 drum computer, Mellotron, Yamaha DX5, Ensoniq Mirage, Akai AX 60, Akai sampler Rhodes Chroma, Yamaha RX11 drum machine, Korg voice processor, Southworth Total Music, Yamaha GSII synth.
Rates: \$35/hr. recording, \$25/hr. mixdown.

MASTER A FULLERSOUND

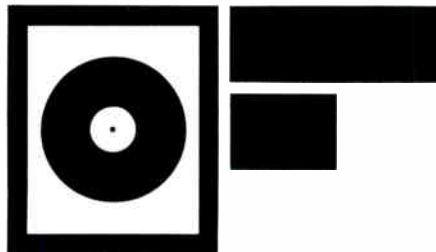
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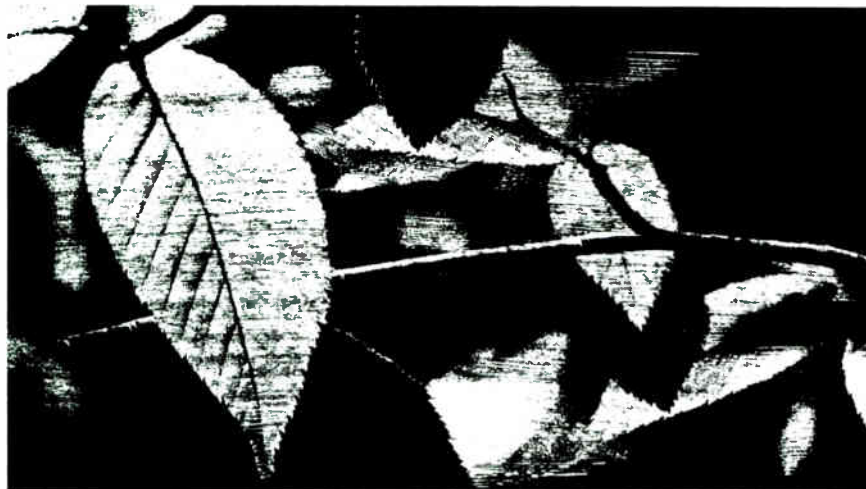
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24+ TRACK STUDIOS

[24+] ABSOLUTE STUDIOS
26211 Central Park Blvd. Ste. 618
Southfield, MI 48076
(313) 353-5494, 258-5332
Owner: Stephen L. Goodale IV
Studio Manager: Steve Goodale

[24+] THE ALLIANCE RECORDING COMPANY
also REMOTE RECORDING
8449 Parshallville Rd., Fenton, MI 48430
(313) 632-5653

Owner: Al Hurschman, Mark Famer
Studio Manager: Al Hurschman
Engineers: Al Hurschman, Dee Hurschman, Don Pushies, Jacques Mersereau, independents.
Dimensions of Studios: 36 x 40
Dimensions of Control Rooms: A: 20 x 24; B: 18 x 20.
Tape 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.
Mixing Consoles: NEOTEK IIIIC, 56x24; Hill J Series, 24x8

Monitor Amplifiers: SAE, Crown, McIntosh
Monitor Speakers: UREI 813B, JBL 4311, JBL 4312, JBL 4301, Yamaha NS10, Auratone.
Echo, Reverb & Delay Systems: Lexicon 224XL, EMT 140TS, ART 01A, Sound Workshop 262, Harmonizer 910, Marshall Time Modulator, DeltaLab DL-2, DeltaLab Time Line, Eventide 1745, Yamaha analog delay, Time Tech, Dynacord tape delay.
Other Outboard Equipment: (2) UREI 1176; (2) dbx 165, (2) dbx 166; Scamp rack w/limiters, gates, EQ; Orban 418A, 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, 190; E-V: RE20s, CS15s, RE55s, RE15s, 635s, 666, DS35s; Sennheiser: 421s, 441s; Beyers: 500s, 260s, 101s; Shure: SM81s, SM57s, SM58s, SM54s; Altec M30s; Crown P2M.
Instruments Available: Ensoniq Mirage; Yamaha DX7; Korg Poly 6; Korg 3 x 3; Linn Drum; Ludwig drums; Fender Rhodes; Fender, Peavey, Roland, AIMS & Marshall instrument amps.
Video Equipment & Services: Synchronizer, 3/4" deck, and monitor available for post-scoring.
Rates: Available on request.

[24+] AMBIENCE RECORDINGS, INC.
27920 Orchard Lake Rd., Farmington Hills, MI 48018
(313) 851-9766
Owner: Charles F. Schenck
Studio Manager: Dennis P. Forbes

[24+] ARS RECORDING STUDIO
also REMOTE RECORDING
11628 S. Pulaski, Alsip, IL 60658
(312) 371-8424
Owner: ARS Enterprises Inc.

Studio Manager: Gary Cobb
Engineers: Gary Cobb, Harry Brotman, Bob Sheffield.
Dimensions of Studios: 20 x 30 x 10 and 9 x 10 x 10
Dimensions of Control Rooms: 16 x 20 x 10
Tape Recorders: Otari MTR-90II, 24-track; Otari MX 7800, 1-inch 8-track; Studer 810, 1/4-inch 2-track; Otari 5050 B, 1/4-inch 2-track; Studer A710, cassette; (5) Technics RSM-85, cassettes.

Mixing Consoles: Trident Series 70, 28 x 24.
Monitor Amplifiers: (2) Crown PSAlls, Crown Micro-Tech 1000, Tandberg 3003, Crown D150.
Monitor Speakers: UREI 811Bs, JBL 4430s, Auratone 50s.
Echo, Reverb & Delay Systems: Lexicon Super Pnme Time, PCM42, PCM60; Ursa Major 8 x 32; Master-Room chamber and 210 Spnng.
Other Outboard Equipment: dbx 165 and 163 compressors; Omni Craft noise gates, MXR flangers and phasers.
Microphones: Neumann, Crown, Sennheiser, B&K, E-V, Audio-Technica, Shure, AKG.
Instruments Available: Yamaha DX7, Gretsch drums; Bluthner 7-foot grand piano.
Rates: Call for rates.

[24+] ATTICA RECORDING STUDIO
2614 5th Ave., Rock Island, IL 61201
(309) 786-9832

Owner: Gregory R. Ballard
Studio Manager: Gregory R. Ballard
Engineers: Gregory R. Ballard
Dimensions of Studios: Main room: 14 x 20 x 12; vocal booth: 6 x 8 x 8; drum booth: 10 x 10 x 8.
Dimensions of Control Rooms: 12 x 20 x 10
Tape Recorders: 3M 79, 24-track; Otari 5050B, 2-track; TEAC A-4010, 4-track; Tascam 80-8, 8-track.
Mixing Consoles: Soundcraft 1600, 24 x 24 x 8
Monitor Amplifiers: BGW, QSC.
Monitor Speakers: Eastern Acoustic Works, Klipsch, Auratone.
Echo, Reverb & Delay Systems: Lexicon 200, REV7, MXR-01A, ADA-256 delays, DeltaLab DL-4, (3) ADA-1000.
Other Outboard Equipment: EXR Voice Exciter, MXR Pitch Transposer, MXR doubler/flanger, Yamaha doubler, Symetrix compressor/limiters, Symetrix noise gates, Omni Craft noise gates, Roland RE201.
Microphones: Neumann U87, Shure 57s, Sennheiser 421, RCA-77DX, Sony C37P, E-V RE20.
Instruments Available: Bradbury grand piano, DX7, CX-3, Ludwig drum set, Drumulator 700D.
Rates: \$45/hr.

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

[24+] AUDIOGRAPH PROD. INC.
2810 Bennett Rd., Okemos, MI 48864

(517) 332-3272
Owner: Doug Monson
Studio Manager: Glenn Brown, Jerome Fox

[24+] AUDIOVISIONS
only REMOTE RECORDING
P.O. Box 714, Birmingham, MI 48012
(313) 258-5602
Owner: Jeff Jones
Studio Manager: Jeff Jones

[24+] AUDIO RECORDING STUDIOS, INC.
also REMOTE RECORDING
601 Rockwell Ave., Cleveland, OH 44114
(216) 771-5112
Studio Manager: Bruce Gigax
Dimensions of Studios: A: 20 x 60, B: 9 x 15.
Dimensions of Control Rooms: A: 24 x 22, B: 19 x 15.
Tape 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.
Mixing Consoles: Audio Logic custom 32 x 24, Sound Workshop Series 30 12 x 8.
Monitor Amplifiers: Spectra Sonics, NAD.
Monitor Speakers: JBL 4333, 4411, 4401, MDM 4.
Echo, Reverb & Delay Systems: Lexicon 224XL, EMT 240, Master-Room, Eventide Harmonizer.
Other Outboard Equipment: dbx and Spectra Sonics limiters, Orban & Ashly EQ, Quad 8 and Roger Meyer noise gates, EXR Exciter, Symetrix phone interface.
Microphones: Neumann, AKG, Shure, Sennheiser, B&K, E-V, RCA.
Instruments Available: Yamaha grand piano, KX88 keyboard controller, TX-B16, Sound Modules, Roland MKS-20 digital piano; E-mu SP-12 drum machine, Oberheim Matrix 6R, Prophet 2002; MacPlus w/Sounddesigner, performer, and TX editor/librarian software.
Video Equipment & Services: BTX Softouch SMPTE Interlock system w/Sony VO-5800 U-matic, also Beta Hi-Ii and VHS Hi-Ii, Sony and Panasonic monitors.
Rates: Upon request.

[24+] AZI PRODUCTIONS
also REMOTE RECORDING
620 W. Coliseum Blvd., Ft. Wayne, IN 46808
(219) 484-3018
Owner: Azi Productions



BARN BURNER STUDIO
Annawan, IL

[24+] BARN BURNER STUDIO
1500 North, Annawan, IL 61234
(309) 935-6181

Owner: Heath Audio Associates, Inc.
Studio Manager: Roxanne M. Heath
Engineers: Harry H. Heath, Michael Morrison, independents welcome.
Dimensions of Studios: 21 x 19; drum booth 9 x 12.
Dimensions of Control Rooms: 23 x 19.
Tape Recorders: MCI/Sony JH 24/24, 24-track; Sony 5002, 2-track; Otari MX5050B, 2-track; assorted cassette decks.
Mixing Consoles: MCI 636/28/automated, 6 para.
Monitor Amplifiers: (2) Crown PSA-2X, (2) Crown MT-600, (2) Crown D-15011, Crown DC 300A.
Monitor Speakers: UREI 813 B, Yamaha NS-10M, JBL 4301B.
Echo, Reverb & Delay Systems: (2) Yamaha REV7 digital reverbs, (2) ADA digital delays, Lexicon PCM60 digital reverbs.
Other Outboard Equipment: (2) dbx 905 parametric EQs, (2) dbx 902 de-essers, (4) dbx 903 comp./limiters, UREI 1178 Peak stereo limiter, (2) Omni Craft GT-4 noise

gates, UREI 964 digital metronome, dbx 160X comp./limiters, dbx noise reduction, Technics turntables, (2) Yamaha REV7 digital reverbs, (2) ADA digital delays, Lexicon PCM 60 digital reverb, (2) dbx 160X comp./limiters, dbx 180 noise reduction.

Microphones: Neumann U87s, Neumann KM84s, AKG 414s, E-V RE20s, Sennheisers 421s and 441s, Beyers M-500s, SM58s, SM57s, SM77s, SM78s, and more.

Instruments Available: Yamaha C7 concert grand piano, Yamaha DX7, Prophet 5, Ensoniq Mirage, Roland Juno 106, Korg CX-3, Yamaha RX-11 drum machine, guitars and basses available. Many other items available upon request. **Rates:** Please call. We have many packages and block rates.

Extras: Musicians lounge and showers. Kitchen facilities. Access to health facilities. Five minutes from state park (camping, boating, fishing, hunting), 24-hour food.

Direction: Built in a beautiful barn on 160 acres of Illinois' finest farmland, Barn Burner Studio will provide you with the highest quality recording and production in complete comfort.

[24+] BEACHWOOD STUDIOS

23330 Commerce Park Rd., Beachwood, OH 44122
(216) 292-7300

Studio Manager: George A. Sipl, Joel M. Solloway
Engineers: Joel Solloway, George A. Sipl, Jim Demain, Dave Wilson, Dale Peters

Dimensions of Studios: (A) live room: 26 x 29; (A) rhythm room: 35 x 29; (B) rhythm room: 31 x 30.

Dimensions of Control Rooms: (A) 27 x 27; (B) 24 x 20
Tape Recorders: (3) MCI JH-24, 24-track; (5) MCI JH-110B, 2-track; Sony APR 5002, 2-track; (3) Otari MX-5050 1/4-inch, 2-track; Sony Beta Hi fi, 2-track; Tascam 44-OB, 4-track

Mixing Consoles: MCI JH-600 automated, 36 x 24; MCI JH-600 automated, 28 x 24.

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

Monitor Speakers: UREI 813 Time Aligned.
Echo, Reverb & Delay Systems: Lexicon 224XL w/LARC, Lexicon 224, Klark-Teknik DN780, (2) Ecoplates, Lexicon 41s and 42s.

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

Microphones: Neumann, AKG, Beyer, Shure, Sennheiser.
Instruments Available: 9-foot and 7-foot Yamaha grand pianos, Hammond organ.

Video Equipment & Services: Adams-Smith 2600 Video Interlock, Sony VO-5600 3/4-inch video, RCA 25-inch and (2) Panasonic 12-inch color monitors.

Rates: Please call.

[24+] BLACKBERRY WAY RECORDING STUDIOS, INC.

606 13th Ave. SE, Minneapolis, MN 55414
(612) 378-2466

Owner: Miki Owens, Kevin Glynn
Studio Manager: Miki Owens, Kevin Glynn

[24+] BOARDROOM RECORDING INC.

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

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

[24+] BREEZEWAY RECORDING STUDIO

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

Owner: Lee & Mary Lee Crooks
Studio Manager: Lee Crooks
Engineers: Paul Wehrey, John Tanner, Mike Hoffman, Andy Waterman, Lee Crooks

Dimensions of Studios: 32 x 18
Dimensions of Control Rooms: 18 x 15

Tape Recorders: MCI JH 24, 24-track (16 optional); MCI JH-110, 1/2-track; Otari 5050B, 1/2-track; Nakamichi DMP-100 digital, 2-track; Sony, Technics cassette decks.

Mixing Consoles: Sound Workshop Series 30, 28 x 24.
Monitor Amplifiers: UREI 6500, 6250 & 6150; Crown D-150A; BGW 250C.

Monitor Speakers: UREI 813B, Yamaha NS-10M, JEL 431L, Auratone 5C

Echo, Reverb & Delay Systems: Klark-Teknik DN780 digital reverb/simulator, Ecoplate II & III, Roland SDE-3000, Lexicon Prime Time w/MEO, DeltaLab Elictron ADM 1024, Lexicon PCM70 digital reverb, Yamaha REV7.
Other Outboard Equipment: dbx 160, 160X & 165 comp./limiters, UREI 1176LNs & LA-4s, Valley People Dyna Mite stereo comp/expand/noise gates, Omni Craft GT-4 noise gates, Drawmer DS 201 gates, Aphex B stereo Aural Exciter, Studio Technologies stereo simulator, Eventide 910 Har-

monizer, MXR flanger/doubler, API 550A equalizers, API 512 mic pre-amps, Orban stereo de-esser, Dolby 361 and dbx 180 noise reduction available on 1/2-tracks. Technics SL-1200 turntable, Stanton pre-amp, other outboard equipment available upon request.

Microphones: AKG C-24 stereo tube, 414EBs & 451s; Sennheiser 441s, 421s; E-V RE-11, 20s; Shure SM57s, 58s, 81s, Sony C-48; Beyer M500; Crown PZMs, Neumann U47 tube.

Instruments Available: Kawai 6'8" grand piano, Yamaha Recording Series drums w/Zildjian & Paiste cymbals, Rhodes electric piano, various guitars, synthesizers and amplifiers available upon request, Hammond B-3 organ w/Leslie

Rates: 16-track, \$40/hr.; 24-track, \$45/hr.
Extras: For our customers' comfort and convenience, our facility includes a studio view lounge featuring cable TV, VCR, video games, stereo and a kitchenette w/refrigerator and microwave. On-site rehearsal halls are available.

Our extremely well trained staff and full complement of session musicians highlight an exemplary recording environment.

Direction: Over a three-year period, Breezeway has grown from an 8-track basement studio to become one of Wisconsin's most popular 24-track facilities. Specializing in commercial and album projects, we offer the professional recording artist a truly outstanding value in today's marketplace. Credits include the Bo Deans, The R&B Cadets, Donovan, E'I'E'I'O, Semi-Twang, Bad Boy, Project: Mix, Free Hot Lunch, Couch Flambeau, etc.

[24+] CHARLES BROWN MUSIC INC.

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

Owner: Charles R.P. Brown III
Studio Manager: Jan Wiggerngloh

[24+] CAVE RECORDING STUDIO

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

Owner: RSC Productions
Studio Manager: Rick Cohen

[24+] CHAPMAN RECORDING STUDIOS

also REMOTE RECORDING
228 W. 5th, Kansas City, MO 64105
(816) 842-6854

Owner: Chuck Chapman
Studio Manager: Chuck Chapman, Dave Brock

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NEOTEK CORPORATION
1154 West Belmont Avenue Chicago, Illinois 60657 U.S.A. 312 929 6699

August 1 1986

Pyramid Audio
450 W. Taft Dr.
South Holland, IL 60473

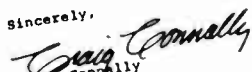
WHEREAS, Pyramid Audio, one of the first NEOTEK dealers, is celebrating its fifteenth year in the professional audio business,

WHEREAS, for each and every one of those fifteen years Pyramid Audio has been a factory authorized NEOTEK representative, responsible for the sales and service of NEOTEK products from the Chicago area,

WHEREAS, on 31 July, 1986 Pyramid Audio advanced their commitment by placing on order with NEOTEK the largest ever NEOTEK ELITE console for the purposes of demonstration and display.

BE IT RESOLVED, that we at NEOTEK wish to congratulate Rob Vukelich and the rest of the Pyramid Audio staff on this auspicious occasion. We send our most sincere thanks for the past fifteen years of support, and we wish you continued success in the future.

Sincerely,


Craig Connolly
President

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THE CHICAGO RECORDING COMPANY

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, Cleon Wells
Engineers: Chris Sabold, Hank Neuberger, Dennis Anderson, Gus Mossler, Tom Hanson, Iain Burgess, Mike King, Tim Butler, Bill Kovach, John Titak, Joe Daniels, Jim Cogan.

Dimensions of Studios: (4) 78 x 32; (5) 78 x 32; (B) 35 x 23; (D) 67 x 35; Studios C-1, C-2, E, H, & J designed for voice-over production and video sweetening.

Dimensions of Control Rooms: (4) 28 x 28; (5) 28 x 28; (B) 22 x 22; (D) 26 x 26.

Tap Recorders: Studer A-800, 24-track; Studer A-80, 24 track; MCI JH-114, 24-track; MCI JH-110, 8-, 4-, 2-track.

Mixing Consoles: SSL 6000E w/Total Recall, 48 x 48; Neve 8068 w/Necam, 32 x 32; MCI 556D w/automation 56 x 48; Cadac Series E, 36 x 32.

Monitor Amplifiers: Tannoy, Studer, Hafler, Crown
Monitor Speakers: Tannoy Dreadnought, Tannoy FSM, UREI, Cadac, Westlake/Eastlake, Yamaha NS-10.

Echo, Reverb & Delay Systems: AMS RMX-16, AMS 1580S, EMT-251, Lexicon 70, Lexicon 60, Lexicon 200, Yamaha REV7, EMT-140 plates, EMT-240, AKG BX-20, Master-Room, Eventide Harmonizers, Lexicon PrimeTime and PCM 41 and 42 digital delays.

Other Outboard Equipment: Drawmer, Scamp & Kepex and Omni Craft gates, audio & designs limiters, dbx, UREI and Quad 8 limiters and compressors, Pultec, API, Flickinger EQ, Aphex, BTX SMPTE synchronization.

Microphones: Neumann, AKG, Schoeps, Sennheiser, Sony, Shure, E-V, RCA including many vintage tube microphones.

Instruments Available: Bechstein, Bosendorfer, and Steinway grand pianos including Steinway with MIDI interface, Fender Rhodes, Wuritzer, Hammond organs, Clavinet, harpsichord, Sonor, Rogers, Slingerland drums, Tympani.

Video Equipment & Services: (7) BTX Softouch SMPTE lock systems, (9) Sony and JVC videocassette recorders, Sony 1-inch Type-C video recorder. Complete audio-for-video sweetening in all studios.

Rates: Music studios, \$240-\$275/hr.; production studios, \$100/hr.; video: \$50/hr.

Extras: 48-track recording with 60 automated returns; Total Recall automation, SMPTE video sweetening. The newest studios; the finest acoustics. Still.

Direction: Since we opened our doors in 1975, we have been Chicago's true world class facility. We've grown from one studio to twelve. Currently, we are in the final stages of a \$3 million move and expansion at 232 E. Ohio St. that has resulted in five new studios so far with a couple more still under construction. This is the largest expansion project by a privately held audio recording studio to date, and when completed, will set the standard for recording in the '80s and '90s.

[24+] CHICAGO TRAX RECORDING
3347 N. Halsted, Chicago, IL 60657
(312) 525-6565

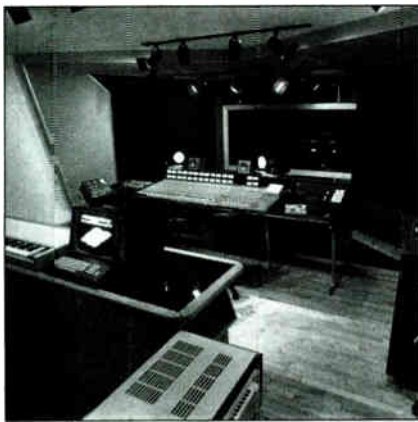
Owner: Chicago Trax, Inc.
Studio Manager: Reid Hyams
Engineers: Al Ursini, Ron Gresham, Bob Kearny, Joe Torrici, Rodger Carpenter, Steve Spapper, Harry Brotman, Glenn Odagawa, Chuck Kawal, Mike "Ace" Mollison.

Dimensions of Studios: (A) 34 x 24 x 17 w/8 x 10 iso room; (B) 11 x 16 x 12

Dimensions of Control Rooms: (A) 24 x 18 LEDE; (B) 14 x 13.

Tap Recorders: Otari MTR-90, 24-track; MCI JH-24, 24-track; Otari MTR-12, 2-track; Studer B67, 2-track.

Mixing Consoles: Harrison Raven w/Audio Kinetics



CHICAGO TRAX RECORDING
Chicago, IL

MasterMix automation 32 x 24; Soundcraft 2400, 24 x 24.
Monitor Amplifiers: UREI, Hafler, Crown, BGW
Monitor Speakers: UREI 813, 811, 890; Yamaha NS-10M, Auratones, JBL 4313.

Echo, Reverb & Delay Systems: Lexicon 200 digital reverb, Ecoplate II reverb, (2) Lexicon PCM60s, Lexicon PrimeTime I and II, (3) Yamaha SPX90 digital multi-effect processors, (2) Effectron 1024s, Lexicon PCM42.

Other Outboard Equipment: AMS 15-80s, (2) Eventide Harmonizers, (2) dbx 165 comp./limiters, (2) UREI LA-4 limiters, (2) dbx 160X limiters, (2) dbx 160 limiters, (4) dbx 263Xs, EXR Exciter, UREI parametric EQ, (4) UREI graphic EQs, (4) Pultec EQs, Valley People Dyna-Mites, Drawmer, Omni Craft and Gatex expander/gates, Roland and Eventide flangers, Akai S612 and 900 samplers.

Microphones: Neumann U87, U47, KM84; AKG 414 D12; Sennheiser 441, 421; E-V RE20; Beyer M260; Sony ECM 22, ECM51; Shure 81, 57; Crown PZM.

Instruments Available: Yamaha C5 grand piano, Hammond B-3 w/Leslie, Sonor drum kit w/7 assorted snares, Fender Rhodes, Yamaha DX7, TX816 Rack, Roland Super Jupiter, Oberheim Matrix 6, Mirage sampling keyboard, Memorymoog, Emulator II and HD, E-mu SP12, Fairlight CMI, LinnDrum, Linn 9000, Roland 707, Moog Model 900, Fender, Marshall and Musicman amps.
Rates: Upon request.

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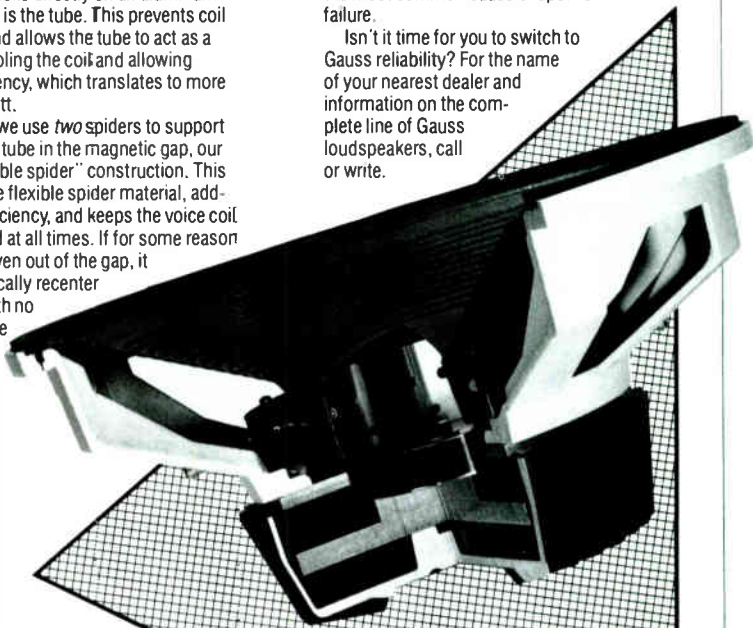
Most companies wind their voice coils on a form, then slip it on a "tube." At Gauss, we wind our coils directly on an aluminum former which is the tube. This prevents coil separation and allows the tube to act as a heat sink, cooling the coil and allowing greater efficiency, which translates to more sound per watt.

At Gauss, we use *two* spiders to support the voice coil tube in the magnetic gap, our famous "double spider" construction. This allows a more flexible spider material, adding to our efficiency, and keeps the voice coil tube centered at all times. If for some reason the coil is driven out of the gap, it will automatically recenter everytime with no damage to the coil. All other speakers use a single

spider... which leads to a lot of recone jobs!

Other manufacturers dress the voice coil wire leads to the cone, where terminal leads are then attached. This can create cone distortion and lead failure. At Gauss, we attach flexible silver braided lead wire directly from the coil to the terminals using gold plated eyelets. This eliminates lead breaks, the most common cause of speaker failure.

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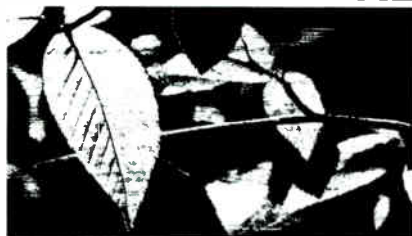
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North Miami, FL 33161
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NORTH CENTRAL



24+ TRACK STUDIOS

[24+] **CLOCKWERKE SOUND STUDIO**
1328 Linda St., Cleveland, OH 44116
(216) 331-2210

Owner: Greg James, Tom Gagen
Engineers: Greg James, Tom Gagen
Dimensions of Studios: 24 x 35
Dimensions of Control Rooms: 19 x 22
Tape Recorders: MCI/Sony JH 24, 16 and 24 track
Otari MX5050SD, 8-track, Otari MX5050B, 2 track,
MCI/Sony JH-110C 1/4 inch and 1/2 inch, 2 track
Mixing Consoles: NEOTEK III 24 x 24
Monitor Amplifiers: SAE, Phase Linear, BGW
Monitor Speakers: UREI, JBL, IMF, EPI, Clockwerke
custom, Yamaha
Echo, Reverb & Delay Systems: Lexicon 224XL, PCM70,
EMT 140, DeltaLab, MXR
Other Outboard Equipment: dbx 166, Orban 424A,
526, 245E, UREI 1176, Ashly SC 50, SC 66, dbx noise
reduction, all channels, Aphex Exciter Valley People,
much more.
Microphones: AKG, Sennheiser, Neumann, E. V. Shure,
Beyer, Audio Technica, RCA, Sony
Instruments Available: Kanabe 77 concert grand,
Hammond B3 and M3 w/Leslie, Fender Rhodes, Tama
5 piece Superstar drum kit. Rent any synthesizer, drum
machine, or computer
Video Equipment & Services: 1/4 inch audio post
w/SMPT lock up
Rates: Music production only 24 track \$70/hr., 16 track
\$50/hr. audio post + \$15/hr

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

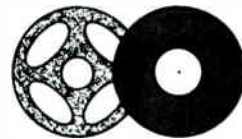
[24+] **COOKHOUSE RECORDING STUDIOS**
10 S. 5th St. Ste. 440, Minneapolis, MN 55402
(612) 333-2067
Owner: Dale Menten
Studio Manager: Jerry Stenstadfold

[24+] **CREATION AUDIO**
4130 Multi Foods Tower, Minneapolis, MN 55402
(612) 343-0425
Owner: Terry Grant, Steve Weis
Studio Manager: Terry Grant

[24+] **CREATIVE AUDIO**
also **REMOTE RECORDING**
705 W. Western, Urbana, IL 61801
(217) 367-3534
Owner: Jonathan D. Pines, Michael Day
Studio Manager: Jonathan D. Pines

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

[24+] **THE DISC LTD.**
14611 E. Nine Mile Rd., E. Detroit, MI 48021
(313) 779-1380
Owner: Robert Dennis, Greg Reilly, Tom Gelardi
Studio Manager: Greg Reilly
Engineers: Greg Reilly, Robert Dennis
Tape Recorders: Ampex MM1000, 24 track, Ampex ATR
102, 2 track, MCI JH 110B, Otari MTR90II, 24 track
Mixing Consoles: API fitted with Allison Research Com
puter Mix System, custom, 32 x 24
Monitor Amplifiers: McIntosh, Crown, PAS
Monitor Speakers: DLC design ACUs w/UREI horn,



THE DISC LTD

THE DISC LTD.
Detroit, MI

Acoustic Research modbed, Yamaha NS-10s, Auratones.
Echo, Reverb & Delay Systems: (2) EMT 140s, Lexicon
PCM41, Efectron, DeltaLab DDL 1, Lexicon 200 digital
reverb

Other Outboard Equipment: Harmonizer, Kepex, Tele-
tronix 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 and U85;
Electro Voice RE20s, RE15, RE10, RE55, 635A; Sennheiser
MD 421s

Instruments Available: Linn 9000, Premier drums, TEAC
7, Macintosh Sound Library, Yamaha grand piano, Korg
Poly 800 and orchestra bells, LinnDrum, Mirage digital
sampling synthesizer

Video Equipment & Services: 1/4 inch Sony BVU 800,
BTX synchronizers and tape controller, BTX time code
generator, Panasonic color monitor.

Rates: Give us a call

Extras: 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.

Direction: Credits include: One Way produced by E. Deo-
dato "Michele Goulet" on Island Records, "Atomic Dog"
George Clinton, "Heard it Through the Grapevine" Roger
Troutman, "Lady" One Way, "The Saga Continues" 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+] **EAGLE ONE PRODUCTIONS**
9745 Mangham Dr., Cincinnati, OH 45215
(513) 733-9999
Owner: Randy W. Looper
Studio Manager: Phil Burkhardt

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

[24+] **ENERGY AUDIO RECORDING**
P.O. Box 40218, Industrial Station, St. Paul, MN 55103
(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
Studio Manager: Jorgen Hoglund
Engineers: Jorgen Hoglund, Twin City Wizards
Dimensions of Studios: 40 x 20.
Dimensions of Control Rooms: 28 x 14.
Tape Recorders: Sony/MCI JH 24, 24-track; Sony APR
5002, 2 track; Otari MX5050, 2 track; Nakamichi MR1,
2 track; (2) Nakamichi MR2, cassette
Mixing Consoles: D&R Electronica Series 8000 Mod. II
32 x 32
Monitor Amplifiers: Trace Elliot RA 500's, Crown DC-
300s, monitors are bi-amped
Monitor Speakers: Electro-Voice Sentry 3/II, Electro-
Voice Sentry 500, Yamaha NS 10.
Echo, Reverb & Delay Systems: Lexicon 224 XL, AMS
RMX 16, Alesis XT.C, Lexicon PCM42, AMS DMX 15-80s,
D&R stereo reverb
Other Outboard Equipment: D&R equipment noise

gates, parametric EQs, comp./limiters, exciter, high-com., telephone hybrid, noise reductions, Pioneer CD player (multiple), AMS DMX 15-80s processor, harmonizers, etc.
Microphones: Neumann U87s, Neumann TL 170 limited edition, AKGs: 414s, D12E, D330, 461s, CK1, CK5, Electro-Voice: RE20s, 671, CS15, PL76, PL91s, Shure: SM81s, SM57, SM58.
Instruments Available: Trace Elliot bass-combo, Tom Scholz Rockman X-100, bass, boogie-amps, Halkan amp, Staccato bass, guitars: Alembic, Dean, Martin, Sonordrums, Dynacord ADD-One digital drums, Yamaha DX7, Roland digital piano (w/Steinway and Bosendorfer).
Rates: Call for rates and specials.

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

[24+] FIFTH FLOOR PRODUCTIONS
 517 W. 3rd St., Cincinnati, OH 45202
 (513) 651-1871
 Owner: Richard & Ellen Goldman
 Studio Manager: Richard Goldman

[24+] 54 SOUND
 1525 E. 9 Mile Rd., Ferndale, MI 48220
 (313) 54-SOUND, 547-6863
 Owner: Joel Martin, Frankie LaMarr
 Studio Manager: Joel Martin, Frankie LaMarr

[24+] FUTURE STUDIOS
 1412 W. Belmont, Chicago, IL 60657
 (312) 880-5000
 Owner: Jim Guilmette, Sonny Hermon
 Studio Manager: Jim Guilmette

[24+] FUTURESOUND STUDIOS
 also REMOTE RECORDING
 141 S. Main St., Marion, OH 43302
 (614) 383-2566
 Owner: David E. Sifrit
 Studio Manager: Terry Hero

[24+] GENESIS RECORDING
 also REMOTE RECORDING
 601 S. 62nd St., Milwaukee, WI 53214
 (414) 476-4377
 Owner: Phil Polsley, Rod Lisowski
 Studio Manager: Phil Polsley, Rod Lisowski



GHL AUDIO ENGINEERING
 Hilliard, OH

[24+] GHL AUDIO ENGINEERING
 also REMOTE RECORDING
 P.O. Box 273, Hilliard, OH 43026
 (614) 876-1057
 Owner: GHL
 Studio Manager: Gary Hedden
 Engineers: Gary Hedden, Jim Kaiser, Jim Dutt, independent engineers welcome.
Dimensions of Studios: 25 x 50 x 16
Dimensions of Control Rooms: 8 x 22
Tape Recorders: (2) Otari MTR-90/II, 24-track; Otari MTR-12/1, 4-track 1/2-inch/2-track 1/2-inch; (2) Otari MX-5050, 1/4-inch 2-track; (2) Nakamichi MR-1-B cassette.
Mixing Consoles: Harrison MR-4, 36 x 24 w/ARMS automation
Monitor Amplifiers: Hafler Pro-Series amps.
Monitor Speakers: Fostex LS-3, Fostex RM-765, Fostex

G-7000, MDM-4, Minimus 7, Auratones.
Echo, Reverb & Delay Systems: (2) Lexicon 200 digital reverbs, (2) Lexicon PCM42 digital delays, Marshall Time Modulator 5402, Quantec Room Simulator, Eventide 910 Harmonizer, dbx 906 flanger/delay.
Other Outboard Equipment: (4) dbx 903 compressors, (2) dbx 902 de-essers, (6) Valley People dynamics processors, (4) Aphex EQF-2 equalizers, (6) Aphex CX-1 compressor/expander, (8) Dolby 361 type A noise reduction, dbx 180 type 1 stereo noise reduction, dbx 700 digital audio processor.
Microphones: AKG C-414, C-460B; Neumann U89, KM84, SM2; Beyer M-500; Sennheiser MD-421; Shure SM58, SM57; Altec M-49; Sony C-38; Electro-Voice RE20, Crown PZM-6S.
Instruments Available: Neil Andrews' rack.
Video Equipment & Services: 1/4-inch JVC-6650, Panasonic S1900 monitor, RCA remote control CCTV.
Rates: Available on request
Extras: Three machine lock up via BTX Softouch controller; unique video track interface; 54 pair Neumann input snake w/Jensen split for house sound; foldback and cue: Bag End TA-12, Fostex T-20 headphones; 2 channel, 6 station Clear-Com; Sony C-5 compact disc player.
Direction: The GHL remote truck is regarded as one of the finest facilities available. We, however, are certainly not limited to concert-type dates. Recent projects have included significant major-label recordings produced by GHL at a variety of locations. We encourage our clients to explore the freedoms of recording and mixing in a leading-edge control room at any appropriate site. The GHL staff is always available for consultation, engineering, and production in any studio. Clients include Atlantic Records, Motown Records, Savoy Records, Greentree Records, HBO, WTTW, WCMH, ABC Radio, David Hewitt, Kerry Livgren, Vince Andrews, BBH.

[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.
 1059 Porter, Wichita, KS 67203
 (316) 262-6456

Owner: Corporation
 Studio Manager: Nancy Stratten

[24+] HIT CITY RECORDING
 707 E. 54th St., Indianapolis, IN 46220
 (317) 257-0764
 Owner: Dave Langlitt, Tim Brckley

[24+] HOFFMANN MEDIA CENTER
 2185 Hampton Ave., St. Louis, MO 63139
 (314) 647-4900
 Owner: International Lutheran Laymen's League
 Studio Manager: Mark Eischer

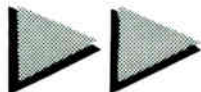
[24+] IRONSIDE RECORDING STUDIO
 Fall Creek Rd., Branson, MO 65616
 (417) 334-7040
 Owner: Bob and Sherr Millsep

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

[24+] JERICHO RECORDING STUDIO
 700 N. Green St., Chicago, IL 60622
 (312) 733-4800
 Owner: Corporate
 Studio Manager: Frank Verciglio

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

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1100 Wheaton Oaks Ct., Wheaton, IL 60187
(312) 653-1919

Owner: Grace Jordan and Dan Zimbelman
Studio Manager: Dan Zimbelman, Melinda Schmidt
Engineers: Mal Davis, Jeff Beaumont
Dimensions of Studios: Design: George Augspurger, Jack Edwards. 2500 sq. ft., (3) iso rooms, 20-foot ceiling.
Tape Recorders: Studer A80MKIV, 24-track; Studer A810, 2-track; Studer B67, 2-track.
Mixing Consoles: Neve custom modified 8058 32 x 24.
Monitor Amplifiers: Hafler
Monitor Speakers: UREI, Yamaha, Auratones.
Echo, Reverb & Delay Systems: AMS, EMT, Yamaha, Lexicon.

Other Outboard Equipment: Dolby and dbx noise reduction, Pultec EQs, Neve compressors, Aphex Compellor, Drawmer noise gates.

Microphones: Neumann, AKG, Sennheiser, Beyer, Shure.
Instruments Available: Sonor drum kit, Yamaha conservatory grand piano, extensive synthesizer and percussion equipment available to rent upon request.

Video Equipment & Services: Separate additional power source available for video lighting in studio. Video duplicating also available in 3/4-inch and 1/2-inch.

Extras: 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.



JOSEPH PRODUCTIONS, INC.
Southfield, MI

[24+] JOSEPH PRODUCTIONS, INC.
also REMOTE RECORDING
17250 W. 12 Mile Rd., Southfield, MI 48076
(313) 569-5190

Owner: Sheldon J. Nueman
Studio Manager: Eve Avadenka
Engineers: Sheldon J. Nueman, Chrs J. Steals
Dimensions of Studios: Voice-over booth.
Dimensions of Control Rooms: Control room, machine room.

Tape Recorders: Otari MTR-90, 24-track; Otari MTR-12, 4- and 2-track; Otari MTR-12, 2- and 1-track; Ampex 440, 1-track.

Mixing Consoles: NEOTEK Production 24 x 16 x 4 x 2.
Monitor Amplifiers: Crown PS400, Crown PS200, Crown D75

Monitor Speakers: JBL 4411, Auratones.
Echo, Reverb & Delay Systems: Lexicon 224-XL, Lexicon PCM42 digital delay, Ursa Major 8 x 32 digital reverbator.

Other Outboard Equipment: Aphex II Aural Exciter, Aphex Compellor, Orban stereo synthesizer, Orban de-esser, Orban parametric EQ, Neumann dialogue mastering compressor, UREI compressors, UREI limiters, UREI 1/3 octave EQ, Dolby A, dbx, Symetrix noise reduction, Otari EC401 Universal Resolver, Tascam cassette deck, Magne-Tech Model 10000 16/35mm dubber, Magne-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.

Instruments Available: On request (original music production).

Video Equipment & Services: Hitachi HR 230 1-inch Type C video tape recorder, Sony V05850 3/4-inch video cassette recorder, Mitsubishi stereo Hi-Fi 1/2-inch video tape recorder, Sony VO2600 3/4-inch video tape recorder, Hitachi 9-bit TC-230 time base corrector, NEC 12-inch monitors, Panasonic 19-inch monitor.

NORTH CENTRAL



24+ TRACK STUDIOS

Rates: \$200/hr. for mix-to-picture, \$90/hr. for 1 to 4-track production, \$200/hr. for Digi-Sync™.

Extras: 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-inch video tape.
Direction: Look for grand opening of new re-recording facility soon!

[24+] K & R'S RECORDING STUDIOS
also REMOTE RECORDING
28533 Greenfield, Southfield, MI 48076
(313) 557-8276
Owner: Kenneth Glaza

[24+] KOPPERHEAD PRODUCTIONS INC.
935 Schneider Rd. NW, North Canton, OH 44720
(216) 494-8760

Owner: Lee R. Kopp
Studio Manager: George E. Payne
Engineers: Bruce Hensal, Dave Marchioni, Lewis Kopp, Lee Kopp

Dimensions of Studios: Master studio: 900 sq. ft., 17-foot ceiling; production studio: 132 sq. ft.

Dimensions of Control Rooms: Master control room: 400 sq. ft., production control room: 275 sq. ft.

Tape 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 1/2-inch and 1/4-inch, 2-track; Sony F-1 digital, 2-track; Tascam 25-2, 2-track w/dbx.

Mixing Consoles: Soundcraft 3B, 32 x 24; Tascam 15-5, 20 x 16 x 8.

Mixing Consoles: Yamaha B1, Crown PSI, Carver.
Monitor Speakers: UREI 813-A, Yamaha NS-10, JBL 4311, Auratone.

Echo, Reverb & Delay Systems: Lexicon 224, Yamaha REV7; EMT and Ecoplate, MasterMix, AKG, Orban; Eventide Harmonizers, Deltalab, Yamaha.

Other Outboard Equipment: Eventide flanger and Omnipressor, Orban de-essers and parametric EQs, Kepex and DynaMite gates, dbx and UREI compressor/limiters, Vocal Stresser, exciter, 27-band real time analyzer, dbx noise reduction for all multi-tracks.

Microphones: Neumann U87s, U89s, KM84, KM85, AKG 414s, Sony C55s and 150, Sennheiser 421s, E-V RE20s, Shure SM57s and SM81s, Crown PZMs, Beyer 500, E-V RE15s, and assorted.

Instruments Available: N/C: Baldwin grand piano, Minimoog, ARP 2600, Polymoog, DX7, Ludwig drums; rehearsal rooms, Steinway grand piano, and Baldwin spinet piano.
Video Equipment & Services: 3/4-inch and 1/2-inch video playback.

Rates: Master 24-track \$85/hr., production 16-track \$40/hr. and project rates.

Extras: Synclavier digital music system with 32 stereo polyphonic sample voices and 32 stereo FM voices; music printing, 50k sampling SMPTE, guitar interface, and velocity/pressure keyboard. Synclavier II system with 32 FM voices, terminal support and music printing. Custom composition, arrangement and sound composition.

Direction: Full service custom music house with specialization in complete Synclavier productions and master 24-track recording facility specializing in solo artist productions requiring arrangement, instrumentation and sweetening.

[24+] LAKE RECORDING
418 Lake St., Maywood, IL 60153
(312) 344-8760

Owner: Robert Kaider
Studio Manager: Robert Kaider

[24+] MADISON STREET SOUND STUDIO
also REMOTE RECORDING
17 N. Madison St., Wauapun, WI 53963
(414) 324-3864

Owner: Nick Kuzulka, Wally Messner
Studio Manager: Nick Kuzulka

[24+] METRO MOBILE RECORDING
only REMOTE RECORDING
2009 John's Dr., Glenview, IL 60025
(312) 998-6420

Owner: Timothy Powell
Studio Manager: Timothy Powell

[24+] METRO STUDIOS
200 3rd Ave. N, Minneapolis, MN 55401
(612) 338-3833

Owner: Tom Tucker, Good Music Agency, Inc.
Studio Manager: Lawrence J. Osterman
Engineers: Tom Tucker, Kirby Binder, John Hurst, Chopper Black, Jim Nipar.

Dimensions of Studios: A: 1020 sq. ft., 180 sq. ft. booth.
Dimensions of Control Rooms: A: 700 sq. ft. B: 500 sq. ft.

Tape Recorders: A: Otari MTR-100 MKII w/autolocator 24-track and EC-101 synchronizer card, Ampex ATR-100 1/4-inch 2-track; MCI JH-110B 1/4-inch and 1/2-inch heads 2-track; Scully 280B 2-track; Nakamichi MR-1, (4) Nakamichi BX-330, Tascam 122, Aiva WX-220 high speed dubbing, B: MCI JH-114, 24-track.

Mixing Consoles: A: Trident 80B (30 x 24 x 24 w/54 returns), ARMS II automation. B: MCI 428 B, 28 x 24.

Monitor Amplifiers: JBL, Hafler, HH.

Monitor Speakers: SOTA CF-2000 (4-way all cone), JBL 4430, JBL 4411, JBL 4311, Yamaha NS-10M, Auratone 5C, customized Auratones.

Echo, Reverb & Delay Systems: AMSRMX-16, Eventide SP-2016, EMT 240 Goldoil, Ecoplate II, Yamaha REV7, AMS RMX 15-80S (6.4 sec sampling), Lexicon PCM-42, Lexicon PCM41, Roland SDE-1000, Yamaha SPX-90 (4) API 550A, (2) Aphex EQF-2, UREI 546 stereo parametric, (2) White 4100, Aphex Compellor, UREI 1178, UREI 1176, Teletronix LA-2A, UREI LA-4, Inconvos 201, (4) Kepex II, Valley People Gain Brain II, (2) Valley People Dyna-Mite, Omni Craft GT-4, Eventide H-910 Harmonizer.

Microphones: Neumann U48, (2) Neumann KM84, (2) Neumann U87, AKG D-12E, (3) AKG B-330BT, (3) AKG C-414EB, (2) AKG C-460B, (4) Sennheiser MD-421, (2) Sennheiser 441, Electro-Voice RE20, Electro-Voice 667A, (6) Shure SM57, (3) Shure SM81.

Instruments Available: Yamaha C-7-foot piano, Pearl maple drum kit w/Rimms, Zildjian cymbals, Peterson strobe tuner, UREI 964 digital metronome.

Video Equipment & Services: Sony 5850 3/4-inch VCR w/580 remote, Master Beat Universal synchronizer/generator, NEC 25-inch monitor, NEC 19-inch monitor.
Rates: \$90/hr., bulk rate available.

[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 of Studios: (A) 25 x 22; 9 x 16 keyboard suite.

Dimensions of Control Rooms: (A) 20 x 18.

Tape Recorders: Otari MTR-90 II, 24-track; Otari 5050B III, 8-track; Otari MTR-10, 2-track; Ampex 440C, 2-track; Studer/Revox A-700, 2-track; Sony PCM-F1, 2-track digital; Tanberg 3004, cassette deck.

Mixing Consoles: Harmon Raven, 32 x 24 w/automation.
Monitor Amplifiers: Crown DC-300A II, Banner 300, Crown D75

Monitor Speakers: JBL 4435s, JBL 4333, JBL 4612 Cabaret, Yamaha NS-10M, Auratones.

Echo, Reverb & Delay Systems: Lexicon 224XL, Lexicon 93 Prime Time, ART DR-1, Roland SDE-3000, Eventide H910.

Other Outboard Equipment: UREI 1176LN limiters, UREI LA-4 limiters, Audioarts I200 limiters, Omni Craft GT-4s, Eventide 2830 Omnipressor, dbx-3BX expander, Orban 622B parametric EQ, Delta Graph EQ-10 graphic.

Microphones: Neumann U87s, U47, U67, KM84, AKG 414s, 452s, D12E; Sennheiser 441s, 421s; Electro-Voice RE20s; Shure SM58s; Studer SMK5-Us; Crown PZM 30 APGs; RCA 77DX.

Instruments Available: Kurzweil 250, LinnDrum, Pearl drums.

Video Equipment & Services: Sony Pro Feel 25-inch, JVC CR-6300 U-3/4-inch; JVC 2650; 1/2-inch Sony.
Rates: Please call for rates.

[24+] MOKAN PRODUCTIONS, LTD.
also REMOTE RECORDING
3101 Broadway, Kansas City, MO 64111
(816) 561-8844, 1-800-3 JINGLE
Owner: David Riggs
Studio Manager: Dan Israel

[24+] MONOPOLEY
Box 51506, Indianapolis, IN 46256
(317) 783-2960
Owner: Jack Poley
Studio Manager: Jack Poley

[24+] MULTI-TRAC RECORDING
25533 Five Mile Rd., Redford, MI 48239
(313) 531-5353
Owner: Nick Canzano
Studio Manager: Rick Canzano

[24+] MUSICOL, INC.
also REMOTE RECORDING
780 Oakland Park Ave., Columbus, OH 43224
(614) 267-3133
Owner: John W. Hull, Boyd Niederlander
Studio Manager: John W. Hull

[24+] NUMARK, INC.
51308 Peachtree Ln., Utica, MI 48087
(313) 739-6940
Owner: Mark and John Antos
Studio Manager: Mark Antos

[24+] THE OLD SCHOOLHOUSE
also REMOTE RECORDING
P.O. Box 2095, Ann Arbor, MI 48106
(313) 994-9325, 99H-WECK
Owner: David "Henry" Weck, Peter Bankert
Studio Manager: Weck and Bankert

[24+] ON SOUND PRODUCTIONS INC.
9315 Clifton Rd., Cleveland, OH 44102
(216) 631-1900
Owner: Van Pavloudis
Studio Manager: Van Pavloudis

[24+] OPUS RECORDING & EQUIPMENT CO.
4262 Grand Ave., Gurnee, IL 60031
(312) 336-6787
Owner: Tony Pettinato
Studio Manager: Fred Bergstrom
Engineers: Tony Pettinato, Perry Miller
Dimensions of Studios: 50 x 30 (iso: 17 x 16, 17 x 12)
Dimensions of Control Rooms: A: 21 x 23, B: 17 x 16.
Tape Recorders: MCI JH-24, 24-track; Otari MX-70, 16-track; Ampex ATR-100, 2-track; Otari MKIII-2, 2-track; Otari 5050B, 2-track; Nakamichi MR1 and MR2s, 2-track.
Mixing Consoles: TAC Matchless, 26 x 24; Ramsa WR-T820, 20 x 16.
Monitor Amplifiers: Crown, Soundcraftsmen, Crest.
Monitor Speakers: Gauss, Fostex, Auratones.
Echo, Reverb & Delay Systems: Lexicon PCM60 and 70s; Lexicon 41s and 42s, stereo plate.
Other Outboard Equipment: Compressors: Neve; dbx 160, 166, 900; UREI LA-4s; noise reduction: dbx, Rocktron; BBE 202R, Eventide 949s, Ibanez HD1000, gates, de-essers, parametric EQs.
Microphones: AKG "Tube," 414s, 451s, 452s, 460s, 535s; Beyer M88, M69, M260; Crown GLM; E-V PL10, RE20; Sennheiser 421s, 441s; Shure 57; RCA DX-77.
Instruments Available: Yamaha 7'4" studio grand, Ludwig drums w/Zildjian cymbals; congas; misc. percussion; JX-8P; DX7; Korg 800; Juno 60; Rockman; Oberheim DMX; Roland TR606; Roland DDR-30 digital drums; Fender bass; misc. amps; Hammond B-3.
Rates: \$35-\$70/hr.

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

[24+] PANDEMIC MUSIC, INC.
3546 Briggs Blvd. NE, Grand Rapids, MI 49505
(616) 361-0733
Owner: Fredenck C. Baker, William H. Vits
Studio Manager: Fredenck C. Baker

[24+] PARAGON RECORDING STUDIOS, INC.
also REMOTE RECORDING
9 E. Huron St., Chicago, IL 60611

(312) 266-0075
Owner: Marly Feldman
Studio Manager: Nancy Gardner



PEARL SOUND STUDIOS LTD.
Canton, MI

[24+] PEARL SOUND STUDIOS LTD.
47360 Ford Rd., Canton (Detroit area), MI 48187
(313) 455-7606
Owner: Ben Grosse
Studio Manager: Mark Hugger

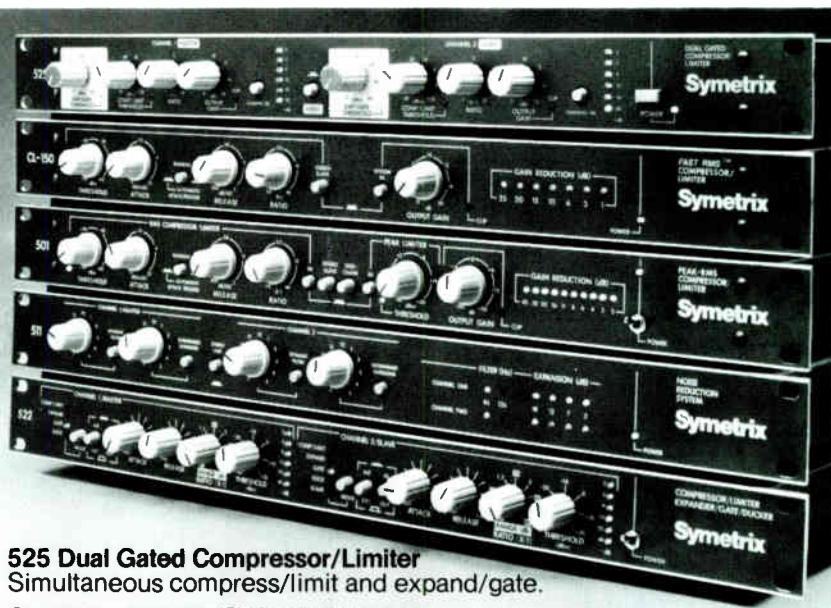
[24+] PEPPERMINT PRODUCTIONS CORP.
also REMOTE RECORDING
803 E. Indianola Ave., Youngstown, OH 44502
(216) 783-2222
Owner: Gary Rhamy
Studio Manager: Brenda J. Circle
Engineers: Gary Rhamy (chief eng.), Richard Willmitch (assistant eng.)
Dimensions of Studios: (A) 40 x 30 x 15 ceiling; (B) 20 x 15

—LISTING CONTINUED ON NEXT PAGE

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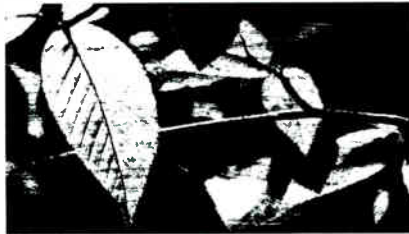
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NORTH CENTRAL



24+ TRACK STUDIOS

Dimensions of Control Rooms: (A) 10 x 35; (B) 10 x 15
Tape Recorders: Scully 24-track on professional 2-inch tape format; Ampex 1/2-inch & 1/4-inch machines; Technics 1500, 2-track; Pioneer 1/4-track; Pioneer and Marantz cassette machines; 30ips mastering for no noise recording.
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.
Monitor Amplifiers: Crown and McIntosh
Monitor Speakers: JBL 4320, Altec Voice of the Theatre, Sennheiser & Koss headphones.
Echo, Reverb & Delay Systems: Eventide Harmonizer; DeltaLab, Loft & 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, Electro-Voice, Sennheiser, Sony, RCA, AKG, plus Crown PZM.
Instruments Available: Steinway grand piano, Hammond C-3 organ w/Leslie, string ensemble, tympani, xylophone, bells, percussion instruments, Fender Rhodes.
Video Equipment & Services: 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 soundtracks.
Rates: Available upon request.

(24+) PINEBROOK RECORDING STUDIOS, INC.

also REMOTE RECORDING
P.O. Box 146, State Rd. #9 South
Alexandria, IN 46001
(317) 724-7721
Owner: W.J. Gaither, R.L. Hammel, E.L. Daniels, Heritage Venture Group
Studio Manager: Randy Hammel

(24+) PLATO-4 BUSINESS IND, INC.

also REMOTE RECORDING
4 Commerce Pk. Sq., 6th floor, Beachwood, OH 44122
(216) 932-2368
Studio Manager: Darrell T. Johnson

(24+) PLUM RECORDING & PRODUCTIONS

5988 Silverlans, Dearborn Heights, MI 48127
(313) 277-0082
Owner: D.J. Radko
Studio Manager: Tom Trip

(24+) THE POWER PLANT RECORDING STUDIO

P.O. Box 477, Flint, MI 48501
(313) 789-2504, 695-0054
Owner: Darryl E. Davis, Curtis Hayes, Jr.
Studio Manager: Curtis Hayes, Jr.

(24+) PRODUCERS COLOR SERVICE INC.

24242 Northwestern Hwy, Southfield, MI 48075
(313) 352-5353
Owner: Producers Color Service, Inc.
Studio Manager: Bruce Calmer, gen. mgr.
Engineers: Bob Melchoe, Jay Scott, Ben Thomas, Tom Bray, Ed Johnson, Jim Vitti.
Dimensions of Studios: Audio Post 1: 7.5 x 12 x 9; Audio Post 2: 8.5 x 15 x 10
Dimensions of Control Rooms: AP 1: 21.5 x 17 x 10; AP 2: 21 x 17.5 x 10
Tape Recorders: AP 1: Otari MTR-9011, 24-track; Ampex ATR 100, 4/2-track; MCI JH-110B, 2/1-track; Technics RS-M253X, 2-track; ITC Series 99, 2-track. AP 2: Otari MTR-9011, 24-track; Ampex MM-1200, 24-track; Otari MTR-20, 4/2 track; AP2: Otari MTR 12-2, 2-track w/center TC.
Mixing Consoles: AP 1: Solid State Logic 4000B, 24 x 24.



PRODUCERS COLOR SERVICE INC. Southfield, MI

AP 2: Solid State Logic 6000E, 32 x 32.
Monitor Amplifiers: AP 1: JREI 6500, Crown D-75. AP 2: Haller 500, Haller P-225.
Monitor Speakers: AP 1: UREI 815, Auratone. AP 2: UREI 813, Yamaha NS-10.
Echo, Reverb & Delay Systems: AP 1: Lexicon 224, DeltaLab DL-2. AP 2: Klark-Teknik DN-780, Ursa Major MSP 126.
Other Outboard Equipment: AP 1: H949 Harmonizer, EECO synchronizer, Technics SL-330 turntable. AP 1&2: Aphex B Aural Exciter, Aphex Compellor, Symetrix 511, UREI 1176, Orban 536A de-esser, Magna-Tech 16 & 35 rec/ repro mag deck, Dolby A & dbx NR, SFX library. AP 2: AP 2: 4x Time Line Lynx synchronizers, Sony 72-inch Hi-Res projection video monitoring.
Microphones: AKG C414EB, Neumann U87, Beyer MCE 5.
Video Equipment & Services: Mix to picture on Sony BVH-2000; complete video production & post-production facilities on premises.
Rates: \$245/hr. record. \$275/hr. mix-to-pix.

(24+) PS RECORDING STUDIOS also REMOTE RECORDING

323 E. 23rd St., Chicago, IL 60616
(312) 225-2110
Owner: Paul Serrano
Studio Manager: Rikki Zee
Engineers: Paul Serrano, Ron White, Goh Hotoda, Harry Bromlar, Larry Huerta, John, Nevin.
Dimensions of Studios: (A) L-shaped 700 sq. ft; (B) 17 x 17; (D) 14 x 19
Dimensions of Control Rooms: (A) 16 x 16; (B) 16 x 16; (D) 12 x 14
Tape Recorders: 3M M79 4-track; Ampex ATR-100, 2-track; Ampex 440, 2-track; TEAC 80-8, 8 track; Scully 12-track. Sony/MCI JH 24 24-track w/auto. locator III.
Mixing Consoles: Quantum 16 x 8 x 16, NEOTEK Elite w/MIDI 36 x 26 x 26.
Monitor Amplifiers: Haller, Crown, McIntosh, Crown Micro-Tech LAX 1000.
Monitor Speakers: UREI 813, Altec 604E, JBL 4311, Yamaha NS-10, Auratone.
Echo, Reverb & Delay Systems: (2) EMT 140ST (tube), AKG BX 10 (Lexicon 200), (2) Lexicon Prime Time, PCM-41, Lexicon Delta-T, Eventide H910, FL201, Lexicon 70, Yamaha REV7, Yamaha SPX90 Ursa Major Space Station, Roland SDE 1000, Elfracton II.
Other Outboard Equipment: Dolby, dbx noise reduction, UREI 1176 limiter, LA-2A, (2) LA-3A, Kexep, (2) Gain Brain, Neve limiter, Orban parametric EQ, de-esser, (2) Pultec tube EQ, Aphex Exciter, Drawmer noise gate, Omni Craft noise gate, dbx 165A, dbx 166 limiter Orban de-esser, (2) Eventide Instant Phasers, (2) Harmonizers.
Microphones: All Neumann & AKG microphones. Vintage microphones: U47, U48, U67, C12A, 77DX, Sennheiser MD 421, MD 441, Shure microphone, Crown PZM.
Instruments Available: Steinway 7-ft. piano, Yamaha 6 1/2-ft. grand piano, Fender Rhodes, full set of drum kits, Hammond B-3, DMX drum machine.
Video Equipment & Services: Contracted
Rates: Custom.

(24+) PUMPKIN RECORDING STUDIO, INC.

6737 W. 95th, Oak Lawn, IL 60453
(312) 598-3045
Owner: Gary Loizzo
Studio Manager: Gary Loizzo

(24+) QCA RECORDING STUDIOS

2832 Spring Grove Ave., Cincinnati, OH 45225
(513) 681-8715
Owner: Edward R. Bosken
Studio Manager: Jim Green

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

[24+] RAINBOW BRIDGE RECORDING
 117 Rockland Rd., Libertyville, IL 60048
 (312) 362-4060
 Owner: Rockland Music, Inc.
 Studio Manager: Perry Johnson

**[24+] RAINBOW RECORDING STUDIOS/
 RAINBOW PRODUCTIONS—OMAHA**
 also **REMOTE RECORDING**
 2322 S. 64th Ave., Omaha, NE 68106
 (402) 554-0123
 Owner: Nils Anders Erckson
 Studio Manager: Tom Buckley, Paul Jones

[24+] RAVEN RECORDERS
 14804 W. 117th St., Olathe, KS 66062
 (913) 829-2727
 Owner: Mike Elrod
 Studio Manager: Bill McWillie
 Engineers: Bill McWillie, Ed Charland, Mike Elrod
 Dimensions of Studios: 30 x 18 x 16
 Dimensions of Control Rooms: 20 x 21 x 16
 Tape Recorders: 3M M79, 24-track; 3M M79, 2-track.
 Studer B-62, 2-track; Tascam 44, 4 track.
 Mixing Consoles: Trident 80B, 32 x 24.
 Monitor Amplifiers: Threshold.
 Monitor Speakers: Custom Altec 3-way time aligned,
 Fostex RM780, JBL 4312, Auratone
 Echo, Reverb & Delay Systems: Eventide 1745, Prime
 Time, DeltaLab DL1, Yamaha REV7, SPX90, U A Cooper
 Time Cube, Echoplex
 Other Outboard Equipment: Eventide FL201, Pitch
 Transposer, Spectra Sonics 610 comp./limiter, Biamp
 Quad limiter, Quad Eight noise gates, Omni Craft noise
 gate, Altec tube limiters, JVC AP101 digital.
 Microphones: Telefunken, Neumann, AKG, Beyer, Senn
 heiser, Fostex, E-V, Sony, Shure, Crown.
 Instruments Available: Pearl drums, grand piano, Emula-
 tor, Minimoog, Crumar Performer, Fender Strat, Les Paul,

Marshall, Fender, Roland amps, Yamaha and Martin
 acoustics
 Video Equipment & Services: JVC CH 1800U, 3 tube
 camera, JVC CR 6300U U Matic
 Rates: \$80/hr., block rates available

[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, G M
 Studio Manager: Brian Stinterberger
 Engineers: Dave Egan, Jeff Ling, Terry Douds, Dar Smart,
 Rusty D'Agno, Tom Johnson, Jim Wilson, Jon Smoltz, Jeff

Redefer, Jon Wyner, Abby Reid, Rob Brumfiel, Tony Cottrell.
 Dimensions of Studios: (A) 15 x 12; (C) 30 x 40; (D) 15 x
 20, (E) 30 x 35
 Dimensions of Control Rooms: (A) 18 x 12; (B) 11 x 8; (C)
 30 x 20; (D) 15 x 17; (E) 30 x 27
 Tape Recorders: (3) MCI JH 24, 24-track; (2) Otari MX-70,
 16 track; Otari MKIII, 8-track; MCI JH-110, 2-track; (12)
 Otari 5050, 2-track.
 Mixing Consoles: (2) MCI 636, 36 x 36; Sound Workshop
 Series 30, 28 x 28; TAC Scorpion, 16 x 16; Sound Workshop
 Logex, 20 x 8.
 Monitor Amplifiers: Crown.
 Monitor Speakers: UREI, JBL, Fostex, Yamaha.
 Echo, Reverb & Delay Systems: Lexicon 224X, Klark
 Teknik DN780, Lexicon PCM70, PCM60, PCM41, Yamaha
 SPX90, Eventide Harmonizer.
 Other Outboard Equipment: dbx, UREI, Ashly compres-
 sors, Orban, Pultec equalizers.
 Microphones: All major manufacturers and models.
 Instruments Available: Yamaha grand piano, KX-88,
 416, Ensoniq ESQ 1, Yamaha RX11, DX7.
 Video Equipment & Services: Video services are pro-
 vided in conjunction with several midwest production
 companies
 Rates: 24-track, \$80/hr., 16-track \$60/hr.; 8-track, \$40/hr.
 Extras: The Recording Workshop specializes in the train-
 ing of recording techniques for assistants, producers and
 studio musicians. Our six week program is offered seven
 times annually. On campus housing is available.
 Direction: The Recording Workshop is 45 miles south of
 Columbus, Ohio, just off route 23. Take the Rozelle Creek
 exit east

[24+] RED LABEL RECORDING STUDIO
 300 Birch St., Winnetka, IL 60093
 (312) 446-1893
 Owner: Richard E. Meyer

**[24+] REFERENCE STANDARD
 RECORDING STUDIO**
 P.O. Box 8588, Northfield, IL 60093
 (312) 446-6073
 Owner: Gary Fry
 Studio Manager: Carol Fry

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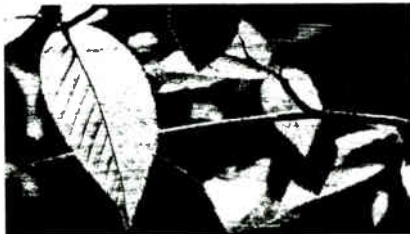
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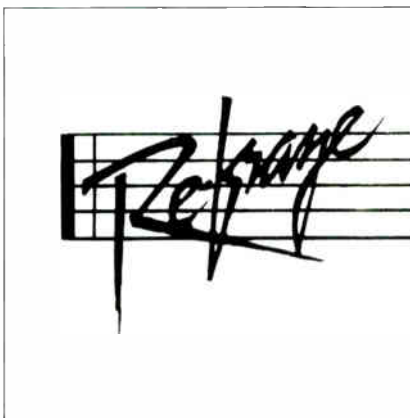
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NORTH CENTRAL



24+ TRACK STUDIOS



REFRAZE RECORDING STUDIO Dayton, OH

[24+] REFRAZE RECORDING STUDIO
2727 Gaylord Ave., Dayton, OH 45419
(513) 298-2727

Owner: Mark and Jane Frazee
Studio Manager: Mark Frazee
Engineers: Mark Frazee, Gary King, Jane Frazee (asst. eng.)
Dimensions of Studios: 38 x 34 x 20, 11 x 11 iso room; 9 x 10 drum booth, 20-ft. high ceiling
Dimensions of Control Rooms: 18 x 21 control room
LEDE acoustics

Tape Recorders: Otari MTR-90, 24-track; Otari MTR-1211 C 1/4-inch, 2-track; Otari MTR-12H 1/2-inch, 2-track; Tascam 25-2 1/4-inch, 2 track; (2) Sony cassettes; Tascam 122 cassette.

Mixing Consoles: Trident Series 80B, 30 x 24 x 24.
Monitor Amplifiers: UREI 6500, Crown DC-300A, Crown D150A, Crown D60

Monitor Speakers: UREI 813B, IBL 4313, Auratone 5C, Hitachi HS-01

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 (w/extended memory), DeltaLab Harmonizer, MXR digital delay, AMS RMX 16 digital reverb system, ADM 1024 Effectron II.

Other Outboard Equipment: (2) UREI 1176 peak limiters, (2) dbx 160 comp/limiters, Valley Audio Gain Brain and 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 Aural Exciter Type B.

Microphones: Neumann UB7s, U48s, Sennheiser 421s, 441; AKG D12Es, 451s (w/ck 1 modules), 414, 224e; PZM; Beyers 101s and 201s; Shure SM57s, 58s.

Instruments Available: Customized Fender Rhodes, Baldwin 9-ft. 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 drums.

Video Equipment & Services: 1/2-inch Beta & VHS recorders, Multiple cameras available.
Rates: 24-track, \$80/hr. Daily and weekly rates available.

[24+] REMINGTON ROAD STUDIOS
1244 Remington Rd., Schaumburg, IL 60195
(312) 885-1330
Studio Manager: Michael Freeman

[24+] RIVER CITY STUDIOS, LTD.
also REMOTE RECORDING

147 Goodrich SE, Grand Rapids, MI 49503
(616) 456-1404
Studio Manager: Stephen Thrall



ROYAL RECORDERS, INC. Lake Geneva, WI

[24+] ROYAL RECORDERS, INC.
Americana Lake Geneva Resort, Hwy. 50
Lake Geneva, WI 53147
(414) 248-9100

Owner: Ronald Fajerstein, Robert Brigham
Studio Manager: Robert Brigham
Engineers: Phil Bonanno, Rich Denh, Bruce Breckenfield, Jim Bartz, Dan Harjung, independents welcome.

Dimensions of Studios: 35 x 24
Dimensions of Control Rooms: 21 x 20.
Tape Recorders: (2) Studer A800, 24-track; (2) Mitsubishi X 850, digital 32-track; (2) Mitsubishi X-86, digital 2-track; Studer A-80, 1/2-inch 2-track; Studer A-80, 1/4-inch 2-track.
Mixing Consoles: Solid State Logic 4000E w/primary and Total Recall automation, 80 x 80.
Monitor Amplifiers: Times One, Yamaha 2002, Crown DC300, D150, D60.
Monitor Speakers: Lakeside 2-way custom, IBL 4411, Yamaha NS-10, Auratones.

Echo, Reverb & Delay Systems: (2) AMS RMX-16, EMT 140s (tube type), Ecoplate I, Lexicon 224XL, Lexicon 200, (2) Yamaha REV7, (2) AMS-DMX 15-80 di Lexicon Super Prime Time, DDL, Lexicon Prime Time II DDL, Lexicon PCM42 DDL, Lexicon PCM41.

Other Outboard Equipment: (2) dbx 160 limiters, (4) dbx 160X limiters, (2) UREI 1176, (2) UREI LA-4A limiters, (2) Teletronix LA-2A (tube) limiters, (3) Drawmer dual gates, Orban Craft gates, (2) GML stereo parametric EQs, (2) Orban Parade 622 EQs, Orban graphic EQ, (3) API 550A EQs, (4) Pultec EQPs, Orban de-essers, Orban stereo syn. Eventide Harmonizer, MXR Ilanger, Ursa Space Station, Scamp Rack, Roland Chorus, Echo, UREI meronome.
Microphones: Neumann: (6) U47, (2) M49, (3) M250, (2) M269, (2) 254, (2) 253 (all tube types and (3) U87, U47 FET; Telefunken: 251 (tube); AKG: (2) C-24, (5) C-12, (4) C-12A (all tube type) and 414, (5) 451, 452, D-12E, D707, D-6G, The Tube; Shure: (10) SM57, 565, SM5, SM7, (4) SM81, (2) Sony C37a, (tube) ECM 50; RCA 77DX; Beyers 101; (3) Schoeps M934B (tube); (2) SKM5; Sennheiser: (6) 421, 441; (2) E V RE20.

Instruments Available: Yamaha C7 grand piano, Hammond B3 organ w/Leslie, Fender Rhodes, Sonor drum kit, Minimoog, Yamaha DX7, E-mu Emulator II plus, Memory-moog plus.

Video Equipment & Services: Complete audio-for-video sweetening utilizing Sony 3/4-inch cassette recorders and Adams-Smith 2600 synchronizers.

Rates: Upon request.
Extras: Located at the Americana Lake Geneva Resort complete accommodations are available along with the following recreational facilities: two world class golf courses, horseback riding, outdoor/indoor tennis courts, boating, bicycling, indoor and outdoor pools, racquetball courts, Nautilus room, sauna, steam bath, whirlpools, tanning beds, skiing, an airport, and much more.

Direction: Recen: cients include: Adrian Belew, Cheap Trick, Harold Faltermeyer, Jerry Goodman, Holland, John Hunter, Cliff Johnson, Chuck Mangione, Daryl Stuermer, and Survivor.

[24+] SCHARREN STUDIOS
6591 Pilliod Rd., Holland, OH 43528
(419) 866-1065

Owner: Steve Scharren
Studio Manager: Steve Scharren
Engineers: Steve Scharren, Tim Story
Dimensions of Studios: 24 x 15; drum booth 10 x 7; "live" room 15 x 12.
Dimensions of Control Rooms: 15 x 10

Tape Recorders: Soundcraft 762 MKIII, 24-track w/delux auto locator; Nakamichi DMP-100/Sony Beta digital mastering set up; Nakamichi MR-1 and MR-2 cassette decks; Fostex Series 80, 8-track open reel; Tascam 80-8 1/2-inch, 8-track; Aiwa hi-speed cassette duplicators. Tascam 85-16B 16-track (w/dbx); Otari 5050 BII 2-track; Tascam 42 2-track; Sony cassette deck K777 2-track; Nakamichi cassette deck 500 2-track; Sony TCD-5M 2-track; Revox B77, 2-track.

Mixing Consoles: Ramse 32 x 8 x 2 custom console; Tascam model 35.

Monitor Amplifiers: Haller DH 500, Crown D-150

Monitor Speakers: (2) Boston Acoustics A-400, (2) Realistic Minimus-II, (2) JBL 4411, Auratone 5Cs.

Echo, Reverb & Delay Systems: DeltaLab DL-4; Lexicon PCM 60 digital reverb, Ecoplate II, Lexicon PCM70 digital effects processor, MIDIVerb.

Other Outboard Equipment: Aphex Aural Exciter, Aphex Compeller, Symetrix SG-200 gate, Symetrix 501 compressor, Sundholm stereo EQ w/parametric notch filters; TR 707 and 909 drum computers; dbx 150, 224, (2) dbx 160X comp/limiters, 3BX; Ibanez DM2000 programmable digital delay, Ibanez MSP 1000 comp/EQ/notch filter; DeltaLab DLS harmonizer; Studio Technologies stereo simulator; Rockman, Drumulator; Boss pedals (all types), GateX gates; dbx 3BX.

Microphones: AKG BT 330, 224E, D12E, 414s; E-V PL77, 76, BK-1, RE20; Beyer Dynamic M101; Sony ECM-22; Crown PZMs; AKG C-24 stereo tube mic and many more. **Instruments Available:** 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, Roland IX3P synth, with programmer, Gibson ES 335, Memorymoog; DW6000, DX7; plus just about any other instrument available upon request, including some of the finest studio musicians in the Midwest, Emulator II+ with over 200 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.

Rates: Reasonable! Call for quotes!



SEAGRAPE RECORDING STUDIOS
Chicago, IL

[24+] SEAGRAPE RECORDING STUDIOS
5740 N. Western Ave., Chicago, IL 60659
(312) 784-0773

Owner: Tom Haban, Mike Konopka

Studio Manager: Mike Konopka

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

Dimensions of Studios: 50 x 25 x 12 nominal, 7 x 12 x 12 vocal booth.

Dimensions of Control Rooms: 20 x 20 x 12

Tape Recorders: MCI JH-24, 24-track; MCI JH-116, 16-track; Otari MX 5050, 2-track; Sony PCM-F1, 2-track; Otari MTR-10 2-track 1/2-inch and 1/4-inch.

Mixing Consoles: NEOTEK Series III, 26 x 24.

Monitor Amplifiers: (2) McIntosh MC2205.

Monitor Speakers: JBL 4430, JBL 4311.

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

Other Outboard Equipment: UREI 1176, Commodore 64 w/MIDI software, Tapco graphics, Symetrix gates and limiters, dbx 166 limiters, Aphex Type B Aural Exciter, Mini-Doc, Omni Craft gates.

Microphones: Neumann U87s, Neumann U47s, AKG 451s, RCA 44, various Beyer, Sennheiser, E-V and Shure.

Instruments Available: Yamaha CP-70 piano, Hammond B3, Mirage digital sampling keyboard Casio CZ-101 keyboard, Oberheim DMX digital drum machine, Slinger and and Fibes drums, Roland GR300 guitar synthesizer, Moog

Taurus bass pedals; Gibson, Fender, St. Bluea, Harmony and National guitars.

Rates: 40-track, \$90/hr.; 24-track, \$75/hr.; 16-track, \$60/hr.; 2-track, \$35/hr.

Extras: Seagrape is designed with fully floored walls and floors featuring slat resonators and broad band diffusers. There are no extra charges for using any equipment listed. We also offer hi-speed and real time duplicating and packaging.

Direction: 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.

[24+] SELLER SOUND STUDIO

5014 Peekskill Dr., Sterling Hgts., MI 48077

(313) 264-7500

Owner: Gary Spanola

[24+] SEPTEMBER RECORDING

also REMOTE RECORDING

5210 E. 65th St., Indianapolis, IN 46220

(317) 842-4955

Owner: Robert Airis, Richard Airis, John Strong

Studio Manager: Elizabeth Moreland

[24+] 74TH ST. RECORDING STUDIO

5250 W. 74th St., Minneapolis, MN 55435

(612) 835-9952

Owner: Paul Martinson, Scott Rivard, John Volinkaty, Tom Lecher, Don Bajus, Mike Jones

Studio Manager: Paul Martinson, Scott Rivard

Engineers: Paul Martinson, Scott Rivard, Pete Martensen

Dimensions of Studios: 28 x 25; booth: 11 x 12.

Dimensions of Control Rooms: 18 x 22

Tape Recorders: MCI JH-24, 24-track; MCI JH-110A, 8-track; MCI JH-110B, 2-track; MCI JH-110C, 2-track; Nagra T-Audio, 2 (SMPTE); Nagra 4.2 1-track (Neopilot).

Mixing Consoles: Trident 65, 40 x 8 / 16 x 2.

Monitor Amplifiers: PSE, SR

Monitor Speakers: JBL 4425, JBL 4312, various small.

Echo, Reverb & Delay Systems: Lexicon 224X, Ecoplate II, AKG BX10, (2) Eventide Harmonizers.

Other Outboard Equipment: Neve, PSE, Pandora limiters;

KepeX II gates; UREI filters; Orban de-esser; 6 channel

monitor matrix.

Microphones: Neumann, AKG, Shure, Sennheiser. **Instruments Available:** Yamaha 7'4" grand piano; Fender Rhodes piano; Gretsch drums.

Video Equipment & Services: Adams-Smith SMPTE lockup; IVC 3/4-inch video, 24-track, 8-track, Magna-Tech hi-speed projector, recorder, and dubbers; 16 and 35mm. **Rates:** \$80-\$160/hr.

[24+] SOLID SOUND

P.O. Box 7611,

1289 N. Dixboro Rd., Ann Arbor, MI 48107

(313) 662-0667

Owner: Robert G. Martens, James W. Spencer

[24+] SOLID SOUND RECORDING STUDIO

2400 W. Hassell Rd. Ste 430

Hoffman Estates, IL 60195

(312) 882-7446

Owner: Judd Sager

Studio Manager: Judd Sager

[24+] SONIC ART

23783 W. Petite Lake Rd., Lake Villa, IL 60046

(312) 356-8992

Owner: RBRB Inc.

Studio Manager: Richard A. Brown

[24+] THE SOUND FACTORY

424 W. Minnesota Ave., Box 505, Willmar MN 56201

(612) 235-9104

Owner: Lowell Lundstrom, Chet Pniewe, Bill Simmons

Studio Manager: Chet Pniewe, Dave Eichler

[24+] SOUND IDEAS PRODUCTIONS

701 Douglas St., Sioux City, IA 51101

(712) 255-9911

Owner: Kraig Wall, Greg Wall, Lon Rochester, Jim Rossiter

[24+] SOUND IMAGES

602 Main St. Ste. 222, Cincinnati, OH 45202

(513) 241-7475

Owner: Jack Streilmarter

Studio Manager: Terri Leedy

[24+] SOUND IMPRESSIONS, INC.

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—FROM PAGE 135

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 of Studios: (A) 525 sq. ft.; (B) 225 sq. ft. (isolation room); (C) 40 sq. ft. (narration only).
Dimensions of Control Rooms: (A) 300 sq. ft., (C) 400 sq. ft.

Tape 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; Aiwa 3200, cassette, Akai GXF71 cassette.

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.
Monitor Amplifiers: McIntosh, Crown, Kenwood, Eddor.
Monitor Speakers: UREI 811A, JBL 4310, Altec A-7, Auratone, E-V Sentry 505, MDM 4 Nearfield.

Echo, Reverb & Delay Systems: AKG BX20, Eventide Harmonizer, Eventide flanger, MICMIX XL121, Lexicon PCM60, Effectron DDL 1024, Valley People "Dyna-Mite"
Other Outboard Equipment: UREI LN 1176 limiters, Allison Kepex noise gates, Orban parametric EQ, dbx noise reduction, dbx 163 limiter, Delta graphic EQ, UREI 565, Audico AVE Impulsers, Technics turntables, dbx 160X limiters, dbx 263X de-essers.

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

Instruments Available: Yamaha grand piano. Others available upon request.

[24+] **SOUND RECORDER INC.**
also **REMOTE RECORDING**
3947 State Line, Kansas City, MO 64111
(816) 931-8642
Owner: John M. Boyd
Studio Manager: Ron Dabbs

[24+] **SOUND RECORDERS INC.**
also **REMOTE RECORDING**
206 S. 44th St., Omaha, NE 68131
(402) 553-1164
Owner: John M. Boyd
Studio Manager: Marty Boyd

[24+] **SOUND SUITE STUDIOS**
14750 Puritan Ave., Detroit, MI 48227
(313) 273-3000
Owner: John Lewis, Michael Grace
Studio Manager: Garzelle McDonald
Engineers: Warren Woods, Mike Brown, Steve King, Steve Smith, Michael Grace, John Lewis.
Dimensions of Studios: A: 24 x 44, B: 13 x 36.
Dimensions of Control Rooms: A: 22 x 23, B: 16 x 18.
Tape Recorders: MCI JH-114, 24-track; Otari MTR-90 II, 24-track; MCI JH-110, 1/2-inch, 2-track; MCI JH110A 1/4-inch 2-track; Studer A 80 1/2-inch 2-track; Otari MTR-12 1/4-inch, 2-track; Studer/Revox cassette 2-track.
Mixing Consoles: MCI JH528, 28 x 32; Solid State Logic SL 4000E 48 x 32.
Monitor Amplifiers: BGW, Haller, Crown, McIntosh.
Monitor Speakers: Weslakes, Altec 604E, UREI, Yamaha NS-10M, Auratones, anything on request.
Echo, Reverb & Delay Systems: EMT 250, EMT 240, PCM 60, PCM42, Lexicon 224 XL, Delta T, Eventide A910.
Other Outboard Equipment: Pultec tube program EQ, EQP 1A, Kepex, UREI 1176 limiters, dbx limiters, parametric and graphic EQ, AMS RMX, noise gates, EXR Exciter, SBX 80 sync box.
Microphones: Neumann, AKG, Sennheiser, Sony, Shure, E-V, many more.
Instruments Available: Steinway grand, Yamaha DX7, full range of synthesizers, Fender Rhodes, Yamaha RX11, drum machine, LinnDrum, SP12, real drums, Roland 808 drum machine.
Video Equipment & Services: Complete audio-for-video sweetening utilizing Sony SB50 3/4-inch video cassette recorders and Adams-Smith synchronizers.
Rates: On request.

[24+] **SOUNDSPACE INC.**
126 Dayton St., Yellow Springs, OH 45387
(513) 767-7963
Owner: Chris Hertzler

[24+] **SOUNDTREK STUDIO V**
9101 Barton, Overland Park, KS 66214
(913) 541-0302
Owner: Ron Ubel, Grant Schainost, Craig Rettmer
Studio Manager: Craig Rettmer

[24+] **SOUNDTREK, INC.**
3727 Broadway, Kansas City, MO 64111
(816) 931-8735
Owner: Ron Ubel, Grant Schainost, Craig Rettmer
Studio Manager: Ron Ubel, Craig Rettmer

NORTH CENTRAL



24+ TRACK STUDIOS



SPECTRUM SOUND STUDIOS
St. Clair Shores, MI

[24+] **SPECTRUM SOUND STUDIOS**
also **REMOTE RECORDING**
29927 Harper, St. Clair Shores, MI 48082
(313) 776-6622
Owner: Spectrum Sound Studios, Inc.
Studio Manager: Kal Sands, Tamara Kornak
Engineers: Kenny Parker, Kal Sands, Al Rude, and independents.
Dimensions of Studios: A: 22 x 17 x 10; B: 14 x 9 x 8.
Dimensions of Control Rooms: 22 x 16 x 10.
Tape Recorders: Otari MTR-90, 24-track; Tascam 85-15, 16-track; Technics 1520, 2-track; Technics 1500, 2-track; Tascam 35-2, 2-track; Tascam 122, cassette.
Mixing Consoles: Harrison MR-4 Senes 36 x 24.
Monitor Amplifiers: Crown, Phase Linear, QED (Class A), Sanyo (MOS-FET), GAS Grandson, Klark-Teknik (1/2 octave EQ).
Monitor Speakers: UREI 813 C, E-V Sentry 500, JBL 4312, Yamaha NS-10, JBL 4401, Auratone 5.
Echo, Reverb & Delay Systems: Lexicon 200 digital reverb, Lexicon PCM70, Roland SRV 2000 digital reverb, Ecopleat II, Lexicon Prime Time delay, DeltaLab DL2 delay, (2) DeltaLab DL4 delays.
Other Outboard Equipment: UREI 1178 limiter, dbx 166, Valley People Dyna-Mites, Orban 424A, Allison G6n Brains, Symetrix CL100, dbx 160X, Getex, Omnicraft GT4, Symetrix SG200, Syntovox 222 Vocoder, ATS exciter, MXR Pitch Transposer.
Microphones: AKG tube, Neumann KM86s, Neumann KM84s, AKG 414s, AKG 451s, RCA DX77, Sony ECM-56F, Crown PZMs, E-V RE20s, Sennheiser 421s, Beyer M500s, AKG D12E, Sennheiser 441s, Shure SM57s, etc.
Instruments Available: Kurzweil K250 w/Macintosh computer and updates, Yamaha DX7 w/CX5M computer, Emulator, LinnDrum, Roland DDR30 digital drums, Simmons drums (2) Gretsch drum kits, (20) Paiste and Zildjian cymbals, Roland GR700 synth guitar, Jackson soloist guitar, Fender Tele (1962), Fender Strat (1964) Jackson Paul C custom Strat, Ro and GR77 bass synth, Fender P-bass reissue, Philip Kubicky P-bass, Marshall JCM 800 amp, Laney amp, (3) Marshall combos, Gallien-Krueger combo, Fender combo (1948), Gibson combo (1958), Ampeg B18 bass combo (1960s), Gallien Krueger bass amp, Marshall bass combo, etc.
Rates: \$39/hr. 24-track; \$29/hr. 16-track; \$25/hr. 2-track.
Extras: AMS RMX 16 digital reverb, Lexicon 480L digital effects processor, AMS DMX 1580s digital delay sampler, Lexicon 1200 C time squeezer, Eventide 969 Harmonizer, Q.Lock, Adams-Smith synth and other audio/video post-production needs. Rates upon request.
Direction: Spectrum is a world class facility with a comfortable and creative atmosphere. Our staff is experienced in commercial production, album projects, audio post for video, singles and demo work. Spectrum is Detroit's best kept secret.

[24+] **STAR TRAX RECORDING INC.**
15602 S. 70th Ct., Orland Park, IL 60462
(312) 429-2760
Owner: Star Trax Inc.
Studio Manager: George Luit



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 plus 5 person tech staff, Steve Kusiciel
Dimensions of Studios: (1) 47 x 22 x 14; (2) 37 x 27 x 12; (The Suite) 14 x 15 x 12; (5) 14 x 13 x 8'9"; (6) 14 x 10 x 8'9"; (7) 10 x 10'6" x 8'9".
Dimensions of Control Rooms: (1) 25 x 16'6" x 11'6"; (2) 24 x 18 x 10; (The Suite) 21 x 22 x 10; (5) 20 x 16 x 8'9"; (6) 17 x 14 x 8'9"; (7) 18 x 13'6" x 8'3".
Tape Recorders: (3) Otari MTR-90, 24-track; (4) MCI JH-24, 24-track; (2) Studer A-80, 4-track; (2) Otari MTR-10, 4-track; Otari MTR-12, 4-track; Otari MTR-10, 1/4-inch center channel time code; (17) Studer B-67, 2-track; (2) Studer B-77, 2-track; (4) Studer B-710, cassettes; (3) Nakamichi MR-2 cassettes.
Mixing Consoles: Solid State Logic 6040E w/Total Recall, 32 x 32; Solid State Logic 4048E w/Total Recall 32 x 32; Neve 8128 w/Neacm II, 48 x 32 x 48 mainframe; (2) Harrison 4032s w/Autoseit I, 32 x 32 x 40; Neve 2118 w/custom discrete circuitry, 6 x 4 x 2.
Monitor Amplifiers: UREI, Haller, BGW, Crown
Monitor Speakers: All rooms UREI Time Align 813s, 811s, and 809s; Yamaha NS10s; Auratone, Rogers, JBL, and Tannoy; others also available.
Echo, Reverb & Delay Systems: (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 digital delay 1745; (2) Korg SDD-2000 MIDI sampling digital delay units; (3) Yamaha REV7s.
Other Outboard Equipment: UREI digital metronome 962; (4) UREI LA-4 comp/limiter, UREI LA-2A tube type limiter; (6) UREI 1176 LN leveling amps; Allison Gain Brains; Kepex; Orban/Parasound dynamic sibilance controller 516C; Orban parametric equalizer 622B; Pultec EQP-15 equalizer; Lang PEQ-1 Program equalizers; White 1/3 octave EQs; EXR and 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: including Neumann, AKG, B&K, Crown, Beyer, Electro-Voice, Sony, Sennheiser, Pearl & Shure among many others.
Instruments Available: Synclavier digital music system (see extras), Steinway 6'4" grand piano, Yamaha 7'4" grand piano, Weber tick piano, Hammond organ model B3 w/Leslie, Hohner clavinet, Moog 2034 poly synthesizer, Musser piano, Musser xylophone, Musser "One-Niter" vibes, Ludwig 25-inch, 27-inch, 28-inch and 29-inch tympanis, Fender Rhodes 88 Mark I, Fender Rhodes 73 Mark II, Ampeg B15N bass amplifier, Ampeg SB12 bass amplifier, (2) Roland cube 60 guitar amplifiers, (2) Sonor Signature drum sets, Emulator 2, (3) Yamaha DX7, (2) Roland Juno 106, Roland Jupiter 6, Korg Poly 61M, Chroma, Ensoniq Mirage Sampling Keyboard, Roland MSQ-100 & 700, Roland TR707 and 909, Yamaha RX-11.
Video Equipment & Services: Complete audio-for-video services available. CMX CASS 1 (computer sided sound system); Synclavier; Adams-Smith 2600 5 machine; 2600 3 machine synchronizer; Audio Kinetics "Q.Lock" 7-10 synchronizing system; BTX 4600 synchronizer; BTX 4500 controller; Sony/MCI 1-inch Type C layback machine; Sony BVU 800 3/4-inch VCR; (4) Sony 5800 VCRs; (2) Sony 5000 VCRs; (2) SVT 26-inch RGB video monitors, Sony

PVM 1900 TV monitor; custom Sony Trinitron 19-inch receiver/monitor; (2) Panasonic CT-1910M TV monitor; Conrac 19-inch monitor.

Rates: Negotiable.

Extras: Streeterville's multiple studios serve the broadest array of audio applications. The new Synclavier digital music system supports a diversity of new tools for uses from sfx creation and video sync-to-record pre-production and associated composing/performing. Extras like 100 kHz stereo sampling, a 2-channel SSL programmable equalizer, and nationwide satellite services plus consulting and custom audio and video duplication and distribution complete the range of specialties available. Album credits include the new Johnny Winter releases with a special appearance by Dr. John, plus Roy Buchanan with guest Delbert McClinton, Robert Cray, Albert Collins and Lonnie Mack, James Cotton. National commercial activity featured 7-Up, McDonalds, Sears, Michelob, Bud Light, Strohs, Lowenbrau, Turtle Wax, Popeyes, State Farm, Amentech, True Value and United Airlines.

Direction: Recent strides into digital synthesis (Synclavier) complement two decades of delivering world class audio to a diverse community of music and production clients. This is in keeping with a tradition of "having answers and options" to meet any audio challenge from the simplest to the most complex tracks for records, r-tv, film. A cutting-edge commitment to audio-for-video led us to CMX which beta-tested its advanced time-code based audio production system here. Both the CASS 1 and Synclavier demonstrate the marriage of advanced technology to Streeterville's people, who add the next dimension of professional service that technology alone cannot render.



STUDIO A RECORDING
Dearborn Heights, MI

[24+] STUDIO A RECORDING
5619 N. Beech Daly Rd.,
Dearborn Heights, MI 48127
(313) 561-7489

Owner: Studio A Recording, Inc.
Studio Manager: Marilyn Morgeson
Engineers: Eric Morgeson, John Jaszcz, Eric Livengood, Bill Brooks.

Dimensions of Studios: 40 x 30 (John M. Storyk design).
Dimensions of Control Rooms: 25 x 22 (John M. Storyk design).

Tape Recorders: (2) MCI JH-114, 24-track; MCI JH-110 1/2-inch, 2-track; Mitsubishi X-80 digital, 2-track; Studer B-67, 2-track; Sony TC-K555, cassette decks, Sony PCM F-1, digital 2-track.

Mixing Consoles: MCI JH-528, 28 x 28; Soundcraft 200B, 32 x 4.

Monitor Amplifiers: (2) Hafler P225, Crown PSA-2.
Monitor Speakers: UREI 813s, Yamaha NS-10M, JBL 4311, Auratone 5-C.

Echo, Reverb & Delay Systems: Klark-Teknik DN-70, AMS RMX-16, Lexicon 200, Yamaha REV7, Ursal Major 8 x 32, Lexicon Prime Time 93, DeltaLab CompuEffectron, (2) PCM42.

Other Outboard Equipment: Roland SBX-80, Aphex Compellor, Eventide Harmonizer, (2) dbx 160X, dbx noise reduction, Valley People Dyna-Mite, Aphex Compellor, Valley People Dyna-Mite, (7) Valley People Kepex gates, (2) Valley People Maxi-Q EQs, (2) Yamaha SPX-90, Aphex limiter/compressor, Orban de-esser, Aphex Exciter, (2) dbx 163, (2) dbx 160.

Microphones: Neumann U87, U47, AKG 414-EB, 451-E; Sennheiser 421; Sony ECM-9-P, Sony ECM 22-P; Shure SM57, SM58; E-V DO-54, E-V DS-35, 635; Crown PZMs.

Instruments Available: Synclavier digital music system: 16 polyphonic voices, sample-to-disk option, 16 FM voices, eight multichannel outputs, 80 megabyte winchester, SMPTE and MIDI options, Linn II drum computer, 1936 7-ft. Steinway B grand piano, Roland JX8P w/programmer,

Prophet 2000, TX7, Fender Delux amp, Acoustic 150, Peavey Standard, 5-piece Ludwig drums, assorted percussion.
Rates: \$85/hr.

Extras: Synclavier based SMPTE/MIDI 24-track key board room with Soundcraft 200B console.
Direction: State-of-the-art in recording technology.

[24+] THE STUDIO/CHROMATIC SOUND

also **REMOTE RECORDING**
8431 Lydia, Kansas City, MO 64131
(816) 523-8199, (913) 469-8424

Owner: Evan Smalley, Leo Johns, Tim Godfrey
Studio Manager: Evan Smalley, Leo Johns

[24+] STUDIO DE LUX

West Bloomfield, MI 48033
(313) 855-2942

Owner: Rick Stawinski
Studio Manager: Bill McKinney

[24+] STUDIO M MINNESOTA PUBLIC RADIO

45 E. 8th St., St. Paul, MN 55101
(612) 293-5453

Owner: Minnesota Public Radio
Studio Manager: Tom Mudge
Engineers: Tom Voegel, Tom Mudge, John Scherf, Scott Rivard, Preston Smith.

Dimensions of Studios: 45 x 35 x 30.

Dimensions of Control Rooms: 23 x 17

Tape Recorders: 3M 32-track digital mastering system [32-track recorder, (2) 4/2 track recorders], Otari MTR 9011, 24-track; (4) Otari MTR 10, 2-track; MCI JH-110B, 4/2-track; Otari MTR 12 w/SMPTE center stripe, 2-track.
Mixing Consoles: Neve 51 M/36, 36 x 36 x 36; MCI JH-636 VU automated console 36 x 24 x 36.
Monitor Amplifiers: S80/SR 200 programmable, JBL 6290.

Monitor Speakers: Genelec I022A, JBL 4430s, Westlake BSM-4.

Echo, Reverb & Delay Systems: (2) Lexicon 224X w/LARC, EMT 140, Ecoplate I and II, (2) Lexicon PCM 42 delay, (2) Eventide 969 Harmonizer.

Other Outboard Equipment: (4) Indent parametric EQs, (2) Eventide 969 Harmonizer, Marshall Time modulator, (2) Audio and Design recording compex limiter, (2) Audio and Design Recording Scamp Rack with 17 mods, (4) LA4A 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/CK 1; (4) AKG 414, (7) AKG 567, (4) Sennheiser 421; (4) Shure SM57, (2) Shure SM58, (2) Shure SM81.

Instruments Available: Steinway 9-ft. grand with Alpha

—LISTING CONTINUED ON NEXT PAGE

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Circle #090 on Reader Service Card

—CONTINUED FROM PAGE 137

acoustics, Rhodes 88 electric piano, Pearl drums w/Paiste cymbals, ARP 2600 synth.

Video Equipment & Services: Cipher Digital (BTX) "Soft-touch" Shadow Interlock System, IVC ¾-inch (CR 8250) video recorder. Services: 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 300

233 E. Erie, Chicago, IL 60611
(312) 664-6057

Owner: TMK-Elias Music
Studio Manager: Joe Ott, Roselle Crane

[24+] STUDIO WEST

25005 W. 129th St., Olathe, KS 66061
(913) 782-3379

Owner: G. West
Studio Manager: G. West

[24+] STUDIO MEDIA RECORDING COMPANY

1030 Davis St., Evanston, IL 60201
(312) 864-4460

Owner: Consortium, Ltd.
Studio Manager: Benj. Kanfers, Scott Steinman
Engineers: Benj. Kanfers, Scott Steinman, David Appell, Sam Fishkin, Jeff Meyer, Mike Weyna
Dimensions of Studios: (A) 600 sq. ft.; (B) 325 sq. ft.; (Live Room) 375 sq. ft.

Dimensions of Control Rooms: (A) 450 sq. ft.; (B) 275 sq. ft.

Tape 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.

Mixing Consoles: (A) Trident Series 80B, 32 x 24 x 24; (B) Trident Series 65, 24 x 8 x 16.

Monitor Amplifiers: (A) Threshold S1000s, BGW, and Crown; (B) Crown and BGW.

Monitor Speakers: (A) UREI 813; (B) UREI 811B; Others: Yamaha NS-10, E-V Sentry 100, JBL 4311, JBL 4313, and Auratones.

Echo, Reverb & Delay Systems: Ecoplates I, II, and III, Lexicon Model 200, Lexicon PCM 60, 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, Studio Technologies AN-1s, AN-2 stereo simulator.

Other Outboard Equipment: UREI LA-4, 1176, 1178, dbx 160; Gain Brain comp/limiters; Kepex and Omni Craft noise gates; Orban de-esser; Furman parametric; White graphic EQs; EXR Exciter; UREI digital metronome, Audio Arts parametric EQ.

Microphones: Neumann tube, Neumann, AKG, Sennheiser, Beyer, Shure, E-V, Coles, Wnght, Crown.

Instruments Available: Baldwin SF10 7-ft. 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 & Services: RCA VHS recorder, Sony Trinitron monitor. No video services.

Rates: Available upon request.

[24+] SUMA RECORDING STUDIO

also REMOTE RECORDING
5706 Vrooman Rd., Painesville, OH 44077
(216) 951-3955, 352-9802

Owner: Kenneth R. Hamann
Studio Manager: Michael J. Bishop

[24+] TAKE 1 MEDIA SERVICES

also REMOTE RECORDING
4900 Euclid Ave., Cleveland, OH 44103
(216) 431-1444

Owner: Jeff Kassouf, Philip A. Salem
Studio Manager: Thomas M. Creter

[24+] TANGLEWOOD RECORDING STUDIO

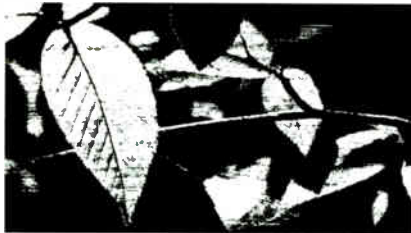
also REMOTE RECORDING
9520 W. 47th St., Brookfield, IL 60513
(312) 485-0020

Owner: Tony Hugar
Studio Manager: Tony Hugar

[24+] 3G'S INDUSTRIES & RECORDING

STUDIO "55"
5500 Troost, Kansas City, MO 64110

NORTH CENTRAL



24+ TRACK STUDIOS

(816) 361-8455

Owner: 3G's Industries Inc.
Studio Manager: Eugene Gold

[24+] 3001 STUDIOS

also REMOTE RECORDING
3001 Indianola Ave., Columbus, OH 43202
(614) 262-3001

Owner: Jeff Gastineau
Studio Manager: Dole Shaffer
Extras: 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.

Direction: 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 PRODUCTIONS "STUDIO 300"

233 E. Erie, Chicago, IL 60611
(312) 664-6057

Owner: Ted Kay, Sheldon Elias
Studio Manager: Joe Ott

[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 of Studios: 40 x 20 (20-ft. ceiling, 3 iso booths)

Dimensions of Control Rooms: 18 x 16 (12-ft. ceiling, LEDE room)

Tape Recorders: Otari MTR-90-II, 24-track; Otari MTR-12, ¼-inch & ½-inch 2-track; Otari MX-5050B-II, 2-track; (3) Tascam 122-B, cassettes.

Mixing Consoles: Harrison MR-4, 36 x 24.

Monitor Amplifiers: UREI 6500, Hafler 500, Hafler 220.

Monitor Speakers: UREI 813-B, Yamaha NS-10, Auratones, UREI 813, (playback/studio).

Echo, Reverb & Delay Systems: Quantec Room Simulator, Lexicon 200 digital reverb, Studio Technologies Ecoplate, Lexicon 92 DDL, Lexicon Prime Time, Eventide 949 Harmonizer, DeltaLab DL-4.

Other Outboard Equipment: (2) dbx 160X, (2) dbx 165, (2) UREI 1176 compressors; Drawmer DS-201, Symetrix 522, Omni Craft GT-4 gates; Orban 622B, Ashly SC-66A EQs; UREI 964 metronome; UREI 1122 preamp; Studio Technologies AN-2 stereo simulator, Yamaha SPX-90 digital effects processor.

Microphones: Neumann KM84, KM54, KM53, U47, U87, SM2, M49; AKG 451, 460, 414, C12-A, C535; Sennheiser MD-421; Shure SM57; Crown PZM, Electro-Voice RE20.

Instruments Available: Yamaha C-7 piano, Yamaha DX7 synthesizer, Sonor drums, misc. guitars and synths available upon request.

Rates: Call for quotation; very flexible for block time.

[24+] TRAX 32 RECORDING STUDIO

also REMOTE RECORDING
11249 N. Riverland Rd., Mequon, WI 53092

(414) 242-9010

Owner: Paul Edwards
Studio Manager: Darrell Klompmaier

[24+] TRC RECORDING STUDIOS

also REMOTE RECORDING
5761 Park Plaza Ct., Indianapolis, IN 46220
(317) 845-1980

Owner: TRC Corp.; Gary Schatzlein, pres.
Studio Manager: Michael Bryant
Engineers: Andrew Symons, Alan Johnson, Kevin Van Wyk, Michael Bryant, Eric Worrell.

Dimensions of Studios: (A) 34 x 43 x 13; (B) 30 x 35 x 14.

Dimensions of Control Rooms: (A) 19 x 22 x 14 (LEDE); (B) 17 x 17 x 11.

Tape Recorders: (2) MCI JH-24/16, 24-track; (3) MCI JH-110 B, 2-track; Studer A80, 2-track; Studer/Revox PR99, 2-track; Studer A80, 4-track; Aiwa 990, cassette; Ampex 301, mono.

Mixing Consoles: Harrison 3232 (w/Allison 65K automation), 26 x 24; Sound Workshop 34B, 32 x 24 w/ARMS II automation.

Monitor Amplifiers: (A) Biamped w/Crown PSA-2 (low), DC300A (hi) and JBL 5234 crossover; (B) Accoustat MOS-FET 200; Crown D150s on all foldback systems.

Monitor Speakers: (A) JBL 4435, NS-10Ms, Auratones; (B) JBL 4435, NS10Ms, Auratones.

Echo, Reverb & Delay Systems: Lexicon PCM 60, EMT 140TS, Lexicon Model 97 Super Prime Time, Audio Digital TC-2, Eventide 949 Harmonizer, Eventide 910 Harmonizer, (2) UREI Cooper Time Cube, DeltaLab Effectron 1050, DeltaLab DL-2, Eventide flanger, Eventide phaser, Klark-Teknik DN780 w/2.0 software, (2) Yamaha REV7, Yamaha SPX90.

Other Outboard Equipment: (8) UREI 1176, (2) UREI LA-3A, (2) UREI LA-4A, (2) ADR lim/comp, (8) ADR noise gates, (2) ADR de-essers, ADR parametric EQ, (2) White 4001 EQs, (2) UREI ½ octave EQs, ADR auto panner, UREI metronome, Aphex I & II, Garfield electronic metronome, Allison 65K automation (A), ARMS II automation (B), 2 channels of Dolby A, 16 channels of dbx 187.

Microphones: Neumann U86s, U87s, U47, KM84s, KM85s; AKG 414 EBs; Schoeps CMT SSs; Sennheiser 421s, 441s; Shure SM57s; E-V RE20s, RE16s, RE50s, E-V "Damion" 666; assortment of custom-built active & passive direct boxes.

Instruments Available: Kawai 6-ft. grand piano, Baldwin 9-ft. grand piano, Fender Stage Rhodes (w/suitcase), Emulator SP-12 drum machine, Oberheim FVS, Yamaha DX7 and TX7, Roland SBX-80 master synchronizer, Roland MSQ-700 sequencer, Casio CZ-101, Emulator II, Fender Telecaster, Ampeg B-15 amp, kazoo.

Video Equipment & Services: Sony SV5600 ¾-inch VTR, MCI JH-45 synchronizer (available), Panasonic video monitor.

Rates: (A) \$140/hr.; (B) \$130/hr.

[24+] TRI-ART RECORDING

H.C. 9 Box 274, Bismarck, ND 58501
(701) 223-7316

Owner: Bill Townsend
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 of Studios: A: 38 x 24, B: 18 x 21, C: 5 x 10.

Dimensions of Control Rooms: A: 22 x 21, B: 18 x 13, C: 10 x 10.

Tape Recorders: Otari MTR-90 II, 24-track; Tascam 58, 8-track; MCI JH-110B, 2-track; Nakamichi DMP 100, 2-track; Revox PR-99, 2-track; Tascam 52, 2-track; Otari MX-5050B, 2-track; Tascam 440B, 4-track; Tascam 122B, cassette; Eumig FL 1000, cassette.

Mixing Consoles: MCI JH-528B w/ auto, 24 x 24; Tascam 520, 20 x 8; Tascam 512, 12 x 8.

Monitor Amplifiers: UREI, Technics, Crown.

Monitor Speakers: UREI 813s, JBL 4411, Auratone, Fostex.

Echo, Reverb & Delay Systems: EMT 240, Lexicon 224XL, UREI 927, Ursa Major SST282, Lexicon PCM60.

Other Outboard Equipment: UREI 1176, 546, LA-3A, LA-4; Eventide H949, Dolby and dbx.

Microphones: U47 FET, U48, U67, U87, KM83, KM84, SM57, SM81, SM5B, D-12E, C414, C-452, PZMs, RE16, M500.

Instruments Available: Yamaha 7 grand piano, Rhodes, Rogers drums.

Video Equipment & Services: U-matic, Beta, VHS, Proton monitor, TimeLine synchronizer.

Rates: Available upon request.



UNITED RECORDING STUDIO
Kansas City, KS

[24+] **UNITED RECORDING STUDIO**
4024 State Line, Kansas City, KS 66103
(913) 262-3555
Owner: David H. McQuitty
Studio Manager: Dann E. Haworth
Engineers: Dann E. Haworth, Dan Billings, Mike Green
Dimensions of Studios: 24 x 20
Dimensions of Control Rooms: 20 x 16
Tape Recorders: MCI JH-24, 24-track; MCI JH-110: 2-track; Tascam 70H8, 8-track
Mixing Consoles: Harrison MR-4, 36 x 24
Monitor Amplifiers: Hafler, Phase Linear
Monitor Speakers: UREI 813B, Yamaha NS-10M, Auratone.
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, Smau.
Instruments Available: 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.

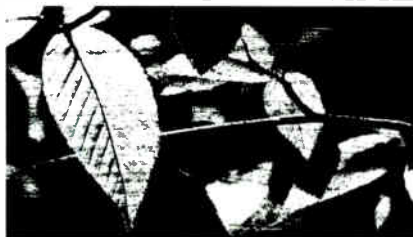
[24+] **UNITED SOUND SYSTEMS, INC.**
5840 Second Blvd., Detroit, MI 48202
(313) 832-3313
Owner: Don and Will Davis
Studio Manager: Don White, Mike Iacopelli



UNIVERSAL RECORDING CORP.
Chicago, IL

[24+] **UNIVERSAL RECORDING CORP.**
46 E. Walton, Chicago, IL 60611
(312) 642-6465
Owner: Murray R. Allen
Studio Manager: Foote Kirkpatrick
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 of Studios: (A) 45 x 60; (B) 20 x 40; (C) 15 x 20; ("Backroom") 9 x 12.
Dimensions of Control Rooms: (A) 30 x 25, (B) 30 x 25, (C) 20 x 8; (BR) 20 x 12.
Tape Recorders: Mitsubishi X850, 32-track; (2) Mitsubishi X80 digital, 2-track; 3M digital, 32-track; 3M digital, 4-track; (4) MCI analog, 24-track; (B) Ampex analog ATR, 2/4-track; (16) Ampex analog 440: 1/2/4-track; (4) Scully analog, 1/24-track; Ampex analog 120C, 16/24 track, Otari M90, 24-track.

NORTH CENTRAL



24+ TRACK STUDIOS

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.
Echo, Reverb & Delay Systems: Quantec, Lexicon 200, (6) EMT plates, four rooms, (3) Lexicon 224X, Eventide 2016, (3) Harmonizers 944, Lexicon-Eventide.
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, C12, C24. Over 200 mikes to choose from.
Instruments Available: Epsendorfer 9 1/2-ft. imperial grand piano, (3) Steinway grands, (3) Fender Rhodes, celeste, tympani, (2) Sonor drum kits, also Ludwig & Slingerland; tack piano, synthesizers, Hammond B3, Synclavier 32 out.
Video Equipment & Services: C Format, BTX Softouch, BTX multi-machine sync, controllers, Shadow T, jam sync generators, house sync, 1 inch, 3/4-inch, 2-inch audio.
Rates: (A) \$220/hr.; (B) \$210/hr.; Backroom, \$150/hr.; Softouch, \$50/hr.; digital, \$50/hr.
Extras: 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.
Direction: Universal is one of the largest, full-service audio facilities in the world. With two film mixing theatres, a video-sweetening facility, a cassette duplicating factory, a location film crew, Universal offers the most complete audio service in the country. Among our most recent recording projects are albums by Chi-Lites, Champaign, The Police, Weather Report.

[24+] **UNIVERSITY OF IOWA**
RECORDING STUDIOS, SCHOOL OF MUSIC
2057 Music Bldg., Iowa City, IA 52242
(319) 353-5976
Owner: The University of Iowa
Studio Manager: Lowell Cross, Peter Nothnagle

[24+] **WALNUT ROAD STUDIOS**
9 Walnut Rd., Glen Ellyn, IL 60137
(312) 469-5118
Owner: Donn Marier
Studio Manager: Dominic Buscemi

[24+] **WASSON'S STUDIO**
also **REMOTE RECORDING**
124 N. Pine, Boonville, IN (near Evansville) 47601
(812) 897-2102
Owner: Phil Wasson
Studio Manager: Vince Emmett, Phil Wasson
Engineers: Phil Wasson, Paul Meserve, Vince Emmett, John Williams
Dimensions of Studios: 16 x 25 main, 6 x 10 iso., 6 x 6 iso.
Dimensions of Control Rooms: 17 x 11.
Tape Recorders: MCI JH-24, 24-track; Otari MTR-12, 2-track, Sony digital PCM-F1, 2-track; Tascam 80-8, 8-track; Tascam 42, 2-track.
Mixing Consoles: Harrison Raven, 24 x 24; (2) Tascam M-35, 8 x 4.
Monitor Amplifiers: Crown DC300, Crown DC60, Yamaha 2200, Yamaha 2100, Yamaha 2150.
Monitor Speakers: UREI 811, JBL 4312, Yamaha NS-10, Auratone.
Echo, Reverb & Delay Systems: Lexicon 200, Lexicon PCM60, DeltaLab D14, Effectron III, Eventide Harmonizer H910, MXR System II, (2) Furman comp./limiters, Rane RA27, dbx 900 w/903 comps., 904 gates, Omni Craft GT-4 noise gates.
Other Outboard Equipment: Commodore 64 w/Sequential Circuits MIDI interface and Passport MIDI interface, Boss SC700 computer controlled effects switcher w/SC 700F foot controller.
Microphones: AKG C34 stereo, AKG 414, AKG D12, Electro-Voice RE20s, RE15, Sennheiser 441s, 421s, 409s, Shure SM57s, SM81s, SM7s.
Instruments Available: Baldwin 6'3" grand, Pearl 5-piece drum kit w/Ludwig snare, Zildjian and Paiste cymbals, Hammond M-3 organ, Ensoniq Mirage, Sequential Circuits Prophet 600, Sequential Circuits Drumtraks, Mesa Boogie 100 w/60 w/stack Marshall 50W stack, (2) Fockmans, Sechecter Tele and Strat; Harpstone acoustic, Yamaha bass guitar.
Video Equipment & Services: Available on contract basis.
Rates: \$50/hr. 24-track; block time available. Remote on contract basis.

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(216) 289-1900
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Studio Manager: Dale Peters

[24+] **WESTWOOD SOUND STUDIO**
4300 Watertown Rd., Maple Plain, MN 55359
(612) 475-3152
Owner: James Johnson
Studio Manager: Sharon Johnson

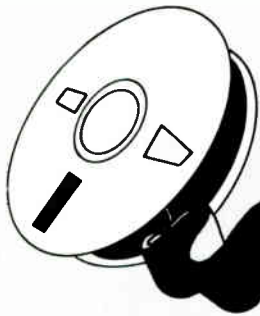
[24+] **WOODLAND WEST RECORDING STUDIOS**
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20260 W. 114th Terr., Olathe, KS 66061
(913) 829-2527
Owner: Woodland West Inc.
Studio Manager: Jack Black
Engineers: Chris Bauer, Guido Toledo, Jack Black, Dave Sturm, and others.
Dimensions of Studios: A: 24 x 30 x 15, iso.: 10 x 12 x 10; 8 x 12 x 10; B: 12 x 10 x 10.
Dimensions of Control Rooms: A: 20 x 18 x 12; B: 12 x 12 x 10.
Tape Recorders: MCI JH-114, 24-track; Otari MKIII, 8-track; Otari 5050B, 2-track; Otari 5050B, 2-track.
Mixing Consoles: Bauer custom console 24 x 24, Audio-Arts 8X, 28 x 8 x 28.
Monitor Amplifiers: Crown D-300, (3) Crown D-150s, Crown D-75, Crown D-60, BGW 150.
Monitor Speakers: Custom JBL-Heil tri-amp w/Audio Logic 3-way X-over, JBL 4313, Yamaha NS-1000, Auratone 5C, Koss Dyna-mite.
Echo, Reverb & Delay Systems: (2) Yamaha REV7s, Lexicon PCM60, AKG BX-5, DeltaLab DL-4, (2) DeltaLab DL-1s.
Other Outboard Equipment: (2) dbx 160 comp./limit., (2) Ashly SC-50 comp./limit., (2) Ashly SC-33 noise gates.
Microphones: (2) Crown PZM, (2) Electro-Voice RE20s, (2) AKG 535, (2) Sennheiser 421, (3) Sennheiser 441, (2) AKG D-12E, AKG 451.
Instruments Available: We work with local music stores to provide a variety of instruments.
Video Equipment & Services: NEC 1901 monitor, NEC VC 739 E Beta Hi-fi.
Rates: Call for quote.

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(618) 544-7898
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Studio Manager: Ron Wheeler



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(312) 656-1544
Owner: Edward Zajda
Studio Manager: Sue Zajda
Engineers: Ed Zajda, Jennifer Zajda
Dimensions of Studios: 30 x 24
Dimensions of Control Rooms: 16 x 10
Tape Recorders: Otari MTR-90 Mk II, 24-track; Ampex ATR-102, 2-track; (2) Akai GX-91, cassette.
Mixing Consoles: Tangent 3216, 24 x 16
Monitor Amplifiers: Crown D75, (2) Bryston 4B



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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, Electro-Voice, Sony
Instruments Available: Yamaha electric concert grand piano, Ludwig drums, Kurzweil 250 w/ Apple Macintosh; E-mu SP-12 drum computer; Roland drum pads.
Video Equipment & Services: Upon request.
Rates: No "extra charge" for all available equipment or musical instruments.
Direction: Our main goal is to give the highest quality of sound and service at a fair price to our clients.



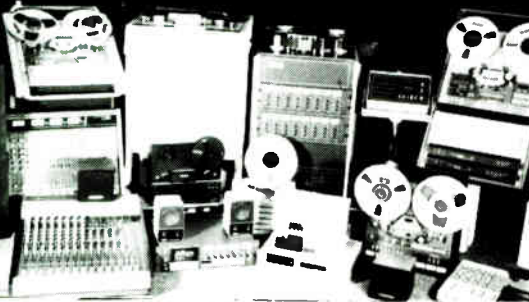
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Chicago, IL

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(312) 944-3600

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Studio Manager: Richard A. Coken
Engineers: Ric Coken, Mike Moats, Joel Sears, Chuck Rapp, Pete Gale, Chns Field, Jim Moore, Curt Frisk, Shawn Snowden, Luis Quiroz, Tom Labus, Chns Pawlak, Michelle Linsner, Hans Wurman, Dick Girvin.
Dimensions of Studios: (Square feet) A: 1040; C: 165; D: 85; V: 75; Theater 1: 50; Theater 2: 60.
Dimensions of Control Rooms: (Square feet) A: 315; C: 165; D: 155; V: 280; (1) 675; (2) 660.
Tape Recorders: Ampex MM1200 24- and 8-track; ATR-100-4, 2- and full-track; ATR 440-4, 2 and full-track; AG350 full-track; MCI JH-16 2-inch, 16-track; Scully 280B, 8-track; Scully 280-4B 2 and full-track; Nagra 4.2 recorders; Otari MX70 1-inch 16- and 8-track; Studer A80 1-inch layback; Tascam: 122B and 133 cassette decks; Mod. 34 and 40-4, 4-track; and A/V format and NAB cart machines.
Mixing Consoles: Trident Series 80, 24 x 24 x 24; NEOTEK Series 132 x 8 x 8 film post; ADM 24 x 16 x 16; 16 x 3 x 3 Filmpost, Auditorionics, 10 x 4 x 4; Electrodyne, 16 x 8 x 16.
Monitor Amplifiers: Crown Micro-Tech 1000s, D150s, 30-30s; UREI; McIntosh; Tapco; Altec.
Monitor Speakers: UREI 811B, 809; E-V Sentry III; JBL 4411; Altec 605, A7; Fostex RM780; Auratone 5C.
Echo, Reverb & Delay Systems: EMT, Eventide, Audio-Digital; DeltaLabs; UREI; Orban.
Other Outboard Equipment: UREI 1176, 1178, Dip Filter, parametric and graphic EQ, digital metronome, Orban 516 de-ess, 672 paragraphic, 245E stereo synth, Valley People and Allison Gain Brain (I and II), Kepex (I and II), Valley People 440; dbx 155, 160, 165; plus Studer telephone hybrid; Dolby/dbx N.R.; Omni Craft; White; Pultec; Magna-Tech; A&D Scamp; Prmms/Ramko; Polyfusion; Teltronix; Burwen; Kudelski; EXR; Audio Precision System One.
Microphones: Neumann, AKG, Schoeps, Sennheiser, Sony, PML, Shure, Electro-Voice, and RCA.
Instruments Available: Yamaha DX7, Moog and ARP synths, Hohner clavinet, Steinway grand, Musser celeste, Pearl drums.
Video Equipment & Services: Film: Magna-Tech 33mm/16mm 6-, 4-, 3-track and stripe recorders and dubbers, 150 Series Automated Dialogue Replacement, resolvers distributors and recorders; MTM 3-track and mono recorders; Magnasync recorders and dubbers; Westrex 33mm and 35-32 optical cameras; Phillips and JAN xenon projection; Moviola upright and flatbed editors; 16mm edge and center track capabilities. Video: BTX Shadow and Otari synchronizers; BTX Cypher and 5400 SMPTE generators; Sony VPH 1020Q Projection, BVU 800 and 5800 Umatics; Panasonic AG6300; NEC NTC 10B; VITC and Lockbox capabilities. Services: Film and video mixing, scoring, effects Foley and voice-to-picture and transfer.
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—FROM PAGE 37, VCRs

IDs for on-air promo purposes. They're getting a little more sophisticated because most of the stations have gone to stereo format.

"We have an Adams-Smith 2600 synchronizer interlocked to a Sony VO-5600 3/4-inch recorder, along with three slaves ATRs. We just use the 3/4-inch format for work tapes; for one-inch layback we send the 3/4-inch tape over to E.D.R., the video production house which is our parent corporation. We didn't really choose the 5600; we got it from E.D.R. We only use it in our viewing room, where a client can preview their project on a Sony Trinitron monitor.

"What we've got in our control room is a brand-new JVC CR850U, an audio edit master on 3/4-inch format. We chose it for its editing capabilities, and because it has three channels of audio, which we need so we can do the stereo program on channels one and two, and SMPTE time code on channel three. It's a wonderful machine, very high-end. When you're interlocking, you're at the mercy of machines that are chasing and talking to one another; so you need a machine that's very responsive, which can locate quickly. This one does it. It's expensive, about \$9,000, but it's still a lot less than the Sony."

—FROM PAGE 39, MAX HEADROOM

that Laurie Anderson employs on albums.

But it's not all techno-babble. Headroom has a history, along the lines of those "Secret Origins" issues of comic book super-heroes; in fact, it's remarkably similar. According to the script, Max began life as Edison Carter, ace investigative reporter for a Brit *20/20*-type show. He uncovers a video technique called "blipverts" which condenses 30 seconds of advertising into three seconds. Unfortunately, this also causes some viewers to spontaneously combust. But business is business, and the media moguls set out to off Carter before he can spill the beans. After a climactic motorcycle chase, Carter smashes up the bike in a seemingly fatal accident. The last thing the doomed reporter sees is a sign: "Max Headroom: 2.3 Meters." The network's head of R&D claims the decapitated noggin and using some techno-magic (son of *They Saved Hitler's Brain!*) converts him into a computer-simulated character who calls himself... well, you get the idea.

So do a few others. Like *Batman* before him, Max Headroom is the perfect media-hype Manchurian candidate: a (literally) manufactured celebrity from whom a manufactured past is expected; the more absurd, the better. His DJ-scratch patter is Cal Wor-

thington/Crazy Eddie speed-schtick; like Road Runner, you laugh more at his dust than his presence.

And automatons are easy to relate to—they're so *human*. As with Charlie McCarthy or Howdy Doody, you forget who's pulling the strings. You're wrapped up in the medium, not the message. He's the perfect cartoon for a video generation. Until Max drops one, like when he was kidding Sting about using "real jazz musicians" on his solo LP. "How very trendy," he taunted. When Max inquired about the "quote political unquote" aspect of the LP, Sting said, "Well, I'm 33 and feel that certain things need to be said." Max quick-takes and bites: "Yeah, like you're 33."

After a brief flurry of media availability, Frewer became "unavailable," according to Cinemax, who seemed anxiously protective of their tube troll, and Peter Wagg remained equally aloof. And the techno-types, it seems, are playing it equally close to the chest, guarding their Frankenstein from the peasant's torchlight—and pitchforks. But perhaps that's just as well, since as with all the classic screen monsters, the primary *frisson* comes from their potential for eluding their masters' control. We'll see.

Until then, c-c-catch the waveform.

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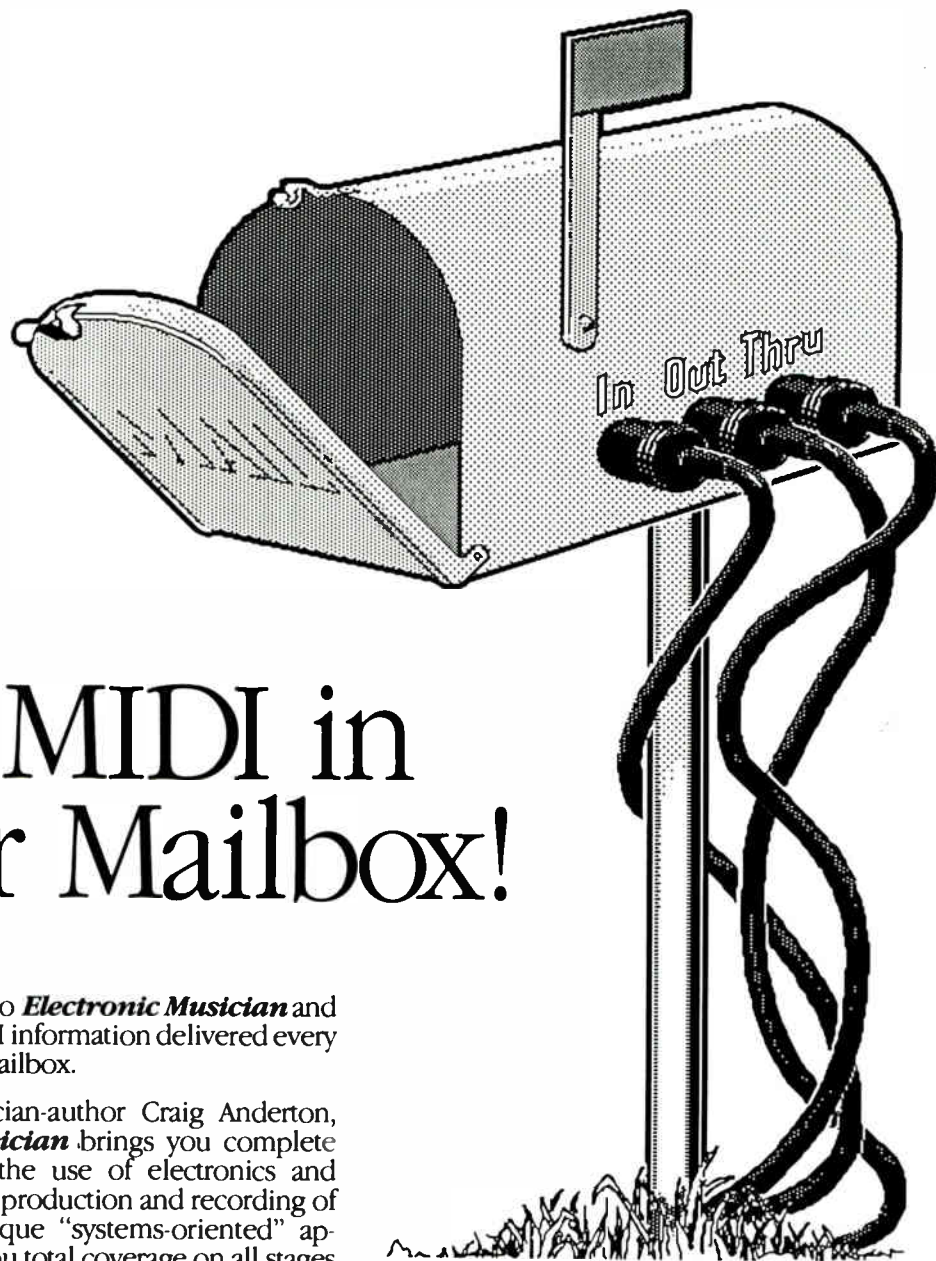
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Twin Cities Music

PRINCE IS JUST THE TIP OF THE ICEBERG

by Jon Bream

Mention Minneapolis to people in the music business and they immediately think of Prince. But he is merely the tip of the iceberg of the Twin Cities music scene.

Since Prince's career exploded with *Purple Rain* in the summer of 1984, 19 acts from the Land of 10,000 Grooves have been signed to big-time recording contracts for the first time. (By comparison, only three locals garnered contracts in the two years prior to *Purple Rain*.) The newcomers range from bombastic synthesizer noodler Yanni and homespun humorist Garrison Keillor to up-from-the-garage heroes Husker Du and pretty-boy rockers Limited Warranty, 1985 grand-prize winners on TV's *Star Search*. In addition, songwriters/producers Jimmy (Jam) Harris and Terry Lewis have become the hottest team in the business with their Flyte Tyme Productions claiming six hits in *Billboard's* Hot 100 in one week this summer.

Yet, except for A&R staffers who have MSP on their itineraries, many people in the music industry don't realize that Twin Cities has become a burgeoning non-coastal music center. Says guitar ace Leo Kottke, who has been on major labels longer than any other Twin



PHOTO: JEFF KATZ

King of the Minneapolis music scene, Prince Rogers Nelson

Cities musician: "There's something about here that either quiets down the chatter you might hear, or something about the way people view it from the outside that keeps it a murmur instead of a phenomenon, which it must be."

There may be more musical talent per capita among the 2.2 million people in the metro area of Minneapolis and St. Paul (the Mississippi River separates the two cities) than in any market in the country. Credit, among other things, the early example set by native son Bob Dylan (he still summers on his exurban Minneapolis farm), strong institutional and corporate support of the arts, a wealth of rooms offering live music, the Midwestern work ethic and the discouraging winters that encourage musicians to stay inside and practice.

Of course, Prince is the king who knights the locals for stardom. Nearly half of the acts with new major label deals have been directly or indirectly associated with Prince. He fathered the Time, which split up after *Purple Rain* hit the screens and before the band reached its commercial peak. Three former Time keepers now have solo careers—Morris Day on Warner Bros. (he headed to Beverly Hills two years ago), Jesse Johnson on A&M and St. Paul Peterson on MCA. Johnson in turn has produced R&B and dance-club hits for TaMara and the Seen, which is fronted by long-time Twin Cities barroom singer Margaret Cox. After the Time expired, Prnced formed the Family around Peterson, who fled for a solo career after one album.

Harris and Lewis were original mem-

bers of the Time before they found the good grooves on their own in the studio. In the past three years, they have turned out a series of R&B smashes for Janet Jackson, S.O.S. Band, Cherrelle, Thelma Houston and others in their recently built Flyte Control Studios and before that in Creation Audio, which used to be located in a basement in a suburban Bloomington house. The only local artist working with Flyte Control is soul crooner Alexander O'Neal (Tabu), who ironically turned down Prince's invitation to front the Time when it was formed in '81.

Current members of Prince's Royal Court have used their cachet to deliver contracts for Twin Cities barroom favorites. Mark Brown, bassist for Prince and the Revolution, created and produced the rocking funkateers Mazarati (Paisley Park, Prince's custom label), and Revolution drummer Bobby Z produced the Suburbs, a dance-rock band that is arguably the Cities' most popular barroom attraction, for A&M.

His brother, producer/engineer David Rivkin, has worked on many of the hit records to come out of the Twin Cities in the 1980s. He has been involved with Prince as an engineer, editor and arranger since the wunderkind's 1976 demo tape led to a deal with Warner Bros. Rivkin engineered "Funkytown," the international smash

for Lipps, Inc. in 1980, and co-produced the Jets, the family band of eight brothers and sisters who cruised to the Top 10 this summer with "Crush on You." MCA's Giorgio (one-name solo acts seem fashionable in the Twin Cities) is Rivkin's latest contribution to what has been dubbed "the Minneapolis Sound."

Rivkin, a former A&M staff songwriter who has spent time in studios on both coasts, would be the first to explain that there is no Minneapolis Sound. "It's the sound of ignorance," he says. "It's made up in an isolated atmosphere. We don't steal from someone in L.A. or New York. From the songs to the licks to the engineering techniques to the cheap mics we use, we're so different from everyone else."

Prince and Jesse Johnson record in their own private studios in Minneapolis suburbs. Flyte Control Studios in south Minneapolis are open only to acts working with Harris and Lewis. Mazarati, the Suburbs, the Jets, MCA rocker Melvin James and others have recorded at Metro Studios in Minneapolis' downtown warehouse district. Many of the post-garage bands, including the critically acclaimed Husker Du (Warners) and the Replacements (Sire), record at the Nicollet-Twin/Tone Studios in south Minneapolis, the same building in which Bobby Vee and Dave



Melvin James

Dudley recorded hit singles in the 1960s. A contingent of pop-rock bands favors Blackberry Way studios near the University of Minnesota campus, a mere block away from the site of the coffeehouse where Robert Zimmerman first performed as Bob Dylan. (A Burger King now stands on the site.)

The studios at Minnesota Public Radio in downtown St. Paul are among the classiest of the Cities. Engineer/producer Tom Voegli, who won a Grammy for his work on *Raiders of the Lost Ark*, works there, and *Time* magazine cover-boy Garrison Keillor, the best-selling novelist and host of radio's syndicated *A Prairie Home Companion*, offices in the same building. Yet, Keillor, who is as big a hero to America's yuppies as Prince is to rock and soul fans, went to Nashville to record his first big-time album with producer Chet Atkins.

There are scores of other Twin Cities studios both of the professional and hobby variety. Many are consumed by the thriving jingle business, which makes the Twin Cities the fourth busiest market in the country. One jingle writer and session player, Billy Barber has also found success as a country songwriter penning "Little Things," a '85 chart-topper for the Oak Ridge Boys. Many studios are filled with local musicians making homemade records for their own or regional labels.

Eight-year-old Twin/Tone Records is one of the most widely respected independent labels in the country. The company started with Twin Cities garage-bands (a couple of which graduated to major labels) but now the roster embraces groups from all over the country including Washington's Siick-ee Boys, Milwaukee's R&B Cadets, Cleveland's David Thomas and Minneapolis' favorite sons, Sou! Asylum. Red House Records is a more low-key indie specializing in acoustic music, and Blackberry Way Records is a haven for pop-rock bands.

The record industry has long had a

Twin Cities producers Jimmy Jam (L) and Terry Lewis



strong presence in Minnesota. In fact, the Twin Cities are considered the record distribution capital of America. With Lieberman Enterprises, Pickwick International, K-tel, Musicland, Navarre and Target headquartered in the area, about 30 percent of the records and tapes sold in America pass through the Twin Cities either literally or for billing purposes.

What this budding music center lacks are a variety of first-rate mixing rooms; music publishers, lawyers and managers with major-league clout; and enough work to support more than one stable of session players.

There are active scenes in just about every style of music from classical (Minnesota Orchestra and the St. Paul Chamber Orchestra) and folk (radio's *A Prairie Home Companion* in St. Paul relies on local acoustic players) to reggae (Ipsos Facto was the only U.S. band to play at Reggae Sunsplash in Jamaica this year) and heavy metal (Impaler benefitted greatly from being a target of the Parents Music Resource Center). Jazz, R&B and country musicians would welcome more places to play; of course, all musicians would. Yet there are still more opportunities for more musicians to get a regular paycheck from live performances here than in probably any other major metro area in the country.

Moreover, at least one act in just about every style has a contract with a big-time label: veteran pop singer Michael ("Bluer Than Blue") Johnson is now being promoted as a country act by RCA; guitarist Steve Tibbetts makes avant-garde recordings for ECM; mainstream rockers Fairchild, the Metros and Limited Warranty record for Gold Mountain, MTM and Ato respectively; guitarist Kottke makes folk-cum-new age records for Private Music; Information Society scores in the dance clubs on Tommy Boy; former Prince sideman Andre Cymone tries for new wave-meets-R&B success on Columbia.

Big-time records are not just a recent phenomenon for the Twin Cities. "Six Days on the Road," "Rubber Ball" and "Muleskinner Blues" were all among the hits recorded here in the early '60s. And who can forget the Trashmen's classic "Surfin' Bird," which was recycled this year on a wine cooler commercial. Koerner, Ray & Glover, an influential folk-blues trio in the early '60s, frequented the same Twin Cities coffeehouse circuit as Dylan. Funkster Willie Murphy teamed up with John Koerner for the classic underground LP, *Running' Jumpin' Standin' Still* on Elektra, and later produced Bonnie Raitt's first Warners album in Dave Ray's ad hoc studio on

an island in Lake Minnetonka. Tony Glover went on to record with the Allman Brothers and the Doors, and to write the definitive instructional book for the blues harp.

Nowadays with Prince and Flyte Tyme as the main magnets, Minnesota is attracting musicians from around the country. Most noteworthy are Giorgio, a former New York soul songwriter, and multi-instrumentalist Oliver Lieber, son of the legendary songwriter Jerry Lieber. The scene has also attracted the attention of Minnesota Gov. Rudy Perpich, who might want to change the slogan on state license plates from "Land of 10,000 Lakes" to "Land of 10,000 Grooves." Last year he formed a task force on the music

and recording industries and now his administration is investigating the establishment of an arts high school in the Twin Cities and college curriculum on the music business. The governor would like the Twin Cities to become a Nashville of the North or a Motown of the '80s. But the situation is really more like San Francisco or Boston—cultural melting pots with long, rich traditions of diverse musical scenes that ebb and flow in commercial fortunes but always remain vital.

Jon Bream is pop music critic of the Minneapolis Star and Tribune, and author of Prince—Inside the Purple Reign (Collier, 1984).

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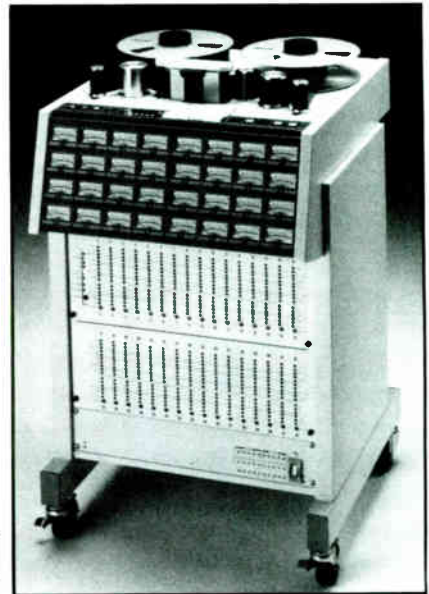
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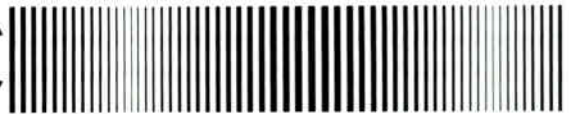
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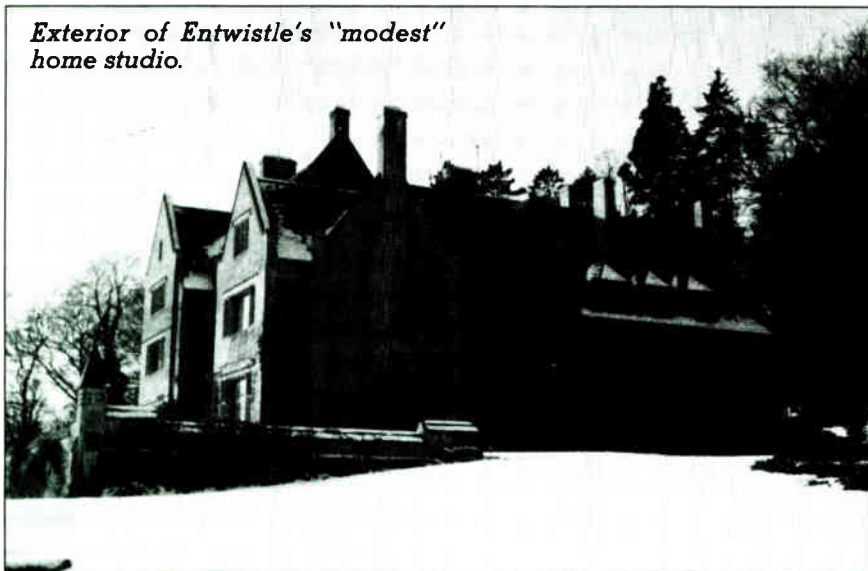
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JOHN ENTWISTLE'S QUARWORLD IS ANOTHER WORLD

by Brooke Sheffield Comer

Thanks to the pyro-paranoia of a previous owner, John Entwistle was spared any major renovations when he converted a drawing room in his country home into Hammer Head Studio. "If the house burnt to the ground, or blew into smithereens, it would cost over two million pounds to replace it," Entwistle remarks. But the chances of fire or explosion are small. "One of the previous owners was petrified of fire, and hated people making noise in the house," he explains. "To quell his fears, he actually gutted the place and fit metal instead of wood wherever he could, with concrete ceilings."

Because Quarwold, Entwistle's Gloucestershire, England country house, was one of the last estates in that area to be built in 1890, the walls are two and a half feet thick. "I really didn't have to do much in the way of insulation," explains Entwistle. "The floors are double floating with wood over two sets of joists, both running opposite ways. This meant we couldn't put in an air conditioning plant, but the rest of the room was perfect." Entwistle lived with his studio-perfect drawing room for seven years before converting it into Hammer Head after the Who broke up. It's now the recording site of The End, Entwistle's new hard-rock band,

featuring American lead vocalist Henry Small, guitarist Andy Barnett, keyboardist Andy Nye and drummer (Ringo's eldest) Zack Starkey.

Hammer Head didn't begin to take shape until the Who moved their Shepperton Studio equipment to Quarwold. "We'd sold our share of Shepperton back to the film business," Entwistle explains, "and I had the equipment brought down here for storage. I've always had demo studios in my London houses, and it occurred to me that with a desk, and a 24-track, I could have a studio in the country too."

Quarwold offered a plethora of possible studio sites, but Entwistle chose the drawing room "because it's the largest room in the house, and the shape was perfect. Since it's narrow at one end, we were able to separate it into a control room and a studio, approximately 15 feet x 20 feet and 25 feet square, with double sliding glass doors. We opted for wooded sliding units instead of metal because they run so smoothly and provide more effective sound proofing. The only trouble is we haven't got a vocal booth, so the singer has to stand between the two glass doors, which is a little restricting."

While planning the design of his studio, Entwistle was determined to keep the room looking like a country

drawing room. "We haven't treated the walls in any way, or changed the decorations," he notes. "Rather than sealing up the windows, we left them all in and double glazed them, and actually opened up two extra windows that had been closed before, because it was easier than filling them in. The only problem with so many windows is that on a nice day, the band will look wistfully outside."

"The original curtains were so heavy that there was no need to buy new ones. We stripped off a square of carpet in the center of the room, so we can lay it down or pick it up. Because one whole side of the room is curtain, we can deaden the room by letting the curtains down, putting in the carpet, and bringing in screens, or remove them accordingly for a live environment."

After nightmarish experiences in dead rooms, John wanted Hammer Head to have maximum live potential. "I used to get claustrophobic when I went into American studios in the '60s and '70s," he says. "They were so padded they made you feel like you had a bad cold. When I set up my first home studio, a consultant told me to soundproof the ceiling and two-thirds of the walls. Once the equipment was brought in, it was dead as a doornail. Everyone I brought in to record ended up screaming at one another after two hours because they weren't getting what they wanted. From that point on, I've made my rooms as live as possible."

Though SSL was making its market debut when Entwistle shopped for a board, research, cost comparison and word of mouth encouraged him to go with an MCI. "I'd heard good things about MCI," he says. "A lot of engineers told me it was the best desk on the market. SSLs were just coming out at that time, but I wasn't keen on spending such a great amount of money on something that I didn't know that much about. We'd used an MCI at Odyssey Studios with the Who, and Bill Symczyk has one in his studio, so I knew the board ran smoothly, and I decided to opt for it." Going with the MCI turned out to be a better deal than Entwistle bargained for. "I got a lot of little extras with the MCI that no one else was offering for the price," he smiles, "and because Sony bought MCI shortly after I made my purchase, the price is now sky high."

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Entwistle (left) with The Who (Roger Daltrey, Keith Moon, Pete Townshend).

Under the pressure of a tight recording schedule, Entwistle hasn't had time to put up his new JBL monitors. "I'm still using my 4312s, though I did get a pair of the bigger ones. I just haven't had the time to install them," he admits. Besides, he tends to favor some of his old gear. "I have the first Lexicon digital reverbs they came out with, and while I'd planned to get the next model they came out with, I found I didn't like them as much as the older ones. I've also got a variety of older harmonizers, phasers and digital delays, including an AMS that only goes up to three seconds on one side which I still keep around. The rest of my 'antique' gear is synthesizers: PolyMoogs and Minimoogs. I've got the first Polyphonic Oberheim that was ever made, serial number 001. Synthesizers evolve so fast, it's hard to keep up. You have to study the market and figure out which ones you'll be able to update."

Studying the market could be a full time job in itself, but Entwistle's trade show appearances to endorse equipment give him a chance to check out new lines. "I endorse a few guitar and amplifier companies, and if I put my name on something, I like to follow it through and help the company out," he explains. "I've designed a new bass guitar, The Buzzard, that's just been released by Warwick, a West German guitar company. It's actually

shaped like a vulture, with a weird head, a wing that goes up in the back, and a claw that comes down from the front." Despite the unwieldy description, John claims that The Buzzard is one of the most comfortable guitars he's ever played. "I designed it using the rough shape of guitars I most prefer to play onstage, then I exaggerated it a bit further, turning the back into a wing and the bottom horn into claws. When you've got it on the claw, the head and wings are very functional. You can actually play it without a strap, by hooking your arm under the back wing. The claw stops it from falling off your lap."

Entwistle's colleagues complain that their home studios make them workaholics, but he hasn't let Hammer Head do him in. In adjacent rooms, a full scale bar puts the local village pub to shame, and a snooker table and assorted video games vie with the MCI for equal action. "I'm in the studio from 2 p.m. to midnight and I don't like to feel stuck in it," he says. "I have an amp set up in my bedroom so if I feel I must play, I can go upstairs. I tend to spend more working time in my London studio, because I can write on my keyboards, most of which are set up there."

Getting on with engineers has never been as much of a problem for Entwistle as finding producers who

won't try to tone down his bass sound. "I haven't ever had trouble with engineers," he confides, "most of whom have redeeming qualities. I'd shy away from someone who didn't know how to work the desk, however. Right now I'm working with Cy Langston, who's been with me for years. He did "The Kids Are Alright," and "Quadrophonia" before coming to work for me exclusively, which is working out quite well."

Producers, he claims, "seem to be frightened of my bass sound, and they take as much top off as they dare until I end up sounding like somebody else. I always believe you can go over the top with bass, because it's one instrument you can turn down on the record. But if the bass isn't there, no amount of turning it up will do any good. If it's too loud, you can simply roll it back into the mix, but nobody else believes this. I know exactly where the bass is supposed to go, usually a few dBs above what everybody wants it to be. But by the time it gets on the record, you lose so much of the warmth. Suddenly you have a record without any bass on it."

Entwistle's mixed feelings toward digital recording have kept him from making any significant investments in that format. "You'll find that on digital machines today, a processor will take a bass sound and say 'I don't like that frequency,' so what you end up with is a bass that's cleaner and louder, but not the one you started out with. The damn thing has a sound of its own. Often, it will smooth out the bottom frequency of bass and bass drum. But I do plan to get more digital reverb units and delays when they're a little cheaper. I can't see paying seven or eight thousand pounds for an AMS. And if someone comes out with a good digital multi-track machine, I'd be interested in looking at that."

Entwistle's first full length LP to come out of Hammer Head is putting the studio to the test. "We're having teething trouble," he admits, "trying to get a certain drum sound, so all the other instruments are direct inject at the moment. When you're using a sampled snare, it's difficult to get a big ambient drum sound unless you're overlaying parts. So we try and get the right parts on the backing track by playing guitars, drums and bass all at the same time, though the whole room is actually being used for the drum sound at the moment with the ambient mics up." The End's new album, scheduled for a summer release on 10 Records in the U.S., will rely primarily on live drums. "It's going to be big music," explains singer/songwriter Small, "far more melodic than metal. John still plays with the same fire as ever." ■

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“CORE WARS”

The Battle for Computer Supremacy

by Craig Anderton

It's been a while since we've covered what *Electronic Musician* author Craig O'Donnell calls "Core Wars"—the ongoing battle for supremacy in the computer market. So, let's take a look at the latest twists and turns, bearing in mind that some of this will no doubt be obsolete by the time the issue appears on the street. We're talking about a fast-moving industry here.

First, though, a quiz. Name the company that introduced a modern, gee-

“There is finally enough serious software for the Amiga and Atari that many people will buy those machines just to run specific software packages.”

whiz computer with a new type of user interface and excellent graphic capabilities. The company, which released the machine with great fanfare to an indifferent public, soon found itself falling short of estimated sales. Software was slow in coming, and the manufacturer trimmed back its personnel as an economy measure. The company's stock prices, once high, started to slide, and some predicted the end of the company.

Although the most common answer right now would probably be "Commodore," that's only partially right—many people seem to have forgotten that this was also the picture the press painted of Apple within the first several months of the Mac's release. Eventually, though, software started appearing that exploited the Mac's capabilities, and when

the "desktop publishing" concept took hold, the Mac became established. Apple is doing just fine now, thank you, and the Mac has become—while maybe not "the computer for the rest of us"—at least the computer for a large number of us.

Apple isn't the only company to make it back from the edge of the precipice, Atari, once all but counted out as a serious contender in the computer market, is back stronger than ever thanks to its cost-effective ST series and heavy European sales.

Now it looks as if it's Commodore's turn to make history repeat itself. The Amiga, almost given up for dead by software developers, the public, and even Commodore, seems to be making a remarkable comeback of late. Spurred by a summer promotion that lowered the price, total units sold has now pushed into the 70,000 to 90,000 range (this is an estimate by knowledgeable industry forecasters, however, it cannot be readily verified for accuracy). Much of this new-found success is because software developers are coming up with programs that best exploit the Amiga's strongest suits—graphics and multi-tasking capabilities.

Several manufacturers (among them Aegis and Electronic Arts, both makers of popular animation programs) are attempting to position the Amiga as a "desktop" video production center. Just as the Macintosh exploited print, they expect to exploit images. In truth, they just might be on to something big. For video titling and mid-levels special effects, the Amiga delivers tremendous power for a fraction of the cost of pro video gear. Perhaps more importantly, the Amiga can record directly into a VCR, so many ad agencies, artists, video directors, and the like are doing their storyboards on

“Apple is promising to introduce a flurry of new products for 1987, some of which sound truly tantalizing...”

an Amiga and recording them on tape (maybe that's why the Amiga appears to be doing best in the video-oriented Southern California market). In fact, one of my next projects is to use the Amiga in storyboarding a proposed music video. Of course, we're not talk-

“While no sane analyst is counting out IBM, the personal computer business accounts for a reasonable amount of IBM's income.”

ing 1950s-quality Disney animation; but changing scenes on the Amiga in time with a soundtrack, judiciously adding some cel animation, and recording both audio and video into a VCR gives a much more effective storyboard than pencil and paper sketches.

When the Amiga's genlock and modem accessories become available (they should be out by the end of the year, but it's hard to get a straight answer out of Commodore), video artists should be able to transfer images over the phone lines in a manner analogous to the way that audio artists transfer samples. At a recent Amiga conference, I talked with Walter Williams, the creator of *Saturday Night Live's* "Mr. Bill" character; he has done all the storyboards for his new character, "Hokey the Shobot," on the Amiga and is looking forward to being able to exchange images on-line with other artists.

But there are changes on more than one front. In particular, good old IBM—known as Big Blue in the industry—has been looking a little lackluster of late. "Clones" (IBM-PC compatible machines) are flooding these shores from Taiwan, Korea, and other Asian rim countries; not only are they lower in price than IBM's offerings, they often feature improved performance. Several American companies have made inroads into the IBM PC market

—CONTINUED ON PAGE 200

There's no telling what a drummer might do with a Mirage ...

If you're a keyboard player, don't ever let a drummer borrow your Mirage ... you might never get it back. If you're a drummer, ask a keyboard playing friend to lend you his Mirage ... "for a while." In either case, if you're into percussion, there's a score of good reasons to get your hands on a Mirage.



The buzz on the buzzword

"Sampled Percussion" is a pretty catchy buzzword. Some high-end electronic percussion systems offer sampling as a creative option. Others offer a selection of sampled sounds on ROM's that plug into the system.

The Mirage can sample any sound in the percussion family — or any other family, for that matter. There's also a wide range of percussion sounds on 3.5" diskettes in the Ensoniq Sound Library, from acoustic and electronic drums to kalimba and Fu Yin gong.

The Ensoniq Percussion Library

Sound Disk	Sound
4	Acoustic Drums, Electronic Drums, Orchestral Percussion
10	Tabla & Bayan Drums
11	Rack Bell, Kalimba, Wind Gong, Slit Drum
14	Cup Gongs, Che Cymbal, Crotales, Orchestral Bells
16	Latin Percussion
18	Fu Yin Gong, Opera Gong
20	Ambient Drums

MIDI makes the magic

Now that we've gotten all these great percussion sounds into a Mirage, how do we get them out? Naturally, all the sounds can be played in real time from the keyboard. Since the Mirage can hold up to 16 samples, you can play a full drum set or complete percussion at any one time.

You can use the on-board sequencer to build up patterns, or use an external MIDI sequencer to create and edit complete songs. Just play the part on the keyboard or, if your sequencer has step editing, write the appropriate MIDI note number on the right beat and lock in a solid groove.



How to become an Octaman

Most drummers will argue that playing percussion is no fun unless you get to hit something. We agree. MIDI features that can put you in touch with a Mirage are showing up on electronic drum kits. And our friends at Roland have come up with a MIDI percussion item that's simple and inexpensive — the Octapad*.

As the name implies, the Octapad gives you 8 pads to hit and each pad can be assigned a MIDI channel and MIDI note number. Add a Mirage, a MIDI cable and a pair of drum sticks and you've got a potent percussion instrument.

Let's start by creating an electronic drum kit. Connect the MIDI out of the Octapad to the MIDI in of the Mirage and load Sound 2 (Electronic Drums) from Sound Disk 4. The Mirage now has 12 distinct electronic percussion sounds ready to go, including full octaves of toms, ride cymbals and flanged crash cymbals.

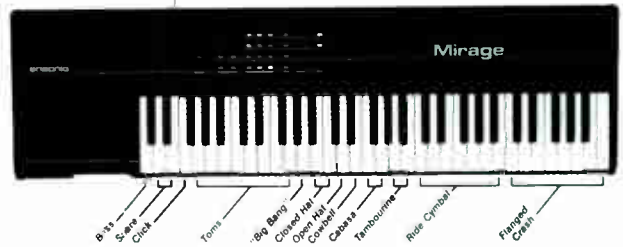
Set the Octapad and Mirage to the same MIDI channel and choose any 8 sounds by entering the MIDI note number into the Octapad for each sound. The keyboard map shown here will give you a guide. You've now got an 8-piece electronic drum kit that's ready to record, sequence or play live.

Mirage means melodic percussion

You can follow the above procedure to use any of the Mirage percussion sounds with the Octapad — but why stop there. One of the strongest advantages of the Mirage/Octapad combo is the ability to play percussion using any sound in the Ensoniq Library.

By selecting MIDI note numbers you can easily program scales into the Octapad to use with Mirage steel drum, marimba, hammered piano, bass, harp, vibes or whatever. Because the Octapads are velocity sensitive, you'll be able to control the dynamics just as you would any acoustic percussion instrument.

If you want to get a bit more outside, try playing brass and orchestra hits, guitar power chords, sound effects and pipe organ through the Octapads — there are over 300 sounds in the



Ensoniq Library just waiting to get pounded.

All this and a keyboard, too

As you can see, the Mirage isn't just a great keyboard, but a versatile drum machine, too. With some additional MIDI gear, it can be downright amazing. Visit your authorized Ensoniq dealer for a full demonstration. There's no telling where a Mirage and your imagination can take you.

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*Octapad is a trademark of Roland Corp. Mirage is a trademark of ENSONIQ Corp. The hollow log is not covered under any U.S. or international patents — yet. The Mirage Sampling Keyboard retails for \$1695 — the Mirage Multi-Sampler for \$1395.



Beej Chaney of the Suburbs

Suburbs Take a New Approach

by Moira McCormick

When Minneapolis avant-rockers the Suburbs went shopping for a new producer, they ended up with what seemed an unorthodox choice: one Robert Brent, a.k.a. Bobby Z, drummer in Prince's Revolution. After all, the 'Burbs were in the vanguard of Twin Cities new wave, now famous for including the Replacements and Husker Du in its ranks. Never before had members of Minneapolis' two main camps—white post-punk and purple rock-funk—collaborated professionally.

"We'd been friends with Bobby for a long time," says keyboardist/vocalist Chan Poling over the lunchtime din of the Suburbs' favorite Minneapolis hangout, Runyon's. "I'm surprised the 'two camps' never got together more often." Actually, as he points out, the Suburbs couldn't really be classified in camp number one: "We're a little bit more electronic and beat-oriented than the Replacements and Husker Du, so we're really not in the white country rock thing. We're really kind

of right in the middle—sort of hardcore beat music."

The Suburbs got together almost a decade ago, and have kept their original lineup of Poling, vocalist/rhythm guitarist Blaine John "Beej" Chaney, lead guitarist Bruce C. Allen, bassist Michael Halliday, and drummer Hugo Klaers. Their initial waxings on the intrepid local indie, Twin/Tone Records—notably the double album *Credit In Heaven*—established the fivesome as purveyors of arty, clever, often discordant punk/jazz/funk, with tongue-in-cheek song titles like "Take Your Wife to the Ceiling" and "Macho Drunk."

The group signed to PolyGram Records in 1982 and put out the much-overlooked *Love is the Law*. Dumped from the label shortly thereafter, the 'Burbs scouted for a new deal, in the process engaging in a brief, unproductive trial liaison with producer David Devore (noted for his work with mainstream warhorses REO Speedwagon). "He's a great guy," says Poling, "but he couldn't get a feeling for what we were trying to do."

The band didn't want to work with Minneapolis-based dance king Steve Greenberg again, even though he'd

done a fine job on *Love is the Law*, because Greenberg indicated he wanted to eliminate a lot of the 'Burbs' signature guitar sound, according to Poling. They were beginning to get desperate—and then one night they ran into Revolution keyboardist Matt Fink at a party for Prince. Fink allowed as how he was producing some tapes of his own; the band, sensing a potential producer here, made some preliminary negotiations. A few phone calls later, it turned out that bandmate Bobby Z—whose brother is premier Twin Cities engineer David Rivkin—was more interested in working with other bands than was Fink. The Suburbs made him an offer, L.A.-based engineer Jim Nipar (Eagles, Joe Walsh, Joe Cocker) was brought in, and the team settled in at Minneapolis' Metro Studios.

Bobby Z (who used his first and middle names on the Suburbs project) produced a trio of tunes, "Heart of Gold," "Want That Girl," and "Never Stop," which won the band its second big-league recording contract, this time with A&M Records.

The result is *Suburbs*, which took another five months to record, again with Robert Brent at the helm. Less overtly weird than *Love is the Law*, which blended heavy metal riffs, Latin horns, tropical percussion, and roadhouse piano with the 'Burbs' hopped-up, somewhat ominous dance music, *Suburbs* nevertheless has its own idiosyncratic way of skipping around genres and defying description. The horns are back, along with strings (effectively used on side one's haunting closer, "Never Stop"). Tunes range from the agreeably poppy "Heart of Gold" and "Life is Like" to aggressive raveups like "Want That Girl" and "Superlove."

Shortly after its mid-June release, *Suburbs* was already the top-selling album in the Twin Cities area—eclipsing even *Parade*, the latest effort by Prince and the Revolution.

In the studio, the Suburbs found Brent the very antithesis of the whip-cracking producer, according to drummer Klaers. "There was never any pressure," he says. "He just always made you confident that you could do better. Musically, he'd get us to do things we normally wouldn't try."

"Our philosophy," puts in Poling, "was just to go in and do it in a take, and go for emotion over notation. Beej and I had never thought of doing harmonies, for instance; Bobby'd say, 'I

hear a harmony over this.' We'd say, 'We've never done that.' He'd say, 'Give it a try.'

"And it sounded great. On the record, I think our voices kind of harmonize in a strange way, even when we're hitting the right notes. Kind of a gratifying, dark edge to it."

One thing Brent didn't do, which a lot of people thought he would, was make the Suburbs sound like graduates of Prince University. "Every Prince-related project sounds like Prince," says Poling, "so people wouldn't be off-base [assuming we would, too]. But jeez, how're we gonna convince them we don't? Guess they'll have to buy the record."

"One of the reasons Bobby used 'Robert Brent,' " Klaers notes, "is, he didn't want people to look at the record and go, 'Produced by Bobby Z—must be another Prince band.' Bobby Z is contracted to [Prince's Warner Bros.-distributed label] Paisley Park, and Robert Brent isn't."

"Bobby appreciated the more rock and roll elements of our band," Poling continues. "He tried to refine it a little bit, to get each sound up to date. That's why we used the machines."

Machines—something the Suburbs had avoided all these years. "We're pretty much babes when it comes to technology," Poling admits. "It's a mixture of trying to keep things as basic and human as possible, and also just a kind of technophobia. As a band, we try to make it sound as good as possible, right in the rehearsal studio. If you have to imagine what everything's going to sound like once all the gadgets are going, it's no fun—it's not immediately fun to play."

"Now we're using synthesizers, we have percussion on floppy disks that we play, plus Bruce is now playing guitar through a million effects. But it's all stuff you can play right there—a touch of your hand will produce the sound. We're getting more tech-y because technology happens to be getting so simple a child can do it. So why not?"

Poling uses a new Yamaha DX7 brain in a rack mount, which he runs through a KX88 master keyboard, which in turn runs eight different brains. "So eight sounds are happening at once," he says, "and you put 'em all up on eight tracks, and you take out the sounds you want, or mix 'em up. Then I use my Memory Moog, and of course the real piano. And I just bought a Roland digital piano—it's amazing."

Guitarist Allen's multitude of effects include Roland digital delay, chorus, octaver, distortion, and "jeez, a million things," as Poling puts it. For the recording of *Suburbs*, Allen made the

curious choice of using tiny Peavey practice amps in the studio. He frequently utilized a Rockman as well. As for rhythm guitarist Chaney, however, "Beej always plays straight through his Marshall amplifier," says Poling. "He has no interest in technical stuff."

Klaers does. He used a Linn 9000 drum machine on *Suburbs*, and is in the process of getting a Simmons NTM interface and E-mu SP12 drum machine for his 1974 Gretsch kit. "What I can do," he says, "is sample the sounds off the album, so I can recreate them live."

"It's just another way of playing technology," stresses Poling. "Not like pushing a button on the drum machine and having to play along with that. We all get to wait away, and it's all coming right from our fingertips."

The Suburbs see their next recorded effort not as an even more synthed-up techno marvel, but as... would you believe a blues album?

"But it's a totally different direction from blues as most people think of it," Klaers attempts to describe. "It's kind of far-out blues."

"It's like a blues album that a blues player with a few drinks in him, in his wildest dreams, would never think of," Poling elucidates. "Or kinda wacked-out rock... I don't know, I can't describe it."

"That's what I like about our music," Klaers declares. "From record to record, we never know where we're gonna wind up." ■

The Ordinaires: Extraordinary

by Dan Daley

There is an old Russian folktale (old Russian tales are definitely pre-*Pravda*, but we'll regard them as at least apocryphal) in which a prince is given a gift of an incredibly beautiful and intricately crafted gingerbread house. After marveling for a moment at the work of art, he became more practical—as Russians are wont to do—and said, "It's wonderful, but what do we do with it? To eat it would be to destroy it, and who the hell can live in a gingerbread house?"

The Ordinaires, a nine-piece, instrumental *orchestra bizarre* that arose from the ashes of a neo-Bohemian punk-art milieu of Manhattan's East Village, might just have found a way to live in a cookie condo. The floors may creak like violins (of which the Ordinaires have two), but they don't seem in danger of crumbling. As alto sax player Fritz Van Orden puts it, "Perhaps it's only because we haven't

had enough rude awakenings yet."

"Rude" is only one in a veritable cosmos of adjectives that can be applied to the sound of this eclectic ensemble. Defining the Ordinaires has been a challenge the equivalent of a mailed gauntlet to the cheek for writers and critics. "The Mothers of Invention *sans* lyrics and contempt" and "Captain Beefheart conducting the Duke Ellington Orchestra" are a couple of examples.

It's even difficult for Peter Moffitt, Ordinaires cellist/flautist and the only band member with an academically musical background, to comprehend it. He too had to rely upon a third voice: "A friend of mine who came up to see the band said it's music that appeals to the cerebral cortex and the gonads at the same time, and that's as good as any description of us. It's music that you can move to and it's music that you can think while you listen to it. We want to do both."

The Ordinaires trace back to when Fritz Van Orden met fellow saxophonist Kurt Hoffman while both were doing a stint in the heavily Glenn Branca-influenced Off Beach, a "minimalist art-noise" band, in 1982. Off Beach was short-lived, but, says Van Orden, "Kurt and I liked what we were doing, and somehow we ended up as the Ordinaires." (The name is a combined *puntiglio* on Van Orden's name and *vin ordinaire*.) To the core of their two saxes were added Moffitt on cello, Joe Dizney and Angela Babin on guitars, Robin Casey and Barbara Schloss on violins, Sven Furberg on bass and Jim Thomas on drums. The result was like a train wreck between a rock band and an orchestra, and according to Moffitt, "the shock waves of that train wreck are still in our sound."

They performed at the Manhattan

THE FAR SIDE

By GARY LARSON



In that one split second, when the choir's last note had ended but before the audience could respond, Vinnie Conswego belches the phrase, "That's all, folks."



PHOTO: STEVEN NEEDHAM

disco/cathedral *noire* *Limelight* recently, playing cuts from their eponymously-titled LP (on the West German Dossier label) to a jaded weeknight crowd liberally peppered with enthusiastic supporters. As house soundman Stephen Bondy trudged back to the choir loft mixing position, rather than gripe about the Ordinaires' elaborate miking set-up, he declared, "I'm happy to work with a band that is both pleasant and dissonant at the same time. You don't have to mix them; they mix themselves."

Onstage, the contrast of a Marshall amp head atop a weary Kustom cabinet stands like an icon of the band. Hoffman and Van Orden hold the center, the violins assemble stage right, the cello sits unassumingly stage left, the guitars and rhythm section form the second wave behind them.

Their reputation as tough targets to pin down is further evidenced by the set. The wonderfully giddy "Grace" glides along, studded with schizophrenic scherzos of influences from James Brown to Slavic marches to the skirl of High! and pipes, the timbres of the violins dissonating merrily against the brash brass section and anxious guitar lines. Other tunes, ranging from the romantically-influenced "Precious Flower" to a brain-stem-twisting rendition of the Led Zeppelin metal opus, "Kashmir," make for an exhilarating excursion through a musical K-Mart.

Back on the more solid—if less sanctified—ground of Peter Moffitt's Flower District apartment, Fritz Van Orden recalled the making of the record. "We taped most of that record onstage at

CBGB's," he recalls. The band wanted a live ambience, and the price was right, he admitted candidly, so the punk-shrine nightclub (with its on-site Fostex 16-track) was used. "But there were always people walking in and out of the place during the day," he says. "And it was in December, and the heating ducts were clanking away."

"We thought of trying to incorporate the noise onto the record, but instead we just tuned up to it," adds Moffitt.

The album is self-produced by the band, with co-production assistance from mixing engineer Martin Bisi, and from Laurie Anderson's producer, Roma Baran, who co-produced several cuts at BC Studios. An admirable and mysterious democracy, rare in any sort of artistic endeavor, kept the peace during this process; each composer in the "nueffet" nonet essentially becomes the leader of the band when his or her piece is being performed. This artistic egalitarianism applies to both recorded and live performances, according to Moffitt and Van Orden.

But despite their vagueness of genus and species, the Ordinaires have a thread of consistency that seems to provide a solid foundation for success of some sort and magnitude. The band/orchestra has a past, a present mission and a potentially viable future. Looking back to their origins, Fritz Van Orden articulates the musical libido of the East Village and how its influence has waned. "There was a downtown something-or-other a number of years ago that we came out of," he says, acknowledging that the Ordinaires perhaps would have been still-

born anywhere else. "But I don't feel much East Village influence anymore. It's very defocused down there now. Back then, if you wanted to take yourself seriously as any kind of an art band, there were many rules—mostly unspoken—that you had to follow, like no chord progressions, no melodies. Repetition was very in—the same chord played the same way over and over again.

"We decided with the Ordinaires that we wanted to enjoy what we were doing, so we began writing what we liked. Peter came up with one rather poppy number, certainly not acceptable by 1979 Mudd Club standards, but it was a wonderful piece and we did it on its own merits." He pauses reflectively, then adds, "I sometimes think hard about some of the values we held near and dear back then."

The present is dedicated to maintaining the integrity of their music and having fun, according to Moffitt. Arrangements, which to Van Orden's musically-McLuhanish way of thinking are deeply intertwined with the very process of composing, need deft touches of both the serious and the quixotic to walk the fine line between the band's natural exuberance and the unctuous artistic detachment of "serious" music. "We think of ourselves as an art band," says Moffitt, "but serious art music has really boxed itself in in the late 20th Century by being incredibly inaccessible; we try to be accessible but not stupid."

Moffitt and the others believe commercial success for the Ordinaires is attainable, either through work in films or through, in the cellist's words, his tongue only loosely in cheek, "Our dream of elevating the state of dance music." The funk-and-cucumber track "Hope" is mentioned as the potentially first orchestral dance track in musical history, with a 12-inch version under consideration. "We'll get out there any way we can without sacrificing the artistic aspirations," he concluded. Van Orden concurs: "We will not settle for the artistic box that says you have to sneer at large audiences and at box-office recognition."

The unit's future is summed up succinctly when Van Orden says, "We make art that people can move to. It's not like we're going to live off gigs forever, but I believe that record sales are forthcoming."

Their immediate quest is for a major label deal. No, make that the "perfect" major label deal, according to Van Orden. The ultimate gingerbread house. "A lot of money and total artistic control," he says only half-facetiously. "Right," adds Moffitt. "And then there'll be hope for popular music." ■

The Persuasions

A Quarter Century of Harmony

by Rip Rense

In a perfect world, the Persuasions would be well known and loved. Their LPs would routinely go gold, their concerts would sell out in big houses, and now, as they enter middle age, they would be in line to play Vegas or Tahoe six weeks a year. Or something like that.

But, as is widely reported, the world still has a few kinks left to be worked out. . .

"When people say, 'Hey, is the band breakin' up?', I say no! When a band breaks up, everybody takes their instruments and goes. See, the Persuasions don't have no instruments, so we can't break up! We're not a *band*."

The words are spoken by lead Persuasion Jerry Lawson, who along with Herbert Toubou Rhoad, Jimmy Hayes, Jayotis Washington (and sometimes "Sweet" Joe Russell) have been a *capella doo-wopping* since they first sat down and harmonized on the stoops of Bedford-Stuyvesant 24 years ago.

And the words, despite Lawson's optimism, are sad. The Persuasions, it seems—after 11 albums and oh, three or four billion concerts, have fallen on rough times. They are without record contract, management, or even a booking agent. As far as the future is concerned, says Lawson, they are happy just to trust in God.

Which might be just as well, really. They still sing like angels.

"Look," Lawson told *Mix* from his mother's home in Apopka, Florida, "it ain't even in the books, man—no way. Breakin' up, that is. Right now, we're thicker than thieves. I was tellin' Jimmy the other day how we used to kid about ending up like the Mills Brothers one day, you now. And now we been around a long time."

He paused.

"You know, God really was in that car that night 24 years ago when we said that we were going to be together forever. God was in that car. Now we just trust in Him. It'll work out. So as long as one of us is living, there'll be a Persuasion."

Right, but there might not be many more Persuasions albums. And really, isn't it logical? Why *should* four guys singing without instruments be very popular, anyway? Well, maybe four guys singing without instruments shouldn't necessarily be very popular. But these are not *four* guys. These are four parts of one voice; of one spirit. And it isn't just good singing. Somebody once wrote that the Persuasions sing with their hearts and souls; the vocal chords are just trans-

lators. How else can you explain the fact that they make "Papa Oom Mow Mow" uh. . . *moving*?

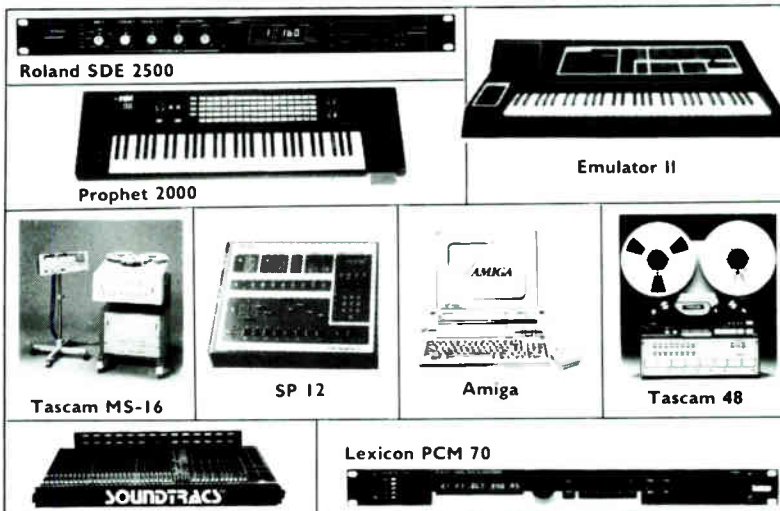
Sure, it is a bit hard to imagine them having hit singles, but isn't it equally hard to imagine that they should be without a record contract? They cut two LPs for Rounder in the early '80s, and Rounder is manned by people who like to think of themselves as champions of "un-commercial" musical excellence. Yet Rounder, said Lawson, never promoted the albums satisfactorily, and in the end wanted the group to sell its own records while touring.

"We got along pretty good, but they didn't want to pay no money up front. I kind of got out of it when—I didn't

want to go anywhere and have to sell my records. I'm not gonna stand out in front of no theater and sell no records," he said sadly.

So they wait. They wait not for the *big time*, or millions of bucks, or "The David Letterman Show" (why haven't they been on?). They wait, simply, for a supportive record company that will pay them adequately and support their product to their satisfaction; for a booking agent that might wangle them into a schedule more befitting a bunch of guys who have been on the road for over two decades. As far as dues are concerned, Lawson and company have overpaid. And now they sit back in semi-eclipse watching laudable a capella groups like the Bobs and the

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Nylons (who take much of their inspiration, and sometimes arrangements, from the Persuasions) turn out (gulp) *hit albums*.

"I tell you," said Lawson, whose speaking voice is as hefty and warm as his singing tenor, "it doesn't bother us at all. It makes us feel good. If they can go out and make a living, a better living at it than we can, it's all right with me. See, they got there by trying to do something that we *did*, and that just makes me feel good.

"I don't care how they do it—they not gonna do it like Jimmy, Jay, Toubo and Jerry—and even Joe. I think when we hit the road next, he's going to be with us."

Indeed, "Sweet" Joe's impossibly high falsetto is missing from the concert line-up, if present on record. The group still sounds lovely as a quartet. And it all started, children, back in the 1950s. . .

"Well, on the basketball courts after games, you know how cats sit around exhausted, and chit-chat and sing. We just set around, singin' a little, then one of the guys would say 'Y'all hit it! Jerry! Joe! Toubo! Y'all hit it!' Well, we hit it and hit it and hit it, and it got to the point where every night, people in the neighborhood started coming around to listen. They'd always say 'When the group gon' sing?' and we'd always say 'What group?'"

And. . .

"We were singing on the church steps one night, and here come the police. Well, you know, five guys on a corner, that's unlawful assembly, and we thought 'uh-oh, here come the cops' and we start to split. And the cops said, 'no, man, we want to hear the group!' And we kept sayin' 'what group?'"

And. . .

"Then finally we said, you know, we ought to be a group. So we broke out the Bible and we thought, 'let's call ourselves the Persuasions, because Jesus Christ had to persuade people to follow him, and we're gonna have to persuade people to follow us—because we do it without a band. So it's just fittin', you know?'"

Yes, but one would think that the time would come when the persuading would end. Yet the Persuasions' music is still only rarely played on radio, and record companies are mostly too busy looking for the next *mega-trend* to pay attention to something so esoteric. Quoth the band's longtime friend and sometimes impromptu manager, Julie Hurwitz: "I just think that no one has really known how to market five guys with no band; no one has had the insight or foresight to cash in on it. They have a wonderful, funny stage show, they've made great rec-

ords. Hell, at least they ought to be doing Lowenbrau commercials."

Indeed. The albums—notably *Street Corner Symphony*, *We came to Play*, *Chirpin'*, and *Comin' At Ya*—will probably endure as a capella pop masterpieces. The guys have Persuaded everything from Bob Dylan's "The Man in Me" to Sam Cooke's "Good Times" to Curtis Mayfield's "Man Oh Man." They've sung on albums with Country Joe McDonald, Billy Joel, the Neville Brothers. . .

But they're still trying to persuade. And to talk to Lawson, they'll never give up.

"The group comes from God. There ain't no band. We just like the birds. They wake up in the morning, singing. So does the Persuasions." ■

Joan La Barbara's Original Instrument

by John Diliberto

In an age of synthesizers and samplers, vocoders and harmonizers, Joan La Barbara is a locus of purity on the synthetic landscape. While other musicians talk about waveforms and oscillators, La Barbara deals in glottal clicks and multiphonics. Her music rarely has words, but it's all sung; she seldom uses instruments, but it sounds like a surreal orchestra.

La Barbara uses only her voice. It is an amazing instrument, its range enhanced by her extended vocal techniques, elaborate multi-tracking, and the occasional "ghost electronics."

"People ask me why I don't sing Bach," she laughs. "I love Bach, but I don't want to go in that direction to legitimize myself as a singer. I don't feel that need. It's like asking an abstract expressionist if he can draw a figure: It's not really a relevant question."

La Barbara doesn't sing pop songs, nor is she an operatic soprano. She composes her own music, using multi-track recording techniques to create a depth of field and space occupied by a dazzling array of sounds, voices and personalities—all of which emanate from her own throat. Her sounds can be startling in their intensity, sometimes downright frightening (e.g. the guttural moans in "Winds of the Canyon")—but they can also be the wistful erotic mutterings of the inner psyche.

An unsympathetic listener might classify La Barbara's music as abstract expressionism. For those who open up to it, her music is much more sen-

sual than that.

She could have been a conventional classical soprano; that's what she trained for. But La Barbara realized early that the instrumentalists have more freedom of both repertoire and performance, so she started emulating horns and saxophones in jazz groups. "There's a long tradition in jazz of vocal experimentation and the use of the voice as an instrument," she reflects.

With Ella Fitzgerald as her patron saint, La Barbara began imitating other instruments. "I got to the point where I could perform with a trombone and match its timbre and register" she recalls. "I found that when I was improvising with a trumpet player, I was singing much higher than I ever could. It was almost a contest, who could go highest."

It wasn't long before La Barbara acquired a reputation as the singer who could get the weird sounds. She made commercial jingles in New York and then slipped through the back door into the then nascent minimalist music scene. "I had done a commercial for Michael Saul, where they had a Japanese singer singing about a perfume, and the ad agency said she sounded too Japanese for American listeners," she recalls. "They wanted an American to come in and imitate a Japanese singer—they thought that would be more palatable." She wound up singing "my version of an Astrid Gilberto-like Japanese housewife, a little breathy and a little off-key."

When Reich was looking for singers for his emerging cyclical music, La Barbara came highly recommended by Saul as someone who could imitate anything. She appeared on Reich's influential "Drumming" and "Music For Mallet Instruments, Voices and Organ" and performed with Steve Reich and Musicians before jumping ship to the Philip Glass Ensemble. Glass says La Barbara's vocal concept influenced the shape of his pre-*Einstein on the Beach* music. Her multi-tracked chorales dominated Glass's *North Star*, and she gave a warm, human edge to the dervish cycles of *Music in 12 Parts*.

It was about that time that La Barbara issued her audio manifesto for human vocal chords, *Voice is the Original Instrument*. Recorded live, it shared little with the minimalism with which she was associated. It was stark and austere, with titles like "Voice Piece: One Note Internal Resonance Investigation Study." "It was just that," La Barbara laughs, "a scientific exploration of what you can do." Another work, "Circular Song," experimented with circular breathing techniques.

She explored her voice like an ar-

cheologist, unearthing buried abilities and discovering new techniques. Arcane processes such as glottal clicking were re-awakened like some ancient incantation. "The easiest way of explaining it [glottal clicking] is, it's like the creaky door sound," explains La Barbara. "Sometimes when I do concerts, people will come up to me, say 'Oh, I made that sound as a kid. That's the creaky door sound.'"

Other techniques are more complex, like multiphonics. "Multiphonics is the simultaneous singing of more than one pitch. The easiest one for me to produce is the octave so that I'm singing an octave with myself at the same time. Then as you relax the throat, that pitch drops a fifth below that."

To hear La Barbara's music is to enter an alien marketplace, full of jabbering voices, shouts and cries, and a pulse derived from life rather than rhythm machines. "Erin," from the LP *As Lightning Comes in Flashes*, ranges from the jabbering of old women to a sensuous choir. "That comes from traveling a great deal and hearing other languages and, more often than not, not understanding what other people are saying, but hearing the inflection, the syntax, the mouth qualities of the various sounds and the music quality and being interested in speech-like rhythms."

La Barbara aptly calls these pieces "speech songs." Less obvious may be her "sound dances" and "sound paintings," one of which is based on the paintings of Mark Rothko. It must have been a study in contrasts at this year's New Music America Festival in Houston. About the time that Jean-Michel Jarre was rearranging the skyline of Houston in a technological overkill of lasers and synthesizers, Joan La Barbara was meditating in the Rothko Chapel, also in Houston, creating an environment of the mind with her Tibetan monk-like singing and the groans of a bowed piano merging into a subtly shifting fabric of sound.

In describing "Rothko," La Barbara explains the visual impetus for her music. "I am looking towards visual stimulus for sound. In the case of 'Rothko,' I studied Mark Rothko and his works and the works leading up to the paintings in the chapel. What I'm doing is a kind of broad wash of sound, which might seem like the paintings themselves, where they seem like a single color but the longer you look at them you begin to see minute figures and you get drawn into the paintings and back out again."

La Barbara also looks to the visual arts in the way she conceives of sound. She thinks of herself as a sculptress, carving out shapes and patterns with her voice. It's not a new idea regard-

ing music, but it seems that La Barbara takes it further and deeper than most. "For instance, there was a series of pieces I did that involved acoustic beats," she recalls. "When I work with these beats I feel them physically and I'm sculpting into that sound. I'm using the voice in that case as I imagine a sculptor uses a knife. I'm carving into the sound and I'm making a shape and I want the listener to experience that shape as I'm carving into it."

Although she's worked with the pioneers of minimalism, her own music shares little of their motoric drive and insistent pulse. What she does share with those composers is an independence and perseverance. She started her own label, Wizard Records, in 1976. In 1985, she issued her first record on a major label, Nonesuch, with the ostentatious title *The Art of Joan La Barbara*. But she lives up to it with some of her most expansive music to date, using other instrumentalists as well as the Buchla synthesizer and compositions of her husband, electronic music pioneer Morton Subotnick.

One of Subotnick's compositions, "The Last Dream of the Beast," uses a technique he's developed over the years called "ghost electronics." The Ghost Box is a microprocessor that instructs the synthesizer how to treat La Barbara's voice, via amplitude modulation, moving sound through the stereo or quad space, fluttering the signal, etc.

One might think that such an art would be limited to the studio, but La Barbara brings these multi-track tapes to her performances, singing a line in real time while the rest of the sound is moving around in a quadrophonic landscape. She perches at the microphone, eyes moving, hands fluttering and darting as if wandering through a fantasy landscape and listening to inner conversations. "I want the audience to experience the sound the way I hear it," she claims.

After spending most of her career in New York City and Los Angeles, La Barbara now lives in the desert of New Mexico, which may explain a piece like "October Music: Star Showers and Extraterrestrials." "October Music is very much about looking up at a sky full of stars and trying to recreate that in sound—trying to create stars out of a voice, and placing those sound stars in the sky; the shock and excitement of seeing a shooting star against the serenity of the night sky.

"The other extraterrestrial sounds are like imaginary beasts," she says with a conspiratorial grin. "You know that wonderful movie, *Forbidden Planet*, monsters from the Id? I'm trying to create monsters from the Id." ■

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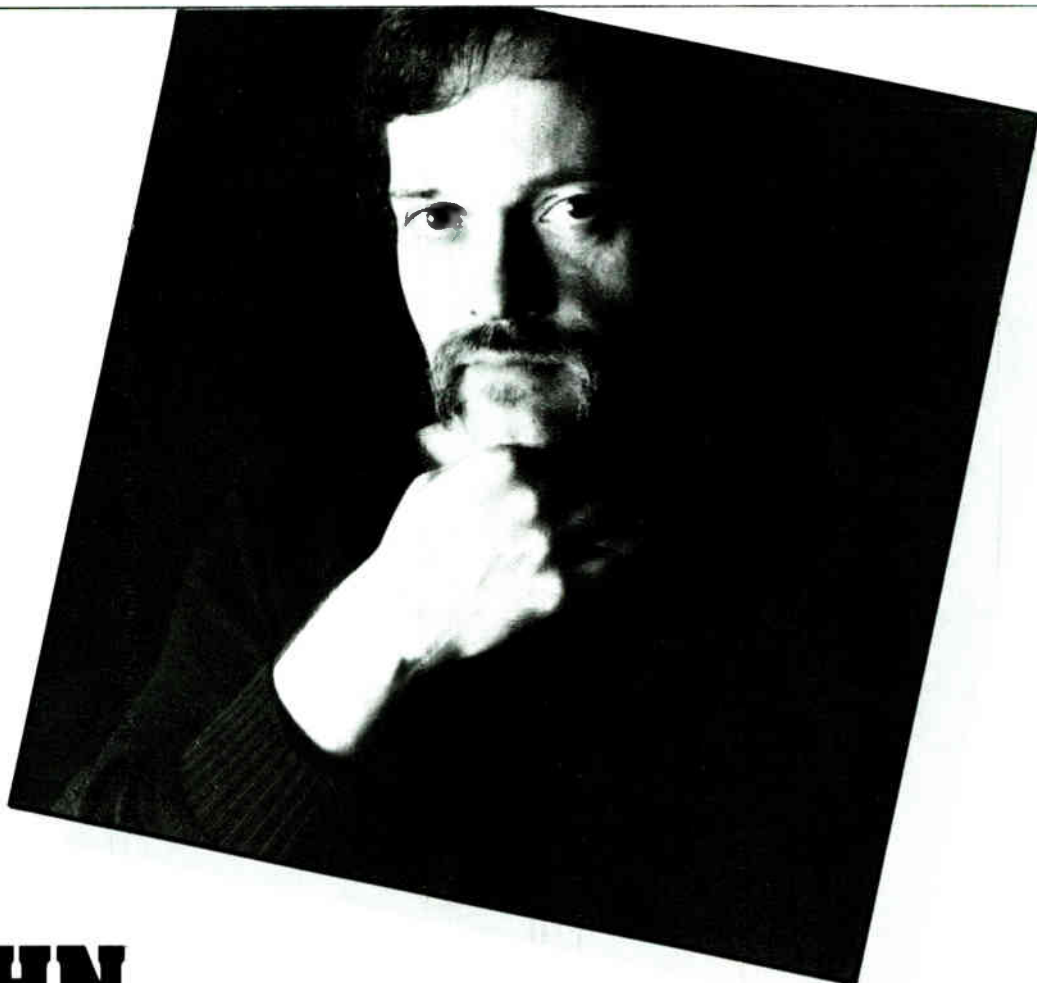
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JOHN ABERCROMBIE AND ECM

by Robin Tolleson

"I use the synthesizer because it's an expressive tool," says guitarist John Abercrombie, explaining his latest album. "A lot of people love it for composition, but I love it for expression. Some of the sounds make me play things that I've always dreamed of playing. I always loved Miles Davis playing with Gil Evans, so when I wrote 'Still' I heard these beautiful chords and this lush sound coming out of my sequencer through the amplifiers, and I called up this trumpet sound on the synthesizer and started playing with it. I was totally enraptured. I felt like Miles with Gil, and that had a deep connection in me, musically."

Turning Abercrombie loose on the guitar synthesizer seems like such a natural thing. The guitarist has strained

KEEPING IT CURRENT

against convention and stylized playing in almost all of his situations, from the bands of Evans, Chico Hamilton, and Dreams in the 1960s through his work with Billy Cobham and Jack DeJohnette in the '70s. With the synth, which he uses on a little over half of *Current Events*, Abercrombie can speak any language he wants. "I think all these things are incredible musical tools that I or anybody can use to

make music—recall things that they wanted to do or they had never been able to do. Like fantasies. It's almost like you're having a fantasy trip, then making the fantasy a reality on some level. It opens a gigantic door to expressive possibilities. I've been waiting for an instrument to do something like this, and so far this one has fulfilled the fantasy."

ECM engineer Jan Erik Kongshaug recorded *Current Events* at his newly-opened Rainbow Studio in Oslo in September of 1985. At that time, Abercrombie hadn't yet owned his Roland G-707 guitar and GR-700 module a full year, and he was still very accepting of the occasional glitching or tracking problem. Now, however, he wants to do more complicated things on the guitar and can't.

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"Now I'm reaching a point of, 'Come on, catch up with me.' The equipment is not quite up to the playing," he says. "But the good far outweighs the bad, in terms of tracking and glitching, all the problems. I'm going with it because even though it's frustrating, the things I can do with it are far more expressive than what I could do on a normal guitar. This is a good beginning."

Since recording *Current Events*, Abercrombie has begun using the Ibanez guitar for triggering the synth. "The tracking on the Ibanez seems to be a little more forgiving, a little more gentle than the Roland," he says. But he continues to use the Roland GR-700 module, tied in with a Roland GR-300. "Because the Roland is primarily an analog synth, it's a very warm sound," the 41-year-old guitarist says. "The sounds are essentially warm, and the fact that you're still plucking a string I think adds something to that too. I've gotten very tired of listening to keyboard synthesizers because they sound very cold, and not very human. Digital sounds are very percussive and bright and not warm, kind of the antithesis of what I want to project as a soloist. I think the Roland has a very human-like quality."

Perhaps in a direct effort not to go overboard with technology, Abercrombie mingles light acoustic guitar pieces in with the energetic guitar synth showcases, and on the whole *Current Events* turns out to grab you without pulling your shirt sleeve off. Abercrombie picks acoustic bassist Marc Johnson and acoustic drummer Peter Erskine to join him on the album, two players who make the music fly while keeping it quite close to earth. "I wanted it to be a playing band, but I also wanted the music to be happier music. Not 'la-la' music, but kind of optimistic music, because I like to play that way," says the guitarist. "I like to really dig in and play. And I wanted a trio because I wanted to have complete control over what I did. I didn't want to have a lot of horn players or piano players, and with the synth I don't need it. I wanted a trio that sounded very full and complete, and I wanted guys that could play very loose but at the same time play very ensemble-like. I think in Peter and Marc I have two people that can really play ensemble. It's a real unified band. Each person is like a tentacle of the central nervous system. We think together and we play together, and the only reason we can do that is because we think *group*."

After a dozen records for the ECM label, Abercrombie knows the *modus operandi*. He knows he's got to go into the studio prepared, because producer Manfred Eicher's allotted time for

all records except special projects is two days to record and one to mix. "Yeah, a typical ECM session is done like that," agrees engineer Kongshaug. "Sometimes it's three days recording and one day mixing."

But as Abercrombie has also learned, the artist gets a lot of help from ECM's recording team. "It's like you have these silent partners in your creation," he says. "They're just there and very little is said. Jan Erik is a very easy-going guy who smokes little thin cigars, and before you know it, when you hear a playback the sound is like a record. It sounds gorgeous from the beginning so it's almost hard to imagine that you need to do a mix. And in the mix, things come even more to life. So it's quite an experience working with those guys."

Eicher is apparently the opposite of the record company mogule stereotype. No fat cat, he. "He's very different than that. He's a very lean cat who is very involved in the artistic development of things. He's there all the time and he's very helpful for the most part, giving suggestions about how a tune might go."

"Manfred is a genius at recording. On the record, for 'Still' I played the chords on a Casio CZ101, then I recorded them into the sequencer and played over it with acoustic guitar," Abercrombie continues. "I was using an Ovation and playing it through the amplifiers in the studio, and Manfred didn't like the sound. So he recorded it with microphones and a direct line, and it sounds amazingly good."

"I think we had a mix of direct and acoustic," adds Kongshaug, "because usually the Ovation direct isn't that great, if you just use that sound. But if you mix it with an acoustic mic, it can sound very good."

Besides his synth guitar and the Ovation, Abercrombie used an Ibanez Artist solid body electric guitar. "I played the synth guitar stereo through two amplifiers, and there was a mic on each amp," he says. "They had a direct line also, and those were mixed. The only real difference in recording with a guitar synth is the fact that it doesn't play like a guitar. Other than the main problems, the glitching, the tracking, recording-wise it's just the amount of time it takes to set things up, and the problematic things that evolve because of all the equipment."

Marc Johnson routinely makes difficult things sound easy on the acoustic bass, always playing in context. The recording team captures a nice blend of thrust, tone and percussive high end from Johnson's bass on the Sammy Fain-Bob Hilliard tune "Alice In Wonderland," but on Abercrombie's nod to his sometime partner Tower, "

"Ralph's Piano Waltz," the bass could have been mixed stronger. "I used two mics for the acoustic sound, and one direct from his mic," says Kongshaug. "And maybe I also used the amp. Usually I use three or four tracks for the bass and then I mix stuff together afterwards. On this trio session, I think I used ten tracks for the drums and four for the bass and three or four for the guitar."

As is the case with so many ECM records, the drums are recorded with a crisp edge, the high end is superb and the low is very lifelike. It's a pleasure to hear the Weather Report/Steps Ahead veteran Erskine "done" in ECM style. All the intricacies of his snare work on "Clint" are brought out, the brushwork on "Alice In Wonderland," his subtle high tom-tom fills gracing the loose gate of "Hippityville."

"Usually I use about eight or ten mics on the drums," says Kongshaug. "Sometimes I use a couple of mics on the floor in addition to get the sound from under the snare. It's nothing special. I think it's like most recording engineers do. Usually," he laughs, "I don't do much with the sound. I don't use filters much. I use good microphones. I often use Schoeps, German Schoeps microphones on the cymbals. And usually I don't use a lot of EQ. I record the drums straight. I mean, usually the musicians have such good sound in their instruments I don't have to do much. It's more a matter of balancing, and the use of echo and panorama."

Abercrombie has recorded many of his ECM albums at Talent Studio in Oslo, Norway. *Current Events* was his first done in Kongshaug's new Rainbow Studio in Oslo. "The new studio is kind of a square room, very open, very big, very nice to be in," says the guitarist. "And the thing I've noticed about Jan Erik and Manfred in these recordings is that the headphone mix is always extraordinarily clear and very real-sounding. You don't feel like you're playing in cans. It feels very natural."

"I always set up the headphone mix with headphones on," Kongshaug explains. "I use headphones myself when I mix for the musicians, and maybe it's also important that I'm a musician myself. Maybe that has something to do with it. We also now have separate fallback mixers with eight stereo groups so that each musician can make their own headphone mix. I give them the drum set in stereo on one fader and the bass mic on another and all, so every musician can make their own fallback mix. Because the musicians always want to have different mixes in their headphones."

The headphones are AKG, by the way. Rainbow's main room is "about

180 square meters, and six meters high," according to the engineer. The studio is equipped with a Soundcraft TS-24 console with a Master Mix computer by Audio Kinetics. "It's a time code based computer mix. It's working really well. We have to use one track for the time code, and a floppy disk to store the data in. I also use a lot of different kinds of reverb. We have EMT plate, a Lexicon 224, a Klark-Teknik digital reverb and a Yamaha REV7. I use a lot of different kinds of reverb and mix them together," says Jan Erik.

"I know people have talked about 'the ECM sound,' and definitely there is one," says Abercrombie, "just like there was a Blue Note sound or a certain period of Columbia sound, and CTI and all the record labels that have been around for a while. They seem to generate a certain sound and mood, and I think that's what makes them successful. A lot of it is recording techniques and the fact that most of the records are recorded in two places, in Oslo and in Ludwigsburg. Two engineers. So you always have basically the same engineer, the same studio, same producer. The musicians change but the setup remains the same. There's going to be a particular sound that comes out. They have something that's consistent, and I think with ECM the difference is that the music is a little more varied than a lot of those other labels. Over the years, it seems to be incorporating a lot of different kinds of musicians."

Anyone not familiar with the music John Abercrombie has been making for ECM over the last 12 years might find *Current Events* the perfect primer. He has spent his musical time in projects of an acoustic, electric and electronic nature, and on *Events* combines his axes. The guitarist and his quick-thinking sidemen play with strength, looseness and good humor. The almost childlike sequencer pattern of "Clint" merges with Abercrombie's power chords as Erskine begins flapping out a funky rock beat. Abercrombie worms out a halting, hesitating tone sort of like a Fender Rhodes with volume on 11, and rides an improbable melody into the sunset. There's even a homage to Serio Leone at the end when Erskine whistles a bit of "The Good, The Bad and The Ugly."

"I'm very happy about what's going on. I feel that I'm playing music that's more myself," Abercrombie says. "I guess I've always played music that was me, but this feels somehow more connected. I'm letting lots of different elements of myself come out that are more lyrical, more aggressive—all the different aspects of modern music that can evolve in this band." ■

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by Philip De Lancie

Last month, I wrote about Sony and the various considerations influencing its approach to the future of rotary head digital audio tape (R-DAT). While the role of Hamlet ("to R-DAT or not to R-DAT") may seem an unlikely one for this pioneering electronics giant, the company shares an industry-wide concern about the impact of R-DAT on the booming yet vulnerable CD market. At least one major label (Polygram) has already announced its decision not to release R-DAT software, and some hardware manufacturers are now reportedly considering pushing back their timetables for marketing. Under other circumstances, the availability of a proven means of high speed R-DAT duping would probably generate some enthusiasm for the new format in the software and retailing sectors of the industry. But many fear that consumers on the verge of taking the CD plunge may catch wind of the new technology and choose to wait for the system offering digital recording as well as playback. So Sony's reluctance to loudly proclaim the adaptability of its Sprinter High Speed Video Duplication System to R-DAT may have more to do with marketing concerns than with genuine technical obstacles.

While Sony hesitates, E.I du Pont de Nemours & Company, known to most of us simply as Du Pont, has been spreading the word about its own high speed video duplication system, which it believes would also work well for R-DAT. Ironically, Du Pont, like Sony, is a player in the CD market through a joint venture with Philips. Their North Carolina CD plant is scheduled to open by early 1987, part of a long range plan calling for six facilities worldwide with an annual capacity of 200 million discs. But Du Pont's interest in CDs seems not to have discouraged the company from viewing R-DAT as an opportunity. The reason lies in Du Pont's position as the major supplier of chromium dioxide particles used in audio and video tapes. Du Pont's proposed high speed duping system, called Thermal Magnetic Duplication (TMD), is designed specifically to take advantage of particle characteristics unique to chromium dioxide.

The basic theory of TMD has been around for a long time. All magnetic particle formulations have a tempera-

TMD: A New Approach to Digital Video Duplication

ture, known as their "Curie point," at which any prior magnetic orientation becomes nonexistent. (The "cassette tape on the dashboard in the hot sun" phenomenon.) As the temperature of the material drops below the Curie point, the particle orientation is easily influenced by magnetic fields in the area. Thus, a copy tape heated to its Curie point and placed against a master tape will assume the magnetic orientation of the master as it cools.

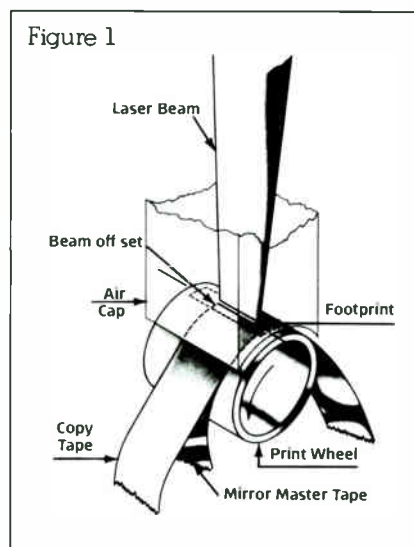
Traditionally, two important limitations have relegated TMD to the world of theory rather than practice. Firstly, the Curie point of the master and copy tapes must be different enough to allow the copy tape to be heated without randomly orienting the master at the same time. Additionally, the copy tape Curie point must be below the temperature at which the tape base begins to shrivel, burn or otherwise distort.

Du Pont's interest in the process stems from the fact that the Curie point of chromium dioxide (125°C) is far below that of other magnetic particles (5-800°C). Used in conjunction with a high Curie point master tape, chrome copy tapes would allow a wide margin of protection against master tape erasure. But even chromium dioxide's low Curie temperature is more heat than a polyester base material can take without damage. The solution to that problem had to await the development of lasers capable of delivering heat to the oxide coating without raising the temperature of the base above 75°C.

Now that the necessary technology is available, Du Pont has developed its high speed TMD printing system for video based duplication. In certain respects, the system is similar to Sony's Sprinter. The first step in the process is the preparation on a Mirror Master Recorder of a tape on which the track pattern is written as a mirror image of the normal pattern for the format to be duplicated (VHS, Beta, etc.). Metal tape is used for this "mirror master" because of its combination of high magnetic flux and high Curie point.

During high speed printing, the mirror master tape and the copy tape are pressed together oxide to oxide by the air cap as they move past the print wheel (see Fig. 1). The laser, operating at a frequency to which a polyester tape base is effectively transparent, is focused to pass through the back side of the copy tape to the depth of the chromium dioxide coating. The black coating is opaque to the laser, which quickly heats it above its Curie temperature. The magnetic axes of the thermally excited particles rapidly flip back and forth, unable to remain oriented in any one direction. (The master, with its higher Curie point, is not affected).

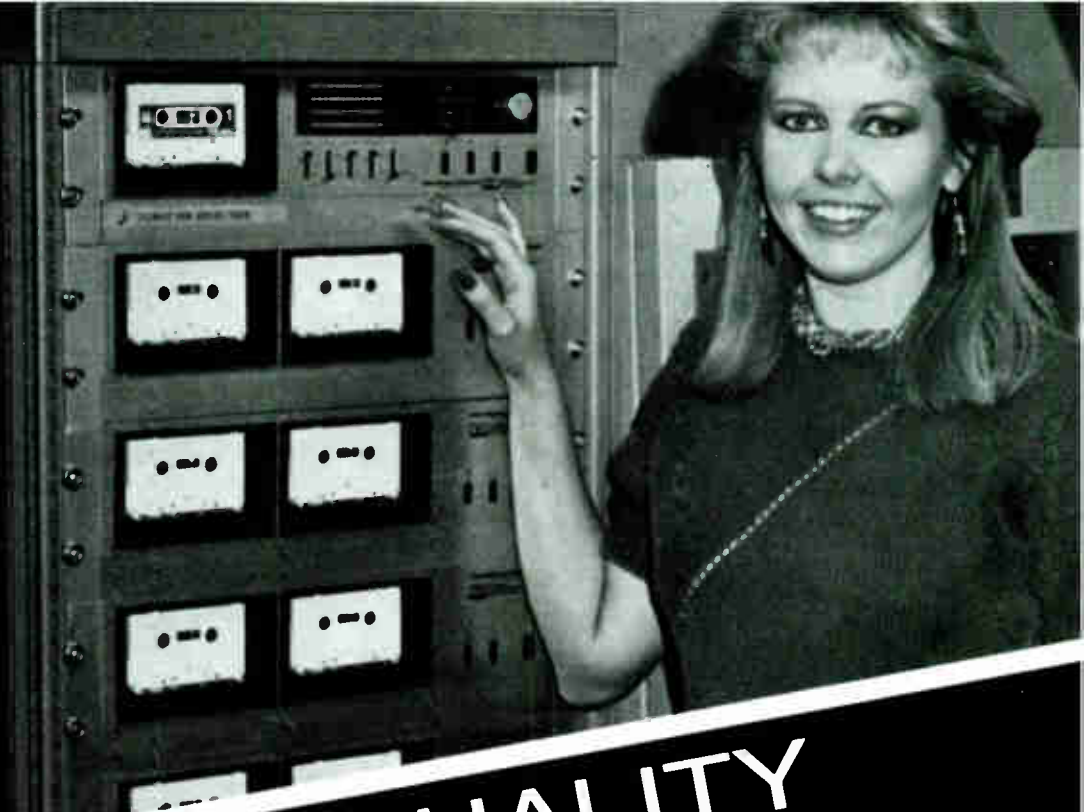
As the heated particles exit the laser zone, the thermal energy is no longer sufficient to maintain a state of excita-



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tion. The particles take on the orientation of whatever magnetic field they see at the moment excitation ceases, which in this case would be the field of the closely pressed high flux master tape. By assuming a pattern mirroring that of the mirror master, the copy tape takes on the normal track pattern for a tape of its particular format.

Du Pont claims that the system is operable at speeds over 140 times greater than real time, which is roughly comparable to Sprinter. But despite the operational similarities of the two systems, the use of thermal rather than magnetic excitation is seen by Du Pont as an important advantage of TMD.

As outlined here last month, Sprinter uses a high frequency alternating magnetic field (transfer bias) to achieve particle excitation. The strength of the field is chosen to exceed the coercivity of the master tape without erasing the higher coercivity master tape. However, because the individual magnetic particles in a tape formulation are not all of identical size, the coercive force required for excitation varies from particle to particle. Thus, the reported coercivity of a tape is actually the mean value of a distribution of coercivities, and particles at either extreme of the distribution curve behave quite differently than those near the mean.

Du Pont maintains that this variation in coercivities creates two potential problems for Sprinter. (Because Sony's spokesperson for last month's discussion of Sprinter felt unqualified to comment on technical specifics, I am unfortunately unable to present Sony's view on the following points). One is the possibility that some portion of the particles on the master tape may have a coercivity below the field strength of the transfer bias. These particles would be randomly oriented as they pass by the transfer head, causing partial erasure of the master. Meanwhile, any particles on the copy tape with a coercivity greater than the strength of the transfer bias would remain unexcited, thereby not participating in the printing process at all.

One of the attributes of chromium dioxide cited by Du Pont is relative uniformity of particle size, with correspondingly narrow coercivity distribution. One might think, therefore, that Du Pont would endorse Sprinter, while touting chrome tape as the best type to use for achieving a high degree of particle participation. But chromium dioxide's typically high coercivity, while less than that of metal tape, would still reduce the coercivity difference between master and copy tapes upon which Sprinter depends. With TMD, on the other hand, Du Pont has a process which creates a new market for its chrome particles, and at

the same time theoretically offers the advantage of full particle participation in the printing process. The distribution of Curie points among particles in a formulation is far narrower than the distribution of coercivities. Once the temperature of a chrome tape reaches the 125-130°C range, all the particles are thermally excited. According to Du Pont, that gives a TMD copy tape optimum short wavelength output, which is important for video based systems.

Obviously, as Sony well knows from its experience with the Beta format, an apparent technical edge is not always the determining factor of success or failure in the marketplace. Sony already has Sprinters placed in the field, but Du Pont has only a system with no product ready for sale. To find out more about where Du Pont plans to go from here with TMD, I spoke with Robert Baer, marketing manager for chromium dioxide:

Mix: How does Du Pont plan to market TMD? Will the company be manufacturing hardware like Sony does for Sprinter, or will the technology be licensed to other parties?

Robert Baer: At the moment, we are in the early commercialization stage. We are not in a position yet to be out selling or broadly placing machines. What we are trying to do is to put machines in a duplicating situation to get practical commercial experience that will further assist us in the larger scale design and building of machines. We have two commercial prototypes in the field now. We are going to be building between ten and 20 machines over the next several months. Beyond that, I don't know what kind of steps are going to be taken. Our commercialization plans really are not yet firm.

Mix: Is Du Pont already involved in the business of manufacturing hardware in other fields?

Baer: We have several areas of our business in which we have been successful in building and selling machines in addition to making and selling consumables. So we certainly have the capability to manufacture hardware or to work with vendors to have it made for us. But it is not exactly clear how we are going to do that in this case.

Mix: Does that uncertainty put you at a disadvantage compared to Sony?

Baer: They seem to be out in the field and to have had some placements, so I guess in that sense they are a little bit further ahead. But we don't feel that we're at a disadvantage. They may be out there with a few more machines at this time, but the market is by no means

saturated. Our feeling is that the two systems may co-exist. I don't think it's an either/or situation. We feel that there is a quality difference. A lot of it will have to do with the quality and the economics—the whole offering of both systems.

Mix: Audio cassette duplicators normally charge a premium for chromium dioxide tape stock. Is the necessity of using chrome tape likely to be an economic disincentive to the use of TMD?

Baer: That premium is for chrome over normal bias iron particles. For video duping, it's got to be compared with cobalt iron. Another difference is that in audio, the coating thicknesses have to be pretty much the same because you're dealing with low frequency signal that penetrates the depth of the tape. In video, it's all high frequency FM recording, so chromium dioxide can be coated thinner and still produce a high quality tape (because of its higher energy product), which tends to equalize the costs.

You also need to look at the economics of the entire system. There are a whole range of factors that affect total economics. It's not yet possible to give strong comparisons between Sprinter and TMD, because neither system has had a great deal of commercial experience. But when you look at the whole system, the cost of the chrome particle is only one small part of the total cost of producing a prerecorded tape.

Mix: What are some of the important factors to be considered regarding the application of TMD to R-DAT?

Baer: The physics of the process of copying is the same. There are transport considerations that will be different (because of the narrower R-DAT tape) that will have to be dealt with.

There were some questions in setting standards as to whether the playback signal you'll be able to get from the chrome tape will be a good match with the hardware design. Right now the hardware designers recognize the need for high speed copying and have allowed a switch for two playback modes for home recorded (Normal) vs. prerecorded (Wide) tapes. So the player knows when it is seeing a prerecorded cassette.

The most important commercial question is whether or not to make the prerecorded signal available in digital form for dubbing. The music industry would prefer that DAT, if it must come at all, be pirate proof. But if you can't dub with it, will the consumer still want it?

Mix: When might we expect to see TMD systems available for purchase

by duplicators?

Baer: We expect to be in commercialization with the video systems by 1987. How big the numbers will get, we don't know. Certainly it is going to be more than ten, but probably less than 100.

For R-DAT TMD, I think it depends to a great extent on when R-DAT decks become available in the marketplace. Our understanding of the market is that we won't see an R-DAT market big enough to worry about duplicating for until 1988 at the earliest, unless someone decides to take a leadership role and feels a need to duplicate in order to sell hardware. But I think that because R-DAT can be used to record at home it won't have the same need as the CD had to have software available. In its introductory stages, the hardware can, I think, sell without the software.

Mix: How would you characterize the chances for R-DAT to catch on as a prerecorded distribution format? Are you optimistic?

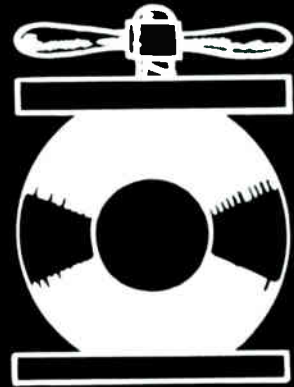
Baer: I'm in the middle. Today's analog audio cassette quality can be awfully good. For a lot of the environments in which people listen, like their automobiles, or boom boxes at the beach or Walkmen, I really question the need for digital sound quality. Yet the CD is selling, so people must want digital sound.

At some point, the Japanese hardware manufacturers are going to need something to stimulate sales and growth. Right now the CD is doing that for them, and it will for a while. But there has to be a strong temptation to bring on the next growth spurt, and DAT may be seen as the way to do that. So somebody is going to introduce the hardware.

Will the consumer buy? If he's in the market for a deck, and it gives him better sound quality for no more cost than a conventional deck, he may go for it. But I don't think it will cause the same groundswell the CD has. A lot of people disagree. They think DAT will capture the dashboard and grab some Walkman business. It's difficult to predict.

Our view is that if DAT comes, it's going to need prerecorded music, and TMD is a good way to do that. Our attitude is one of wait and see. We're ready with TMD and chrome particles if we're needed to help make it happen. ■

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October 24 through 29 at the Jacob Javitz Convention Center, New York City—The annual Society of Motion Picture and Television Engineers (SMPTE) conference.

October 17 through 19 at the Pasadena Convention Center—the annual Tools of the Trade Show presents more than 170 computer graphic-related exhibits, plus a new “Computer Graphics Pavillion.” Artists get to noodle around with various design studio systems, which will be organized informally under a simulated tent. *Studio Systems Journal*, the magazine that is coordinating the pavilion estimates that 15,000 artists, designers

video cassettes at Burbank’s Foto-Kem. Video dailies were transferred to Laser-Disc at Hollywood’s Pacific Video, sent back to Foto-Kem, where editor Rick Westover used EditDroid to do the first three rough cuts. The resulting edit decision list was used to make the film workprint.

According to Westover, this whole process took only 11 weeks, or about half the time he estimates it would

have started to see Sanyo’s 3-inch portable color flat screen televisions in consumer electronics stores. Weighing in at 2½ pounds with a price tag of about \$500, the Sanyo product is heavier and more expensive than the Casio flat screens that premiered about a year-and-a-half ago—but there’s a significant difference. Sanyo actually uses a standard CRT with only one electron gun, whereas the other color flat screens use liquid crystal display technology; the LCD screen keeps the size and price down, but doesn’t create as sharp a picture, especially in direct sunlight conditions.

Unlike conventional three-gun color technology, the beam indexing

FILM AND THE EDITDROID & OTHER NOTES

and illustrators will get the chance to see the latest hardware, software, output devices and related services. More info at *Studio Systems Journal* (805) 543-7394.

Video Headhunting: Yes, we already know television is a jungle, and Morgan/Weber, a Boston executive search firm, has recently attacked one of the most pressing management problems: how to find people qualified to handle highly-skilled technical and executive positions. After all, topnotch film-to-tape colorists, editors, directors of photography and Paint Box artists cannot be plucked randomly from every mango tree—even in Lotus Land.

Tim Davis, a former operations manager at both Century III Teleproductions, Boston, and VCA/Teletronics, NYC, has signed on as chief headhunter in the newly-formed Media Search Division. Morgan/Weber first works with the hiring company to assess their needs, then conducts a national search for qualified candidates. For more information, call Morgan/Weber at (617) 227-1155.

EditDroid Posts First Flick: Although the videodisc-based electronic editing system developed by Lucasfilm affiliate, The Droidworks, has been used to cut some episodic television, last spring the EditDroid got its first crack at a feature on the low budget rock ‘em sock ‘em title, *The Patriot*. The Crown International Pictures release was shot in Santa Barbara and 35mm negatives were transferred to viewing

have taken him to do the job using a conventional film flatbed. “It provides you with unprecedented creative flexibility,” says Westover. “I could actually present the director, Frank Harris with several different versions of a scene, giving him the ability to evaluate and compare them easily. This is especially important with an adventure film like *The Patriot*, where the action is covered from every angle. If I had my choice, I’d never edit a film conventionally again.” Foto-Kem president Bill Broderson says the dollar savings from neg to workprint translated to about 60 percent.

Sanyo Introduces Beam Index Technology for First Color Flat Screen TV: This story is definitely on the consumer side, but videophiles will probably be interested in the technology behind this new product. Last month you may

tube is a single electron beam device that produces a color index signal to indicate the position of the beam on the phosphor (a screen that contains three primary color phosphor stripes). This color indexing signal continuously indicates the position of the scanning spot relative to the color phosphor stripes. Rather than being forced to land on a particular phosphor as it does in a conventional CRT, the beam in this tube is allowed to pass over all of the color stripes. To produce the desired color, the information is fed in the correct time sequence by picking up the index light signal, thus creating a clear picture that is formed by the reflected light of the phosphor screen and viewed through the transparent front glass panel.

Obviously, toting a featherweight flat screen color monitor around on location would be a director’s dream . . . not to mention the consumer TV and computer possibilities. But Sanyo sales manager Chuck Davis says he’s not really sure where beam indexing technology will be used, or if it will become commonplace. “As you know, Sanyo is a consumer-targeted company,” says Davis. “This is a new approach for us. Usually Sanyo hasn’t developed new technology—the company has been real good at manufacturing existing technology for a mass market.” The marketing department is waiting to see how this 3-inch consumer model sells before they consider implications for other applica-

tions. So when will you be able to hang a 19-inch TV like a frame on the wall? Davis says that kind of household hardware is still about five to seven years away.

Facility Notes: Boston's *Century III Teleproductions* has installed the CMX CASS-1 audio computer in the audio-for-video suite. The CASS-1 enables automated mixing using up to 14 separate sources—with or without time code—plus storage to hard disk. So far projects have included

"I could actually present the director with several versions of a scene... If I had my choice, I'd never edit a film conventionally again."

network television openings, corporate pieces, national spots, and a three-hour documentary.

Stamford, Connecticut's *Eaglevision, Inc.* has moved to a new expanded production facility in Stamford Square. The upgrade includes: a new Sony two-machine editing suite with Laird 1500 character generator, TBC, Sony Ikegami monitors and a Tascam System 8 console; an enhanced field production package including lighting, audio and video monitoring equipment; next-day duplication service with Sony, Maxell, Ampex, Fuji and Agfa tape.

John Crowe Productions with offices in Houston, Dallas and Kansas City got the nod to shoot the Jean-Michel Jarre concert extravaganza in downtown Houston last spring (the 150th birthday celebration for the state of Texas and NASA's 25th). Director Bib Giraldi used two 4-foot JCP production trailers equipped to handle 15 cameras. The tricky part was reading good video of the nighttime laser and video projection show. Philips LDK 6s solved the low light condition problem.

On The West Coast...

American Video Factory of Marina Del Rey recently sunk some big bucks on new CMX 3400 editing systems for all three of their online suites... *KIRO Video* of Seattle, Washington has a new name and expanded film and computer graphics capabilities. Now

called *Third Avenue Productions*, the agency/sports targeted facility hopes to churn out more high end product with the addition of a Bosch FGS-4000. The name change represents a major expansion from the confines of the KIRO-TV production department... The Bay Area is hopping lately: *One Pass Film and Video* just bought a new Cubicomp Picturemaker system (Cubicomp is a Berkeley-based company, partially owned by Ampex Corporation) to go with their Paint Box and Dubner systems. Dean and Monique Hodgkinson of Contact Video (SF) will offer 3-D solid modeling design through One Pass. A new interformat editing suite for 3/4-inch and/or Betacam to one-inch has also been added, complete with CMX 340, GVG switcher, DVE, Sony BVX 30 noise reducer/color corrector/image enhancer and Quantafont Q8. The suite is designed to provide a lower cost alternative with interformat AB dissolves, color correction, character generation, effects and audio compression, de-essing, and noise gating. One Pass has also been fully acquired by The George Banta Company, a large publicly owned graphic arts and printing company that has worked in a co-venture with One Pass called Scanline since 1984. Scanline bought the Editel Group last spring. One Pass

will continue as an independent operating unit within Scanline, headed by One Pass president Scott Ross... *Pacific Video Resources* of S.F. has added a component Chyron Scribe ultra-high resolution text generator and component input and output Ampex ADO to their component Betacam editing suite. Because the system remains component all the way through the chain, it's especially good for projects that will end up on large screen video projection systems, or on 35mm and 16mm film. Digital stereo audio, plus both 16- and 24-track analog recording capability compliment the component video... Last spring San Francisco's *Studio C* and *The Sound Service* merged to form *The Sound Recording Organization (SRO)*, which specializes in audio-for-video and film. All three studios have been busy with an assortment of commercials, feature and documentary work for a number of clients... *The Bay Area Video Coalition (BAVAC)*, the nation's largest non-profit video arts center serving both non-profit and commercial clients, announces the selection of David Bolt as executive director to succeed Mo Warshawski. Bolt recently served as program development director of the Pacific Educational Network. Warshawski will pursue his interests as a freelance writer and arts consultant. ■

Masters at Work

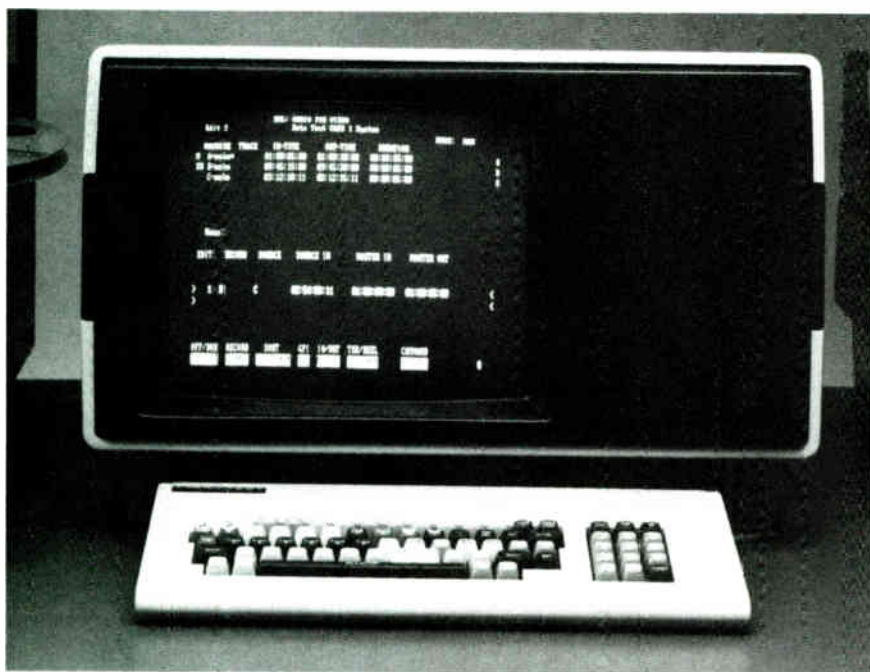
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CMX CASS I ONE PASS AUDIO BETA TEST

The system delivers audio synchronization and editing with console fader automation in one package.

by Lou CasaBianca

The focus in post-production technology centers around hard disk and optical memory editing systems, and what we have affectionately grown to know as the "user interface." The demand for high quality stereo audio for film and video production has proven to be one of the most important areas of expansion in video post-production facilities. At the same time many recording studios have expanded to handle the increase in high quality audio post-production for films and television. In both cases, the automated mixdown process has become an integral part of audio post-production. Like the post-production process for video, audio post for video has become edit decision list oriented and time code based. One of the true pioneers in hard disk editing systems, CMX Corporation is the developer of the first commercially available system. Source footage is dumped to disk and random access edited in a fraction of the time it normally would take. CMX, part of the Chyron Group, has become the de facto standard in video editing systems for broadcast television.

Recently, CMX introduced the CASS 1, Computer-Aided Sound Sweetener for audio-for-video and mix-to-picture sound sweetening. The availability of stand-alone automated production consoles and audio multi-track recorder synchronization systems has set the stage for the integrated approach of the CMX CASS. The system can interface to most audio consoles with VCA fader control. It delivers audio synchronization and editing with console fader automation in one package with two main operational phases: The Edit Phase and the Mix Automation Phase.

Edit Capabilities

There are two editing sub-systems: the editor and the general purpose interface (GPI). The editor syncs up and lays down all of the audio from the sources onto a multi-track audio tape recorder in the Edit Phase. Individual sources are synchronized with the master (i.e. cut picture) and recorded at standard level on separate tracks of a multi-track recorder. One of the machines controlled through the system is designated as the Master, either the edited videotape master or the multi-track audio machine. Synchronization is based on time code (SMPTE/EBU) which is read off the Master machine. The CASS 1 uses the CMX color-coded keyboard and CMX monitor. The Adams-Smith 2600 synchronizer system provides machine interface for most popular audio and video tape machines as well as film dubbers. This is the kind of technology that anyone who has ever been in the middle of an "octopus mix" has fantasized about.

The General Purpose Interface

The system will simultaneously control up to six video or audio machines as well as 14 non-time code devices via built-in general purpose interface (GPI) relays. This means that the GPI can control machines that do not use time code, such as audio carts, compact and videodisk players, 2-track machines, etc. The GPI screen is divided into five sections: the GPI identification area, enable status, trigger times, master time code, and motion indicator and mode display area.

The Edit Phase

The system design brings CMX editing techniques into the sound post-production environment. The com-

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mand "frame bump" allows the editor to move one tape machine in reference to another in increments of one frame (1/30th second) or in user-programmable increments of 1/100ths of a frame. The infamous "3:2 pull down" can be automatically synched-up in editing 35mm mag track to video. The 1/100th frame offset, which can also be entered manually, would be set to have one sprocket hole equal 25/100th of a frame.

The edit phase incorporates features such as user-programmable roll forward and roll back. Another feature, automatic cycle and chase, allows the editor to select material to be recorded onto the multi-track, with each time code point of each edit stored by the system in a CMX-standard edit decision list (EDL). The list can also be copied from the CASS memory and stored on a standard CMX EDL disk using an optional 8-inch CMX disk drive. The EDL may be stored not only in the system's memory, but also onto the internal 20Mb hard disk that is included with the system. In a commitment to integrated compatible systems design, the CASS 1 accepts input from a CMX-standard EDL disk. This makes it possible to take an EDL from a CMX video editing session and load it into the CASS 1 to use as a reference when building the multi-track audio tape. User bit notes on the list can then be referenced and used to facilitate the audio editing process. Once laydown on the multi-track recorder is completed, the editor can

The CASS 1 will simultaneously control up to six video or audio machines as well as 14 non-time code devices.

perform the automated mix on the CASS 1.

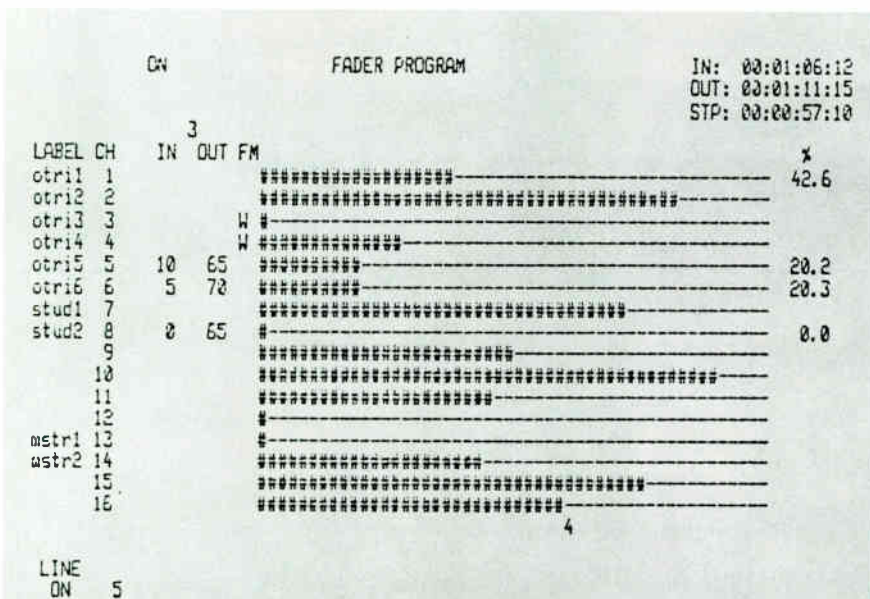
Console Automation

The mixdown automation system consists of two distinct sub-systems, the mix automation system and the fader program event. In the console automation phase, it can memorize the motion of up to 32 faders in a "mix buffer." In this phase, the separate synchronous tracks are fed into an audio console where their levels are precisely controlled. The mixed output may be recorded on an ATR or laid back directly onto tracks of the VTR. The mix can be replayed and modified until the results are satisfactory. A sub-system of the console automation system is the fader event, which allows the operator to execute frame accurate

cuts, mixes and crossfades which are then incorporated into the stored mix. This is an especially appealing feature. Instead of assembling razor blade sections from different takes, the magic mix can be realized on one pass and stored on hard disk. The start time and end time of the mix can be written to the CASS memory, by starting and stopping the master while mixing. Each mix has a start and end time code associated with it. The mix is active while the master is running between those two times. If there is no mix in the CASS memory, the start time can be set by simply starting the master and mixing. The end time is set when the master is stopped.

One of the most powerful features the system provides is the "electronic joining" of a new fader setup which is required in editing film scene changes. The system also supports a "revise" mode which allows the editor to roll back over a mistake and re-mix only those channels that must be changed, after which the mix can be continued. The mix automation system provides the capability to store several hundred mix versions on the CASS's internal 20 Mb hard disk. Stored mixes can be recalled into the active mix memory at any time, and can be accessed by project names and numbers assigned by the user. Mixes can be saved and archived onto floppy disk.

The maximum length of a given mix in active memory is a function of the amount of fader motion used in the mix. Mix lengths of over a half-hour are achievable. The fader program is a design feature that enables the editor to set up an event that can precisely and automatically modify fader levels and their rate of change. It can be used to remove a brief, undesirable sound, such as a cough or pop, or to insert a sound effect at a frame-accurate time. To "punch up" a sound effect, a fader can be brought up and then pulled down fast and more accurately than physically possible manually. Once the fader program event has modified the mix, it can be discarded, since the effect is stored in the mix memory. The mix memory screen contains information about the mix memory mode and the current fader levels. The screen is divided into four areas; fader identification, fader level display, mix control and mode display area. In essence, all the system's functions can be displayed on the computer monitor. This includes the fader program screen which is divided into five sections: trigger point, fader identification, transition timing, fader level and mode display area. The fader program allows the operator to do very



The CASS 1 fader program screen is divided into five sections. These are:

1. Trigger Point Area
2. Fader Identification Area
3. Transition Timing Area
4. Fader Level Display Area
5. Mode Display Area

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accurate cuts, mixes, and crossfades by programming the relevant fader values and transition times via the keyboard. CMX also markets the CASS 1E, a stand alone editor.

Sneak Preview

The CMX CASS 1 is a very powerful stand-alone system, but it is also the audio complement to CMX video editing systems since it uses the CMX edit decision list. One Pass in San Francisco, part of ScanLine Communications, was selected by CMX as the "beta" test site for the CASS system. ScanLines owns the Editel Group, which has post-production facilities in New York, Chicago and Los Angeles. The Editel and One Pass operations are among the most technologically advanced film, video and computer graphics facilities in the country. The company provides in-depth services for feature film, music video and interactive video production. In addition, a heavy schedule of broadcast commercials makes it the ideal laboratory environment for evaluating and "shaking down" such a system. Recently, we were invited to sneak preview CASS 1 by ScanLine president, Steve Michelson. We met with One Pass Audio sound editor/mixer Vance Frost and senior engineer Eric Mor-

"The biggest disadvantage of the CASS system now is that you can't control a one-inch video machine."

gan to preview the system. The following is an interview relating their impressions of the system after working with it under field test conditions for several months.

Mix: Let's review the kinds of projects and the equipment in the edit bay to set-up the environment that the CASS 1 fits into at One Pass Audio.

One Pass: We do two processes in this room. Mixing, recording, sweetening as one function. The other is synchronizing sound for film on video tape. We transfer film in the Rank Cintel room to video tape and then we bring in the audio tape to this room

and sync directly to the video tape. That's the One Pass film-tape process or "FT"™ process as we call it. That approach has become a standard, and a lot of productions are now being handled that way, although I think One Pass has pioneered the approach. Our other film-tape-film "FTF"™ approach uses the CMX 3400 controller and that's pretty much the standard in the state-of-the-art video tape editing device. We're very lucky in that we have this great relationship with CMX and they work very closely with us.

The board is a Harrison 32x32. Studer tape machines, the Studer A800 with 16- and 24-track heads, and the Studer A80 4- or 8-track. Adams-Smith synchronizers. We just received the Lexicon PCM70 digital effects processor, and we have an AKG spring reverb, Orban graphic equalizers and UREI limiters.

Mix: What do you have it set up to handle right now?

One Pass: Right now CASS can control all the audio machines, and eventually all the video machines. We try to have patch bays all over the place and run tie lines so that any device can technically control anything else. All of our I²s come up on the patch bays so that input and output of all the



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other edit suites come up in the patch bays. Basically any room can control any machine, including the 24-tracks sometimes.

Mix: What disk format is the CASS mix and edit information stored on, an 8-inch floppy or a 5½-inch?

One Pass: A lot of it is in the internal RAM on the IBM PC. We get the software on 5-inch floppies and then mixes are all stored on a hard disk. The system is designed to interface with Adams-Smith's synchronizers. Then we have Adams-Smith controllers through Calloway I²s that control audio and video machines with the CMX 3400 system. There is a separate synchronizer for the 3400 systems. And that's what we use for the synching of the film tape.

Mix: So if you wanted to have three one-inch machines and the 2-track and the 24-track, no problem just traffic management through the network of patch bays?

One Pass: That's the CMX 3400 system that's doing that with the Calloway I²s. The biggest disadvantage of the CASS System now is that you can't control a one-inch video machine, so that's one of the reasons we have the 3400 system in here. The announce-

"CMX is thinking their system is going to replace outboard synchronizers as well as automate your board for you."

ment of the PC-driven system that will interface with any system will change that. I think that CMX considers the CASS as a system for audio facilities who will use one ¾-inch video tape machine and not one-inch.

Mix: You see the CASS as an audio tool. Rather than buying an automated console, you can use your existing board—as long as it has VCA fader control—plug in the synchronizers, the monitor and keyboard and you're in business.

One Pass: It's my opinion CMX is thinking their system is going to replace outboard synchronizers, as well

as automate your board for you. Audio facilities will be the primary buyers. An audio facility will get one ¾-inch VTR/VCR machine and you're in business. Another thing that's odd about it is they don't really provide for recording onto the ¾-inch video machine. This is probably because you wouldn't really want to record on that ¾-inch. Generally, you wouldn't want to take that as your sound quality, because the quality is so bad. They assume you're going to do a mix to ¼-inch or a mix to 4-track and then take that somewhere else and have it laid back to picture.

Mix: They have design enhancements coming to resolve that limitation.

One Pass: In fact, you can control a Sony one-inch BVH-1000 machine with a parallel interface, but it's real limited in what you can do with it. You can't take advantage of a lot of the functions like jogging, slow speed, that sort of thing. CMX is working on a serial interface that will allow you to use a PC to control all the machines you want.

Mix: As a menu-driven controller, describe the CASS screen layout.

One Pass: There are six basic screens you work with, the initialization, edit,



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list management, general purpose, the mix screen and the fader screen. First, is the initialization screen which is kind of the general information that you need to know about how the system will respond to different machines and different elements. For example, we choose a master machine up here, you scroll to a position. It tells you to select a machine number to be the master A, B, C, etc. Of the six machines that are available, we pretty much always select A. You can customize it for any job that you might have, although we pretty much run in one configuration, which is the A machine. The video tape is always the master and the 24-track machine will be a slave, and the 4-track machine will be a slave with an offset.

The next screen is the edit screen; it gives you the listing of the three main machines you'll be operating, whether they're on or off, and their status. You have an ability to call them up and describe moves and commands. When editing, you set it up, try it out, do a preview, manually override the input and listen. Then you actually control record the edit. Then it jumps into the list, and you end up with a list of the exact moves you've made and the documentation on them. The list management deals with adjusting the EDL

and putting different things into it and out of it that would not be as in a normal edit. The GPI (general purpose interface) screen has 14 controllers that you have the ability to access to start things at certain time codes. CMX is talking about using the GPI triggers to do track selection for the multi-track machine. One of the guys here has used it to trigger a Mirage synthesizer and that's worked out pretty well. It generates pulses and serves as a start switch, and you can put in the time code address of the point at which you want it to start.

Mix: How do you feel about the documentation on the system?

One Pass: I tried to read the manual before I used it, I tried to look at it, I took it home a couple times and found that it didn't make a tremendous amount of sense, but it got me started on the keyboard. It wasn't that it didn't make sense, it didn't make sense to me. Then I got started working on the keyboard and I'd run up against a problem and I'd go to the manual and try to get substantiation. I'd find that the manual really didn't tell me how to get around that problem, whatever it was, so I'd end up calling the software company and asking them. That ended up being a pretty successful way of

dealing with it. They have been very helpful. We have enjoyed working with CMX in getting this system up to speed.

Mix: Recently, I spent a day at USC at an EditDroid hands-on seminar. It brought home the message about turning editors into computer programmers. The CMX-like editors are built around time code, everything resolves around the edit decision list. How do you feel about being captive to a keyboard as the editor's interface?

One Pass: I have seen EditDroid and I particularly found SoundDroid very interesting. Their whole point of view is that film is very labor intensive, you make a film and you put hundreds and hundreds of man hours into it on a fairly inexpensive device, a flatbed. Whereas you take video editors and you put many less man hours and use a much more expensive piece of equipment and the end product may cost the same or have some relationship that works out. I think they're heading in the right direction, but I think that it's a difficult journey to drag people from one place to another in either direction. Video editing presents a very different approach from audio editing. Coming here has been a real eye-opener for me. ■

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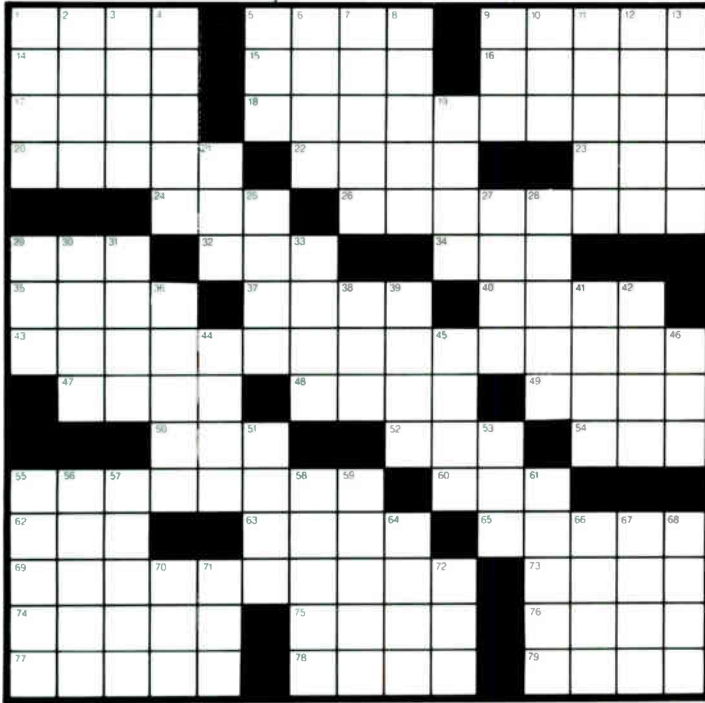
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MIX WORDS

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"SHAPE OF THE SOUND"

ACROSS

1. Certain reservoir
5. _____ Romeo
9. French clerics
14. Hebrew lyre
15. Sap
16. WWII pin-up
17. Pizza purchasing power
23. Dimension of a chamber
20. Fr. relative
22. '80s supergroup
23. The Greatest
24. Summer in Orleans
26. Partial
29. OPEC abbr.
32. Spring mo.
34. Sweet, to some
35. Diva's highlight
37. Greek letter
40. Sky prefix

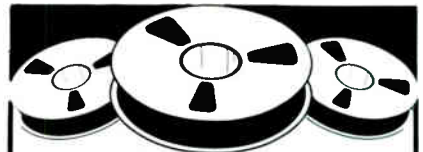
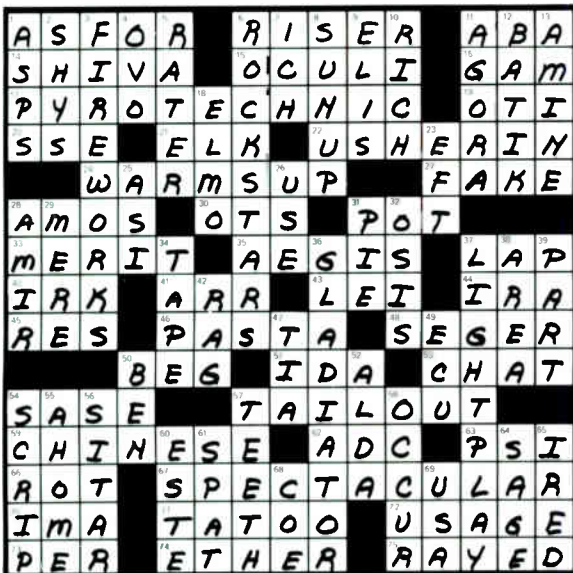
43. Never-ending studio consideration
47. Contend
48. Fr. wave
49. Quiet _____
50. EQ mfr. (abbr.)
52. Sub- or jet
54. Put on the docket
55. When 43A does this, it can produce 26A depending on 18A and 69A
60. Rotary control (abbr.)
62. Cicero's breakfast?
63. Haitian spirits
65. James Dean, e.g.
69. A phase, acoustically; or Van Morrison hit
73. Many colored item
74. "_____ of medicine"
75. Pub offerings

76. Rail
77. Nonsense
78. Post Mardi Gras period
79. Biblical name

DOWN

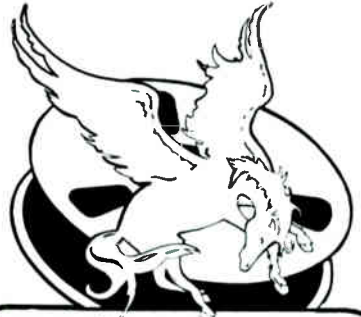
1. Store (with away)
2. The local propaganda folks
3. Poetic a.m.
4. Talk idly
5. High crag
6. Byron poem
7. College newcomers
8. Via _____
9. Farming prefix
10. Lugosi alter ego
11. Eno
12. Italian town
13. Having to do with vibrations in the air
19. Bireme necessities
21. Greek letter
25. Record label
27. _____-American (art)
28. Take place in the s/t continuum
29. _____ graph meters
30. Husbanded
31. This has been good to Joe Walsh "so far"
33. _____ toms
36. San Antonio site
38. Turn it up to _____
39. Good news in the trades
41. Towel letter
42. Reputation
44. Spirit
45. Filter through
46. Porcine abode
51. "Whiter Shade of _____"
53. Crag
55. Mountain ash
56. Do a zig and a zag
57. Prolong enjoyment
58. Relating to a key
59. "Fly Like An _____"
61. Brief
64. Tommy gun
66. Good fortune
67. Spanish river
68. Meadows
70. Part of i.e.
71. "_____ Sylphides"
72. Presidential monogram

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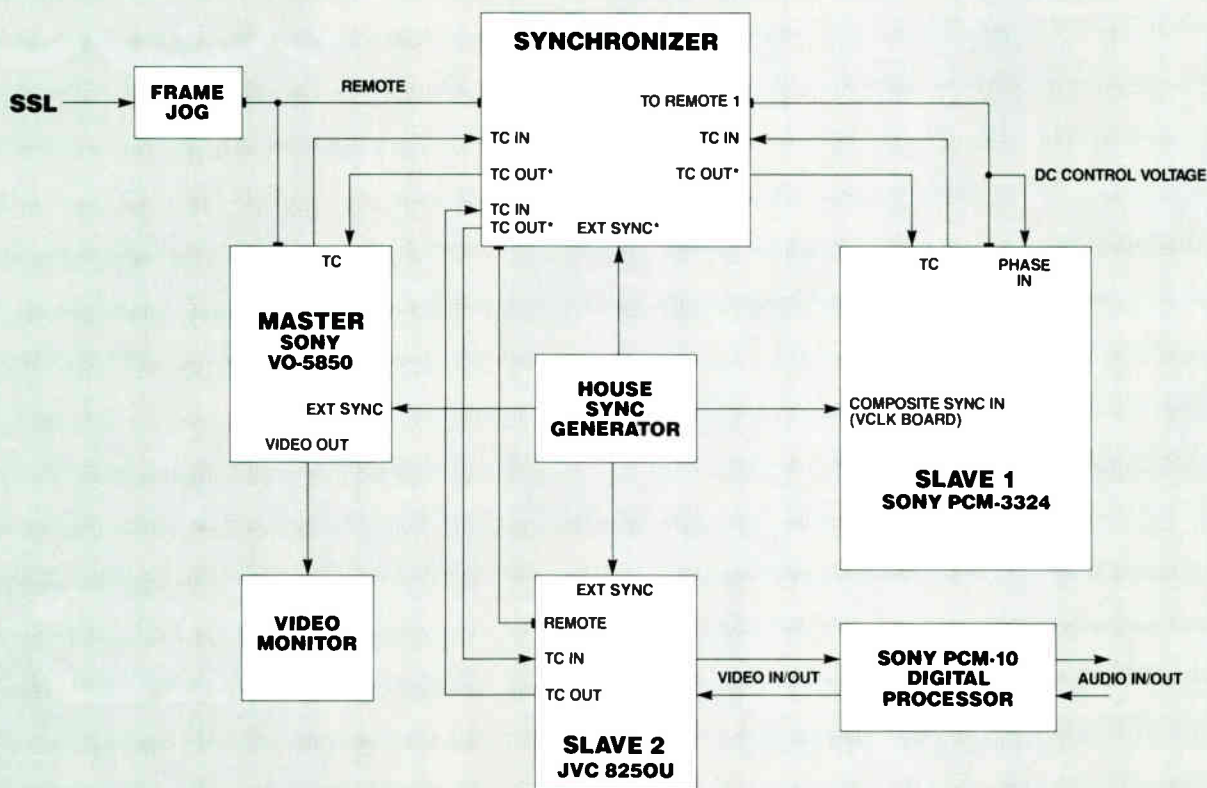


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* Time code generator shown as integral to synchronizer — external sync is used to genlock time code only!

facts added using the AMS DMX 1580-S digital sampler, were then either edited to the multi-track or left on a fader to be used as needed in the mix.

Outboard digital delays and the Quantec Room Simulator helped to highlight the mix, adding ambience and color as the mix required.

The final mix requirements were: mono, for optical transfer; stereo, for home video release; and music and effects for foreign distribution. Proper routing was established and again recorded on open tracks of the 3324. From here on it was a simple matter of transferring from the digital multi-track, again using the Stripper to clock the master recorder, to magnetic film which would be used to make the optical print.

Future Systems

Synchronizing audio with video or film is by no means new. It is the additional capabilities of the currently available technologies that are leading us to explore new avenues of creativity. The use of digital recorders has forever changed our perception of sound as it is reproduced in the various media we are exposed to daily.

Disk-based, digital sampling and random access systems that store large libraries of sounds, such as the New England Digital, Synclavier II system recently installed at the Dallas Sound Lab, are breaking new ground as we speak. Further advances in this area will ultimately take us to even higher plateaus, but for now the merger of the highest level of technologies is allowing us to achieve qualitative results that were once dreamed of in the early days of digital recording. Lack of generation loss, elimination of wow and flutter, combined with the proven reliability and aural integrity of digital recorders has given us the means to reach out one step further, providing clients with what they have come to expect with their pictures: high-quality sound. ■

Rusty Smith has been chief engineer of Dallas Sound Lab since its opening three years ago. His experience as a professional musician since 1972 led to an interest in audio engineering, acquiring a basic 4-track home studio. Moving up to an 8-track facility in Dallas, he was eventually hired at Goodnight Audio, a 24-track,

MCI-equipped studio. He served a brief stint as a freelance engineer before signing on with the Sound Lab.

Smith's current position has opened many doors, working with state-of-the-art equipment such as synchronizers and digital recorders. Learning the ins and outs of editing and mixing audio for various television commercials and feature film projects has proven to be an exciting and rewarding challenge.

Ron Lagerlof, currently head of technical operations at the Dallas Sound Lab, is a ten-year veteran of the recording studio business. Starting in Chicago, he learned the basics of multi-track recording at Universal Recording Corp., circa 1975, and then moved to Muscle Shoals, Alabama, to record the likes of Roy Orbison, Hank Williams, Jr. and John Prine.

Lagerlof moved to Dallas in 1980 to work for TM Productions, a national commercial music syndicator, responsible for the maintenance of three 24-track studios. He later struck out as an independent engineer and "systems facilitator," contracting the installation of DSL's three studios as well as others in the Texas area.

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MIX CANADIAN SUPPLEMENT



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by Linda Jacobson

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(Photo above) Master's Workshop in Rexdale, (outside of Toronto) offers a full range of recording services. The control room pictured here is equipped with a custom designed automated NEOTEK Elite console, two Sony PCM-3324 digital 24-track recorders, a BTX Shadow synchronizer, a Soundmaster computerized editing system and a large selection of outboard gear.



(Photo left) Post-production work at Master's Workshop in Rexdale.

it for sweetening or to combine both studios for 48-tracks. It's another reason, no doubt, that Blue Wave is seeing more video, TV, and film work, particularly voiceover and commercial projects. Yet Blue Wave handles music projects as well: they just completed a demo for a movie starring Men In Motion's Rick Hansen, and last summer, TV's *Star Search* held auditions there for local bands.

This year, Master's Workshop in Toronto opened a film sound-mixing theater, designed by master acoustician Terry Medwedycyk. Equipped with two 24-track Sony digital machines, the new theater, reports Doug McKenzie, "has been a pleasant surprise. We had a line-up of Expo '86 projects, the most impressive being Douglas Trumbull's Showscan production for the B.C. Pavilion. It's called *Discovery*, and the unique thing about it is that the entire 20-minute soundtrack, from recording to editing and mixing to delivery in the theater, is digital. We started with over 120 tracks of information and sound.

"In '86 we started moving heavily into film features. We just finished a

by Linda Jacobson

With over 100 2-inch 16-track and 24-track studios across Canada, one couldn't possibly speak to them all. Suffice to say that our northerly neighbor is handling gargantuan amounts of recording projects for national and international TV, video, radio, and film production. And music. *Mix* checked in with a few of the studio operations across Canada to get a feel for what's happening lately.

Specialty Studios

Blue Wave of Vancouver finished their fully automated, second 24-track room, Studio B, intended for voiceovers and overdubs. Mostly video work occurs in Studio A, using one-inch MCI layback gear. Blue Wave is unique—they own Vancouver's sole Q.Lock 4.10 synchronization system, drawing clients from all over who use

(Photo right) Corey Hart (L) with producer Phil Chapman at Le Studio Andre Perry.

NEWS FROM UP NORTH



Who's Hot?: The Studios Report

Spotlight '86. The Homegrown contests. Labatt's Battles of the Bands. The Fame Game. CBC's Rock Wars. Endless club band competitions. FACTOR, the Fund to Assist Canadian Talent on Records. No doubt about it, Canada provides plenty of opportunity for talented, unsigned bands to break into studio recording.

FACTOR and the various contests work together to help stimulate growth in Canada's relatively small

music industry. The Canadian Independent Record Production Association (CIRPA) set up FACTOR in 1981, and this year the grants are larger and more widespread than ever before. They work like this: a jury of industry pros listens to a band's demo tape. If they judge it worthy of investment, the band submits a theoretical budget and FACTOR lends half of it. If the band's record brings in money, they must repay the loan. Should disaster strike and nobody buys it, CIRPA writes off the loan. Not bad, eh? Most FACTORED album projects are of very high quality, and the Can-

adian offices of record labels such as WEA and A&M have shown much interest.

So, suppose you're in a hot band with a fat FACTOR-aided pocketbook, ready to record a gold album. Who is your competition for international record sales? We asked several recording studios to give their best bets on who's the next Loverboy, Triumph, or Joni Mitchell.

"The Toronto band *Glass Tiger* is starting to happen in the States," reports Paul Gross of Phase One in Toronto. "Also, a CBS group we recorded, *Cats Can Fly* (a progres-

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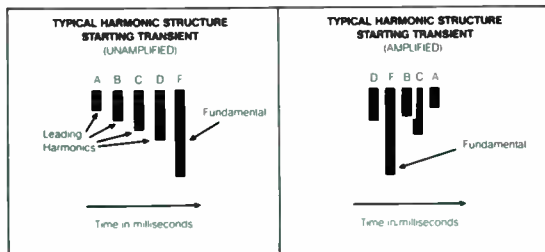
"I like the way BBE™ brings out the 'live' dimension in sound."

Bernie Grundman

When it comes to cutting discs, Bernie Grundman is the master. Ever since the late 60's, the music industry's top artists have been entrusting Grundman with the delicate task of preparing their record masters. The list of satisfied clients includes Stevie Wonder, Prince, Michael Jackson, Olivia Newton-John and Lionel Ritchie, to

Angeles. Even the finest components, you see, can be undermined by that all-important interface between amplifier and speaker. That's where phase and "overhang" distortion develop, due to voice coil characteristics, reflected impedance from the environment, crossover impedance anomalies and the

mechanical properties of dynamic speakers. The relationships among the fundamental frequencies, their leading harmonics and between the leading harmonics themselves become distorted in both amplitude and time. The result? Muddiness, poor imaging and pinched, colorized sound that lacks the presence and punch of the real thing.



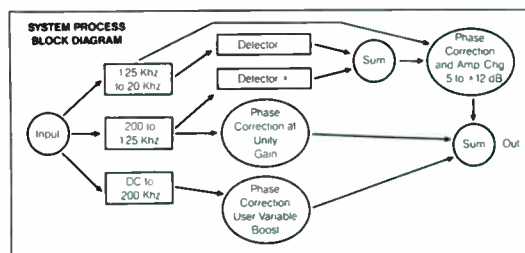
mechanical properties of dynamic speakers. The relationships among the fundamental frequencies, their leading harmonics and between the leading harmonics themselves become distorted in both amplitude and time. The result? Muddiness, poor imaging and pinched, colorized sound that lacks the presence and punch of the real thing.

name just a few. So when a critical listener like Bernie Grundman lists himself as one of BBE's satisfied customers, it's quite a compliment. "Unlike an equalizer, BBE is a dynamic process. It gives me the high end I want without the sibilance and without creating energy levels too intense for my cutting lathe to handle. I can foresee BBE becoming a very valuable tool in the mastering process."

The BBE 202R is a vital link in the chain of precision components used at Bernie Grundman Mastering in Los

angeles. Even the finest components, you see, can be undermined by that all-important interface between amplifier and speaker. That's where phase and "overhang" distortion develop, due to voice coil characteristics, reflected impedance from the environment, crossover impedance anomalies and the mechanical properties of dynamic speakers. The relationships among the fundamental frequencies, their leading harmonics and between the leading harmonics themselves become distorted in both amplitude and time. The result? Muddiness, poor imaging and pinched, colorized sound that lacks the presence and punch of the real thing.

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Goede Studios, Edmonton, Alberta

Dolby stereo film for international release, called *Judgement in Stone*. We still have a lot of television work, about ten different series were through here this year.

"We recently developed a computer system here called "Soundmaster" for the IBM-PC, designed by Bob Predovich and Andy Staffer. It's the heart of our audio editing process. We just started marketing it to other studios, and set up Soundmaster International, a separate company to service other audio facilities. The biggest response we're getting is from L.A."

In Montreal, the National Film Board is Canada's state-run studio specializing in film post-production and editing. Though not very well known in the private sector, almost every year the National Film Board wins Academy Awards for animation. They just built two new studios equipped with digital Neve consoles.

Mixed Bag Studios

Comfort Sound in Toronto had their busiest year since opening 12 years ago. Comfort is seeing more business for film and TV sound, as opposed to

records. In '86 they acquired a new Fostex 16-track, because "there are a lot of musicians with home-based studios recording on this same 16-track format, who want to mix in a larger studio with good monitoring and a lot of outboard gear. We also picked up a Roland SBX-70 processor, because a third of our work requires audio/video interlocking—mostly industrial films and jingles." Comfort Sound also runs one of Canada's four 24-track remote recording trucks, which does all the concert audio for the Canadian video music network. Most recently, they recorded UB40 and the Fine Young Cannibals at a festival in Montreal.

Goede Studios in Edmonton, Alberta, does "about 40 percent music, 40 percent commercial production, and 20 percent film scoring. We've been in Edmonton for ten years but saw Alberta's industry coming of age, so we built a new facility, to be competitive with Toronto and Vancouver," reports Leo Liersche. L.A.'s Westlake Audio Design designed the multi-purpose studio: two rooms, one 16- and one 24-track, including an AMS AudioFile hard disk-based digital recording/retrieval/editing system. "We're in the process of bringing in a full-time vid-

Out On The Farm: Elora Sound

The aroma of coffee coaxes you awake. You roll out of bed. Amble through the rambling, 19th-Century farmhouse, into the dining room. Feast upon a sumptuous breakfast with fresh, homemade rolls and jams. Relax a bit, then pump iron in the exercise room (gotta get in shape for your video). Shower. Then you're out the door, after asking the front desk to set up a court for your evening squash game. You head for the old stone barn, because last night the band wrote the last tune and now you're ready to lay down some tracks.

Such is life at Elora Sound in scenic Fergus, Ontario, about 90 minutes west of Toronto. Audio engineer Bill Mather opened Elora Sound as an "environmental studio" to specialize in long-term album projects. Located on a working, 110-acre farm, Elora Sound, says Mather, "appeals to people

who are interested in recording in the country. People who feel under pressure to produce a new album. People who can't, in their normal everyday life, come up with the material and the performances they want. People who need to get away from everything in order to do their best."

Elora Sound's studio, in the barn, was designed by Terry Medwedyk about three years ago. Says Mather, "it has a very warm sound, and we kept many of the original elements—exposed stone walls, wooden beams. We didn't want that space-age approach." The studio is based on 24-track MCI and 2-track Ampex decks, with 3/4-inch Sony VTRs, video/audio SMPTE lock-up and post-production gear.

"Because we're a resort studio, we offer services that other studios can't. We have a cook and a gourmet meal service, and the bands stay in a big farmhouse. There's volleyball, a hot tub, that sort of stuff. The point of being in a resort studio is to not worry about normal

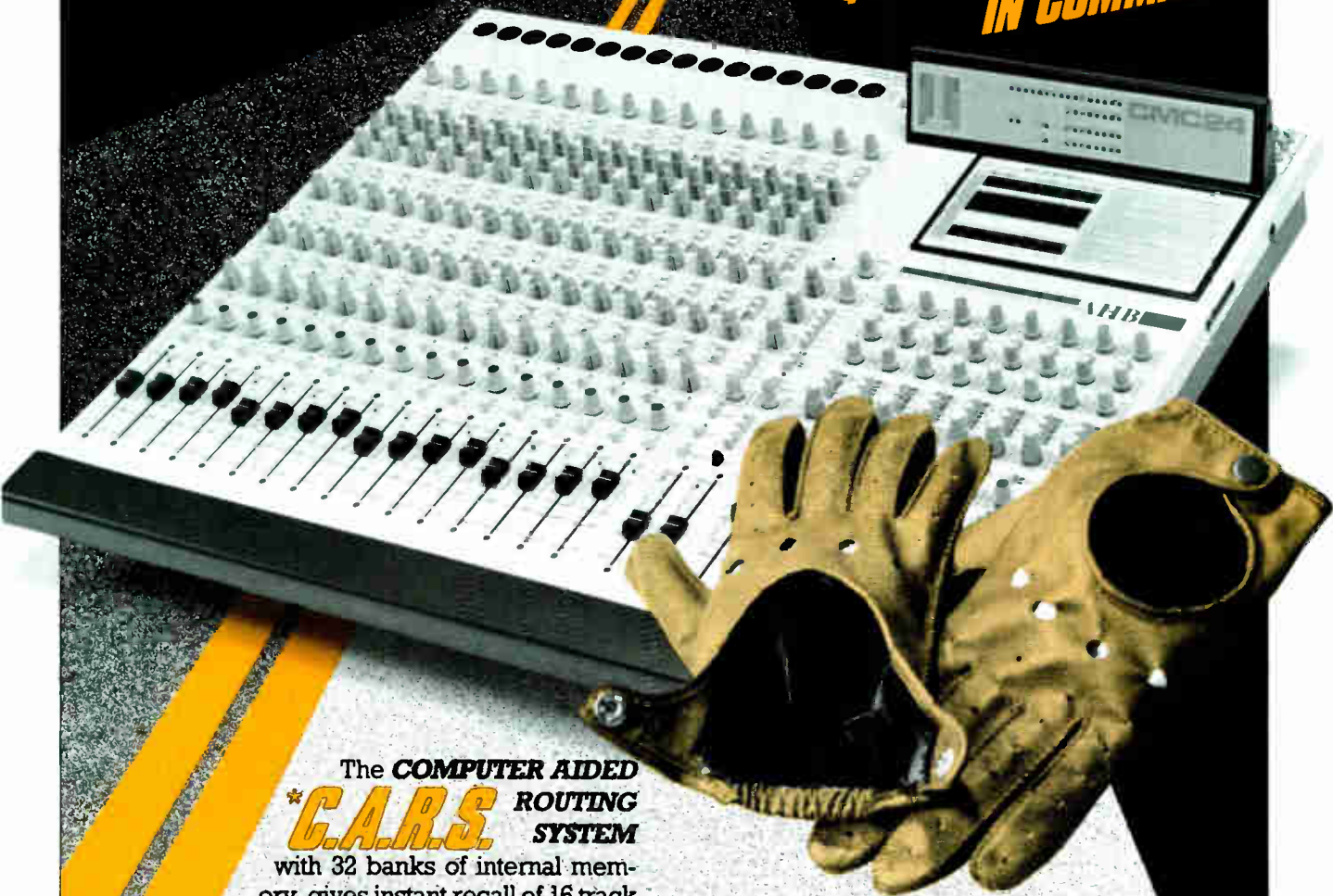
day-to-day things, so we take care of it all. We're about an hour from the airport (Pearson International), so we even run limo service to and from there.

"Fergus is far enough away that it really is legitimate 'country,' yet it's not that long a drive from Toronto, or Detroit, or Buffalo. When we built the studio, we knew that many resort studios go someplace because it's a great location, scenically. They forget that if somebody's in for two months, no matter how wonderful your facilities, eventually the client needs to get out of there. We didn't want a location where you have to go to the local legion for a drink. Elora has a big stone gorge and spectacular natural beauty, but it's also a big tourist town with art galleries, fine restaurants, a squash and tennis club, an art movie theater... even though the population is only five or six thousand, you find things you wouldn't find rurally."

—Linda Jacobson

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eo producer. Also, as far as I know, we're the only ones in Edm.onton with a program for band projects, from concept to market entry. We access where the band wants to go, build a complete business and market plan with distributorship and publishing allowances, record, and immediately build in the video end."

Little Mountain in Vancouver is a

15-year old studio that opened to provide sound for commercial film, A/V's, and jingles. Yet in the past couple of years, they've established a sizeable music clientele: half their business comes from rock and pop recording. "This year," reports Alison Glass, "we've had in Loverboy, Bon Jovi, Julio Iglesias, Bryan Adams, and Donna Summer, who recorded the song for

the Statue of Liberty celebration.

"We've added more outboard equipment, including a lot of new Yamaha REV-1s, and REV7s. We're also expanding our SMPTE lock-up system, and opening a layback room in early '87. We're going to Los Angeles to look at studios and their equipment, to get an idea of how to go."

Manta Sound in Toronto just installed two 32-track and two 2-track Mitsubishi digital recorders, intended for film work and jingle work. "We just completed our one-inch video layback facility, which is taking off on us," reports Lu Ann Leonard. "And we're putting in a fourth studio, our post-production facility. Also, because we have the largest studio in Canada (floor space), we're seeing a lot of symphony recording film and jingle work." Manta, whose projects include 50 percent jingle work, 25 percent album work, and 25 percent film work, lately has been doing work for ad agencies from Chicago and New York. "The Canadian dollar is on our side, it's wonderful. We've been so busy."

Business at Vancouver's Ocean Sound has grown this year, with many more rock/pop albums, increased jingle production, and several animation and soundtrack projects. This two-studio facility, recently redesigned by the seemingly omnipresent Terry Medweddyk, has changed a lot in the past few years. Says Kathleen Larkey, "Now we're very electronically-oriented, it seems like everything can be done on machines." Ocean Sound work revolves around their new Fairlight Series II, the E-mu II, Yamaha QX1 and TX816, Oberheim gear, and Roland's SMPTE/MIDI synch'er, the SBX-80.

The Chips Davis LEDE™ room in Toronto, Sounds Interchange, installed a new four-way, time-aligned monitoring system, designed by Claude Fortier. This year Sounds Interchange recorded the popular Canadian rock group, Parachute Club, produced by John Oates, as well as an album by classical guitarist Leona Boyd. The studio continues to do "lots of everything." They're into the second season of post-production for Lorne Greene's "New Wilderness" show, and completed post on the last three SCTV series. Commercial jingles keep 'em busy as well, for clients that include McDonald's and Pepsi.

Music Mavens

At Elora Sound in Ontario, "one of the biggest changes we've seen is ev-

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everything mellowing out a bit. A year ago we were doing a lot of dance bands, but now people are following the Sade route and going for the more yuppie music." Nevertheless, Elora hosted the band Rush for three months in '86. They wrote most of the tunes for their new album, handled pre-production, recorded everything, then headed for England and Laussarat to complete it. Their last album, *Power Windows* (which went platinum), was also recorded at Elora Sound.

Lots happening at Le Studio, the world-class recording and video post-production complex 45 minutes north of Montreal. This is the place that recorded the Police, David Bowie, Asia, Chicago, and many more. Now you can have a piece of the action; in July, Le Studio went public. The first three weeks of stock issuance saw the unit

"A year ago we were doing a lot of dance music, but now people are following the Sade route."

—Elora Sound Studios

price move from \$3.50 to \$7. Reports Yael Brandeis, "we've prepared a Synclavier room to service both music and film/sound effects clients. We also have expanded and diversified tremendously in video, and have a very sophisticated post-production suite with four DVE decks, along with an Ensoniq Mirage sampler and a computer graphics department based on Bosch FGS-4000 and the Quantel Paintbox. We have a small shooting stage for video clips, but we don't do shoots unless they involve a great deal of computer graphics. We have done a video for pop star Michel Lemieux, who has an international deal with Polygram. We shot it here, with the whole background done by computer graphics. Video is the thing, and computer graphics in video seems to be taking the forefront. Now we're making plans to create a similar video facility, probably with the Synclavier, in Washington D.C.—Andre Perry Video, which will open in early '87."

This year saw rock studio Metalworks, 30 minutes from downtown Toronto, working with the internationally popular bands Helix, Platinum Blonde, and Refugee. They also completed overdubs and two bed tracks for *The Sport of Kings* album by Triumph. Matter of fact, Triumph owns

this studio, whose clientele is 90 percent rock album- and demo-oriented. With the assistance of George Augspurger, Metalworks has redesigned the control room, which is built around an MCI 600 Series board and two new 24-track Studers A800s. Andy Holland notes the studio's next step is getting a new board, probably in early '87. "We're looking at Neve, SSL, Westar, and Mitsubishi, because we're contemplating putting in a digital machine."

Vancouver's Mushroom Studios built an angled ceiling in their main studio, designed and constructed by Richmond Sound Design. "We've been going 24 hours a day, seven days a

week," exclaims Linda Nicol. "We've had alternative music, basic rock, heavy metal, all sorts. We just worked on an album with Long John Baldry, who's a little more bluesy. We had heavy metal band Queensryche, from Seattle; their album was released in July. Because of Expo '86, we've had bands in from England and Germany, who came to play at Expo but stopped by to do some recording."

On the boundary of metro Toronto is the 12-year old Phase One Studios. This year, with the help of Terry Medwedyk, they redesigned their Studio B with an SSL console. The studio's been working with more and more

—CONTINUED ON PAGE 187

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— FROM PAGE 180, WHO'S HOT

sive quartet whose first single landed in Canada's Top 10). And *Platinum Blonde*. Another Canadian artist named *Luba*, she's going to be something in America. You'll probably start hearing about *Honeymoon Suite*, too. Bryan Adams sang on one of the tracks they just recorded here."

And we kept hearing these names. Comfort Sound in Toronto recorded a concert by Glass Tiger last spring. The client was the Canadian music video channel, MuchMusic, which sold the show to MTV. That was a MuchMusic breakthrough, for they'd never before sold a show of a Canadian band to the States.

"Soon you'll hear Platinum Blonde," reports Andy Holland of Toronto's Metalworks Studio. "Their new album *Alien Shores* was recorded and mixed here. Their last album sold over 400,000 copies." (That's quadruple platinum in Canada.)

Pop rocker Luba, on Capitol Records, is also a favorite of Yael Brandeis, Le Studio's (Quebec) manager: "She's fantastic!" (Luba's video was shown in August on the U.S. Home

Entertainment Network in a salute to "women rock stars of the future.")

"Honeymoon Suite, you'll be hearing them, they did some recording and most of their mixing here for their latest album," concurs Alison Glass of Little Mountain Studio in Vancouver.

And *Haywire*. They keep talking about Haywire. This multi-contest-winning pop/rock band from Halifax, after being signed to Canadian label Attic Records, produced an inexpensive EP (mixed at Metalworks). Last April, their first single "Bad Bad Boys" was the Number One CHR add in Canada. Then the whole album went gold.

Have you heard Torontoan *Jane Siberry*? Her two LPs, *No Borders Here* and the new *Speckless Sky* (recorded at Manta Sound and Inception Sound) are getting raves. The albums are manufactured by Open Air Records, the vocal music subsidiary of Windham Hill Records. Comfort Sound completed the audio for her new video, and reports "Jane is sort of a cross between Laurie Anderson and Joni Mitchell. She's our neighborhood-kid-makes-good, and just got signed to A&M in the States. We think she's

going to be a really major star."

Moving westward, Vancouver has strong independent record labels, such as Zulu Records and Nettwerk Productions, that support the local alternative rock scene. "Not the kind of stuff you'd expect to hear on commercial radio," says Linda Nicol of Mushroom Studios. "But in the last year, some of these bands have been signed by major labels. That's a real step forward. Nettwerk's entire catalog was just picked up for distribution by Capitol/EMI in Canada. That included *Skinny-Puppy*, *Moev*, and *Grapes of Wrath*, who all recorded here. Warner/Reprise in Los Angeles picked up *54.40*. These bands are starting to be in a position where people will hear their names a lot more."

Other touted talent: the classical *Bowkun Trio* (on Duke Street Records); reggae act *20th Century Rebels*; *Tchukon*, a pop R&B band of Quebecers and American emigrants, on Aquarius Records; hard rockers *Helix* on Capitol Records; pop acts *Kim Mitchell* and the French Canadian band, *The Box*, both on the Alert Label; and *Idol Eyes*, on WEA.

—Linda Jacobson



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—FROM PAGE 185, UP NORTH

international bands. "We've recorded Triumph, Saga, Kiss, Air Supply, Alice Cooper," lists Paul Gross. "We're getting a lot of New York engineers and producers now, too. We've been working with more of the bigger Canadian acts, too, the ones on CBS or Capitol Records, who often bring in an American or British producer or engineer."

Closing down this year is Toronto's Amber Studio, which was Canada's first to install digital multi-track. The

"Vancouver has a really vibrant scene, and there's an immense amount of talent. People don't have to go to L.A. or New York anymore to make it, they can stay home and become a success."

—Kathleen Larkey,
Ocean Sound, Vancouver

landlord chose not to renew their lease. Amber was owned by industry veteran George Semkiw, who's opted to become a freelance producer. Semkiw has been in the business for 22 years working with everyone from Harry Belafonte to Lou Reed, Clearasil to Lee Jeans, and wants to work with new, unsigned bands as well as seasoned pros.

One final note: the American dollar is worth \$1.38 in Canada. You might just want to go north, young band. ■

Canadian MIDI Activity

MIDI madness runs rampant in Canada, although there are just a handful of MIDI-based businesses. "You name it, we use it" is the MIDI motto of musicians and studios nationwide, in everything from rock recording to jingle production. TRACS (the informal organization of Toronto studio owners) has been more active than ever due to the proliferation of MIDI-oriented meetings and manufacturers' seminars. The growing CMUG (Canadian MIDI Users Group) publishes a newsletter from their Toronto headquarters. Quebec boasts a French-speaking MIDI users group based in Montreal.

Mix spoke with Jim Burgess, a synthesist, keyboard player, and programmer who runs **Saved by Technology** in downtown Toronto. Burgess, whose past and present clients include Rush, Honeymoon Suite, Robert Palmer, and Stevie Wonder, established a MIDI pre-production basement studio three years ago. It blossomed. Today, S.B.T. studio work comprises an even mix of record projects, film and TV soundtracks, and commercials. Says Burgess, "we're not a conventional studio in that everything we do involves sequencing, programming, and sampled sounds. We also have a retail division and a distribution division; we're a hybrid between a music store and computer store. It all works together. Our studio is tailor-made for the needs of some of our store's customers, who own small MIDI composing systems and can put together the pre-production for their projects at home, then come in the studio to orchestrate and produce the final version."

S.B.T.'s studio is dedicated to the

Macintosh computer. Main software tools include Mark of the Unicorn's Performer and Professional Composer (the latter provides printed lead sheets), Opcode sequencers and editor/librarians, and Digi-Design sampling software. Music machines include Emulator II, Yamaha TX816, Prophet VS, Oberheim Xpander, and a full PPG system, with a Yamaha KX88 and Roland Octopads controlling the lot. A Roland SBX-80 provides SMPTE interlock with any audio or video source (perhaps one of S.B.T.'s 3/4-inch Sony BVU video decks).

Also in Toronto is **XL Electronix Computer Music Centre**, operated by guitarist/synthesist Kevin Barr since their opening almost two years ago ("catering to what, at that time, was a nonexistent computer market"). According to Barr, "Our main thrust is music software for just about everything from IBM and Macintosh to Commodore. We sell synthesizers and interfaces. We also publish a newsletter, and do business through the mail and by phone."

Barr told us that the hottest-selling programs in Canada are Mark of the Unicorn's Performer, Personal Composer (Jim Miller), and Total Music (Southworth Music Systems). Curiously, "We've had more success with Yamaha's CX5M Music Computer than probably most of North America. For a few months we've had the second version which I don't believe has been released in the States, and we've gone through two to three hundred of them. It's an ideal orchestration device for someone with a limited budget."

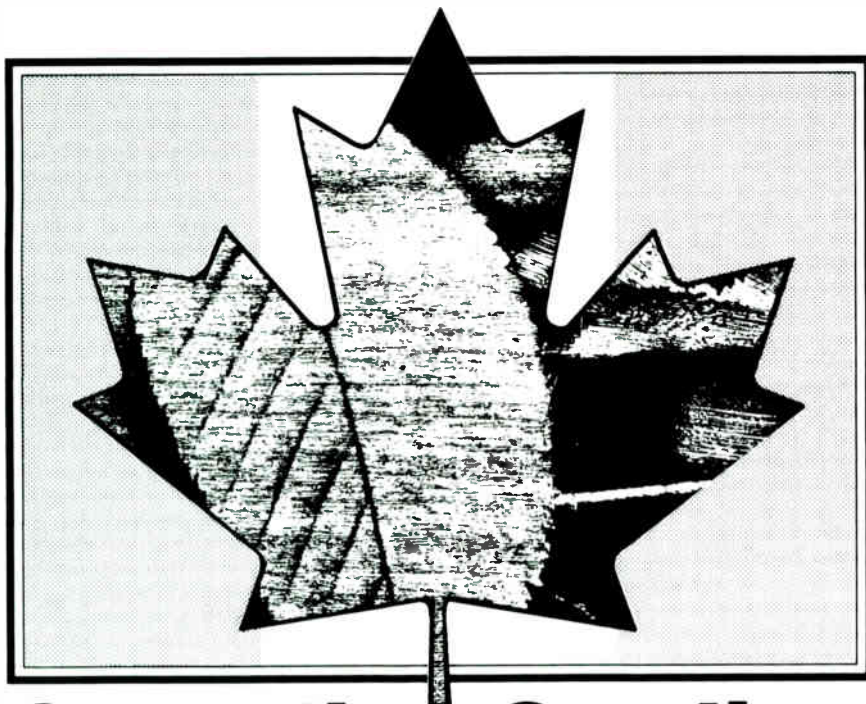
So who's buying? "Our market is split up into home-based composers (about half), who probably will end up in the studio. Studio guys account for about 30 percent, stage performers 20 percent. Many of our systems cater to those who

want to do most of their preparatory work at home, where it doesn't cost \$150 an hour." We asked if Canadians are creating MIDI software: "What we've found is people writing small routines, things like editors or small sequencing programs. Nobody up here is getting into very large programs like scoring software or large sequencing programs."

Then we heard about something in Quebec. Producer/engineer Daniel Vermette notes "I've been involved with Atari computers, working with the people who design **Soundwave Software** in Montreal. Their program is Super Switcher, a split-keyboard device based on the Atari ST Computer." The brainchild of designer Charles Guerin, Soundwave also recently released the SW-8 Sequencer, an 8-track sequencer/recorder for the Atari ST (and designed for musicians with little computer experience). Currently in development is the 24-track version. Soundwave software is beginning to make its way into the States.

How are the studios utilizing MIDI? A small sampling (no pun intended) of comments: "Modular Music, the studio next door to ours, writes a lot of music for commercials and audio-visual presentations. We're electronically linked so if any of our clients require MIDI capability on an Emulator or whatever, they just beam the stuff over from their room without having to move the synthesizer" (Doug McClement, Comfort Sound). From Leo Liersche of Alberta's Goede Studios: "We use a sampler for everything from vocals to sampling drums or bass sounds, loading them into the AMS AudioFile, then triggering them off tape for a certain track. You name it, we're using it."

—Linda Jacobson



Canadian Studios

4 & 8 TRACK

The information in the following listings was supplied by those listed. *Mix* claims no responsibility for the accuracy of this information. Please verify critical information directly with the studios.

[8] A CAPPELLA MUSIC
also *REMOTE RECORDING*
#14 Oriole Rd., Lethbridge, AB T1H 4S3
(403) 328-4261
Owner: Murray Nelson
Studio Manager: Caroline Amies

[8] ACCUSONIC
70 Bathurst St., Toronto, ONT M5V 3P5
(416) 368-1262
Studio Manager: Paul Gallienne

[8] AIRLAB STUDIOS
also *REMOTE RECORDING*
109-B Portland St., Toronto, ONT M5V 2N3
(416) 361-0562
Owner: Kenneth J. Kroeker
Studio Manager: Peter McFadzean

[8] ALBATROSS RECORDING STUDIO
11870 Jean-Masse St., Montreal, QUE H4J 1S3
(514) 332-1317
Owner: Richard Murray, Ambroise Dufresne
Studio Manager: Richard Murray, Ambroise Dufresne

[8] ALDON SOUND-4-STUDIOS
also *REMOTE RECORDING*
1449 Redwood Ave., Windsor, ONT N9C 3P2
(519) 256-3900
Owner: Don Lazurek
Studio Manager: Don Lazurek

[8] ATLANTIC MULTIMEDIA RECORDING STUDIOS
also *REMOTE RECORDING*
17 Shibu Court, Fredericton, NB E3A 4T6
(506) 474-1180
Owner: Richard Hughes
Studio Manager: Kevin Herrng

[8] ROLAND BESSETTE
also *REMOTE RECORDING*
Box 364 Succ Brossard, Brossard, QUE J4Z 3H5
(514) 465-8076
Owner: Roland Bessette
Studio Manager: Roland Bessette

[4] BISON RECORDING LTD.
also *REMOTE RECORDING*
311 Kenny St., Winnipeg, MT R2H 3E7
(204) 233-4464
Owner: Howard A. Kazuska
Studio Manager: Howard A. Kazuska

[8] CADENCE SOUND STUDIO
P.O. Box 306, Belleville, ONT K8N 5A5
(613) 966-2014
Owner: Christopher Flint
Studio Manager: Angela Black

[4] CHROMEDIA PRODUCTIONS
also *REMOTE RECORDING*
50 Place Cote Vertu #116, St. Laurent, QUE H4N 1G2
(514) 331-5816
Owner: Dom Vocisano
Studio Manager: Dom Vocisano

[2] CLJ ENTERPRISES
109 Baldwin St., Toronto, ONT M5T 1L7
(416) 977-5824
Owner: Csaba L. Jaszberenyi

[8] COONEYTUNES LTD.
1070 Bleury Ste. 301, Montreal, QUE H2Z 1N3
(514) 397-8819
Owner: Ian Cooney
Studio Manager: Herb Gilman

[4] CURRENT PROJECTS
also *REMOTE RECORDING*
51 MacDonell, Toronto, ONT M6R 2A3
(416) 533-6829
Owner: Ian Murray, C. Cobb
Studio Manager: Ian Murray

[8] DESCHAMPS RECORDING STUDIOS
314 Dundas St. W., Toronto, ONT M5T 1G5
(416) 977-9740
Owner: Claude Deschamps
Studio Manager: Claude Deschamps

[4] I.C.A. ARTIST ACCESS #1
5787 S.E. Marine Dr., Vancouver, BC V5J 3H1
(604) 278-0232
Owner: I.C.A. Institute of Communication Arts
Studio Manager: Linda McCann

[8] KIRKLAND SOUND RECORDING
also *REMOTE RECORDING*
9 Summit Ave., Kirkland Lake, ONT P2N 1M6
(705) 567-3847
Owner: Bob May
Studio Manager: Bob May

[4] LE SONOMAIRE
also *REMOTE RECORDING*
246 St. Elzear Blvd. E., Laval, QUE H7M 4A2
(514) 668-0638
Owner: Claude Corbeil
Studio Manager: Claude Corbeil

[8] LE STUDIO DU PARC ENR.
392 Latour, St. Jean Sur Richelieu, QUE J3B 1M8
(514) 348-9359
Owners: Robert Rheault, Robert Lagacé
Engineer: Robert Rheault
Dimensions of Studios: 27 x 13 including drum booth.
Dimensions of Control Rooms: 16 x 13
Tape Recorders: Tascam 38, 8-track; Tascam 32, 2-track.
Mixing Consoles: Soundcraft 400B and Soundcraft 200Bs.
Monitor Amplifiers: Bryston 3B (monitors) Quad 33 (headphones).
Monitor Speakers: JBL 4411, Minimus 7.
Echo, Reverb & Delay Systems: ART 01A digital reverb (2.4 update), Roland SRV 2000 digital reverb, Roland SDE 3000 digital delay.
Other Outboard Equipment: Switchcraft and ADC patch bays, dbx noise reduction, Roland JX-8P synthesizer, PG 800, MSQ 700 digital keyboard recorder, Peavey Encore amplifier, Beyer DT-100 headphones, Ashly SC-50 compressors.
Microphones: AKG D224E, D1200, Audio Technica ATM 21, Beyer MC160, X1N Soundstar, Neumann KM-84, Sennheiser MD 409, Shure SM57, Sony ECM 331.

[8] MUSIC GALLERY
also *REMOTE RECORDING*
1087 Queen St. W., Toronto, ONT M6J 1H3
(416) 534-6311
Studio Manager: Paul Hodge

[8] MUSIC INDUSTRY ARTS RECORDING STUDIOS
D1042, Fanshawe College, P.O. Box 4005,
London, ONT N5W 5H1
(519) 452-4470
Owner: Fanshawe College
Studio Manager: Jan Wetstein

[8] N.B. STUDIO
also *REMOTE RECORDING*
1731 Centennial, No. Battleford, SK S9A 3J2
(306) 445-7085, 445-4880
Owner: Dennis Cann, Larry Knibbs, Pat Smith, Angie Delaire, Lindsay Parkinson
Studio Manager: Dennis Cann
Engineers: Larry Knibbs
Dimensions of Studios: 800 sq. ft.
Dimensions of Control Rooms: 20 x 15, vocal isolation booth: 10 x 8.
Tape Recorders: Otan 5050 Mark III, 8-track; Otan 5050 Mark III, 2-track.
Mixing Consoles: Yamaha 1608 16 x 8.
Monitor Amplifiers: Haller, NAD.
Monitor Speakers: JBL 4411s, Auratone 5Cs.
Echo, Reverb & Delay Systems: (2) Yamaha REV7s, Yamaha SPX90.
Other Outboard Equipment: Loft compressor/limiter/gate, (2) Yamaha 1/3 octave EQs, Nakamichi cassette.
Microphones: AKG 414, Shure SM57s, SM58, Sennheiser 421, Beyer Dynamics.
Instruments Available: Yamaha CP-70 electric grand; Roland MK-20 piano module; Yamaha DX7, TX7; QX7 sequencer; E-mu Drumulator; Roland electric drums model DDR-30.
Video Equipment & Services: Sony 8mm (to Beta or VHS) with editing facilities primarily for live recording and promotional packages.
Rates: \$35/hr., block booking rates available upon request.

[2] PAVANNE AUDIO
only *REMOTE RECORDING*
P.O. Box 7, Place du Parc, Montreal, QUE H2W 2M9
(514) 270-8394
Owner: N. Fraser
Studio Manager: N. Fraser

[8] PERFECT SOUNDS
132 Ivanhoe Crescent, Pointe Claire, QUE H9R 3Z8
(514) 697-0235
Owner: Fred Grindley, Keith Ferguson
Studio Manager: Fred Grindley

[8] PERRY'S RECORDING STUDIO
Box 731, Chase, BC V0E 1M0
(604) 679-3018
Owner: Doug Perry
Studio Manager: Doug Perry

[8] PIZZAZZUDIO
1063 Spadina Rd., Toronto, ONT M5N 2M7
(416) 489-9555
Owner: Barry LuBotta
Studio Manager: Barry LuBotta

[8] PREMIER RECORDINGS LTD.
also REMOTE RECORDING
8530-190 St., Edmonton, AB T5T 3X9
(403) 487-3083
Owner: Mel Gargus
Studio Manager: Mel Gargus

[8] RESMER RECORDING STUDIO
592 Almira St., Pembroke, ONT
(613) 732-3102
Owner: Elmer and Ron Resmer
Studio Manager: Ron Resmer

[4] SMITH SOUND
also REMOTE RECORDING
2422 Galt St., Vancouver, BC V5R 2R7
(604) 434-5010
Owner: J. Marie Smith
Studio Manager: Les Clarke

[8] SOUND IMAGE STUDIOS
also REMOTE RECORDING
Box 18, Grp. 50, SS1, Winnipeg, MAN R3C 2E8
(204) 338-8332
Owner: Mark Maniash, Keith Manash
Studio Manager: Mark Maniash

[8] SPECTRUM PRODUCTIONS LTD.
also REMOTE RECORDING
10433-80 St., Edmonton, AB T6A 3J5
(403) 466-2723
Owner: Gary Semaniuk
Studio Manager: Gary Semaniuk

[8] STUDIO A.V.S. ENR.
also REMOTE RECORDING
162 St. Eustache, St. Eustache, QUE J7R 4K9
(514) 472-2784

Owner: Audiotec Laval Enr., Robert Allard
Studio Manager: Claude Pigeon

[8] STUDIO NORTH
also REMOTE RECORDING
12 Yorkville Ave., Toronto, ONT M4W 1L4
(416) 920-2009
Owner: M. Gold
Studio Manager: Blair Clark

[4] THIRD DAY RECORDINGS
Box 23, St. Martins, NB E0G 2Z0
(506) 833-2284
Owner: Tim Davidson
Studio Manager: Tim Davidson

[8] WESTRACK COMMUNICATIONS LTD.
also REMOTE RECORDING
332 17 Ave. SW, Calgary, AB T2S 0A8
(403) 228-2950
Owner: P.A. Andrews
Studio Manager: Sean Mahoney

[4] WILD WEST MUSIC OF CANADA LTD.
11035 150 St., Edmonton, AB T5P 1S1
(403) 465-2966
Owner: Donald L. Schulz
Studio Manager: Richard G. Bell

[16] ARAGON SOUND
11 W. 2nd Ave., Vancouver, BC V5Y 1B1
(604) 324-1849
Owner: Howard Fitzgerald
Studio Manager: Howard Fitzgerald

[16] A.R.P. TRACK PRODUCTIONS
28 Valrose Dr., Stoney Creek, ONT L8E 3T4
(416) 662-2666
Owner: Nick Keca
Studio Manager: John Keca

[16] BLUE JACKET
9 Davies Ave. 2nd Fl., Toronto, ONT M4M 2A6
(416) 469-4383
Owner: Greg Fraser
Studio Manager: Greg Fraser

[16] BROCK SOUND PRODUCTIONS
576 Manning Ave., Toronto, ONT M6G 2V9
(416) 534-7464
Owner: Brock Fricker
Studio Manager: Brock Fricker

[16] BULLFROG RECORDING STUDIOS
also REMOTE RECORDING
2475 Dunbar St., Vancouver, BC V6R 3N2
(604) 734-4617
Owner: Bullfrog Recording Company Ltd.
Studio Manager: Frederic Koch, Maggie Schert
Bookings & Traffic: Shelley Chubby
Engineers: Alan Rempel, Bart Gurr, Gerry Gagnon
Dimensions of Studios: Main studio: 17 x 20, isolation booth: 10 x 12, MIDI studio: 12 x 20
Dimensions of Control Rooms: 13 x 16
Tape Recorders: Ampex MM 1100 2-inch, 16-track; (2) Otari MX 5050 1/2-inch, 8-track; Otari MX 5050, 2-track; TEAC 25-2, 2-track; Studer/Revox A700, 2-track; (2) Sony PCM-F1, 2-track; Fostex A-8 1/4-inch, 8-track.
Mixing Consoles: Soundcraft 1624, 16 x 16 x 2.
Monitor Amplifiers: Phase Linear/Quad tri-amplification w/Crown crossovers.
Monitor Speakers: JBL custom designed 4-way; Tannoy NFM-8, Electro-Voice Sentry 100s; Auratones.
Echo, Reverb & Delay Systems: (2) Roland SRV 2000 digital reverb, AKG BX 10 (modified), Lexicon Prime Time, Roland SDE 2500 digital delay, (2) Yamaha SPX 90.
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; Nova Systems (Apex) Aural Exciter; Omni-Q tape lock system (TL2) for time code synchronization.

16 TRACK

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DECEMBER 8, 1986

QUESTIONS?
Call (415) 843-7901

Name _____

Business Name _____

Check category: Engineer _____ Producer _____

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City _____ State _____ Zip _____

Telephone (_____) _____

Credits (max. 50 words) _____

Services offered (max. 100 words) _____

I enclose \$30 Check Visa Mastercard Card # _____

Exp. date _____ Signature _____

Microphones: Neumann U87s, AKG C-34 stereo, Sennheiser 421s, 441s, AKG 414, Sony C-37, Shure, Fostex, Electro-Voice
Instruments Available: Yamaha grand piano, Roland HP 400 electric piano, Pearl drums, IX3P, IX8P and other MIDI equipment.
Rates: From \$35 to \$50/hr. Discounts available for block bookings.

[16] CIRCA RECORDING STUDIOS
 1221 A 11th Ave. SW, Calgary, AB T3C 0M5
 (403) 228-0440
Owner: Bruce Thompson Music Corp. Ltd.
Studio Manager: Bruce Thompson

[16] E.M.A.C. RECORDING STUDIOS
 (Electronic Media Arts Corp.)
 also **REMOTE RECORDING**
 343 Richmond St. 3rd Fl., London, ONT N6A 3C2
 (519) 667-3622
Owner: Joseph Vaughan, Robert Nation
Studio Manager: Robert Nation

[12] GOOD EGG PRODUCTIONS
 also **REMOTE RECORDING**
 71 Bank St. Ste. 507, Ottawa, ONT K1P 5N2
 (613) 233-7698
Owner: Christopher Ferren-Mayo, Ric Marrero
Studio Manager: Christopher Ferren-Mayo

[16] GREAT SHAKES PRODUCTIONS
 37 Gloucester Grove, Toronto, ONT M6C 2A2
 (416) 789-5856
Owner: D.D. Hill
Studio Manager: D.D. Hill

[16] I.C.A. ARTIST ACCESS #2
 12-12840 Bathgate Way, Richmond, BC V6V 1Z4
 (604) 278-0232
Owner: I.C.A. Institute of Communication Arts
Studio Manager: Linda McCann

[16] I.C.A. ARTIST ACCESS #4-TALISMAN MOBILE
 only **REMOTE RECORDING**
 12-12840 Bathgate Way, Richmond, BC V6V 1Z4
 (604) 278-0232, 873-0778
Owner: I.C.A. Institute of Communication Arts
Studio Manager: Linda McCann, Peter Kepkay

[16] INSPIRATION RECORDING STUDIO
 C.P. 220, Laprairie, QUE J5R 3Y2
 (514) 659-1772
Owner: Richard Loder

[16] INTIMATE SOUNDS LTD.
 6315 Metral Dr., Nanaimo, BC V9T 2L8
 (604) 390-3421
Owner: Scott Littlejohn
Studio Manager: Scott Littlejohn

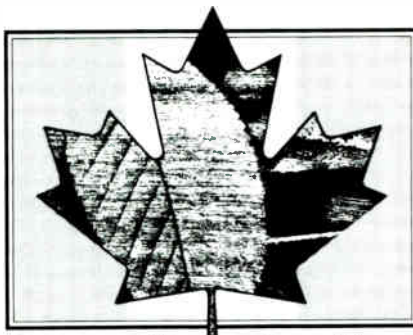
[16] J.D. RECORDING STUDIOS INC.
 705 Wilson St., Sherbrooke, QUE J1L 1M4
 (819) 563-6635
Owner: Julien Provencher
Studio Manager: Denis Aubin

[16] LE GRAND SALON
 1565 D'Iberville Ste. 203, Montreal, QUE H2K 3B8
 (514) 527-2325
Owner: Don Coté
Studio Manager: Jean Claude Béliveau

[16] LES STUDIOS JACASSON INC.
 4450 rue St. Denis Ste. 200, Montreal, QUE H2J 2L1
 (514) 844-6667
Owner: Jean-Jacques Bourdeau
Studio Manager: Jean-Jacques Bourdeau

[16] LOWE-KEY PRODUCTIONS
 2550 E. Pender St., Vancouver, BC V5K 2B5
 (604) 253-2096
Owner: Edward A. Lowe
Studio Manager: Alex D. Murray

[16] M.E.S. RECORDING STUDIO
 34 Parkdale Ave. N, Hamilton, ONT L8H 5W8
 (416) 545-0404
Owner: Bill Longley
Studio Manager: Lucio Zoccolillo



Canadian Studios

[16] MISE-EN-SON
 3471 39th Ave. P.A.T., Montreal, QUE H1A 3Y6
 (514) 642-9988
Owner: Claude Dazé
Studio Manager: Claude Dazé

[16] MOONDOG RECORDING STUDIOS
 also **REMOTE RECORDING**
 c/o 90 Ling Rd. Ste. 902
 Scarborough, ONT M1E 4Y3
 (416) 284-2831
Owner: Paul A. Smith, Fred Duval
Studio Manager: Paul A. Smith

[16] MYTRONICS
 40 Barbados Blvd. Unit #9
 Scarborough, ONT M1J 1L1
 (416) 265-8550
Owner: Richard Gozdziński
Studio Manager: Frank Watt

[16] ORCHARD STUDIO
 8672 Heritage Rd., Norval, ONT LOP 1K0
 (416) 451-2804
Owner: David Ferri, Wendell Ferguson
Studio Manager: David Ferri, Wendell Ferguson

[16] PAG & PROD. INC.
 3476 Marian St., Laval, QUE H7P 1M3
Owner: Paul and Gisele St. Pere
Studio Manager: Paul St. Pere

[16] POLYAUDIO
 also **REMOTE RECORDING**
 P.O. Box 2203, Chicoutimi, QUE G7J 4C2
 (418) 549-7862
Owner: Les Productions Polyaudio
Studio Manager: Gilles Lapierre

[16] QUEST RECORDING STUDIO
 215 Toronto Ave., Oshawa, ONT L1H 3C2
 (416) 576-1279
Owner: Paul LaChapelle
Studio Manager: Paul LaChapelle

[12] RADIANT SOUNDS
 290 Shuter St., Toronto, ONT
 (416) 368-5070, 363-5695
Owner: Brian Lepine
Studio Manager: Grant Ritchie

[16] RAINBOW RECORDING STUDIO
 8407 Stanley Ave. Unit 5, Niagara Falls, ONT L2E6X8
 (416) 356-2234
Owner: Warren Parker
Studio Manager: Alison Young

[16] REEL TIME RECORDERS LTD.
 also **REMOTE RECORDING**
 2037 Hammonds Plains Rd.
 RR #1 Bedford, NS B4A 2W9
 (902) 835-9379
Owner: Mary and Chuck O'Hara
Studio Manager: Chuck O'Hara

[16] SERAPHIM SOUND RECORDING STUDIO
 266 E. 1st St., No. Vancouver, BC V7L 1B3
 (604) 985-0177
Owner: Soren Lonngvist
Studio Manager: Paul Bastow
Engineers: Paul Bastow, Soren Lonngvist, various independents.

Dimensions of Studios: 36 x 24 x 13, iso room: 15 x 10 x 12.
Dimensions of Control Rooms: 17 x 16 x 11.
Tape Recorders: Fostex B-160, 16-track; Otari MX 5050B, 2-track; Studer-Revox PR-99, 2-track; TEAC/Tascam A3340S, 4-track; Nakamichi 500 cassette.
Mixing Consoles: Soundtracs M Senes, 24 x 8 x 2.
Monitor Amplifiers: BGW 250C, Gallien-Krueger 1000-SB, Integral Systems, QSC 3500.
Monitor Speakers: JUREI 813 B Time Aligned, Yamaha NS-10M, Auratone 5C.
Echo, Reverb & Delay Systems: Roland SRV-2000, Delta-Lab, PCM60, Yamaha SPX-90, MXR Delay System II, Roland SDE 1000.
Other Outboard Equipment: Ashly SC-50 comp./limiters, (2) 1/3 octave EQ, DeltaLab Acousticcomputer, dbx comp./limiters 166, noise gates, etc.
Microphones: AKG "The Tube," Sennheiser MD 441s, Shure SM57s, SM58s, E-Vs, Sony ECM 22s, AKG D-12E, AKG C414, AKG 451, Neumann U87.
Instruments Available: Brambach five-foot baby grand piano, Fender Twin, Fender Deluxe, Music Man RD112, Minimoog, various guitars, basses, Milestone drums, misc. percussion.
Rates: Please call.

[16] SOUND ART MUSIC PRODUCTIONS
 7181 Del Monte Crescent, Mississauga, ONT L4T 3L4
 (416) 677-8478
Owner: Arthur and Teri Atkinson
Studio Manager: Arthur H.B. Atkinson

[16] SOUND IDEAS
 also **REMOTE RECORDING**
 86 McGill St., Toronto, ONT M5B 1H2
 (416) 977-0512
Owner: Brian Nimens
Studio Manager: Mike Bell

[16] SOUND SOURCE
 7828 Drolet, Montreal, QUE H2R 2C7
 (514) 527-2323
Owner: Ron Moroni
Studio Manager: Ron Moroni

[16] SOUNDPATH PRODUCTIONS LTD.
 1100 Invicta Dr. Units 20, 21, Oakville, ONT L6H 2K9
 (416) 842-1743
Owner: Bill Drew
Studio Manager: Rick Lighthouse

[16] STUDIO B RECORDING
 also **REMOTE RECORDING**
 1029 Tiny Beaches Rd. S. Bluewater Beach,
 Wyevalle, ONT L0L 2T0
 (705) 361-2460
Owner: Greg Beacock
Studio Manager: Greg Beacock

[16] STUDIO 21
 C.P. 666, St. Eustache, QUE J7R 5W3
 (514) 472-2841

Owner: Michel Bibeau
Studio Manager: Michel Bibeau
Engineers: Michel Bibeau
Dimensions of Studios: 10 x 12.
Dimensions of Control Rooms: 15 x 10.
Tape Recorders: Tascam 85-16B, 16-track; Tascam 32-2B, 2-track; Technics RS1500, 2-track; Sanyo RDS40, cassette; Sharp RT W 600, cassette.
Mixing Consoles: Tascam M-16, 16 x 8 x 16 x 2.
Monitor Amplifiers: Roach DVT50S, Crown D60.
Monitor Speakers: Fane, Auratone.
Echo, Reverb & Delay Systems: Reverb: ART 01A, Roland SRV 2000. Delay: ADA A 1280, Loft 450, Korg SDD 1000.
Other Outboard Equipment: Ibanez HD1000 harmonizer, EXR SP1 Exciter, (2) Symetrix CL100 compressors, dbx 162 compressor, (2) Symetrix noise gates, Systech 4000 A flanger, Korg KMS 30, Synchronizer, Crown EQ2, (4) Fostex T-20 headphones.
Microphones: Neumann U89; Sony C38, ECM 33; (2) Sennheiser M421, Altec 626A.
Instruments Available: Emulator II; Oberheim DMX; Roland JX3P, Juno 106; Korg EX800; Roland TR909, MSQ 700; Fender Strat, Precision Bass; Gibson EBO; Norman B20-12; Yamaha DX7 and Apple 2+; assorted percussion.
Rates: \$40/hr. studio; \$60/hr. with Emulator II.

[16] TALISMAN MOBILE SOUND LTD.
 only **REMOTE RECORDING**
 1201 601 W. Broadway, Vancouver, BC V5Z 4C2
 (604) 873-0778
Owner: Peter Kepkay, Lawrence A. Long
Studio Manager: Peter Kepkay

[12] WALTERS FAMILY STUDIO (WFS)
RR#3, Bright, ONT NOJ 1B0
(519) 463-5559
Owner: Walters Family
Studio Manager: Darren Walters

24 TRACK

[24+] Adb STUDIOS INC.
3880 de Courtrai Ave. Ste. 200
Montreal, QUE H3S 1C1
(514) 340-1994
Owner: Al Di Buono
Studio Manager: Al Di Buono
Engineers: Mike Fedenko, Al Di Buono, Glen "The Snake" Robinson
Dimensions of Studios: 350 sq. ft.
Dimensions of Control Rooms: 170 sq. ft.
Tape Recorders: MCI JH-16, 24-track; Studer Revox B77, ½-track; Alpine AL 55, 4-track cassette.
Mixing Consoles: Quantum Audio Labs QA 1010, 26 x 24.
Monitor Amplifiers: Bryston 4B; Crown D150; BGW Systems 100B.
Monitor Speakers: Tannoy SRM 12B; Auratone 5Cs; Fostex RM 765.
Echo, Reverb & Delay Systems: DeltaLab 1024, DeltaLab 256, AMS digital reverb, Yamaha SPX-90.
Other Outboard Equipment: UREI LA-3A comp./limiters; UREI 527A graphic equalizers; Loft 401 parametric equalizer; Aphex Aural Exciter, pitch transposer; Fetish, Sub-Sonik II, dbx 162 stereo comp./limiter; (8) Kepex noise gates; Applied Micro Systems Auto-Locator.
Microphones: (2) AKG 414EBs, (2) 452EBs, CK1, D12E; (2) Electro-Voice RE20s; (2) Sennheiser MD421s, (2) MD 441s; Shure SM57.
Instruments Available: Ludwig and Rogers studio kit, with assorted percussion. Drum machines, keyboards, modules, and computerized sequencer are available at reasonable rental rates.
Rates: \$55/hr. (Canadian) or block rate available.

[24+] AMBER STUDIOS LTD.
735 Queen St. W., Toronto, ONT M6J 1G1
(416) 362-6472
Owner: George Semkiw
Studio Manager: George Semkiw

[24+] B & C PRODUCTIONS SOUND STUDIO
P.O. Box 873, Maitland Dr., Belleville, ONT K8N 5B5
(613) 962-0549
Owner: Eric Baragar, John Collins
Studio Manager: Eric Baragar, John Collins

[24+] BLUE WAVE PRODUCTIONS LTD.
also REMOTE RECORDING
34 W. 8th Ave., Vancouver, BC V5Y 1M7
(604) 873-3388
Owner: Tom Lavin
Studio Manager: Carlton Lee, Jannene Elam

[24+] CENTURY 21 STUDIOS
also REMOTE RECORDING
1085 Salter St., Winnipeg, MAN R2V 2E7
(204) 334-4304
Studio Manager: Harry or John Hildebrand

[24+] CHERRY BEACH SOUND LIMITED
16 Munition St., Toronto, ONT M5A 3M2
(416) 461-4224
Owner: Carman Guerrieri
Studio Manager: Joan Culbert

[24+] COMFORT SOUND RECORDING STUDIO
also REMOTE RECORDING
26 Soho St., Suite 390, Toronto
Ontario, Canada M5T 1Z7
(416) 593-7992
Owner: Doug McClement
Studio Manager: Doug McClement
Engineers: Corby Luke, Gabe Lee, Andrew St. George
Dimensions of Control Rooms: 19 x 19
Tape Recorders: Ampex MM1200, 24-, 16-track; Fostex B16, 16-track; Otari MTR-12-II, 4-track; Technics RS-1500US, 2-track; Sonyo Beta HiFi w/Sony PCM 701; (10) Sony TCM-81, cassette decks.
Mixing Consoles: MCI JH-636 automated, 36 x 24, Soundcraft Series II 32 x 4.
Monitor Amplifiers: Amcron DC300A (bridged).

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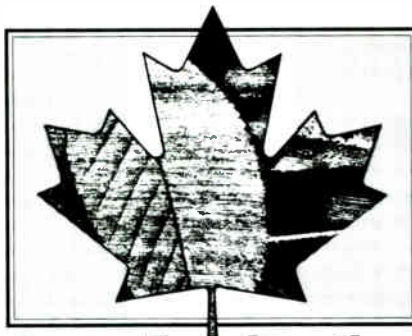
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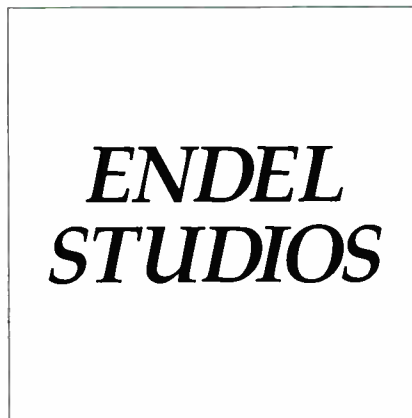


Canadian Studios

Monitor Speakers: HZ, Yamaha NS-10, Auratone.
Echo, Reverb & Delay Systems: Lexicon 200, Lexicon PCM60, Yamaha REV7, Lexicon PCM41, Effectron 1024, Fostex 250, DeltaLab, AKG, BX20.
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, Soundcraftsmen graphic EQ, Omni Craft GT4 noise gate, (2) Ashly noise gates, Eventide Instant Phaser, Orban de-esser.
Microphones: Telefunken Tube U47, (2) Neumann U87, (3) AKG 451, AKG D12E, (2) Sony ECM 22P, (5) Sennheiser 421, (4) Sennheiser 441, Sennheiser 104, (3) PZM, Electro-Voice RE20.
Instruments Available: Baby grand piano, Emulator II, DX7, Juno 60, 5-piece Gretsch drums, misc. percussion, Simmons pads.
Video Equipment & Services: JVC 8250 3/4-inch recorder, BTX synchronizer, Proton monitor, Panasonic camera.
Rates: Not as much as you'd think.

[24+] COMMERCIAL ELECTRONICS LTD.
only REMOTE RECORDING
1335 Burrard St., Vancouver, BC V6Z 1Z7
(604) 669-5525
Owner: H.H. Von Tiesenhausen
Studio Manager: Jonathan Moran

[24+] E.A.R.S. AUDIO
also REMOTE RECORDING
1393 Boyer Rd., Orleans, ONT K1C 1PQ
(613) 824-6090
Owner: Ken Fraser, John Cybanski
Studio Manager: Ken Fraser, John Cybanski



ENDEL STUDIOS
St. Charles Sur Richelieu, QUE

[24+] ENDEL STUDIOS
146 Ch. des Patriotes
St. Charles Sur Richelieu, QUE J0H 2G0
(514) 584-3400
Owner: Endel Corporation Ltd.
Studio Manager: The Secretary, Endel Corp. Ltd.
Engineers: Robin Black (upon request)
Dimensions of Studios: 20 x 25
Dimensions of Control Rooms: 20 x 25
Tape Recorders: Soundcraft 760 MK III, 24-track; Sony PCM-F1 digital, 2-track; Otari 5050, 2-track; TEAC CX cassette.
Mixing Consoles: Soundcraft 2400, 24 x 24.
Monitor Amplifiers: H & H/Yamaha/Quad
Monitor Speakers: UREI 813, JBL, Auratone, Realistic, AR 18s.

Echo, Reverb & Delay Systems: (2) Lexicon PCM60, Yamaha REV7, Roland delays, ADA delays, Loft delays, Master-Room, Lexicon PCM 70, Roland SRV-2000, ART-DR1.

Other Outboard Equipment: dbx comp./limiters, Symetrix comp./limiters, Ashly audio stereo parametric EQ, Loft noise gates, Roland stereo flanger/Vocoder/Dimension "D", Roland MSQ-700, Franklin 1200 computer (DX Pro), BSS DPR 402, Drawmer noise gates, Drawmer 1960 tube mic amp comp./limiter.

Microphones: AKGs, Sennheiser, Neumann, Shure.
Instruments Available: OB-Xa, Oberheim Xpander, (2) DX7, Roland JX8P, Yamaha CS-80, modified DMX, Roland TR 808/TR 727 (perc. comp.), Minimoog, Korg CX-3, Yamaha CP-70, ARP 2600/Omni, Polymoog, full MIDI operation ready, Emulator II, Oscar, Super Jupiter.

Rates: Available upon request.
Extras: Charming country studio set on private farm bordering one of Quebec's most beautiful rivers. Privacy guaranteed. Block booking available.

[24+] ELORA SOUND STUDIO
122A St. Andrew St. W, Fergus, ONT
(519) 843-4178
Owner: William J. Mather
Studio Manager: William J. Mather

[24+] ENORMUS SOUND STUDIOS
28 B. Houlden Rd., Toronto, ONT M1R 3E4
(416) 757-8775
Owner: Norman Wm. Corbett
Studio Manager: Carlene Osborne

[24+] GOEDE CREATIVE STUDIOS
9336 49 St. Edmonton, AB T6B 2L7
(403) 468-1747
Owner: Darryl Goede Creative Prod. Ltd.
Studio Manager: Darryl Goede

[24+] I.C.A. ARTIST ACCESS #3
#83-2182 W. 12th Ave., Vancouver, BC V6K 2N2
Owner: I.C.A. Institute of Communication Arts
Studio Manager: Linda McCann

[24+] INCEPTION SOUND STUDIOS
3876 Chesswood Dr., Toronto, ONT M3J 2W6
(416) 630-7150
Owner: Chad Irshick, Jeff Wolpert
Studio Manager: Mike Haas
Engineers: Chad Irshick, Jeff Wolpert, Michael Haas
Dimensions of Studios: 18 x 26 + piano iso booth and drum room.
Dimensions of Control Rooms: 19 x 17
Tape Recorders: MCI JH-24-24, 24-track; MCI JH-110, 2-track; Otari MTR-12, 4-/2-track; Sony PCM-701 digital, 2-track; (3) Sony TC-K777 cassettes.
Mixing Consoles: MCI JH-428, 40 x 24.
Monitor Amplifiers: Bryston, BGW, Crown, AB.
Monitor Speakers: Modified Fostex w/ JBL drivers; NS-10; Auratone 5C/T5/T6; ESS.
Echo, Reverb & Delay Systems: AMS RMX16, Publison IM90, EMT 240, live chamber, (2) Lexicon Prime Time, REV7, (2) Effectrons 1024, Echoiron 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 LA4, (4) Kepex II, Trident parametric EQ; (2) UREI parametric EQ; (4) Ashly parametric EQ; BBE 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.
Instruments Available: 1929 Steinway nine-foot concert grand piano, 1964 Fender Jazz Bass.
Video Equipment & Services: Post: Adams/Smith 2600 for three machine lock, JVC 3/4-inch VTR.
Rates: On request.

[24+] INSIDE TRAK STUDIOS LTD.
also REMOTE RECORDING
7490 Edmonds St., Burnaby, BC V3N 1B4
(604) 525-3422
Owner: Rick Picard, Gordon Ross
Studio Manager: Lisa Barton
Engineers: Dave Slagler, Gary Tole, Bill Buckingham
Dimensions of Studios: 35 x 22 x 11.
Dimensions of Control Rooms: 18 x 14 x 10.
Tape Recorders: MCI JH-24, 24-track, MCI JH-110B (1/4-inch and 1/2-inch), 2-track; Otari MTR-10, 2-track w/center track time code.
Mixing Consoles: MCI JH-636, 32 x 24.
Monitor Amplifiers: Carver PM1.5, Bryston 3Bs.
Monitor Speakers: Tannoy Big Reds, Yamaha NS10Ms, Auratones.
Echo, Reverb & Delay Systems: AMS RMX16, AMS

DMX-15-80s, Lexicon 224, Yamaha REV7, Yamaha DDL, Lexicon PCM41, Roland SRV2000.
Other Outboard Equipment: UREI, Valley People, Symetrix, Aphex, MXR, Yamaha comp./limiters.
Microphones: Neumann, AKG, Shure, Sennheiser, Sony, Crown PZM.
Instruments Available: Yamaha grand piano, Ayotte custom drums, Simmons drums, Marshall 100 watt amp, synths. Almost anything on request.
Video Equipment & Services: Audio Kinetics: Q.Lock synchronization, Sony 3/4-inch video machine, Sony 27-inch video monitor, MCI 2-track audio ATR, MCI JH-110C, one-inch C-format layback machine. Services: multi-track editing and computerized synchronization to 3/4-inch video and one-inch C-format audio layup to final picture, dialogue over-dubbing sound-SFX and music scoring to picture, dual-language mixes to video (C-format), custom scoring and music sound SFX recording to picture, audio transfers to 3/4-inch and one-inch video, production assistance, playback-dubbing of audio reel-to-reel to cassette.
Rates: On request.

[24+] INTERMIX AUDIO PRODUCTION SERVICES INC.
only REMOTE RECORDING
 3270 E. 19th St., Vancouver, BC V5M 2T3
 (604) 437-6807

Owner: Commercial Electronics Ltd.
Studio Manager: David Brown
Engineers: David Kellin, David Brown
Dimensions of Studios: 18 x 7.5 GMC motor coach transmode.
Tape Recorders: Stephens 821 B-104A, 24-track; Studer A-67, 2-track; Sony digital PCM-F1, 2-track; Studer B-77, 2-track; Tascam 122 cassette.
Mixing Consoles: Soundcraft 1624, 24 x 16 x 24; Valley People QZ/MaxiQ, 24 x 24; Soundcraft 200, 8 x 4 x 2.
Monitor Amplifiers: Bryston 4B, Bryston 2B.
Monitor Speakers: Tannoy SRM 12B, Yamaha NS-10, Auratone 5C.
Echo, Reverb & Delay Systems: Lexicon 224XL w/LARC, Lexicon PCM42.
Other Outboard Equipment: Valley People Kepex II, Gain Brain; UREI LA4; dbx 160X; Orban 424A; BTX time code generator and reader; BTX Shadow synchronizer and controller.
Microphones: AKG C460, C451, C33, C414; Neumann U89; Crown PZM 31S; Shure SM57, 58; Sennheiser MD 421, 441, 431; Beyers 160; B&K 4006.
Video Equipment & Services: JVC 20-inch color monitor, Sony HVC 2800 w/remote zoom, pan and tilt for stage surveillance, other video services on request.
Rates: On request.

[24+] KENSINGTON SOUND
 170A Baldwin St., Toronto, ONT M5T 1L8
 (416) 593-9607
Owner: Mike Alyanak
Studio Manager: Vezi Tayyeb

[24+] KINCK SOUND
 128 Manville Rd. #22, Scarborough, ONT
 (416) 751-8163
Owner: Fred Kinck Petersen
Studio Manager: Fred Kinck Petersen

[24+] LE STUDIO ANDRE PERRY
 201 Perry, Morin Heights, QUE JOR 1H0
 (514) 226-2419
Owner: Andre Perry, Yael Brandeis
Studio Manager: Yael Brandeis or Paul Northfield

[24+] LES STUDIOS MARKO (1983) INC.
 910 LaGauchetiers, Montreal, QUE H2L 2N4
 (514) 282-0961
Studio Manager: J. Clifford Balson
Engineers: Serge Lacroux, Serge Gaudet, Serge Ouellet, Sylvain Jacob, Richard Belanger
Dimensions of Studios: (A) 42 x 32; (B) 20 x 32; (C) 20 x 18; (D) 20 x 16.
Dimensions of Control Rooms: (A) 30 x 22; (B) 20 x 22; (C) 20 x 22; (D) 20 x 16.
Tape Recorders: (2) Otari MTR-90, 24-track; (2) Otari MTR-12, 4-track; Otari MTR-12 Super Analog, 2-track; (2) Otari MTR-10, 4-track; (4) Otari MTR-10, 2-track; (2) Otari MTR-12, 2-track.
Mixing Consoles: NEOTEK, III C, 48 x 24; Sound Workshop 30, 28 x 24; Sound Workshop 30, 16 x 16; Sound Workshop 30, 12 x 8.
Monitor Amplifiers: Bryston
Monitor Speakers: JBL 4435, JBL 4430, JBL 4425, ADS-L-980.
Echo, Reverb & Delay Systems: EMT-240, Lexicon 224 XL, Lexicon Super Prime Time II, Eventide H949, Ursal Major SST-282, Roland SDE-3000, Yamaha SPX-90, Lexicon PCM60.
Other Outboard Equipment: Valley People Dyna-Mite,

Symetrix-501 and 522, EXR Exciters, Aphex Compellor, Roland SBX-80, Korg-SDD-3000.
Microphones: Choice of over 50 microphones, e.g. Neumann, Sennheiser, AKG.
Instruments Available: Yamaha 6-foot and 9-foot pianos.
Video Equipment & Services: BTX Shadows and Softouch, Time-Line Lynx synchronizers, JVC CR-8250, 3/4-inch VCR Sony PVM-1900 monitors and NEC 40-inch monitors.
Rates: From 2-track at \$80/hr. to 24-track/video interlock at \$210/hr.

[24+] LITTLE MOUNTAIN SOUND STUDIOS
 201 W. 7th Ave., Vancouver, BC V5Y 1L9
 (604) 873-4711
Owner: Bob Brooks
Studio Manager: Bob Brooks
Engineers: Roger Monk, Bob Rock, Pat Glover, Ron Obvious

Dimensions of Studios: (A) 66 x 38 x 22 semi-live, one iso. room; (B) 38 x 38 x 22 live amb, (2) iso. rooms.
Dimensions of Control Rooms: A: 20 x 18 x 10; B: 20 x 18 x 10; C: 11 x 14 x 10.
Tape Recorders: (A) Studer A800 Mark III, 24-track; (B) Studer A80 Mark IV, 24-track; (C) Studer A80 Mark III, 24-track; (D) MCI 8-track.
Mixing Consoles: (A) Neve A8036 (Spitfire), 24 input; (B) Solid State Logic 4048 fully automated with Total Recall, 48 x 48; (C) Neve 8036 (Spitfire) 24 input; (D) Neve 8014 16 input.
Monitor Speakers: UREI 813 Time Aligned, Yamaha NS-10, JBL 4311, AR-18, Gauss.
Echo, Reverb & Delay Systems: Lexicon 224XL; AMS-Rev, AMS-DDL (10 sec.); EMT 140s, 240s, Prime Time; GML EQ, lim/comp; LA-3; Trident EQ; Yamaha REV-1; etc.
Microphones: 86 mics total including Neumann, AKG, Sennheiser, Shure, PZM, Electro-Voice.
Instruments Available: Marshall, Fender, Mesa Boogie-guitar amps, Minimoog, Fender P-bass, Camco and Pearl drum kits.
Video Equipment & Services: BTX video lock, w/JVC 8200 3/4-inch deck, SMPTE generator, etc.
Rates: On request.

[24+] MAGDER FILM PRODUCTIONS INC.
 793 Pharmacy Ave., Toronto, ONT M1L 3K2
 (416) 752-8850
Owner: Zale Magder
Studio Manager: Paul Bonish

[24+] MANTA SOUND COMPANY
 311 Adelaide St. E., Toronto, ONT M5A 1N2
 (416) 863-9316
Studio Manager: Lu Ann Leonard
Engineers: Andrew Hermant, Gary Gray, John Naslen, Peter Lee, Ron Searles.
Dimensions of Studios: Studio #1: 20 x 13 x 16; Studio #2: 60 x 44 x 25; Studio #3: 24 x 20 x 11.
Dimensions of Control Rooms: #1: 20 x 17; #2: 20 x 19; #3: 15 x 20.
Tape Recorders: Mitsubishi X-850, 32-track; Studer A-80 MKIII, 24-track; Studer A-80 8-/4-track; Mitsubishi X-86, 2-track; Studer A-820, 2-track; Studer A-810, 2-track w/TC.
Mixing Consoles: Neve 8068, 32 x 32 (42 line); MCI 538D 38 x 32 (50 line); MCI 528C, 28 x 32 (36 line).
Monitor Amplifiers: Bryston, Studer, McIntosh.
Monitor Speakers: Manta Electronics MS 2.10 triamped.
Echo, Reverb & Delay Systems: EMT 140S, AMS RMX 16, AMS DMX 15-80s, Marshall AR300.
Other Outboard Equipment: Pultec EQ, Neve EQ, Teletronix, UREI, Fairchild, dbx, Drawmer, Aphex Compellor.
Microphones: AKG, Altec, Electro-Voice, Neumann, PZM, Sennheiser, Sony, Schoeps.
Instruments Available: Yamaha C-7 grand (all rooms), Hammond organ.
Video Equipment & Services: Video playback and synchronizers (all studios), layback to one-inch video, audio post-production.
Rates: Contact studio manager.

[24+] MARC PRODUCTIONS LTD.
also REMOTE RECORDING
 1163 Parisien St., Ottawa, ONT K1B 4W4
 (613) 741-9851
Owner: Marcel Tessier
Studio Manager: Guy Tessier

[24+] MARIGOLD PRODUCTIONS LIMITED
 P.O. Box 141, Station S, Toronto, ONT M5M 4L6
 (416) 484-8789
Owner: Rich Dodson
Studio Manager: M.L. Dodson

[24+] THE MASTER'S WORKSHOP CORPORATION
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 (416) 741-1312
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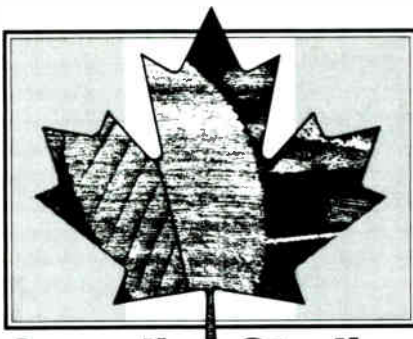
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Canadian Studios

[24+] MASTERTRACK LTD.
35 A Hazelton Ave., Toronto, ONT M5R 2E3
(416) 922-4004
Owner: Ian S. Jacobson
Studio Manager: Jeffrey White, Andy Condon

[24+] METALWORKS RECORDING STUDIO
3611 Mavis Rd., Unit #5, Mississauga, ONT L5C 1T7
(416) 279-4008

Owner: The Metalworks Recording Studios, Inc.
Studio Manager: Alex Andronache
Engineers: Ed Stone, Hugh Cooper, Noel Golden, Dave Dickson, Dave Runstedler
Dimensions of Studios: 22 x 50 (2 iso. booths)
Dimensions of Control Rooms: 22.5 x 19
Tape Recorders: (2) Studer A-800, 16-/24-track; (2) Studer A820 (¼-inch, ½-inch) 2-track; MCI JH-110B (¼-inch, ½-inch), 2-track; Revox, ¼-inch, ¼-track; (2) TEAC 122B cassettes.

Mixing Consoles: MCI JH-652 LM, 52 x 24.

Monitor Amplifiers: Crown.

Monitor Speakers: Main: JBL 4350s (modified), JBL 4312s, Yamaha NS-10Ms, Minimus 7s, Auratones.

Echo, Reverb & Delay Systems: Lexicon Prime Time II, AMS digital delay/harmonizer w/stereo sampling, Sony DRE 200, Yamaha REV-1, Yamaha REV7, Lexicon PCM 42, Ursa Major Space Station, EMT 140 tube and solid state plates.

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 Stresser, (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; (2) Trident EQs; (16) outboard Neve strips (1064) EQs, Eventide Harmonizer, Marshall Time Modulator, AMS phaser, Roland Dimension "D" chorus, Panscan, Aphex Aural Exciter (type B), Adams-Smith synchronizers.

Microphones: Includes: Neumann U67, U89, U87, KM84; Shure SM58, SM57; Electro-Voice RE15, RE20; Crown PZM; Sennheiser 421, 441; Beyers M500; AKG 567E, C535EB, C460B, (cki capsule), C452EB, (cki capsule), C451EB (cki capsule), C422 (stereo), C414EB-P48, D224E, D12E, Tube.

Instruments Available: Yamaha grand piano, Fender Rhodes 88 electric piano. Assorted synthesizers and drum machines available on request.

Video Equipment & Services: Available upon request.

[24+] MONTCLAIR SOUND
also REMOTE RECORDING
91 Montclair Ave., Toronto, ONT MSP 1P5
(416) 488-0603
Owner: B.W.M. Enterprises Ltd.
Studio Manager: B. McVicker

[24+] MUSHROOM STUDIOS
also REMOTE RECORDING
1234 W. 6th Ave., Vancouver, BC V6H 1A5
(604) 734-1217

Owner: Charlie Richmond
Studio Manager: Linda Nicol
Engineers: Dave Ogilvie, Rob Porter, Dale Penner, Rolf Hennemann, Keith Stein.
Dimensions of Studios: 50 x 30 x 20; piano room, 14 x 20 x 12; vocal booth, 15 x 11 x 8
Dimensions of Control Rooms: 15 x 20
Tape Recorders: Studer A80 II, 24-track (plus extra set of 16-tr. heads); Studer A80 II, 16-track; Studer B67, 2-track; Ampex ATR-100, 2-track (¼-inch and ½-inch heads); Revox A77, ¼-track; Nagra III film sync, 1-track; Revox A77, ½-track; Sony PCM digital, 2-track.

Mixing Consoles: Richmond Sound Design, 48 x 22 x 8; VCA sub-groups w/30 Universal Audio tube pre-amps.
Monitor Amplifiers: (10) Richmond Sound Design APA-128 60 watt amps, Carver M-1.5 t 1200 watts, Kenwood basic M1 200 watts.

Monitor Speakers: Altec 604E w/Time Align horns and

Mastering Lab crossovers, including (4) JBL 15-inch subwoofers and (2) Decca ribbon super tweeters, Yamaha NS-10M, Auratone SC Super Sound Cube, BIC Venturi Formula 5, Realistic Minimus 7, Visonik Ambassador 100 (Big David).

Echo, Reverb & Delay Systems: EMT 240 "Gold Foil" plate reverb w/remote, Eventide H910 Harmonizer digital effects unit, Lexicon 224 digital reverb w/30 programs, Lexicon 93 Prime Time digital effects, RSD APA-120 echo chamber amps, Sound Barrier Concord live echo chamber loudspeakers, UREI Cooper Time Cube analog delay unit, (2) stereo acoustical echo chambers, Korg SDD 2000 programmable MIDI sampling delay, Yamaha REV7, Lexicon 224 XL with LARC.

Other Outboard Equipment: Allison Research Kepex noise gates, Allison Research Gain Brain, Altec program EQ, Dolby B1 noise reduction, Furman PQ-3 parametric EQ, Langevin graphic EQ, Langevin high and low pass filters, MXR auto flangers, NEI 341 (4) band parametric EQ, Omni-Q TL-1 time code sync unit, Orban Parasound 516EC de-esser, RSD graphic EQ, RSD VCA noise gates, RSD VCF noise gate/filters, Roger Mayer RM80X noise gates, Technics SH9010 (10) band paragratic EQ, U.A. 175B tube limiter, U.A. 176 tube limiter, U.A. 550A high & low pass filters, UREI 1176LN compressor/limiters, ITL CDH-100 "Memory Pack" studio lighting controller.

Microphones: ADG C-12, C-61, D-12E, D-24E, D-202E, D-224E, D-900E; Beyers MC-713; Electro-Voice RE15, RE20, 635A; Neumann KM84, U47 (original vacuum tube), U87; MILABCL-4, DC-63, DC-73, F-69, VM-41, PZM; RCA 77B, 10001; Sennheiser MD-421 U; Shure SM57, SM58; Sony C-17B, C-37A, C-38B, C-57, C-220A; ECM-22P, ECM-377; Synchron/Fairchild AU-7A.

Instruments Available: Yamaha C-7 7-foot grand piano, Fehr & Stemmer upright piano, Marshall 4 x 12-inch loudspeaker cabinet, Polytone bass amplifier, Traynor Bass Mate amp, keyboard stands, Tama studio drum kit, miscellaneous percussion, Emulator II with Apple Macintosh.

Video Equipment & Services: Video monitors and cameras, video tape machines on request.

Rates: Please call for rates.

[24+] OCEAN SOUND STUDIOS
also REMOTE RECORDING
1758 W. 2nd Ave., Vancouver, BC V6J 1H6
(604) 733-3146

Owner: The Ocean Sound Corp
Studio Manager: Ken Morrison

[24+] ONTARIO INSTITUTE OF AUDIO
RECORDING TECHNOLOGY (OIART)
500 Newbold St., London, ONT N6E 1K6
(519) 686-5010
Studio Manager: Paul Steenhuis

[24+] PERCEPTIONS RECORDING STUDIO
11 Canvarco Rd., Toronto, ONT M4G 1L4
(416) 423-9990
Owner: 450564 Ontario Limited
Studio Manager: Peter Akerboom
Engineers: Peter Akerboom, independents
Dimensions of Studios: 34 x 21 x 14 containing two isolation booths.

Dimensions of Control Rooms: 19 x 14 x 12
Tape Recorders: Studer A80, 24-track; Sony PCM701 Pro, 2-track digital; Tascam 80-8, 8-track; TEAC 3440, 4-track; TEAC A6100, 2-track.

Mixing Consoles: Soundcraft Series II, 32 x 16 x 24.

Monitor Amplifiers: Bryston.

Monitor Speakers: JBL Custom 4333, Yamaha NS-10s, Auratones, Bose 301.

Echo, Reverb & Delay Systems: Lexicon PCM60, MIX-XL-305, EMT-type plate reverb; Roland SDE 1000 DDL, DeltaLab 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, etc. All available at reasonable rental rates.

Microphones: AKG C-414EBs, 451Es, D-12; Sennheiser 421s, 441s; Electro-Voice RE20, RE15, 635AC; Shure SM57, SM58.

Video Equipment & Services: Complete audio/video sweetening utilizing JVC ¾-inch VCR w/Studer TLS 2000 tape lock system ¾-inch video to audio, audio to audio interlock. SMPTE time code readers, generators, synchronizers

Rates: 24-track, \$65/hr.; w/Tapelock, \$75/hr. Block rates available on request.

[24+] PHASE ONE RECORDING STUDIOS LTD.
3015 Kennedy Rd. #10, Scarborough, ONT M1V 1E7
(416) 291-9553

Owner: Doug Hill, Paul Gross
Studio Manager: Paul Gross
Engineers: Lenny De Rose, Joe Primeau, Randy Staub.
Dimensions of Studios: A: 30 x 50; B: 30 x 30.

Dimensions of Control Rooms: A: 20 x 20; B: 20 x 20.
Tape Recorders: (2) Studer A80, 24-track; Studer A80, 1/2-inch 2-track; (3) Studer A80, 1/4-inch 2-track.
Mixing Consoles: Rupert Neve 8026, 24 x 8 x 24; SSL Total Recall 4000, 36 input.
Monitor Amplifiers: Bryston, Crown, AB Systems.
Monitor Speakers: Custom JBL.
Echo, Reverb & Delay Systems: (2) stereo EMT, mono EMT, Lexicon 224, Yamaha REV7, AMS, Lexicon 224XL available rentals.
Other Outboard Equipment: Drawmer gates, Pulsecs. (2) LA-2s, (3) Roland 3000s, Lexicon Prime Time, PCM 41, PCM 42, Kepex I gates, UREIs, dbx limiters.
Microphones: Neumann 87, 88, 84, Shure 57, AKG 452, 451, E-V RE20, RE15, Sennheiser 421.
Instruments Available: Hammond B3 organ; Yamaha C-7 grand piano.
Video Equipment & Services: Interlock with 3/4-inch JVC available.
Rates: Studio A: \$100/hr.; \$1,200/lockout; Studio B: \$160/hr.

[24+] POLARIS RECORDING STUDIOS LTD.
 also **REMOTE RECORDING**
 1151 Drouillard Rd., Windsor, ONT N8Y 2R2
 (519) 973-4944
 Owner: George Hellow
 Studio Manager: Robin Spooner

[24+] PROFILE SOUND STUDIO
 3448 Commercial St., Vancouver, BC V5N 4E8
 (604) 875-6821
 Owner: Profile Sound Studio Ltd.
 Studio Manager: Don R. Ramos

[24+] RIVER AUDIO STUDIOS
 133 Niagara Blvd., Ft. Erie, ONT L2A 3G6
 (416) 871-6621, 1-800-263-5717 (from Eastern U.S.)
 Owner: River Audio Studios Ltd.
 Studio Manager: Paula MacMillan
 Engineers: Scott Boyling, David Wolff.
Dimensions of Studios: 1,200 sq. ft. w/ 18-foot ceilings (includes two isolation areas).
Dimensions of Control Rooms: 550 sq. ft.
Tape Recorders: Studer A-800, 24-track; Studer A-820, 1/2-inch 2-track; Studer A-820 (with SMPTE), 1/4-inch 2-track; Studer A-810 (with SMPTE), 1/4-inch 2-track; Sony PCM-F1, digital 2-track; (2) Revox PR-99, 2-track.

RIVER AUDIO STUDIOS

RIVER AUDIO STUDIOS
Fort Erie, ONT

Mixing Consoles: Sony/MCI H 652, 52 x 48; Soundcraft 1600, 24 x 24.
Monitor Amplifiers: Tannoy, Bryston.
Monitor Speakers: Tannoy, UREI, JBL, Yamaha, Auratone.
Echo, Reverb & Delay Systems: Lexicon PCM 42s, Marshall Tape Eliminators, Yamaha REV7s, AMS-RMX 16, AMS-DMX 80, (4) live chambers (including 150-foot tunnel).
Other Outboard Equipment: AMS keyboard interface, Brooke/Siren de-essers, Aphex Compellor, Aphex Aural Exciter, dbx 166 compressors, Rane EQs, Drawmer limiter compressors/noise gates/vacuum tube compressors, Electro Harmonix vocoder.
Microphones: Large collection of vintage tube microphones: Neumann M49s, M269s, KM56s and Schoeps 221s. Also Sennheiser, Shure, AKG, Sony, Electro-Voice and Tram.
Instruments Available: Horugel 7-foot grand piano, Fender Rhodes 88, Emulator II, Yamaha 816, Yamaha DX7, Roland JX-3P, Crumar D-2, Yamaha Super Pro Recording Drum Kit, Yamaha RX11, Oberheim DMX, Roland TR-909, Roland MSQ 700, Carvin electric guitar, Yamaha steel string guitar, Marshall amplifier, percussion gear.
Video Equipment & Services: JVC 3/4-inch VCR, JVC video monitors, channel access from building exterior to

studios for video, 10K watts extra power line for video lighting.
Rates: Available upon request.
Extras: We have incorporated into our design computer access to all three studios, all rooms are interconnected to facilitate 24-/48-track tape transfers. Equipment brokerage service for border crossings. Travel and superior lodging arrangements made. Airport pickup and delivery, private airstrip access. Gourmet food services on premises. Private label estate wines.
Direction: A versatile complex capable of accommodating: album production, jingle production, TV and film scoring. Offering full client services in a truly personalized, caring, understanding fashion.

[24+] ROUND SOUND STUDIOS INC.
 357 Ormont Dr., Weston, Toronto, ONT M9L 1N8
 (416) 743-9979
 Owner: Corporation Shareholders
 Studio Manager: Victor J. Rivera

[24+] SAVED BY TECHNOLOGY MIDI STUDIOS
 10 Breadalbane St., Toronto, ONT M4Y 1C3
 (416) 928-5957
 Owner: Jim Burgess
 Studio Manager: Lee Tizzard
Extras: Saved By Technology MIDI Studios offers a complete range of synthesizers, samplers, music software and special-purpose MIDI equipment at no additional charge. All instruments have a large library of unique, original sounds available. SMPTE-to-MIDI controllers permit hard sync of the entire music system to a video or multi-track master. We are experienced in custom sound design for specific applications. Existing samples may be converted directly from one sampling device to another. Existing sequences may be bounced into our production system, enabling basic sequence programming to be done in advance. Total video/multi-track/computer lock available.
Direction: Canada's most advanced MIDI production facility, located in the heart of downtown Toronto. Years of experience in computer music applications for the record, TV/film and commercial fields. In-house music production and publishing services available. Call for rates and a complete listing of equipment.

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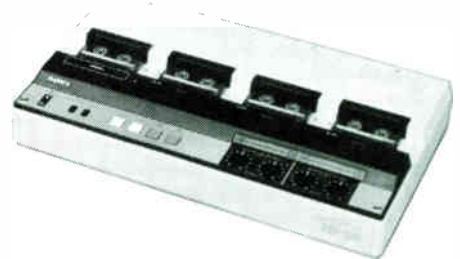
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Canadian Studios

[24+] SOLAR AUDIO AND RECORDING LTD.
also REMOTE RECORDING
6065 Cunard St., Halifax, NS B3K 1E6
(902) 423-0233
Owner: Russell F Brannon
Studio Manager: Jeanne Miller

[24+] SOUND KITCHEN LTD.
3805 Weston Rd., Weston, ONT M9L 2S8
(416) 749-2365
Owner: Hugh Ferguson, Dave Moyles, Calvin Sauro
Studio Manager: Glenn Talsky



SOUNDS INTERCHANGE LTD.
Toronto, Canada

[24+] SOUNDS INTERCHANGE LTD.
506 Adelaide St., E., Toronto, ONT M5A 1N6
(416) 364-8512
Owner: Syd Kessler, Salim Sachedina
Studio Manager: Karen Guluche
Engineers: Mike Jones, Les Bateman, Kevin Doyle, Steve Convery, Mark Stafford, Vic Pyle, Paul Daley, Peter Mann.
Dimensions of Studios: 1: 56 x 32 (2 iso. booth) 22-foot ceiling; 2: 45 x 30 (2 iso. booths).
Dimensions of Control Rooms: 1: 21 x 26; 2: 27 x 20.
Tape Recorders: Studer (4) A80 24-track, A800 24-track, (2) 8-track, (2) 4-track; 1/2-inch 2-track mastering, (4) 2-track mastering; (4) A810 2-track (4) speed, (plus third track t/c), (3) ABORC mono/stereo (butterfly heads), ABORC stereo, (2) ABORC mono/pilotone, ABORC mono/pilotone w/resolver, Ampex AG 440C 4-track, ATR 100 stereo/ mono; Sony PCM 100 2-track digital mastering; Mitsubishi and JVC systems available upon request.
Mixing Consoles: MCI JH-532, 32 x 24; Neve 8028, 24 x 16 x 24 monitors; (2) MCI JH-636, 24 x 24, Sound Workshop Series 34, 24 x 24.
Monitor Amplifiers: H&H MOSFET, Crown, BGW, McIntosh, Bryston, Phase Linear, Harman Kardon
Monitor Speakers: 4-way custom-made time aligned, Custom JBL, JBL, UREI, Super Reds, Auratone, Yamaha NS10s.
Echo, Reverb & Delay Systems: (2) EMT Plates 140, (3) EMT gold 240, AKG BX-20 echo, AMS RX-16 digital reverb w/remote, AMS DMX 15-80s harmonizer, Eventide H910 Harmonizer, (2) Eventide 949 Harmonizer, (3) Space Stations, Lexicon Prime Time Delta-T, (2) Eventide 1745 digital delays, Eventide phaser, (2) Marshall time modulators, Eventide flanger, (2) Yamaha REV7 reverbs.
Other Outboard Equipment: Pultec EQ (program mid-range), UREI limiters (LA-2A, -3A, -4A, -5), Ashly limiters, Innovonics limiters, (2) Pye limiters, Telefunken LA-2A limiters, Aphex Compeller, API 550A, EQs, Scamp rack, Flickenger EQ, Klark DN 27A graphics, UREI 527A graphics, White 3rd octave EQ, Quad 8 gates, (2) 24-track Dolby racks, Dolby 361s, UREI digital metronomes.

Microphones: Neumann U87, U67, KM86, KM84; Telefunken U47, SM2; AKG 451E, 452E, 414, 224E, D20D, D12E, C24, C12A; Shure SM58, SM57, SM53, SM81, SM76, SM7, SM54, SM60, 300; Sennheiser 421, 441; Crown PZM; Studer (Schoeps) SM5, SKS 50LB, CMCS; Sony C-500, C-37, C-38, ECM 22P; Electro-Voice RE16, RE20, RE15; Beyer M 160N.

Instruments Available: Petrof concert grand piano, Yamaha C-3 grand, Heintzman tack, Hammond B-3 organ w/Leslie, Fender Rhodes, Yamaha DX7 synth, Oberheim OBX-A synth, LinnDrum, Jupiter 6, Roland MSQ 600, Dr. Click, Simmons drums.

Video Equipment & Services: Audio post-production for video, computerized SMPTE 1-inch, 3/4-inch video to audio, audio to audio interlock, MCI/Sony JH-110B 1-inch C-format audio restripe, Ampex VPR 80/TBC 2 1-inch C-format video recorder, Sony BVU 200 3/4-inch VCR, JVC 8250/6650 3/4-inch VCR, Magna-Tech 2000 series 35/3-track master pickup recorder, (3) Magna-Tech 2000 series 16/35 reproducers, Sony Beta HiFi 1/2-inch; Mitsubishi; VHS 1/2-inch.

Rates: Available upon request.

Extras: Studio one new LEDE™ concept, designed by Chips Davis. Complete sound effects and stock music library. High speed and real time audio dub and cassette duplicating and distribution. All studios fully interlocked by computer. Information regarding hotel accommodations, etc., for out-of-town clients available upon request. Kitchen and lounge with color TV, pinball. Central location with free parking.

Direction: We provide a wide range of services with a complete recording and mixing service to the music, radio, television and film industries, from simple voiceover, jingle work, demo and album production to complex interlock recording for video and film. Our fully supportive and efficient technical and creative staff help to provide an appropriately comfortable atmosphere for creating an award winning project. Please phone for quote.

[24+] SPOT SHOP STUDIO INC.
1720 W. 2nd Ave., Vancouver, BC V6J 1H6
(604) 736-7474
Owner: David Hoole
Studio Manager: Mark Scott

[24+] SRS-SOUND RECORDING STUDIO
also REMOTE RECORDING
500 Newbold St., London, ONT N6E 1K6
(519) 686-5060
Owner: Geoff Keimer

[24+] STUDIO MULTISONS INC.
1208 Beaubien E. Rm. 107-108, Montreal, QUE
(514) 272-7641
Owner: Raymond Du Berger, Jacques Bigras
Studio Manager: Raymond Du Berger

[24+] STUDIO PLACE ROYALE INC.
141 St. Paul St. W., Montreal, QUE H2Y 1Z5
(514) 844-3452
Owner: Brown and Rodrigue
Studio Manager: Stanley Brown
Engineers: Normand Rodrigue, John Smith, Stanley Brown.
Dimensions of Studios: 200 sq. ft. 150 sq. ft.
Dimensions of Control Rooms: 600 sq. ft.
Tape Recorders: Scull 284 Servo, 8-track; Otari MTR-10, 2-track; Otari 5050, 4-track; Tascam, 2-track; Scully 280, 2-track; Ampex 440B, 1-track; Scully 280B, 1-track.
Mixing Consoles: Allen & Heath Syncon, (28) 16 x 16; Allen & Heath, 12 x 2.
Monitor Amplifiers: Bryston 400.
Monitor Speakers: Tannoy HPD, Yamaha NS-10.
Echo, Reverb & Delay Systems: MCS-1 Powertran (sampler); Space Station.
Other Outboard Equipment: Neve comp./limiters, Delta de-esser, UREI filter set.
Microphones: (2) AKG C414 EB; Neumann U87, (2) U67; Shure SM81; various dynamics.
Instruments Available: Roland Juno 106.
Video Equipment & Services: JVC 3/4 inch VCR; BTX Synchro 2, 4-, 8-track ATR; BTX SMPTE code generator, jam sync, MCI Sony 1-inch layback.
Rates: \$75/hr., video sync, \$125/hr.

[24+] STUDIO ST. CHARLES
85 Grant, Longueuil, QUE J4H 3H4
(514) 674-4927
Studio Manager: Peter Tessier

[24+] STUDIO SECRET
1180 St. Antoine W. Ste. 407, Montreal, QUE H3C 1B4
(514) 866-6091
Owner: 115537 Canada Inc.
Studio Manager: André Boileau

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Circle #133 on Reader Service Card

Engineers: Luciano Arcarese, Costa Koskoletos, André Boileau, George Korizas
Dimensions of Studios: 20 x 25
Dimensions of Control Rooms: 15 x 19
Tape Recorders: Studer A80 Mark IV, 24-track; Tascam 85-16, 16-track; Tascam 80-8, 8-track; Studer A810, 2-track; Otari MX-5050 B, 2-track.
Mixing Consoles: Soundcraft 1600, 24 x 8.
Monitor Amplifiers: Bryston 4B.
Monitor Speakers: Tannoy SRM-12B Super Red.
Echo, Reverb & Delay Systems: Klark-Teknik DN780, Lexicon PCM70, Yamaha SPX-90, MICMIX Master-Room X210, DeltaLab CompuEffectron CE 1700.
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.
Instruments Available: Samick grand piano, Yamaha DX7, Drumulator, Ludwig drum kit, various guitar and bass amplifiers, various guitars and basses.
Rates: 24-track: \$60/hr.; 16-track: \$40/hr.; 8-track: \$25/hr.



STUDIO 306
 Toronto, ONT

Studio Manager: Brian Mitchell
Engineers: Dan Kunitz, Bob Cobban, John Smithbower, Brian Mitchell, Mike Rowlands.
Dimensions of Studios: 45 x 22 w/(2) isolation booths.
Dimensions of Control Rooms: 24 x 17
Tape Recorders: MCI JH 110, 24-track; MCI JH-110, 4-track; MCI JH-119A, 2-track; Ampex 440, 2-track.
Mixing Consoles: Neve 8016, 24 x 24.
Monitor Amplifiers: Bryston and Crown.
Monitor Speakers: Altec Lansing Super Reds (modified) JBL 4333s.
Echo, Reverb & Delay Systems: EMT 140 stereo plates, AKG BX20 stereo, Yamaha REV7 digital reverb, Eventide digital delay.
Other Outboard Equipment: Pultec midrange and program EQs, UREI LA 3A leveling amps, UREI 1176 limiters, API 525 compressors, Valley People 610 compander/noise gates, Allison Research Kepex noise gates, Dolby A 361 noise reduction, ADR F769X-R Vocal S'tresser, EXR Exciter, Symetrix SG 200 noise gates, UREI 964 digital metronome, Eventide H910 Harmonizer.
Microphones: Neumann: U87s, U67a, U47s, KM84s, AKG 414s, D20s, Studer/Schoeps SM5s, Sony C37s;

Electro-Voice RE20s, Sennheiser 441s, Shure SM57s, SM58s.
Instruments Available: Steinway 7-foot grand piano, Heintzman teck piano, Hammond B3 organ and Leslie, amplifiers, percussion instruments.
Video Equipment & Services: 3/4-inch JVC 6650 w/independent record capabilities on either audio track, Telcom Research T5010 SMPTE Time Code reader/generator audio post-production for video.
Rates: \$90/hr.; \$35/hr. extra for video interlock.
Extras: Sound effects and stock music library.
Direction: We provide recording services for the record and jingle production industries, and audio post-production services for the TV and film industries.

[24+] STUDIO VERT INC.
 199 St. Denis, St. Urbain, QUE GOA 4L0
 (418) 277-2514
Owner: Pierre Tremblay, Nicole Denis Tremblay
Studio Manager: Pierre Tremblay, Nicole Denis Tremblay

[24+] STUDIO VICTOR INC.
 1050 rue Lacasse, 3ieme etage
 Montreal, QUE H4C 2Z3
 (514) 932-9340
Studio Manager: Gaëtan Pilon

[24+] STUDIO WEST CANADA LTD.
 also **REMOTE RECORDING**
 P.O. Box 39, Saskatoon, SK S7K 3K2
 (306) 244-2815
Owner: Wayne Wilkins, Blaine Wilkins
Studio Manager: Wayne Wilkins
Engineers: Mitch Barnett, Clarence Deis.
Dimensions of Studios: 25 x 50 x 18, (1) iso booth, (1) live room.
Dimensions of Control Rooms: 20 x 30 x 12
Tape Recorders: MCI JH-114, 24-track; MCI JH-114, 8-/16-track; MCI JH-110, 2-track; (2) Otari MX 5050 II, 2-track; Sony PCM-F1 digital audio processor, 2-track.
Mixing Consoles: Automated MCI 636, 36 x 24.
Monitor Amplifiers: H & H V800 MOSFET, H & H 100D, Bryston 2B
Monitor Speakers: UREI 813 "Time Aligns", JBL 4312, Yamaha NS-10.
Echo, Reverb & Delay Systems: Audicon "The Plate".



STUDIO TEMPO INC.
 Montreal, Quebec

[24+] STUDIO TEMPO INC.
 0707 Charlevoix, Montreal, QUE H3K 2Y1
 (514) 937-9571
Owner: Yves Lapierre (pres.), Francois Cousineau, Bernard Scott
Studio Manager: Dawn Corbett
Engineers: Ian Terry, Michel Lachance, Billy Szawlowski, Denis Barsalo.
Dimensions of Control Rooms: 23 x 27, booths: 14 x 8, 10 x 10
Dimensions of Control Rooms: 16 x 32 approx. (irregular)
Tape Recorders: Studer A800 MK III, 24-track; Ampex 440B, 4-track; Studer B-67 stereo-mono, 2-track; Studer B-67 stereo/mono, 2-track w/pilotone; Otari MTR 12-11 1/2-inch/1/4-inch, 2-track, 1 w/pilotone; Otari MTR 12-11 1/2-inch/1/4-inch, 2-track w/Time Code; MCI JH-110 stereo/mono, 2-track; MCI JH-110 mono stereo, 1-track
Mixing Consoles: Helios custom, 32 x 24.
Monitor Amplifiers: Studer, Quad, Caz-Tech, QSC.
Monitor Speakers: Westlake, JBL, EPI, Auratone, ESS.
Echo, Reverb & Delay Systems: EMT Plate 104, (3) MICMIX Master-Rooms, Lexicon 224, Lexicon Prime Time, (2) Lexicon PCM 42, Roland 3000, Loft 450, Yamaha REV7, many tape machines.
Other Outboard Equipment: Eventide phase shifter, Eventide flanger, Eventide Omnipressors, UREI compressors, A&D compressors, dbx 160, Allison Gain Brains & Kepex, Orban Parasound de-essers, parametric EQs, Amber Spectrum analyzer, Thorens turntable, digital metronome.
Microphones: AKG, Beyer, Crown P2M, Electro-Voice, Neumann, Shure, Sennheiser, Studer.
Instruments Available: Yamaha grand piano.
Video Equipment & Services: SMPTE interlock system, BTX Cypher & Shadow, JVC 3/4-inch VCR w/26-inch color stereo monitor, center track time code, CMX-CASS 1 audio editor and console automation, Adams-Smith Model: 2600 synchronizer.
Rates: Recording/mixing, \$150/hr. (Canadian); 2-track editing, \$75/hr. (Canadian); Video interlock: additional; \$40/hr. (Canadian).

[24+] STUDIO 306
 306 Seaton St., Toronto, ONT M5A 2T7
 (416) 968-2306
Owner: Brian Mitchell

Professional Audio-Video
 2641 EAST MCDOWELL PHOENIX, ARIZONA 85008

Circle #134 on Reader Service Card

Lexicon PCM 60 digital reverb, (2) Master-Room B, AKG BX-10E, (5) DeltaLab II digital delays.

Other Outboard Equipment: (4) Valley People Model 610 dual compressor expander, Eventide H949 Harmonizer, Roland Dimension D, Eventide Instant Flanger, UREI 535, Klark-Teknik DN3030, Klark-Teknik DN60 Real Time Spectrum analyzer, Aphex Aural Exciter.

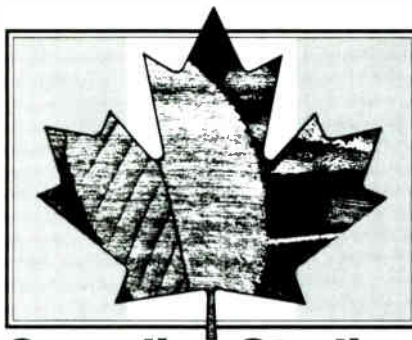
Microphones: Neumann, AKG, Electro-Voice, Shure, Sennheiser, Crown PZM.

Instruments Available: Yamaha grand piano, Yamaha Recording Series drum kit, other instruments available upon request.

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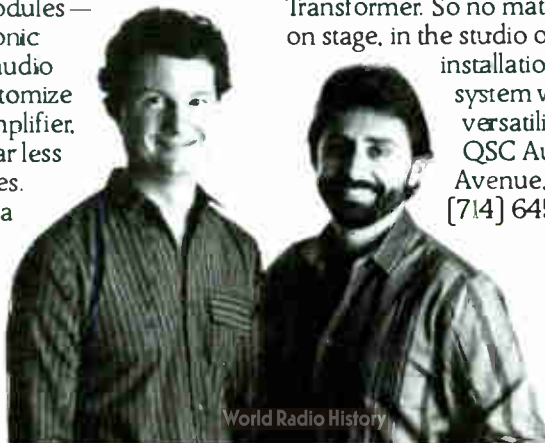
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Barry Andrews
President,
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Patrick Quilter
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FEEDBACK

Dear Mix:

Your July 1986 issue was exceptionally well done. Every article held my interest. Congratulations to Dan Daley for his fantastic article on Contemporary Christian Rock. The write-up was interesting, informative, and free of that annoying "anti-anything Christian" attitude so prevalent today. Genuine artists like Amy Grant, Steve Taylor, and Tonio K. must not allow their record labels to display their typical bush-league approaches to marketing CCR any longer. It's about time these labels started to wise up and make good business decisions instead of continually trying to cater to a tiny, isolated segment of the record-buying public.

Keep up the good work, *Mix!*

Yours truly,
Timothy Keirman
Solon, OH

Dear Mix:

Your August cover is great! Though I'm a bit prejudiced, your art department did a great layout job. I hope you are as pleased.

Unfortunately, there was a mix-up somewhere between our PR people and your editorial department concerning the "This month's cover" blurb on page five. Even though my studio manager Bill Brady and I were instrumental in the construction design and layout of Omega's new studio facilities, John W. Gardner of Nashville, Tennessee was the acoustical designer. If it is in order, a correction would be appreciated.

Thanks for your time and attention to this small oversight, and I wish you continued success.

Sincerely,
W. Robert Yesbek, president
Omega Recording Studios

Dear Mix:

A while back, I read about somebody who was trying to bring back or rebuild Lyricons—the wind synthesizer used in the '70s. Could you help me get in touch with this person?

Cordially,
Alfred B. Grunwell
Calf Audio Inc.
Ithaca, NY

Dear Alfred: Mr. John Dornes, who bought up the remaining inventory of Computone (Lyricon's manufacturer), can be reached at 69 Mercer St., New York City, NY 10012, (212) 966-5289. You may also want to investigate J.L. Cooper Electronics (Los Angeles, CA) MIDI Wind Driver Interface, Gentle Electric's (Delta, CO) Pitch & Envelope Follower, and Fairlight's Voicetracker, as other alternatives worth checking out.

—FROM PAGE 150, CORE WARS

as well, notably Compaq and Tandy. What's worse, the PC uses less glamorous technology than the sexy 68000 and 68020 processors featured in more recently-designed machines.

However, clones aren't IBM's only problems. The PC Jr. was an embarrassment; the Convertible portable computer has been getting a less-than-enthusiastic reception; and even their highly-touted series of computers based on RISC (reduced instruction set) architecture has failed to generate the hoped-for level of interest. While no sane analyst is counting out IBM, the personal computer business accounts for a reasonable amount of IBM's total income. They're going to have to come up with something soon if they want to retain that business.

Meanwhile, although rumors of enticing new products pour forth from Apple-watchers at a steady pace, the Mac is still a closed-architecture, somewhat pricey machine. But Apple is promising to introduce a flurry of new products for 1987, some of which sound truly tantalizing if the rumors hold true.

So what does all this mean to musicians? Lots. First of all, there is a ton of software available for IBM-compatible machines. As the price of clones continues to drop, it will be feasible to

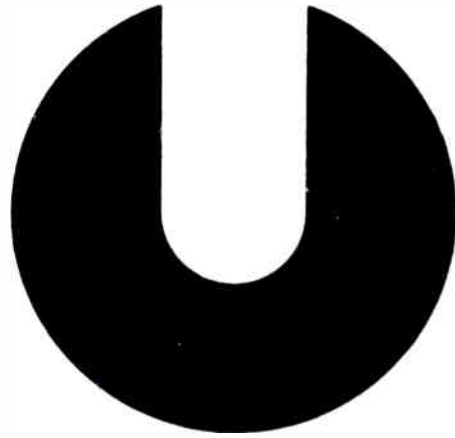
afford more than one computer—say, a clone for business and an Amiga for video work, or a Mac for business and a clone to sit in your studio and run a good IBM-compatible sequencer. Just think: for under \$1,800 you can get an Atari 1040ST with a megabyte of memory and a cheap IBM-compatible. We sure have come a long way in a few years.

What this also means is that no matter what computer you buy, you can count on some degree of software support. Although exceptions are always possible, once a company sells a certain number of computers, software and hardware support usually follows suit. There is finally enough serious software for the Amiga and Atari that many people will buy those machines just to run specific software packages. Just about every computer has programs available for the "Big Three" business software functions (word processing, data base, and spreadsheet), and also, just about any computer can run MIDI sequencers, samplers, and paint/animation programs. This will help relieve some of the fear involved in buying a computer, namely, that no software support will develop. Software for all the remaining players in the Core Wars competition seems to be on the increase, which is good news for the companies involved—and for us. ■

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A Mix Publication



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—CONTINUED FROM PAGE 73, WONDER end of the week, we sat down for a drink, and he told me everything I had told him during all these interrupted confused conversations! He understood it all!

"I had come from a computer company in Silicon Valley, and I had been talking to Steve in terms of computer references, what the capabilities were and he understood it completely!

"He pushed this show technologically, to make sure that we're trying to integrate different technologies; video, audio. Like the SMPTE synchronization to open the show—we presented the idea to some video people and they said 'only in the studio,' so we brought in our people to make it happen. If Steve thinks it's do-able, I know

we can do it. It's this perspective that we try to maintain.

"The other thing Steve can do is that his interpretation of technology is 'what it can do for you.' Not only in some of the work we do, like customizing synthesizers to talk to him—I press buttons and it reports to him—but that we're able to achieve from his desire to pursue shows a certain level. For him, technology has the capability of being a humanizing factor, as opposed to alienating. That is the thing we hope to achieve through the show. The way technology could be used; this could easily turn into a robotic, alienating show. What we're doing is making Steve more present, more human.

"We had a lot of discussions trying to build the show. Everybody would

bring in creative ideas and have meetings with Steve. It's very easy to go into a techno-pop trend, trying to make it high-tech and humanless. It's easier to achieve that! But Steve was always very clear when we were turning in that direction. He'd say 'well it sounds right, but are we gonna have this effect, are we gonna overload people, so that they don't relate to what we are trying to do?' To me, what's important is the application of technology, in the direction of this attitude.

"At the end point—you don't come away from the show with the focus on technology. You see a man use it, but what he's doing with it is basic—universal. When the audience is involved with the show, they're involved with the technology."

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