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THE RECORDING INDUSTRY MAGAZINE

Mix

INTERVIEW: BILLY JOEL & JIM BOYER

**Listings:
Northeast Recording Studios
Digital Recorder Forum**

**Computers in the Studio
Robert Moog
NASA Sound
Engineer Roger Nichols**

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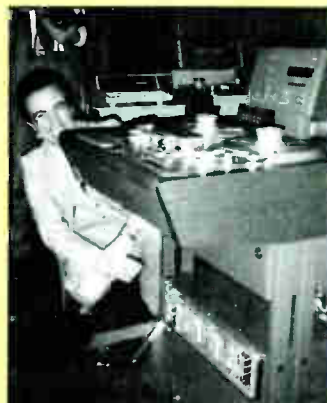
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Cover: Studio A, Sonic Sound Recording Studios Inc. Freeport, Long Island, NY.
 Photo: Laura Tesoriere, Michael Algios
 Sonic's Studio A is one of two 24-track rooms owned and operated by Al Falcon and Gerry Comito. Located just 40 minutes from midtown Manhattan, Sonic offers a state-of-the-art recording quality in a low key suburban atmosphere. Sonic has recently reopened with a new Trident console and a control room designed by Francis Milano of Analogique Professional Systems, New York City.



In this issue's "Special Report," *Mix* talks to a number of major manufacturers and others in the field to find out about the latest in *digital recording technology*. Our report on this rapidly expanding field begins on *page 14*.

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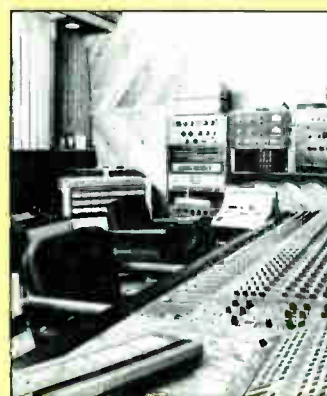
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"Roger, Mission Control..." We've heard the words a million times since man first travelled into space, and we take for granted the fact that people can talk to us from thousands of miles away. Writer Hank Lam delves into the question of *how* this is accomplished and his story on *NASA sound* appears on *page 124*.



Our "Listings" section features the *Studios of the Northeast*, starting on *page 68*. Accompanying that piece, our update article talks about trends in the region and how studios are dealing with changing economic and technological climates.

The always engaging *Mr. Bonzai* lunches with one of the pioneers of the synthesizer, *Robert Moog* in a fascinating interview. Read what this music giant has to say about his own work, past, present, and future on *page 116*.



The MTR-12 1/2" Two-Channel Recorder

AFTER YOU HEAR IT, YOU'LL KNOW WHY IT'S CALLED "SUPER-ANALOG".

The easy purchase decision for a premier analog master recorder just got tough. Real tough.

The reason? The new 1/2" two-channel MTR-12 from Otari. Priced at 15% less than its only competition (MTR-12H, 1/2" two-channel, \$8,500 U.S.), the new MTR-12 is the place to start your re-evaluation of the state-of-the-art in 1/2", 30 IPS two-track mastering.

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The MTR-12 has a long list of sophisticated features which include: the industry's most advanced microprocessor-controlled transport with 12.5" reel capacity, transformerless, balanced I/O, three speed, user-adjustable phase compensation, two master bias presets for each speed, controlled wind mode, Record reference level, switch selectable: 185, 250 & 320 nWb/m, and an optional ten-memory autolocator.

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Dear *Mix*:

As always let me say that *Mix* is an invaluable aid to the recording services community. As a forum for the industry, you provide an opportunity for communication among recording professionals throughout the world.

However I must point out a few misstatements in the recent article, "Buying A Tube Microphone", by Sye Mitchell.

Transistors do not have an inherently faster slew rate than tubes; the statement that tubes, "filter high frequencies rather than pass them", is simply not correct. Slew rate is a function of amplifier circuits, not single components thereof.

The statement that, "Transistor...technology vastly improved recorded sound," is a questionable generalization which must be qualified in so far as microphones, limiters, equalizers and amplifiers are concerned.

The finest engineers in the industry never stopped using tube mikes. I refer to people such as Armin Steiner, Bill Schnee, Alan Sides, Doug Sax. etc. Please note Mr. Glyn Johns' statement in a past Studio Sound magazine that (I paraphrase) the major microphone manufacturers have done a disservice to the industry in the introduction of FET microphones which are of unacceptable sound quality.

Contrary to popular belief, tube mikes do not need to warm up for long periods of time. Two minutes is more than enough time. If it is not, there is something wrong with the mike.

If a microphone has been abused, the physical damage should be apparent with a detailed examination. I don't roll my Telefunken mikes on a flat surface to see if they are bent. Perhaps Mr. Mitchell learned to test mikes in a pool hall.

In the past years I have conducted hundreds of A/B listening tests, throughout the country, comparing tube microphones to solid state microphones. In acoustic environments ranging from million dollar facilities to semi-pro, involving professional engineers, each time the results were the same. It was agreed that the tube microphones sound better than the equivalent solid state mikes. Let me emphasize this: SOUND. The difference is not subtle; anyone can hear it.

Of course, many tube mikes

have been abused and have deteriorated over time as any mike will that is not properly cared for. The most important thing towards maintaining your condenser microphones is to always use a wind screen.

I invite any of the manufacturers to make similar A/B listening tests at the AES convention using my tube microphones for comparisons to those currently made.

Sincerely Yours,
Dan Alexander
Dan Alexander Audio
Berkeley, CA

Dear *Mix*,

Thanks a million for the great write up on page 46 of the March edition of *Mix*. We are the Conti Studio and just getting going in the business as a "new studio".

If possible, may I ask that you make a correction in your next edition as it is very important to a "sound stage" to be of adequate size. You stated on page 46 that our dimensions are 40X15X17 which is incorrect. Our size is 40X50X17 (studio) and our control room is 20X20X9.

I wouldn't make a big thing of this error, but it is very important to a sound stage to have the correct size and the difference between 15 and 50 is quite a bit.

Finally, we all enjoy so much you publication and we wish you all much success in the future.

Sincerely,
Dick Conti
Conti Studio
Edgewater, FL

Dear *Mix*,

We thought that your readers would like to know about the Family Light Music Camp this coming Memorial Day Weekend (May 25-28) at Idyllwild School of the Arts in Southern California. Family Light has been successfully putting on music camps for several years, but we believe the Idyllwild setting is the most beautiful and most conducive to learning that we've found yet. It is situated an hour from Palm Springs in the San Jacinto National Forest, a gorgeous natural setting.

Family Light's music camps bring together aspiring musicians and

—page 194

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CURRENT

SPARS Hosts Digital Debates

A group of about 150 studio owners, manufacturers, engineers, producers and students convened at the University of Miami in Coral Gables, Florida, March 8-10 to discuss the future of digital audio. Although not intended by SPARS (Society of Professional Audio Recording Studios) as a pro- or anti-digital event, the undercurrent of the weekend was that digital audio is finally "here" and that 1984 will be the year that a high percentage of studios take the plunge, whether into the multi-track, \$150,000+ deep end, or the wading pool of two track digital mastering.

At the Thursday night opening session Ken Pohlmann, Director of the U. of M. Music Engineering Technology Program (and a regular *Mix* contributor) put the group on track with a review of the basics of digital technology and a status report on digital audio hardware and software.

Friday's first session, "Digital Audio on Trial: If It's So Good, Why Is It So Bad?" assembled a golden-eared panel to discuss their subjective evaluations of music in the new medium. Sound Workshop's Michael Tapes confessed that of the 100 CD's he has purchased, none has played back with as much "musicality" as he regularly experiences with his analog reference system (about \$20,000 worth of Linn Sondek equipment). Meanwhile, audio engineer and educator John Eargle pointed out that digital audio is at that marvelous stage of development where

PHOTO: JOHN WORHAM



Bruce Botnick and Roger Nichols were among the speakers at the recent SPARS digital seminar held at the University of Miami.

last year's technology is not as good as this year's, yet this year's prices are lower than last year's. Recordists Bruce Botnick and Roger Nichols (see interview in this issue) were somewhat at odds on the sampling rate issue. Botnick, who has been working on digital machines for 4½ years said, "If I could have a sampling rate two or three times

greater, I think a lot of complaints we hear now would not be there." Whereas Nichols, who recorded Donald Fagen's *Nightly* album digitally, admitted that he has softened his position on sampling rate, having not heard a difference between the 44.1 kHz rate of the Sony machine and 3M's 50 kHz.

—page 14

AES Anaheim Conference

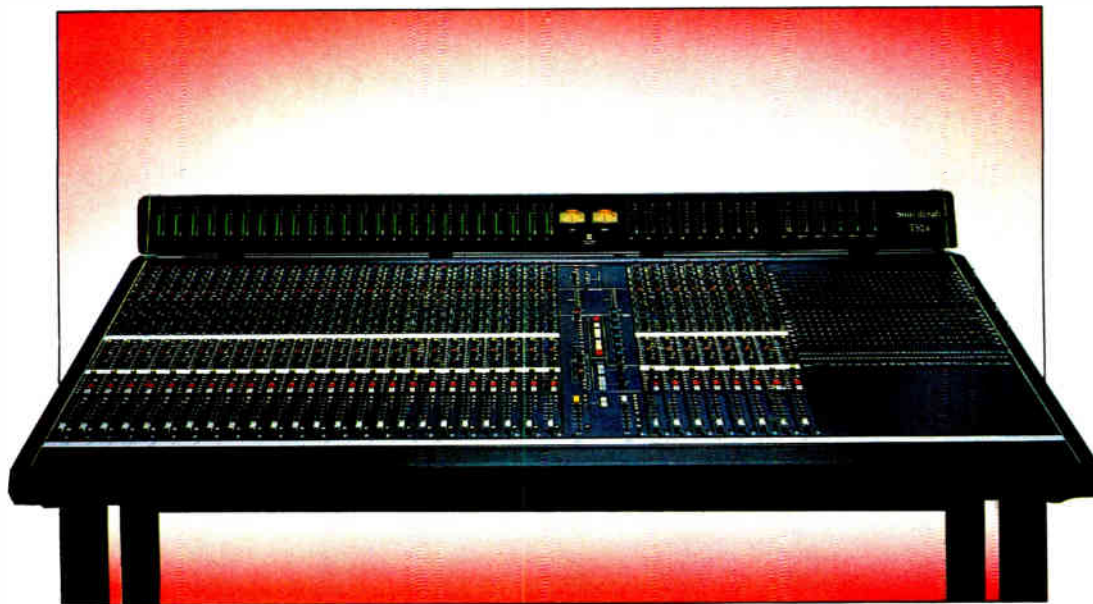
"The Art and Technology of Recording" will be the focus of this month's second Audio Engineering Society International Conference, being held at the Disneyland Hotel in Anaheim, CA May 11 through 14. Unlike the fall AES convention, which always features exhibits by audio manufacturers that display the ever-expanding technology of the field, the conferences have a more educational intention. As

AES literature explains, "The purpose of this conference is to provide a time for greater in-depth examination of the subject than the time schedule of conventions normally permits."

Among the topics scheduled to be covered in official lecture/presentations at the conference are microphones, signal processing, classical recording techniques, popular recording techniques, a survey of the state-of-the-art in both analog and digital recording and transmission, a look at the history of

recording, psychoacoustics and distortion, sound recording for motion pictures, an economic look at the industry, and educational opportunities in the recording business. In addition to these sessions, numerous companies will be displaying their recording-related wares in booths. All in all, it promises to be an enlightening few days for all of us involved in recording or the dissemination of information about the field, which is at yet another critical crossroads. See you there!

A P P R O P R I A T E



T E C H N O L O G Y

When high technology meets the needs of the user, only then does it become appropriate.

That's the philosophy Soundcraft has applied to their new TS 24 in-line console. A philosophy that has revolutionized in-line console design, producing a meticulously engineered console, with the engineer in mind. Designed for audio purity, not egocentricity.

Master status switching reconfigures the console for each stage of recording and remixing. This allows the engineer to create; not search for a lost signal within the console.

The Soundcraft TS24 is an example of intelligent engineering combined with the common sense necessary for *today's* successes.

When choosing your new console, consider the technology *appropriate* for your requirements. Consider the TS24. And, consider profitability for *yourself*, not just the console manufacturer.

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NORTHEAST

Vinyl Flesh was in at Pipeline Recording in Glen Cove, NY, recording sides for a single. The band co-produced with Fritz Lang. Pipeline had its grand opening in January of this year. . . . At *Inner Ear* in Queens, NY, *The Band Next Door* recorded and mixed three original tunes from demo purposes and possible future pressing, and *Quarks* finished mixing and editing their new E.P. . . . In *Electric Lady's Studio A* *Psychedelic Furs* completed working on their fourth album. *Keith Forsey* producing and *Dave Wittman* engineering, and *Rockats* on their first NCA album with *Pete Soley* producing and *Hal Handstorf* engineering, with *Gary Hellman* assisting both projects. . . . MCA recording artists *The Fixx* and producer *Rupert Hine* were in at *The Workshoppe* in Douglaston, NY, to work on new material with engineer *Rob Bengston*. Also at Workshoppe, Mink DeVille guitarist *Rick Borgia* recorded a solo project with engineer *Kevin Kelly*. . . . Journey drummer *Steve Smith*, with band members *Tim Landers*, *Dean Brown*, *Eef Albers* and *Dave Wilczewski*, finished recording and mixing his new album, *Orion* for CBS Records with engineer *Phil Greene* and assistant *Joe Moody* at Normandy Sound in Warren, R.I. . . . *Baltech* put finishing touches on their latest EP for Myrrh-Real Productions at *Skebbe Recorders*, Silver Spring, MD. It was produced by *Vasili Kite* and engineered by *Kevin Morales*. . . . *The Dynamic Breakers*, famous for their break dancing and winners of the ABC *Big Break Dance Special* recorded their first 12" rap tune called "Dynamic Breakers" for Webb Records at *Quadrasonic* in NYC. *Joe Webb* and *Frank Fair* produced. *Dave Ogrin* engineered. And one of NY's hottest rap groups, *The Disco 3* cut their 12" "Fat Boys" there. . . . At *Boogie Hotel* in Port Jefferson, NY, the Long Island-based band *Industry*, completed their debut LP for Capitol Records. Rock veteran *Vinne Poncia* produced the sessions with *Bob Schaper* behind the board. . . . At *Unique Recording* in NYC, *The Waitresses* cut new tracks with *Jimmy Rodeo* producing, *Steve Ettinger* engineering, *Roey Shamir* and *Mike Nicoletti* assisting. Also, producers *Ted Currier* and *David Spradley* finished recording and mixing *The Boogie Boys* for Capitol Records, with *Bob Rosa* engineering and *Steve Pecorella* and *Jeff Neiblum* assisting. . . . *Mark Recording* of Clarence, NY, completed the audio portion of *Jay Weisbecks'* "No Room for Escape" video. Co-production and engineering were provided by *David Bellance* and *Mark Mekker*. . . . Capitol recording artists, *Reflex* were captured live at the Ritz, NYC, by *Aura Sonic's Steven Remote* and *Mack Malkin* for FM Tokyo. . . . At *Greene Street Recording*, NYC, *Steps Ahead* mixed the single off their new Elektra record, *Michael Brecker*, *Michael Manieri*, *Craig Peyton*, and *Nelson Cruz* pro-

ducing, *Rod Hui* engineering and *James Mase* assisting. *Chaka Kahn* was in doing vocals for her new Atlantic album, *Arif Mardin* producing, *Lew Hahn* engineering, *Joe Arnold* assisting. . . . At *Duplex Sound* in NYC, *Eumir Deodato* put the finishing touches on his self-produced album for Warner Bros. and *Chuck Mangione* cut basic tracks for his new album on Columbia with Deodato producing. Both projects were engineered by *Mallory Earl*. . . . Engineer *Karen Kane* worked with folk singer/song writer *John Vorhaus* to put the finishing touches on his forthcoming album recorded at *Euphoria Sound Studio* in Revere, MA. The album was produced by *John Curtis*. . . . At *Evergreen Recording* in New York, *Bill Laswell* produced *Herbie Hancock* with *Rob Stevens* engineering. *Nicky Skopelitis* produced *Bee Side's* new single on Celluloid Records. . . . At *Secret Sound* in NYC *Helen Schneider* recorded some new material with *Mark Berry* engineering, *Tom Gartland* assisting. . . . Recent projects at *Sorcerer Sound* in NYC included *Vixen* recording a single, *Mario Salvati* engineering and *Lenny Kaye*, formerly of the Patti Smith Group, recording and mixing his new band, *Craig Bishop* engineering.

SOUTHEAST

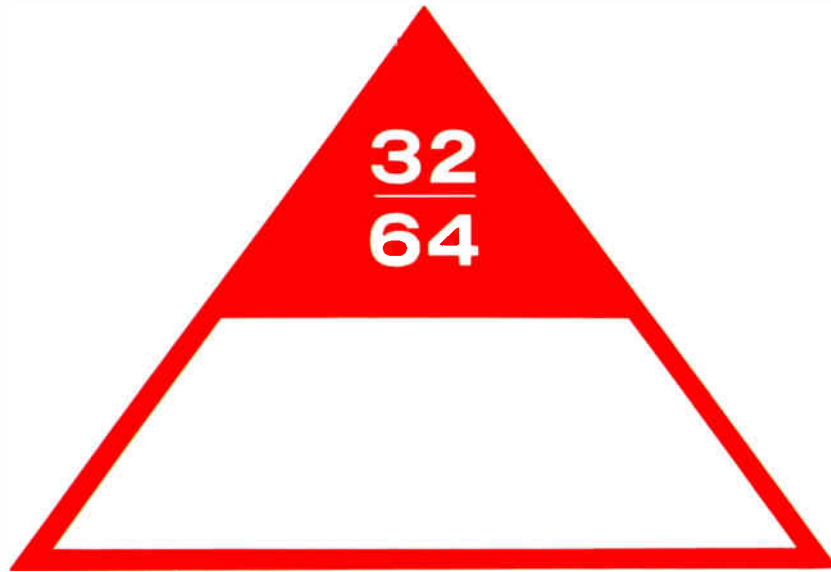
Ray Stevens was in at *Woodland Sound Studios* in Nashville laying down some tracks for a McDonald's jingle. *Ron Chancey* produced for Creative Productions. At the controls was *Les Ladd* assisted by *Tim Farmer*. . . . A lot of big names were in at *Sound Shop Studios* in Nashville: *Tammy Wynette*, working with producer *Jerry Crutchfield* and engineer *Ernie Winfrey*; *Jerry Reed*, who produced himself with *Larrie Londin*, engineered by Winfrey; and *Lee Greenwood*, also working with Crutchfield and Winfrey. . . . At *Stonebridge Recording*, Maryville, TN, sessions included *Lisa Arnold* working on demo material with *Jerry McLain* producing. . . . At *Music Mill* in Nashville, *Harold Shedd* was in doing overdubs on a new *Glen Campbell* album; *Jim Cotton* and *Joe Scaife* engineering for Atlantic America; and Harold Shedd put final touches on the new *Mel Tillis* album for MCA; *Jim Cotton*, *Joe Scaife*, *George Clinton* engineered. . . . *Cheshire Studios* in Atlanta had *Atlanta* finishing overdubs and mixing their debut album, *Pictures*, for MCA Records, with *Larry McBride* and *Milan Bogdan* producing, *Milan Bogdan* engineering, *Tom Race* additional engineering. And *Peabo Bryson* worked on his album for *Elektra/Asylum*. *Peabo* produced, *Russ Fowler* engineered. *Sound Emporium* in Nashville saw country stylist *Gene Watson* working with his co-producer *Russ Reeder* on a new MCA album. Engineer for the sessions was Sound Emporium chief *Jim Williamson*, with *Cathy Potts*

assisting. *Watson* previously recorded several #1 country records at Sound Emporium, including "Paper Rosie", "Should I Come Home (Or Should I Go Crazy)", and "Fourteen Carat Mind". . . . At Doppler Studios, in Atlanta, *Brian Russell* produced *Jimmy & the Mustangs* and *Pheba* for the cable TV film *Attack of the Rock & Roll Aliens*. *Joe Neil* and *Bill Quinn* engineered. . . . *Mississippi Recording Company* and its label, Sunbelt Records, completed mixing sides for national release on country artist *Jerry Puckett*. Puckett also produced the songs. . . Soundshine Productions in Ft. Lauderdale was busy working with *Frank Cornelius*, formerly of Niteflyte, on a solo album entitled *Lazy Lady*. . . . At *Morrisound Recording Studios* in Tampa, FL, *Tom Gribbin* and *The Saltwater Band* mixed their new live album. Gribbin produced and *Jim Morris* engineered. . . . *Becky Hobbs* has just completed her first album for the EMI/America label under the direction of *Blake Mevis* at the Music Hall in Nashville. *Bill Harris* was the engineer. And the ever popular *Charley Pride* worked on his next RCA album with *Norro Wilson* producing and *Harris* engineering. . . . Recently at the *Bennett House* in Franklin, TN, *Dan Fogelberg* with co-producer and engineer *Marty Lewis* and special guests *Russ Kunkel*, *Doc Watson*, *Ricky Scaggs*, *Dave Grisman* and many others. That's for a bluegrass album to be released in the fall. . .

SOUTHERN CALIFORNIA

Activity at *Redwing Studios* in Tarzana included *Andrae Crouch* mixing his latest LP with producer *Bill Maxwell* and engineer *Dennis Degher*, and Journey keyboardist *Jonathan Cain* producing the *Tane Cain Band*, engineered by *Kirk Butler*. . . . at *Image Recording* in Los Angeles, Atlantic artist *Robbie Patton* recorded his new album with producer/engineer *Harry Maslin*, assisted by *Keith Buckley*; also at Image mixing their latest album was MCA/Camel rock group *Franke and the Knockouts* with *John Van Next* at the board. . . . *Golden Goose Recording* in Costa Mesa has finished *Clete Reader's* new single for Bandana Records, with *Byron Berline* doing fiddle overdubs and *Curt Becher* giving helpful hints on vocals. *Dennis Rose* produced with *John Goetz* assisting. . . . *Joe Sample* was in at Conway Recording in Hollywood to work on his new MCA album. *The Crusaders* produced. Engineering was done by *F. Byron Clark* with assistance from *Jeff Stebbins*. Also at Conway, Warner/Pioneer artist *Yazawa* recorded a new album with co-production by *Andrew Gold*. *Dennis Kirk* engineered with help from *Csaba Petocz*. . . . At *Westlake Studios* in LA, *Laura Branigan* mixed her new album for *Atlantic Records* with producers *Jack White* and *Robbie Buchanan*, and engineer *Juergen Koppers*,

THE BURBANK STUDIOS LEAD THE WAY IN FILM SOUND TO THE PEAK OF THE PYRAMID.



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“WE NEED 32-TRACK IN FILM SOUND. 24-TRACK IS JUST NOT ENOUGH.”

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The trouble w ordinary consoles don't work half th



MIX IN
PROGRESS.
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It's a situation that every studio manager recognises. A client has been in, done some work, and departed to return some time later. Expecting to find the desk as it was left.

Of course, the engineer could always note down all the settings and then reset the desk. But that's extremely time consuming and not entirely reliable.

So, usually, the studio has to stand idle between sessions. Keeping the customer happy, but not keeping the money coming in.

At Solid State Logic, however, we've developed a rather more practical solution to this dilemma. We call it the Total Recall System.

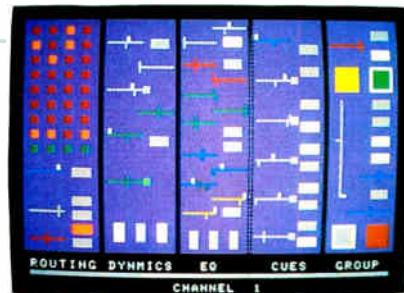
Total Recall is completely independent of all audio paths and allows the console settings to be permanently stored on floppy discs within a few seconds.

So, at the next session it takes only minutes to reload this information, check it on the colour video monitor and return the console to its original settings.

The same thing can be done at the end of each mix

With
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e time.

And it gives producers and musicians real flexibility and continuity. After recording in an SSL studio, they can return there (or to any other computerised SSL studio in the world) and continue work with absolute accuracy and the minimum of fuss.



Yet the computer is simplicity itself to operate. Even inexperienced assistants and tape-operators will soon master its basic functions. While feed-back from studios with SSL systems shows that more advanced expertise is acquired quickly and naturally with use.

The SL 4000 E Series Master Studio System could only have been developed through an understanding of the needs and problems of people who spend their lives in studios.

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to save time at a later re-mix. And engineers can even store their personal EQ and dynamics settings and create their own libraries on floppy disc.

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These unique facilities give the Solid State Logic Master Studio System several important advantages.

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It saves the engineer wasting precious time and lets him concentrate on the creative process, from track laying to over-dubbing through to mixing. Because the studio computer speeds up everyday tasks like autolocation, drop-ins, mixing and synchronisation.

assisted by **Matt Forger**. **Rebbie Jackson** was in with her brother **Michael Jackson** doing overdubs on her latest for **Epic** with engineer **Matt Forger** and assistant **Ric Butz**. . . . Recent projects at **Music Grinder Studio** included **Phil Collins** in doing a film score with **Arif Mardin** producing and **Jeremy Smith** engineering; **Chaka Khan** also working with **Arif Mardin** producing and **Jeremy Smith**; and **Allan Holdsworth** cutting tracks for his next Warner Bros. LP, **Dennis MacKay** at the board. . . . At **Group IV Recording** in Hollywood, composer **Alan Silvestri** scored the feature film **Romancing the Stone**, starring **Michael Douglas** and **Kathleen Turner**, with engineers **Dennis Sands** and **Andy D'Adario** behind the board. . . . At **Morning Star Sound Recorders**, Baldwin Park, CA, **Woods Empire** was in doing pre-production for their new album with **David Crawford** producing. . . . At the **Village Recorder** in LA, **Joe Cocker** cut tracks in Studio D with producer **Gary Katz**, engineer **Daniel Lazerus** and assistant **Robin Laine**; also in the Village were **Kenny Loggins**, working with producer **Albhy Galuten** and **Rodney Crowell**, who was produced by **David Malloy**. . . . Life was busy at the **Sunset Sound Factory** in Hollywood: finishing off her Spanish LP was EMI artist **Sheena Easton** with producer **Greg Mathieson** and engineer **David Leonard**. Putting last touches on his latest was Warner Bros. artist **Steven Bishop** with producer **Mathieson** and engineer **Tchad Blake**. . . . **Bonnie Pointer** was in at **EFX Systems** in Burbank recording overdubs for her new single produced by **Cleopatra Productions**, **Barry Brenner** engineered. . . . At **Sunset Sound** in Hollywood, Warner Bros. artist **Prince** worked on some new tunes for his upcoming movie. **Prince** produced and engineered the project. **Peggy McCreary** assisted. . . .

NORTHWEST

The **Steve Miller Band** worked at **Sun Valley Audio** (Sun Valley, ID) recording their new album for **Capitol Records**. . . . Activity at **Womach Recording**, Spokane, WA, included the group **Brotherhood** recording **The Power**, and overdubbing vocals on **Eye To Eye**. The **Switch Band** was in doing demo tracks for **Arianna Records**. . . . At **The Plant** studios in Sausalito, 707 was recording their new album with producer **Jim Gaines**. **Gaines** also engineered, with **Mark Slagle** assisting. And film sound designer **Dale Strumpell** was in working on computer dialogue for "Hal" in the upcoming **MGM** production **2010**. . . . Recent activity at **Little Mountain Sound Studios**, in Vancouver, included **Chilliwack** cutting tracks for their next **Solid Gold Records** release. The project was self-produced by **Bill Henderson** with engineering by **Bob Rock** of the **Payolas**. **Loverboy's Paul Dean** flew from Chicago to Vancouver to mix the band's contribution to **Giorgio Moroder's** new film, **Metropolis** in his hometown studio of **Little Mountain Sound**. **Derek Jones**, producer/engineer at **Ultra Sound Studios** in Campbell, CA completed the master for his **Battle of the Bands** **Flexi-Disc**. The **Flexi-Disc**

features the four bands: **Full Moon Tan**, **May West**, **Drama**, and **3D**. . . . **Silhouette Band** leader **Mike Molenda** recorded a self-produced solo EP project for **Amourous records** at **Starlight Sound Studio** in Richmond, CA. Also at **Starlight** was **Ralph Records** artist **Naut Humon** mixing his new album, **Contents Under Notice**. **Norman Kerner** was engineering and **Paul Gatehouse** assisting on the sessions. . . . **Audio Vision Studio** in Logan, Utah was host to **Jodie Lyons** who produced a five-song demo project for new rock artist **Bobby Schlagel**. Behind the board was **Sam Foster** with notable session player **Mark Evans** handling **Acoustic** and **digital percussion**. . . . **Vis-A-Vis**, the **Pacific Northwest** musical group, recorded an EP at the **Music Annex** recording studio in Menlo Park, Ca. Producing the recording in conjunction with the group was engineer/producer **Russell Bond**. . . . Studio C in Stockton, CA had **9th Creation** recording with **Steve Kato** producing, **Ralph Stover** engineering, and local rockers **James Blonde Band** working on a single release. . . . **Waylon Jennings'** back-up band popped into **Bear West Studios** in SF after a gig for a late night session, produced by **Chuck Vincent**, and engineered by **Mark Needham**. **Greg Douglass** added some guitar tracks to some material on an album by **Joni Hastrup & the Anagos**, produced by **Ross J. Winetsky**. And **Bill Spooner** of **The Tubes** has been working on some of his own material, as well as some commercials at **Bear West**, engineered by **Mark Needham** and **Marc Senasac**. . . .

NORTH CENTRAL

At **Studio A** in Dearborn Heights, MI producer **Randall Jacobs** worked with **The Machanixx** on their first EP, and **Rocky Barra** continued work on a contemporary **Christian** recording project. . . . **Dennis DeYoung** of **Styx** has been cutting tracks for a solo album due in July at **Pumpkin Studios** in Oak Lawn, IL. **Styx** also mixed their forthcoming live album there. . . . Recording activity at **Gnome Sound Studios** included legendary **Motown** superstar **David Ruffin** cutting a new album with producers/writers **Ronnie McNeir**, **Bruce Nazarian**, and **Jerry Jones**. . . . The past few months have seen **Comfort Sound** in Toronto very active on all fronts. The mobile completed a series of 26 half-hour television shows in **Hamilton**, featuring **Steve Ray Vaughan**, **Emmylou Harris**, **Rosanne Cash**, **Tony Joe White**, **Larry Gatlin** and others for the series **In Session**. In the studio, **Tom Mawhinny** completed his third LP **Lucy Be We**, and **Maja Bannerman** and the **Ceedees** worked on demo projects. . . . At **5th Floor Recording Studios** in Cincinnati, **Bootsy Collins** was in mixing his new single and other work on his upcoming **Warner Bros.** album with **Gary Platt** engineering and **Kathi Jo Williams** as assistant engineer. . . . At **QCA Recording Studios** in Cincinnati, **Solar Recording** artists **The Whispers** cut tracks for their forthcoming album with members of **Midnight Star**, produced by **Reggie Calloway** and engineered by **Ric Probst**. **Midnight Star** also cut tracks for **Solar** artist **Carrie Lucas** with pro-

ducers **Bill Simmons** and **Jeff Cooper** and engineers **Ric Probst**, **Jim Greene**, and **Robin Jeny**. . . . **Western Sound Studios** in Kalamazoo completed work on a two-volume set of records to be released by jazz singer **Mark Murphy** under the **Muse Records** label. Engineering was **Dean Lathrop**. . . . **Spectrum Sound Studios** in St. Clair Shores, MI completed two 16-track projects by **Pleasure Circuit** and **I.C.U.** Both disks were released on the **Detroit-based Tight Records** label. . . . Since opening in October of 1983, **Cloud 10**, a new 8-track in **Ann Arbor**, MI has been involved in album projects for the folk duo **Gemini** and **Michigan harmonica ace Peter "Madcat" Ruth**, as well as a cassette released by local new music stars **Non Fiction**. . .

SOUTHWEST

Michael Henning & Tribe completed recording/mixing in **Sumet-Bernet Studio A** (Dallas), with **Bobby Dennis** engineering. **Tribe** along with another **Sumet** project, **Johnny Remo & the Sax Maniacs**, will be included in a **Texas** compilation album produced by **Lian Sternberg** for **Elektra-Island Records**. . . . **Grammy** nominated producers **Ron Kreuger** and **Kletch Wiley**, who had the misfortune of being nominated in the same category with **Michael Jackson** this year, cut tracks for a new children's musical project, **Three Ring Saturday** at **Sierra Recording** in Fort Worth, with **Randy Adams** engineering. The project also included three songs to be included in a new **Gingerbrook Fair** film entitled **Truthfulness**. . . . At **Rivendell Recorders** in Pasadena, TX producer **Jonathan David Brown** was in from LA working with the **Synclavier Music System** on **Morgan Cryar's** upcoming album material. And **Rivendell** is proud to note that **B.B. King** won a **Grammy** for his album cut at **Rivendell** in 1983. . . . At **Omega Audio** in Dallas the **Lubbock based group The Nelsons** mixed their new album. The group received rave reviews after winning **MTVs "Basement Tapes Awards"** for their new video. The **MTV** success spawned interest in their new album **Bag Your Face**. ■

STUDIO NEWS

Producer **Harry Maslin** (David Bowie, Air Supply, etc.) and engineer/studio manager **John Van Nest** have announced that their studio, **Image Recording** (formerly **Allen Zentz Recording**) is now available for outside projects. Since taking over the facility last year, the studio (located at 1020 North Sycamore Ave., Hollywood, CA 90038, 213/850-1030) has played host to a number of major record projects by **Laura Branigan**, **Stevie Woods** and **Night Ranger**, among others. Recent equipment acquisitions include a new **MCI 24 track recorder**, **Ampex ¼"** and **½"** two tracks, and the entire line of **AMS** outboard gear. The owners have also formed a production company to develop and promote

—page 193

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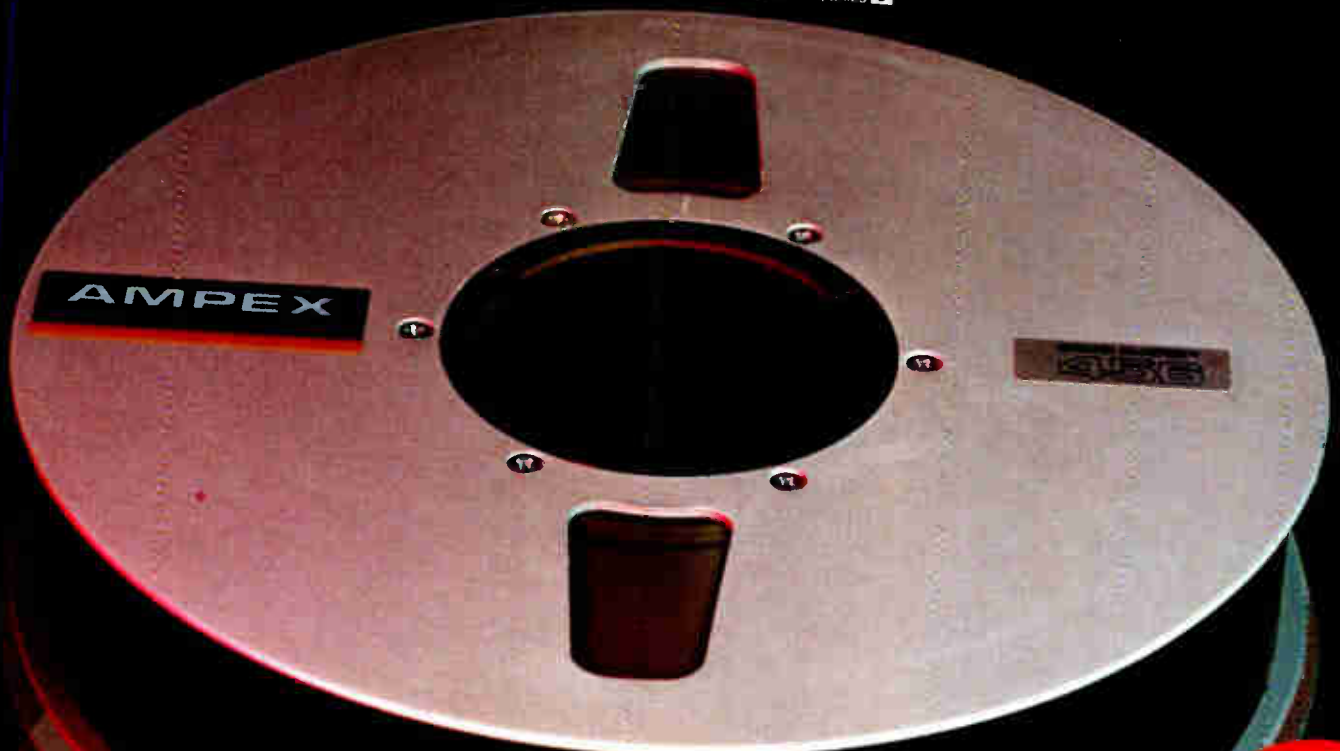
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World Radio History

DIGITAL RECORDING

by George Petersen

While predictions of a "digital revolution" made just a few years ago are yet to be fulfilled, it is obvious that the digital studio is a coming reality, although a belated one. Advancements such as the all-digital console introduced by Neve, standardization talks among manufacturers, the proliferation of computerized and digital-based studio gear such as delay units and processors, and improvements in digital recorders themselves have all contributed to the advent of the digital studio.

On another front, the growing acceptance of the compact disc and the value of the word "digital" as the sales buzzword of the '80s has sent both consumers and record companies clamoring for digital product. Keeping with the demand, a significant number of business-conscious recordings studios have been purchasing digital mastering systems. Digital multitrack sales have so far been less than overwhelming, although a great many studios are now considering the investment.

We talked to a variety of major digital recording equipment manufacturers to provide you with an update of their current product developments and activities. A short outline of the DASH (Digital Audio Stationary Head) standards proposal has also been included. In future issues of *Mix* we will

continue this dialog in our Digital Discussions column.

dbx — Lance Korthals

Mix: What is the current status of the dbx 700 Digital Audio Processor?

Korthals: "We began shipping our 700 units to dealers in January. As is inevitable, the unit has gone through the normal changes necessary to bring it from first prototype to the current production model. The principle (CPDM, Companded Predictive Delta Modulation) has remained the same—we have only made changes in the layout to make it a producible, reliable piece of equipment."

Mix: What about the 700's compatibility to the compact disc format?

Korthals: "To make a CD from the 700 at the present time, you need to go through analog, but there are a couple of good points surrounding this: 1) if you talk to mastering engineers, they'll say that most product, whether digital or analog, goes through analog anyway, because in 90% of the cases you have to make level or EQ changes so the first song is in a continuous flow with the last song which may have been done four months later.

"The other question about going through analog is whether there is a dynamic range loss. The answer is yes,

but when the 700, with its dynamic range of 110 dB, goes to a CD with a dynamic range of 90dB, you have a 20 dB difference to blow off. In fact, it can be proven mathematically that when you go from a 110 dB master to a 90 dB final release, you will end up with a dynamic range of 89.6 dB after going through analog and back to digital. So it's not a terrible loss of dynamic range.

"In a practical sense, when using your 90 dB, 16 bit PCM unit, you have to leave some headroom. If you leave 20 dB for peaks, that limits your dynamic range to about 70 dB. On the other hand, with the 110 dB available from the 700, you can leave that 20 dB and have 90 dB below that. At that rate you'll still have more dynamic range than the CD can handle.

"We made some tests in studios in the San Francisco Bay Area, where 24 track masters were recorded on Studer A-800s, and we mixed them down to the 700. We locked up both machines, and played the master 24 track and compared it to the 700 mixdown. These engineers who made these recordings originally could not tell the difference between the 24 track master running through the board and the 700 mixdown. I think that is a valid way of looking at this, rather than mixing it down to analog and comparing that to digital, because what you're ultimately after is having it sound like the original."

JVC — Larry Boden

Mix: What is JVC's outlook on the digital market?

Boden: "We're expanding the applications of digital—we're going to the video post-production market, the video duplication market, and instru-

—page 16

Dickinson on Digital

Frank Dickinson, the owner/engineer of Digital by Dickinson, Bloomfield, NJ, has been operating both a digital rental service and digital recording studio for several years. Some of the company's recent projects include releases by Joe Jackson, Kashif, Bob Dylan, and the soundtrack to *La Cage Aux Folles*. As an outspoken proponent of digital recording, Dickinson is frequently bothered by the constant criticism and "sour-graping" the medium receives.

One basic point of contention involves the quality of digital maintenance. "The problem with

—page 16, Dickinson

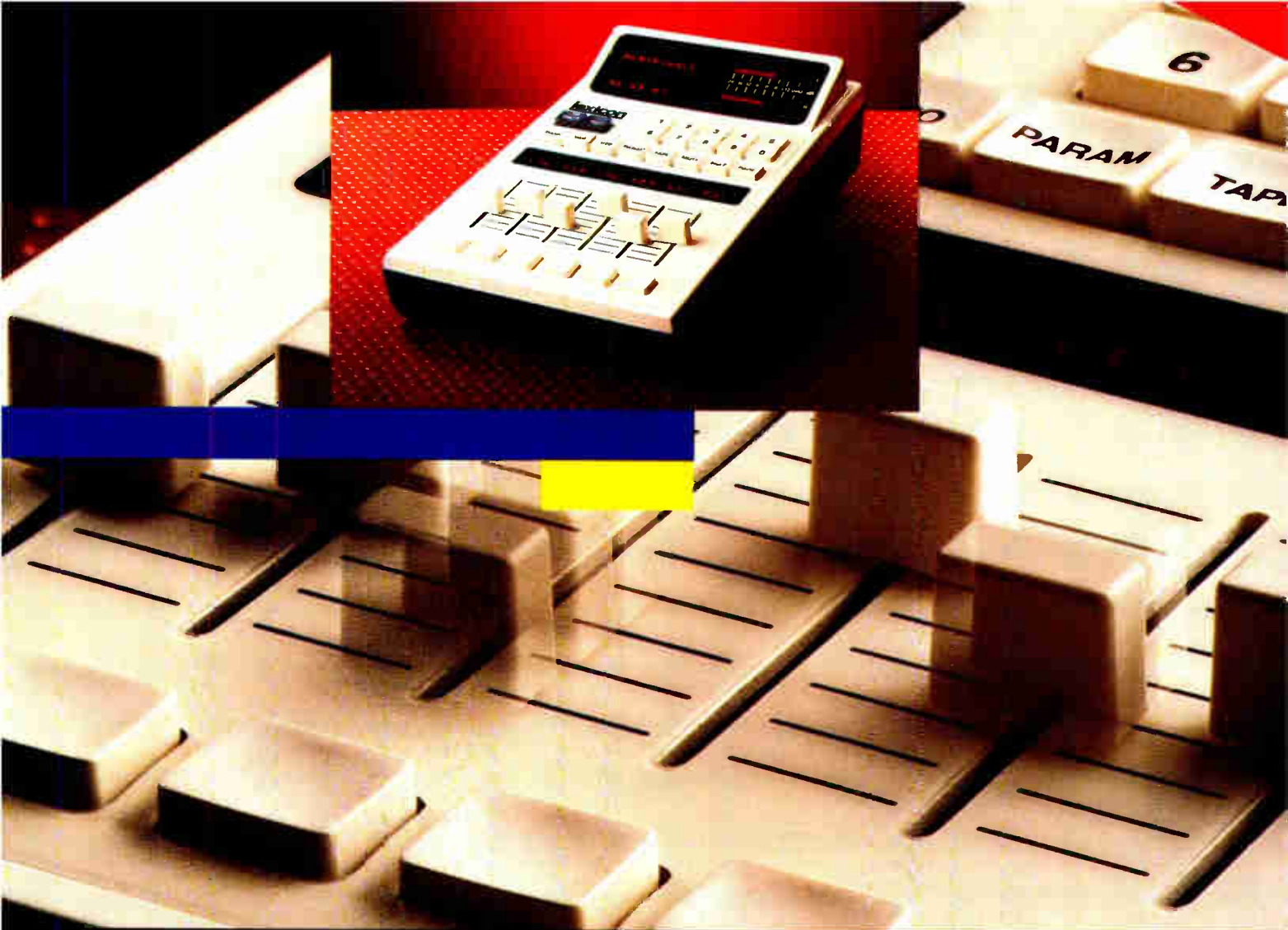
SPARS Hosts Digital Debates

—from page 6, SPARS

A nuts and bolts session on preparing digital tapes for CD mastering followed, where Roger Nichols advised such procedures as laying 1½ minutes of time code before and 30 seconds after the musical program master intended for CD. Bill Foster, of London's Tape One Studio, stressed the critical care that must be taken in azimuth alignment in order to produce a good sounding CD. Bob Ludwig, mastering engineer at New York's Masterdisc noted, too, that "the technology is here to serve the music" and cited situations where forms of distortion may be "added" to the ultra-clean digital signal to "enhance" the music.

The final Friday panel drew

together several of this country's major studio owners. Moderator Hamilton Brosious, editor of the recently released "Digital Recording Report," posed the panel on ways that the studio owner can deal successfully with the economics of digital audio. Los Angeles Record Plant Chief Chris Stone, who has used digital multi-tracks for five years at his studios, emphasized his convictions that 1: There is a digital market; 2: There is a way for the client to pay the cost of the equipment; and 3: Studio owners are going to have to find ways to justify the costs of going digital. He also noted that one way that his studio is dealing with the high cost of digital multi-track is by renting out their Sony 3324 (24 track) to clients and other studios at daily, weekly, and monthly rates.—page 18



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—from page 14, Dickinson

digital, whether it's Mitsubishi, Sony, 3M, JVC, or something we haven't seen yet," Dickinson explains, "is the unfortunate fact that the technical competence of the studios is not up to what they are buying. Studios are not acoustically up to handling the machines, and they are not up to caring for them. As a result, we are winding up with poor product which is bad mouthing the basic premise digital was brought in on.

"Let's face it," Dickinson continued, "where have all the good technicians gone? The video studios bought them up—they work eight hours a day, they take home \$1000 a week, they have no overtime, and they can actually plan on going home for the weekend."

But what bothers Dickinson even more is the fact that many digitally recorded projects are being released on CDs cut from analog masters. "Billy Joel's *Nylon Curtain*, which was a digital mixdown, got turned around. The CD was made from the 15 ips analog copy. Why? This doesn't help the record company and it doesn't help the digital business either. When we recorded the *La Cage Aux Folles* record, we made a deal with the producer: We had no analog copies available to anybody. We did everything from the digital, including the cassette bin loop masters. This way we stopped a lot of the 'well-let's-use-the-analog-it's-easier' stuff. When we did the new Joe Jackson record, we did the same thing: The producer requested that no buss EQ'd analog copies go out to the record company."

Dickinson feels that the future of digital recording is still yet to be resolved, and that the DASH proposal is hardly the only solution. "Each approach—Sony's, Mitsubishi's, 3M's—has its own merits, but I still don't think we have the ultimate answer. The ultimate answer will be that we won't have moving tape: Eventually we will go to silicon storage or protein storage. Corning Glass is now working on a device which has the ability to store billions of pieces of data within a cube of glass. All I know is that magnetic tape is doomed. We don't know what the answer is. I think we've only put our toe in the lake. I don't think we've even begun to figure out what we can do with this formula—that's going to take time and money. We have to figure out how to get a few damn good good sets of brains to work on this."

—George Petersen

The DASH Standard: A Brief Outline

The DASH (Digital Audio Stationary Head) standard proposed last year by Matsushita, MCI/Sony, and Studer is a format designed to promote standardization and machine compatibility among digital manufacturers and users. DASH lays the groundwork for fixed-head 2 to 48 track digital recording on both 1/4" and 1/2" tape, at three speeds. Four auxiliary tracks are provided for recording the control signal, time code, and other purposes.

The control, or reference track's functions include: servo lock, skew reference of the data track, and carrying the absolute address, sampling rate, and a

reference for automatic wave form equalization.

DASH encoders utilize a Cross Interleave Code (CIC) which can correct errors corresponding to a maximum of three words. The encoding and decoding of error correction codes is performed independently for each track. Both electronic and razor blade editing can be accommodated.

One of the main advantages the DASH proposal offers is flexibility of future formats, such as the thin film head technology developed by Matsushita. This insures that tapes recorded on present DASH machines can be played on future double density recorders, which will have twice the track capacity of current models.

—from page 14, Special Report

mentation and industrial uses, as well as the recording studio market. We've introduced our second generation of digital machines, the 900 system, which is an update of our 90 system. We've reduced the size and weight, added a remote control unit, and added features to our AE-900V digital audio editor, such as insert editing, search to cue,

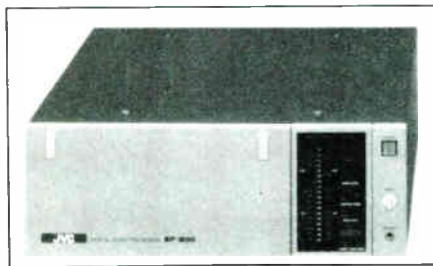
ramifications of it in all formats and under all applications. We are firmly committed to digital in both 14 and 16 bit and other applications."

3M — Dick Marstad

Mix: Does 3M have plans to produce another digital multitrack?

Marstad: "We're extremely cautious at this time, and I'm not at liberty to comment on our future plans in the multitrack business. But we're still definitely involved in digital audio and we will continue to provide full technical support for the machines in the field which also have a five year head guarantee."

"There's an FCC requirement in the U.S. and a DDE requirement in Europe that says you can't manufacture any computer-based equipment that radiates a given amount of radio frequency interference over a certain range. This is measured in Volts per meter to a calibrated antenna in a free field test site. Essentially, the recorder would have to be tightly shielded to meet the specification, and currently there are no plans to make a new box."



JVC BP-900 digital processor.

and the ability to link two machines for four track digital recording."

Mix: Does JVC have plans for a digital multitrack?

Boden: "We've never been one to rush product out on the market without sufficient field testing or sufficient technical backup. We still believe that digital has got to be affordable. It does no good if only 4 or 8% of the studios can purchase a multitrack machine. It's got to be affordable by the top 50%."

Mix: What is JVC's position on the DASH proposal?

Boden: "We still have it under consideration. It's a complicated proposition—you really have to look at the

3M digital system.

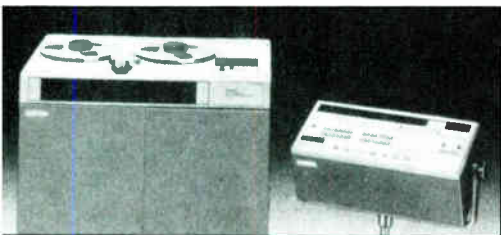


Matsushita — Almon Clegg

Mix: What is Matsushita's position on digital recording?

Clegg: "We are one of the four proponents of the DASH format, and we demonstrated a prototype machine at the October AES convention. Our technology contribution to DASH was the thin film heads for high density recording, what we call 'double density.' We don't have a plan for when we will be offering a machine for sale.

"Our estimate is that there are only about 2000 studios in the entire world that could afford to buy a \$100,000 digital recorder. What percentage of those could we sell a machine to? We don't know, but we are certainly interested in the market. We're trying to decide how we can best sup-



Matsushita's 16 track prototype.

port the industry. We're setting up a factory to manufacture the thin heads, and we've had discussions with Sony, Studer, and others to supply them with the heads, and that is moving forward."

Mitsubishi — Tore Nordahl

Mix: What is Mitsubishi's position on digital standards?

Nordahl: "We have no intention of changing the multitrack format at the present time. We have had the Mitsubishi multitrack standard for about three years and it has a very powerful error correction system, that the industry would require in the longer term. As an example, studying the DASH paper that was presented last fall, you can see that if you have a dropout of more than 3-5 milliseconds, then the channel is likely to go into mute. With the Mitsubishi format, you can actually have a complete breakdown of the head for any particular track through the entire length of the reel, and due to the fact that we have two error correction tracks for every eight audio channels, it can completely correct the playback exactly as it was recorded on the tape. Any future format required by the recording industry would need error correction stronger than what DASH can do at the present time.

"I would expect to see continuous developments in the DASH format, especially if they expect to go to double density 48 track on 1/2" tape, because of the enormous tolerance requirements. The Mitsubishi format is much stronger—it could support double density 64 track—and it's a long term system we would expect to last ten years or longer."

Mix: Would you expect the razor blade editing process to have a long life span? **Nordahl:** "With the two track machine, razor blade editing should have a fairly long life—people have been doing cut and splice for years, and people will continue to do so in the reel-to-reel two track format. The electronic editor is



Mitsubishi X-800 32 track.

really there to assist with the critical sort of editing as in classical music, where various crossfade times are required. We are currently working on a cut and splice for our 32 track, which will be available soon, but has not been announced yet."

<p>A & M RECORDS JOE JACKSON "BODY & SOUL" DAVID KERSHENBAUM, PRODUCER</p>	<p>WALT DISNEY EPCOT CENTER</p>	<p>LIVE AT LINCOLN CENTER MEHTA, N.Y. & ISRAELI PHILS "SYMPHONIE FANTASTIQUE" ANDREW KAZDIN, PRODUCER</p>
<p>CBS GOLD 3/84 BOB DYLAN "INFIDELS" PRODUCED BY: BOB DYLAN & MARK KNOPFLER</p>	<p>RCA RED SEAL "LA CAGE AUX FOLLES" T. SHEPARD, PRODUCER 1984 GRAMMY NOMINEE "PRICE-HORNE IN CONCERT AT THE MET" LEONTYPE PRICE, 1984 GRAMMY WINNER MARILYN HORNE, 1984 GRAMMY WINNER JAY SAKS, PRODUCER, 1984 GRAMMY WINNER</p>	<p>TELEVISA LEINSDORF, N.Y. PHILHARMONIC "STRAVINSKY" MENUHIN ANDREW KAZDIN, PRODUCER</p>
<p>ARISTA RECORDS AIR SUPPLY "IN PRODUCTION" 4/84 DAVID KERSHENBAUM, PRODUCER KASHIF "IN PRODUCTION" 3/84</p>	<p>GRP RECORDS DAVE GRUSIN & LARRY ROSEN, PRODUCERS "NIGHT-LINES" DAVE GRUSIN "IN THE DIGITAL MOOD" GLEN MILLER ORCH.</p>	<p>POLYGRAM "ON YOUR TOES" NORMAN NEWELL, PRODUCER</p>
<p>TDK "IN PRODUCTION" 3/84 THINK HOUSE & TOSHI ENDO PROD'S, JUN MIYAKE, ARTIST</p>	<p>LIVE FROM THE MET "METROPOLITAN OPERA CENTENNIAL GALA 1883-1983" "ERNANI" CLEMENTE D'ALESSIO, PRODUCER "FORZA VERDI LA DEL DESTINO" SAM PAUL, PRODUCER</p>	
<p>1984 OLYMPICS COMMITTEE KURT-PHIL PRODUCTIONS PHILIP GLASS "OLYMPIC THEME SONG" KURT MUNKASCI, PRODUCER</p>	<p>LONDON DECCA-POLYGRAM CLASSICS 4/83 PAVAROTTI AT AVERY FISHER HALL</p>	

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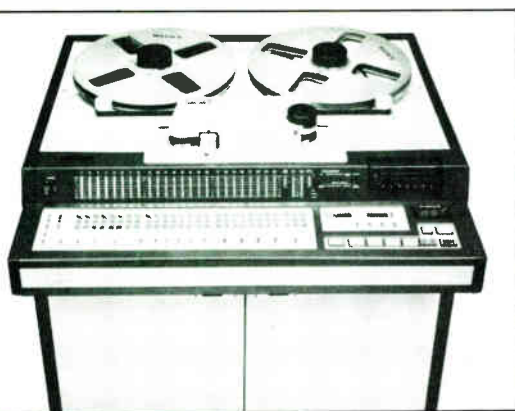
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<p>DON Q (LOCK TO VIDEO) RUM JINGLE O'CHOA STUDIOS, SAN JUAN CUCCO PENA, PRODUCER</p>	<p>CBM-MAZE RECORDS SAGA "IN TRANSIT" JIM CRICHTON, PRODUCER</p>	<p>TODAYS CREATIVE MUSIC "A TODO DAR" CUCCO PENA, PRODUCER</p>
<p>ELECTRA-ASYLUM-NONESUCH RECORDS ELITE RECORDING, M. AUBORT & J. NICKRENZ 1984 GRAMMY NOMINEE "DEL TREDICI" ST. LOUIS SYMPHONY 1984 GRAMMY WINNER, BEST PRODUCER "BERG: LULU SUITE" CINCINNATI SYMPHONY "DEL TREDICI" ST. LOUIS SYMPHONY "OVORAK" ST. LOUIS SYMPHONY "SCHUBERT" BOSTON SYMPHONY CHMBR. PLAYERS</p>	<p>NEW WORLD RECORDS MEHTA, N.Y. PHIL. "SCHUMAN" ANDREW KAZDIN, PRODUCER</p>	<p>WARNER BROS. PAUL SIMON "HEARTS & BONES" PRODUCED BY PAUL SIMON, RUSS TITELMAN & ROY HALEE DONALD FAGEN "NIGHTFLY" (SAFETIES) GARY KATZ, PRODUCER</p>
<p>CBS MASTERWORKS "LA RONDINE" LONDON PHIL STEVEN EPSTEIN, PRODUCER RICHARD EINHORN, PRODUCER YO-YO MA "BACH SUITES" RAMPAL-RIITTER "WEBER FLUTE SONATAS" RAMPAL "ORIGINAL RAGTIME" JOPLIN YO-YO MA "BACH GAMBAS SONATAS" RAMPAL-STERN "BACH SONATAS" ORMANDY - YO-YO MA PHILADELPHIA ORCH. "SHOSTAKOVICH"</p>	<p>PURE DIGITAL RECORDINGS FOR: ANGEL-CAPITOL-EMI SMITHSONIAN INSTITUTE MOSS MUSIC (VOX) PRO-ART RECORDS SINE OUA NON NONESUCH RECORDS TED PRODUCTIONS RON CARTER DON SEBESKY MUSICAL HERITAGE SOCIETY PHILHARMONIA VIRTUOSI</p>	

Circle #005 on Reader Service Card



Sony PCM-3324 digital 24 track.

Sony — Curtis Chan

Mix: What in the Sony position on digital?

Chan: "Essentially the position of Sony is that if all the companies fight each other on standardization, then we will have no reference to start from. With the DASH standard, we have an outline of the basic guidelines for a given standard. So now the manufacturers can combine forces and use all their engineering power in designing a common LSI, and all the companies can benefit. This will reduce the cost of the machine, and because the LSIs are now implemented, we can all make machines that are truly compatible. The given standard also propels even more standards to come for other product lines in that same category. Some people have argued whether or not this is the time for a standard, but if it's not, then when shall we begin?"

Mix: Since Sony is promoting the DASH standard, does this mean that video-based recorders such as the PCM 1610 will be phased out?

Chan: "No, not at all. We know that the audio and video industry will merge in

the near future. Because of this, many of our products are video related. The end user can not only do a date in the recording industry, but at the same time, can also do video and film production. This is how Sony views its product line: you never look at the specific marketplace, but to the total overall marketplace."

Mix: Is Sony eventually planning to produce 4, 8, and 16 track digital machines?

Chan: "The DASH format will allow for that. This will depend on the marketplace, and this is possible not only from Sony, but all the manufacturers that are with the DASH format. Again, because of the standard, all of the encoding and decoding blocks have already been done. Making a 2, 4 or 8 channel machine is very easy—essentially it's just piecing together the specific design you need. This is what makes a given standard a valuable commodity: You don't have to re-invent the wheel all the time.

"The digital audio industry is in its infant stages now. There is still much more room for growth. If a manufacturer is smart, he will insure to the end user that compatibility will exist for all current as well as future products. This is what the DASH format insures. Take the oncoming thin film head technology: With the way the DASH standard is structured, anybody who has our 24 track now will be able to play their tapes on the 48 track."

Studer — Tom Mintner

Mix: What is Studer's position on digital?

Mintner: "Studer's position on digital from the beginning was that we are fully committed to it—financially and in terms of research—but we intend to make good machines and we intend to make them profitably. Studios want digital, but they want digital that works and sounds good.

"The art of digital design is in the conversion—in the front end, and in the conversion on the way out. The

design compromises that are made are different than they are in analog, and the performances results we get with digital are far more impressive, which leads some people to say that digital is perfect. But it's only as perfect as the compromises we put into it. Digital information is digital information, but there is a misconception that there is an absolute encoding and decoding which is the same on all digital tape recorders. This simply is not true, especially when you're talking about a device which from the front end to the back end has two extremely steep filters, difficult-to-design items like a high-speed, high-bit number A to D converter, and the same technology in D to A converters.

"Secondly, Studer has found that the traditional values of a tape machine—the tape itself, tape handling system, and tape motion characteristics and stability—are perhaps even more important with digital, because of the relatively short wavelengths we're trying to put on the tape, the polish of the tape, and the thinness of the tape in some cases. Having a top quality transport may not be important on the floor of a show or at an equipment demonstration, but it becomes very important in making the system work in the studios in the long run." ■

—from page 14, SPARS

Murray Allen, of Universal Recording in Chicago, said that his studio got into digital three and one half years ago at the peak of the recession and high interests because he felt that they had to do something daring to stimulate sales. The long shot has apparently paid off, with his clients willing to pay the \$50/hr. extra for digital time and a nearly spotless maintenance history on his 3M machines. Allen also gave strong advice for carefully searching out reasonable financing arrangements for the digital purchase, and budgeting it out as a realistic expenditure in a studio's five year growth plan. Taking a more skeptical view of the studio's need to upgrade to digital, Sigma Sound's (Philadelphia and New York City) Joe Tarsia has not yet been able to justify a digital purchase for the majority of his clients, even though Sigma was one of the first East Coast studios to upgrade to both 24 track analog and automated mixing. Tarsia also pointed out that of this year Grammys, only one album was mixed digitally.

Mack Emerman, owner of Criteria Studios in Miami, reported that digital mixdowns at his studio have now all but replaced the ½ inch 30 ips mastering that was so popular there just last year. Their multi-track tests have shown, he adds, only subtle differences in track by track comparisons between analog and digital, however dramatic

—page 20



PHOTOS: DAVID SCHWARTZ



(Above right) Willi Studer unveils the new Studer Digital Two Track with designer Roger Laqadec (left) standing by.

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—from page 18, SPARS

differences in clarity after the tracks have been mixed. Later that evening Emerman hosted an open house at Criteria, co-sponsored by Pro Sound News, with demonstrations of a variety of digital programming from Mitsubishi, Sony and 3M systems.

The most heated debate ensued Saturday morning as several digital manufacturers squared off on the issue of Standardization. Sony was represented by Curtis Chan, who itemized the elegance of the DASH (Digital Audio Stationary Head) format for tape interchangeability and quality assurance. Taking issue with him on er-

ror correction methods, as well as the importance of interchangeability, was Tore Nordahl of Digital Entertainment Corporation, which represents Mitsubishi in the U.S. A non-DASH proponent, Nordahl downplayed the need for a "standard," reflecting on the notion that many clients favor certain machines and will go to a studio that has that machine, rather than just look for a studio that runs in a compatible format.

Another distinctly non-DASH approach was represented by Lance Korthals of dbx, whose \$4600 Model 700 digital processor uses a radically different compandive delta modulation technique with a 700 kHz sampling

rate. Though their device requires a more complex operation to create a CD compatible master, Korthals pointed out that the system compares favorably to the others in dynamic range as well as price.

3M was represented on the panel by Richard Molstad, who informed the assembly that 3M had stopped producing their digital recording systems at least partly due to its failing the FCC requirement for radio frequency interference generation. He also hinted at the limited outlook on tape as a digital storage medium, saying that magneto-optic disk technology could render tape based digital recording functionally and economically obsolete in the not too distant future.

Almon Clegg of Matsushita, which recently announced their 16 channel DASH format digital recorder using 1/4" tape and thin-film head design, echoed a popular opinion that standards would arise more as a function of who best serves the marketplace. His comments also included news of a standards discussion going on in Japan for consumer digital cassettes, including one high density format that can pack 3 hours of digital audio on a cassette about half the size of the standard audio cassette.

The final panel of the seminar pulled together Chris Stone, Studio Sound Editor Richard Elan and high fidelity writer Len Feldman to discuss further ways to improve the CD format. Stone stressed the importance, as well as the progress being made, in identifying the manufacturing process on the record by a Digital Audio Recording Code (i.e., "ADA" would indicate that the record was recorded analog, digitally mixed and digitally mastered.) Richard Elan, after playing examples including great analog recordings and poor CD releases, suggested that engineers are now challenged to pay much closer attention to minor acoustic noise sources such as studio room air conditioning and squeaky chairs, which rarely posed a problem at the forgiving noise floor of analog.

Len Feldman put the capper on the discussion with a challenge to CD makers to deliver what the medium has promised, such as the 60 minutes of playing time which consumers had been prepared to expect but have not yet been delivered.

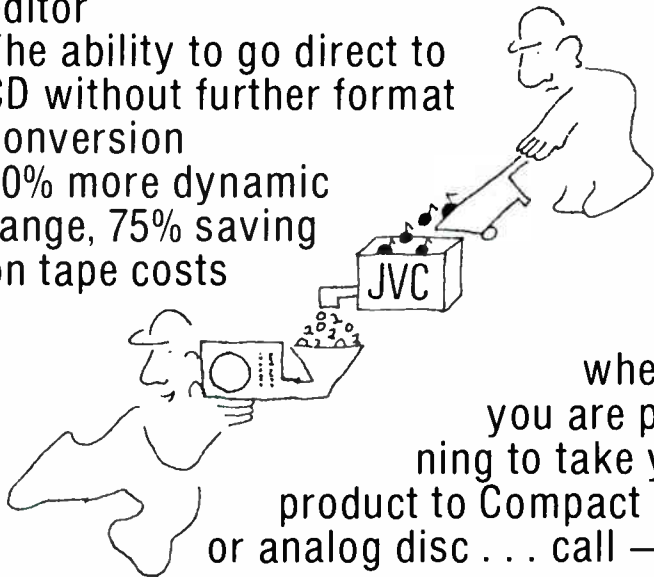
The overall program was the most ambitious to date for SPARS, having outlined education as its primary goal. The representation of many of the country's leading studio owners in the academic environment also seemed to indicate a new appreciation and recognition of the need for a legitimate education in the recording arts for a successful future in the industry.

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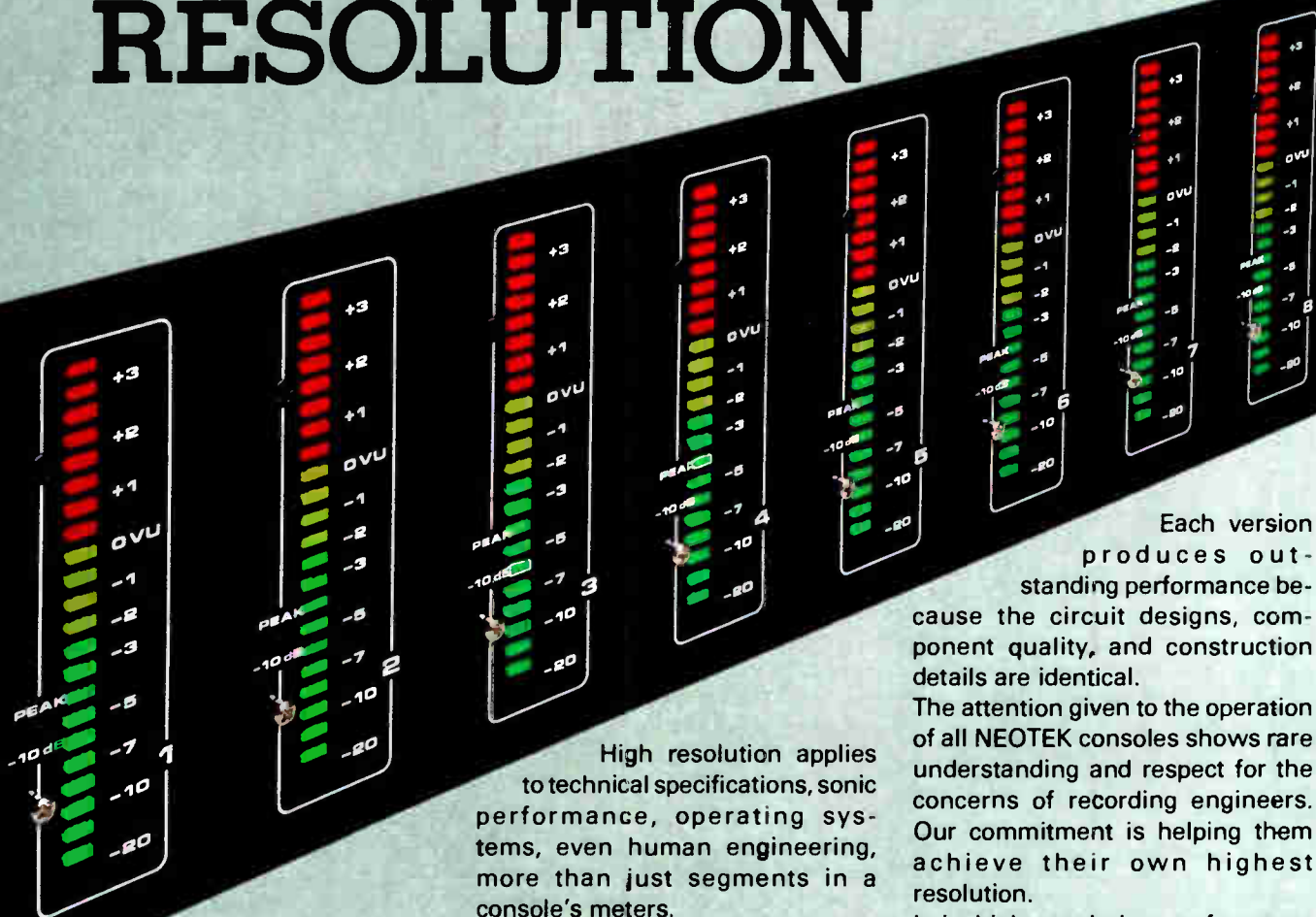


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DIGITAL DISCUSSIONS

Time Domain Consideration in Digital Audio Systems

by Ralph Jones, Meyer Sound

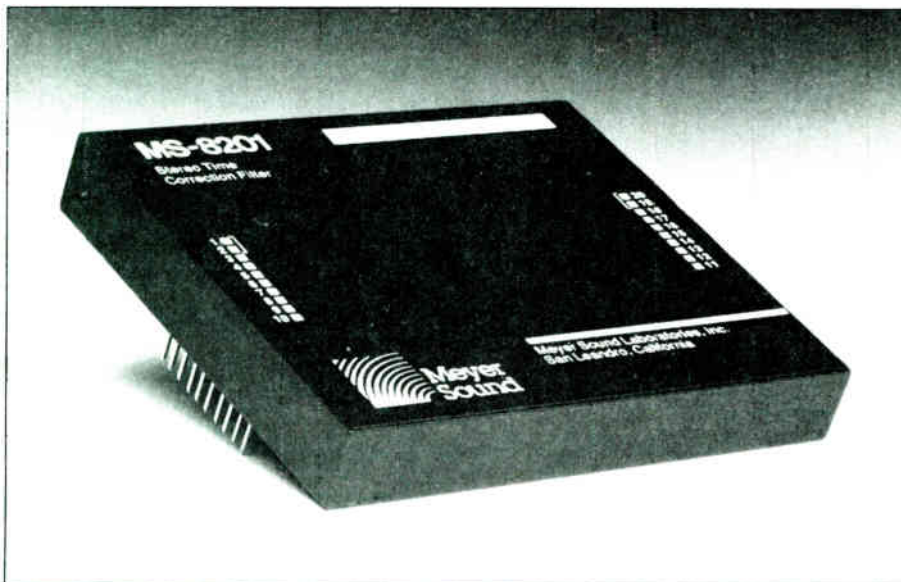
As manufacturers of professional loudspeakers, we at Meyer Sound have a clear interest in new developments in music recording and playback. It goes without saying that a better loudspeaker can only reveal the faults in a poor recording; it will never magically make that recording better. Any effort spent refining the technology of loudspeakers is wasted, then, without similar refinements in recording mechanisms. For this reason, we

welcome the advent of digital recording technology.

I intend to show in this discussion that digital audio conversion presents our field with the opportunity finally to approach a theoretically ideal recording medium. I will also introduce a new product that we have developed—the MS-8201 Time Correction Filter—which is designed to bring digital recorders and processors closer to the ideal.

Let me begin by describing what I mean when I refer to an ideal

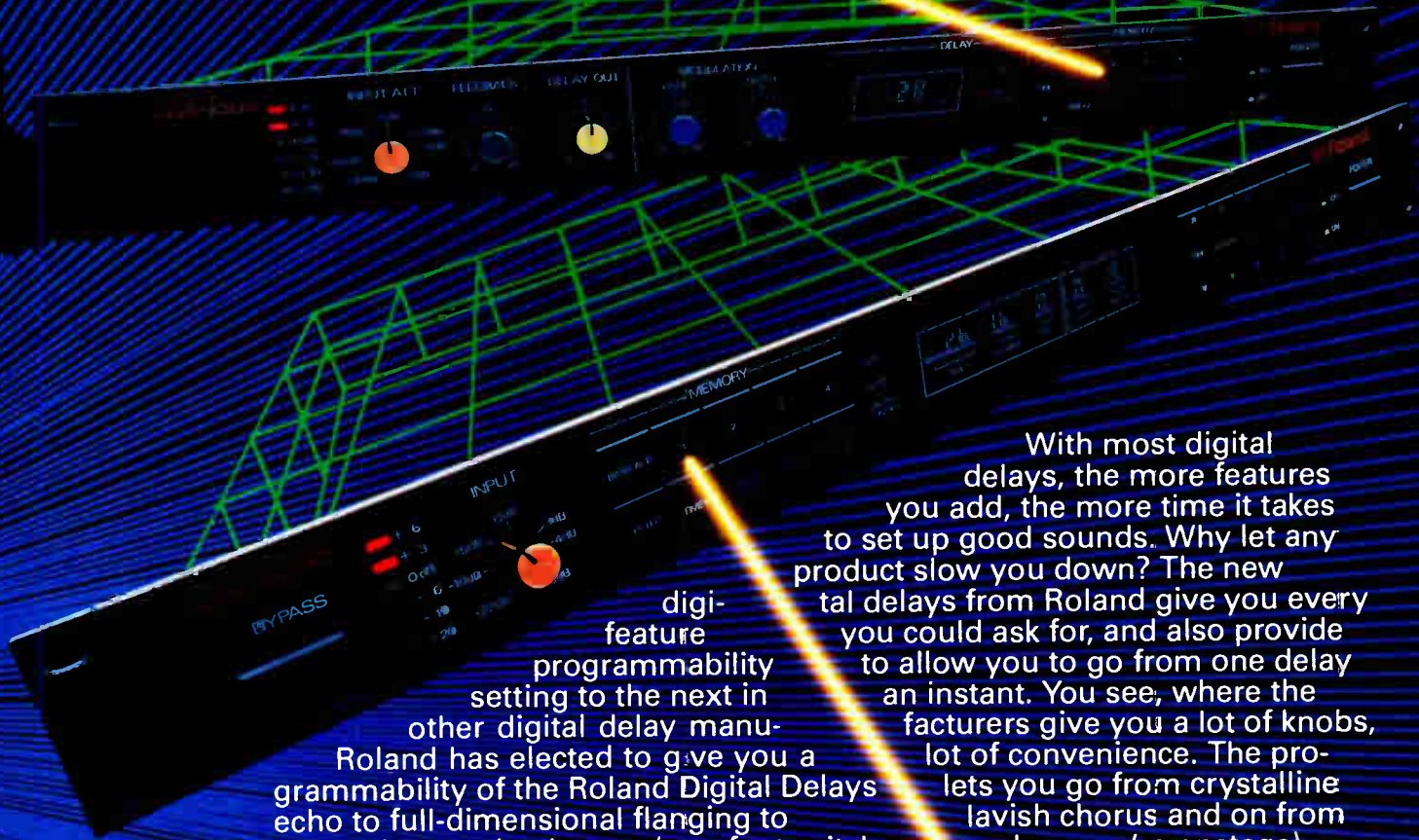
recording medium. Assuming a perfect recording and reproduction system, a musical performance recorded today and reproduced two weeks from now may be said to exhibit simply a very large amount of phase shift: any time we play a record or tape, we are hearing an event delayed in time. If the medium is perfect, then the delay is the only alteration that it will make to the event. We could say, then, that the perfect recording medium acts as a delay line: in choosing when to play a recording, we're simply determining



Meyer Sound MS-8201 Stereo Time Correction Filter

The benefits of time correction are not by any means merely intellectual. The ear is very sensitive in the high-frequency region where phase distortion occurs in digital systems.

INSTANT



digital feature programmability setting to the next in other digital delay manu- Roland has elected to give you a grammability of the Roland Digital Delays echo to full-dimensional flanging to there...just push a button (or a footswitch What's more, Roland has provided program- higher resolution and more delay time per dol- the market. The features speak for themselves:

Both Units: Four convenient footswitches: Delay switch between Memory Channels), Playmate (to time), and Hold. Precision control of Delay Settings: to 10 mSec in 1 mSec steps. Wide Frequency Re- Noise: Digital Companding and Pulse Code Modulation 16 bit A/D converter) increase frequency response, to tive dynamic range of 100 dB with only .03% THD.
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With most digital delays, the more features you add, the more time it takes to set up good sounds. Why let any product slow you down? The new tal delays from Roland give you every you could ask for, and also provide to allow you to go from one delay an instant. You see, where the facturers give you a lot of knobs, lot of convenience. The pro- lets you go from crystalline lavish chorus and on from when you're onstage). mability while offering lar than any product on

On/Off, Preset (to remotely set delay adjustable from 1 sponse/Low (equivalent to a give an effec- 1 mSec to Delay, Mod-

Roland RolandCorp US, 7200 Dominion Circle, LA, CA 90040.

DELAY

Distortions that
were once
deemed
acceptable or
“inaudible” are
today the cause
of alarm if they
appear in any
significant
measure (it was
once thought,
after all, that we
were absolutely
incapable of
hearing less than
5% harmonic
distortion).

the length of the delay. If we accept this premise, we open up a large body of mathematical and engineering knowledge that we can tap: for applications in other areas of engineering, delay line theory has been refined highly, and applied extensively. We can use that knowledge to analyze the present state of recording technology, and gear our efforts toward approaching the model.

Most of the characteristics of an ideal delay line are common to any idealized signal-processing network, and are quite familiar to audio engineers. Within the frequency range of interest, a perfect delay has a flat frequency response, and it adds no noise or distortion. In other words, it is totally transparent to the signal: ignoring the absolute time shift introduced by the delay, we should see at its output precisely the same conditions as were present at its input.

The one alteration that the ideal delay line makes to a signal is to shift it in time, *and the time shift is equal for all frequencies that the delay is intended to act on.* This is similarly true for the idealized case of the recording process, and in accepting that process, we agree implicitly that such a delay does not alter fundamentally the character of the musical experience. (This is most true for the case in which we compare the experience of monitoring a mix in the studio with that of playing the final recording weeks later.)

We can contrast this pure delay with the type of phase delay that is often used as an effect (i.e., that we agree *does* alter sonic character). So-called “phasers” introduce different amounts of delay at different frequencies, and the effect of this is quite audible, especially (but not only) if the amount of delay is constantly changing. Absolute, pure delay is represented by the action of digital delay effects processors, and in theory is not audible unless we hear the original and the delayed signal added

together, as in the case of echo or, at shorter delays, flanging.

How does the present digital technology compare with the delay line model? If we take a look at the specifications for a digital recorder (or, better yet, verify them by measurements), we see a pretty impressive picture. The frequency response is ruler flat from a few Hertz to just above 20 kHz (where the anti-aliasing filters come in, and the curve takes a precipitous nosedive). Noise is, for all intents and purposes, out of the picture. Distortion is negligible. Wow and flutter are vanishingly low. This all adds up to something very close to perfect.

Phase response, however, is not normally specified, and must be

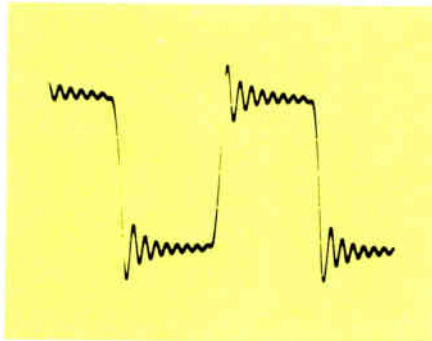
measured. In our laboratories at Meyer Sound we have measured the phase response of a number of professional digital converters. All exhibit a fixed system delay which is introduced by the conversion process. When this pure delay is subtracted, interesting results emerge: *we have yet to find a professional digital recorder (or CD player) that is flat in the phase domain.*

Specifically, what we inevitably find in phase response measurements of digital converters is an extreme, frequency-dependent delay occurring in the highs. In most cases, the phase of the system begins to deviate from flat at around 5 kHz, with a 180-degree phase reversal occurring by about 17 kHz. The character of this delay is very different from what we see in phase-domain measurements of microphones and loudspeakers, which show predominantly low-frequency delay, since they behave like high-pass filters. (Furthermore, psycho-acousticians have known for some time that the human ear shows a preference for, if anything, *leading* highs.) The best time-corrected monitor speakers will introduce far less phase distortion than is typically seen in digital converters.

To what can this gross phase distortion be attributed? In the frequency response of digital audio systems, the remarkable characteristic that we see is the action of the anti-aliasing filters, which cause that steep rolloff above 20 kHz. This rolloff is necessary to prevent information above the Nyquist frequency from entering the converter (aliasing being a particularly nasty form of distortion). In order to achieve such a steep characteristic, multiple filter poles must be used, and each pole contributes delay. As digital converters are presently implemented, the cumulative delay of all those filter poles goes uncompensated, resulting in phase distortion.

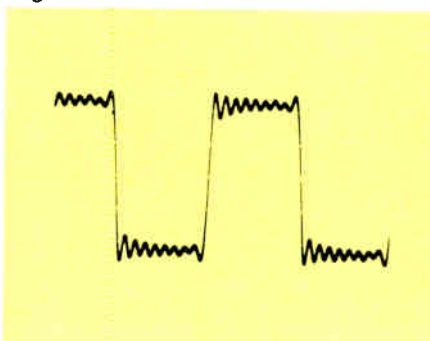
The Meyer Sound MS-8201

Figure 1A



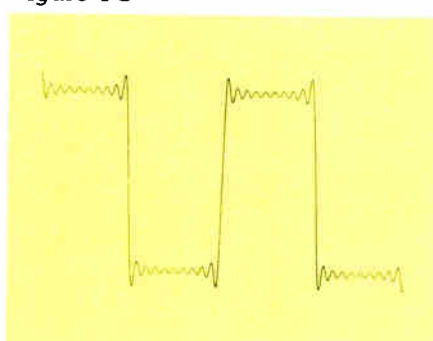
Uncorrected Digital Recorder

Figure 1B



Corrected Digital Recorder

Figure 1C



Ideal 20 kHz Lowpass

Time Correction Filter was developed as a result of our measurements of a number of professional digital recorders and players. It is a circuit designed to correct for the phase distortion caused by anti-aliasing filters: using this circuit, digital recorders and players can be made to be nominally flat in the phase domain, with only a slight residual delay at the highest frequencies. The MS-8201 may be connected at the front end of a digital converter to produce time-corrected digital masters (in which case no further processing is necessary), or it can be used at the output of a digital playback system to correct existing recordings. The circuit is tunable, and can be trimmed precisely to match the characteristics of a particular converter.

The benefits of time correction are not by any means merely intellectual. The ear is very sensitive in the high-frequency region where phase distortion occurs in digital systems. We know very well that information above a few kHz is critical in our perception of sound location, and recent research has indicated that high-frequency phase information also affects the perceived timbre of a

sound. It is quite possible (though not yet proven) that the "different high-frequency sound" of digital recordings is mostly due to phase distortion.

The greatest practical benefit of time correction is found when correction is done before the converter. Anyone who has seen a test report on a digital converter will recognize the squarewave characteristics shown in Figure 1A. On transient signals and squarewaves, digital converters contribute a substantial amount of "ringing" and "overshoot." This is a direct result of phase distortion. As shown in Figure 1B, correcting before the converter reduces the amount of overshoot on transients, resulting in an average of 3dB increased dynamic headroom. Those who have experience with the overload characteristics of digital systems will recognize the importance of this improvement. For reference, Figure 1C shows a computer-generated plot of the calculated squarewave response of a mathematically ideal 20 kHz lowpass filter.* (If you wish to see for yourself the overshoot in a CD player, a new compact disk, titled *The Digital Domain*, is available from Elektra/

Asylum. The disk was produced by Elliot Mazer and Loren Rush, in cooperation with the Center for Computer Research in Music and Acoustics at Stanford University. In addition to over 50 minutes of extraordinary music, it includes a test section with a 1 kHz computer-generated squarewave, among other test signals.)

Beyond the immediately apparent benefits of phase correction may lie further benefits of which we are not yet aware. Distortions that were once deemed acceptable or "inaudible" are today the cause of alarm if they appear in any significant measure (it was once thought, after all, that we were absolutely incapable of hearing less than 5% harmonic distortion). My private suspicion is that the same will come to be true of phase distortion. It is in this spirit that I suggest that we come to terms now with a major issue separating our current technology from the theoretical ideal. In a very real sense, we can only gain by doing so. ■

*Computer plot courtesy Alexander Yuill-Thornton.

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E · N · G · I · N · E · E · R

by Iain Blair

SCENE: The central control room of the San Onofre nuclear power plant. A young nuclear engineer sits at the console monitoring a series of complex readings and levels. . .

And now for something completely different.

SCENE: The control room of a recording studio, a few hours later. The same young man sits at the console, listening to the rock and roll blasting from the monitors as he studies a series of readings and levels. . .

It sounded like a situation more out of Monty Python than real life, but this is in fact how Roger Nichols, ace studio engineer and the man behind the board for all those state-of-the-art Steely Dan albums, first got his start in the world of rock, by moonlighting from his job at the power plant every weekend. Since those early days some fifteen years ago, Nichols has established a worldwide reputation as one of the top recording engineers in the industry. His work with Steely Dan won him three Grammy awards and five Grammy nominations for Best Engineered Recording. He then went on to engineer the Donald Fagen *Nightfly* album which was recorded and mixed digitally, as well as recording and mixing the last two John Denver albums digitally. He's used the 3M, Sony and Mitsubishi

AN
INTERVIEW
WITH
ROGER
NICHOLS

multi-track digital machines as well as the Sony, JVC, Soundstream, 3M and Mitsubishi two tracks. In the fall of 1982 he also recorded 28 John Denver concerts in Europe using a pair of Sony PCM-F1 processors synchronized to provide four-track capability.

Nichols is also an expert in the computer field, and has designed and built sample-to-disk digital audio systems that were employed on albums by Steely Dan, Donald Fagen, Al Jarreau, Diana Ross, John Denver, the Temptations, Eye To Eye, Michael Lovesmith, Scott Hoyt, Bobby King and the soundtrack album of *Get Crazy*. He holds a degree in nuclear

physics, and has jokingly sworn to "nuke" anyone who doesn't agree that digital recording is far superior to analog. Despite this strongly-held view, in person he is charming, and not at all threatening. We met for lunch in a Hollywood restaurant, and I decided to start at the beginning.

Mix: Were you always interested in high-tech?

Nichols: Yes, as a kid my interests were things like astronomy, physics, audio technology—really anything high-tech. I remember I once built an entire stereo system from scratch because I couldn't afford a new one. I just tore all these old radios, etc., apart, which was great 'cause I also learned a lot that way.



KATHY COITIER

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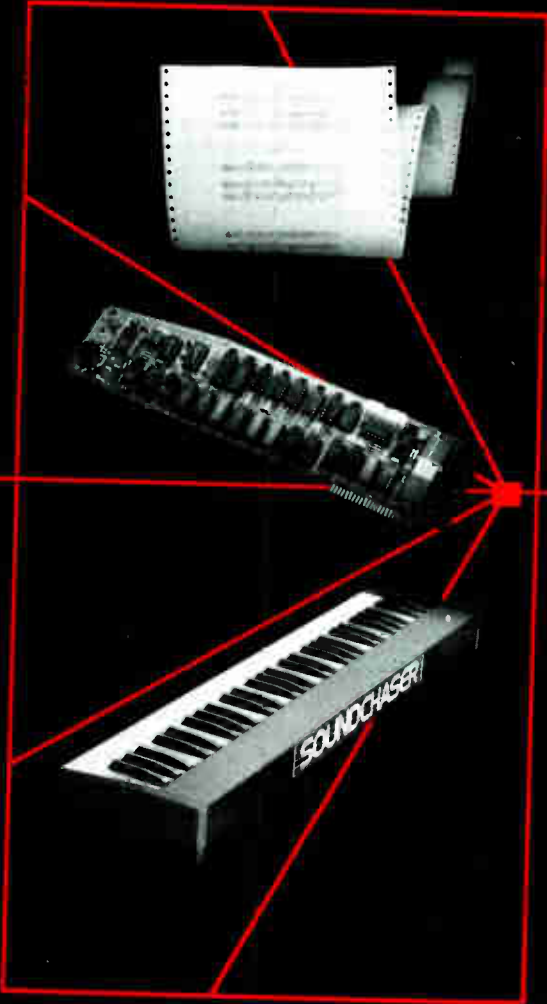


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Mix: What about music?

Nichols: Well, I always loved music, but from early on I was also a bit of a perfectionist in terms of sound quality, and all the pops and clicks on albums just drove me crazy! I think that's when I first started getting more into that whole side, the technical end of recording.

Mix: How did you get involved with nuclear power?

Nichols: I majored in nuclear engineering at Oregon State University, I suppose because it was about as high-tech as you get. In fact, I found stuff like physics very easy, and I had someone go to my English classes for me, and pretend to be me, so I could spend all my time doing the work I liked. After I graduated, I joined Edison and went to work at San Onofre as a nuclear engineer. I was there for three years, during the construction and its first operations, and I found it fascinating, especially the difference between the theory and the reality of a power plant. Funnily enough, I've recently been offered several jobs to go back into the industry.

Mix: I assume you're pro-nuclear power plants?

Nichols: Yes, I'm definitely an advocate. There's nothing wrong with them—it's the human factor that's the problem. I'm continually having arguments with people who really don't understand how they function. In fact, they're far safer than an ordinary camera shop in terms of radiation, and I've done tests to prove it.

Mix: When did you first get more involved in recording?

Nichols: It was basically right around the same period, about 1967-8. I started taking time off at weekends to build Quantum Studios in Torrance with some friends. It started off as an 8-track demo studio, and I did a lot of language tapes which taught me how to edit well—that was really good training. We then gradually expanded the studio's capabilities to include a 16-track Ampex set-up, so that we could record various local garage bands, etc. So, for awhile, I was a nuclear engineer by day, and a rock and roll engineer by night so to speak!

The very first record I ever cut with my name on it as engineer was the local high-school band. At the same time, I was also involved in recording local acts in clubs and gigs, so that I could experiment with achieving technical perfection. Quantum Studio helped make all that legitimate. Looking back, those were great days, although we never had time to sleep or do anything else. We'd work all day selling hi-fi systems, etc., and then record all

night. But I was also learning a hell of a lot.

Mix: When did you first become involved with Steely Dan?

Nichols: I eventually left Quantum—I'd already left the power plant—and went to ABC. This was around 1970, and I joined as another "jack-of-all-trades" type of figure, meaning I engineered sessions, made tape copies, took care of maintenance, etc.—really a bit of everything. I even slept in the studio a lot, but at least I got to sleep, and I enjoyed every minute of it. Anyway, I started right in working with Steve Barri, producer and VP of ABC Dunhill, and recording with their acts like The James Gang, the Grass Roots, etc., so I basically just learned under fire as I went along—just winged it. Then in 1971 ABC signed Steely Dan—Becker and Fagen—as writers, and that was the start of a very successful and fruitful relationship, although in fact I became originally involved with them more by default than anything.

Mix: What happened?

Nichols: They wanted to come in and use the studio at night to do their demos, and no one else wanted to do it, so I ended up engineering all their sessions!

Mix: They've always had a reputation for perfectionism, as well. You must have got on very well.

Nichols: Absolutely! We hit it off immediately, because we were all after the same standards of quality. The demos went very well, and they then got signed as artists as well. We then recorded the first Steely Dan album in the summer of '72. I'd already left ABC by then and was independent, and we decided to do it at the Village Recorder in West L.A.—we used Studio A.

Mix: How long did it take?

Nichols: We actually finished it in less than six months, which was fast for them. But even then, their level of acceptance was way above everyone else's. They never had the attitude of, "it's getting late, that's good enough," or "no one else will notice." Everything *had* to be perfect or at least as near perfect as technically and humanly possible.

Mix: You always hear stories about how incredibly repetitious some of their sessions were.

Nichols: Yes, but I never minded the repetition as long as there was some kind of forward motion. Even if it was only one note of some guitar solo, it was still progress.

Mix: What about the technical side?

Nichols: The most important thing was

always using the least amount of signal-processing to get the best sound—the source was always the main thing. In that sense, Walter was a very high-tech oriented person, whereas Donald was more involved with the music side, but it was a very 50/50 relationship. They collaborated on everything—music, lyrics, production ideas. For instance, they'd try 50 amps to get exactly the right sound they were looking for, or 50 snares. They always had a very finished concept in their heads as well for each song, so there was relatively little experimenting along the way. They'd spend time until they matched the reality in the studio with the ideas they already had in their heads, but working with them was never tedious or uninteresting.

Mix: Did the recording process alter radically from those early days through to, say, *Aja* or *Gaucho*?

Nichols: Not really. We always basically applied the same processes. The only real changes came in the technology that was constantly being improved and upgraded. In that sense, there were a lot more possibilities available to us by the time I engineered *Nightfly*, compared with albums like *Countdown to Ecstasy* and *Can't Buy a Thrill*. But like I said, even in those early days they were striving for perfection the whole time, and they'd come up with various ways of recording that were less than orthodox.

Mix: For example?

Nichols: I remember we had a lot of problems trying to record the perfect, ultimately steady rhythm track for "Showbiz Kids." It was just one of those tunes that was very, very difficult to play exactly in tempo, with every instrument in sync. What would happen was that we'd get a great drum track and something else wouldn't quite cut it, or everything else would be spot-on except for the snare—you get the picture. After awhile, everyone got very frustrated, and they started trying out different drummers, and then different combinations of players, and still it never quite hung together properly.

In the end we got a 24-track tape loop of eight bars at 30 IPS—it was about fifty feet of tape. That went right across the control room, and then around a roller on a camera tripod we'd set up at the other end. We then copied this onto a second 24-track machine, and we had our track. I remember another time we were recording this long, involved guitar solo, and every time we got to a certain point something didn't quite sound right. So we tried switching tracks, and it still didn't sound right. So then we examined the tape master itself, and found these little lumps across some of the tracks. Of

course we then sent the tape back to 3M as faulty, and they analyzed it—and you'll never guess what it was—mustard! Apparently some workman at the factory had eaten a hotdog and the mustard had squirted out onto the tape during the manufacturing process

Mix: When did you start using computers to record?

Nichols: Well, in '79 when we were cutting the "Hey 19" and "Glamor Profession" tracks for *Gauche* we again had a lot of problems with tempo and sync. We tried various combinations of musicians, but it never came out right. Anyway, one night we were locked up in the studio—it was Soundworks in New York—and we were about one year into the project, or about half-way, and Donald, who knew I was into computers, suggested that I make one that could play drums with a human feel. So I spent about three months, working at night, building it, and in January 1980 I called him and told him it was ready. We rushed straight into the studio, tested it, and it worked. That same night we laid down the tracks for "Hey 19" using the computer, which I named Wendell. And on the album, the real drummers got credit, and Wendell got credit as "rhythm augmentation," so everyone was real happy.

Mix: Were any tracks specifically written for Wendell?

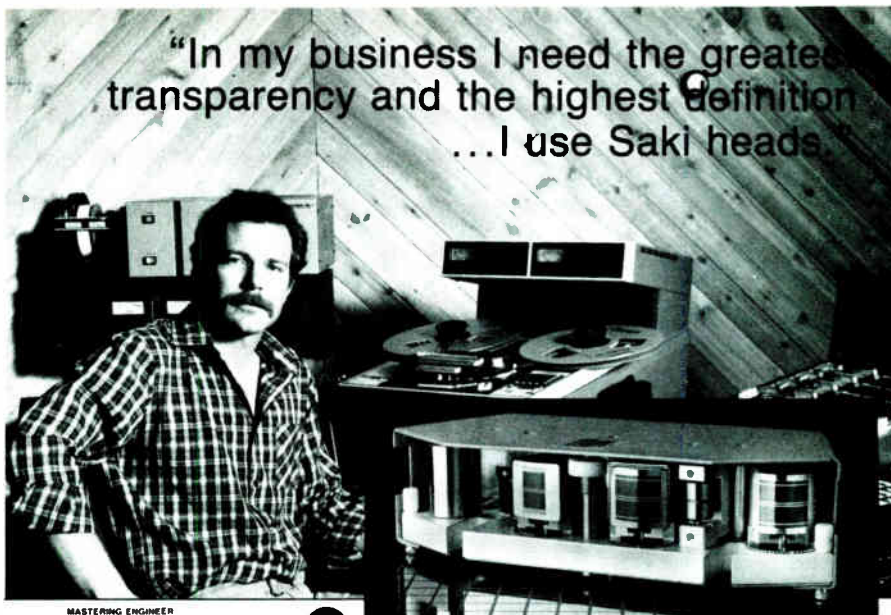
Nichols: "My Rival" was written with Wendell specifically in mind, but basically we treated it more as one of the available drummers. We definitely didn't want to use it all the time. We also used it a lot to fix things on many of the tracks we'd already recorded, as well as to sequence synthesizers, etc.

Mix: Did you ever consider marketing Wendell as a drum machine?

Nichols: Not really, because I had no aspirations to produce a Linn-type product, although I kept working on it, and now I have Wendell-2 which I've already used on various projects—I recently just finished a solo album for Bobby King on Motown Records where I took his LinnDrum tracks, played them to Wendell-2, which then replaced the drum machine sounds with real drums. I also used it on the new Temptations album, Michael Lovesmith's album, and on tracks like Al Jarreau's "In This Love Together," where it fixed the snare sound.

Mix: At what point did you begin recording digitally?

Nichols: I recorded and mixed Donald's solo album *Nightfly* digitally—and we finished that project in one year, so it was twice as fast as *Gauche*. But then digital didn't even exist when we started *Gauche*.



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Mix: Even allowing for Steely Dan's perfectionism, two years for *Gaucho* was rather a long time wasn't it?

Nichols: Yes, but things happened that you just wouldn't believe. For instance, the title track itself, which was the major track of the entire album, and the very first track to be recorded, got totally erased by mistake by a maintenance man!

Mix: What happened?

Nichols: We had different sets of tones, because we were using different brands of tape like Ampex, 3M, etc., and we did it all analog and *never* made safeties because we were all purists—we wanted never to be tempted to use a generation down. Anyway, the first 30 or so seconds got completely wiped. Anyhow, by the time we got to *Nightfly*, Wendell-1 wasn't hi-fi enough, so I went back and built Wendell-2, which has sixteen bits as opposed to Wendell-1's eight bits. Wendell-2 plugged straight into the 3M machines, so there was not any degradation of the recorded sound. It was still the original, not a copy. On *Nightfly*, Wendell-2 played on "Ruby," "IGY" and "Walk Between Raindrops," as well as embellishing the rest of the tracks and repairing various bits and pieces.

Mix: Will you continue to work with Fagen on his solo projects?

Nichols: Yes, and his new album starts soon, in New York again. But I did all the Steely Dan albums, and that period is over. I want to expand my horizons, because two years on one project is a bit like living on the moon—you just lose touch with everything else going on around you. So it won't be a full-time job anymore. I'm looking at other projects.

Mix: Why do you think Becker and Fagen split up in the end?

Nichols: I think they just felt they were getting stale, but it was very amicable. Walter's living in Hawaii now.

Mix: You also recorded and mixed John Denver's last two albums digitally. What were the differences between working with him and Steely Dan?

Nichols: In terms of time it was like night and day. We did the first one, *Seasons of the Heart*, on the 3M digital machine in Soundworks, in three weeks during my spare time while working on *Gaucho*. The second album, *It's About Time*, was done on the new Mitsubishi digital machine at Criteria Studios in Miami, and we were the very first people to use it. It only took four weeks to record, and it was also interesting as it was the first time The Wailers had played on anyone

else's album since the death of Bob Marley.

Mix: You've also been involved in some very successful film soundtrack projects recently.

Nichols: Yes, I did the soundtrack for *The Big Chill*, which was basically a compilation of '60s rock and roll songs. First, I had to track down as many of the original masters as possible—and that was no easy task. Then I transferred them all to digital, and cut the album from the digital. So the album ended up being probably two generations better than the original recordings that were released. Best of all, it got rave reviews, and did very well—it went gold in about two weeks! Then I got a call to do the same thing for *Christine*, John Carpenter's movie of the Stephen King book. That used a '50s soundtrack, and I chased down all the original masters and then used the same process.

Mix: What are your feelings about compact discs?

Nichols: The medium is fine—that's not the problem. The problem is naturally that the end product is only as good as its source material. If you make a compact disc from an inferior tape, you are going to end up with an inferior compact disc. The CD *must* be made from the best possible source—the original two-track master. The hardware behind the CD technology is superb, and I don't think anyone can dispute that it's a definite sonic revolution. For a start, there's no distortion from dust particles or fingerprints, so that all you get is pure sound—and pure silence where there is no sound. On the other hand, this new clarity also reveals any errors in the original mastering tapes, such as poor miking set-ups, bad editing or noise in the studio. Therefore, CDs demand a new standard of studio engineering. There's also the occasional problem with defective CD pressings. But despite these teething problems, I'm certain that CDs are the thing of the future.

Mix: Finally, what about your own future. Having worked for so long and so successfully as an engineer, do you have any ambitions to start producing?

Nichols: Not really—at least, I'm not actively seeking to do it. I did actually co-produce one project with Steve Barri, but my real ambitions are more to do with making the perfect record—and I'm definitely getting closer! I've also formed a new company that's presently nick-named "The Rock 'n' Roll Swat Team," because we'll act as consultants to various studios and producers, ironing out any technical problems. Those are the areas that I enjoy most. ■



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See and hear Pat Metheny on the album "Pat Metheny Group" on Atlantic Records.

C

Studios enter the computer

by Radcliffe A. Joe

New technology is allowing studios to spend more time making music and less time with paperwork drudgery.



Bob Liftin

In a move aimed at streamlining their operations and minimizing the risk of financial insolvency in bearish economic times, a growing number of recording studio operators are computerizing their facilities.

This escalating trend toward computerization transcends the more commonplace use of computer technology for synthesis and digital recording, and now embodies such grassroot studio operations as invoicing, bookkeeping, labeling, inventories, library functions, editing and locking up of multi-track and videotape systems.

Studio operators who have made the transition to computerized facilities, are finding that in spite of the high startup cost—in excess of \$500,000 in some cases—they are realizing savings of between 25% and 30% on their overhead expenses. This saving is usually passed on to the consumer in the form of a reduction in the turnaround time needed to complete projects.

Bob Liftin, one of the pioneers of computerized studio operations,

began moving his New York based Regent Sound Studio into the computer age as far back as 1976, when he installed a microprocessor to lock up his multitrack and videotape operations.

Next, he saw the need for getting immediate, efficient and reliable reports on his firm's bookkeeping, inventories, library and other day-to-day functions. After close to a year of researching the small business computer market, Liftin outfitted Regent Sound with its first Apple computer.

Says Liftin: "I selected the Apple over other available systems because it was one of the few systems on the market at that time with complete documentation. The system's unprotected software allowed us to modify their programs to do exactly what we wanted."

Liftin also found that the Apple was "super reliable, and interchangeable." He was also impressed by the fact that if one of his machines malfunctioned, it was possible to pull it out of service and replace it with another system

committed to functions in some other area of this studio. This, he notes, can be done with a minimum amount of dislocation to the studio's operations.

Liftin also points to the fact that troubleshooting the Apple is a simple undertaking, "as almost any serviceman in any part of the country can repair the unit. This is a distinct advantage when one wants to minimize down time," he says.

From a single unit, Liftin's bank of computers has grown to eight systems that handle Regent Sound's library, inventory, finances, studio schedules, invoices, the printing of labels and logs, communications between the studio's engineer and its consoles and editing machines, and various other functions.

Unlike some studio operators that opt for a single commercial computer that handles functions at all levels of their facility's operations, Liftin prefers several small, dedicated units. He explains that these are not only faster than the larger computers, they also provide his staffers with greater control over the overall operations.

Age

When Liftin began converting his studio to computer operations, he started with the Apple II system. He has since upgraded to the Apple IIe, and is now eyeing the new Macintosh which he describes as "an extraordinary little unit." He has also begun selling floppy disks to his clients, and is in the process of tying all his control room functions to the computer, and implementing electronic message boards.

Liftin feels that computerization of the studio is essential for viability and continued growth. However, he cautions studio operators who are contemplating the computerization of their facilities to closely study the computer market and decide on the system that best suits their individual needs. He suggests that initially the system should be applied to studio billings, and from that point it can be expanded to other areas of the facility. He also advises that the first-time computer buyer should look for a system that offers complete documentation.

Nick Collieran of Alpha Audio in Richmond, VA, agrees that the use of computers will be critical to the success or failure of the recording studio of the future. He sees the recording studio industry breaking down into two distinctly separate divisions: the small mom and pop type operator that concentrates on demos and other non-critical recording applications, and the large facility that is computerized, highly efficient, and very profitable. He sees the marginally profitable mid-size operators as fading out of existence under the burden of excessive government regulations and the time-consuming exercise of non-computerized paperwork.

Collieran, who owns five recording studios and is also heavily involved in other areas of the entertainment industry, quickly saw the importance of computerization to his business. His Datapoint computers are utilized for word processing, filing, shipping, accounting, the storage of talent records and more than 11,000 sound effects, audio editing, label prints, the synchronization of his audio recorders to his video systems, and a multitude of other studio operations.

The computerization of

—page 36, *Computer*

MetroGnome's Studio Software

MetroGnome, an enterprising company based in Nashville, has begun creating, producing and marketing computer software specifically designed for use by recording studios and related facilities using IBM and Apple computers.

The firm, the brain-child of two young entrepreneurs—Mark Augelli, 29, and Larry Keith, 34—is offering five software packages to the industry. They are: Sessions Plus, Catalog Plus, Writers Plus, Pickers Plus and Labels Plus.

According to Augelli, Sessions Plus is geared to four areas of studio sessions operations. Part one of the package provides the user with database information on scheduling, logging and billing, plus a print-out of each recording session by date, producer and other pertinent data. The second part of the package keeps track of scheduled and unscheduled maintenance of the studio equipment. With part three, the user is able to keep updated on the whole spectrum of inventory in his facility, from equipment through the tape library. He or she can also be told, at the press of a button, what tapes are missing from the inventory, when they were taken out, and who received them. Part four of Sessions Plus stores such information as supplier and client directories, credits information, and a list of available talent.

Augelli describes Catalog Plus as a management tool that stores information on the history of a song. It includes such features as the singer of a specific song, its writer, when it was released, album cuts, to whom the song was pitched and licensing and royalty information. This package, as does Sessions Plus, sells for \$1,195 for IBM machines, and \$895 for Apple systems, but for another \$100 the Catalog Plus user can get additional modules that provide such features as information on writers, contracts, mailing lists and income. Augelli feels that these features can be of significant value to the small and mid-sized publisher.

Writers Plus is geared to the estimated 125,000 songwriters in the U.S., and is designed to help them keep track of royalty income, expenses and awards and credits. It also incorporates many of the features found in the Catalog Plus package.

Pickers Plus is designed for the studio musician and singer who work both on the road and as session performers. This package includes features such as professional credits, personal inventory, expenses, income scheduling and residuals.

Finally there is Labels Plus which allows the user to print cassette and open reel labels in bulk. The labels Plus, Pickers Plus and Writers Plus packages sell for \$149.

At present MetroGnome is preparing software packages for use in audio and video production, and for management and booking agents. The firm is also working on software that will be compatible with computer hardware made by Radio Shack and Commodore.

MetroGnome began its operations a year ago with sales to small and mid-sized industry professionals. However, more recently the firm has been servicing an increasing number of larger studios, and has even sold a software package to Word Music, the gospel music label.

Augelli explains that the firm also has the ability to customize software packages to the specifications of individual buyers. It is also in the process of developing software for the foreign music market.

Up until now, all MetroGnome products were marketed through word-of-mouth, but the firm is working on the development of dealer networks in a number of major cities including New York, Los Angeles, San Francisco and London, England.

MetroGnome meshes the talents of a computer expert (Augelli) with the savvy of a music industry professional (Keith). Augelli has worked for many major computer companies, including IBM, while Keith has his own music publishing business. Together, says Keith, they were able to create a product specifically geared to the needs of the music industry, approaching its development from a practical rather than from a technical standpoint.

At its inception, the service offered by MetroGnome was so unique that inquiries outstripped sales by a wide margin. However, the firm is now enjoying an encouraging turnaround in that trend.

—Radcliffe A. Joe

—from page 35, *Computer*

Colleran's talent records now allows him to immediately access artists for booking purposes, and effortlessly check every significant detail of their working history down to remuneration received for their last job.

Storage of Alpha Audio's sound effects onto computers has also simplified operation of the system. It also allows ready access to the engineer's and producer's ratings of the effects, as well as detailed cross-indexing.

In addition to his five recording studios, Colleran is also a distributor of studio equipment and supplies including Sonex sound absorbing acoustical foam, and Sound Tex, a wall covering that is said to be anti-static and anti-radio interference. Colleran has found that computer storage of information pertinent to his distribution operations, has greatly enhanced the speed and reliability with which he can run his business.

He explains that the computer allows him to log all incoming products, as well as print out daily and bi-monthly reports.

Alpha has a production unit of a BOSS computerized editing system which will allow one operator to run five audio tape machines. This system,

developed by Alpha, was displayed at the recent NAB convention. Colleran explains that the system incorporates a "scratch pad memory" that allows the use of external relays that are "at least one generation beyond what is currently available." Colleran has not yet decided whether the system will be manufactured exclusively by his company, or whether he will work with OEMS.

Additionally, Colleran recently acquired a separate building that will be devoted exclusively to the research and development of computerized equipment for use in the studio.

As far back as 1977, the Virginia visionary computerized his Sphere mixing console; also, his audio editing systems (the BOSS) feature computerized auto assemblies.

Colleran discloses that he looked at Apple systems when he contemplated computerizing his operations, but found that they could not perform all the applications his multi-faceted operations required. "As a result, we had to consider larger microprocessors, and finally settled on Datapoint."

Alpha Audio services a large number of industrial and corporate accounts which, according to Colleran, are impressed with the

speed and reliability of computerized operation. The largest of the five studios charges about \$200 a hour, but Colleran stresses that his clients realize significant savings in terms of time spent in the studio.

Colleran, along with Carlos Chafin and Bob Tulloh, is constantly working on new ways to upgrade his computer systems, and on new applications for those systems. He feels that through the computerization of paper work and other day-to-day functions, the studio operator and his engineers can be freed to concentrate on the more creative aspects of their business.

Agreeing with this view is Denny Jaeger who owns and operates a private studio in Oakland, CA. Jaeger, one of the developers of New England Digital's Synclavier II, is also a composer and musician who finds that computerization allows him to spend more time composing and recording.

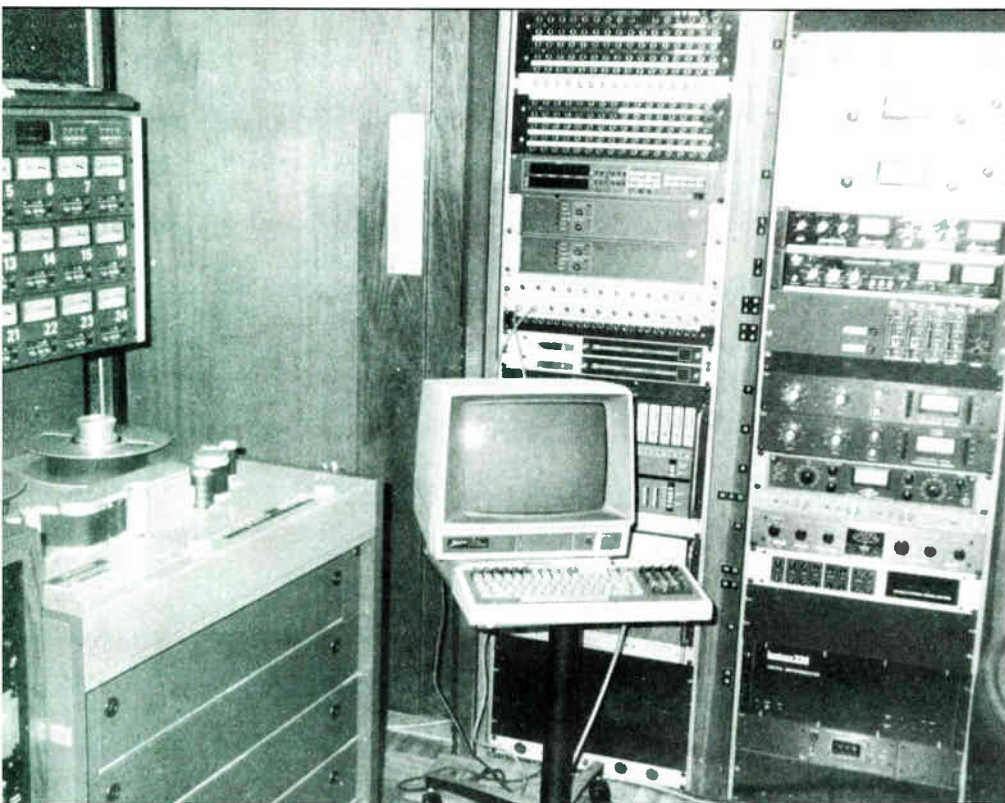
Jaeger, who prides himself on knowing "a lot about the applications of computers," built his studio around a hybrid Synclavier II system which, he says, features numerous applications not yet available to commercial recording studios. The Synclavier works in tandem with a computer developed by Control Video Corp.

Using his expertise in computer systems, Jaeger has developed a modified "trib," no larger than a Frisbee, that replaces all his previous auto locators. His operation also incorporates a "Stroker" lock-up device which allows him to stop, advance and reverse a recorder "without ever taking my eyes off what I am doing."

Jaeger says that his next advancement in the computerization of his facility will be to "put it all on a touch sensitive screen that will be even easier to use than the already user-friendly "Stoker."

Although many people use the Synclavier system almost exclusively for synthesis, Jaeger says the unit incorporates many more functions. In his own case, he applies the system primarily to synthesis, music printing and sample-to-disk functions.

In the synthesis mode, Jaeger uses the system for synthesizing and programming sound, and was able to program more than 150 synthesized sounds for a recently-released movie, *Secret of the Phantom Caverns*. He was also able to program myriad unique sounds for David Bowie's last movie, *The Hunger*. Jaeger is proud that the flexibility of the Synclavier permits him to create a total orchestra, then write the music for each instrument therein.



Alpha Automation's "The Boss" in Control Room I of Alpha Audio's studios. It is interfaced currently to the Studer A800-24, an Otari MTR 10-2, and a JVC VCR with the BTX Shadows and Cypher.



Denny Jaeger behind the Sound Workshop Series 34 console, holding his Control Video SMPTE controller.

The unit's sample-to-disk function allows Jaeger "to adapt a high level of computer technology to music." It also permits him to master directly to digital hard disk when doing commercials, and is also used as an editing tool. Jaeger boasts that "the Synclavier is very fast as an editing tool, and has replaced the razor blade in his studio. With its 20 megabytes of memory the master need never be cut."

Jaeger has also linked his computer to a Kennedy disk drive, which allows him to retrieve information from the Winchester hard disks used by the Synclavier system, and store it on "digital cassettes." According to Jaeger the system allows thousands of pieces of information to be stored on about ten cassettes.

Also found in the Jaeger studio is a Lexicon model 224X, "which I use a lot as a synthesizer or which to

shape sound" and a Sound Workshop Series 34, which he describes as "the perfect board for a computerized room, because it is very compact, very fast and very clean."

Jaeger predicts that in the recording studio of the future, conventional recording consoles will be obsolete, and computers will perform all their functions. "Many of these computers will be voice-activated," he states. He also feels that soon the Synclavier will evolve into a 32-track digital studio; and that as technology increases, the studio environment will grow increasingly smaller while being capable of increasingly larger functions. He also sees the coming of digital laser disks that can store as much as six hours on a single side of a 12" disk.

Finally, Jaeger equates the Synclavier system to music packaging. He says that its editing capabilities are limitless, and it eliminates the need for expensive studio dates.

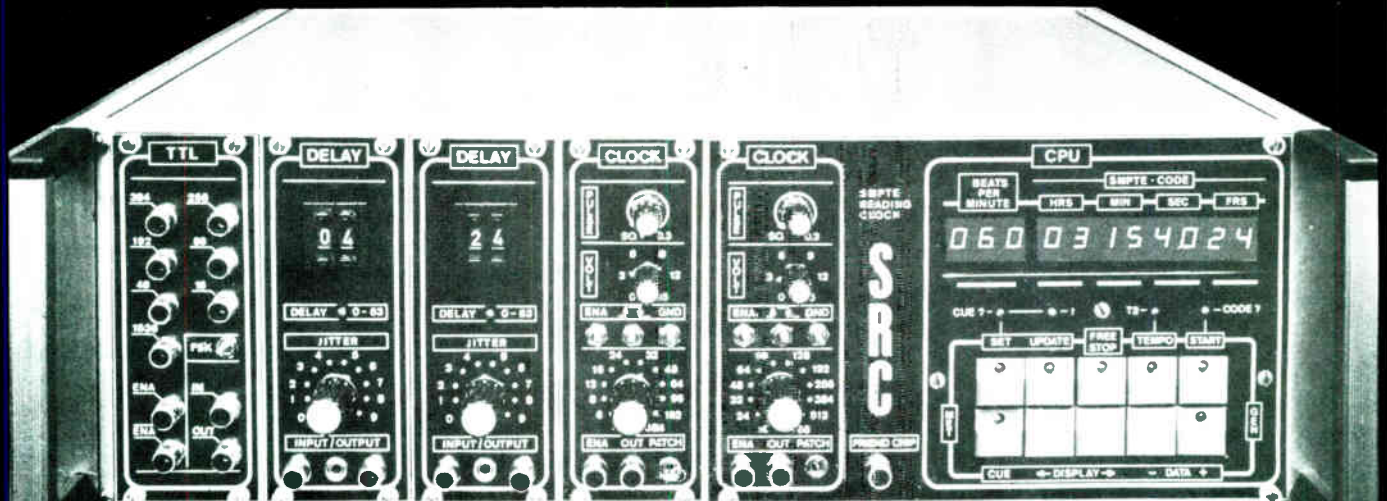
So successful has Jaeger been with his computerized private studio, that he plans on opening a second room, featuring similar capabilities, within the next month. This room will be located in Los Angeles, and will be available for commercial use. ■

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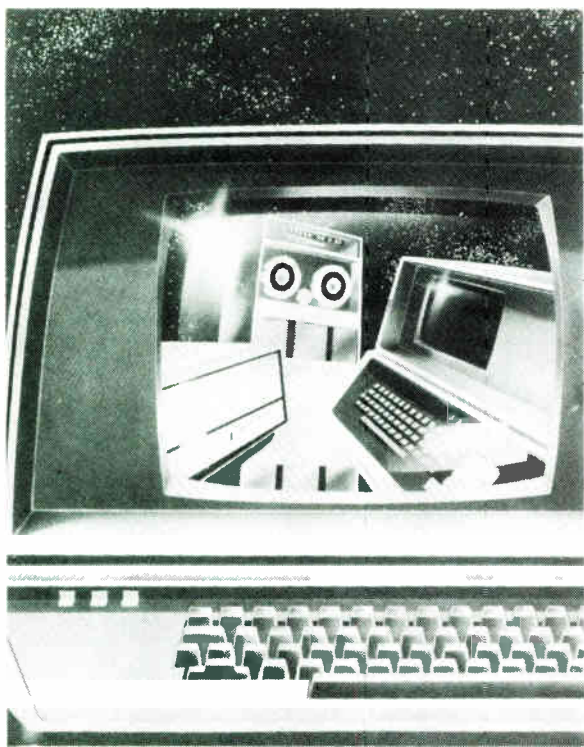
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THE MIX PERSONAL COMPUTER PRIMER & GLOSSARY

BY LOU CASABIANCA



Imagine an audio engineer so fast and skillful that he or she can repeatedly make split-second edits without error, then remember every edit parameter for future use. Imagine a session keyboard player or master drummer who never tires of playing musical passages exactly the way you want them and is always available on call. A secretary who understands and can spell correctly more words than most people ever use and can do all the typing, accounting and billing as well. An assistant who can access by phone all of the world's key information resources from the Library of Congress to the New York Stock Exchange. And imagine all these things wrapped up in a portable, easy to use package . . . the personal computer.

Rapidly becoming as easy to use as an automobile, microcomputers have become as indispensable to information and communication as the car has become to transportation. Computer technology is to the information age what mechanization was to the industrial age: conceptual spaces connected by electronics, replacing physical space connected by the motorcar.

John Naisbitt, in *Megatrends*, forecasts that "during the '80s, electronics, propelled by the information and entertainment industries, will become a \$400-billion business, the largest ever created on the planet." The "megashift" from an industrial society to an information society had its beginnings in 1956 . . . about the same time

rock and roll and television started to reach the masses. Naisbitt says, "It was the first time white-collar workers outnumbered blue-collar workers, the first time in history most of us were working with information rather than producing goods. The restructuring of America from an industrial to an information society will easily be as profound as the shift from an agricultural to an industrial society. It is an economic reality, not an intellectual abstraction."

ORIGINS OF THE COMPUTER

Humans have used devices to help them calculate since before we began to record our history. Probably the first calculating device was the fingers, the decimal system, base ten. Nothing will ever replace the ultimate computer, the human brain, significantly enhanced by the computer. Using beads as a programming device, the abacus has been used for at least 2,500 years, and is still used in many parts of the world. The explosion in Europe of science, commerce, and manufacturing after the Renaissance, and the importance of mathematics after the discoveries of trigonometry and calculus by the 17th century, had scientists thinking about how to use machines to do calculations. About this time in France and Germany, two mathematicians, Blaise Pascal and Gottfried Leibnitz, built similar machines which could add and multiply.

The next most important step in the development of calculating

machines was made in the first half of the 19th century by an Englishman, Charles Babbage. Although he contributed more to the history of computers as a thinker than as an inventor, he was the first person to envision the basic parts that a computer must have: input/output, an ALU, an arithmetic and logic unit he called "the mill," a means of transferring data within the machine, mechanical wheels that did what "busses" do today, and a memory that he called a store, which we call "storage."

George Boole, who lived in England about the same time as Babbage, invented Boolean algebra which was adapted to computers in the analysis and manipulation of data. In 1880 Herman Hollerith, while working for the U.S. Census Bureau borrowed an idea from Babbage, and invented a punched card system to hold data. Data was represented by punching out specific holes on cards made by the same machines that were used by the mint to make dollar bills. His invention saved enormous amounts of time during the 1890 census and he went on to found a company which became the forerunner of IBM. In the late 1920's Vannevar Bush built the first useful analog calculator at the Massachusetts Institute of Technology.

During the '30s, work continued on more complicated "thinking machines" that would be able to perform conditional operations, would be electrical instead of mechanical, would have some kind of memory, and would

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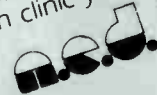
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be programmable. It would be a computer.

The Mark I, built at IBM by Howard Aiken between 1939 and 1944 as an electro-mechanical calculating device for long range artillery, was the first digital computer. The first truly electronic digital computer was ENIAC (Electronic and Numeric Integrator and Calculator.) Built by a team at the University of Pennsylvania, headed by J. Presper and John Mauchly, between 1942 and 1946, ENIAC used over 18,000 vacuum tubes and was about one hundred feet long, ten feet high, and three feet wide.

John von Neuman, by enhancing the machine with stored programs,

designed the first modern computer. Further improvements were made at the University of Cambridge in England, and in 1951 the first commercial, electronic, digital computer, UNIVAC, was built by Mauchly and Eckert for Sperry-Rand. In 1965, bringing us full-circle, John Bardeen, Walter Brattain and William Shockley received a Nobel Prize for the development of the transistor in 1948 for Bell Laboratories.

The solid-state era, the second generation, was opened up in 1959 with the delivery of the first transistor-based digital computers. The third generation of computers made their first appearance in 1964 with the use of integrated circuits. A quarter inch

square of silicon, layered with thin slices of metal and semiconductive material, allows a chip to act like an array of microscopic transistors. By the early '70s, integrated circuits could be mass produced cheaply enough to permit the development of inexpensive computers whose entire Central Processing Unit was on a single chip called a microprocessor. It is projected that by the year 2000 the cost of a home computer system (computer, printer, monitor, modem, etc.) should be about that of the present telephone-radio-recorder-television system.

TECHNOLOGY

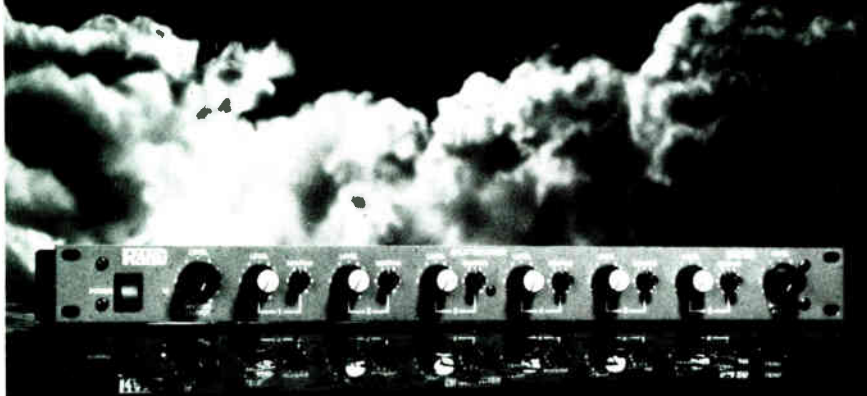
The coming changes will make it imperative that everyone have his or her own computer. Computers and their bionic cousins, robots, inspire fear and mystery in the minds of many people. Harvard University has made the possession and use of a personal computer mandatory for freshmen starting classes in Fall, 1984. Our children are the first generation to be educated to use the computer to expand their brainpower in learning. *Megatrends* reveals that whenever new technology is introduced into society, there must be a counterbalancing human response—that is, high touch—or the technology is rejected. The more high tech, the more high touch.

Some have suggested that the human potential movement is a direct reaction to the impersonalization connected with technological change. The introduction of word processors into the office has led to the revival of handwritten notes and personal stationary. When high tech and high touch are out of balance, the result is high tech dissonance, such as the "backlash" against the dehumanization of people through computer direct mail campaigns . . . "Dear Occupant," and the widespread concern about their invasion of our personal privacy.

The first step in dealing with the mystery of computers is the same as in dealing with the mystery of reading and writing. It's called computer literacy.

We're living in a high tech world requiring increasingly high tech skills. Computers are forcing a reconceptualization of the nature of the business we really are in. The shift from money to electronic banking will be as important as the shift from agricultural barter to money. A powerful anomaly is developing: as we move into a more and more literacy-intensive society, our schools are producing increasingly inferior graduates. In the minds of many, technology is always on the verge of liberating us from personal discipline and responsibility. Only it never does.

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In future issues of MIX we will be examining the role of computers and their use in the recording studio, as tools for musicians, their use in the management of creative and financial business affairs, and in the audio/video/film postproduction environment. THE MIX PERSONAL COMPUTER PRIMER & GLOSSARY is designed to be a quick reference guide. For more in-depth reading we recommend the following:

Graphics Primer for the IBM PC, by Mitchell Waite & Christopher L. Morgan, published by McGraw-Hill.

The IBM/PC Expansion & Software Guide, published by Que Corporation.

The Illustrated Computer Dictionary and Handbook, by Les Cowan, published by Enrich/Ohaus.

Megatrends, by John Naisbitt, Warner Books.

PC Magazine, published by Ziff Davis.

PC World, published by World Communications.

Your First Basic Program, by Rodnay Zaks, published by SYBEX.

THE MIX PERSONAL COMPUTER PRIMER GLOSSARY

Access: the ability to retrieve and/or change what is in a file. Anytime you tell a computer to show you a file, you are gaining access to that file.

Acoustic Coupler: A device which allows a computer to talk over telephone lines. The phone receiver is placed in a cradle and electrical impulses from the computer are sent to the acoustic coupler which converts them into tones. The tones are then sent out through the telephone receiver.

AI: Artificial Intelligence: A computer with artificial intelligence can imitate the human ability to learn and to make decisions.

Algorithm: A sequence of steps that specify the solution to a given problem. Most computer programs consist of algorithms, most of which are for solving mathematical problems.

Analog Computer: A computer that represents the parts of a problem by different electrical voltages. The opposite of a digital computer.

Assembly Language: A programming language in which each command in the instruction set is represented by a word. The **Assembler** is a program that translates a program written in assembly language into machine language which the computer can understand.

Base Two: Base Two, also called binary, is the numbering system in which a computer thinks. A numbering system with only two digits, Zero and One. In electrical signal terms the computer's thoughts are either high voltage

(one) or no voltage (zero).

BASIC: A high-level program language designed for ease in learning programming. Acronym for Beginner's All-purpose Symbolic Instruction Code.

Baud Rate: Named after J.M.E. Baudot, who invented the first French telegraph signalling code in 1877, refers to the speed at which an electronic communication travels through a line. For example, a computer may send data over telephone lines at 300 baud, which is slow, or at 9600 baud, which is fast.

Binary: A numbering system that uses only two digits: 0 and 1.

Bit: A contraction of the words Binary digit. A bit may take the value of 0 or 1.

Board: Short for printed circuit board on which are soldered electrical components such as chips, resistors, capacitors, etc., connected by strips of metal printed on the surface of the board.

Bubble Memory: An advanced method for storing information magnetically on a thin metallic film that is deposited on a slice of garnet, allowing much more information to be stored in a given amount of space.

Bug: Program error. Originated in military during WWII when moths would fly into relays and literally gum up the works.

Byte: A group of eight bits.

CAI: An abbreviation for Computer Assisted (or Aided) Instruction.

Central Processing Unit (CPU): An electronic module in charge of searching, decoding, and executing in the proper sequence instructions stored in the memory. The CPU is usually composed of a microprocessor chip and a few other components residing on a single board or "card".

This ends part one of "The Mix Personal Computer Primer and Glossary," which will be continued next month.

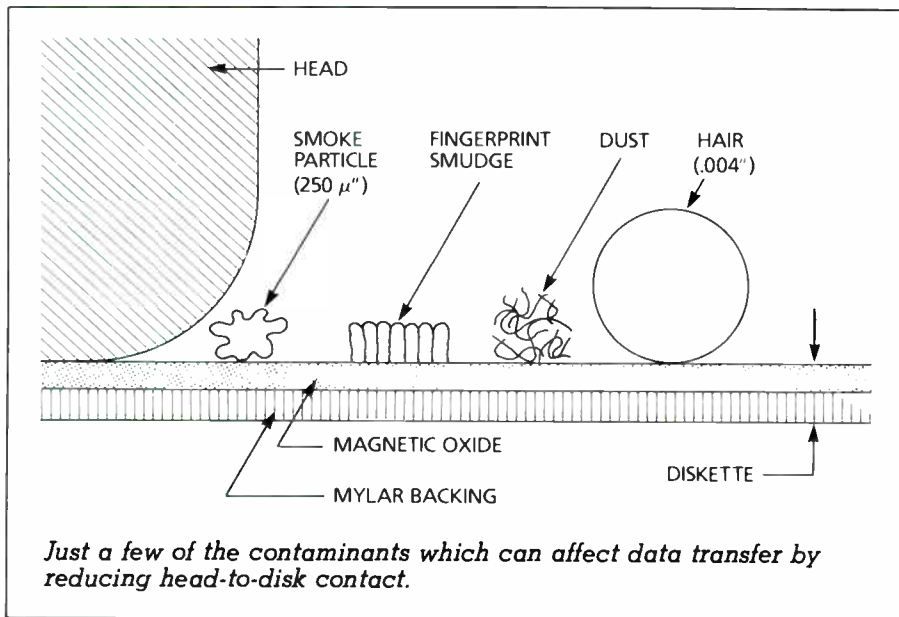
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MICROCOMPUTERS

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and smoke from the air. Even if the environment is filtered and humidity controlled, there's another problem: oxide residue from the diskettes. A smoke or dust particle as small as 250 micro-inches is enough to cause the disk drive to skip over data, causing an error.

The ideal way to clean any read/write head is directly, with a swab and cleaning solution. But due to the location of flexible disk read/write heads it's not practical, nor is it safe from a warranty perspective to partially disassemble the machine to clean the heads manually. The solution is to clean the heads with a specially made cleaning disk.

A number of companies, including Allsop, Discwasher, Nortronics, Perfect Data, 3M, and Verbatim make kits for cleaning flexible disk drive heads. In all of them, a special diskette made of non-magnetic material is inserted into the drive, the drive is activated and run for a specified period and the diskette removed. Most add some type of cleaning solution which dissolves the grime on the head and removes it. A few are dry, literally scrubbing the dirt off with some degree of abrasive action.

For computer users without fairly extensive programming background, a basic head cleaning kit may not be quite enough. Unlike audio or video drop in cleaners, diskette drives don't easily turn on and off at the flick of a button. Many disk drives (such as IBM/PC's) will only run with a media diskette in them. Others will run externally once turned on, but over and over again in the same place (such as Apple II's). Second drives are difficult to activate on virtually all systems. Nortronics offers head cleaning software that solves these problems as well as stepping the read/write head to a clean portion of the cleaning disk so that the head is cleaned with a fresh surface.

Keeping The Power Line Smooth

Those of you involved in sound reproduction probably know the importance of maintaining smooth power flow to your equipment. Once again, the problem is especially critical with computer equipment. Small voltage fluctuations can disrupt data flow and cause problems including blank screen, lost files, output errors, equipment stoppage and even hardware

by Kay Black

The importance of regular maintenance to microelectric equipment should be nothing new to professionals in the recording industry. You've been cleaning audio recording heads for years, replacing those heads periodically and making sure that the moving parts of your equipment are as clean as possible.

Life in the studio is becoming easier through the addition of personal computers as well as digital synthesizers; computer controlled mixers, equalizers, harmonizers and reverb units, and just plain personal computers. The simplicity has a price, however. While computer-based equipment may seem impervious to environmental assault, it's not. There are several chinks in the armor that need to be carefully maintained to prevent unexpected, seemingly inexplicable problems.

Problems in microcomputer-based equipment are most common in three areas:

1. Contaminated read/write heads
2. Power line irregularities
3. Static electricity

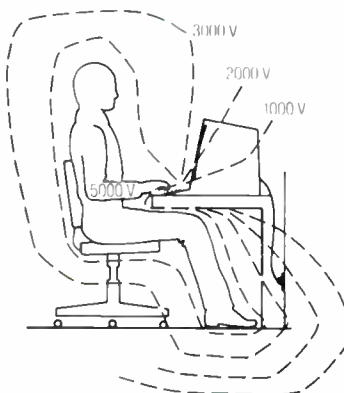
Taking Care of Your Heads

Disk drive heads need to be regularly cleaned. Unless you work in a clean room, your computer's diskettes and disk drives are exposed to dust, dirt

Static electricity damages computers two ways:



(Above) Static charges discharge to ground directly through delicate microelectronic circuitry, and (below) field induced charges cause slow degradation of integrated circuits.





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damage. Although power outages are infrequent, surges and spikes lasting in the nanosecond to millisecond range occur many times per month in most environments and can wreak havoc with computer systems. Surges and spikes are caused by electrical storms, starting and stopping other electrical equipment and line switches within the power network.

Severe voltage fluctuations including brown-outs and black-outs can only be avoided with a UPS (Uninterruptible Power Supply). This type of equipment is in the \$500 to several thousand dollar range, but the investment may be worth it to you if you con-

sider the time (dollars) spent retrieving or reconstructing lost data.

For correcting the surges and spikes, the variety of line conditioners and surge suppressors available is mind boggling. When choosing a surge suppressor look for:

- A clamping response time of no more than 1 nanosecond.
- Peak energy of at least 75 Joules.
- Added features such as an RFI/EMI filter, some type of voltage monitor so you know when trouble is brewing, or a built-in buss strip.

The companies manufacturing surge suppressors include Discwasher,

Electronics Product Devices (EPD), Network, Nortronics, Panamax, and RKS Industries.

Keeping Static Inactive

Static is a potential hazard for your computer if you live in a climate with dry winters and work in an environment that's not climate controlled. Static discharge is a problem for computers because integrated circuits are subject to damage from electrostatic discharge as low as 100 volts. (A static charge may need to be as high as 3500 volts for a person to even feel its discharge.)

Static most frequently affects microelectronic equipment through an induced field effect, rather than by the more commonly noticed discharge to ground. An invisible electric field emanates from a charged body to everything in the area around it. As the field emanates from a charged person through a computer the charge may be induced and travel through an integrated circuit in a way that actually breaks down some of the IC's atomic bonds. Over time or in extreme cases the field induced atomic breakdown causes other bonds to weaken and break, eventually melting so-called "gate" connections and destroying the integrated circuit. To the operator the computer suddenly crashes for no apparent reason. From the IC's perspective, though, it's been periodically bombarded with induced electric fields and has finally withered under the beating.

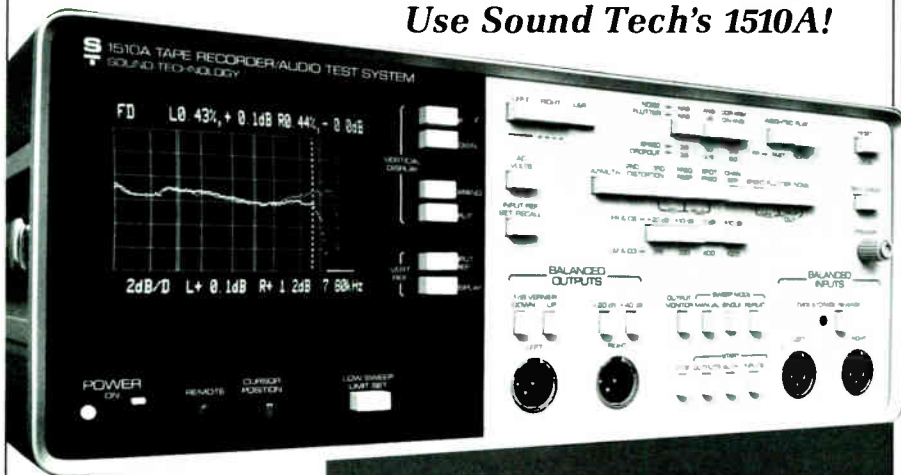
A number of methods have been developed to prevent and inhibit electrostatic discharge. Data processing environments traditionally maintain humidity in the 60-70% range and ionize the atmosphere by electrical or nuclear means. Anti-static mats and carpets are also available in the \$50-\$200 cost range. They provide good protection against static, but must be large enough to fully cover the work area to be effective.

Anti-static sprays are less expensive than mats and carpets, can cover larger areas, but have the disadvantage of needing to be periodically reapplied. The sprays work by reducing friction, attracting ions in the air to neutralize charges, and increasing a surface's conductivity. Compu-Clean, Nortronics and Staticide are among the firms that make sprays.

Computers are like any other electronic equipment, only more so. A little regular care can go a long way toward insuring long life for them and reduced frustration for you. ■

Kay Black is Communications Coordinator for the Consumer Products Division of Nortronics Company, Inc., 8101 Tenth Ave., N., Minneapolis, MN 55427.

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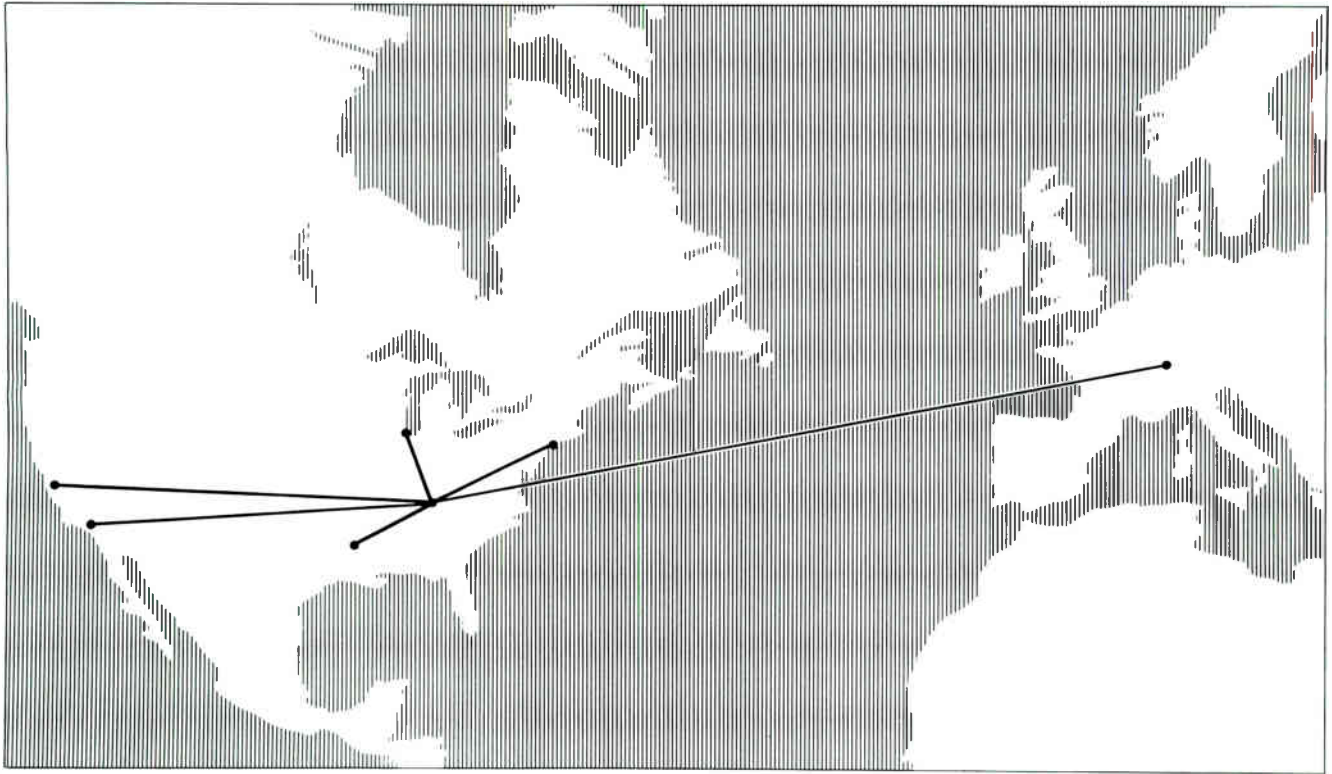
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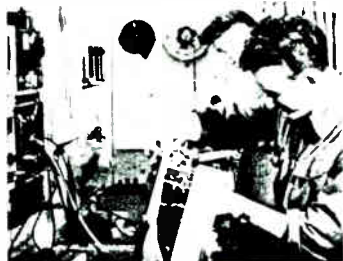
Swiss Audio for the USA

A Profile of Studer Revox America, Inc.

Our story begins in a Zurich post office basement...



Dr. h.c. Willi Studer



Studer workshop, circa 1950

In 1949, a Swiss importer approached Willi Studer with a modest proposition. The importer had a shipment of American-made Soundmirror tape recorders which he needed to have reconditioned and modified for European line frequency and voltage. Willi Studer accepted the job. After 25 years of designing radios, amplifiers, and industrial test equipment, Studer had found yet another challenge for his wide-ranging engineering talents.

Working with two associates in a cramped basement workshop, Studer quickly completed the Soundmirror modifications. However, by the time he'd completed the job, Studer had become convinced that he could build a much better tape recorder by starting from scratch.

The rest is history. Willi Studer's personal drive, engineering expertise, and devotion to perfection have made him a legend in the audio industry. His accomplishments have earned him a long list of honors, including the Gold Medal of the Audio Engineering Society (the organization's highest award) and an honorary doctorate from the Swiss Federal Institute of Technology.

But Dr. Studer's fame has not come as a result of honors and awards. His name is respected because of the products his company makes. From the first Dynavox recorders to the awesome A800 studio multi-track machines, from the first basic Revox amplifiers to the computer-controlled Revox 200 system, and from the simple mixing facilities of the Studer 27 recorder to the sophisticated production capabilities of the 900 Series consoles, every product associated with the Studer name has become synonymous with reliability, durability, and superior performance.

Today, Dr. Studer presides over an international group of companies with a total work force of over 1800 people. Corporate headquarters and research laboratories, along with one major manufacturing facility, are located near Zurich in the town of Regensdorf. Five more manufacturing sites are located in nearby towns in Switzerland and the Black Forest region of West Germany. The Swiss parent firm also maintains a network of sales and service subsidiaries in nations around the globe.

Studer Revox headquarters, near Zurich



...and continues today in "Music City, USA."

Until the early 1970's, Dr. Studer's relatively small company had to rely on independent distributors to handle sales and service of Studer/Revox products in overseas markets. This worked quite well as long as only small quantities and a limited product line were involved. But as the Studer reputation for quality spread across North America, the demand quickly increased. It soon became apparent that an independent distributor – one equally concerned with other product lines – might not be able to handle the rapid growth.

Accordingly, a new company called Willi Studer America was formed in 1973 to handle sales and service of Studer professional products. Because the new firm was closely tied to a Canadian sister subsidiary in Toronto, Willi Studer America initially set up shop in nearby Buffalo, New York. But a few years later the young company moved to a city with a more central location and more recording activity: Nashville, Tennessee.

Revox products remained with a separate independent distributor until 1977, at which time Willi Studer America assumed responsibility for this line as well. The company then adopted its present name of Studer Revox America, Inc.



Studer Revox America, Nashville

Today, Studer Revox America employs over 40 people at the Nashville headquarters facility and in five field offices: New York, Los Angeles, Chicago, Dallas, and San Francisco. The 15,000 square foot Nashville building houses all administrative, accounting, technical, marketing, and warehousing activities. Parts and service for Studer products are available at the Nashville and at the five Studer field offices.



Swiss efficiency, southern hospitality

As a wholly-owned subsidiary of the Swiss parent firm, Studer Revox America is committed to long-term support of all Studer and Revox products. Professional users and hi-fi enthusiasts can count on continuity of service support throughout the long life span of their Studer/Revox audio equipment.

The Studer line is strictly pro.



Le Mobile remote recording

The Studer Division of Studer Revox America markets a full line of professional audio products for use in music recording, film production, tape duplication, and radio/TV broadcasting.

In music recording studios, Studer multi-track and 2-track mastering recorders have become the *de facto* standard for reliability, responsiveness, and overall audio performance. The sophisticated, microprocessor controlled A800 recorder can be found in the overwhelming majority of "hit making" studios in New York, Los Angeles, Nashville, and – increasingly – many secondary recording centers. Studios with more restricted budgets often choose the Studer A80VU multi-track, which offers proven Studer quality at a price comparable to many "economy" recorders. Also, more and more video production houses are choosing Studer recorders for production of music videos and other quality stereo TV programs.

With the introduction of the versatile A810 stereo recorder, Studer has inaugurated a new era of computer controlled studio systems. Every function of the A810 – including setting of parameters in the audio electronics – is under microprocessor control. And, with the serial interface option, all functions can be controlled through external computer systems.

Studer also markets a complete line of audio mixing consoles, ranging from the 900 series for complex recording and broadcast production down to the compact 169, designed for remote and OB van use.

Special versions of the Studer A80 recorder are used for mastering and quality control at large cassette tape duplication facilities.

Other products in the Studer line include a professional cassette deck, telephone interfacing systems, a power amplifier, SMPTE-based synchronizer systems, an FM monitor tuner, and studio monitor speakers.



Fantasy Studios, Berkeley, Calif.

As an innovator in professional digital audio, Studer has developed the first digital sampling frequency converter (Studer SFC-16) and also helped to establish the DASH format for stationary head digital audio recording.

Revox is pro and home hi-fi... and much more.



Revox PR99 pro recorder

Revox 200 Series components

Revox products were originally marketed strictly for use in home high fidelity systems. But back in the 1960's, some perceptive (and budget conscious) audio professionals "discovered" Revox tape recorders. Revox has had a split identity ever since.

Today, you will find thousands of Revox A77, B77, and PR99 tape decks in radio stations around the U.S. You'll also find them in recording studios, hospitals, churches, police stations, university laboratories, and courtrooms – wherever reliable and cost-effective recording is called for.

But that's only one side of the Revox story. You'll also find Revox audio products installed in the living rooms of America's most discerning music lovers. For those listeners who refuse to compromise on performance or quality, Revox provides the ultimate in home music reproduction.

Revox recently introduced two new components featuring advanced microprocessor technology and infrared remote control: the B251 Integrated Amplifier and the B261 FM Tuner. Infrared remote control capabilities may also be extended to the Revox B77 open reel recorder; Revox B790, B791, and B795 turntables; the Revox B710 MKII cassette deck; and the Revox B225 Compact Disc Player.



Revox: classic elegance

Whether you are a broadcaster, a recording engineer, a musician, or a hi-fi enthusiast, you can rely on Revox audio components to deliver consistent performance and impeccable sound reproduction for years to come.

Revox in the classroom.

The educational division of Studer Revox America markets Revox learning laboratories to secondary schools, colleges and universities, and corporate training departments throughout the United States. Revox learning laboratories are used extensively at America's foremost center for training teachers of foreign languages.

The Revox 884 learning laboratory is a modular, microprocessor controlled system which may be expanded to as many as 75 student positions. Each student desk contains a rugged Revox D88 cassette deck, a three-motor design with microprocessor transport control. The D88 is also available separately as a versatile audio/visual teaching aid.



Revox 884 at Middlebury College, Vermont

Checked in Europe. Checked in Nashville. Checked on delivery.

Each Studer Revox audio product receives thorough quality control testing and inspection before leaving the Swiss or German manufacturing facility. To make sure there was no damage during shipment, all units are re-tested and re-inspected in our Nashville shop. At this time all recorders are set-up for particular tape types, and special modifications are made according to customer request. A quality control check sheet, which includes basic performance specifications, is enclosed in the box with each new component.



Computerized QC of the A810

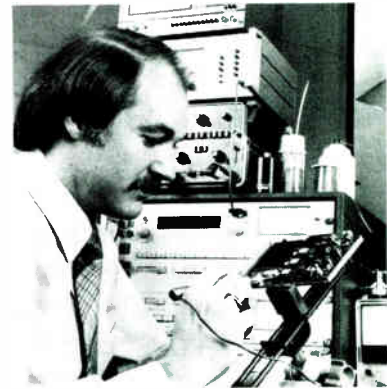
Studer professional products are checked once again upon delivery, either by Studer field office personnel or by a Studer dealer. Many Revox dealers also offer this service to their professional and home hi-fi customers.

Service support follows each product for decades.

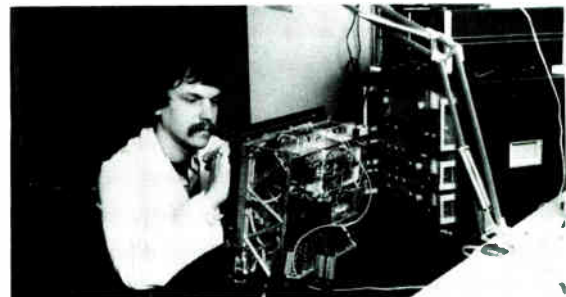
Studer Revox does not make "here today, gone tomorrow" audio equipment. Each one of our products is engineered to provide a useful service life of at least 10 years. Many of our units made over 20 years ago are still in professional use today – and still performing just as they did when they were brand new!

That's because, at Studer Revox, we emphasize *long term* performance as the true measure of value. You won't find retired Studer recorders abandoned in the back room of a recording studio. (To our knowledge, every Studer multi-track sold by our company since 1973 is still on active duty.) And you won't find a "graveyard" of junked Revox recorders buried in the basement of a hi-fi dealer. A Studer Revox product is always worth refurbishing, whether for further use or for resale. At Studer Revox America, we have the people, the equipment, and the parts required to make sure the job is done right.

A staff of thirteen factory-trained technicians and engineers is assigned to servicing Studer products. Five work in our main service center in Nashville, with eight more based in our five field offices. Over \$100,000 worth of servicing equipment is on hand to tackle any problem, from a minor adjustment to major overhauls. In addition to custom made equipment by Studer, our service bays include a selection of the best wave analyzers, oscilloscopes, programmable audio test sets, and scientific computers programmed for audio testing procedures. Each Studer office also has a high quality portable test set available for field servicing.



Testing a microprocessor board



Servicing a veteran A77

Studer products sold through authorized Studer dealers are also serviced by those dealers. All service personnel are brought to Nashville or sent to Switzerland for thorough product servicing courses.

Four more factory-trained technicians, using an additional \$60,000 worth of equipment, take care of Revox service at the Nashville facility. For local service, Revox maintains a network of over 100 independent authorized service centers.

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Do you need some pushbuttons for a Studer C37 you bought back in 1960? Do you need them delivered to your studio in Oregon the next day? We can do it.

Do you have a Revox G36 (circa 1964) in your service shop that needs a new capstan motor? Are you under pressure to get the job done? Don't worry, we have the motor in stock.

We've stocked our Nashville parts room with nearly 5000 different parts for units made as far back as the mid-1950's. In addition, all of our Studer field offices, Studer dealers, and Revox service centers have their own inventories of common replacement parts. Any other parts needed, due to accident or rare failure, can be ordered for express shipment from our Nashville stock. And, should your Studer Revox unit suffer extreme damage – from fire, shipping accident, or vandalism – we can order *any* cosmetic or structural part for shipment from Switzerland within one week.



A full inventory of parts



Prompt shipment is assured

A dedication to perfection inspired by Dr. Studer.

Dr. Willi Studer could have easily retired at age 60. Or at age 65. He did not. He is still working today, well past his 71st birthday. He continues to work because he knows that even the world's best audio equipment can always be improved.

Dr. Studer's pursuit of perfection stands as an inspiration to every employee of Studer Revox America.



Hans D. Batschelet, President

Under Dr. Studer's steadfast guidance, the Studer Revox companies in Europe now manufacture products that are universally acknowledged as a standard for excellence. Here in America, it is our job to provide service and support equal to this uncompromising standard. It can't always be done in a 40 hour week. It takes perseverance, attention to detail, and a strong team spirit.

Most of all, it takes a commitment to the principle that, from day to day, any job can always be done a little bit better.

It's the same fundamental commitment Willi Studer had back in 1949, when he first decided he could build a better tape recorder.



The headquarters staff of Studer Revox America, Inc.

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AUDIO APPLICATIONS

When the number of faders exceeds the number of available fingers, console automation may provide the solution. But today's automation systems have much more to offer than the mere addition of extra hands.



The Solid State Logic SL6000 E console incorporates a comprehensive computer automation system for the control of both console and transport functions.

Console Automation

by Ken Pohlmann

In the beginning, there were rotary pots, then slide actuated pots which were quickly mistaken for faders. Engineers graduated from five finger exercises to ten, and were soon asking assistant engineers, producers and even studio technicians to lend a hand as the number of faders used in a mix-down was shown to directly influence the probability of getting a bullet on the charts. Soon consoles were longer than a night at the opera and even their manufacturers admitted that a solution was badly needed.

Thus console automation was devised to extend the engineer's ability to control the parameters of a mix-down. Initially, voltage controlled amplifiers were inserted in the I/O fader section and movements from faders could be stored for later fader control; several passes of simple fader motions could be stored then cumulatively played back to control the entire mix. Two advantages were immediately apparent: automation proved to be a time-saver because complex mixes could be

swiftly assembled section by section, instead of being performed real-time—only after many rehearsals; also, automation allowed for more complexity in mixing because attention to detail could be accomplished on a section by section basis. After fader automation proved successful, it was seen that the technique could be extended to echo returns and other console functions—the only real limitations being the cost of hardware and the law of diminishing returns as more and more controls and operating procedures had to be added.

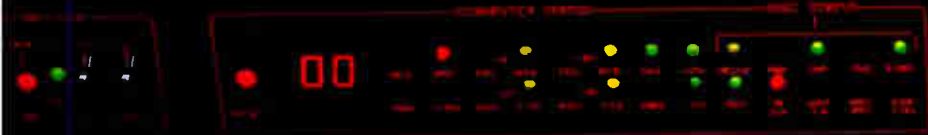
Are all console automation packages alike? Conceptually, in terms of the generalities described above—yes. However in practice the systems differ considerably in terms of their ergonomics, and their storage mediums. To better explain the nature of console automation, I would like to summarize several manufacturers' systems. In this way we may examine the different approaches to the question of automation. Are the differences significant—such that a console buyer would be swayed one way or another because of the automation? In certain

applications, the differences are fully that great.

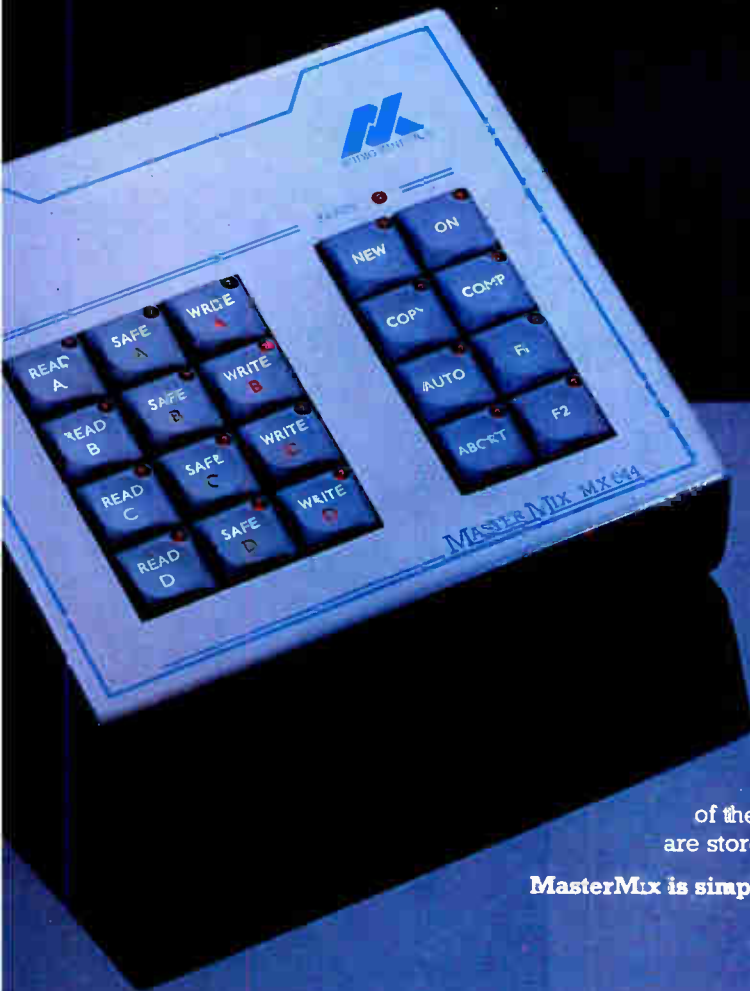
Perhaps the most familiar automation package is the MCI/Sony JH-50 system which operates controls built into the console control surface to automate I/O, echo return, group, and master faders for a minimum of 16 functions and a maximum of 64 functions in multiples of 16. The JH-50 operates in real time, scanning not less than 11 times per second to record the value of the function; when played back, the value is converted to a control voltage and used by the console immediately. The storage system is normally two unused audio tracks on the multitrack machine. However, other tracks on a synchronized machine may be used. Data is written to the tracks in a ping pong fashion, alternating new and back-up files. Data is stored synchronously with the audio tracks, thus the cost of more expensive storage and synchronizing is alleviated. Three FETs are provided for every signal circuit which interfaces the console and the automation; when the automation is turned off, it becomes transparent to the board. The system may be factory in-

MIXING MASTERS?

Console Automation used to be considered a luxury. With the introduction of the MasterMix system, automation becomes not only accessible, it becomes so economical, simple, efficient and accurate as to be essential.



MASTERMIX IS THE NEW STANDARD IN AUTOMATION



MasterMix can automate your existing console. Interfaces are available for most automatic-ready consoles, and the MasterMix VCA fader package permits a complete update of virtually any console.

MasterMix records the Mix data on floppy disc. The traditional disadvantages of contemporary tape based systems, which introduced cumulative errors on repeated passes and were subject to dropouts, noise and distortion interference are eliminated.

Only one track of standard SMPTE/EBU timecode is required for synchronisation and a code generator is included as part of the main computer unit. Automation of level and mute decisions are stored independently and accurately to a single time code frame.

MasterMix is simple to use, and the increase in speed and quality of production will ensure that the system rapidly justifies its installation.

MasterMix is the new standard for automation systems.

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stalled, or retrofitted in the field.

In addition to interface boards for each I/O module, echo return circuit, group and master circuit, which plug into existing mox sockets, two other boards complete the automation package, the processor and digitizer boards. The processor contains the Z-80 microprocessor and ROM firmware used to implement the system, and tailor it for either the JH-400 or JH-500 board. Other subsystems on the processor board include the direct memory access controller, clock generator, baud rate generator, universal asynchronous receiver/transmitter (UART), bidirectional bussing, and latches. The digitizer boards each performs the multiplexing (scanning) and conversion for 16 channels. The data acquisition works asynchronously with the microprocessor to supply it with data. A successive approximation A/D and D/A accomplish the conversion, and information from the user sets of controls are multiplexed.

User controls consist of identical sets of functions for every automated feature, each consisting of three buttons and three LEDs. READ, WRITE and UPDATE modes may be enabled and displayed by lit LEDs, temporary modes are indicated by flashing LEDs. The only other user controls required are located on the auto remote auxiliary module and include master clear, invalid data lamp, data phase reverse, data record locks, and data matrix. These controls are used to direct data to and from the storage tracks.

The JH-50 automation package is thus an efficient system which has accepted certain limitations to provide a cost-effective and user friendly system. The number of stored mixes is restricted, and the presence of data alongside audio tracks runs a risk of audible buzz, but the use of audio tracks is an effective solution and the integration of controls into the console surface in turn integrates the use of automation into the use of the console.

The Neve NECAM II automation system uses floppy disk-based storage with SMPTE/EBU time code to allow for storage of up to 999 mixes. Because of multiple mixes on line, merging sections or tracks from different mixes becomes possible. Faders are equipped with touch sensitive servos to allow response to operator intervention; the minimum fade time is 0.5 seconds for full travel. The maximum number of faders controllable by the system is 48, and the re-position accuracy is plus or minus 2 millimeters. Mute controls are similarly remembered, with a minimum fade time of 50 nanoseconds; a 3 way toggle is mounted above each fader. A free standing control panel and display is used

to access the system computer and show status of automation (manual, assist, suspend, etc.) and that of tape machine (play, rewind, pause, etc.). The display also shows the storage capacity remaining after each update; unwanted data may be deleted from the disk. Control of the tape machine carrying the master time code is also controlled from the keyboard. An auto locator function parks the tape at the starting point of a mix.

The principle of operation creates numbered labels, each one referring to a specific time code frame.

Black and white shot of the NECAM 96's color automation data display.

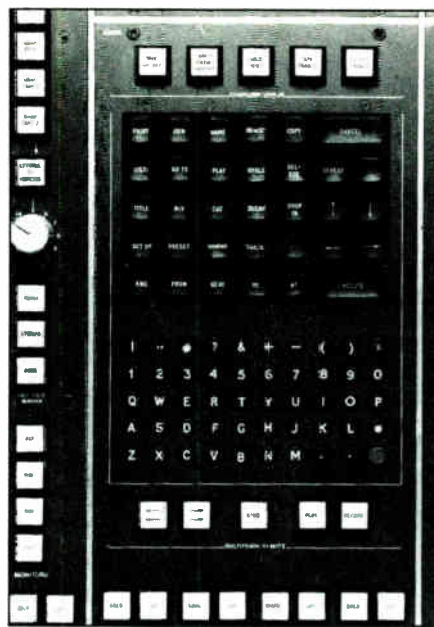


Mixes are then performed between two labels. A maximum of 999 label points with event timing accuracy of one frame (1/25 or 1/30 of a second) may be stored. Events and labels may be stored either before mix time, or on the fly. The START MIX command is used to initiate a mix, and values for MIX, FROM, and TO are entered or supplied by the computer. Information associated with a mix (FROM, TO, fader movements and mutes) are stored with the KEEP command. Similarly the DELETE command may be used to delete a mix by entering the mix number and the command. Mixes may be merged and edited in an interactive process. First, a segment of a mix is specified by entering a mix number, and start and end label, then MERGE is entered. Then all channels in the merged mix are specified by touching those faders, and the process is repeated for each section where merging is desired. The KEEP command then saves the new mix.

At press time, Neve introduced their new NECAM 96 automation, a NECAM I/II compatible system. NECAM 96 offers twice the event switch capacity with greater speed and flexibility, as well as drop-in "Automerge" mix editing, a full size alphanumeric keyboard, and a high-resolution color graphics system with displays of mix/label names, numbers,

stores, and past/prior events. The new system utilizes double sided 8" disks for storage, and a conversion kit is available so owners of NECAM II can upgrade to NECAM 96.

The Solid State Logic Dynamic Mixing System is a thoroughly integrated automation system in which full controls for the studio computer and floppy disk storage are streamlined into the console operation. Master, channel and group faders and mute information is recorded onto 8" floppy disks for updating or storage, any number of mixes may be stored, and the mixer may edit between them. Time code is used on the master tape machine, and frame accuracy is retained throughout the system. The MIX ON/OFF button on the command module is used to select automation, the GO TO command parks the tape at the proper location, and EXECUTE begins the mix. Any of three fader statuses is displayed by LEDs on each fader panel; ABSOLUTE writes all fader data, TRIM is used to update previous data by trimming gain up or down, and ISOLATE may be used to monitor a track isolated from the computer. Individual channels may be placed into various statuses, as required. All mixes are stored on disk, and displayed on the video Mix List. Edits may be specified in foot/frames, time code, or cue names. To edit two



Detail of computer data entry/control console SL 6000E.

mix segments together, the JOIN MIX 'b' TO MIX 'a' AT 'n' command is used. To insert part of one mix into another mix, the JOIN MIX 'b' TO MIX 'a' FROM 'n1' TO 'n2' command is used similarly.

The SSL mixing system per-

mits rollback of both multitrack machines or dubbers and mix data simultaneously to perform pick-ups automatically in the computer, with preview. The real time system is designed to facilitate manual operations in live applications, and simplify track-building and mixing in post production. It has three main elements: Preset, which is a map of fader and mute settings at a given time; Events, which is one or more relay closures, and Sequence, which is a series of presets and/or events repeated any number of times, in any order.

The SSL automation package offers the ideal compromise between the streamlined approach offered by MCI/Sony, and the more comprehensive approach of Neve. Thus full disk storage and editing is provided, individual fader automation controls are present, without the need for a stand-alone keyboard and display.

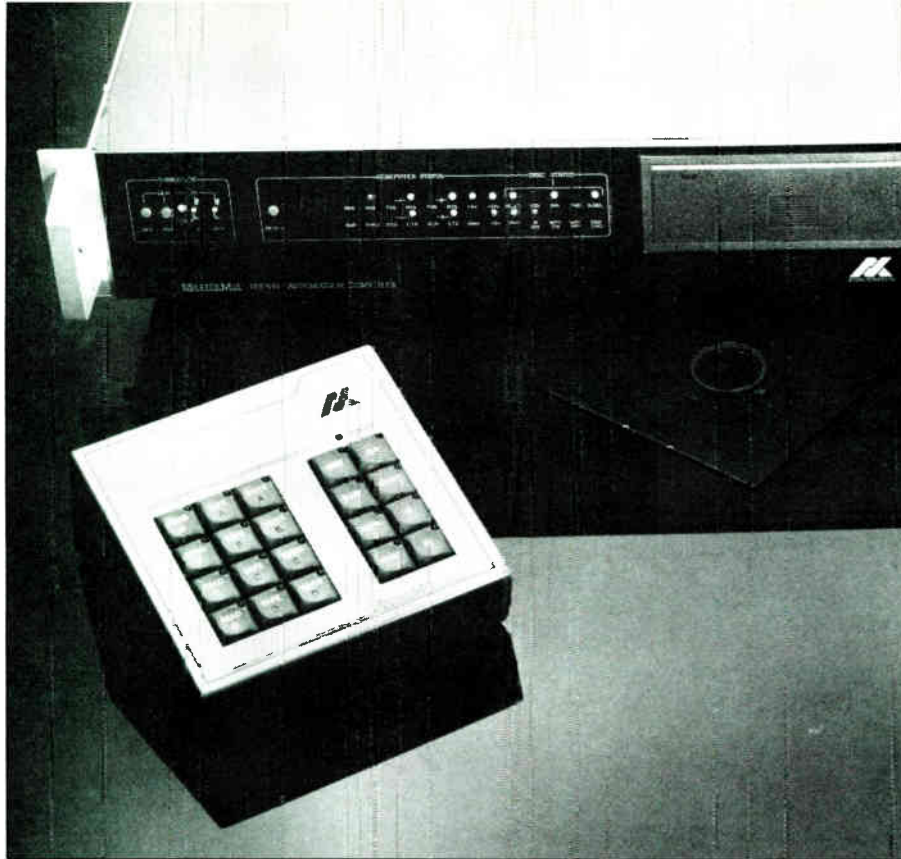
Introduced in January of this year, the George Massenburg Labs' moving fader automation system utilizes two 68,000 processors on a multibuss with a half megabyte of RAM and a 20 megabyte hard disk. A floppy disk is also provided for archiving mixes and transposing SSL and NECAM mixes into the system. Two of the eight words the software was written for are used for moving the faders and the operation of

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The MasterMix automation system from Audio Kinetics.

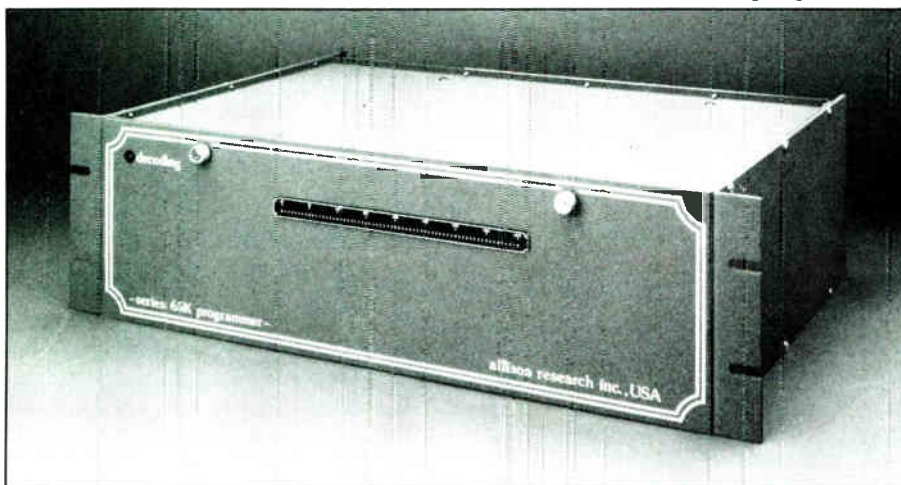
eight switches per channel (for mute on/off, EQ in/out, etc.). This leaves six words of data for future expansion. Up to 128 channels can be accommodated. Since it is a 10 bit system, fader settings are broken up into 1024 divisions, and mutes can be turned on and off every quarter of a SMPTE frame.

The GML system is simple, yet sophisticated. Data can be entered by operating faders and mutes while the tape is moving or by punching in changes relative to a certain time code address. An alphanumeric keyboard allows the entry of "Headers" for session, song and engineering information. An "Auto Null" mode

automatically returns the fader to a preset position after making a manual level adjustment. Freewheeling over time code, or dealing with discontinuous time code is not a problem since the system can phase lock and generate its own code to stay within 1/4 frame accuracy.

The motorized faders—the heart of the GML automation—are designed to fit into "drop-in" fader consoles, such as API, Neve, Amek, Trident, Neotek, and other boards where the fader is separate from the input strip. According to a company spokesman, the system could also be configured to operate with VCA faders as well.

Allison 65K automation programmer.



The Audio Kinetics MasterMix system, demonstrated at last month's NAB convention, is a console level and mute package which retains many features of more costlier systems, with reduced cost and complexity. Whereas to have a NECAM you must first have a Neve board, and the SSL automation system is dismembered without its console, MasterMix may be interfaced to most automation-ready consoles featuring D.C. or digital grouping faders. Also, MasterMix VCA faders are available for a full system implementation on consoles not previously prepared for automation. The MasterMix uses one audio track for time code, and a 5 1/4 inch floppy disk for 600K of storage. Completed mixes may be copied to a second disk for archiving. The system is comprised of a rack mounted computer and disk drive, and a desk top controller.

Valley People's Allison 65K programmer is a time-proven system which has been in production since the 1970s. This no-frills, tape based automation can interface with any console equipped with 0 to 5.75 Volt VCA faders, and is easily expandable for up to 64 input/output channels. Valley People also manufactures the Fadex programmable fader system for upgrading conventional non-VCA consoles for automation flexibility.

Sound Workshop's Diskmix is a supplemental automation storage/editing system which operates as a slave device, reading the automation information from the recorder's cue/time code tracks and storing it on 8" floppy disks. Diskmix will work with Sound Workshop ARMS automation (such as S.W.'s own console line, or automated Harrison Series 4 boards), the Sony/MCI JH-50 system, or Allison 65K automation. Diskmix eliminates the time delay problems which can occur when bouncing automation cues from track to track, and allows mixing to be performed section by section, rather than having to go through whole songs. Multiple mixes can be stored on floppy disks and can be edited off-line on a channel-by-channel basis or merged with portions of other mixes.

Whether console automation is supplied from the factory, retro-fitted in the field by the manufacturer, or added as an independent system, it seems clear that the added efficiency, and chance for greater creativity will reward the purchaser. The studio computer is gaining prominence. Rather than making the human operator obsolete, it is rapidly extending his capability. But with the advent of digital consoles, when the somewhat cumbersome situation of a hybrid console with analog signal and digital control has passed away, today's automation systems will seem tedious. ■

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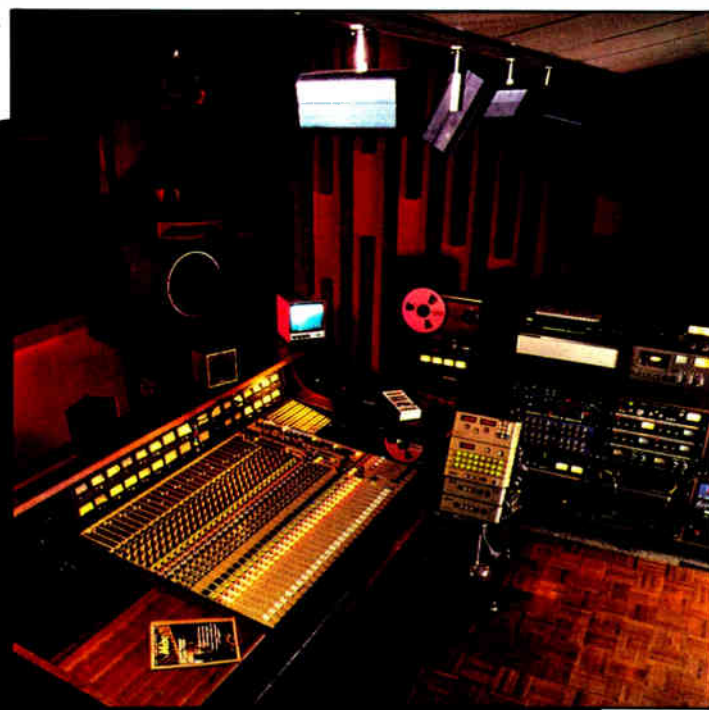


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PHOTO GEOFFREY THOMAS



A Step Above Recording, NYC

by Blair Jackson
and George Petersen

Because the East Coast and Southern California are the major centers of the recording industry, economic trends hit those areas first. The protracted recession that was ushered in with the Reagan years had a devastating effect on the recording industry in those regions a couple of years ago; and it's still being felt in ripples in the great heartland of this country. And

now that a recovery is well underway thanks to record government deficit spending, the recording economy has improved markedly with, once again, the two coasts showing healthy signs. Across the board (no pun intended) the studios we spoke with have seen a marked increase in business in '83-'84 over the previous year.

There are several reasons for

this, of course. One is the rise of video music, about which much has already been said. Another factor which has been particularly significant on the East Coast, though, has been the continued growth of dance music as a viable genre. The breakdancing phenomenon is the most visible manifestation of this, but up and down the Eastern Seaboard, studios are churning out 12" dance records both for discos and home consumption. "Disco" is thought of in most circles as a late '70s phenomenon, but the broader "dance music" category, which has been incorporating everything from syncopated techno-pop to hard-edged urban funk, is actually eclipsing the disco fad that was spawned by the success of *Saturday Night Fever* and a handful of trendy R&B artists.

One example of a studio that has been riding the tidal wave of dance music's popularity is North Lake Sound in White Plains, NY, half an hour from Manhattan. Co-owner and studio manager Joe Renda reports that dance records have constituted a lot of the studio's recent business and that, in fact, they've found an increasing demand for synths, LinnDrums and Simmons drums from their dance music clients. (Other studios have also reported this.) North Lake's other recent clients include Peter Frampton, who lives nearby, and Crazy Joe & the Variable Speed Band. Kiss and Blue Oyster Cult are two of the studio's steadier visitors, though neither has been active lately.

Another studio that has gotten a lot of work from the dance music boom is A Step Above Recording in NYC. Studio manager Joe Manzella



PLENTY TO DANCE ABOUT

says, "we've been going bananas over here, there's so much work." Manzella says that "we've had good luck attracting clients because we've always stayed close to the community. You'd be surprised—New York is really a small, tight place as far as the music scene goes. We know just about everyone." To accommodate the needs of clients making dance records, A Step Above, like other studios we spoke to, have been stocking up on electronic instruments of all kinds. Recent purchases include a MemoryMoog plus, an OB-8, a Jupiter 6, a Yamaha DX-7 and a LinnDrum, in addition to a Dr. Click system. "I'd say 90% of our clients have used some of these," Joe says. Among the recent dance music people who have worked at the studio are GQ, recording for Stadium Records and Candi & Rush Hour, cutting for Kiwi Records. Another equipment move: they got a 1/2" mastering retrofit for their MCI two-track recorder.

Workshoppe Recording in Douglaston, NY is another studio that has done well by dance music—they've been particularly involved with the Nelwin label, who have charted several dance records in the past. Working for Nelwin when we called was Upfront, recording a 12" called "Can You Feel It?" with producer Winston Negrón and engineer Kevin Kelly. Though this kind of music is fairly lucrative for the studio, Stephanie Davy points out that the dance music trend doesn't seem to be giving many musicians work: "A lot of times it's one guy who comes in and does everything himself on synthesizers." Stephanie, wife of Workshoppe owner Kevin Kelly, also heads Rabbit Productions, which is mainly involved with jingles and radio production—they do all the audio production for the large East Coast Record World retail record store chain, among other clients, at Workshoppe. The studio is also where the syndicated radio show *60 Second LP* originates; that show recently reached a milestone: 2,000 shows. Back on the record front, producer Marty Pekar and engineer Rob Bengston have been sequestered with the doo wop group The Jive Five, cutting an album for Rounder Records.

Richie Vetter, of Blank Tapes Recording in NYC says his three-studio facility is very busy, especially in the areas of dance and rap music. One of their major projects this spring involved the mix of the new Rolling Stones release, and the studio's large volume of business has necessitated the construction of a fourth room, which should be on-line by this fall. The new room will be as big as their other three rooms combined, and Vetter is currently considering the installation of either a

digital multitrack or twin analog 24-track machines.

"Business is good, but it's not like it was a few years back," says Mitch Plotkin, of New York City's Record Plant. "Today, studios really have to work to keep busy." Obviously, working to maintain a top level clientele has paid off for the Record Plant, as they had a steady flow of album projects last year, and kept the facility 25% booked with jingle projects for major accounts such as Miller beer.

At Atlantic Studios in NYC, studio manager Paul Sloman reports that "1984 has so far been a very good year. We've done mostly record session work, but audio-for-video is on the upswing and I think that will continue." Atlantic completed a major renovation of their Studio "A" last month, with a Tom Hidley-designed control room featuring a dual monitor system comprised of UREI 813s and some custom Hidley monitors. Another recent acquisition are a pair of Sony 3324 digital 24 track machines and a Sony digital two track system. Session activity has been heavy this year, including Joe Jackson's new LP (produced by David Kirshenbaum, with Rick Pekkonen engineering), a mix of the upcoming Lou Reed album, and a release by the Fatback Band (pro-

duced by Jerry Thomas and Bill Curtis, with Ron St. Germaine engineering).

The studio remodeling fever has spread to other NYC studios as well. Mary Culum, at Electric Lady notes the studio completed the extensive redo of Studio "B" in time for the mix of The Cars' fifth album, produced by Mutt Lange and Ric Ocasek (Mike Shipley engineered the LP with Ed Garcia assisting.). The new room now features a Neve 8128 56x48 console with NECAM automation, two Studio A-800 Mk III 24 track machines and Westlake 5-way monitors. Other recent sessions at Electric Lady Studios include projects by Iron Maiden, Billy Idol, Hall & Oates, and Kid Creole.

Barry Bongiovi, of the Power Station in NYC says business over the past year has been "great", with a large number of top acts recording there. The studio is now in the process of remodeling and upgrading rooms "A" and "B". Due to client demand for the Solid State Logic console in studio "C", studio "B" is likewise being outfitted with an SSL board. The Neve console in studio "A" is being expanded and the entire renovation project should be completed by July 1.

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Unique Recording

There was a time when synthesizers in the recording studio were condemned by the Musicians Union, shunned by many of the large recording studios, and found favor only among R&B, dance music, and other struggling groups on limited budgets. But the times they are a-changing, and today the much-ridiculed synthesizer is fast becoming the centerpiece of progressive studios around the country.

One of the pioneers of the wide use of synthesizers in the studio is Unique Recording based in New York City. Unique is headed by Bobby Nathan, a guitarist turned studio operator, and his partner and general manager, Joanne Georgio. The studio, located on Seventh Avenue, in the heart of Manhattan's Times Square district, started life five years ago as an eight track facility offering a comprehensive synthesizer keyboard service.

"It was a time," remembers Nathan, "when we were bucking the trends. Most people were very suspicious of synthesizers at that time. Many felt that they would take jobs away from musicians, while others argued that their sound would never approximate the instruments they were trying to emulate. Both arguments have been proven wrong."

Nathan points out that with 27 people on the payroll, (twelve of

whom are engineers), Unique Recording now employs a larger staff than it ever dreamed possible. He also notes that the applications of the synthesizer are limited only by the limitations of the person using it.

Unique Recording, which has gone from a single 8-track studio to two 24-track rooms in the five years it has been in business, is a synthesizer user's dream. Crammed into Studio A are such instruments as a Mini Moog, a Prophet 5, an ARP 2600, a Memory Moog, a Yamaha model DX-7, a PPG Wave 2.2 and two Emulators among other more conventional instruments such as an acoustic piano.

Studio B of the facility features Mini Moog, Prophet T8, a Juno 60, a Jupiter 8, and OB-8 keyboards. In addition, a mini interface is used to link all the keyboards through a single cable. Nathan explains that this linkage system provides the user with access to a sound that would not be available through the use of a single synthesizer keyboard.

Rounding out the synthesizer systems available at Unique Recording are: "every drum machine available to the industry, plus Sony DRE 2000 and Lexicon 224 digital reverb systems, as well as Lexicon PCM 42 delays in each room.

Over the years Nathan has outfitted his studio with in excess of \$100,000 worth of synthesizer systems, and those which for one reason or another he does not own, he makes available to his clients on a rental basis.

One of the more recent, and most cherished additions to Unique Recording is an Emulator which, according to Nathan, is a "user friendly, musician-oriented digital recorder that records sounds and stores them in a memory." Some 500 sounds, (many of them created by Nathan), ranging from guitar and percussion instruments to a whole gamut of string instruments, are stored in the Emulator's memory, and can be retrieved at the touch of a button. Nathan says that although it has its limitations as far as frequency bandwidth is concerned, it is a great production saver.

Nathan sees the synthesized studio as a significant part of the growing trend toward computerization of the recording facility, and predicts that as technology advances, and people lose their fear of the systems, more and more studios will offer a full service of synthesized equipment.

—Radcliffe A. Joe

by North Haledon, New Jersey, owner Brian Drago announces that the facility has been "really jumping, with three sessions a day" since their grand opening last November. Drago describes the complex as a "turn-key operation, with a recording studio, ten rehearsal studios, a booking agency, record label, artist management and a video studio. Recently, a plastic surgeon moved into an office space at the complex, to which Drago quipped: "Where else can you rehearse your material, cut your record, shoot a video, get bookings, and have your face lifted all at the same place?"

In Rochester, NY, Boyd McCoy of Funky Records reports that their 48-track facility has been quite successful. In fact, the construction of a second studio and an apartment for client lodging is currently underway and should be finished by late August. At press time, two heavy metal bands—Thunderhead from Fulton, NY, and No Mercy from Syracuse, NY—were busy completing album projects in Funky Records' unique lead-lined studio.

Boogie Hotel, in Port Jefferson, NY, has been "incredibly busy" during the first months of 1984 says co-owner Steve Bramberg. Some of the studio's recent sessions have included the John Jarrett Band mixing their upcoming Capitol release; the Detroit rockers Adrenalin, recording tracks for their debut album on Rocshire Records, produced by Vinnie Poncia; and a project for French artist Stevie, produced by Rosetta Stone and Jan Mulaney for CBS International.

Variety has been the spice of life at Skyline Studios in NYC according to studio manager Lloyd Donnelly. Jim Steinman has used the studio for a succession of his producing projects, including Bonnie Tyler, Barry Manilow and Air Supply; Lou Reed recorded his *New Sensation* album there with engineer John Jansen; Windham Hill artist Scott Cossu used the facility; as did such fusion artists as Steps Ahead, local favorites French Toast, and John Blake. Donnelly says the studio turned the corner when it purchased a Neve console and Studer recorders. "Before, a lot of different artists would do work here, but not for major projects," Donnelly says. "The new equipment changed that. 1983 was excellent for us. The investment paid off because it really injected new life into the operation." In addition to the recent purchase of such equipment as an Oberheim OB-8, an 1896 Steinway piano that Donnelly says has been in great demand and even lured projects to the studio, a LinnDrum, Efectron II and other pieces of gear, Skyline underwent six months of cosmetic revamping, improving the lounge area, setting up a posh producer's office, etc.

"Of the so-called smaller major studios in NY," Donnelly comments, "we're in a very good position these days."

At Soundworks, in NYC, owner Charles Benanti says that the studio's involvement in video for the past five years—they were among the first big studios to make that a major concern—is paying off royally so far this year. "Business is going through the roof," he reports cheerily. "We're working eight day weeks and 25 hour days. Among their recent projects were work on Christine McVie's MTV special, a program called *The Computer Show*, a segment on John Denver for the Winter Olympics and a documentary on John Hammond, Sr. The studio handled the mixing of recent records by Steel Pulse and Reuben Blades and the latest offering by Kashif was recorded and mixed there. "We try to keep a balance of audio and video-related projects all the time," Benanti says, "and we're doing well attracting both."

A few blocks away at Celebration Recording, engineer Sal Ciampini says the studio is thriving with a different kind of project mix: about 65 to 70% jingles, with the remainder being primarily record projects. The studio is owned by the firm of MZH&F (Mamorsky, Zimmerman, Hamm & Forest) which is a full service production com-



Skyline Studios' Neve Console

pany that has been in the jingle jungle for years, so quite a bit of the business at the studio derives from that association. Ciampini acknowledges that the jingle business has changed significantly in recent years with the advent of the new wave and advertisers' increased consciousness about the music video look. "We do a lot of punk and new wave jingles," he says. "We used to hardly ever rent LinnDrums and Sim-

mons. Now we get two or three calls a week." Recent record projects at the studio, which recently went all Studer, include the heavy metal artist Jake Slater and Jorge Dalto, whose sessions included guest appearances by the likes of George Benson, Steve Gadd and Anthony Jackson.

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Control Room at Boston's Synchro Sound

Sound in Boston, studio manager Gene Amoroso tells us the snows outside couldn't compete with the heat inside being generated by a succession of clients, including former J. Geils lead singer Peter Wolf, who worked on his first solo album at Synchro from December through February; Elliot Easton of The Cars, also at work on his debut solo effort; the Rock Steady Crew, who were the breakdancers in the film

Flashdance; and such local bands as the Sex Execs, the November Group and the Scatter Brains.

The strength of the local recording scene in Boston has been a major part of the success of Downtown Recorders, according to studio owner Mitch Benoff, who often sees weekly bookings in the 80 hour range, and had two 400 hour months last year. The studio upgraded to 24 tracks while still

retaining their 16-track machine and the remodeling of their control room (with new UREI 813 monitors) should be completed by May 1.

Nineteen eighty-three was a good year for Carriage House Studios in Stamford, CT, reports studio manager Johnny Montagnese, who says that both steady TV/movie work and record dates were responsible for their success. A few of the studio's recent sessions included Edgar and Johnny Winter cutting tracks, Meatloaf doing some remixes, a promo for ABC cable, and Gilda Radner doing narration for an upcoming feature produced by Gene Wilder.

At EVS/Evergreen in Revere, MA, Michele Moretti reports the recent purchase of an MCI 618 board for Studio C and an MCI JH-24 recorder for Studio A, replacing the 3M gear. The current owners of the studio have had control of it for under a year and Michele acknowledges, "we're still trying to fix the reputation that was damaged by the previous owners." At 2,250 sq. ft., EVS is the largest studio in New England, and because its three studios are "away from the hustle and bustle of the city," as Moretti puts it, EVS provides a relaxing atmosphere at the same time as it is centrally located. EVS/Fleetwood has done considerable industrial work lately.

The past year has been "a very strong one" for R.P.M. studios in NYC according to studio manager Tom Maguire. Working about a 60-40 mix of album to jingle work, the studio has been busy with a variety of projects. Material has done extensive work there, including Herbie Hancock's *Future Shock*, and a session "that annihilated one of our Technics turntables which they used for scratch effects," Maguire says with a laugh. Recent equipment additions include a pair of Studio A80 24-tracks, which they've been locking up with a BTX Shadow II, and a Studer A80 Mark I that the studio purchased from German radio station. "It was perfectly maintained," Maguire crows, "much more so than if we'd gotten it from a studio. It had very few hours on it." The studio also bought an AMS RMX16 digital reverb unit and a DMX. Among the recent recording sessions at R.P.M. were Yellowman, produced by Material, Francois Kavorkian working with the Thompson Twins, John Sebastian at work on a new solo project, and Chrysalis artists Jimmy Destri and Billy Idol. Mixing projects in their Necam room have included yet another new Jimi Hendrix record, the latest Laurie Anderson disk, the Psychedelic Furs, Duran Duran, Roxy Music and Grandmaster Flash.

—page 67, *Northeast*

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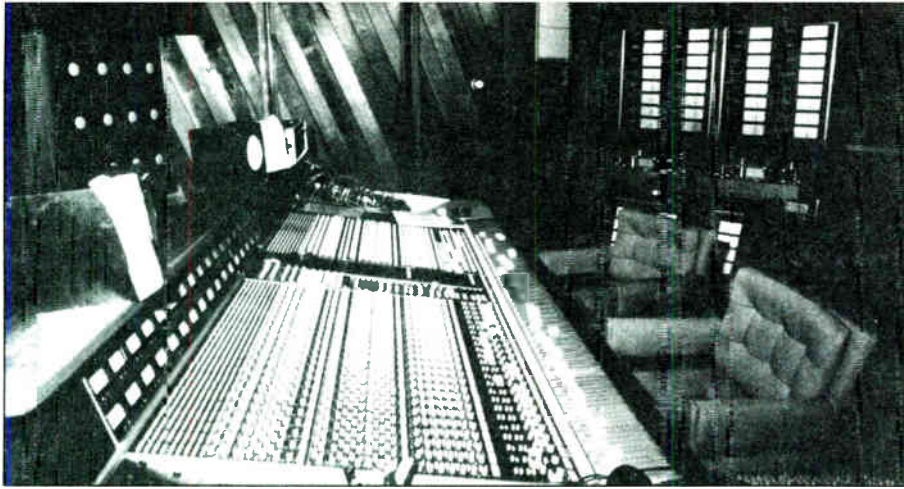
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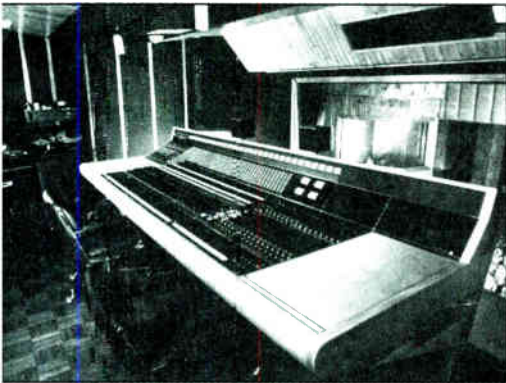


—from page 62, *Northeast*

Pictured here is the control room at Bear Tracks Studio in Suffern, NY. In the foreground is the SSL 4000E computerized console. In the background on the right are their two Studer A80 MKIII 24-tracks, which allow for 48 track capability. Originally built by producers/owners Jay Beckens-

tein and Rich Calandra for their own use, it has been open to outside artists for less than a year. Among those who have utilized the comfortable facility to date have been Dizzy Gillespie, Roger Glover, Rainbow, and fusion kings Spyro Gyra. Bear Tracks is on five secluded acres of land near Harriman State Park. ■

Tiki Studios: All in the Family



While other fathers were chastising their guitarist sons, telling them to "Turn that damn thing down!" Fred Guarino, Jr. was receiving hearty encouragement from his father, Fred Sr. who was well-known in the commercial world. Fred Sr. helped his son set up a basic TEAC-equipped 4-track studio in the garage of their Long Island, NY, home in 1976. Fred Jr. worked in the studio while attending college and holding the lead guitar slot in several local bands, devoting more and more time to recording when he purchased a TEAC 8-track. By 1978, Fred was working in the studio full time, getting his engineering chops down with a succession of mainly local clients.

In 1980, though, father and son officially became partners in the growing Tiki Studios operation and they decided that rather than con-

tinue expanding in the garage facility, they would move the studio. Over the next couple of years, the duo worked almost ceaselessly on a complete interior renovation of a house in Glen Cove, NY, that they purchased, all the while keeping the garage operation running smoothly. They did the bulk of the construction themselves—a big task considering it was a three-story, multi-room house. Upon completion, they decided to skip the 16-track stage and go directly to 24-track, purchasing a Trident console, a used 3M recorder and a ton of onboard gear.

The big step up has paid off so far for the Guarinos, as Tiki has become one of the busiest studios in Long Island. Just 40 minutes from mid-town Manhattan, Tiki offers what Fred Jr. calls "a quieter, very private experience for the people who use it. We're lower priced than the big New York studios, and we like to think we can offer personal touches that they can't."

The modernization continues at Tiki. They recently installed a Trident TSM console and they just received a new Studer A-80 24-track recorder. "Personally, I prefer the Otari MTR-90 to the A-80 but everyone wants Studer right now—Studer is the magic name, so I'll give the clients what they want."

And that kind of attitude explains why Tiki is still on the rise.

—BJ

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8 Music Productions	72	16 Monarch Star	81	24 Queen Village Recording	102	Ottawa	
Port Chester		Bath		16 Sawana Audio	84	24 Carlson Productions Ltd	88
8 Goodtime Sound Recording Studio	71	8 Jon Miller Production Studios	71	16 Soundmaster Studios	84	Toronto	
Port Jefferson		Bryn Mawr		8 Synthesound	75	24 McClean Place Recording	97
24 Breeze Hotel Studios	87	24 Chug Gateley Audio Services	94	Primos		Quebec	
Port Jefferson Station		Chester		24 E.J. Stewart	112	Morin Heights	
16 Sound Cottage	84	8 Widener University	77	Rehrensburg		24 L. Studio	64
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24 Funky Records	94	16 Highland Studios	80	State College			
24 Grenadier	94	Duquesne		16 Filmcore Audio	80		
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Roslyn Hts		Easton		16 Mountain Sound	81		
24 Sabella Studios	105	8 King Henry Productions	71	Valley Forge			
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8 Lap Sync	72	8 American Artist Studio	70	York			
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16 MCF Recording Studios	81	Gladwyne		RHODE ISLAND			
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24 Utopia Sound Studio	114	16 Green Valley Recording	80	Pawtucket			
Stamford		Johnstown		8 Celebration Sounds	70		
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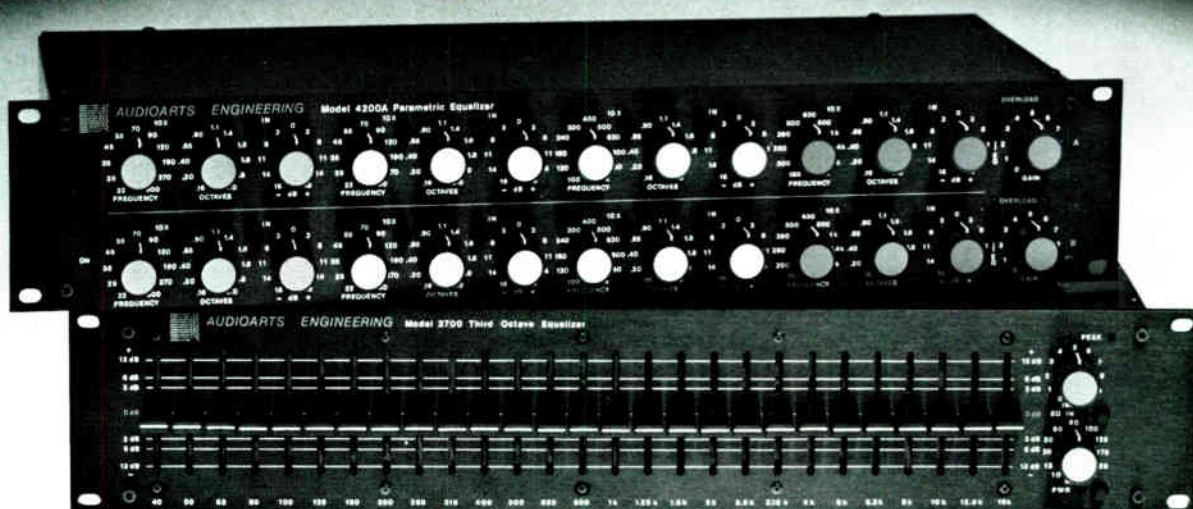
SHAPE IT UP

As a professional you don't have time to fool around. With seven years experience in equalizer design, we know what's needed and how to do it.

Our Model 2700 is a precision third octave equalizer employing a fresh approach in its electronic design. The result is a truly superior sounding filter set non-interacting in its control settings and accurate in its calibration.

Our Model 4200A stereo four-band parametric equalizer is an achievement in tuneable filter design. Its multi-range filter banks provide the engineer with a degree of precision control and range of effects available on no other equalizer today.

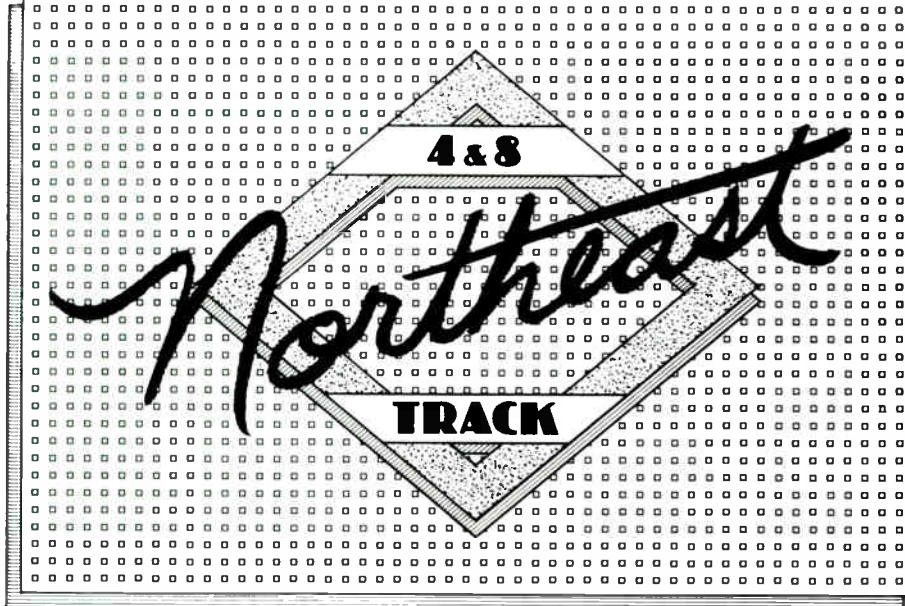
If technical excellence, sonic performance and dependability are of prime importance to you then depend on AUDIOARTS ENGINEERING, the people with the experience and the know-how.



AUDIOARTS® ENGINEERING
5 COLLINS ROAD, BETHANY, CT. 06525 (203) 393-0887

Circle #034 on Reader Service Card

World radio history



••CELEBRATION SOUNDS
 also REMOTE RECORDING
 26 Summer St., Pawtucket, RI 02860
 (401) 728-0780
 Owner: David Correia, Dan Moretti
 Studio Manager: Cathy Correia
 Engineers: David Correia, Dan Moretti, Bill Counts
 Dimensions of Studio: 20 x 18.
 Dimensions of Control Rooms: 12 x 10.
 Tape Recorders: Otari MX5050 MkIII 8 track/remote; TEAC 3340S 4 track; Revox B77 half-track; Nakamichi 680 ZX and Akai GX M50 cassette decks.
 Mixing Consoles: Sound Workshop 1280B8 EQ with parametric.
 Monitor Amplifiers: (2) Crown DC 300 A.
 Monitor Speakers: JBL 4311, Auratone 5C
 Echo, Reverb & Delay Systems: Lexicon 200 digital reverb, MicMix XL305, Lexicon PCM 41 digital delay
 Other Outboard Equipment: Eventide Harmonizer H 949, Ashly SC-55 stereo compressor/limiter, (2) Ashly SC-50 compressor/limiter, EXR Exciter, MXR stereo EQ
 Instruments Available: Acoustic piano, Prophet 600 synthesizer.
 Microphones: Neumann, AKG, Sennheiser, Beyer, E-V, Shure, Sony.
 Rates: \$30/hr. Block rates available.

••CENTURY III TELEPRODUCTIONS
 651 Beacon St., Boston, MA 02215
 (617) 267-6400
 Owner: Ross Cibella
 Studio Manager: Ward Dilmore
 Engineers: Rob Hill.
 Dimensions of Studio: 40 x 25, 12 x 15.
 Dimensions of Control Rooms: 20 x 30, 15 x 17.
 Tape Recorders: MCI 110B-8 8 track, Studer A810 2 track, Otari 5050B MKII 2 track, Scully 280B 4 track, Ampex 440B 4 track, TEAC 3340S 4 track.
 Mixing Consoles: Harrison MR4 24, Soundcraft 1600 24.
 Monitor Amplifiers: Bryston, Crown.
 Monitor Speakers: UREI 811B, JBL 4311, Auratone.
 Echo, Reverb & Delay Systems: Lexicon 200 digital reverb, Lexicon Prime Time II.
 Other Outboard Equipment: MicMix "Dynaflex" noise reduction, dbx & UREI limiters, Orban de-essers, Lexicon Time Compressor, Ashly noise gates, Audio Arts parametric EQ, EXR Exciter.
 Microphones: AKG, Neumann, E-V, Shure, Sony.
 Video Equipment & Services: All format.

••CHERRY SOUND STUDIO, INC.
 132 N. Third St., Philadelphia, PA 19106
 (215) 922-3975 or 922-1620
 Owner: Robert Cohen
 Studio Manager: John Anthony

••CINEMA SOUND LTD.
 also REMOTE RECORDING
 311 West 75th St., New York, NY 10023
 (212) 799-4800
 Owner: Joan S. Franklin
 Studio Manager: David Weinstein

••CLACK SOUND STUDIOS
 56 West 45th St., New York, NY 10036
 (212) 245-6770

••COLLEGIUM SOUND, INC.
 also REMOTE RECORDING
 35-41 72nd St., Jackson Heights, NY 11372
 (212) 426-8555
 Owner: Don Wade, Jerry Epstein
 Studio Manager: Don Wade

••COMMERCIAL REFINERY, INC.
 also REMOTE RECORDING
 2105 Maryland Ave., Baltimore, MD 21218
 (301) 685-8500
 Owner: Wayne Gruehn, Johnny Contino
 Studio Manager: Ms. Pat O'Toole

••CORELLI/JACOBS RECORDING, INC.
 25 West 45th St., New York, NY 10036
 (212) 382-0220
 Owner: Andrew Jacobs
 Studio Manager: John Miller

••CP SOUND
 also REMOTE RECORDING
 200 Madison Ave., New York, NY 10016
 (212) 532-5528
 Owner: Steve Dwork
 Studio Manager: Peter Bengtson

••ADVERTUNES INC.
 RFD #1, Box 8, Epping, NH 03042
 (603) 679-8448
 Owner: Darrell & Melinda Murphy
 Studio Manager: Darrell Murphy

••AIR SOUND
 1116 Boylston St., Boston, MA 02115
 (617) 247-4186
 Owner: Robert Reardon, Dennis Rothgaber
 Studio Manager: Dennis Rothgaber

••AMERICAN ARTIST STUDIO
 P.O. Box 131, Erie, PA 16512
 (814) 455-4796
 Owner: Carl A. Niebauer
 Studio Manager: Skip Niebauer

••ANGEL SOUND, INC.
 1576 Broadway, New York, NY 10036
 (212) 765-7460
 Owner: Angel Sandoval
 Studio Manager: Angel Sandoval

••ARABELLUM STUDIOS
 654 Sand Creek Rd., Albany, NY 12205
 (518) 869-5935
 Owner: The Scarybellum Group
 Studio Manager: Yvonne Bautochka
 Engineers: Art Snay
 Dimensions of Studio: 18 x 24
 Dimensions of Control Rooms: 12 D x 20 W

Tape Recorders: Otari MX-5050 MK III 8 track; Otari MX-5050 2 track; Sony TC-854 4 track; Sony TC-K75 2 (cassette); Sony TC-158 2 (cassette).
 Mixing Consoles: Soundcraft 3B, 24 in 16 out (32 x 32 frame).
 Monitor Amplifiers: Dynaco QSA-300M, Crown D-75.
 Monitor Speakers: Advent, Genesis, Dynaco, Burhoe, Auratone.
 Echo, Reverb & Delay Systems: Lexicon 224 digital reverb, Lexicon Prime Time DDL, custom plate, Echoplex tape echo.
 Other Outboard Equipment: dbx noise reduction, dbx compressors, Symetrix limiters and signal gates, Soundcraftsmen 1/2-octave equalizers, Furman Parametric EQ.
 Microphones: AKG, Beyer, Shure.
 Instruments Available: Electrocomp synthesizers and sequencers. Others available on a rental basis.
 Rates: \$35/hr flat rate, \$30/hr block rate (8 hrs. minimum), tape extra.

••ASTRAL RECORDING STUDIO
 also REMOTE RECORDING
 243 W. 30th, New York, NY 10001
 (212) 244-8420
 Owner: Sam Aldi
 Studio Manager: Michael de Benedictus

••AUDIO ARTS RECORDING STUDIO
 also REMOTE RECORDING
 425 Church St., Endicott, NY 13760
 (607) 785-3280 or 754-6175
 Owner: Michael Putrino & Greg McQuade
 Studio Manager: Michael Putrino & Greg McQuade



BACK TRAX
 Oakland, NJ

••BACK TRAX
 106 Roosevelt Blvd., Oakland, NJ 07436
 (201) 337-5203
 Owner: Vincent Miraglia, Gregg Miraglia
 Studio Manager: Vincent Miraglia

••BEEP SOUNDS
 33 Elm St., Brookline, MA 02146
 (617) 731-3785
 Owner: Robert Ceely
 Studio Manager: Robert Ceely

••BEE-VEE SOUND, INC.
 also REMOTE RECORDING
 211 East 43rd St., Suite 603, New York, NY 10017
 (212) 949-9170
 Owner: Bruno Vineis
 Studio Manager: Camille Salvaho

••BOW RIVER MUSIC
 also REMOTE RECORDING
 2240 Boston Post Rd., Guilford, CT 06437
 (203) 453-1619
 Owner: Michael Aldien, Stephen King
 Studio Manager: Donna Aldien

••BROADCASTING FOUNDATION OF AMERICA (BFA)
 also REMOTE RECORDING
 P.O. Box 1805, Murray Hill Station, NY 10156
 Studio Manager: Harold Bridges

••CAT'S VOICE RECORDINGS
 Box 564, Newbury Port, MA 01950
 (617) 462-1361
 Owner: Tom Reeves
 Studio Manager: Tom Reeves

Engineers: Steve Dwork, Peter Bengtson.
Dimensions of Studios: 10 x 14.
Dimensions of Control Rooms: Control A: 12 x 17; Control B: 11 x 18.
Tape Recorders: Ampex MM 1000 8 track; (3) Ampex 440s 2/4 track and mono; Nagra portable.
Mixing Consoles: Quad/Eight custom, 12 in x 4 out; API custom, 24 in x 8 out.
Monitor Amplifiers: Crown.
Monitor Speakers: JBL 4313, Auratones.
Echo, Reverb & Delay Systems: Quad-Eight.
Other Outboard Equipment: UREI 1/2 octave EQ; UREI "Little Dipper"; UREI 1178; API EQ; API compressor; Pultec, Kepex Gain Brains, etc.
Microphones: Neumann U87s; AKG 414s; Shure; E-V; Sony; RCA.
Rates: Mono thru 8 track—record, edit, mix: \$75/hr. A-V programming and pulsing: \$100/hr. BTX "Softouch" SMPTE video synchronizing system—2, 4, or 8 track to picture, \$100/hr.
Extras: Film transfer facilities, 16 mm & 35 mm, American and European sync standards, complete audio visual slide pulsing and computer programming, full A-V road show capability, music and effects libraries. Cassette, open reel and all A-V format duplication.
Direction: Our basic objectives are to provide excellent mixing and narration facilities with as much flexibility as possible, while maintaining a reasonable rate structure.

••**CUE RECORDINGS INC.**
also REMOTE RECORDING
Cue Recording Studios • Musiques • Viducue
 1156 Ave. of the Americas, New York, NY 10036
 (212) 921-9221
Owner: Mel Kaiser
Studio Manager: Bruce Kaiser

••**CYPRESS QUEEN RECORDING**
also REMOTE RECORDING
 1019 New Market St., Philadelphia, PA 19123
 (215) 934-6414
Owner: Lawrence Ponzek, Bart Ponzek, Paul Ponzek, Tim Ponzek
Studio Manager: Lawrence Ponzek

••**DARK STAR**
also REMOTE RECORDING
 63 McCurdy Rd., New Boston, NY 03070
 (603) 487-3314
Owner: Jaime R. Saunders
Studio Manager: Jaime R. Saunders

••**DEMO-VOX SOUND STUDIO, INC.**
also REMOTE RECORDING
 1038 Bay Ridge Ave., Brooklyn, NY 11219
 (212) 680-7234
Owner: Frank J. Grassi
Studio Manager: Laura Grassi

••**DESTINY® RECORDING STUDIO**
also REMOTE RECORDING
 31 Nassau Ave., Wilmington, MA 01887
 (617) 658-8391
Owner: Larry Feeney
Studio Manager: Larry Feeney

••**ERAS RECORDING CORPORATION**
 226 E. 54th St., New York, NY 10022
 (212) 832-8020
Owner: Boris Midney
Studio Manager: Ray Volpe

••**FALLEN ANGEL**
 Salem Road - 1, Hicksville, NY 11801
 (516) 938-6180
Owner: Karen and Dennis Genovese
Studio Manager: Karen Genovese

••**FAR & AWAY STUDIOS, INC.**
also REMOTE RECORDING
 Box 63, R.D. 1, Chester, NY 10918
 (914) 294-7763
Owner: Far & Away Studios, Inc.
Studio Manager: Geoff Gray, Rick Greenwald

••**FILIPPONE SOUND STUDIOS**
also REMOTE RECORDING
 176 Garner Ave., Buffalo, NY 14213
 (716) 881-4483
Owner: Randy Filippone, Karen Dalessandro
Studio Manager: Gregg Filippone

••**FORGE RECORDING STUDIOS, INC.**
also REMOTE RECORDING
 P.O. Box 861, Valley Forge, PA 19481
 (215) 935-1422 or 644-3266
Owner: Corporation

Studio Manager: Warren R. Wilson, President
Engineers: (2) staff engineers available
Dimensions of Studios: 650 sq. ft.
Dimensions of Control Rooms: 450 sq. ft.
Tape Recorders: Ampex ATR 102 2 track, Ampex ATR 104 4 track, (3) Ampex ATR 700 2 track, (2) Ampex 354 2 track; Scully 280-B 4 track; Stephens-3M 8 track
Mixing Consoles: Audiotronics 110-8 16 x 8
Monitor Amplifiers: Crown DC300A, D75.
Monitor Speakers: JBL 4315, Auratone, Altec.
Echo, Reverb & Delay Systems: AKG BX20.
Other Outboard Equipment: Marshall Time Modulator, Harmonizer, (4) Kepex, (2) dbx compressor/limiter, KLH transient noise eliminator, KLH Dynamic noise filter, UREI filter set #565, Soundcraftsman graphic EQ, Dolby A, Dolby B, dbx noise reduction.
Microphones: Neumann, AKG, Electro-Voice, Sennheiser, Syn-cron, Shure.
Instruments Available: Drums, assorted percussion, piano.
Video Equipment & Services: Video duplication 1/4" U-Matic, 1/2" VHS, 1/2" Beta.
Rates: \$35/hr., plus materials.
Direction: Syndicated radio programs, commercial production, duplication with 8 track capability.

••**CHRIS GATELY AUDIO SERVICES**
ONLY REMOTE RECORDING
 P.O. Box 526, Bryn Mawr, PA 19010
 (215) 525-3605
Owner: Chris Gately
Studio Manager: Al Powell

••**GOD'S MOUNTAIN RECORDING STUDIO**
 P.O. Box 98, Rehrensburg, PA 19550
 (717) 933-4181
Owner: Teen Challenge Training Center
Studio Manager: Hank Rogers

••**GOODTIME SOUND RECORDING STUDIO**
also REMOTE RECORDING
 101 Westchester Ave., Port Chester, NY 10573
 (914) 939-1066
Owner: Carmine Riale
Studio Manager: Judy Novy

••**GRC STUDIOS**
also REMOTE RECORDING
 1137 Fillmore St., Baltimore, MD 21218
 (301) 889-4228
Owner: GRC Inc.
Studio Manager: Robert J. Friedman

••**HILL RECORDING**
also REMOTE RECORDING
 126 Pruyin Hill Rd., Mechanicville, NY 12118
 (518) 664-8839
Owner: Frank G. Hill
Studio Manager: Cheryl Sheley

••**HIT AND RUN STUDIOS**
 18704 Muncaster Rd., Rockville, MD 20855
 (301) 948-6715
Owner: Steve Carr
Studio Manager: Steve Carr
Engineers: Steve Carr
Dimensions of Studios: Main room: 27 x 18; Drum room: 14 x 13.
Dimensions of Control Rooms: 17 x 13
Tape Recorders: Otari 5050 Mill 8 track, TEAC 3440 4 track, Technics 1500 VS 2 track, (4) Technics cassette decks.
Mixing Consoles: Tascam 15 w/new I.C.'s 24.
Monitor Amplifiers: (2) Yamaha P2200.
Monitor Speakers: UREI 811A time aligned, Auratone SC's, home stereo speakers.
Echo, Reverb & Delay Systems: Lexicon PCM 41 digital delay, Orban 111B stereo reverb, DeltaLab DL5 harmonizer.
Other Outboard Equipment: (2) ATS Vocal Exciters, (2) Ashly SC 66 parametric EQ's, Orban 622B parametric, Dual 10 graphic, (2) Dual 15 graphic, 31 band graphic EQ. Compressors: dbx 165, (2) dbx 163, (2) Symetrix CL100, Ashly SC50.
Microphones: Neumann 87, AKG 414, Crown PZM's, Sennheiser 441, Shure SM57's.
Instruments Available: Acoustic piano, RMI electric piano, Far-fisa organ, assorted guitar amps.
Rates: 8 track, \$22/hr.; 4 track, \$15/hr.

••**IAN COMMUNICATIONS GROUP, INC.**
also REMOTE RECORDING
 10 Lipton Dr., Wilmington, MA 01887
 (617) 658-3600
Owner: Ian Communications Group, Inc.
Studio Manager: Richard B. Berbenian, Paul A. Mooradian
Engineers: A. Ron Tut, Kentaro Furutani
Dimensions of Control Rooms: 129" x 16 x 11.
Tape Recorders: Tascam 80-8 8 track; Otari MTR-10-4 4 track, MTR-10-2 2 track; Technics 1500 & 1506 2 track; Otari DP-7000 1/2" bin loop cassette duplicators; Nakamichi 670-ZX cassette decks.



IAN COMMUNICATIONS GROUP, INC.
 Wilmington, MA

Mixing Consoles: Audio Arts 12 x 4 x 2
Monitor Amplifiers: Brystor 3B's
Monitor Speakers: KEF 105, KEF 204, KEF 101, ADS 400, JBL 4311, Auratones.
Echo, Reverb & Delay Systems: DeltaLab Effectron, Master Room XL210.
Other Outboard Equipment: Orban 418-A stereo limiters, Orban Sibilance controller, Orban stereo synthesizer, EXR Exciter, Audio Arts 4200A parametric EQ, dbx Type I & II, Dolby A, B & C, Dolb HX Pro on cassette mastering decks.
Microphones: AKG C-414EB, AKG C-33 stereo, Shure SM-81, SM-85, SM-58, SM-57; E-V RE-20, RE-15; Beyer M-400, M-500; Sennheiser MD-421.
Instruments Available: Fender Rhodes, harpsichord grand piano.
Video Equipment & Services: Available upon request
Rates: In house \$35/hr; Location, on quotation per job
Extras: In-house graphics, typesetting, printing, bindery and shrink wrap/packaging capabilities. Custom leaded audio and video cassettes w/optional private labeling available, authorized distributors for Agfa, BASF and 3M/Scotch audio, video & computer products.
Direction: Service, technically superior products and a commitment to excellence.

••**J.M. STUDIO**
 149 Grand St., Newburgh, NY 12550
 (914) 562-8084
Owner: John Mulligan
Studio Manager: John Mulligan

••**JERRUTH RECORDING STUDIO**
 930 N. Duke St., York, PA 17404
 (717) 854-2542
Owner: Jerrold D. Duncan
Studio Manager: Ruth E. Duncan

••**JON MILLER PRODUCTION STUDIOS**
also REMOTE RECORDING
 7249 Airport Rd., Bath, PA 18014
 (215) 837-7550
Owner: Jon Miller
Studio Manager: Jon Miller

••**JSG PRODUCTIONS**
 723 Beacon St., Newton, MA 02159
 (617) 527-4822
Owner: Jon Golden

••**JUNKER ASSOCIATES**
 29 Ledgewood Rd., Framingham, MA 01701
 (617) 879-1612
Owner: Jeffrey Stephen Jurker

••**KEWALL PRODUCTION**
PRODUCTIONS RECORDING/RECORDS
also REMOTE RECORDING
 77 Bayshore Rd., Bayshore, NY 11706
 (516) 586-2486/6436
Owner: Keith A. Gutschwager
Studio Manager: Walter K. Gutschwager

••**KING HENRY PRODUCTIONS**
also REMOTE RECORDING
 1855 Fairview Ave., Easton, PA 18042
Office: (215) 258-4461; **studio:** (717) 839-9248
Owner: Henry Casella
Studio Manager: Henry Casella

••JIMMY KRONDES VIDEO & AUDIO RECORDING STUDIO
2 Musket Lane, Darien, CT 06820
(203) 655-3660
Owner: Jimmy Krondes

••LIP SYNC MUSIC INC.
43 William St., Smithtown, NY 11787
(516) 724-3055
Studio Manager: Bill Littlefield

•THE LITTLE STUDIO
also REMOTE RECORDING
Box 416, Rockland, MN 04841
(207) 594-2497
Owner: Helmut Vles
Studio Manager: Helmut Vles

•LUV SOUND
980 Suffolk Ave., Brentwood, NY 11717
(516) 273-6880
Owner: Bob Luv
Studio Manager: Bob Luv

••MICRO MIX AUDIO LABORATORY
4015 Fairfield Ave., Munhall, PA 15120
(412) 464-0807
Owner: Jim Wilson Jeff Bower

••MUSICO-PRODUCTIONS
also REMOTE RECORDING
c/o 7294 Michael Rd., Orchard Park, NY 14127
(716) 675-7052
Owner: David Musial
Studio Manager: David Musial

•MUSKRAT PRODUCTIONS, INC
also REMOTE RECORDING
44 North Central Ave., Elmsford, NY 10523
(914) 592-3144
Owner: Smith Street Society Jazz Band
Studio Manager: Bruce McNichols

••NATURAL SOUND STUDIO
53 Ross Ave., Leominster, MA 01453
(617) 537-8988
Owner: Dennis Lancey
Studio Manager: Dennis & Pat Lancey

••NO CRUST RECORDING STUDIO
East Greenbush Plaza, East Greenbush, NY 12061
(518) 434-2014
Studio Manager: Thomas Rella

••NORTH COUNTRY SOUNDS/
EASTMAN TELEPRODUCTIONS
also REMOTE RECORDING
175 Bunker Hill Rd., Auburn, NH 03032
(603) 483-2662
Owner: Tom Bartlett
Studio Manager: Tom Bartlett

••NORTHEAST SOUND STUDIO
P.O. Box 208, West Newton, MA 02165
(617) 894-2973
Owner: Pamela Smith Gary Smith
Studio Manager: Gary Smith

••NORTHERN LITES AND SOUND STUDIOS
also REMOTE RECORDING
36 Cedarwood Terrace, Georgia, VT 05468
(802) 893-1220
Owner: Tracy L. Lord, P.R. Appleget
Studio Manager: Tracy L. Lord, P.R. Appleget

••OAK GROVE RECORDING STUDIO
65 Clinton St., Malden, MA 02148
(617) 321-1017
Owner: Emenee Productions
Studio Manager: Mark Hanrahan

•OCASONIC RECORDING STUDIO
714 Almond St., Vineland, NJ 08360
(609) 794-2377
Owner: Peter Ocasio III
Studio Manager: Peter Ocasio III

••112 PRODUCTIONS
3090 Rte. 112, Medford, NY 11763
(516) 732-1061
Owner: WBLI Radio
Studio Manager: Neal Ferraro, Len Rothberg

••PA DA RECORDING
also REMOTE RECORDING
27 Washington Square N., Room 4D, New York, NY 10011
(212) 228-1808
Owner: R A Miller
Studio Manager: Eddy R. Davis

••PASS (The Public Access Synthesizer Studio)
16 W. 22nd St., Room 902, New York, NY 10010
(212) 206-1680
Owner: Harvestworks Inc.
Studio Manager: Gerald Lindahl

••PEABODY RECORDING STUDIOS
also REMOTE RECORDING
1 East Mt. Vernon Place, Baltimore, MD 21202
(301) 659-8136
Owner: Peabody Institute of the John Hopkins University
Studio Manager: Alan P. Kefauver
Dimensions of Studios: A: 20 x 32; B: 450 seat hall.
Dimensions of Control Rooms: A: 12 x 20; B: 15 x 20
Tape Recorders: Ampex MM-1200 24 track, Ampex ATR-104 4 track; (2) Ampex ATR-102 2 track; (2) Ampex ATR-802 2 track; Sony PCM 701 es/VO-5850 2 track digital; Tascam 122 cassette
Mixing Consoles: A: Sound Workshop 1600 w/VCA; B: Sound Workshop Series 30 w/VCA.
Monitor Amplifiers: UREI, JBL and SAE.
Monitor Speakers: JBL 4430; UREI 811; Tannoy Gold 10.
Echo, Reverb & Delay Systems: Lexicon 224; Lexicon 200; DeltaLab DL-2. AKG BX-10E.
Other Outboard Equipment: UREI LA4 Compressors (4); UREI 1178 limiters (2); UREI 546 equalizer; UREI 565T filters; MicMix Dynalex; Lang PEQ-2A equalizers; dbx noise reduction (36 channels); UREI equalizers.
Microphones: Neumann KM-84s, KM-83s, KM-86s, U-87s, KM-88s, U-67s (tube), SM-69s; AKG 414EB-48s, 422s, Milab DC-63s; Sony C-37Ps; Beyer M-500s, M-160s, M-260s, M-101s, M-201s, M-69s; Electro-Voice dynamics; Shure dynamics; AKG dynamics; UREI direct boxes; PZMs and much more
Instruments Available: Steinway 9' concert grand, Steinway 7' concert grand, other instruments and devices on request.
Rates: Call for rates.
Extras: Studio A is tied to a 750 seat Concert Hall with a stage suitable for a 100 piece orchestra, and is available for a nominal charge. A full duplicating facility is also on premises.
Direction: The Peabody Recording Studios is a classically oriented full service studio serving the needs of The Peabody Conservatory of Music and the surrounding community.

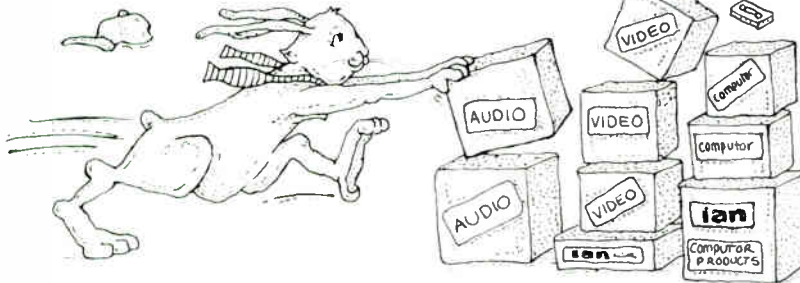
••PHANTASMAGORIA PRODUCTIONS, INC.
630 Ninth Ave., Suite 801, New York, NY 10036
(212) 586-4890
Owner: Keith Robinson
Studio Manager: Shirley Lee

••POSTHORN RECORDINGS
also REMOTE RECORDING
142 West 26th St., 10th Floor, New York, NY 10001
(212) 242-3737
Owner: Jerry Bruck
Studio Manager: Louise Bloomfield

••RADIOBEAT
P.O. Box 75, Allston, MA 02134 (Kenmore Sq., Boston)
(617) 353-1608
Owner: James Dufour
Engineers: Lou Giordano, Chief; Jimmy Dufour, Josiah McElheny

Dimensions of Studios: 250 sq. ft. (non-rectangular) and 2 isolation rooms
Dimensions of Control Rooms: 125 sq. ft. (non-rectangular)
Tape Recorders: Otari MX5050 8 track; Otari MX5050B 2 track; TEAC A-3300 SX 2 track; (3) Sony cassette
Mixing Consoles: Tangent series 4 20 / 4 and 2
Monitor Amplifiers: Phase Linear, Dynaco, Marantz
Monitor Speakers: EAW MS100, Bose 301, JBL 4301B, Auratone
Echo, Reverb & Delay Systems: Tapco 4400 reverb, DeltaLab DL4 digital delay, tape, Orban 111B, Lexicon PCM41, live chamber
Other Outboard Equipment: Ashly SC50 comp/limiters (2), Ashly SC66A stereo parametric EQ, Tapco 2200 stereo graphic EQ, Ashly SC33 stereo noise gate.
Microphones: Neumann U87; (2) Sennheiser MD421, AKG D19E, RCA 77; RE16, RE10; Shure SMS8 (2), SM57 (3), Primo EMU4520 (condenser) (2); E-V 666, Neumann KM84 (2); AKG D12E; others on request.
Instruments Available: Fender Precision, Cambridge upright piano, Acetone electric organ, many amps by Fender, Sunn, Ampeg
Rates: Call for rates.

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 (203) 684-5617 or 649-0342
 Owner: Rob Rainwater, Bob Kuhl
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••**RECORDED PUBLICATIONS LABORATORIES**
also REMOTE RECORDING
 1100 State St., Camden, NJ 08105
 (609) 963-3000
 Owner: Recorded Publications Mfg. Co., Inc.
 Studio Manager: Ernest W. Merker

••**REED STREET STUDIO**
also REMOTE RECORDING
 160 Reed St., Lexington, MA 02173
 (617) 862-4872
 Owner: Kenny Epstein
 Studio Manager: Kenny Epstein

••**ROAR PRODUCTIONS**
also REMOTE RECORDING
 6655-H Dobbin Rd., Columbia, MD 21045
 (301) 596-0600
 Owner: Steven Rosch
 Studio Manager: Steven Rosch

••**ROSEMARY MELODY LINE**
also REMOTE RECORDING
 633 Almond St., Vineland, NJ 08360
 (609) 696-0943
 Owner: Rosemary Melody Line
 Studio Manager: Dennis Link

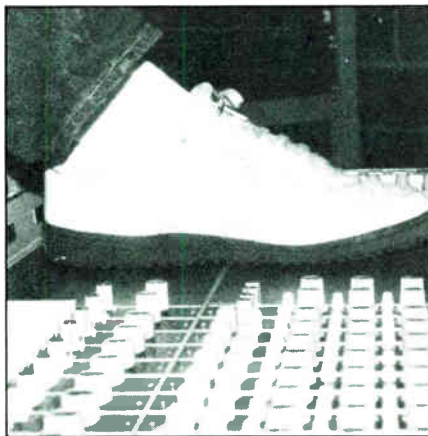
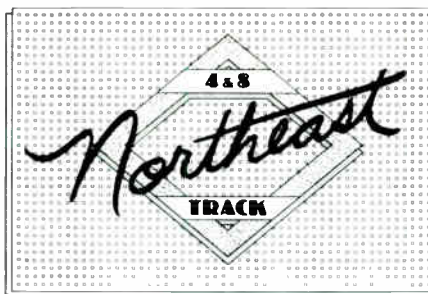
••**ROSS-GAFFNEY, INC.**
 21 W. 46th St., New York, NY 10036
 (212) 719-2744
 Owner: James Gaffney
 Studio Manager: Richard Weigle

••**SADLER RECORDING STUDIO INC.**
 118 E. 28th St., New York, NY 10016
 (212) 684-0960
 Owner: John H. Sadler
 Studio Manager: John H. Sadler

••**SAGITAEUS PRODUCTIONS**
also REMOTE RECORDING
 R.D. #1, Box 930, Bingham, MN 04920
 (207) 672-3295
 Owner: Norm Pooler
 Studio Manager: Norm Pooler, Audio, Frank Pooler, Video

••**THE SESSION**
 20 West 37th St., New York, NY
 (212) 244-6691
 Owner: John Lotas
 Studio Manager: Pandel Collaros

••**SHUSTER SOUND STUDIOS**
 29 Burt Court, Valley Stream, NY 11581
 (516) 791-2985
 Owner: Bob Shuster
 Studio Manager: Bob Shuster
 Dimensions of Studios: 12 x 28
 Dimensions of Control Rooms: 9½ x 15.
 Tape Recorders: Scully 280 2 & 4 track (¼"-½"), TEAC/Tascam Series 70M8 8 track; TEAC 3300S ¼ track stereo; AKAI GX220 ¼ track stereo; JVC KD-75; JVC KD-10, JVC K77 and Sony TC 140 cassette decks.
 Mixing Consoles: Yamaha RM1608 16 in x 8 out; Sony MX-20 8 in x 4 out.
 Monitor Amplifiers: Sansui AU6600, Dynaco Mark III, H/H V800.
 Monitor Speakers: Altec 9865-8A, Yamaha NS10M book shelf type, Lafayette PIP model 1's.
 Echo, Reverb & Delay Systems: British Spring Reverb, Grampan Spring Reverb 636, Echoplex tape delay (tube type), Roland SDE 3000 digital delay
 Other Outboard Equipment: dbx 160 compressor/limiter; Delta Graph EQ, Dolby noise reduction; TEAC AN80, AN180, AN300; ACCSET parametric EQ, Technics SL-1500 MKII turntable, Jensen transformer direct boxes, Orban 245E stereo synthesizer.
 Microphones: AKG 451E; Neumann M-49, U-67, U-87, KM-87; Sennheiser 421, 431, 441; Shure SM-57, SM-58, SM-81; Sony ECM-22, ECM-33P; TEAC ME-180; Crown PZM.
 Instruments Available: Baby grand piano, amps, drums.
 Video Equipment & Services: JVC ¼" VTR and Sony ¾" VTR
 Rates: Call for rates. Dubbing of reel to reel and cassettes: price upon request.



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 175 Elm St., Somerville, MA 02144
 (617) 628-0085
 Owner: Non-profit private corp (Somerville Media Action Project)
 Studio Manager: John Kusiak

••**SMILING EARS SOUND**
also REMOTE RECORDING
 10167 Pasture Gate Lane, Columbia, MD 21044
 (301) 730-3695
 Owner: Gary Zeichner
 Studio Manager: Gary Zeichner

••**SONGWRITER'S STUDIOS**
also REMOTE RECORDING
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 Studio Manager: Micheal S. Brown

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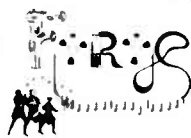
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••SOUND IMAGES RECORDING
314 Grant Ave., Duquesne, PA 15110
(412) 466-2854
Owner: Albert Puskanc
Studio Manager: Albert Puskanc
Engineers: Albert Puskanc
Dimensions of Studios: 14 x 14 x 10, plus 2 iso booths
Dimensions of Control Rooms: 14 x 14 x 8
Tape Recorders: Olan MX5050 Mark III 8 track, Olan MX5050B 2 track w/remote, Pioneer RT 1011L 2 track, Tascam 122B cassette
Mixing Consoles: Ramsa WR 8816 16 channel
Monitor Amplifiers: Crown, AB Systems, Ector, Rotel
Monitor Speakers: JBL 4312s, Auratones
Echo, Reverb & Delay Systems: DeltaLab, Echotron 4-second digital delay, (2) Furman RV-1 reverberation systems with parametric EQ, ADA Model TFX4 doubler, chorus, flange, echo
Other Outboard Equipment: dbx 180 Type I noise reduction, Valley People Gain Brain II and Kepex IIs, custom 4-band parametric EQ, various graphic EQs, click track, Peterson strobe tuner, custom made direct boxes
Microphones: Sennheiser 421s, AKG C-460 B, Shure SM57s, AKG D-12E, etc
Instruments Available: Roland IX-3P Programmable Poly Synth w/sequencer Fender precision bass, Martin D-28, Gibson 12-string acoustic, Les Paul studio, Korg guitar synthesizer, studio amps by Fender, Peavey, Carvin, Ampeg, and Kustom plus various pedals and stomp boxes
Rates: 8 track, \$25/hr Block rates available. Special introductory rate for new clients \$18/hr

••SOUNDPRISM
645 Broadway, New York, NY 10012
(212) 260-5226
Owner: Soundprism Creative Services Inc
Studio Manager: Mike Carey

•SOUND REFLECTIONS
Box 974, Cambridge, MA 02238
(617) 491-6847
Owner: T Huckle
Studio Manager: R Brundage

••SOUNDSCAPE STUDIOS
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393 Sunrise Highway, Lynbrook, NY 11563
(516) 599-4446
Owner: Jeffrey Poretzky
Studio Manager: Tim Cereste

••SOUND SYNDICATE STUDIO
also REMOTE RECORDING
308 2nd St. Morris Park, Phillipsburg, NJ 08865
(201) 454-4402
Owner: Duke Kish
Studio Manager: Duke Kish
Engineers: Duke Kish, Jake Kish, Ken Wilson, Chris Wilson
Dimensions of Studios: 16 x 16 with drum booth
Dimensions of Control Rooms: 14 x 14
Tape Recorders: Ampex (with VSO) 440 8 track, Tascam 3340 4 track, Sony 756 1/2 track, Viking-Telex 888 1/2 track; Advent cassette, Sony 8 track cassette
Mixing Consoles: Modified Tascam 10 12/8, Tapco 2000 6/2, Tascam 2 6/2
Monitor Amplifiers: Bose 1800
Monitor Speakers: Altec 604's, Auratones
Echo, Reverb & Delay Systems: Roland Space Echos, Roland digitals & Roland chorus Custom reverb by CCC
Other Outboard Equipment: Furman Parametrics, Wes Black parametric EQ-Sweep, Roland graphics, Roland phaser, Creative Concepts' noise reduction, LLL stereo limiters, LLL adjust peak LED metering, 30 LLL noise gate expanders, Haeco limiters, Sescom direct boxes, many effects toys including Korg Vocoder
Microphones: Neumann U-87, EV-RE 20, EV-RE15, EV-RE10, Shure 57s, Audio Technica 813s, AKG D-12, Shure 58's, Sony EC30, Hockey-Puck pick-up and assorted Shure, Sony etc
Instruments Available: Lester upright piano, Roland strings, Roland synthesizers, Hohner planet, Musser vibes, individually mixed studio tuned wood shell Camco drums with Zildjian cymbals, pre-CBS Precision bass, Telecaster, Ovation custom Balladeer acoustic, vintage Ampeg Portaflex, Vito alto sax, plus a broad selection of instruments & amps with advance notice
Video Equipment & Services: Currently expanding with the addition of our Ampex 1" professional video recorder
Rates: \$30/hr Block rates are available

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Studio Manager: Edward J Remusat

••SOUNDWAVE RECORDING STUDIOS, INC.
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2 West 45th St., Suite 903, New York, NY 10036
(212) 730-7366
Studio Manager: Carol Baker

••SPLICE OF LIFE
6 Sparhawk St., Brighton, MA 02135
(617) 782-3384
Owner: Hanuman Dass
Studio Manager: David Zuckerman

•STAFFORD SOUND
also REMOTE RECORDING
11 W. 17th St., New York, NY 10011
(212) 929-1441
Owner: Lee Stafford
Studio Manager: Thom Sawyer

••STARDUST RECORDING STUDIO
615 Valley Rd., Upper Montclair, NJ 07043
(201) 746-2359
Owner: George Louvis
Studio Manager: George Louvis

••STILLWATER SOUND STUDIO
also REMOTE RECORDING
11 Turn of River Rd., Stamford, CT 06905
(203) 322-0440
Owner: Dominick Costanzo
Studio Manager: Dominick Costanzo
Dimensions of Studios: 24 x 14
Dimensions of Control Rooms: 10 x 9
Tape Recorders: 3M M-56 8 track (1", 30 ips), Ampex 351-2 2 track (1/4"), TEAC 3340 4 track (1/4"), Advent 201 cassette
Mixing Consoles: Allen & Heath 12 x 2 modified, 12 in x 2 out, Allen & Heath 142, 6 in x 2 out
Monitor Amplifiers: McIntosh MC2100, CM Labs 911
Monitor Speakers: JBL L-100, Altec 604-D, ADS 300, others on request
Echo, Reverb & Delay Systems: Ursa Major Space Station SST-282; others on request
Other Outboard Equipment: Orban 622B parametric EQ, Universal Audio 175B limiters, Allison Kepex, Neve 1064 mic pre-EQ, others on request
Microphones: Neumann U67s, Sony C37As, AKG C414EBs, D12E, E-V RE20, RE15, Shure SM56s, Sennheiser MD421s, others on request
Instruments Available: Yamaha CP-70 electric grand piano, Wuritzer electric piano, Leedy drum kit, vintage Fender and Ampeg amplifiers, others on request
Rates: \$20/hr Block rates available

•STROBE LIGHT SOUND STUDIO
1219 Bergen St., Brooklyn, NY 11213
(212) 771-3411
Owner: Andrei Strobert
Studio Manager: Andrei Strobert

•STUDIO 55 PRODUCTIONS
also REMOTE RECORDING
42-55 Colden St., Suite 11P, Flushing, NY 11355
(212) 762-1264
Owner: George Lerner
Studio Manager: George Lerner
Engineers: George Lerner, B.S
Dimensions of Studios: main 16 x 28, auxiliary 14 x 16
Dimensions of Control Rooms: 12 x 16
Tape Recorders: TEAC (reel-reel) 5100 4 track, TEAC (cassette) 860A 4 track, Phase Linear 8000 2 track, (2) Pioneer 8181 cassette decks (customized)
Mixing Consoles: Fender, (CBS Labs) M12 24 (two of above, one-8th channel, one for left channel) Complete customized
Monitor Amplifiers: Phase Linear D500 (3), SAE Mark XXV #6, Pioneer SPEC 1 & 2
Monitor Speakers: Altec Lansing A19 (6) custom, ESS Profession #6
Echo, Reverb & Delay Systems: (2) Phase Linear 1100 Dynamic Expander and noise reduction, MXR system for delay, eq, Roland Chorus Master
Other Outboard Equipment: SAE Mark XXVII-B 1/2 octave EQ (2), (3) Phase Linear parametric EQ, Phase Linear 5100 Sound Analyzer, (2) Phase Linear 8100 linear turntables
Microphones: Shure SM58, SM57, SM56s, AKG D1000, various E-Vs
Instruments Available: Full drums (Gretsch), lead guitar (Gibson, Les Paul), keyboards, (2) 100W Marshall stacked lead and bass systems (4 x 12) 2 (4 x 15)2 Others upon request

Video Equipment & Services: 1/2 track VHS color at request. 24 hr notice
 Rates: Special for cassette (stereo) 2-track demo \$25/hr. plus tape. Four track \$35/hr includes tape

••STUDIO 44
 44 Country Corners Rd., Wayland, MA 01778
 (617) 358-4075
 Owner: Buddy MacLellan

••STUDIO N
 706 Waverley St., Framingham, MA 01701
 (617) 872-6843 or 965-0778

Owner: Studio N Productions
 Studio Manager: Philip Nodiff
 Engineers: Dave Nodiff, Bob Higgins, Rooster O'Brien. Independents encouraged.
 Dimensions of Studio: 13 x 10 x 8. Iso booth: 7 x 9 x 8.
 Dimensions of Control Rooms: 13 x 10 x 8
 Tape Recorders: TEAC/Tascam 80-8 w/full dbx 8 track; Revox A77 1/2 track. Now available: Sony PCM-F1 digital 2 track; various cassette decks.
 Mixing Consoles: Ramsa 8112 12 x 2.
 Monitor Amplifiers: Marantz
 Monitor Speakers: JBL-100, Auratone 5C, Audio Source.
 Echo, Reverb & Delay Systems: Ursa Major Space Station, DeltaLab Effectron DDLs (2), additional delays upon request.
 Other Outboard Equipment: dbx 160X limiter/compressor, E-H Flanger; other toys/effects furnished upon request.
 Microphones: Neumann, AKG, Sennheiser, Sony, Shure, others; D. Jensen direct.
 Instruments Available: Linn LM-1 and LinnDrum, Fender: Tele Deluxe, Strat; Champ "tweed" amps; Acetone organ, various Casio keyboards. Other instruments available.
 Rates: \$25/hr. Block discounts available. Please call for full info.

••STUDIO 3
 74 Elm St., P.O. Box 8643, Portland, ME 04104
 (207) 772-4446
 Owner: Tom Blackwell, Tim Tierney
 Studio Manager: Tim Tierney

••STUDIO X
 47 Ethelbert Place, Ridgewood, NJ 07450
 (201) 444-9147
 Owner: Bill Tesar, Rave Tesar
 Studio Manager: Bill Tesar



Engineers: Rave Tesar, Bill Tesar, Steve Tesar, Jon Buck.
 Dimensions of Studios: A: 17 x 12; B: 15 x 12; iso 7 x 7.
 Dimensions of Control Rooms: 15 x 9
 Tape Recorders: Otari MX5050 Mark III 8 track; Dokorder 1140 4 track; Technics 1520 2 track, (2) Technics RSM 280 cassettes.
 Mixing Consoles: (2) Tascam model 5B modified & cascaded 16 in x 9 out.
 Monitor Amplifiers: BGW, Phase Linear
 Monitor Speakers: JBL 4313, Auratone 5C, Buyukas Audio.
 Echo, Reverb & Delay Systems: G.B.S. reverb system, Ursa Major Space Station, Lexicon PCM 42, Lexicon PCM 41.
 Other Outboard Equipment: 10 channels dbx 150 noise reduction, Castle flanger-Chorus II, (2) Valley People Dynamites, Symetrics dual signal gate, (2) dbx 160 comp/limiters, (2) UREI LA4 comp/limiters, MXR dual 16 band EQ, Biamp dual 10 band EQ, Dr. Click.
 Microphones: Assorted E.V., AKG, Sennheiser, PZM, Shure, Sony, Countryman, Whirlwind direct boxes.
 Instruments Available: Simmons 5 piece drum set, LinnDrum, Drumulator, Sonor drums, LP Perc., Kaim grand piano, Baldwin spinet, Fender Rhodes, Yamaha DX7, Korg Poly 6, Mini Moog, Moog Rogue, Hammond B3, Hohner D6 clavinet, Elica string ensemble, Casio 101, Yamaha, Fender, Polytone amps.
 Rates: 8 track, \$25/hr., Block rate \$20/hr

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 (617) 423-1929
 Owner: Syntone Inc.
 Studio Manager: Daniel Mockensturm

••TEL-E-VUE PRODUCTIONS
 also REMOTE RECORDING
 Old Rte. 17, Box 217, Ferndale, NY 12734
 (914) 292-5965
 Owner: Paul Gerry
 Studio Manager: Pat Gerry

••THIRD STORY RECORDING
 also REMOTE RECORDING
 3436 Sansom St., Philadelphia, PA 19104
 (215) 366-5998
 Owner: John Wicks, Scott Herzog
 Studio Manager: John Wicks

••TOWER STUDIOS
 Allaire Airport Industrial Park,
 Farmingdale, NJ (Rt. 2, Box 300E) 07727
 (201) 938-4466
 Owner: Chris Cavallaro
 Studio Manager: Chris Cavallaro

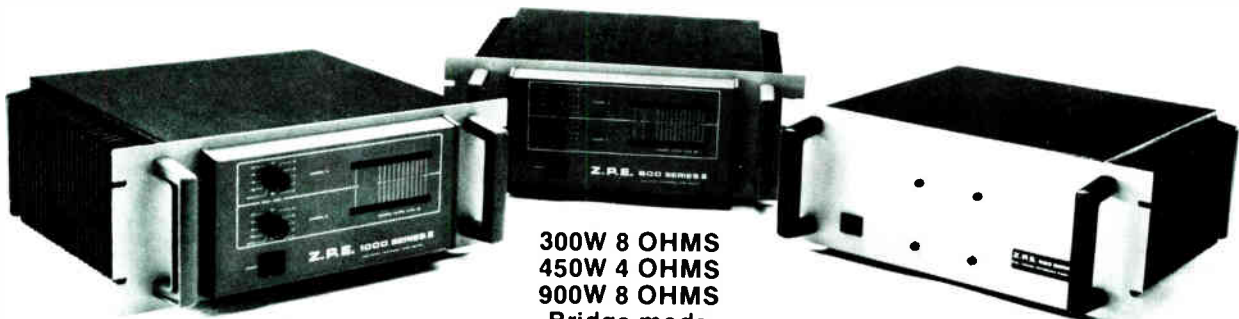
••TRAXX
 Crestway Rd., RR 1, New Fairfield, CN 06812
 (203) 746-3561
 Owner: Jim Beck
 Studio Manager: Jim Beck

••TREE FROG PRODUCTIONS
 Box 360, Hollis Center, ME 04042
 (207) 929-5415
 Owner: Tim McLaughlin
 Studio Manager: Tim McLaughlin

••UNITED MASTERWORKS RECORDING CO. LTD.
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 44 Canaan Place, Allendale, NJ 07401
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 Studio Manager: Edwin Chapman, Jr.

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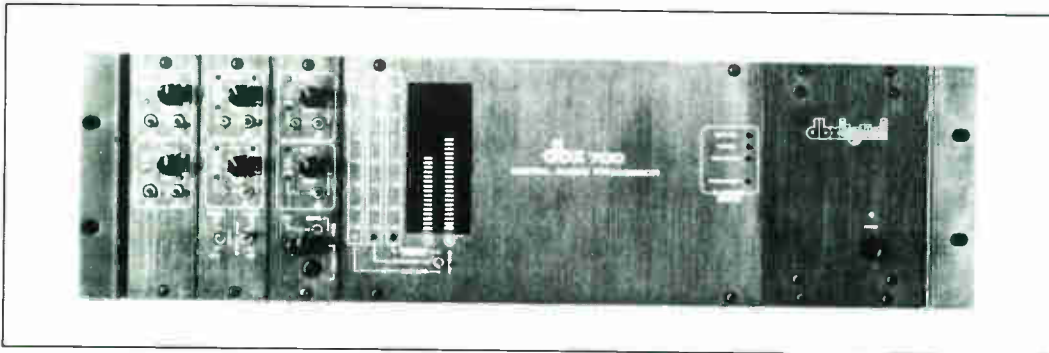
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••WEBCO RECORDING
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(301) 253-5962
Owner: Wayne E. Busbice
Studio Manager: Wayne E. Busbice, John W. Busbice

••WHITE CLOUD RECORDING
P.O. Box 275, Uniondale, NY 11553
(516) 483-7823
Owner: P. Antonucci, H. Stein
Studio Manager: P. Antonucci, H. Stein

••WHITEHALL STUDIO
26 Whitehall Rd., Rochester, NH 03867
(603) 332-8614
Owner: Alphonse B. Thernien
Studio Manager: Alphonse B. Thernien, Jr.

••WIDENER UNIVERSITY RECORDING STUDIO
also REMOTE RECORDING
14th & Chestnut Sts., Chester, PA 19013
(215) 499-4338
Owner: Widener University
Studio Manager: John A. Vanore
Engineers: Terry Hoffman, John Vanore.
Dimensions of Studios: 40 x 50 x 16 (tiered floor & ceiling).
Dimensions of Control Rooms: 18 x 10.
Tape Recorders: Otari 5050 8 track, Tascam 40-4 4 track, Otari 5050B 2 track, Technics 1500 2 track, Technic M85II cassette.
Mixing Consoles: Neotek 1E 16 x 8.
Monitor Amplifiers: Crown.
Monitor Speakers: Eastern Acoustics, Auratones.
Echo, Reverb & Delay Systems: MicMix XL-305 Lexicon PCM-42.
Other Outboard Equipment: Orban 424A gated limiter, Gain Brain, Kepex, Ashly parametric EQ, Bi-amp graphic EQ, dbx for 8 track, Dolby A for 2-track.
Microphones: AKG Tube, RCA 77DX's, RCA BK-11's, Neumann U-87, AKG 414/P48's, E-V RE-20's, Crown PZM, Sony C-37P's, Sony 989 stereo's, Sony ECM-56's, Beyer M500, AKG 224, AKG 222, AKG 202, AKG 200, AKG D-1000, AKG D-12, Countryman direct boxes.
Instruments Available: Baldwin grand piano, Fender Rhodes piano, drum set, amps, tympani & percussion.
Video Equipment & Services: Studio is suitable for a video shoot.
Rates: Call (215) 499-4338.

••WINGS-AS-EAGLES
also REMOTE RECORDING
151 Keelley Ave., Warwick, RI 02886
(401) 738-6914
Owner: Bill Montella, Jr.
Studio Manager: Bill Montella, Jr.

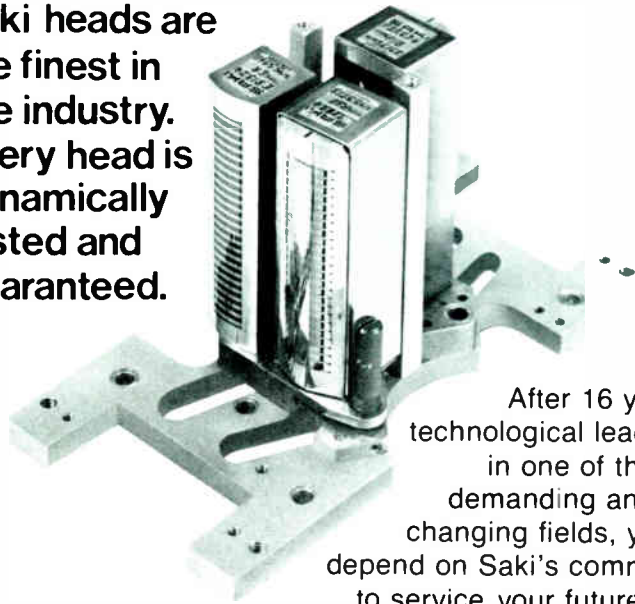
••ZALMO SOUNDS
also REMOTE RECORDING
Ditmas Ave. and East 8th St., Brooklyn, NY 11218;
Box 681, Brooklyn, NY 11230-0681
(212) 633-4166
Owner: Zalman Schreiber
Studio Manager: Shomer Shabbos

••ZARR SOUND STUDIO
1819 Ave. N, Brooklyn, NY 11230
(212) 339-1599
Owner: Fred Zarr
Studio Manager: Don Feinberg

••ZBS PRODUCTIONS
also REMOTE RECORDING
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(518) 695-6406
Owner: Meatball Fulton
Studio Manager: Miss Phoenix

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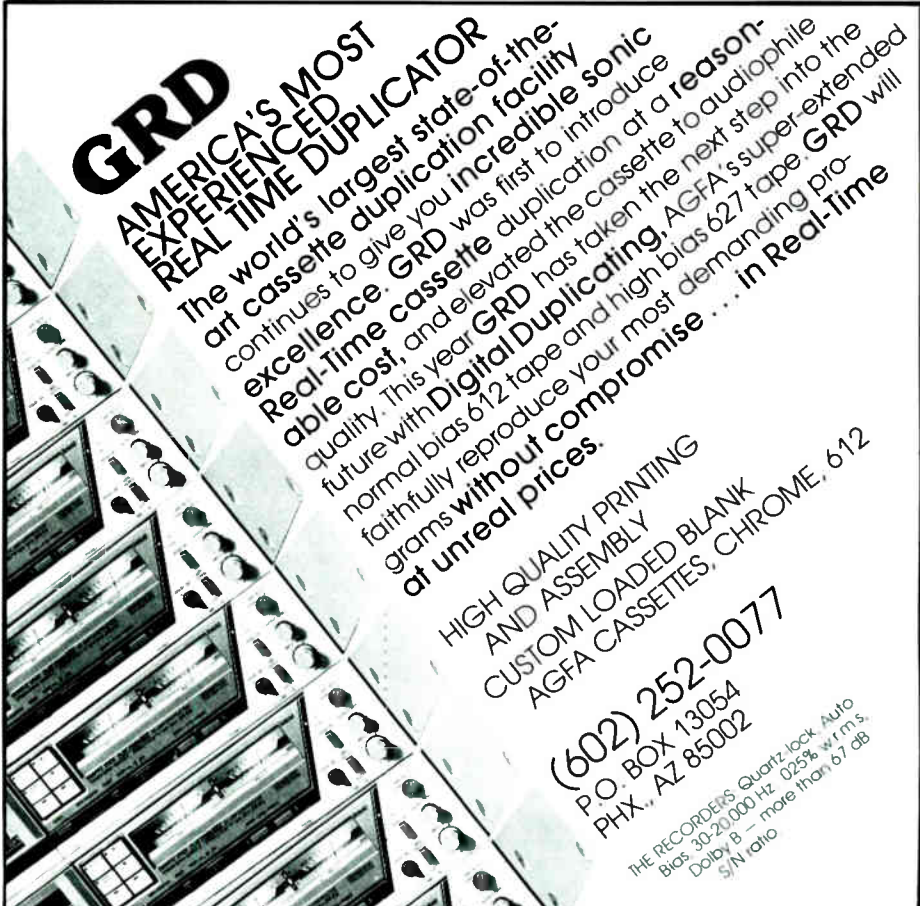


SAKI MAGNETICS, INC.

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AMERICA'S MOST EXPERIENCED REAL TIME DUPLICATOR

The world's largest state-of-the-art cassette duplication facility continues to give you incredible sonic excellence. GRD was first to introduce Real-Time cassette duplication at a reasonable cost, and elevated the cassette to audiophile quality. This year GRD has taken the next step into the future with Digital Duplicating. AGFA's super-extended normal bias 612 tape and high bias 627 tape. GRD will faithfully reproduce your most demanding programs without compromise... in Real-Time at unreal prices.

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THE RECORDERS: Quartz-lock Auto Bias 30-20,000 Hz 0.25% w/r.m.s. Dolby B - more than 67 dB S/N ratio

Circle #042 on Reader Service Card



•••AIR CRAFT STUDIOS

Dormont Square, Pittsburgh, PA 15216
(412) 343-5222
Owner: Lost In Music Inc
Studio Manager: Barney Lee
Engineers: Barney Lee Henry Yoder Gary Hohman
Dimensions of Studios: Studio A 19 x 30, Studio B 13 x 20, Vocal Booth 9 x 9 triangular
Dimensions of Control Rooms: 13 x 20
Tape Recorders: Ampex Model MM 1200 16 track, Otari MKIII 8 track (2) Otari 5050B 2 track
Mixing Consoles: Allen & Heath Series B Syncon 26 x 24
Monitor Amplifiers: Crown, Nikko, SAE
Monitor Speakers: JBL 4430, JBL 4311, TOA
Echo, Reverb & Delay Systems: DeltaLab DL4, Orban stereo reverb Echoplate reverb
Other Outboard Equipment: Signal gates, UREI compressor/limiter, parametric EQ, DeEsser, Valley People Kepey and Gain Brain
Microphones: AKG Shure, Sennheiser, E-V, Calrec, Sony
Instruments Available: 7 Baldwin grand piano, CP70 Yamaha grand Mini Moog, Hammond B3, Oberheim OB-SX, Fender Rhodes BC Rich, Gibson, Fender, Guran guitars
Rates: \$40/hr plus tape 8 track, \$70/hr plus tape 16 track

•••ALL STAR SOUND STUDIOS

4 First Ave., Bloomfield, NJ 07003
(201) 743-8497
Owner: Steve Becker, Jay Vican
Studio Manager: Steve Becker

•••AMBIENT INC.

9622 52nd Ave., College Park, MD 20740
(301) 982-9288
Owner: Raymond E. Tilken
Studio Manager: Raymond E. Tilken

•••AMPHION ENTERPRISES, INC.

114 Brooklyn St., Rockville, CT 06066
(203) 871-1786
Owner: Edward J. Adams
Studio Manager: Edward J. Adams

•••ARTCRAFT VIDEO & AUDIO RECORDING STUDIOS

285 E. 49th St., P.O. Box 55 Rugby, Brooklyn, NY 11203
(212) 778-5150
Owner: Michael Serby
Studio Manager: Anthony Seimiano

•••AUDIOVISIONS

also REMOTE RECORDING
Foley Rd., Colchester, VT 05446
(802) 864-0848
Owner: Stephen Goodrich, Richard Longfellow, Douglas Lang, Peter Wilder
Studio Manager: Douglas Lang

•••THE AUDIO DEPARTMENT, INC.

110 W. 57th St., New York, NY 10019
(212) 586-3503
Owner: Joe Danis
Studio Manager: Jane Biecher

•••AUDIO IMAGE

also REMOTE RECORDING
95 Little Tree Ln., Hilton, NY 14468
(716) 392-9500
Owner: Larry Ellis
Studio Manager: Larry Ellis

•••AUDIO-TRACK SPECIALISTS

also REMOTE RECORDING
260 Ohio St., Johnstown, PA 15902
(814) 539-4197
Owner: Frank J. McCloskey, Earl S. Shope
Studio Manager: Frank McCloskey
Engineers: Chief Engineer & Technician Frank J. McCloskey, First Assistant Kevin Salem
Dimensions of Studios: 20 x 25
Dimensions of Control Rooms: 15 x 20
Tape Recorders: TEAC/Tascam 85-16 w/dbx 16 track, Technics RS 1500US 2 track, JVC cassette deck, BIC T 2 2 speed cassette deck
Mixing Consoles: Tangent 4A Series 16x16x4x2
Monitor Amplifiers: ASR Power Amps
Monitor Speakers: Phase Linear E-V Sentry 100 Auratone Infinities
Echo, Reverb & Delay Systems: Great British Spring stereo reverb, Loft analog delay-flanger, LT Sound ECC Microplate
Other Outboard Equipment: Whirlwind Direct Boxes dbx compressor/limiter, MXR noise gates/line drivers, Symetrics patch bay, Symetrics parametric EQ, DOD 1/3 octave EQ (2) Omni Craft GT-4s, all dbx noise reduction (16 track and 2 track Tascam EQ)
Microphones: Dynamics & condensers Beyer Dynamic E-V Shure, Sony, TEAC/Tascam, AKG, Audio-Technica Countryman EMT pressure-zone mikes
Instruments Available: Baby grand piano Ludwig drum kit Casio CT-202, other synthesizers available upon request
Video Equipment & Services: Available upon request
Rates: 16 track recording and mixing \$48/hr Album production packages & block rates available

•••BAKER ST. STUDIOS

10 Wheeler Ct., Watertown, MA 02172
(617) 924-0065
Owner: Baker, Baker and Baker
Studio Manager: Tiffany Newport
Engineers: Roger L. Baker, Darleen Wilson Rick Kolow Andy Mendelson
Dimensions of Studios: 40 x 20 w/5 x 6 Iso booth on wheels variable acoustics and video hard cyc
Dimensions of Control Rooms: 15 x 18 Design by Abadon/Sun
Tape Recorders: Otari MTR-90 16 track Otari 7800 8 track, Otari MTR-10 2 track, Eumig Cassette (2)
Mixing Consoles: Tangent (w/automation) 3600 24 x 36
Monitor Amplifiers: Crown DC 300 (Monitors), Crown DC 60 (2 for headphones)
Monitor Speakers: UREI 811, Auratone
Echo, Reverb & Delay Systems: Echoplate large plate Biamp Spring, DeltaLab DL-4 digital delay, Ibanez 230 Analog delay (2) A/D A STD-1 stereo delay
Other Outboard Equipment: Eventide Phaser MXR Auto-phaser, dbx 160X compressors, UREI 1178 dual comp limiters, UREI 546 dual 4-band parametric EQ, MXR Pitch Transposer, Orban Sibilance controller, Kepey (4), Gain Brain (2), Furman parametric EQ, MXR 31 band graphic EQ (2), dbx noise reduction all channels
Microphones: Neumann U-67 U-47, KM-87, AKG 451 s E-V

RE-20, RE 55, RE 16, CS-15, Sennheiser 421, 441, Shure SM-57, Beyer 160 260, RCA 77 DX, Crown PZM
Instruments Available: Shomer grand piano, Hammond organ, Wurliizer electric piano, Arp Omni Moog, Fender and Ampeg tube amps
Video Equipment & Services: 3/4" editing facility with JVC KM 200 SEG and JVC VE-90AT Edit Controller, 10 x 20 Hard Cyc with lights, JVC KY-1900U cameras (2), KNOX Character Generator Studio or location shoots
Rates: 16 track \$325/10 hrs 8 track \$195/10 hrs, Video, Comparable custom packages



THE BARGE SOUND STUDIO
Wayne, NJ

•••THE BARGE SOUND STUDIO

92 Lionshead Drive West, Wayne, NJ 07470
(201) 835-2538
Owner: Jim Barge
Studio Manager: Jim Barge
Engineers: Jim Barge
Dimensions of Studios: 17 x 27
Dimensions of Control Rooms: 14 x 16
Tape Recorders: Auto Tec L 16 16/8 track, Otari MX 5050 2SHT 2 track, TEAC 3340 4 track Studer A80 2 track
Mixing Consoles: Custom 20 in x 8 out w/MCI JH-600 mic preamp
Monitor Amplifiers: SAE 2200 Yamaha P2100 Crown DC 300A, Yamaha P2100 w/Loft 402 crossover
Monitor Speakers: Altec 604/4G in Altec 612C cabinets Auratones
Echo, Reverb & Delay Systems: EMT 140TS Eventide H910 Harmonizer DeltaLab DL 2 MICMIX XL-305, Ibanez MD2000
Other Outboard Equipment: dbx noise reduction, Soundcrafts-men graphic EQ dbx 160 compressor/limiter, Orban 622B parametric EQ, Orban DeEsser Aphex CX-1 compressor/expander, Eventide flanger Klark DN3030A graphic EQ
Microphones: AKG C414EB C505E D12E, Neumann U87, KM87, E-V RE20 DS35, Shure SM57 Sony ECM 280, ECM 270 ECM 170 ECM 22, Beyer M500, RCA 77DX
Instruments Available: Kawai grand piano Hammond B3 w/Leslie Ludwig drums percussion (various) amps Fender Rhodes Minimoog ARP strings
Rates: 16 track \$45/hr 8 track \$35/hr Flexible allowances for block bookings

•••BIRCH RECORDING STUDIO

113 West Main St., Secretary, MD 21664
(301) 943-8141
Owner: Paul R. Birch
Studio Manager: Jeff Wanex

•••BLUE PLANET ENTERPRISES

also REMOTE RECORDING
2295 Westfall Rd., Rochester, NY 14618
(716) 244-7107
Owner: Jack N. Prewitt
Studio Manager: Jack N. Prewitt

•••C. BROOKS REMOTE

ONLY REMOTE RECORDING
899 Troy Ave., Brooklyn, NY 11203
(212) 282-7344-44
Owner: Brooks Clyde
Studio Manager: Northern High Clyde Brooks

•••C&C STUDIOS...AUDIO/VIDEO SPECIALTIES

also REMOTE RECORDING
R.D. #1, Box 581-A, Glassboro, NJ 08028
(609) 881-7645
Owner: Edward P. Candelora Jr
Studio Manager: Terr. Candelora

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THE C460B

condensator microphone is designed for applications requiring the widest dynamic range. With its low self-noise (15dB SPL), the C460B captures sounds from silence to the most demanding sound pressure levels (140dB) with no change in THD even with selectable attenuation. For information on additional unique features, write to us.



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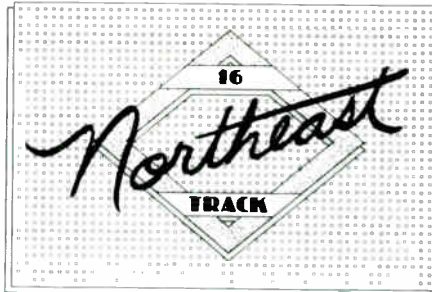
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•••MASON HALL STUDIOS
 also REMOTE RECORDING
 Mason Hall, SUNY, Fredonia, NY 14063
 (716) 673-3153
 Owner: State Univ. of New York
 Studio Manager: Ken Beckenstein

•••MCE RECORDING STUDIOS
 also REMOTE RECORDING
 467 State St., Schenectady, NY 12305
 (518) 382-1762
 Owner: Mark C Ernst
 Studio Manager: Mark C Ernst

•••MEGG MUSIC
 345 E. 62nd St., New York, NY 10021
 (212) 838-3212
 Owner: Donald Dannemann, Norris O'Neill
 Studio Manager: Pete Serenita

•••MIDNIGHT MODULATION
 2211 Pine Lane, Saugerties, NY 12477
 (914) 246-4761
 Owner: Michael Bitterman
 Dimensions of Studios: 20 x 20
 Dimensions of Control Rooms: 10 x 8
 Tape Recorders: Tascam 85-16B 16 track, Tascam 80-8 8 track,
 Otari 5050B 2 track, Tascam 122 cassette 2 track
 Mixing Consoles: Sound Workshop 30, 16
 Monitor Amplifiers: BGW 750B Symetrix
 Monitor Speakers: JBL 4411 (control room), Klipsch Cornwall
 (studio), TOA cubes
 Echo, Reverb & Delay Systems: Ursa Major 8 x 32 digital
 reverb; Lexicon PCM41 digital delay, Effectron 1024, Marshall
 Time Modulator
 Other Outboard Equipment: dbx 160X limiter/compressor,
 UREI 1176LN limiter/compressor, DOD graphic EQ, Marshall
 Time Modulator, Valley People Dynamite, Orban 622B
 parametric EQ, Aphex Aural Exciter
 Microphones: Neumann U87 (2); E-V RE20, Sennheiser 421U
 (2), Shure SM57 (2), SM81 (2); Sony ECM 33, ECM 250, AKG
 414 P48 EB; RCA 77DX
 Instruments Available: Yamaha grand piano, ARP 2600, Linn
 Drum computer, Poly 61 synthesizer, 360 digital keyboard
 Video Equipment & Services: VHS documentation of recording
 session (Call for rates)
 Rates: 16 track, \$50/hr (\$40/bulk) Special "The \$5,000
 album"—call for details



•••MORNING STAR COMMUNICATIONS, INC.
 also REMOTE RECORDING
 1564 Temple Dr., Ambler, PA 19002
 (215) 643-1865
 Owner: Glenn W Barratt, Donald A Visher
 Studio Manager: Donald A Visher
 Engineers: Glenn W Barratt, Ray Razzi
 Tape Recorders: Tascam 85-16B 16 track, Technics RS 10A02
 2 track, Sony PCM 701 (digital) 2 track
 Mixing Consoles: Neotek II 24 x 16 w/VCA grouping
 Monitor Amplifiers: Perreux 5000, Crown D-75
 Monitor Speakers: Fostex LS-2B, Realistic Minimus 7
 Echo, Reverb & Delay Systems: Lexicon 244, Master Room
 XL-305
 Other Outboard Equipment: Kepex II, Gain Brain II, Maxi-O,
 UREI LA-4, Lexicon Super Prime Time, Eventide Harmonizer,
 Aphex Aural Exciter, Orban parametric 622B, DeltaLab DL-1
 Microphones: AKG "The Tube", AKG 414 EB/48, AKG D-R,
 Beyer 101, Beyer 201, Crown P2M, E-V RE20, Neumann U87,
 Neumann KM84, Sennheiser MP-421, Shure SM57
 Rates: 16 track, \$50/hr, 8 track, \$40/hr, 2 track \$30/hr

•••MOUNTAIN SOUND
 also REMOTE RECORDING
 314 North First St., Stroudsburg, PA 18360
 (717) 424-1702
 Owner: Larry Cardino
 Studio Manager: Larry Cardino

•••MUSIC ONE
 6643 Fremont Rd., E. Syracuse, NY 13057
 (315) 656-8389
 Owner: George Day, Bill Scranton
 Studio Manager: Julia Scranton
 Engineers: Bill Scranton, George Day
 Dimensions of Studios: Studio A: 21 x 19; B: 10 x 10; C: 20 x
 20
 Dimensions of Control Rooms: A: 15 x 18; B: 8 x 8; C: 12 x 15
 Tape Recorders: Scully 100 16 track; Ampex 440 B 4/2 track,
 Ampex MR 70 4 track, Ampex ATR 800 2 track, Ampex ATR
 700 2 track, Ampex 351 full track, various cassette decks; 1/2" 2
 track mix available
 Mixing Consoles: Interface (modified) 300 20 x 16; Custom 16 x
 8 (2)
 Monitor Amplifiers: Crown, McIntosh, Soundcraftmen
 Monitor Speakers: Big Reds - 604E w/Master Lab crossovers,
 JBL 4311, Rogers L57, KLH, Auratone and other small monitors
 Echo, Reverb & Delay Systems: Lexicon 224X digital reverb,
 EMT 140 stereo plate, Orban 111B spring, live chamber, Lexicon
 Prime Time, Eventide 910 Harmonizer
 Other Outboard Equipment: Limiters UREI LA-3As, LA-4As,
 1176, dbx 163; EQs: Orban 622B parametric, Orban 674A,
 Pultec, UREI; Quad Eight noise gates, Valley People Dyna Mites,
 dbx 310D noise reduction (16 tracks), Custom transformerless
 preamps (10 channels)
 Microphones: Neumann U87s, AKG 414s, D12, 224E, 451s,
 E-V RE20, Sennheiser MO421, MO431, RCA 77, Shure SM7,
 SM57s, 58, SM81s
 Instruments Available: 7' Mason Hamlin grand piano, Fender
 Rhodes, Hammond B3 w/Leslie, Synergy digital keyboard,
 Oberheim OBXX, Prophet 600, ARP string ensemble, Oberheim
 DMX drum machine, Fender amps, Ampeg amps, Fender, Gib-
 son, Guild, Yamaha, guitars
 Video Equipment & Services: Music Library, A-V equipment,
 High Speed and Real Time—cassette duplication
 Rates: Call for rates Special day rates

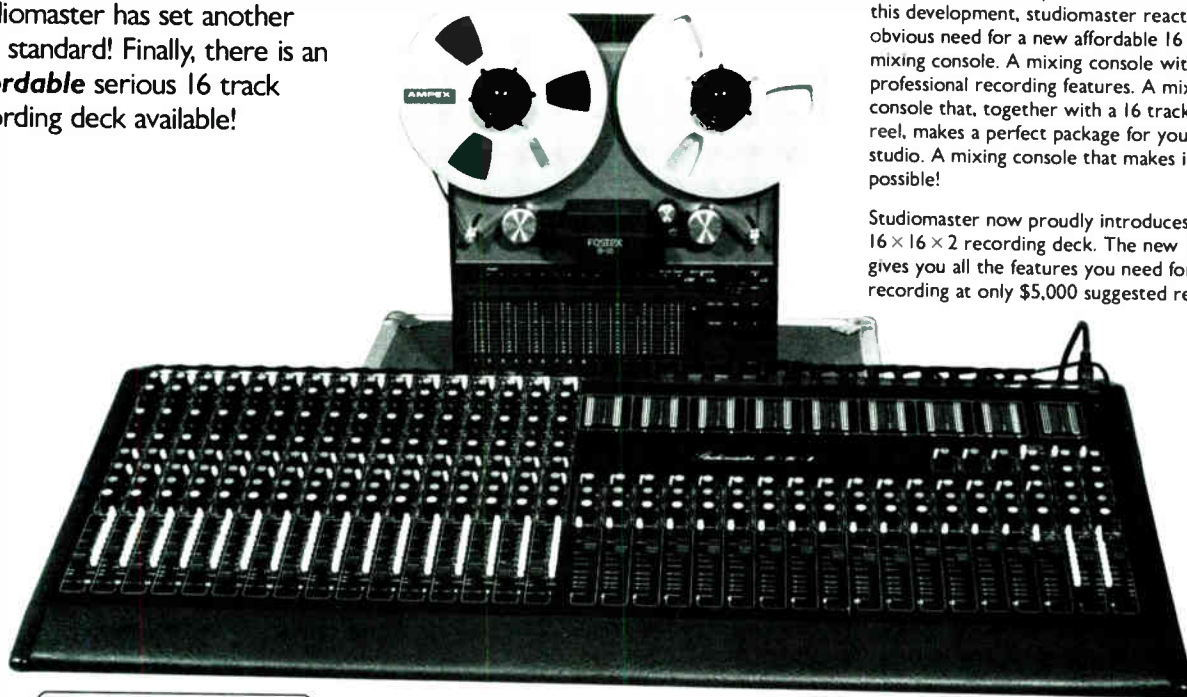
•••NEW LONDON COUNTY RECORDERS
 2514 Route 32, Uncasville, CT 06382
 (203) 848-9908
 Owner: Ron Drago, Wayne Manca
 Studio Manager: Anthony "Pop" Moretti

•••ODYSSEY SOUND STUDIO
 350 Chelsea Ave., Long Branch, NJ 07740
 (201) 870-3554
 Owner: Thomas Maggio
 Studio Manager: Thomas Maggio

Continued on next page

16 TRACK STUDIOS HAVE JUST BECOME AFFORDABLE!!

Studiomaster has set another new standard! Finally, there is an **affordable** serious 16 track recording deck available!



In the past, 16 track studios have been out of the reach of but a few. In 1983, however, major changes occurred in the 16 track reel-to-reel market. New companies are now offering more selection and lower prices in reel-to-reels. With this development, studiomaster reacted to the obvious need for a new affordable 16 track mixing console. A mixing console with professional recording features. A mixing console that, together with a 16 track reel-to-reel, makes a perfect package for your own studio. A mixing console that makes it all possible!

Studiomastrer now proudly introduces the new 16 x 16 x 2 recording deck. The new 16 x 16 x 2 gives you all the features you need for serious recording at only \$5,000 suggested retail.

Studiomastrer, Inc.

A DIVISION OF **IMC**

P.O. BOX 2344, FORT WORTH, TEXAS 76113
 817-336-5114 CABLE: INTMUSIC TELEX: 203936 IMCTX UR

Continued from page 81

Engineers: Thomas Maggio
Dimensions of Studios: 18 x 25
Dimensions of Control Rooms: 15 x 25
Tape Recorders: Tascam 85-16b w/dbx 16 track; Ampex ATR 102 2 track; Otari 5050 8 track, Otari 5050B 2 track; Tascam 44 4 track.
Mixing Consoles: Soundcraft Series II/sweep EQ 24 x 16 x 8 x 2.
Monitor Amplifiers: Kenwood LO-7s, Crown.
Monitor Speakers: B & W 801s, JBL 4411s, Auratones.
Echo, Reverb & Delay Systems: Lexicon 224X/LARC, H910 Harmonizer, FL 201 flanger, Effectron ADM-256, AKG-BX10-II.
Other Outboard Equipment: Aphex II-S, UREI 1176-LNs, UREI 539s, Eventide Omnipressors, Orban 622-B EQ, Orban 516 de-essing, 30 channels dbx noise reduction.
Microphones: Wide selection of AKG condenser and Dynamic, Sennheiser, Beyer, Sony Shure, RCA, Crown.
Instruments Available: LinnDrum, Yamaha C-3 grand piano, Hammond B-3/Leslie, Fender Rhodes, Slingerland drums.
Rates: Available upon request.

•••P&P STUDIOS, INC.

also REMOTE RECORDING
 17 Viaduct Road, Stamford, CT 06907
 (203) 327-9204

Owner: John Fishback
Studio Manager: Aldena Leonard, Edgar Bernstein, V.P. Sales
Engineers: Dan Pickering, John Fishback.
Dimensions of Studios: A: 1000 sq. ft. B: 100 sq. ft.
Dimensions of Control Rooms: A: 350 sq. ft. B: 100 sq. ft.
Tape Recorders: MCI JH100 16 track; MCI JH110 2 track; Ampex 440C 4 track, Ampex 440B 4 track; Ampex 440C 2 track; Ampex 440B full track; Tandberg 6000 1/4 track; TEAC 2340 4 track; Nakamichi 480 cassette.
Mixing Consoles: A: Syncon, 18 x 16, B: Allen & Heath, 8 in x 4 out.
Monitor Amplifiers: PSE, McIntosh, HH, Dyna.
Monitor Speakers: Big Reds, Auratones, DAC 710s.
Echo, Reverb & Delay Systems: MICMIX CSREQ-23 and M-R III, Loft delay.
Other Outboard Equipment: dbx 160s, LA-3As, Orban parametric EQ, Multi-track parametric EQ, Tapco graphic EQs, Eventide Omnipressor, CBS Audimax, CBS Volumax, Orban De-Essers, PAL Pulse Generator, Beseler Pulser, QUAD/Eight noise gates, Dolby A & B, Phase Linear auto correlator
Microphones: Neumann, AKG; Sennheiser; Beyer; Shure; E-V; Sony, etc.
Instruments Available: Yamaha grand, Rhodes 88, Gretsch drums w/various small percussion, Oberheim drum machine, Fender Twin Reverb and Bassman amps (tube).
Video Equipment & Services: Video/audio lockup via SMPTE for sweetening. Shooting stage on premises. All formats available 1/2", 3/4" 1".
Rates: 16/8/4/2/1 track: \$50/hr. Video, film and multi-media rates available upon request
Extras: High-speed custom cassette and reel-to-reel duplication multi-media programming center w/AVL Eagle, film/video inset stage, multi-plexing to film and video, jingles and custom scoring for video, film and multi-media presentations.
Direction: Our studio, designed by John Storyk, offers a warm environment that doesn't intrude on the mood of the user. We are service oriented and understand that helping our clients achieve their goals is our job. We have a facility that enables our clients to work in a variety of media under one roof.

•••PARIS RECORDING

466-A Hawkins Ave., Lake Ronkonkoma, NY 11779
 (516) 981-7502
Owner: Brian M. Unger
Studio Manager: Rudy Perrone

•••PARK SOUTH II

6 Letts Ave., Manahawkin, NJ 08050
 (609) 597-3481
Owner: Master Trax, Inc.
Studio Manager: Terry Byrns

•••PHOENIX 413 AUDIO & VIDEO

413 Cooper St., Camden, NJ 08102
 (609) 963-3170
Owner: Michael Nise
Studio Manager: Mark H. Schultz
Engineers: Mark H. Schultz, Dan McKeown.
Dimensions of Studios: 12 x 21, 18 x 18, 6 x 10, 12 x 3, 6 x 3.
Dimensions of Control Rooms: 14'4" x 17'2"
Tape Recorders: Scully 100 16 track, Sony TC-766-2 2 track, Sony TC-756 2 track
Mixing Consoles: Neotek Series II 32/24.
Monitor Amplifiers: BGW 750, BGW 150.
Monitor Speakers: ALS 1104, Big Reds, JBL 4310, Auratone Cubes
Echo, Reverb & Delay Systems: Lexicon 200, Prime Time II, PCM-42, Roland RE201.
Other Outboard Equipment: dbx and UREI comp/limiters, Valley People and Omni-Craft gates, UREI and ADC EQ, 30 IPS cassette copier.
Microphones: Neumann, AKG, Sennheiser, Crown P2M, Shure, E-V, Sony.



Instruments Available: Prophet 5, Cunningham baby grand, Hammond B-3, Rhodes 73, Hohner clavinet, Rogers drums, more
Video Equipment & Services: 1/4" and 3/4" dubbing.
Rates: \$50/hr Packages negotiable

•••PLUM STUDIO

also REMOTE RECORDING
 2 Washington St., Haverhill, MA 01830
 (617) 372-4236
Owner: Richard and Vivian Tiegen
Studio Manager: Richard and Vivian Tiegen
Engineers: Richard and Vivian Tiegen
Dimensions of Studios: 1000 sq. ft., "L" shaped room; 10 x 12 iso booth.
Dimensions of Control Rooms: 18 x 25.
Tape Recorders: Scully M-100 2" 16 track, Revox B-77 2 track, Tandberg 1/4 track, Onkyo (2) TAW88 cassette dubbing decks.
Mixing Consoles: Audio Arts 8X 24 x 24 x 8 x 2.
Monitor Amplifiers: BGW 500, Crown 150A, Technics SU 7700
Monitor Speakers: JBL 4311s, Auratones.
Echo, Reverb & Delay Systems: Lexicon Prime Time w/memory extension, DeltaLab Effectron, AKG BX10, MXR harmonizer.
Other Outboard Equipment: Symetrix, dbx, Valley People compressors, Dynamite, Furman parametric EQ, MXR flanger/doubler, dbx noise reduction, Valley People Headroom Horseman, Simmons Clap Track.
Microphones: Neumann U87, (2) AKG 451s, RCA 77 DX Ribbon, (3) Sennheiser 421s, Shures, E-V RE20, RE15, 635A, Sony, Altec 21B tube condenser, assorted dynamics.
Instruments Available: Hammond C-3 with Leslie, percussion & pedals, Kawai piano, pre-CBS Fender Pro-Reverb, studio instrument rental service (on premises).
Video Equipment & Services: JVC KY2000 camera, JVC portable & in-house monitors, JVC CR-4400U 3/4" VCR, Cezar Controller, JVC tape handlers, editing (Sony), Micro-Time Time Base Corrector.
Rates: Please call. Packages available

•••RBY RECORDING/VIDEO

Main St. North, Southbury, CT 06488
 (203) 264-3666
Owner: Jack Jones
Studio Manager: Marjorie Jones

•••RESOLUTION, INC.

also REMOTE RECORDING
 Chace Mill, 1 Mill St., Burlington, VT 05401
 (802) 425-2111
Owner: William Schubart, President
Studio Manager: Michael Couture
Engineers: Michael Couture, Ty Atherholt
Dimensions of Studios: 22 x 20 x 14.
Dimensions of Control Rooms: 13 x 18 x 10.
Tape Recorders: MCI JH114 16/8 track, MCI JH110A (3) 2 track, MCI JH110B transformless 1/2" 2 track; Scully 280 (2) 2 track, Sony PCM-F1 digital recorder
Mixing Consoles: MCI JH416 16 in x 16 out; Electrodyne 8 in x 2 out.
Monitor Amplifiers: Crown DC300, DC150; BGW 500, 750.
Monitor Speakers: UREI 813A Time Aligns, Altec 60486, in 620 cabinets, ADS 710; Auratones, Altec 887; Koss ESP9.
Echo, Reverb & Delay Systems: AKG BX20, Eventide digital delay, tape delay.
Other Outboard Equipment: Dolby A all channels Eventide phaser, UREI 1176, LA3A (2); dbx 160 (3); Lang EQ, VSO all transports; API 550A EQ; Audioarts parametric EQ; EXR Aural Exciter; Soundcraftsmen 1/2 octave graphic EQ.
Microphones: Neumann U87s, U47, KM84s; AKG 414, C451Es, Sennheiser 421, Beyer 160; E-V RE20, RE11, RE16, PL95; Sony ECM 335, ECM 99A, ECM 150; Shure SM57, SM58, 33 ribbons, 16 EQ, AKG CK9 shotgun, HME RCA 770X
Instruments Available: Steinway grand piano, Fender Rhodes, ARP 2600, Oberheim OBXA, assorted percussion.
Video Equipment & Services: Computerized 3/4" A/B roll editing system with 1" mastering capability. Sony broadcast equipment, video compressor, freeze frame, TBC, music video.
Rates: Please call

•••RIK TINORY PRODUCTIONS

180 Pond St., Box 311, Cohasset, MA 02025
 (617) 383-9494
Owner: Rik Tinory, President

•••ROSE HILL STUDIOS

1326 Midland Ave., Syracuse, NY 13205
 (315) 475-2936
Owner: Rose Hill Group
Studio Manager: Vincent Taft

•••ROXY RECORDERS

648 Broadway, New York, NY 10012
 (212) 475-6571, 420-0527
Owner: Roxy Recorders, Inc
Studio Manager: Mike Friese
Engineers: Dave Dachinger, chief engineer, Todd Anderson, Peter Darm; Various independents.
Dimensions of Studios: 25 x 20 x 12H w/vocal and amp isolation booths.

Dimensions of Control Rooms: 19 x 16 x 10H—sloped ceiling.
Tape Recorders: Ampex MM1000 (modified by Paul Blank) 16 track; Otari MX-7800 w/remote-locate 8 track, Otari MX-5050B 2 track; Technics 1520 2 track; Aiwa, Sony cassette decks
Mixing Consoles: Tangent Series 16 transformerless (custom modified by Paul Blank), 24 in x 16 out
Monitor Amplifiers: Crown DC-300, D-150, Hafler D-200
Monitor Speakers: UREI 811; Auratone 5C, CV-3000.
Echo, Reverb & Delay Systems: Master-Room XL305 w/variable decay; Lexicon PCM41 digital delay, Bel BF-20 stereo flanger, tape slap; Echoplate II, Harmonizer 949
Other Outboard Equipment: dbx 158, 155, 180 noise reduction; Dolby A noise reduction; Valley People Dyna-mite dynamics processor (2); Gemini Easy-Rider comp/limiter (4); dbx 161 compressor/limiter; Pultec EQH program EQ; Neptune; Symetrix stereo parametric EQ; Accessit noise gates (4); Ashly SC-40; Simmons Claptrap (handclap synthesizer), UREI digital 964 metronome 60 Hz pulse sync generator.
Microphones: Neumann U87, U67 (tube), U89; AKG 414, 451, Sennheiser 441; E-V RE20, 666; Beyer 160; Shure 57, 545, Countryman, EM 101, Zimet direct boxes, Sony DEM56
Instruments Available: Steinway grand, Fender Rhodes (stereo), Marshall, Fender, Roland, Ampeg guitar amps, Ludwig/Pearl 7 piece drum kit, many pedal effects
Rates: Call for rates
Extras: Tape duplication, computerized mailing.
Direction: 1982 credits: Diane Keaton, Kenny Burrell, Vic Jns, Philippe Saisse, Cab Calloway, Bill Evans Sextet, David Hodo (Village People), Mike Stern, Mitch Forman, Tom Waits, Mickey Bass, Judy Gorman-Jacobs, ABC Video, EMI Liberty, Polygram, Columbia, Citibank, Volvo, Wheaties, Warner-Amek, Walt Disney's TRON, Video Magazine, Money Magazine, New on the Charts.

•••SAINTS & SINNERS SOUND STUDIO

432 Western Ave., Albany, NY 12203
 (518) 454-5278
Owner: College of St. Rose
Studio Manager: Mary Anne Nelson

•••SCOVIL PRODUCTIONS

69 Main St., Norwalk, CT 06851
 (203) 853-8872
Owner: Gary Scovill
Studio Manager: Gary Scovill



SEAR SOUND
 New York, NY

•••SEAR SOUND

235 W. 46th St., New York, NY 10036
 (212) 582-5380
Owner: Walter E. Sear
Studio Manager: Richard Kuntzevich
Engineers: Walter Sear, Ray Janos (also independents)
Dimensions of Studios: A: 15 x 37
Dimensions of Control Rooms: A: 12 x 16, B (film mix): 15 x 25
Tape Recorders: Ampex MM1200 16/8 track, Studer B67 2 track, Ampex 300 (3) 2 and 1 track, Ampex 351/92B mono-Pilotone, Nagra 4 2 1 track; Westrex & Magnasync 35 mm and 16 mm dubbers, 3 & 1 track

Continued on next page

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15 & 30
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remote
standard.



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+ 4 in/out



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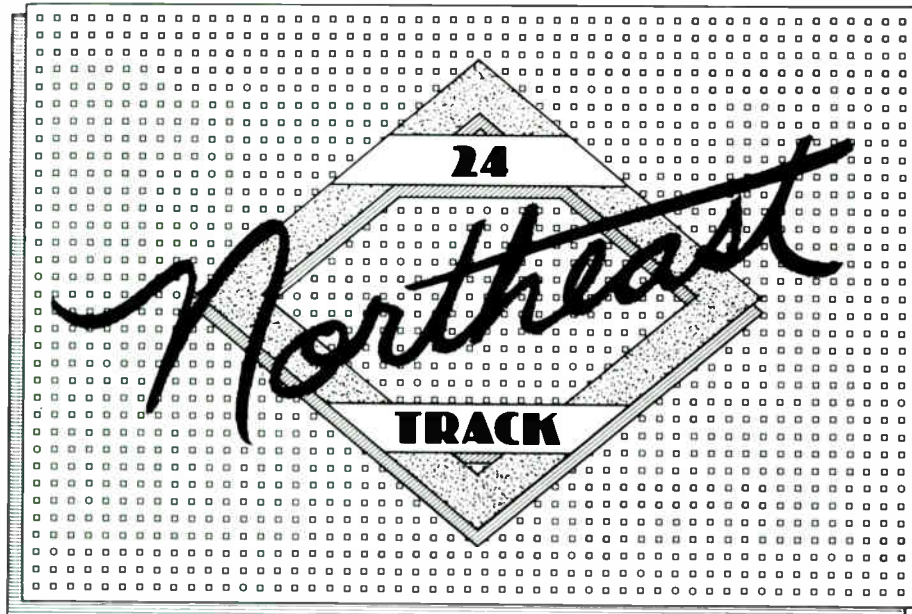
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••••AUDIO ART STUDIO
102 Green St., New York, NY 10012
(212) 226-3685
Owner: Audio Art, Inc
Studio Manager: Tad Suzuki

••••AUDIO INNOVATORS, INC.
also REMOTE RECORDING
216 Boulevard of the Allies, Pittsburgh, PA 15222
(412) 471-6220
Owner: Norman J Cleary
Engineers: John Struthers, Chief Eng: John Brandy, Janet Davis; Creative Serv. Dir.: Sue Harger
Dimensions of Studios: A: 31 x 26, B: 12 x 10, Baum: 18 x 13.
Dimensions of Control Rooms: A: 20 x 17, B: 16 x 15, Baum: 22 x 15
Tape Recorders: (3) 3M M79 24 tracks, 3M M79 8 track, (2) Ampex ATR-102 2 tracks; Ampex AG-440 2 track; (3) Scully 280-B 2 tracks; 3M M79 2 track, Nagra IV-S remote film sync recorder.

Mixing Consoles: A: Amek M2000A/2500, 36 in x 24 out; B: Spectra Sonics Custom, 20 in x 6 out; Baum: Spectra Sonics 1032, 32 in x 32 out

Monitor Amplifiers: Crown 300; SAE 2400L, BGW 750, (3) BGW 450s; Spectra Sonics Tr-amp; Technics SE-A3

Monitor Speakers: JBL 4333, 4430, 4311; UREI 813, 815; Auratones

Echo, Reverb & Delay Systems: Lexicon 224, DeltaLab DL4
Other Outboard Equipment: Orban stereo phase synthesizer, dbx noise reduction, Orban Paragraphic EQ, 674 stereo EQ, sibilance controller, Eventide Harmonizer, Omnipressor, UREI 1176 limiters, Audio Design limiters, EXR Exciter Kexep, Gain Brain, dbx flanger, DeltaLab DL2 Acousticomputer.
Microphones: Neumann 67, 87, 89, 47, KM84; AKG; Sennheiser; E-V; Sony

Instruments Available: Baldwin 9' concert grand, Baldwin baby grand, drum kit, Celeste, Hammond B-3 w/Leslie, alternate percussion.

Video Equipment & Services: Audio for video post-production, 3/4" and 1" respring, BTX 4600 and BTX Shadow SMPTE interlock systems; Barco and Sony monitors; JVC, Sony and Panasonic 3/4" U-Matic machines

Rates: Available upon request

••••AUDIO WORKS
360 East 57th St., New York, NY 10022
(212) 980-3445
Owner: Shelton Leigh Palmer and Co., Inc
Studio Manager: Phil Winters



AUDIOTEK RECORDING
Hollis, NY

••••AUDIOTEK RECORDING
182-35 Jamaica Ave., Hollis, NY 11423
(212) 526-1456
Owner: Herb Horton
Studio Manager: Joe Sharpe
Engineers: Joe Sharpe
Dimensions of Studios: 30 x 50 w/14 1/2' ceiling, easily accommodates 50-75 musicians
Dimensions of Control Rooms: 20 x 20
Tape Recorders: (2) Ampex MM 1200 48/24/16/8, Ampex ATR 102 2 - 1/2" tape, Ampex ATR 102 2 track - 1/4" tape; Studer Mark III 8 track, Tascam, Studer and Nakamichi cassettes
Mixing Consoles: A P1 52 x 48
Monitor Amplifiers: UREI 6300, UREI 6050, Biamped
Monitor Speakers: JBL 4435 Biradials
Echo, Reverb & Delay Systems: #140 EMT plate w/remote, 224X Lexicon, Super Prime Time, other assorted delay upon request
Other Outboard Equipment: Any item or effect which is on this planet is available upon request
Microphones: The best microphones available
Instruments Available: drums, Yamaha DX9, Baldwin grand & upright, Mesa Boogie, Vox Super Beate

••••AAA RECORDING STUDIO
130 West 42nd St. (Room 552), New York, NY 10036
(212) 221-6626
Owner: Fred Vargas
Studio Manager: Mike Dacek

••••A.D.R. STUDIOS INC.
also REMOTE RECORDING
325 West End Ave., New York, NY 10023
(212) 486-0856

Owner: A D R Studios, Inc
Studio Manager: Stuart Allyn
Extras: Very extensive microphone collection. Microphones available for rental
Direction: Our award winning engineers are fully versed in all phases of audio recording and production. They are available for complete projects from pre-production meetings through production recording (studio or location) to post production mixing, and can provide comprehensive follow through of all audio components. Specialized services include: Album and jingle production, post scoring and mixing, audio sweetening and mixing for video, audio/video production assistance, and location recording services

••••A & R RECORDING, INC.
322 West 48th St., New York, NY 10036
(212) 397-0300
Studio Manager: Milton Brooks, V P

••••ASSOCIATED RECORDING
723 7th Ave., New York, NY 10019
(212) 382-0660
Owner: Nathan Schnapl, Paul Freidberger
Studio Manager: Warren Gradus

••••A STEP ABOVE RECORDING
281 5th Ave., New York, NY 10016
(212) 686-2487 or 684-9238

Owner: D'Exite Inc
Studio Manager: Joe Manzella
Engineers: Michael Morley, chief engineer, Louis Damien Gueli (chief cook and bottle washer)
Dimensions of Studios: 40 x 18, 6 x 5 x 10 bathroom tiled iso booth for voice over; 10 x 16 glass and wood iso booth
Dimensions of Control Rooms: 19 x 17
Tape Recorders: Pioneer 2/2 2 track, MCI JH16 w/AL II 24x or 16x, (2) MCI JH110A 2x w/1/2" mastering, Studer A810 2x, Denon cassette decks
Mixing Consoles: MCI customized 500 series 32 x 28 w/x-formerless MRC preamps
Monitor Amplifiers: Carver Pro amps, Yamaha P2200
Monitor Speakers: Foxtex customized LS-3, Yamaha NS-10, JBL 4311, Auratones
Echo, Reverb & Delay Systems: EMT 240, Lexicon 224, Orban Parasound dual reverb, Lexicon PCM 41
Other Outboard Equipment: Marshall Time Modulator, Eventide Harmonizer H949 w/manual keyboard, DeltaLab Acousticomputer, Orban Parametric EQ, dbx 165, 162, 160s; UREI LA4s, UREI limiting amplifiers, Kexep
Microphones: Neumann U87s, E-V RE20s; Sennheiser 421s,

AKG 414s, Sony ECM 220, C107, ATB11s ATM11; and many more Shure, AKG, AT, E-V, etc
Instruments Available: DMX drum machine, LinnDrum machine, Yamaha DX7 digital synthesizer, electric pianos, Rhodes, Hammond organ w/Leslie, Clavinet, Rogers drums, vibes, congas, tumbales, customized b-amped bass stack, 10 different guitar amps (Marshall, Fender new & pre-CBS, Gallen-Krueger), Yamaha 7'4" grand, Mesa Boogie
Rates: Call for rates

••••ATLANTIC RECORDING STUDIOS
1841 Broadway, New York, NY 10023
(212) 484-6093
Owner: Atlantic Recording Co
Studio Manager: Paul A. Sloman; Frank Tabino, Asst. Mgr.
Engineers: Jimmy Douglass, Gene Paul, Lou Hahn, Bobby Warner, Bill Dooley, Michael O'Reilly; Asst. Engrs: Dan Nash, Stephen Benben, Mastering Engrs: Dennis King, George Piros
Dimensions of Studios: Studio A: 35 x 48; Studio B: 18 x 33; Mix Room: 9 x 13 (booth)
Dimensions of Control Rooms: A: 17 x 22; B: 18 x 22, Mix Room: 21 x 19

Tape Recorders: Sony 3324 (digital) 24 track; Studer A-800 24 track, A-80 2 track; MCI JH-24/24 24 track, MCI 110B 2 track; Otari MTR-12 2 track; Sony PCM-1610 (digital) 2 track; Audio Kinetics synchronizer available
Mixing Consoles: Neve (automated) 8108 48/32, MCI 556 56/48, MCI (automated) 538 38/32
Monitor Amplifiers: Bryston 4B bridged, Bryston 3B bridged; Studer

Monitor Speakers: UREI 813-B, Hildley/Sierra also available; JBL 4312, Electro-Voice Sentry 100A, Yamaha NS-10M, Visonic 9000, 7000, Pioneer HPM 100, Dalco SW-3, IMF-MCR 2A, DCM-Macro, Auratone, Altec 19, Hafler and Colberts
Echo, Reverb & Delay Systems: EMT 250 & 251, Sony digital reverb, Lexicon 224X, Lexicon Super Prime Time, Eventide 1745M; Marshall AR-300; Lexicon PCM 42, Korg SDD-3000; Audio Digital TC-2; Ursa Major SST-282; Audio Digital TC-3 and (5) EMT stereo 140 chambers.

Other Outboard Equipment: Over 60 compressors/limiters including: Fairchild 670, Spectrasonic 610, Teletronix LA-2A & 3A, UREI 1176LN, dbx 160 and 160X, and Gain Brain II. Over 20 special processors including: Publison, Eventide SP 2016, Valley People Dyna-Mite, Eventide Phaser, Eventide flanger and Harmonizer H-949, EXR-EX2 and (3) Audio and Design Scamp racks. With a full complement of equipment for each rack, over 80 equalizers including: Pultec, Lang, Aengus, Orban, Sontec, Datatronix 550A, Audio & Design and Neve. Full Valley People rack in each room.

Microphones: Including: E-V RE15, 16, 20, 55 and Shure SM57, 58, 81 and Sennheiser MKH-415, MD-421, MD441 and Neumann U47 tube and FET, U48, M49, U67, U87, KM84, KM86, U89, and Telefunken 251 and AKG C451, C414, C33, D12 and RCA SK46, 44, 77DX and Sony C37 and B&K 4004 and more

Instruments Available: (2) Hammond B3 organs, La-Piana baby grand, Steinway baby grand, Fender Rhodes and Rhodes Dynamite piano, Hohner Clavinet, amplifiers including: Fender, Music Man, Polytone, full Ludwig drum kit, and misc. percussion instruments

Video Equipment & Services: Sony video monitor in each studio, BVU-800 videocassette recorders, provision for external video equipment

Rates: \$200/hr., 24 track analogue recording/mixing

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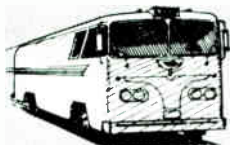
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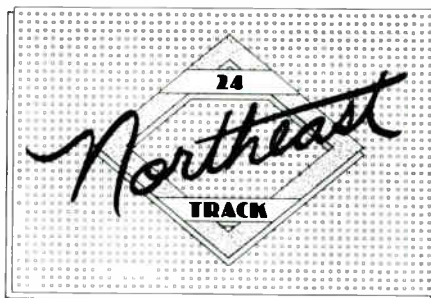
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tals also available on request.
Rates: Contact General Manager, Lou Vetter

••••BLUE JAY RECORDING

669 Bedford Rd., Carlisle, MA 01741
(617) 369-2200

Owner: Bob and Janet Lawson, Steve Langstaff
Studio Manager: Bob Lawson
Engineers: Glenn Berger, Gragt Lunstord, Michael Golub.
Dimensions of Studios: 27 x 38.

Dimensions of Control Rooms: 18.5 x 17.

Tape Recorders: MCI JH114, Autolocator III 24; RTZ III 2 track; Studer B67 2 track; Revox A77 ¼ track; (3) Technics RSM85 MKII cassette decks; MCI JH110B ¼"; (2) MCI JH110B ¼"; (6) Tascam 122 cassette decks (Dolby A is available for all tape machines.

Mixing Consoles: MCI JH636 automated, parametric EQ, modified 32.

Monitor Amplifiers: Bryston 4, McIntosh 2100, assorted smaller Crown amps, (2) BGW 250.

Monitor Speakers: UREI Time Aligned Monitors, Auratones, Yamaha NS10s.

Echo, Reverb & Delay Systems: Lexicon 224 digital reverb-eration system, all programs including 14 x 6, EMT 140 stereo tube, Loft flanger, Lexicon 93 Prime Time, Ursa Major Space Station DeltaLab Harmoniccomputer, (2) DeltaLab Effectrons.

Other Outboard Equipment: UREI LA4As, 1176LNs and LA-2As, Allison Research Gain Brains and Kepexes, Eventide 949, Orban 516 DeEsser, Dolby M24-H noise reduction, Troisi parametric EQs, dbx 165 compressor, (4) dbx 904 noise gates, dbx 905 equalizer, Pultec EQP equalizer, Ashly stereo parametric equalizer SC66A, Orban stereo parametric equalizer 662B.

Microphones: Telefunken 251, Neumann U64 stereo pair, RCA 77 Ribbon, pair of Bruel & Kjaer, Neumann U47s, U87s, KM86s, KM84s, AKG C414 EBs, C451s; others: Sennheiser, E-V, Shure, Beyer, Crown, PZMs

Instruments Available: DMX drum machine, Steinway "B" 1927 seven foot; Wurlitzer electric piano; Rhodes 88, and others with notice

Extras: Energy-saving earth-sheltered custom building in country setting 30 minutes from Boston offers lounge, kitchen, privacy, extreme acoustical isolation and a wide-dynamic range studio suited to both noise-reduced and digital recording.

Direction: George Thorogood and the Destroyers (Rounder), Aerosmith (CBS), Pat Metheny, Andy Pratt, Tom Rush, Joe Perry, J. Geils Band, Jonathan Edwards, Tom Scholtz.

••••BLUE ROCK STUDIO

29 Greene St., New York, NY 10013
(212) 925-2155

Owner: Edward Korvin
Studio Manager: Estelle Lazarus

••••BOOGIE HOTEL STUDIOS

709 Main St., Port Jefferson, NY 11777
(516) 473-6655

Owner: Steve Bramberg, Jeff Kawalek, Don Berman, Robert Ludwig, John Rose

Studio Manager: Steven Bramberg.

Engineers: Don Berman, Jeff Kawalek, Bob Ludwig, Chris Isca, Jim Sparling, Bob Tis - Chief Engineer.

Dimensions of Studios: 50 x 60 x 20 ceiling w/2 iso booths, 15 x 20 each.

Dimensions of Control Rooms: 14 x 20.5.

Tape Recorders: Studer A80VU MKII 24 track; Studer A80RC 2 track, (2) Studer B67 MKII 2 track

Mixing Consoles: Neve 8128, 48/32.

Monitor Amplifiers: McIntosh, Crown, H & H.

Monitor Speakers: UREI 813A, JBL 4311, JBL 4313, Auratones, Mitsubishi DS-181W

Echo, Reverb & Delay Systems: EMT stereo plate, 2 live chambers, (2) Lexicon Prime Time delays

Other Outboard Equipment: (2) Eventide Harmonizers, (6) Pultecs, Orban 622 parametric EQ, (8) Valley People dyna-Mites, (4) MXR phaser/flangers, (2) United Audio tube limiters, (4) Neve limiter/compressors, (2) LA3As, (2) UREI 1176s, dbx 165 limiter

Microphones: (2) Neumann M-49s (tube-type), (2) Neumann U47s FETs, (2) U87s, KM84, KM86; AKG C451E, (2) EB414, (2) C60, (2) D1000E, D12E; Sennheiser (10) 421, (4) 441; Shure SM53, SM56, SM58, SM7, E-V 666, (2) RE20, (2) Crown PZMs

Instruments Available: Yamaha grand piano, Hammond B3

w/Leslie, Ludwig & Rogers drums, assorted guitar amps.

Rates: Call for info. Block rates available.

Extras: Lodging for 8 to 10 people, full kitchen (optional meal plans available), full bar, artists lounge w/video games, pool table, etc. Located near active town, shops, beach, water sports, Bridgeport Ferry Boogie Hotel is also affiliated with two major mobile recording trucks, and can accommodate any remote location recording needs.

Direction: Boogie Hotel is a truly unique concept in modern-day recording studios in that it combines the most up-to-date studio facility with the old-world charm of a private hotel, featuring gourmet cuisine and total, personalized service, all within easy access to a major metropolitan area. Every aspect of the recording process has been considered, thus freeing the artist and producer to create in a relaxed, enjoyable atmosphere.

BOOGIE HOTEL STUDIOS
Port Jefferson, NY



••••BROCCOLI RABE RECORDING STUDIO COMPLEX
15 Gloria Lane, Fairfield, NJ 07006
(201) 575-7460

Owner: Mr. Brian Drago
Studio Manager: Mr. Brian Drago



CARLETON PRODUCTIONS LTD.
Ottawa, Ontario

••••CARLETON PRODUCTIONS LTD.
also REMOTE RECORDING

1500 Merivall Rd., Ottawa, Ontario, Canada K2E6Z5
(613) 224-1313

Owner: Standard Broadcasting
Studio Manager: Wayne Hicks, vice president of sales

••••CARRIAGE HOUSE STUDIOS

119 West Hill Rd., Stamford, CT 06902
(203) 358-0065

Owner: West Hill Productions, Inc.
Studio Manager: Johnny Montagnese, Ian Cron

Engineers: Philip Magnotti, Cliff Pa, Chris Cassone, J. Montagnese, Doug Holzwarth, John Jacobi, and independents.

Dimensions of Studios: Main room, 30 x 30; iso booth, 8 x 8, iso booth, 6 x 6, Live room, 25 x 25

Dimensions of Control Rooms: 25 x 25.

Tape Recorders: Otari MTR-90 MK II 24 track, Otari MTR 10½" 2 track, Otari MTR 10¼" 2 track.

Mixing Consoles: Trident Custom Series 80 32 x 24

Monitor Amplifiers: UREI, BGW, Accoustate, Phase Linear.

Monitor Speakers: JBL 4435 Bi-amped w/crossover, Yamaha NS-10M.

The proof is in the listening.

The surprise is in the price. \$425.

The New Orban Model 412A Compressor/Limiter

The new 412A Compressor/Limiter is Orban's entry into the general-purpose level control sweepstakes—it's designed to make you, the audio professional, the winner! Available in mono (412A) and stereo (414A) versions, it's loaded with features that most other low-cost units don't offer—but the real proof is in the *listening*. We invite you to compare its natural, transparent sound to any other compressor/limiter you might know or use. After you do, we feel confident you'll make it *your* essential AGC. Contact your Orban dealer for a demonstration, and find out how affordable Orban-quality processing can be!

Performance Highlights

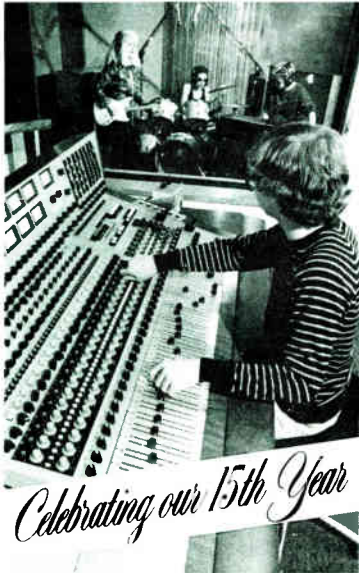
- Streamlined, straightforward front panel offers the most-demanded user controls, including ATTACK TIME, RELEASE TIME, RATIO, and THRESHOLD. These wide range controls permit extremely natural sound or special effects.
- Exclusive Orban feedback control circuitry (adapted from our popular 424A Gated Compressor/Limiter/De-Esser) achieves remarkably transparent sound.
- User controls interact intelligently to simplify and speed setup, and to prevent errors.
- Peak limiting and compressor functions are crosscoupled to eliminate potential pumping and modulation effects.
- THRESHOLD control with 20dB range allows user to determine the level at which gain reduction first occurs, without changing below-threshold gain. Ideal for sound reinforcement applications.
- Proprietary circuitry achieves optimum headroom and signal-to-noise regardless of THRESHOLD control setting.
- Front-panel OUTPUT ATTENUATOR control with OUTPUT CLIP LED to indicate line amplifier clipping.
- Illuminated, true peak-reading GAIN REDUCTION meter is more accurate and readable than LED displays.
- GAIN REDUCTION OVERLOAD lamp warns of control circuit overload due to a demand for G/R which exceeds the range of the VCA.
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Echo, Reverb & Delay Systems: Lexicon 224X, Echoplate III, Orban, Live-Room.

Other Outboard Equipment: UREI LA 4s, dbx 160s, Dyna-Mites, Eventide Harmonizer, flanger, Trident Parametrics, DeltaLab delay line, Acousticcomputer, Roland Dimension "D" Microphones: Neumanns, AKGs, Shure, Sennheiser, Fender, Beyer, "we have it or can get it."

Instruments Available: Fairlight CMI synthesizer, OBXs, Junos, Yamaha Acoustic, Yamaha electric grand, Rhodes, Polysix, ARP-Odyssey, DMX drums, Ludwig drums, Roto-Toms, tympani, vibes, marimba, etc etc

Video Equipment & Services: Yes! What do you need?
Rates: \$60, \$80, \$120/hr. Basic starting rates; project-oriented pricing.

CARRIAGE HOUSE STUDIOS
Stamford, CT



••••DON CASALE RECORDING STUDIOS, INC.
377 Plainfield St., Westbury, Long Island, NY 11590
(516) 333-7898
Owner: Don Casale
Studio Manager: Don Casale

••••CBS RECORDING
also REMOTE RECORDING
49 E. 52nd St., New York, NY 10022
(212) 975-2958
Owner: CBS, Inc.
Studio Manager: William Townley

••••CELEBRATION RECORDING
2 West 45th St., New York, NY 10036
(212) 575-9095
Owner: MZH & F, Inc
Studio Manager: Jack Zimmerman
Engineers: Mark Hood, Holly Peterson, Sal Ciampini, Todd Salvo, Kevin Reynolds.
Dimensions of Studios: A: 33 x 28 plus drum room and additional isolation room; B: 14 x 16
Dimensions of Control Rooms: A: 18 x 24, B: 15 x 17
Tape Recorders: Studer A80 MK III 24 track; 3M M-79 24 track, (2) 3M M-79 4 track, Studer A80 MK III 2 track; (2) 3M M-79 2 track; (2) Studer A-810 full track; many Scully 280, 280 B, 4, 2, full tracks; Magna-Tech MR 1035-3 35 mm dubber (3 or full track).
Mixing Consoles: Harrison 3232 32 x 32, Harrison 3624 36 x 24.
Monitor Amplifiers: (7) Crown DC-300A, (4) Crown D-60; Phase Linear 400.
Monitor Speakers: Super Reds, Big Reds, Dahlquist DQ-9, Auratones, JBL 4311.
Echo, Reverb & Delay Systems: Lexicon 224X, EMT 140, (2) AKG BX-20, MICMIX MR-3, EMT copy, Lexicon Prime Time II w/memory extension, Marshall Time Modulator, Cooper Time Cube.

Other Outboard Equipment: Eventide H910 Harmonizer, Pultec EQH-2 EQ, Orban 621B stereo parametric EQ, (5) dbx 160 limiters, (2) Teletronix LA-3A limiters, Teletronix LA-2A limiter, (2) Unated Audio 1176 limiter, Neve stereo limiter, UREI digital metronomes, Dolby noise reduction available throughout. Microphones: Neumann U87, U67, U47, KM84, KM64, AKG 414, D224, D190; Beyer M160, M360; E-V RE20; Sennheiser 441, 421; RCA 77DX, 44BX; Sony 37; PZM.
Instruments Available: At no charge: Steinway grand piano, Baldwin grand piano, (2) Fender Rhodes, Clavinet, tack piano, drum kits, vibes, tympani, congas, hand percussion, guitar and bass amps. Anything else via rental.

Video Equipment & Services: O-Lock 3.10.2 synchronizer, JVC 8250 video cassette, other video cassettes. Synchronization to video tape for post-scoring and video mixing. \$50/hr extra charge. Audio relay to videocassette.

Rates: Daytime—call for rate card. Nights and weekends—competitive and flexible. Call for quote

••••CELESTIAL SOUNDS

919 Second Ave., New York, NY 10017
(212) 355-4825

Owner: Toni and Celeste Pinelli

Studio Manager: Pete Sobel

Dimensions of Studio: 22 x 20 plus drum and iso booths.

Dimensions of Control Rooms: 21 x 17.

Tape Recorders: Studer A80 MK II 24 track, Studer A80 ½" 2 track, (2) Studer B-67 ¼" 2 track; Revox A-77 ¼" 2 track; Aiwa 6900 MK II 2 track.

Mixing Consoles: MCI 636 automated 36/44

Monitor Amplifiers: (3) BGW 750B, BGW 250, (3) SAE 250.

Monitor Speakers: UREI 813, Yamaha NS10M, ADS300, Auratones.

Echo, Reverb & Delay Systems: EMT 250 digital reverb, EMT 140 stereo plate, Lexicon Prime Time, Eventide Harmonizer, flanger.

Other Outboard Equipment: (3) Pultec EQP-1A, (8) API 550/550A EQs, (4) Kepex II noise gates, 30 channels dbx 216 noise reduction, dbx 160 & 165 comp/limiters, (2) Teletronix LA-2A limiters, UREI LA-3A, (2) UREI LA-4, (2) UREI Parametric EQs, (2) Orban Parametric EQs.

Microphones: Neumann U87, U89, AKG 414EB, D224E, Sennheiser 441, 421, E-V RE20, Shure SM57 Available for rent, at prior request: U47, U67, (2) AKG C60, (2) AKG C12A, (4) PML EK61, (2) PML EK71.

Instruments Available: Steinway B grand, Dyno-My-Rhodes, Hammond B-3/Leslie. Yamaha and Pearl drums, Fender and Mesa Boogie amps, Sunn bass amp, Hi-watt 4 x 12 cabinet, Roto-Toms, assorted percussion available for rent, prior request: Linn, DMX drum machines, OBX-A, OBX-B & Prophet 5 synthesizers.

Rates: \$125/hr. Block rates available.

••••CENTURY RECORDING, INC.

545 Boylston St., Suite 505, Boston, MA 02116
(617) 267-9800

Owner: Kevin and Janet Tracey

Studio Manager: Ross Johnston

Engineers: Bill Tracey, Ross Johnston

Dimensions of Studio: 24 x 14.

Dimensions of Control Rooms: 26 x 18

Tape Recorders: MCI JH-24 24 track, MCI JH-428 2/4 track, MCI JH 110 full track; Scully 280 2 track; (2) Ampex AG-445 2 track, Technics M85 cassette, Kenwood KX31 cassette.

Mixing Consoles: MCI 400 modified 28 x 24.

Monitor Amplifiers: Bryston, Crown

Monitor Speakers: UREI, JBL, Auratone

Echo, Reverb & Delay Systems: EMT Plate, Lexicon

Other Outboard Equipment: Effectron II, EXR Exciter, UREI 1176 Peak limiter, Teletronix LA-2A Leveling amp, Pultec, Lang PEQ-2 De-esser by Orban, dbx 160, Orban parametric EQ, Dolby 361 type A, Roger Mayer gates

Microphones: Neumann, Shure, AKG, Sennheiser, Audio Technica

Instruments Available: Yamaha grand piano

Video Equipment & Services: Sony U-Matic ¾" video deck, BTX Shadow.

Rates: Upon request.

••••CHELSEA SOUND STUDIOS

130 W. 42nd St., New York, NY 10036, and
135 W. 14th St., New York, NY 10011
(212) 869-4440 and (212) 242-7326

Owner: Mark Freeh

Studio Manager: Phil Bulla

••••CLEAR SOUND PRODUCTIONS

also REMOTE RECORDING

Grand Concourse, Bronx, NY 10458

(212) 365-3434

Owner: Shahed Ahmad

Studio Manager: Shahed Ahmad

••••CLINTON RECORDING STUDIOS INC.

653 10th Ave., New York, NY 10036
(212) 246-2444

Owner: Bruce Merley, Ed Rak

Studio Manager: April Stange

Engineers: Ed Rak, chief engineer; Jay Rifkin.
Dimensions of Studios: Studio A: 2000 sq. Ft., 22-ft. ceiling; Studio B: 1,000 sq. ft., 15-ft. ceiling.
Tape Recorders: All Studer: A800, A-80, A-810.
Mixing Consoles: (2) Neve custom 8078, 40 x 32 (one console with Necam II automation).
Monitor Amplifiers: McIntosh 2500, 2300, 2200.
Monitor Speakers: UREI 813B, Visonik 803, Electro-Voice Sentry 100, Auratone 5C.
Echo, Reverb & Delay Systems: EMT stereo & mono plates, Lexicon Super Prime Time, Marshall time modulator, Audio Digital TC2.
Other Outboard Equipment: BTX Cypher, Dolby SP24, Dolby 361 noise reduction, UREI LA3A, UREI 1176, dbx 160, Scamp rack, Orban 622 equalizers, Pultec EQP1A, Eventide Harmonizer
Microphones: Over 100 Neumann, AKG, Sony, Shure, Sennheiser, Schoeps, Crown & Electro-Voice.
Instruments Available: Yamaha tour-series drums, Yamaha C7 piano, Steinway D piano, Roland jazz chorus 120, guitar amps, Acoustic bass amp.
Video Equipment & Services: IVC 6650 ¼" VTR w/remote, Sony 25" Profecel monitor.
Rates: Please call.

CLINTON RECORDING STUDIOS INC.
 New York, NY



••••CONNECTICUT RECORDING STUDIOS, INC.
 1122 Main St., Bridgeport, CT 06604
 (203) 366-9188
Owner: Paul Leka
Studio Manager: Jo-Ann Vendittelli; Gilbert Tobin, Asst. Mgr.
Engineers: Chief Eng.: Joe Boerst; Asst. Eng.: Owen McMahon.
Dimensions of Studios: Studio Room: 30 x 17; Keyboard Room: 24 x 12.
Dimensions of Control Rooms: 20 x 13.
Tape Recorders: MCI JH-114 24 track, JH-110 16/8 track, JH-110B 4 track, JH-110A 2 track; Scully 280 2 track, 280 full track; Revox B-77 2 track.
Mixing Consoles: Neve 8058 28/24.
Monitor Amplifiers: Crown, BGW, H&H, McIntosh.
Monitor Speakers: Big Reds, UREI 813, Auratones.
Echo, Reverb & Delay Systems: (2) EMT 140 stereo, (4) live chambers, Lexicon Prime Time, Eventide Harmonizer, AKG BX 20.
Other Outboard Equipment: UREI 1176 & LA3, Pultec, Eventide Flanger, Kepex, dbx 160, Gain Brain, White Equalizers, Roger Mayer.
Microphones: Neumann U87, U47, KM84; AKG 451, 452; Sennheiser 421; E-V RE20, SM57, SM81; RCA 44 & 77; Sony.
Instruments Available: 74" Steinway C-3, Oberheim OBX-a, Yamaha CS-80, Fender amps, chimes, Celeste, percussion, drum set, Rhodes 88, honky tonk piano, Steinway upright.
Rates: \$125/hr, 24 track; \$75/hr, 16 track; \$65/hr, 8 track; \$45/hr., 2 track.

••••COUNTERPOINT RECORDING STUDIOS, INC.
 723 Seventh Ave., New York, NY 10019
 (212) 398-9550
Owner: Jerry Ragovoy
Studio Manager: Obie Hemsey

••••DAK AUDIO
 also REMOTE RECORDING
 315 Rickert Rd., Sellersville, PA 18960
 (215) 723-1167
Owner: Daniel A. Kendra
Engineers: Griffith Wm. Foulke, Scot Fisher.
Dimensions of Studios: 20 x 23, 6 x 6.
Dimensions of Control Rooms: 17 x 10, 16 x 8.
Tape Recorders: 3M M79 24 track, Tascam 80-8 8 track, Tascam 3440 4 track; Studer B67 2 track; Otari MX 5050B 2 track; Pioneer RT 1050 2 track.



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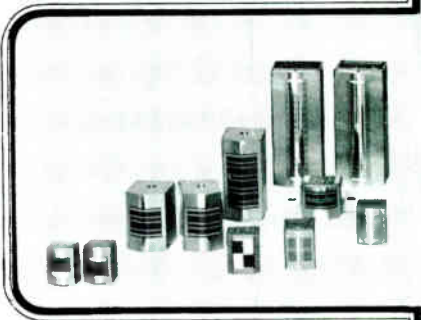
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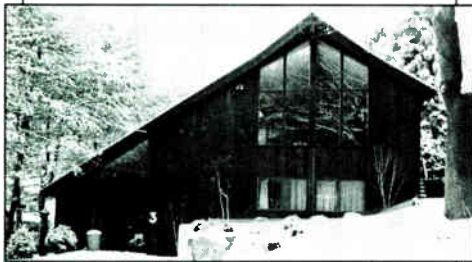


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Mixing Consoles: Tangent 3216 24 x 24; Studiomixer II 20 x 8 x 4 x 2; Sunn 2216 16 x 2 x 1

Monitor Amplifiers: Crown, Yamaha

Monitor Speakers: JBL 4435, JBL 4313B, JBL 4401; Cerwin Vega; Auratone.

Echo, Reverb & Delay Systems: Lexicon 200 digital reverb, Lexicon Prime Time II digital delay, DeltaLab Effectron 1024, Korg SDD 3000.

Other Outboard Equipment: Kepex, Gain Brain, Symetrix CL-100, Furman Parametric EQ, UREI 537 EQs, dbx, Dolby, Tapco, Soundcraftsman, Bamp

Microphones: AKG C414EB, Sennheiser 421, Electro-Voice RE20, Crown PZM, Shure SM81, SM57, SM58, PE50SP.

Instruments Available: Hammond M3 organ w/Leslie 145, Fender Rhodes piano, upright acoustic piano, acoustic and electric guitars, guitar and bass amplifiers

Rates: 24 track, \$75/hr.; Block rate \$55/hr 8 track, \$35/hr.; Block rate \$28/hr Mobile 8 track, \$38/hr.

DELTA RECORDING CORP.

16 W. 46th St., New York, NY 10036
(212) 840-1350

Owner: Bernard Zimney

Studio Manager: Bram M. Leinwand



DIGITAL BY DICKINSON
Bloomfield, NJ

DIGITAL BY DICKINSON

9 Westinghouse Plaza, Box 547, Bloomfield, NJ 07003
(201) 429-8996

Owner: Frank R. Dickinson Jr.

Studio Manager: Enn Ohlsen

Engineers: Frank R. Dickinson Jr., J. Mark Goode.

Dimensions of Studios: 18 x 20.

Dimensions of Control Rooms: 12 x 16.

Tape Recorders: (4) 3M digital mastering system 32 track, (6) JVC 8200 VTRs 2 track, (2) JVC DAS-90 digital audio processor 2 track; Sony F-1 digital processor 2 track; Ampex AG440C 4 track, Ampex ATR100 2 track, Sony PCM-10 digital processor 2 track.

Mixing Consoles: Trident TSM80 40/32/24; Studer 12/2

Monitor Speakers: B&W 801, UREI 848, VMPS column towers, Yamaha NS10M.

Echo, Reverb & Delay Systems: (2) EMT 140 stereo plates, (2) EMT 140 mono plates, Prime Time II, Lexicon PCM41 digital delay, AKG BX-10 stereo reverb.

Other Outboard Equipment: Eventide Omnipressor, Valley People stereo Dyna-Mites, dbx-160, Inovonics Model 201, Fairchild Model 602, Fairchild Model 670, Valley People Gain Brain, Pultec EQP-1A EQs, Valley People Kepex.

Microphones: Neumann U87s, U67s; AKG 414s; Sennheiser 421s; PZM BPTs; E-V RE20; Altec, Sonys, Schoeps CMC3s.

Instruments Available: Stenway grand piano, Hohner Clavinet D-6, Fender Rhodes 73, upright grand piano w/tack attachment.

Video Equipment & Services: Audio Kinetics Q-Lock system w/interfaces, (6) JVC 8200 ¼" video machines, JVC 2082UM color monitor, JVC 6400 ½" VHS machine, Sony SL-2000 ½" Beta machine.

Rates: Rates similar to analog (No analog overhead)

Extras: JVC DAS90 digital audio system w/complete editing capabilities available on or off premises. 3M digital mastering system complete w/editor. All types of location recording from classical to rock & roll as well as studio on premises completely multi-track digital, w/Trident console capable of handling two 3M digital 32s for 64 tracks.

Direction: More pure digital recordings in the marketplace, especially for compact disc release for 40% more dynamic range over analog and more digital audio lock to video and film.

Recent 100% pure digital projects include Joe Jackson and Kashif's latest albums in production, along with "La Cage Aux Folles" RCA, "Inidels" Bob Dylan, "Hearts & Bones" Paul Simon, Don Q rum jingle lock to video, Epcot Center Walt Disney, "In the Digital Mood" Glenn Miller Orchestra Grusin-Rosen Prods, Musical Heritage Society, analog transfers of archival masterpieces to digital for Readers Digest etc. Ask for literature.

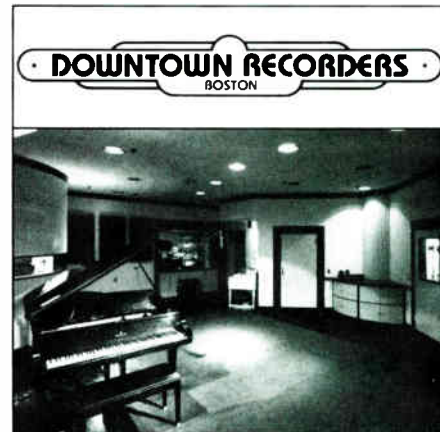
DIMENSIONAL SOUND

301 West 54th St., New York, NY 10019

(212) 247-6010

Owner: Ed Chalpin

Studio Manager: Scott Weinstein



DOWNTOWN RECORDERS
BOSTON

DOWNTOWN RECORDERS
Boston, MA

DOWNTOWN RECORDERS

537 Tremont St., Boston MA 02116

(617) 426-3455

Owner: Mitch Benoff

Studio Manager: Anne Richmond

Engineers: Joe Cuneo, Jeff Whitehead.

Dimensions of Studios: 23 x 28 plus 4 iso booths

Tape Recorders: MCI JH-24 24 track (16 track also available), Otari M5050B 2 track; Revox A77H 2 track

Mixing Consoles: Tangent (modified) 3216, 32 in x 24 out

Monitor Amplifiers: Crown DC-300s, DC-150, Dynaco

Monitor Speakers: UREI 813s, Yamaha NS-10Ms, JBL 4311s, Auratones.

Echo, Reverb & Delay Systems: Lexicon 224X digital reverb, Clover reverb, 100 dome acoustic chamber, Clover reverb, Lexicon Super Prime Time; DL-4 digital delays.

Other Outboard Equipment: Eventide Harmonizer, dbx 165s, LA4s, 1176s, UREI 175 tubes and Ashly SC50 compressors, Valley People and Roger Mayer noise gates, Ashly SC66A parametric EQs.

Microphones: Neumann U87s, KM-84, Sennheiser 441s and 421s, Shure SM81s and SM57s, AKG D12, 414s and 451s, E-V RE15, RE20s and 664, Beyer 500s, Crown PZMs.

Instruments Available: 1920 Stenway grand piano, Hammond B-3 organ w/Leslie speaker, Wuritzer electric piano

Rates: \$55/hr. 24 track package rate, \$35/hr. 16 track package rate; special weekly lock-out rates

EASTERN ARTIST'S RECORDING STUDIO

36 Meadow St., E. Orange, NJ 07017

(201) 673-5680

Owner: Bill Galanty

Studio Manager: Christopher Rich

Engineers: Andy Wallace, Tom Zepp

Dimensions of Studios: 15 x 30

Dimensions of Control Rooms: 15 x 17

Tape Recorders: Studer A-80 VU MK III 24 track, Ampex ATR-102 2 track, Studer B67 2 track, Studer/Revox B77 2 track

Mixing Consoles: Audio Processing Systems Inc (APSI) 3001 32 x 24

Monitor Amplifiers: Hafler 500 (2), Hafler 220 (3), Crown D-300 (Cue, 2)

Monitor Speakers: UREI 813 As, Electro-Voice Sentry 100s, JBL 4311, Minima 7s, Auratones

Echo, Reverb & Delay Systems: Echoplate, EMT 250, Lex 224X reverb, PCM 41, PCM-42, Lexicon Prime Time, Eventide Harmonizer

Other Outboard Equipment: UREI LA-3A LA-4, dbx 160s, UREI 1176, Kepex II noise gates (8), Omni-craft gates (4), Pultec EQs, APSI graphic and parametric EQs, Loft delay/flanger, Castle

Phase Shifter, Orban De-Esser, Dolby noise reduction.
Microphones: Neumann U87, U47, KM84, Telefunken 251 tube; AKG 414, 452; Sennheiser 441, 421; E-V RE20; Beyer M250, 500, 160; Shure 58, 57, 81.
Instruments Available: Yamaha C-7 grand piano, Hammond B-3 w/Leslie, Fender Rhodes electric piano, Linn LM-1 and Oberheim DMX drum machines, Prophet V synthesizer, Tama 8 piece drum kit, various percussion instruments, Fender, Yamaha, Sunn, Vega and Kustom guitar amps.
Rates: Upon request.

EASTERN ARTISTS' RECORDING STUDIO
East Orange, NJ



••••80'S 24 TRACK RECORDING & VIDEO INC.
 522 West 29th St., New York, NY 10001
 (212) 279-5161 or 244-8698
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 Studio Manager: Novac

••••DON ELLIOTT PRODUCTIONS
 15 Bridge Rd., Weston, CT 06883
 (203) 226-4200
 Owner: Don Elliott
 Studio Manager: Liz Gallagher

••••ELECTRIC LADY STUDIOS
 52 W. 8th St., New York, NY 10011
 (212) 677-4700
 Owner: Alan Selby
 Studio Manager: Mary Culum

••••EMMAUS SOUND STUDIO
 533 Oak Terrace, Point Pleasant, NJ 08742
 (201) 899-5586
 Owner: Joe Saint, Jim Scott
 Studio Manager: Joe Saint

••••EUROSOUND STUDIOS
 151 W. 46th St., New York, NY 10036
 (212) 869-2666
 Owner: Raul Alarcon
 Studio Manager: Raul Alarcon

••••EVERGREEN RECORDING
 215 W. 91st St., New York, NY 10024
 (212) 362-7840
 Owner: Joel Greenbaum
Engineers: Rob Steven, Chief Eng., independents.
Dimensions of Studios: Main recording area, glass enclosed drum room, two isolation booths - total 500 sq. ft.
Dimensions of Control Rooms: 200 sq. ft.
Tape Recorders: Ampex MM1200 24 track; Otari MTR10 2 track; Ampex/Inovonics 2 track, Technics 1500 2 track; Pioneer RT1050 2 track; Awa and Akai cassette decks.
Mixing Consoles: Harrison MR3 28 in x 24 out. Allison 65K Programmer automation.
Monitor Amplifiers: Yamaha P2200, Bryston IV, Marantz tube.
Monitor Speakers: UREI 811s, Burhoe Crimsons, Auratones, JBL 4401s, RCRs.
Echo, Reverb & Delay Systems: Echoplate II, Ursa Major Space

Station, MXR DDL, Eventide Harmonizer, Eventide SP2016, Lexicon Prime Time II.
Other Outboard Equipment: Kepex, Ashly comp/limiters, dbx 160s, 161s, Valley People Dyna-Mites, dbx 904 noise gates, dbx 909 de-esser, Orange County comp/limiter noise gate (stereo), Pultec EQ, Ashly parametric EQ (stereo).
Microphones: AKG 414s, 451s; Neumann U87s; Sennheiser 421s, 441s; Shure SM57s, 58s; Crown PZMs; E-V RE20s.
Instruments Available: Complete Slingerland drum kit (wood snare or Ludwig metal snare), Boogie, Fender, Ampeg, Polytone amps, grand piano, Rhodes, Yamaha organ, Roland Juno 60 synthesizer, LinnDrum, Steinway grand piano.
Rates: Call for info.

••••EVERGREEN RECORDING STUDIOS INC
 1373 McLaughlin Run Rd., Pittsburgh, PA 15241
 (412) 221-2737 or 221-7025
 Owner: Harry Coleman, Charlotte Coleman, Elgin Eissler
 Studio Manager: Harry Coleman, Charlotte Coleman

••••EVS/FLEETWOOD STUDIOS, INC.
 321 Revere St., Revere, MA 02151
 (617) 289-6800
 Owner: Alphonse Morad
Studio Manager: Michele Moretti, Girard Simon
Engineers: Bill Ferruzzi, Chief eng.; Jeff Landroche, Marc De Sisto.
Dimensions of Studios: Studio A: 50 x 40 x 14; Studio B: 9 x 6½ x 8; Studio C: 20 x 10 x 11.
Dimensions of Control Rooms: Studio A: 15 x 17 x 11; Studio B: 16½ x 6½ x 8; Studio C: 12 x 10 x 7½.
Tape Recorders: Studio A: 3M 79 24-16 track, Scully 284B 8 track, Scully 280B 2 track, Scully 280 2 track, Scully 280 4 track; Studio B: (2) Scully 280B 4.2 track; Studio C: (2) Scully 280 2 track, Scully 284B 8 track.
Mixing Consoles: API 2488 32/32, Data Mix 8/8.
Monitor Amplifiers: Phase Linear 400, QSC 4 2, Crown.
Monitor Speakers: UREI 848, A'tec, Master Lab Network.
Echo, Reverb & Delay Systems: EMT Echoplate Model 140, Super Prime Time Harmonizer
Other Outboard Equipment: Eventide Harmonizer, Eventide Omnipressor, Inovonics Limiters, Teletronix Limiters, Dolby 301, Kepex, Pultec EQ, Altec 438A compressors, echo tape loop.
Microphones: Neumann, AKG, E-V, Beyer, Shure, Sennheiser, Sony.

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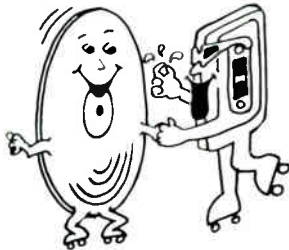
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icon Prime Time, Eventide Harmonizer 949, Echoplate II, MXR digital delay, Loft digital delay.
Other Outboard Equipment: UREI Compressors, Neve EQ, API EQ, dbx compressor/limiters
Microphones: Neumann 87s, 47s, AKG 414; Sennheiser 421
Instruments Available: OBX-A, Yamaha 74" grand, Fender Rhodes, Clavinet, Emulator, Prophet V, LinnDrum, Simmons drum, Yamaha DX7.
Video Equipment & Services: Video available
Rates: \$40/hr., 24 track

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••••JAC RECORDING INC.
45 W. 57th St., New York, NY 10019
(212) 753-6446
Owner: Charles Leighton
Studio Manager: Charles Leighton

••••JHANA SOUND PRODUCTIONS
Walnut Tree Hill Rd., Sandyhook, CT 06482
(203) 426-0307
Owner: Jack Hanna
Studio Manager: Jack Leonard
Engineers: Ron Bacchocchi (chief), Earl Cohen, Jack Hanna.
Dimensions of Studios: 40 x 30
Dimensions of Control Rooms: 24 x 13
Tape Recorders: MCI JH-24 w/AL III 24 track, MCI JH 110B ½" 2 track; Revox A77 2-¼ track; Scully 280 2 & 1 track; Tandberg 9000X 2-¼ track; Harmon Kardon HK 400 cassette; MCI JH 110 2 track
Mixing Consoles: MCI JH-636 GO-VU transformerless 30/24
Monitor Amplifiers: McIntosh, BGW, Yamaha
Monitor Speakers: Big Red Time sync., JBL 4430, JBL L100, Yamaha NS-10, Auratones, KEF - Chorale.
Echo, Reverb & Delay Systems: Echoplate II, AKG BX-10, Lexicon Prime Time, DeltaLab DL-2, Ursula Major Space Station, Effectron, (2) live chambers
Other Outboard Equipment: Eventide Harmonizers 910 & 949, UREI 1176 Limiters (3), Ashly SC-66 parametric EQ, dbx 160X limiters (3), Audio Arts parametric EQ, Valley People Dyna-Mite, Gain Brain, ADR Vocal Stressor, dbx 180 noise reduction 2CH, Pultec filter, Roland stereo chorus, flanger UREI 527A, Aphex Exciter
Microphones: AKG, Sennheiser, Shure, E-V, Sony.
Instruments Available: Yamaha 74" grand piano, other available upon request
Video Equipment & Services: Please call for details
Rates: Upon request, please call

••••KAJEM STUDIOS
1400 Mill Creek Rd., Gladwyne, PA 19035
(215) 649-3277
Owner: Mitch Goldfarb, Joe Alexander, Kurt Shore, Sam Moses
Studio Manager: Mitch Goldfarb
Engineers: Mitch Goldfarb, Joe Alexander, Terry Hoffman
Dimensions of Studios: Hexagonal 35 x 30, plus an adjacent 2000 sq. ft. ambient room
Dimensions of Control Rooms: 20 x 16
Tape Recorders: Studer A80 MK III 24 track, Studer A80 RC ½" 2 track, Studer B67 2 track; Tascam 90-16 16 track; Copy Machines—Revox, TEAC, Crown, Ampex
Mixing Consoles: Harrison 2824, 28 in x 24 out.
Monitor Amplifiers: Crown DC300, SAE
Monitor Speakers: UREI Time Aligned 813s, JBL L60, Yamaha NS-10s, Auratone Visonic, reference headphones by Koss AKG and Fostex.
Echo, Reverb & Delay Systems: EMT 251, Sony DRE 2000, Eventide Instant Phaser/Flanger, Eventide DDL, Eventide Harmonizer, MXR Pitch Transposer, Ursula Major Space Station, Acousticcomputer, Lexicon Prime Time, MXR DDL, Master-Room.
Other Outboard Equipment: SAE Parametric, Scamp Rack, Roger Mayer noise gates, Symetrix compressors, LA4s, Sweep EQ, Kepex II, Gain Brain II, ADR Complex Vocal Stressor, EXR Exciter, Scamp De-Esser, Scamp Dynamic Noise Filter/Gate, Scamp Pan Scan, API 550As

Microphones: Neumann U87s, KM84, Sennheiser 421s; E-V RE20s, 16s; AKG 451s, 414s, D29s, D12s; Shure 57s, 54s, 81s; Sony ECM33s, ECM989; Crown PZM.
Instruments Available: Mason Hamlin grand piano, ARP Omni, Vox organ, Pearl and Rogers drums, Tack piano, Wuritzer, electric piano, Fender, Acoustic, and Music Man amps, Roland Juno 60, rentals available upon request.
Rates: Please call for rates. Package rates available
Extras: Off-hour special on 16 track time—\$45/hr between 11 p.m.-7 a.m. in-house production and arranging available, 50,000 cu.ft ambient room.
Direction: Kajem is Philadelphia's largest and best equipped single-room facility, with control room tuned by Acoustilog. Adio Productions is a division of Kajem Studios specializing in award-winning commercial jingles

••••KAMPO CULTURAL CENTER, INC.
31 Bond St., New York, NY 10012
(212) 228-3063
Owner: Hiroshi Harada
Studio Manager: Tom Toeda

••••KIMCHANDA SOUND STUDIOS
(Division of Fist-o-Funk)
Star Route, Box 9, Stamford, NY 12167
(607) 652-3387
Owner: Kevin Misevis
Studio Manager: Kevin Misevis
Engineers: Kevin Misevis Freelance engineers available - Eddy Marshall, Godfrey Diamond, Larry Alexander, Bub Patrick
Tape Recorders: MCI JH16 24 track Dolby; Studer A67 2 track Dolby
Mixing Consoles: MCI 528-28C 28 in x 24 out Plasma Display, automated, 4 band EQ, Spectra-Vue
Monitor Amplifiers: UREI 6500 2XBGW 750, BGW 225
Monitor Speakers: UREI 813A, Tannoy, Sentry 100A, Auratones.
Echo, Reverb & Delay Systems: Lexicon 224X digital reverb, 515 MICMIX, Lexicon Prime Time, Effectron (DeltaLab).
Other Outboard Equipment: Aphex Aural Exciter, (4) Aphex CX-1 compressor/limiter/expander, (4) UREI 1176, (4) Pultec EQ, Harmonic computer (DeltaLab), (2) Pultec filters.
Microphones: Neumann U87s, AKG 414, Sennheiser, RCA, Shure, E-V
Instruments Available: Baldwin piano, Fender Rhodes, ARP 2600, Hammond C3 with Leslie, Slingerland drums, Prophet 500 synthesizer
Rates: Negotiable.

••••KINGDOM SOUND STUDIOS
6801 Jericho Turnpike, Syosset, L.I., NY 11791
(516) 364-8667
Owner: Bill Civitella
Studio Manager: Bill Civitella, Maureen Civitella
Engineers: Dave Oliver, Bill Civitella, Glen Kolotkin, John Devlin
Dimensions of Studios: 26 x 32 x 16
Dimensions of Control Rooms: 26 x 16 x 13
Tape Recorders: Studer 24 track A-80 MK III, Studer 24 track A-80 MK III, Studer A80 MK II ½" 2 track, Studer A-80 MK II ½" 2 track, Studer 810 ¼" 2 track, (2) Studer A 710 cassette recorders, all machines w/Dolby
Mixing Consoles: Trident (Melkust auto) TSM 40 in x 32 out
Monitor Amplifiers: Crown DC 300s, 150s, Phase Linear 400s
Monitor Speakers: Altec 604 E II, UREI 813A, Yamaha NS-10M, Auratone, Altec 604E for studio playback
Echo, Reverb & Delay Systems: EMT 140, 240, Lexicon 224, and 250 DDL
Other Outboard Equipment: Four way cue system with individual mix boxes, Eventide 949 Harmonizer, (2) Eventide 910 Harmonizer, Marshall Time Modulator, Eventide 201 flanger, Eventide phase shifter, Lexicon Prime Time, MXR flanger, UREI 1176s, UREI LA4s, UREI LA3As, dbx 160s, A&D 760s, Orban 621B stereo EQs, Pultec EQ-1A, API 560s, Orban 516EC de-esser, (8) Valley People Kepex II gates, UREI 964 digital metro-nome.
Microphones: Neumann U47s (tube), U87s, KM86s, AKG 414s, 452s, D12s, D224; Shure SM57s; E-V RE20s, RE55s, RE10s, RE15s, PZMs.
Instruments Available: Steinway 1915 grand piano, Hammond A3, Dyno-My-Rhodes, Oberheim OBB, Yamaha DX7, Oberheim DX digital drum computer, Baldwin electric harpsicord, Fender, Marshall, Acoustic, Yamaha amps, Rogers drums, full percussion and tympani, Wuritzer electric piano, (2) Leslie amps, Moog synthesizer, other instruments available on request.
Rates: Please call for rates

••••LE STUDIO INC./LE STUDIO MOBILE
ONLY REMOTE RECORDING
715 Boylston St., Boston, MA 02116
(617) 267-2825
Owner: Samuel Boroda
Studio Manager: Samuel Boroda

••••LE STUDIO
201 Perry, Morin Heights, Quebec, Canada JOR 1H0
(514) 226-2419
Owner: Andre Perry and Yael Brandeis
Studio Manager: Yael Brandeis



*LE MOBILE
New York, NY*

••••LE MOBILE
REMOTE RECORDING
211 W. 56th St., New York, NY 10019
(212) 265-1979
Owner: Guy Charbonneau
Studio Manager: Bookings: Abe Holt, or Meryl Yelman

••••LEMANS SOUND STUDIOS
331 Triangle Rd., So. Somerville, NJ 08876
(201) 359-5520
Owner: Bernie Goydish
Studio Manager: Bernie Goydish

••••LION & FOX RECORDING, INC.
also REMOTE RECORDING
1905 Fairview Ave., N.E., Washington, D.C. 20002
(202) 832-7883
Owner: Hal Lion, Sally Lion, Jim Fox
Studio Manager: Jim Fox



*LONG VIEW FARM
No. Brookfield, MA*

••••LONG VIEW FARM
also REMOTE RECORDING
Stoddard Road, No. Brookfield, MA 01535
(617) 867-7662, 867-7050, (800) 225-9055
Owner: Gil Markie
Studio Manager: Andrea Marchand

••••McCLEAR PLACE STUDIOS LTD.
225 Mutual St., Toronto, Ontario, Canada M5B 2B4
(416) 977-9740
Owner: Bob Richards
Studio Manager: Phil Sheridan

••••M & I RECORDING ENTERPRISES LTD.
630 9th Ave., New York, NY 10036
(212) 582-0210
Owner: Mitch and Ira Yuspeh
Studio Manager: Steve Harday

••••MARK STUDIOS
also REMOTE RECORDING
10815 Bodine Rd., Clarence, NY 14031
(716) 759-2600

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Circle #060 on Reader Service Card

Owner: Vincent S. Morette
Studio Manager: David M. Bellanca
Engineers: David Bellanca, Larry Swist, Vince Morette, Chuck Cavanaugh, Mark Mekker
Tape Recorders: Otari MTR90 24 track, Ampex ATR 102 2 track; Ampex AG440B 4 track; Otari MTR10 2 track; Studer A80 2 track; 50 Nakamichi LX-5 cassette decks for real time duplication.
Mixing Consoles: Amek 3000M, 36 in x 24 out, Audiotronics 110-B 24 in x 24 out
Monitor Amplifiers: Crown PSA2, UREI 6500
Monitor Speakers: UREI 813, 811, miscellaneous small speakers
Echo, Reverb & Delay Systems: Echoplex II, BX-20E, BX-10E, EMT 240, Lexicon 200 digital reverb, Lexicon PCM 41, Lexicon PCM 42 w/mco, pitch transposer, Ursa Major Space Station, Roland delays, Lexicon 224X
Other Outboard Equipment: UREI 1176LN (2), LA 4, LA 3, AD & R Complex F760 RX, gates, Audio Arts parametrics, UREI parametrics, Aphex Exciter, EXR Exciter, many tape echo decks
Microphones: AKG 414EB, P48, Beyers 260, 160, 69, 500, 400, AKG C12; Shure SM57, 58, 59, 81; Sennheiser MD421, 402, AKG Tubes, U67, U89, AKG C451EB, C452EB.
Instruments Available: Kawai grand, Moogs, Prophet, Fender, Acoustic, drum machines, etc.
Rates: Package rates available for remote and studio, so no clock watching is needed

••••MASTERMIND RECORDING STUDIOS

1650 Broadway, New York, NY 10019

(212) 765-7400

Owner: Anne Wood

Studio Manager: Joan Meisel

Engineers: (Chief) Keith Walsh, Neal Ceppos, Pat Smith (Chief tech. engineer).

Dimensions of Studios: Studio C: 12 x 35 x 20, Studio A: 12 x 50 x 25

Dimensions of Control Rooms: Studio C: 50 x 35 x 20;

Studio A: 60 x 50 x 25

Tape Recorders: MCI (2) JH-24 transformerless 24 track, MCI JH-110B 2/mono track; Scully (8) 280 2 track; Magna Tech 35mm/full coat & stripe 1-4 track

Mixing Consoles: Studio A: Audio Design (custom built) separate mon. section, 32 x 24; Studio C: MCI JH-52B "D" transformerless 28 x 24.

Monitor Amplifiers: All McIntosh 2100 and Crown D-75 for cue
Monitor Speakers: "Big Blues" (custom Altec 604E), ADS 300, Auratone 5C

Echo, Reverb & Delay Systems: (4) EMT "tube" chambers, Harmonizer, Orban stereo, and Prime Time

Other Outboard Equipment: Harmonizer, Instant flanger/phase Kepex, Lang EQs, UREI LA-3 comp/limiters, 1176 comp/limiters, Little Dipper Filter


Microphones: Neumann U-87s, U-47s, AKG 451 EBs; Shure SM-57; EV RE-20s; Beyers 160s; Custom PZMs; RCA 44s

Instruments Available: (2) Steinway grand pianos, honky tonk piano, Hammond organ w/Leslie, Slingerling drum set, Tama drum set, RMI electric piano and Celeste

Video Equipment & Services: Sony video playback systems.

Rates: Competitive rates (Please call us or write for our rate sheet).

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Circle #061 on Reader Service Card



MASTER SOUND PRODUCTIONS INC.
Long Island, NY

••••MASTER SOUND PRODUCTIONS INC.

921 Hempstead Turnpike, Franklin Sq., L.I., NY 11010

(516) 354-3374

Owner: Maxine Chrein

Studio Manager: Maxine Chrein

••••MEDIASOUND INC.

311 W. 57th St., New York, NY 10019

(212) 765-4700

Owner: Michael D. Mektoen, Domino Media, Inc

Studio Manager: Hank Meyer; Special Consultant: Susan Pianer

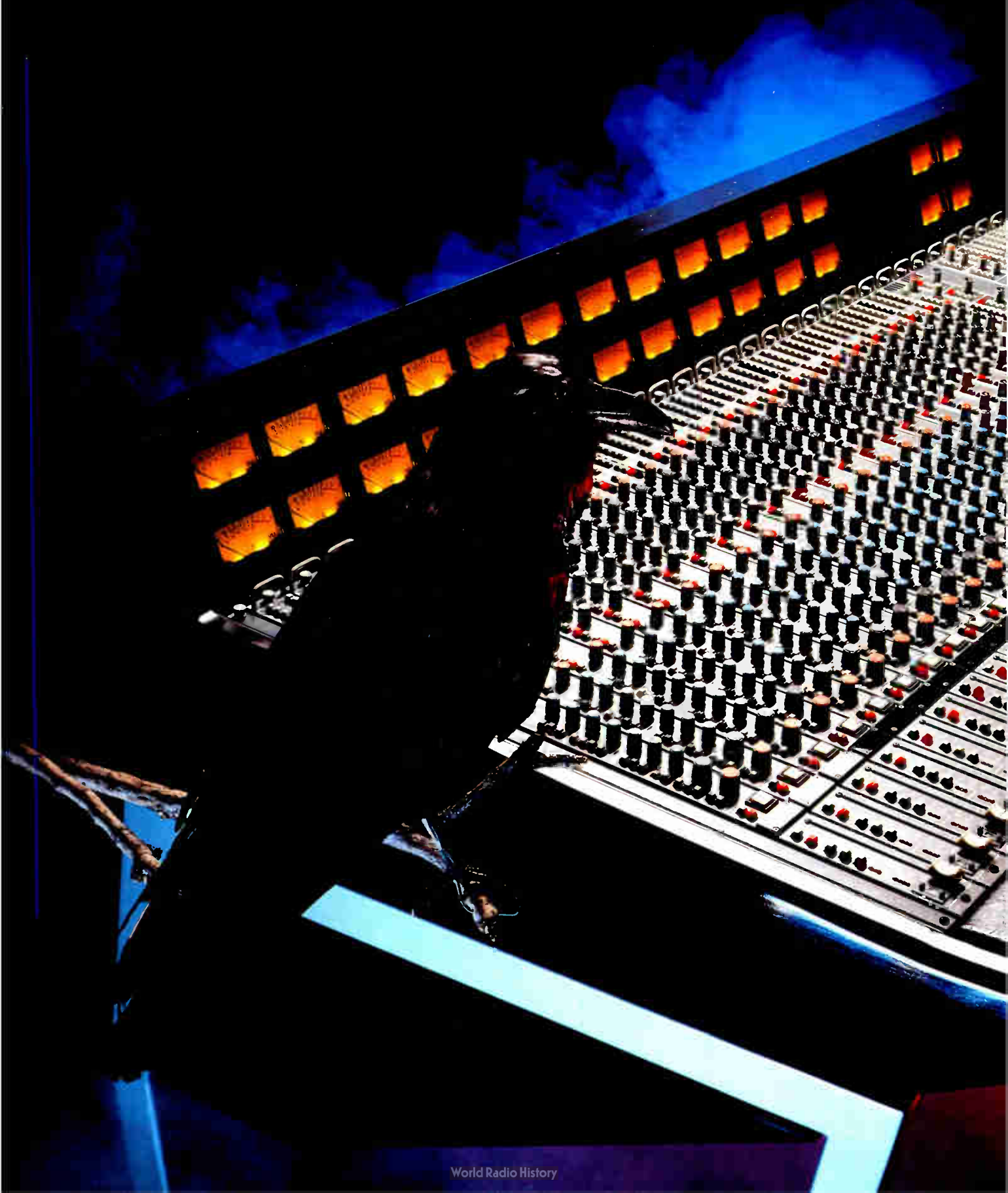
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THE RAVEN. A DREAM



IT BECOMES REALITY.

A lot of people have always dreamed of owning a Harrison. That's because Harrison has always offered the top of the line in technological sophistication and workmanship. And now we can help make that

dream a reality— with a console that offers you high Harrison quality while also remaining highly affordable. The Raven.

The Raven follows a long line of renowned Harrison consoles, with the same outstanding engineering and workmanship as its predecessors. With the latest in Harrison technology in circuit design and signal handling. With Harrison's new VSI Fader section, which gives it the capability of interfacing simultaneously with automation and your video system. In addition, a high degree of field programmable signal path options allows you to tailor the Raven to your needs. Harrison quality is built in through features like transformerless balanced +4 (or +8) inputs and outputs, DIN standard Eurocard connectors, laser-trimmed thick film resistor networks, and socketing of all integrated circuits. And, the Raven is designed to be ergonomically correct.

Owning a Raven, moreover, means you get Harrison's commitment to prompt, quality service. When you need help, our service department is only a toll-free

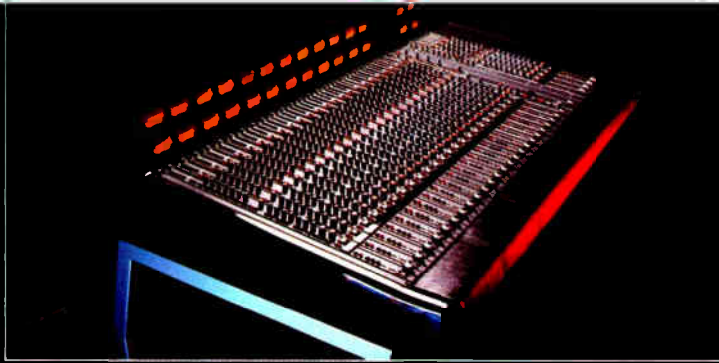
Best of all, even as the Raven is built to our high standards, it's also built for your budget. That makes it a rare bird indeed. The stuff that dreams are made of.

Additional Raven Features:
Minimum audio-path design • State-variable equalizer • 24 track plus direct outs • 4 mono sends, plus 1 stereo send (all sends individually switchable) • Main/monitor pre/post folder • Automatic PFL • Optional non-interrupting stereo solo • Dual switchable mic inputs to each module • Extensive communications • P & G faders • 4 versatile echo returns • 2 main stereo mix busses for ease of mix-minus operation.

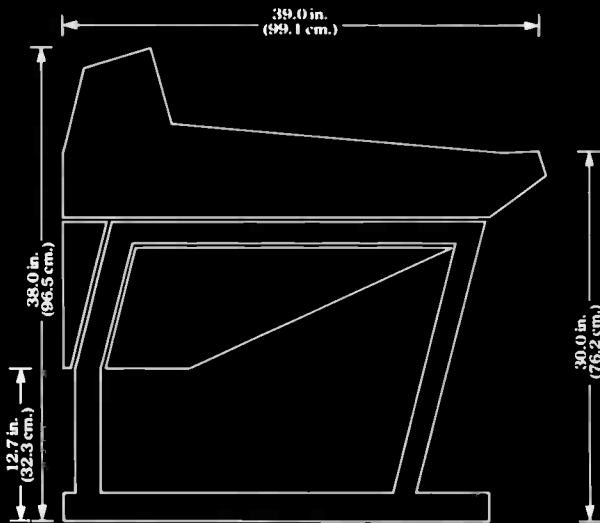


For more information call or write Harrison Systems, Inc., P.O. Box 22964, Nashville, TN 37202 (615) 834-1184 Telex 555133.

 **Harrison**
HARRISON SYSTEMS, INC. INCORPORATED



THE RAVEN. SPECIFICATIONS.



End View of Raven

Power Supply Dimensions

Dimension	Inches	(cm)
Width	19.0	48.3
Depth	17.5	44.5
Height	7.0	17.8

Line inputs:

Balanced
Nominal level

Maximum level

Actual load impedance
Expected source impedance

Electronic active
+4 dB, +6 dB, +8 dB
(ref. 0.775 volts rms)
+30 dB
(ref. 0.775 volts rms)
10 kohms
1000 ohms or less

Line outputs:

Balanced
Nominal level

Maximum level

Actual source impedance

Minimum load impedance

Electronic active
+4 dB, +6 dB, +8 dB
(ref. 0.775 volts rms)
+24 dB
(ref. 0.775 volts rms)
40 ohms standard
20 ohms optional
600 ohms standard
300 ohms optional

Meters:

Illuminated "pointer type" VU

Housing:

All aluminum alloy construction finished in multipart urethane finishing system, box steel welded legs, black "ebony type" wood trim.

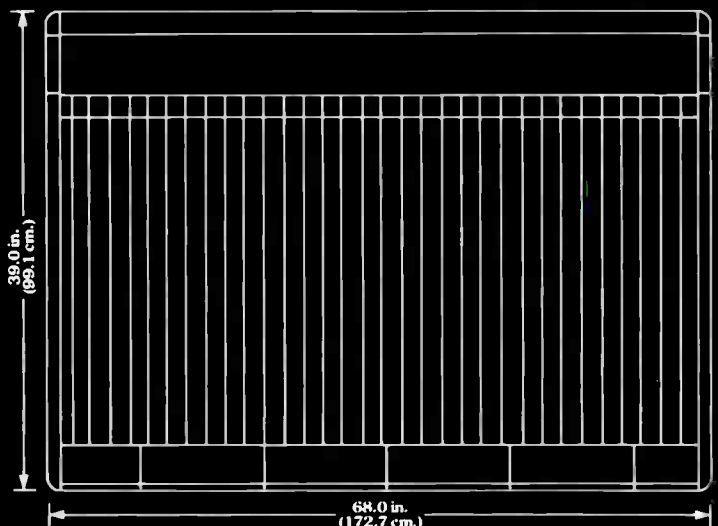
Connectors:

Microphone input, line inputs & outputs—12 pin *Molex* connector module internal—*DIN* Eurocard 64 pin.

Power:

See reference manual for power and thermal considerations.

Representative Raven Frame (Top)



These specifications represent an overall system and not the individual components of a system. These specifications are subject to change at any time. Important: See reference manual for conditions of test and compliance.

Frequency Response:

Microphone input line output. Gain shall not deviate from gain at 1kHz for any frequency from 20 Hz to 20 kHz more than +2 dB to -2dB.

Line input to line output. Gain shall not deviate from gain at 1kHz for any frequency from 20 Hz to 20 kHz by more than +2 dB to -1.5 dB.

Noise:

Microphone in. The equivalent input noise shall not exceed -129 dB (ref. 0.775v).

Crosstalk:

Microphone in to line out. The crosstalk shall not be worse than -65 dB with reference to the driven output at any frequency up to 15 kHz.

Distortion:

Microphone in to line out. The measured intermodulation distortion shall not exceed 0.1%.

Microphone input:

Balanced	Electronic active
Minimum gain (voltage gain)	Zero dB (unity)
(fader unity, pad -20 dB)	
Maximum gain (voltage gain)	70 dB
(fader unity, no pad)	
Nominal input level	-20 dB through -70 dB
(fader unity, no pad)	(ref. 0.775 volts rms)
Maximum input level	+30 dB
(fader unity, pad -20 dB)	(ref. 0.775 volts rms)
Expected source impedance	150 to 200 ohms
Actual load impedance	1200 ohms

Harrison

HARRISON SYSTEMS, INCORPORATED
P.O. Box 22964, Nashville, Tennessee 37202
(615) 834-1184, Telex 555133

Engineers: Fred Christie, Harvey Goldberg, Carl Beatty, Mike Barbiero, Michael Brauer, Doug Epskin, Lincoln Clapp, Don Wershba

Dimensions of Studios: A: 30 x 50 (former church); B: 20 x 20; C: 10 x 15, lounge 15 x 15.

Dimensions of Control Rooms: A: 15 x 10, B: 14 x 14; C: 10 x 14; lounge control room 10 x 14

Tape Recorders: Studer A800s, B67s and A80s, 1/2" and 2 track stereo capabilities in all rooms

Mixing Consoles: Neve 8068 modified, 42 in x 16 out; Harrison 4032, 32 in x 32 out

Monitor Amplifiers: McIntosh 2500s, Altec 9440s, H&H

Monitor Speakers: UREI 813As

Echo, Reverb & Delay Systems: EMT 140, AKG, Grampion, Eventide DDL, Lexicon Prime Time, Lexicon 224

Other Outboard Equipment: Pultec EQ, UREI limiters, Neve limiters, Eventide phasers and flangers, MXR phasers and flangers, Kepex, Gain Brain, Eventide Harmonizers, Marshall Time Modulators, Trident limiters; too much to list, please call for more info.

Microphones: Neumann, AKG, Shure, Sennheiser, E.V. Beyer, Pressure Zone, old tube Neumann microphones

Instruments Available: Vibes, xylophone, Celeste, Hammond organ, Fender Rhodes, clavinet

Rates: Upon request

◆◆◆MINOT SOUND

19 South Broadway, White Plains, NY 10601
(914) 428-8080, (212) 828-1216

Owner: Ron Carran

Studio Manager: Thom Cimillo

Engineers: Ron Carran, Ray Bardani, Bruce Robbins, Wayne Warnecke

Dimensions of Studios: 40 x 25

Dimensions of Control Rooms: 22 x 18

Tape Recorders: Studer A80 MkIII 24 track, MCI JH16 24 track, (2) MCI JH 110B 2 track (1/2" mix), Scully 2 track, Ampex 2 track.

Mixing Consoles: Harrison 3624, 36 in x 24 out, Allison 64K Automation

Monitor Amplifiers: H/H TPA 50s, Perreux 8000B, AdCom

Monitor Speakers: Big Reds, JBL L100, Yamaha NS10M, Visonik 7000

Echo, Reverb & Delay Systems: EMT 140 stereo AKG BX-20E; Eventide Harmonizer, Cooper Time Cube, Lexicon Prime Time, Sony DRE 2000 Digital reverberator, Eventide SP2016

Other Outboard Equipment: Kepex, Pultec and other parametric EQ's (Orban), API EQ's, phaser, flanger, Scamp Rack, auto pan; UREI, dbx, API limiters, digital metronome, VSO, VTR, BTX Shadow, 48 tracks Dolby, Lexicon PCM 41, Trident parametric EQ's

Microphones: Neumann U87, KM84, KM86, U47, Sennheiser 421, Shure SM57, AKG 414, 451, E-V; plus many others.

Instruments Available: Rhodes, Steinway, clavinet, Hammond, Fender and Marshall amps, bass amp, drums, congas, vibes, tamps, misc perc equip., OBX & other synthesizers

Rates: \$125/hr. Block booking rates available

Extras: Full record & single production service, musician owned and run studio, storage, new small 8 track studio

Direction: Records Michael Franks (Warner Bros.), Starpoint (Polygram), Bob James (CBS); Harvey Mason (Arista); The Michael Franks record was mixed with the Mitsubishi PCM 2 track digital; Junior (Polygram), Lenny White (Elektra); Rick James Presents Bobby M (Motown); Earl Klugh/Bob James (Capitol); Marcus Miller (W B), Atlantic Starr (A&M), David Sanborn (W B), Luther Vandross (Epic)

MINOT SOUND

MINOT SOUND
White Plains, NY

◆◆◆THE MIXING LAB, INC.

also REMOTE RECORDING

100 Bellevue St., Newton, MA 02158
(617) 964-8010

Owner: John Nagy

Studio Manager: John Nagy

Dimensions of Studios: 10 x 10



Dimensions of Control Rooms: 18 x 19

Tape Recorders: MCI JH114, 24 track, Studer 2 track, MCI transformerless 2 track; Ampex 2 tracks

Mixing Consoles: Custom fully parametric EQ w/group faders VCA's patch points available everywhere

Monitor Amplifiers: McIntosh

Monitor Speakers: Big Reds, 805-910, Phillips 1/2", ADS-910, Auratones, many others

Echo, Reverb & Delay Systems: Lexicon 224 digital reverb w/vocal plate & dx-20, Lexicon digital delay

Other Outboard Equipment: UREI limiters, Kepex & Gain Brain, Marshall Time Modular, Avrabad De-esser, Flanger phasers & Lexicon Prime Times

Microphones: Neumann, AKG, Schoeps

Instruments Available: Multiple

Rates: \$60 and up

◆◆◆MOBILE RECORDERS LTD.

ONLY REMOTE RECORDING

Southbury, CT 06488

(203) 264-2659

Studio Manager: G. Rothar

◆◆◆MUSIC DESIGNERS INC.

241 White Pond Rd., Hudson, MA 01749

(617) 890-8787

Owner: Jeff Gilman

Engineers: Jeff Gilman, Fred Mueller

Dimensions of Studios: 26 x 36 x 17, iso room 13 x 17

Dimensions of Control Rooms: 17 x 25

Tape Recorders: 3M Mincom: M79 24 track, 3M Mincom M 79 16 track; MCI JH-110 4 track, MCI JH-110 2 track; Otari 5050 2 track

Mixing Consoles: Harrison w/Allison 64K Automation 3232B 32/32

Monitor Amplifiers: Bryston, APT, Phillips

Monitor Speakers: UREI 813s, JBL 4311, Custom (near field)

Echo, Reverb & Delay Systems: EMT stereo, AKG BX20, Custom plate, Lexicon, Eventide, DeltaLab

Other Outboard Equipment: Multitrack and Audio Arts parametric EQ, Teletronix tube LA-2, UREI 1176 and LA4 comp/limiters, SpectraSonics comp/limiter, Allison Kepex & Gain Grains, Frequency shifter, phasers, dbx noise reduction (32 channels)...if we don't have it, we can get it!

Microphones: All the standards plus an excellent assortment of tube condensers by Telefunken, Sony & Altec

Instruments Available: Bluetoner 7 ft grand piano, Hammond B-3, harpsichord, ARP-Omn, Sonor drums, Roland, Fender & Acoustic guitar amps, Roland & Oberheim drum machines.

Video Equipment & Services: Special rates on nearby furnished apartments for lengthy stay.

Rates: Call for information on rates and accommodations.

◆◆◆MUSIC AMERICA RECORDING STUDIOS LTD.

120 East Avenue, Rochester, NY 14604

(716) 325-7235

Owner: Corporation

Engineers: Chris Bubacz, Gary Zeffing, various independents.

Dimensions of Studios: 18 x 30 (drum booth, vocal booth & additional iso room: 18 x 90)

Dimensions of Control Rooms: 16 x 20

Tape Recorders: MCI, JH24; (2) Ampex ATR102 w/1/4" and 1/2" heads; Sony 1/4-track

Mixing Consoles: MCI JH636 automated console, parametric eq, plasma metering

Monitor Amplifiers: Banner, Mosset, Phase Linear, SEA, BGW


Monitor Speakers: JBL 4430s, Auratones

Echo, Reverb & Delay Systems: Lexicon 224, Lexicon Prime Time, MXR Digital Delay, Echoplate reverb, live echo chamber

Other Outboard Equipment: White 4400 1/3-octave equalizer, UREI 1176 compressor/limiters, Dolby 361s, dbx noise-reduction, Ashly level-processors, Ashly noise gates, Valley People noise gates

Microphones: Neumann, AKG, Shure, Sennheiser, E.V. Beyer, Sony

Continued on next page



Bin Loop System available in Monaural or Stereo

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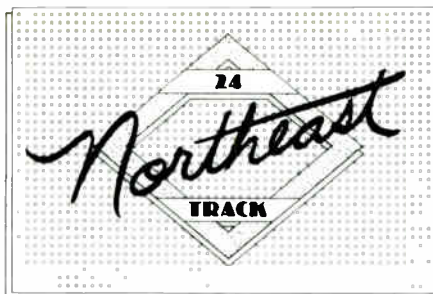
Instruments Available: Kawai 74" grand piano Hammond C-2 organ/Leslie, Oberheim synthesizer Mini-Moog synthesizer
Other instruments available for rental
Rates: Hour rates, block rates available upon request
Extras: Coffee bar lounge area, 24 hr restaurant & major hotel across the street
Direction: MARS Ltd is truly the only state-of-the-art recording facility for both artists and producers with an experienced professional staff in the western New York area. Owners have been involved with 16 gold and platinum records

MUSIC AMERICA RECORDING STUDIOS LTD.
 Rochester, NY



**MusicAmerica
 Recording Studios,
 Ltd.**

••••THE MUSIC FACTORY
 150 6th Ave., Troy, NY 12180
 (518) 447-5733
 Owner: E. Delaney
 Studio Manager: Linda Klein



••••NATIONAL RECORDING AND VIDEO CENTER
 also REMOTE RECORDING
 460 W. 42nd St., 228 W. 47th St., New York, NY,
 41-41 Crescent St., Long Island City, NY 10036
 (212) 279-2000
 Owner: Irving Kaufman, Hal Lustig
 Studio Manager: Jeff Pastelov, Eldo Luciani (audio), Herb Ohlandt (video)
 Engineers: 40
 Dimensions of Studios: 12 studios from one voice to full symphony 6 edit rooms, 2 shooting stages (where "Tootsie" was filmed).
 Dimensions of Control Rooms: To match
 Tape Recorders: 45 Audio tape recorders, MCI, Ampex, Neve, 46 tracks to mono, 23 Magnatech film dubber-recorders 4 Norelco projectors, all synch locked to video or film, 2 Vidmag sprocket video recorders, 21 Ampex 1" video recorders, 6 video cameras RCA-TK47B and IKE-HL79, Q-Lock and Shadow Synch systems
 Mixing Consoles: 16 consoles including Automated MCI, Sound Workshop, Grass Valley, Audio Designs, Trident
 Monitor Amplifiers: Crown, McIntosh
 Monitor Speakers: UREI, Altec, Electro-Voice, Auratone
 Echo, Reverb & Delay Systems: EMT, AKG, Lexicon, Lexicon Time Compressor
 Other Outboard Equipment: Full stock of state-of-the-art devices
 Microphones: More than 150
 Instruments Available: Standard popular instruments
 Video Equipment & Services: Two shooting stages, 514 video

edit rooms, Grass Valley 300 switchers, Grass Valley DVE Mark II, Ampex A D O's, 21 Ampex VPR 2 or 3, CMX 340, Datatron Vanguard, Chyron and BEI Character generators, Bosch FDL60B Telecine with Corporate Communications color corrector, all Tektronix and Conrac monitoring
Rates: On request
Extras: Complete complex from microphone or camera to final product, all in one house
Direction: Full spectrum of audio, video and film with expertise built up through 25 years of experience at broadcast quality level for top advertising agencies, film houses and major product companies throughout the world TV situation shows, sports casts, commercials, music albums, industrial and education recording all performed at the same high standards

••••NEWBURY SOUND
 108 Massachusetts Ave., Suite 508, Boston, MA 02115
 (617) 267-4095
 Owner: Ken Kanavos
 Studio Manager: Ken Kanavos

••••NICKEL RECORDING
 also REMOTE RECORDING
 168 Buckingham St., Hartford, CT 06106
 (203) 524-5656
 Owner: Jack Stang
 Studio Manager: Jack Stang, Tom Newton
 Engineers: Chief Jack Stang, Second engineer Tom Newton, assistant engineers, Ed Burgess, Rich Horan
 Dimensions of Studios: 2400 sq ft
 Dimensions of Control Rooms: 40 x 30
 Tape Recorders: Soundcraft 76024X 24 track, Tascam 80-8 8 track, Otari 5050B 1/2 track, TEAC 3340 4 track
 Mixing Consoles: Soundcraft Series 1600
 Monitor Amplifiers: Nikko & Crown
 Monitor Speakers: JBL, Auratone, Avid, ADC
 Echo, Reverb & Delay Systems: (2) Plate reverbs, Lexicon Prime Time digital delay, Orban, (2) Effectrons
 Other Outboard Equipment: dbx limiters, De-Esser, compressors, noise gate, Aural Exciter, UREI graphic EQ
 Microphones: AKG D12A, 414s, 451s, Sennheiser 421s, Snyos, Shure SM82, E-V
 Instruments Available: Acoustic piano & guitar, guitar amps, baby grand piano, Fender Rhodes, acoustic guitars, guitar amps, Rogers drum kit, synthesizers on request
Rates: 8 track, \$29/hr., 16 track \$38/hr., 24 track, \$55/hr. Call for block rates

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Jupiter 6	Linn Drum	Gallien-Krueger, etc.)
Yamaha DX-7	and Dr. Click	

... Plus Loads of New Outboard Gear

State of the Art 24-track Recording at Sensible Prices!

••••THE NINETEEN RECORDING STUDIO
 also REMOTE RECORDING
 19 Water St., South Glastonbury, CT 06073
 (203) 633-3286, 633-8634
 Owner: Jonathan Freed
 Studio Manager: Steven Fanelli
 Engineers: Ronny Scalise, Jonathan Freed
 Dimensions of Studios: 42 x 42 includes semi-open drum booth and isolation booth, isolation booth overlooks beautiful trout stream Total studio building is 4000 sq ft
 Dimensions of Control Rooms: 22 x 24 also overlooks trout stream
 Tape Recorders: All recorders equipped with dbx noise reduction MCI JH114 16/24 track, Otari MX 5050 2 track, Tascam Series 70 8 track, Tascam Series 70 2 track, (2) Revox A77 2 tracks, Technics, TEAC, Nakamichi cassettes
 Mixing Consoles: Sound Workshop 1600/automated, 24 in x 24 out
 Monitor Amplifiers: Epicure 2 x 125W, SAE 2 x 300W
 Monitor Speakers: UREI 813B Time Aligned, ADS L-300C, Auratones
 Echo, Reverb & Delay Systems: Stereo plate reverb (Proprietary Design), MXR digital delay, others available by request
 Other Outboard Equipment: dbx and UREI compressor/limiters, Eventide Omnipressor, SAE 2-channel 1/2-octave graphic EQ, parametric EQs, Phase Linear Autocorrelator, Eventide Harmonizer, MXR delay w/lange/phase effects, 4 channels dbx noise reduction, others available by request
 Microphones: Neumann U87, U47, KM84/83, Sony C37 tube mics, ECM 33P, AKG C451, D1000E, Sennheiser 421, 441, Beyer M500, M260, Synchron, Shure, E-V, others
 Instruments Available: Full set of drums, 1919 Knabe baby grand piano, Hammond B3 w/Leslie, Fender Rhodes piano, Mellotron, synthesizers, Yamaha CP70 electric grand, Alembic, Fender and Gibson bass guitars, Fender and Acoustic amplifiers, full assortment of percussion instruments, OBXA and Prophet 5, Mesa Boogie
Rates: 24 track, \$90/hr., 16 track, \$70/hr., 8 track, \$50/hr., 2 track, \$40/hr. Remote recording, 8 track \$750/day plus tape/plus mixdown, 16 and 24 track \$1,500/day plus tape and mixdown

••••NOLA RECORDING STUDIOS
 111 West 57th St., New York, NY 10019
 (212) 586-0040
 Owner: Phil Johann, James Czark, John Post
 Studio Manager: Robin Bass

◆◆◆NORMANDY SOUND, INC.

25 Market St., Warren, RI 02885
(401) 247-0218

Owner: Arnold Freedman, Ogden Feil, Phil Greene
Engineers: Phil Greene, Bob Winsor, Tom Soares, Joe Moody,
Fred Torchio

Dimensions of Studios: 1000 sq ft., 2000 cu ft isolation
booth

Dimensions of Control Rooms: 460 sq ft

Tape Recorders: MCI JH24 track, Ampex ATR-102 (1/2") 1/2
track, Ampex ATR-102 (1/4") 1/2 track, Scully 280-B 1/2 track, Mit-
subishi X-80 digital 2 track on request

Mixing Consoles: MCI 636 fully automated with parametric EQ
Monitor Speakers: UREI 813A Time Align, Altec 604, Yamaha
NS10M, Auratone Supercubes

Echo, Reverb & Delay Systems: Lexicon 224X digital reverb,
EMT ST-140, Acoustic Chamber, DeltaLab ADM-1024 digital
delay, Lexicon Prime Time, MXR digital delay, Korg SDD 3000
digital delay

Other Outboard Equipment: UREI LA 4A, UREI 1176LN,
Valley People Dyna-Mite noise gates, Ashly SC-50, Ashly SC-33
stereo noise gates, Roger Meyer noise gates

Microphones: Neumann (tube) U48, (tube) U47, M49, KM84,
AKG C414 C451, Sony-C500, E-V RE11, DS35, Sennheiser
MD441, MD421, MD211, Beyers M160, M88, Shure SM57,
SM53, SM58

Instruments Available: Guitars 1960 Fender Stratocaster,
1968 Fender Precision bass, Keyboards Yamaha Conservatory
grand piano, Fender Rhodes, Hammond A-100 (console B-3
organ) Fender-75 (Music Man)

Rates: On request

◆◆◆NORTH LAKE SOUND, INC.

3 Lakeview Drive, North White Plains, NY 10603
(914) 682-0842/43

Owner: Joe Renda, Chip Taylor, Jon Voigt

Studio Manager: Joe Renda

Engineers: Ed Sprigg, Eddie Solan, Tom Weber

Dimensions of Studios: 30 x 22 x 14 ceiling, 24 x 14 x 40

Dimensions of Control Rooms: 22 x 22 x 14 ceiling

Tape Recorders: MCI JH16 24 track w/Autolocator II, (2) MCI
JH110A 2 track and 110B 2 track 1/2", Revox A77 1/4 track,
Nakamichi 581 cassette

Mixing Consoles: MCI JH636 AFVU (with automation)

Monitor Amplifiers: Crown

Monitor Speakers: Big Red 604Es biamped with time-sync cross-
over Auratone 5C, JBL 4311, Altec Model 9, Brauns SM 1002,
Yamaha ST 10

Echo, Reverb & Delay Systems: Echoplate AKG BX20, Lexicon
Prime Time Scamp ADR Module, Marshall Time Modulator,
Eventide Harmonizer, DeltaLab Acousticcomputer, Lexicon 224
digital reverb, Dyna-Mite noise gates

Other Outboard Equipment: (2) UREI compressor/limiter LA4,
dbx 162 stereo compressor/limiter, (4) dbx 160 compressor/lim-
iters, Scamp dual gates S100, Roland Rhythm 77, Rhythm Ace,
UREI 1176N, Orban parametrics

Microphones: Neumann U87s, SM84s, U47 tube, Sennheiser
MD 421s, AKG C451Es 414s, Sony C37Ps, Shure SM57s

Instruments Available: Kawai 74" concert grand piano, Ham-
mond B3 w/Leslie, ARP Strng Ensemble, Fender Rhodes 73,
Wurlitzer electric piano, various Fender amplifiers and guitars,
Linn D-6 drums Yamaha drums Sequential Circuits Prophet 5

Rates: Upon request
Extras: Complete live-in facilities Mike, cue and video lines
throughout entire house. Located in country surroundings next to
reservoir and pine forest but only 35 minutes from midtown Man-
hattan Color TV, video games, swimming, ping-pong, etc

NORTH LAKE SOUND, INC.
North White Plains, NY



◆◆◆OMEGA RECORDING STUDIOS

also REMOTE RECORDING
10518 Connecticut Ave., Kensington, MD 20895 and
1420 K St. N.W. Washington, DC 20005
(301) 946-4686

Owner: Bob Yesbek

Studio Manager: Bill Brady (Kensington, MD) and Tom Mc-
Carthy (Washington, DC)

◆◆◆ONOMATOPOEIA, INC.

37 W. 57th St., Suite 1210, New York, NY 10019
(212) 688-3167

Owner: Matthew Kaplowitz

Studio Manager: Mike Fericola

◆◆◆OPAL RECORDING STUDIO

254 W. 54th St., New York, NY 10019
(212) 489-6097

Owner: John Gomez, Elliot Rosoff

Studio Manager: Steve Rosenthal

◆◆◆THE OUTLOOK

Star Route Box 180, Bethel, MN 04217
(207) 824-3246

Owner: Ted and Connie St Pierre

Studio Manager: Connie St Pierre

Extras: Comfortable accommodations in the New England tradi-
tion are included in package prices starting at only \$60/hr for
24-track recording in this fine Studer/Trent facility Low-
pressure, creative atmosphere, free set-up and break time, use of
all equipment—no hidden costs, session musicians,
engineer/producer, jingle production

Direction: The Outlook is Northern New England's only 24-track
Located in an 1830 farmhouse in the White Mountains, a beautiful
4 season resort area, it's an ideal vacation and perhaps the most
unique studio in the Northeast Credits include American and
European releases on major and independent labels, Downeast
humor to new music

◆◆◆PENNY LANE STUDIOS

1350 Avenue of the Americas, New York, NY 10019
(212) 687-4800

Owner: Harley Flaum

Studio Manager: Gene Ismirle



TAPE RECORDERS

MCI 24-track
2 Ampex ATR100 2 tracks
Studer B67 2-track
2 Technics M85 Cassette Decks

MIXING CONSOLE

MCI JH600 Console w/automation
36 in/out w/8 wild faders

MONITOR SPEAKERS

Urei 813's Time Aligned
JBL 4311's
Auratones
Yamaha NS-10M's

ECHO REVERB AND DELAY SYSTEMS

Live chamber
Lexicon Prime Time
AMS DMX 15-805 Stereo Delay
EMT stereo 142 Reverb Plate
Marshall time modulator
Lexicon 224x
Eventide 1745 DDL
Roland Chorus ECHO

MICROPHONES

Neumann U87, U47, KM84
Sony C-37P
AKG414
Sennheiser 421
Shure 57, 87
Electro-Voice RE 20



OTHER OUTBOARD EQUIPMENT

Eventide H-910, 949 Harmonizers
Flanger & Phaser
4UREI 1176's
dbx 165
Audio Designs Vocal Stresser
dbx 900 rack including:
2 905 Para-Eq, 2 904 NoiseGates
2 903 Complimiters
902 De-esser, 906 Flanger
2 Teletronics LA-2's
Kepex & Gainbrains
4 Orban 622B Parametric EQ's
8 API Para-EQ's
Aphex CX-1 Compressors
Aphex 602 B

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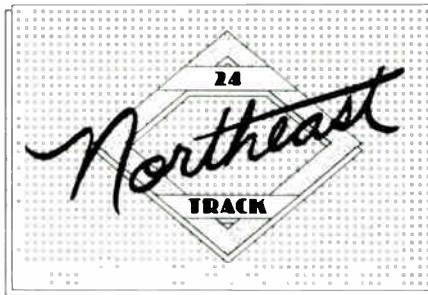
COMPANY

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STATE

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Engineers: Alan Varner, Exec Engr, John Terelle, David Chenkin, Tara Shanahan, Engrs
Dimensions of Studios: A 25 x 36, B 10 x 12
Dimensions of Control Rooms: both 18 x 20
Tape Recorders: Otari MTR 90 24 track, Ampex ATR 2 & 4 tracks
Mixing Consoles: Trident TSM, 32 in x 24 out, Trident Fleximix, 8 in x 4 out
Monitor Amplifiers: McIntosh
Monitor Speakers: Big Reds, E M Long, Visonik, JBL, Auratone
Echo, Reverb & Delay Systems: EMT 140, BX20, Eventide SP2016, Lexicon Prime Time and Super Prime Time
Other Outboard Equipment: UREI, Allison, Trident, Eventide, Pultec, etc
Microphones: Full range of professional mikes
Instruments Available: Drums, Rhodes, Steinway B, synthesizers
Video Equipment & Services: Full audio-for-video post-production with Q Lock 3 10, JVC 6650 and JVC 6600 interlocked to 24 track and 2 track machines

••••POWER PLAY STUDIOS
 38-12 30th St., L.I.C., NY 11101
 (212) 729-1780
 Owner: Anthony V Arli
 Studio Manager: Diane Ragone, Maren Carlsen
 Engineers: Rick Gratz, Julian Herzfeld, Tay Hoyle, Tony Arli, Mike Tomizawa
Dimensions of Studios: Studio A 35 x 18, Studio B 20 x 15
Dimensions of Control Rooms: Studio A 22 x 15, Studio B 25 x 14
Tape Recorders: MCI JH24 24 track, MCI JH114 24 track MCI JH110B 2 track, MCI JH110 2 track, Otari MX5050B 2 track, Tascam 8-8 8 track, Tascam 40-4 4 track, Yamaha, Onkyo, Technics cassette decks
Mixing Consoles: MCI JH636 28/28, Soundworkshop Series 30 24/24
Monitor Amplifiers: Hafler P500A, Crown DC 300A, Yamaha P2100, P2050, Crown D60, Phase Linear 400
Monitor Speakers: UREI 813Bs, Big Reds, JBL 4311s, Yamaha NS10Ms, Acutex, Auratones
Echo, Reverb & Delay Systems: Lexicon 200 digital reverb, Ur-sa Major Space Station, (2) AKG BX10s, (2) Eventide Harmonizers, PCM 41, (2) PCM 42, MXR flanger doubler
Other Outboard Equipment: 1 pair dbx 165As comp/limiters, 2 pair dbx 160X comp/limiters, 4 pair Dyna-Mites gate limiters, Symetrix CL100 comp/limiters, (3) Accessus noise gates, Orban stereo parametric EQ, MXR stereo 15 band EQ, (3) dbx 150 noise reduction
Microphones: Neumann U47, (2) U87s, KM84, AKG (2) 414s, (2) 451, (2) 452s, 535 EB, Sennheiser (5) 421s, (2) E-V RE20s, (3) EM58s; Crown PZM
Instruments Available: Yamaha DX-7, Prophet 5, Roland, Juno 60, Pro I, Korg Lambda, Fender Rhodes, Wurliizer electric, Yamaha 6' grand, Yamaha U1J studio upright 48", LinnDrum 2, Rockman, Roland Vocorder
Rates: Studio B \$35/hr, 24 track, \$25/hr, 8 track Studio A: Rates upon request

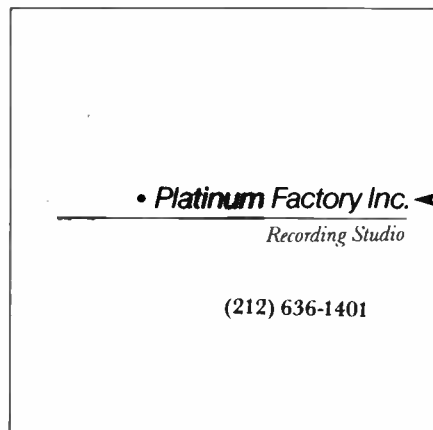
••••POWER STATION
 441 W. 53rd St., New York, NY 10019
 (212) 246-2900
 Owner: Bob Walters, Tony Bonglon
 Studio Manager: Dianna Alleyne

••••PRESENCE STUDIOS
 461 Main St., East Haven, CT 06512
 (203) 467-9038
 Owner: Jon Russell
 Studio Manager: Jon Russell

••••PROFESSIONAL SOUND, FILM & VIDEO, INC.
 136 Arlington St., Boston, MA 02116
 (617) 423-0007
 Owner: Vincent R. Parla, Pres., CEO, Bill Wangern, V P
 Studio Manager: John Paul Parla
 Engineers: William E. Wangern, chief engr, Dave Roseboom, Ted Evans, Mark Mayfield, Bruce Gordon, Mark St Cyr, Ken Lamond, Vincent E. Parla & Grady Moates, research and design engrs
Dimensions of Studios: Studio A (1 of 4) 30 x 20 with Hidley vocal isolation and drum booths
Dimensions of Control Rooms: A (1 of 4) 16 x 20
Tape Recorders: (3) MCI JH110 1/4" 2 track, MCI JH24 24 track, MCI JH110 1/2" 2 track; Ampex 440s & 700s 2 track & 4 track; Otari 5050s 1/4" 4 track
Mixing Consoles: MCI JH636 automated, 36 in x 24 out, (2) Audioionics 110, 8 in x 8 out, ADM custom, 16 in x 8 out
Monitor Amplifiers: Crown, McIntosh (tube)
Monitor Speakers: Altec 604, 605, Little Reds, Auratone
Echo, Reverb & Delay Systems: EMT plate reverbs, Harmonizer H949 w/PTC 960 tape controller, Master Room XL305
Other Outboard Equipment: dbx 900, ADR vocal stressor, Orban parametric EQ, Nakamichi cassette decks, Nagra
Microphones: Neumann, Sennheiser, AKG, Shure, Crown PZM, E-V, RCA (ribbon) Full range of each manufacturer's models
Instruments Available: Steinway (5) grand, Gretsch drums, Mustel Celesta, tubular chimes, temple blocks, and other neat sounds
Video Equipment & Services: BTX Shadow Cypher encode decode, JVC 8250U CR, Magnatch 16/35 mm interlock system, complete audio sweetening services for film and video
Rates: Upon request

••••PYRAMID SOUND INC.
 also REMOTE RECORDING
 105 E. Clinton St., Ithaca, NY 14850
 (607) 273-3931
 Owner: John Penalas
 Studio Manager: Alex Penalas

••••QUEEN VILLAGE RECORDING STUDIOS
 800 S. Fourth St., Philadelphia, PA 19147
 (215) 463-2200
 Owner: Walter Kahn
 Studio Manager: Kathleen Dowling



PLATINUM FACTORY, INC.
 Brooklyn, NY

••••PLATINUM FACTORY INC.
 1368 Fulton St., Brooklyn, NY 11216
 (212) 636-1401
 Owner: Derek P. McDowell, President
 Studio Manager: Derek P. McDowell
 Engineers: Dick Hammond, Barry Simpson, Franklyn T. Grant, Cirland Noel, Jon Evans, Asst Engrs: Derek Davis, Alvin Jowers
Dimensions of Studios: 35 x 25 x 15
Dimensions of Control Rooms: 18 x 14
Tape Recorders: Studer A80 24 track, Studer A80 2 track, Ampex ATR 102 2 track, AIWA cassette deck F 700 2 track
Mixing Consoles: MCI JH428 28/24
Monitor Amplifiers: Crown D150 A(2), Crown D 75, Perreux 5000 B, (2) Crown DC 300A
Monitor Speakers: UREI 813, JBL 4312, Auratones
Echo, Reverb & Delay Systems: Echoplex III reverb plate w/remote, Eventide SP 2016, Audio Digital TC-3, AKG BX 10, Prime Time
Other Outboard Equipment: dbx 160X compressor/limiters, Valley Kepex II, noise gates, Valley Max-Q parametrics, Eventide 910 Harmonizer, Eventide H-949 Harmonizer, Lang EQ, Orban/Parametric EQ
Microphones: AKG 451, AKG C414 EB, Crown PZM 30 GP, Shure SM81, Neumann 87, 47, Shure SM58, Sennheiser MD421
Instruments Available: Oberheim OB6, LinnDrum, Yamaha baby grand, Yamaha Studio Series drum, Hammond B-3, Oberheim Sequencer, Fender Rhodes
Video Equipment & Services: Insight Production - Video Productions
Rates: 12, 18, 24, 50 hour packages, Breakthrough Package 12" Single Production Package, call for current rates

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| Crown | Studiomaster |
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 Ridgewood, NJ 07450
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COMPLETE SHOWROOM

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You can start duplicating on magnetite 12 now or wait until our competition duplicates us.

Our new exclusive Magnetite 12 formulation (Fe_3O_4) is sound waves beyond any duplicating tape ever made. Far superior to the highly-touted chrome products—that, according to some of the best ears in the business. People who know, the better the sound, the better the cassette will sell.

This Bias I tape has: a 2 dB lower noise floor than other ferric tapes, a better high frequency output than the best available chrome tape, less distortion than either chrome or ferric tape for a better maximum output level and greater dynamic range. All this provides Magnetite 12 with the master quality sound performance that no other cassette tape can deliver.

Versatility is part of its uniqueness. Magnetite 12 can be brilliantly duplicated for playback at both 70 and 120 microsecond equalization parameters with amazing results.

While everyone may not understand all that Magnetite 12 can do, they will discover the sound of Magnetite 12 is beyond duplication.

magnetite 12 *Breaking the sound barrier.*

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Circle #065 on Reader Service Card

◆◆◆THE RANCH

37 West 20th Suite 1107, New York, NY 10011
(212) 741-0784

Owner: Andy Parks Productions, Inc.

Studio Manager: Cathy Parks

Engineers: Dave Ruffo, Robbie Norris

Dimensions of Studios: Main room: 16 x 26; drum room: 15 x 13; vocal booth: 9 x 7

Dimensions of Control Rooms: 16 x 14½ x 10 ceiling

Tape Recorders: 3M 79 24 track; Ampex ATR102 2 track; Sony 850 2 track; Sony 854 4 track; Hitachi D-E95 cassette decks

Mixing Consoles: MCI 416-24 modified, 30 in x 48 out

Monitor Amplifiers: McIntosh, Crown

Monitor Speakers: Altec 604-8Hs, JBL 4311, Auratones

Echo, Reverb & Delay Systems: (2) Audicon full size plates, Lexicon "Delta T" fully loaded DDL, Mutron 1173 digital delay, Eventide H910 Harmonizer, various tape echoes

Other Outboard Equipment: Teletronix LA2A, LA3, 1176s, LA4s and dbx 160 limiters; (4) Kepex IIs, Pultec, Lang and Ashly EQs; EXR Exciter, Eventide flanger, 24 tracks Dolby, etc

Microphones: Neumann (2) tube U47, FET U47, (3) U87, KM84; AKG 414EB, C451, D224, D12, D202; Sennheiser 441, (2) 421; Shure (2) SM57, Sony ECM 22

Instruments Available: Yamaha CS80 synthesizer, Ludwig Octopius drum kit, Steinway B grand piano, Fender Rhodes piano, Fender and Marshall amps

Rates: Rates on request. Block rates available.



MICKY RAT RESEARCH CENTER/EARTH BASE I
Silver Springs Pyramid, MD

◆◆◆MICKY RAT RESEARCH CENTER/EARTH BASE I

also REMOTE RECORDING

Cheezbox 1332, Silver Springs Pyramid, MD 20902
(301) 649-4153

Owner: Cheeztone Records & Tapes Products Group
Studio Manager: Yours truly!, Prof. Mickey Michael Rat

◆◆◆RAWLSTON RECORDING STUDIO

1271 Fulton St., Brooklyn, NY 11216
(212) 783-2542

Owner: Rawlston Charles

Studio Manager: Rawlston Charles, Akili Walker

Engineers: Akili Walker, Greg Hutchison

Dimensions of Studios: 35 x 16 acoustically live, isolation booth & drum booth available

Dimensions of Control Rooms: 27 x 14

Tape Recorders: Studer A-80, MKIII 24 track, Studer A-80 ½" & ¼" 2 track, Studer A-80 ¼", 2 track; Technics 1506 stereo ¼ track; (2) Technics M85 cassette deck

Mixing Consoles: Neve 8068 32x32

Monitor Amplifiers: Crown PSA 2s, Crown DC-150As

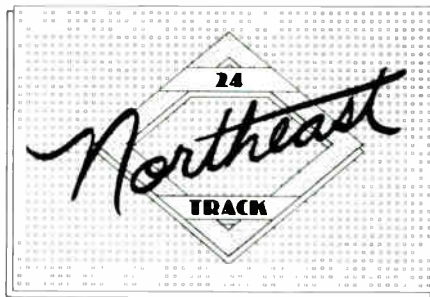
Monitor Speakers: UREI 813 Bs, Yamaha NS10, Auratones 5C, JBL 4311s

Echo, Reverb & Delay Systems: EMT 140 stereo plate, Eventide SP2016 digital processor, (2) PCM 42 digital delay units, Lexicon Prime Time II, Eventide 949 Harmonizer, Eventide phaser/flanger

Other Outboard Equipment: (4) API 550A EQ; (2) Pultec MEQ5; Orban stereo 622B EQ; stereo UREI 532 graphic EQ; (4) Kepex II; (8) Dynamite compressor/gates; (2) UREI 1176 limiters; Teletronix LA2A; (2) dbx 160X limiters; A & Dr Easy Rider compressor; (4) Neve compressors; Dymallex noise reduction unit; (2) Dolby 361 noise reduction units

Microphones: Neumann tube U47, M49, U87s; Shure 57s; Sennheiser 421s, 441s, AKG 414s, D12s, 451s; Electro-Voice RE20s, RE55; RCA 44BX, 77DX; C-Ducers, PZMs. Countryman direct boxes

Instruments Available: Yamaha C-7 grand piano, Dyno-My Rhodes; OB-8; Mini Moog (Kurzweil 250 digital synth on order); Yamaha recording drums, Simmons drums & DMX drum machine; SVT bass amp, Roland Jazz Chorus & Mesa Boogie guitar amps



◆◆◆RCA RECORDING STUDIOS

also REMOTE RECORDING

1133 Ave. of the Americas, New York, NY 10036
(212) 930-4050

Owner: RCA

Studio Manager: Director of Recording Operations, Larry Schnapf; Studio Manager: Gene Catiani; Dir. of Studio Sales: Len Lawson

Engineers: Dick Baxter, Ed Begley, Tom Brown, Jim Crotty, Al Fat, Dennis Ferrante, Mike Getlin, Paul Goodman, Ray Hall, Joe Lopes, Pat Martin, Mike Moran, Tony Salvator, Bob Simpson, Mastering: Jack Adelman, Jay Koopman, Cynl Ross, George Drebot, Rick Rowe

Dimensions of Studios: A: 60 x 100 x 30, B: 50 x 75 x 28, C: 50 x 75 x 25; D: 30 x 40 x 15, E: 15 x 25 x 10, F: 15 x 25 x 10

Dimensions of Control Rooms: A,B,C: 30 x 40 x 25. Nine mastering rooms, 6 lacquer mastering cutting channels

Tape Recorders: MCI, Studer, Ampex, Presto; 24 track: MCI Ampex; 16 and 8 track: 3M, MCI, Ampex; 2 track: Ampex, 3M, MCI; JVC digital and Soundstream digital

Mixing Consoles: (5) Neve consoles; (2) APIs, MCI, 64 in x 24 out

Monitor Amplifiers: McIntosh 2100

Monitor Speakers: 604s, Ulahs, Mastering Lab crossovers

Echo, Reverb & Delay Systems: 36 plates, 6 AKGs, 6 live rooms, (4) Lexicon 224 digital delays

Other Outboard Equipment: All brands, full complement

Microphones: Complete line, 600 microphones

Instruments Available: 6 Steinway grands, 3 over 100 yrs. old. 8 organs. Extensive. What we don't have we'll rent

Extras: Mobile van

Rates: On request. Call manager

Direction: Donny Hathaway, Roberta Flack, Kansas, Elvis Presley, George Benson, Waylon Jennings, Jefferson Starship, Lou Reed, David Bowie, Marshall Tucker Band, The Band, Hot Tuna, Frank Zappa, Oscar Peterson, Ella Fitzgerald, Buddy Rich, Lionel Hampton, ABC-TV, AT&T, Avco Embassy, BBC, Capitol Records, Dick Clark Prod., Met Opera, MGM Films, Motown Records, Frank Sinatra, Cher, Peaches & Herb, Judy Collins, Michelle Le Grande, Zoot Sims, Joe Pass. Film scoring for "Reds," "Lovesick."



RECORD PLANT STUDIO
New York, NY

◆◆◆RECORD PLANT STUDIOS

also REMOTE RECORDING

321 W. 44th St., New York, NY 10036
(212) 581-6505

Owner: Roy Cicala

Studio Manager: Mitch Plotkin; Traffic Mgr: Randi Greenstein
Engineers: Jay Messina, Chief engr., David Hewitt, Dr. of remote recording; Sam Ginsberg, David Thoener, Thom Panuzo, Rod O'Brien, Steve Marcantonio, Gray Russell, William Wittman, Tim Bomba

Dimensions of Studios: A: 39½ x 24½ x 11, B: 35 x 26 x 11, C: 19½ x 29½ x 9½; Mix room: 16½ x 10 x 8

Dimensions of Control Rooms: 16 x 19 x 9; B: 14 x 17 x 8, C: 17 x 16 x 8; Mix room: 21½ x 20½ x 9

Tape Recorders: Ampex MM-1200 24 track, Ampex ATR-104 4 track, Ampex ATR-102 2 track

Mixing Consoles: A: Spectrasonics Custom 30 in/16 out/24 mon.; B: API Custom 40 in/16 out/24 mon.; C: API Custom 32 in/16 out/24 mon.; Mix room: Trident Custom TSM 56 in/24 out

Monitor Amplifiers: Bryston Amps, Crown amps
Monitor Speakers: Westlake monitors, JBL 4311s, Yamaha NS10M's, RORs E-3, Auratones, Burhoes

Echo, Reverb & Delay Systems: (8) EMT Echo Plates, Space Stations, Publisons, Eventide DDLs, Audio Development Delay, Harmonizers

Other Outboard Equipment: Extensive Outboard inventory including vintage and newer equipment. Most requested limiters, equalizers, effects, and noise reduction

Microphones: Large selection of Beyer, Shure, AKG, Neumann, Electro-Voice, PML, Sennheiser, RCA, Sony, various models
Instruments Available: Steinway grand pianos in Studios A, B & C, Hammond organs, percussion kit, large selection of guitar amplifiers including Marshall, Fender & Gibson and Ampeg bass amplifiers

Video Equipment & Services: ¾" video playback only JVC CR 6600, RM 70U Controller

Rates: Available upon request

◆◆◆REEL PLATINUM STUDIOS

Lodi, NJ 07644

(201) 471-3464

Owner: Bob Allecca

Studio Manager: Bob Allecca, Julian Hernandez

◆◆◆REELSOUND RECORDING CO.

(East Coast Division)

also REMOTE RECORDING

P.O. Box 25, North East, MD 21901
(301) 287-2627, 287-2420

Owner: Malcolm H. Harper, Jr

Studio Manager: Dave Perkins

Engineers: Dave Perkins, Marcolm Harper

Dimensions of Studios: 75 x 150 sound stage w/living quarters and meals located on Chesapeake Bay

Dimensions of Control Rooms: 36' 1948 Flexible Bus

Tape Recorders: MCI JH-114 24 track, Ampex 440B 2 track

Mixing Consoles: MCI 428 LM

Monitor Amplifiers: Crown

Monitor Speakers: JBL 4401s, 4313s

Echo, Reverb & Delay Systems: MicMix XL-305, DeltaLab Effectron

Other Outboard Equipment: (2) dbx 160 limiters, (4) Gan Brains, (4) Kepex, (2) UREI Graphic EQs, RTS Intercom

Instruments Available: Yamaha grand piano, Hammond organ, Rhodes piano, and musicians available!

Video Equipment & Services: Sony color TV system

Rates: Please call

Direction: Journey, Genesis, Ted Nugent, Triumph, ZZ Top, Willie Nelson, Alabama, Oak Ridge Boys, Loretta Lynn, Dolly Parton, Judas Priest, Amy Grant, Farrel and Farrel, Leon Patillo, Rev. James Cleveland, O'Neil Twins, DIR Broadcasting, Westwood one, Patrick Grenfell Prod.



REGENT SOUND STUDIOS, INC.
New York, NY

◆◆◆REGENT SOUND STUDIOS, INC.

1619 Broadway, New York, NY 10019
(212) 245-2630

Owner: Robert Liftin

Studio Manager: Elissa Kline, Gen. Mgr.: Sandi Morroff

Engineers: Bob Liftin, John Alberts, David Browning, Al Buonanno, Bob Donlan, Barbara Flynn, Jimmy Liftin, Grant Maxwell, Rick Niven, Fred Shehadi, Maintenance: Lew Whittier, Jeff Peterson, Peter Fine

Dimensions of Studios: Studio A: 50 x 24; Studio B: 28 x 30, Studio C: 23 x 14; Studio D: 17 x 19

Dimensions of Control Rooms: Studio A: 21 x 19, Studio B: 19 x 16, Studio C: 20 x 21, Studio D: 13 x 15.

Tape Recorders: Ampex ATR 124, ATR 116, MM 1200 (5) w/P.U.R.C. and Rehearse functions, ATR 104 (3), ATR 102 (6), ATR 700 (4), 440 modified Mono Nagra, Studer A810, TEAC 40-4, Magnatech 16/35mm Mag Dubber, Aiwa cassette decks, Nakamichi 500 cassette deck

Mixing Consoles: Crown, Phase Linear, Carver

Monitor Amplifiers: Sierra/Hidley, JBL 4313 & 4311s, Canton LE900, Auratones, Yamaha NS 10M

Echo, Reverb & Delay Systems: Audicon Plate, Lexicon 224 (2), AKG BX-20, MICMIX Masterroom

Other Outboard Equipment: Lexicon DDLs, Prme Time, Teletronix LA2A, Pultec EOH2, 360 Programmable EQ, UREI LA4, Aengus EQ, Kepex 2, Eventide Harmonizer, Audio Designs Selective limiter, Orban parametric, UREI LA3A limiter, UREI Little Dipper, programmable Autofade, etc.

Microphones: Neumann U87s, U89s, U49s, KM84s, ATM21, RCA 77DXs; Sennheiser 421s; Shure SM7s, SM57s, D-12; AKG 441, KM86, E-V RE15, RE16s, RE20s, RE55s, CS15s, AKG 451, Sony ECM50s, etc.

Instruments Available: Fender Rhodes, Steinway & Yamaha grand pianos, Hammond B-3, drums (2 sets), tympani, xylophone, vibes, celeste, congas, bongos, orchestra bells, misc percussion
Video Equipment & Services: EECO MQs 100A (3), Convergence 103, BTX Shadow (2), Ampex VPR 2 w/dolby, VPR 80; JVC 8250 (2), 8200 (3), Sony 2860 (2); EECO Time Code Generator, Time Code Reader, Datametrics & ESSE Character Generators, Conrac & Sony video monitors, Ampex sync-lock (2)

Rates: A/V computer controlled recording, mixing & sweetening \$225/hr; 8/16/24 track recording \$200/hr; 8/16/24 track mixing \$180/hr; 16/35 mm mag \$65/hr, sound effects preparation and copy room \$50 Call for other rates.

••••RIGHT TRACK RECORDING

168 West 48th St., New York, NY 10036
(212) 944-5770

Owner: Simon Andrews

Studio Manager: Mark Harvey

Engineers: Chief recording engr. Frank Filipetti, Chief technical engr. Bob Schwall

Dimensions of Studios: A 40 x 40 x 15; Isolation rooms A. 12 x 10 x 10, B. 20 x 12 x 13, Studio B: 32 x 28 x 15 appr

Dimensions of Control Rooms: A. 24 x 23, B. 18 x 16
Tape Recorders: (2) Studer 800 MK III 24 track; MCI JH24 24 track, MCI 114 24 track; (2) Studer A80 VV 1/2" 2 track, Studer A80 RC 2 track; Ampex ATR 2 & 4 track; MCI 110B 1/2" 2 track.

Mixing Consoles: Studio B: S.S.L. 4000 E 40/32; Studio B: S.S.L. 6000 E 56/32

Monitor Amplifiers: Crown PSA-2, Yamaha 2200, BGW 750, BGW 250

Monitor Speakers: UREI 813A, Westlake HR-1, Yamaha NS 10-M

Echo, Reverb & Delay Systems: (4) EMT 140 T S, AKG BX20, AKG BX10, Lexicon 224, Lexicon 224X w/LARC, Eventide 949/910/1745 M, DeltaLab DL2, Publison, Lexicon Delta T, Prme Time II, etc.

Other Outboard Equipment: Too numerous to mention

Microphones: Neumann U47, U67, M269, U87, KM84; AKG 414, D12, C12, C24, 451, RCA 77DX; Electro-Voice, Shure; Sennheiser; Beyers, etc.

Instruments Available: Yamaha 9' concert grand 6'3" conservatory grand, Hammond B-3, Prophet 5, Mini Moog, ARP, clavinet, etc.

Video Equipment & Services: 1/4" cassette playback & dubbing, SMPTE interlock, both video & audio

Rates: Upon request

••••RPM SOUND STUDIOS, INC.

12 East 12th St., New York, NY 10003
(212) 242-2100

Owner: Robert Paul Mason

Studio Manager: Tom Maguire

Engineers: Dominic Maata, Mike Krowiak, Elliott Scheiner, Jim Boyer, Brad Leigh, Kurt Munkasci, Neal Dorfman, Bob Clearmountain, Howard Lindeman, Leanne Unger, Leslie Mona, Marti Robertson

Dimensions of Studios: 2000 sq. ft. Main Studio room, 3 isolation booths, 150 sq. ft. each, (1) 250 sq. ft. clear-plexiglass drum "room" designed by producer Phil Ramone.

Dimensions of Control Rooms: 1000 sq. ft.

Tape Recorders: (2) Studer A80 Mark III 24 track, Studer A80 1/2"-1/4" 2 track, Studer B67 1/2" 2 track, Studer A80 4 track

Mixing Consoles: Neve 8068 w/Necam, 40/32

Monitor Amplifiers: Double pair Bryston 4Bs strapped (others available)

Monitor Speakers: UREI 813B (others available)

Echo, Reverb & Delay Systems: EMT 140 (2), EMT 250 digital reverb, AMS digital reverb, RMX 16, AMS DDL (full 33 sec.), Quantec Room Simulator, PCM 41, PCM 42, Lexicon, Super Prime Time #95, (2) PanScans, Eventide Harmonizers HM-80 (2), H910, H949, Lexicon Delta-T stereo DDL w/VCO.

Other Outboard Equipment: (2) Teletronix LA-2As, (4) UREI 1176 limiters, (4) Valley People "Dynamites", (4) dbx 160 limiters, (8) Pultec EQs, (8) ITI parametric EQs, (2) Sontek parametric EQs, (2) Neve compressor/limiters, (4) Orange Country compressor/limiters, BTX Cypher System for Time Code, Full complement of time code processing gear, BTX Shadow II system.

Microphones: Neumann (5) U87s, (4) U47s, (2) matched Tube U48s, (5) KM86s, AKG (2) 414s, (4) 451, (2) D12s; Sennheiser

(4) 421s, (4) 441s; Shure (5) M57s, M58, (4) M54s; Beyers (2) M160s; Electro-Voice (2) RE20s, RCA (2) 77DXs, B&K (2) matched stereo pairs

Instruments Available: Steinway B grand piano, Fender Rhodes electric piano, Hohner clavinet, Hammond B-3 organ w/pedals, Bench and Leshe speaker, Sonor Drum set with full set of matched melodic toms, various percussion instruments Synthesizers: Prophet 10, (2) Prophet 600s, (5) Pro-1s, (2) Prophet Six-Trax, Prophet DrumTrax, Emu Drumulator, Buchla 406, Kurzweil 250

Video Equipment & Services: (2) 1/4" JVC decks, Pro-Fee! monitors, (2) Sony BetaHiH 5200s.

Rates: Call for rates

••••ROCKIN' REEL RECORDING

636 Larkfield Rd., East Northport, NY 11731
(516) 368-5689

Owner: David Greenberg

Studio Manager: Esther Annumma

Engineers: David Greenberg, Thomas Schizzano

Dimensions of Studios: 24 x 27; 3 isolation rooms, enclosed drum booth

Dimensions of Control Rooms: 22 x 19

Tape Recorders: Otari MTR-90, Ampex ATR 102 2 track, Technics 1500 2 track, Nakamichi 600 cassette decks.

Mixing Consoles: Tangent modified 3216 32 in x 24 out.

Monitor Amplifiers: BGW 750, BGW 600, BGW 50, Dynaco 400, UREI 6500

Monitor Speakers: UREI 813 Time Aligned, JBL 4311, Auratones, Yamaha NS10Ms

Echo, Reverb & Delay Systems: Lexicon 224 digital reverb, Echoplex, Sound Workshop 242 spring, Lexicon Prme Time, MXR digital delay, Eventide 910 Harmonizer, tape echo

Other Outboard Equipment: 24 track dbx noise reduction, Kepex, Gain Brain, UREI 1176LN peak limiters, dbx compressors, B&B audio CX1 compressor/noise gates, UREI digital metro- nome, B&B parametric EQ, UREI 565 EQ, Graphic EQ

Microphones: Neumann U47 FET, U87, U89 KM84, KM88; AKG 414, 451, Sennheiser 421, 441; Beyers M160, RCA 77DX, Sony C37; Shure SM57, SM58; E-V RE20, RE15, RE55, RE10

Instruments Available: Steinway baby grand, Hammond B3 w/910 Leslie, DynoMy piano, Rhodes 88, ARP Strung Ensemble, amps, acoustic amps, Mesa Boogie amp, Hohner Clavinet DC, Roland amp JC120

Rates: Rates available upon request

••••ROSEBUD RECORDING

also REMOTE RECORDING

1595 Broadway Suite 318, New York, NY 10019
(212) 489-6470

Owner: Ralph MacDonald

Studio Manager: Eddie Heath



SABELLA STUDIOS
Roslyn Heights, NY

••••SABELLA STUDIOS

49 Oakdale Rd., Roslyn Hts., L.I., NY 11577
(516) 484-0862

Owner: James Sabella

Studio Manager: James Sabella

Engineers: James Sabella, Dave Lynch, John King

Dimensions of Studios: 17 x 22, design by Frank Comentale.

Dimensions of Control Rooms: 14 x 16, design by Frank Comentale

Tape Recorders: MCI JH114 24 track; Ampex AG 350 2/4 track; Technics M65 cassette 2 track

Mixing Consoles: Tangent 3216, 32 in x 24 out, with modified EQ and solo

Monitor Amplifiers: David Hafler 500, Altec amps, Spectro Acoustics 202C

Monitor Speakers: Big Reds w/special construction, design and Master Lab crossovers, Auratone 5C, JBL 4311s, KEF

Echo, Reverb & Delay Systems: EMT 140 modified by G.

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BRYSTON



Bryston's 2B-LP

Bryston has been known and respected for years as the manufacturer of a line of amplifiers which combine the transparency and near-perfect musical accuracy of the finest audiophile equipment, with the ruggedness, reliability and useful features of the best professional gear. Thus, Bryston amplifiers (and preamplifiers) can be considered a statement of purpose to represent the best of both worlds - musical accuracy and professional reliability to the absolute best of our more than 20 years' experience in the manufacture of high-quality electronics.

The 2B-LP is the newest model in Bryston's line, and delivers 50 watts of continuous power per channel from a package designed to save space in such applications as broadcast monitor, mobile sound trucks, headphone feed, cue, and any installation where quality must not be limited by size constraints. As with all Bryston amplifiers, heatsinking is substantial, eliminating the requirement for forced-air cooling in the great majority of installations. This is backed up by very high peak current capability (24 amperes per channel) and low distortion without limiting, regardless of type and phase angle of load. In short, the 2B-LP is more than the functional equivalent of our original 2B in spite of the fact that it occupies only half the volume, and will fit into a single 1.75" rack-space.

The usefulness of the 2B-LP is extended by a long list of standard features, including: Balanced inputs; female XLR input jacks; dual level-controls; isolated headphone jack; and individual two-colour pilot-light/clipping indicator LEDs for each channel. In addition, the channels may be withdrawn from the front of the amplifier while it is in the rack, vastly facilitating any requirement for field-service, including fuse-replacement.

Of course, in keeping with Bryston's tradition of providing for special requirements, the 2B-LP can be modified or adapted to your wishes on reasonably short notice, and at nominal cost.

Best of all, however, the 2B-LP is a Bryston. Thus the sonic quality is unsurpassed. The difference is immediately obvious, even to the uninitiated.

Other amplifiers in Bryston's line include the model 3B at 100 watts per channel, and the model 4B at 200 watts per channel. All ratings continuous power at 8 ohms at less than 0.1% THD.

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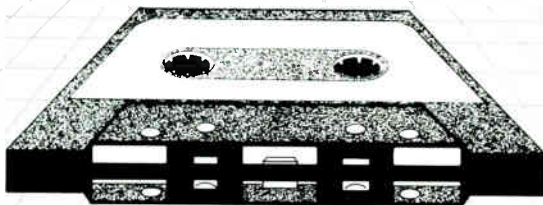
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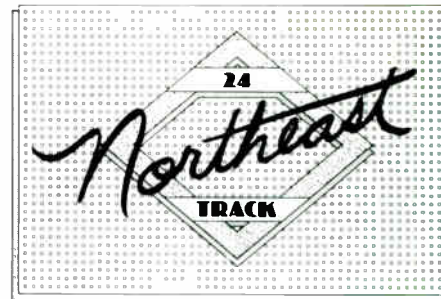
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Other Outboard Equipment: Universal Audio 1176s, Universal Audio 175Bs, tube limiting amplifiers, Pultec EQP 1Rs, Pultec EQ H2s, dbx 155s, dbx 160s, Roger Mayer noise gates, Eventide flanger, Systems Design vocal pitch changer, EXR Exciter
Microphones: Neumann U67 tube, U87s, U47 tube, KM84s, IM86, Beyer M88s, M160s, Beyer Sound Star, AKG D12, 452s, 414s; Sony C37As tube, Sennheiser 421s, Shure SM57s, 58s; E-V RE20s

Instruments Available: Drums, keyboards, Micro Moog Pro 1, OBXA, guitar amps, Fender, Hiwatt, Marshall, Fender Strat, Gibson Les Paul, Fender bass, Rickenbacker guitar

Video Equipment & Services: JVC 1/2"

Rates: 2 track, \$25; 8 track, \$35; 16 track, \$50, 24 track, \$60.

••••HOWARD SCHWARTZ RECORDING INC.

420 Lexington Ave., New York, NY 10170
(212) 687-4180

Owner: Howard Schwartz

Studio Manager: Michael Laskow

Video Equipment & Services: (4) JVC 8250 3/4" video cassette machines, (2) N E C TT 8000 1" video machines

••••SECRET SOUND STUDIO, INC.

also REMOTE RECORDING

147 West 24th St., New York, NY 10011
(212) 461-7674

Owner: Jack Malken

Studio Manager: Debra Rebhun

••••SELECT SOUND STUDIO

2315 Elmwood Ave., Buffalo, NY 14217
(716) 873-2717

Owner: William A. Kothen

Studio Manager: Chuck Mandrell, Gen. Mgr.; Dick Bauerie, Musical Dir.

••••SERVISOUND INC.

35 West 45th St., New York, NY 10036
(212) 921-0555

Owner: Messrs Nathan Levy and Michael Shapiro

Studio Manager: Christopher Neison

Direction: Servisound is a one-stop post-production recording facility featuring video-sync scoring and mixing, original composition, performance and dubbing to picture, with a full complement of 24, 16 and 8 track mixing studios for the production of slide, multimedia, A/V, film and video sound tracks. Servisound has the latest and most complete music and sound effects library available, as well as the award winning talents of film score composer Michael J. Shapiro. Servisound handles all post-production sound requirements, from narration and editing, to scoring, mixing and duplication in the final medium.

••••SHEFFIELD RECORDINGS LTD. INC.

also REMOTE RECORDING

13816 Sunnybrook Rd., Phoenix, MD 21131
(301) 628-7260

Owner: John J. Anosa

Studio Manager: Nancy Scaggs

••••SIGMA SOUND STUDIOS, INC.

212 North 12th St., Philadelphia, PA 19107
(215) 561-3660

Owner: Joseph D. Tarsia

Studio Manager: Marge Dixon

Engineers: Chief engr., Arthur Stoppe, Engrs: Joe Bees, Wally Hayman, Peter Humphreys, Gene Leone, Mike Tarsia, Joe Tarsia

Dimensions of Studios: Studio 1: 46 x 28, Studio 2: 27 x 24, Studio 3: 8 1/2 x 11; Studio 10: 11 x 8 1/2

Dimensions of Control Rooms: Control 1: 20 x 17; Control 2: 16 x 16; Control 3: 9 x 10, Control 10: 11 x 9

Tape Recorders: 3M M79 24/16/8, Otari MTR-90 24 track, Ampex ATR-100 4 track, Ampex A6 440-C 4 track, Ampex ATR-100 2 track, Otari MTR-10 2 track, Otari MX-5050 2 track

Mixing Consoles: Sphere Eclipse-C 48/48; MCI JH-636 35/30, Sound Workshop Series 20 or 30 12/8

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Monitor Amplifiers: Crown PSA-2, DC-300A, or D-150A, Phase Linear 400.

Monitor Speakers: UREI 813, Electro-Voice Sentry 100, JBL 4311, ROR E3

Echo, Reverb & Delay Systems: EMT 140 mono or stereo, Lexicon 224, Lexicon Prime Time, Marshall Time Modulator, Marshall AR-300, DeltaLab DL-1, Eventide H910 Harmonizer, Cooper Time Cube, Denon Tape Echo machine.

Other Outboard Equipment: Dolby or dbx noise reduction, BTX 4500/4600 for SMPTE-Lock 46 track recording, Gain Brain II, Kepex II, UREI LA-4, ADR "Compex" limiter, Pultec EQP-1A, Pultec MEQ-5, Orban 622B parametric EQ, UREI filters, EXR Exciter, MXR flanger, ADR Panascan, Orban stereo synthesizer, Orban Sibilance controller, UREI digital metronome, dbx compressor/limiter, de-esser and parametric EQ

Microphones: AKG C414, C452EB, D-12, D-19E, D-200, C451E, B&K 4006, Beyers M160; Crown PZM; Electro-Voice 654A, 655, 666, RE15, RE16, RE20, Neumann U47, U87, KM84, KM86, RCA BK-5, 77D 77DX, Shure SM7, SM56, SM57, SM81; Sony C37.

Instruments Available: Steinway or Yamaha grand pianos, Rhodes piano, clavinet, RMI, Yamaha CP-30, Hammond B-3 organ w/Leslie, Tama or Hayman drums, Prophet 5 synthesizer, ARP string ensemble, Oberheim DMX drum machine, Simmons drums, Ampeg, Fender, Kustom, Mesa or Music Man instrument amplifiers.

Video Equipment & Services: Sony BVH-2000 1", SONY VO-5850 3/4", Q-Lock 3 10. Video/audio sweetening, mixing, audio laybacks. Music scoring to video

Rates: On request

••••SKYLABS INC. (The Mobile Recording Unit)

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58 W. Tidbury Dr., Dover, DE 19901
(302) 697-6226

Owner: Skyelabs Inc

Studio Manager: Bob Skye

Engineers: Bob Skye and independents

Dimensions of Studios: 9,420,000 sq. miles and open for new territory at your request

Dimensions of Control Rooms: 18 x 8 plus lounge housed in a GM PD4 106 diesel coach

Tape Recorders: MCI JH-24 w/Autolocator III 24 track, Ampex AG-440 1/2" 2 track, Ampex 351/440 1/4" 2 track, Ampex 403 1/4" 3 track, Technics RS-1500 1/4" 2 track, Technics RS-686 cassette.



Mixing Consoles: Sound Workshop Series 30 32x24; Sound Workshop 1280 B 12x8

Monitor Amplifiers: Phase Linear, Crown

Monitor Speakers: UREI 811A, Ampex 622, Auratone 5C, your choice

Echo, Reverb & Delay Systems: Master Room XL 305 reverb, DeltaLab DL-4.

Other Outboard Equipment: UREI 527 EQ, Delta Graph EQ, UREI LA3s and 4s.

Microphones: Sennheiser, AKG, Shure, Sony, Electro-Voice
Interface Equipment: 330 feet of 42 in x 3 out Audio Snake, 400 feet of main power cable A.C. power requirements. 50A single-phase 220V 42 Jensen Mic-Splitters (user choice of Phantom Power source). The Mobile Recording Unit is equipped with high-grade power regulation, filters, suppression, and isolation equipment to insure that the faults of the outside world never become part of your project

Video Equipment & Services: Time Code is available for A/V work

Rates: We have several price packages. Please call or write with your requirements.

Extras: Skyelabs is the first and only certified mobile LEDE tm control room. It features a room EQ response that surpasses most in-house studios. Please call or write for room specs. We're glad to share them with you.

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SKYLABS, INC.
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36 West 37th St., New York, NY 10018
(212) 594-7484

Owner: Paul R. Wickliffe (Pres.), Lloyd P. Donnelly (V.P.)
Studio Manager: Lloyd P. Donnelly

Engineers: Paul Wickliffe, A.T. Michael MacDonald, David Lichtenstein, Arthur Payson, Roger Moutenot, David Young, Scott Ansell, Fran Manzella, Mark Genlan

Dimensions of Studios: 30 x 30 x 13 plus 2 isolation booths

Dimensions of Control Rooms: 25 x 20 x 10

Tape Recorders: Studer A80 MK III 24 track, Studer A80 MK III 1/4" & 1/2" 2 track, Ampex ATR100 1/4" 2 track.

Mixing Consoles: Neve 805B, 40 in x 24 out, with 10 channels of VCA subgrouping.

Monitor Amplifiers: Yamaha P-220C, McIntosh 2100

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Monitor Speakers: UREI 813 (in custom enclosures) JBL 4311s, AR 116, Auratones, Yamaha NS10s and ROR cubes
Echo, Reverb & Delay Systems: EMT 240 (Gold Foil) stereo, EMT 140 (stereo), 10 story plaster staircase, Delay Lexicon 224x, Marshall Time Modulator, Marshall Tape Eliminator, Effertron II, Marshall Time Modulator, Marshall Tape Eliminator, Effertron II, Lexicon PCM41, Eventide #49 Harmonizer, UREI Cooper Time Cube, Roland RE501

Other Outboard Equipment: 28 channels Dolby A Pultec, Lang and UREI EQs, Teletronics LA 2A, 4 Neve limiters, 2 UREI 1176s, 2 LA 4As, 2 A11 560s, 2 cbx 160Xs, A&D Easyrider compressors (stereo), 4) Kepex IIs, Eventide flanger, UREI digital Click

Microphones: 3 Neumann 84, 2 147 FEI, 4 U87s, 2 U67s, 2 KM84s, Sony C37, B7M 22P, ECM 33, 2) AKG 414, 4) 414s, 2) D-12s, 2) 202s, 3) Sennheiser 421s, 441, EV RE20, RE15, 1) EV ribbon, Shure SM81s, SM54s, 2) SM57s, 3) SM58s, 2) RCA 770Xs, 44DX, Alesis, salt shakers

Instruments Available: Steinway B Grand Piano c. 1896, Fender Rhodes suitcase 73 piano, Hammond C3 w/ Leslie, Yamaha resonating series drum kit, Ludwig Drum machine, Oberheim OB 8 synthesizer

Video Equipment & Services: U-Matic 3/4" video playback upon request

Rates: Available upon request

Extras: Our \$1000 a day facility includes a large comfortable lounge area, producer's office overlooking studio, pre-production room w/ format playback

Direction: Our clients include Bob Fosse, Bonnie Tyler, Steve Forbert, The Flies, Michael Franks, Air Supply, The Bonanos, John Cale, Laurie Anderson, Richard Thompson, Barry Manilow, Tina Turner, Maria Muldaur, Phyllis Hymon, Alan Vega, RCA, Warner Brothers, CBS, E.A. Aratone, MCA, IRS, Artists Ze Records, Nempcor, ATV, Capitol

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Studio Manager: Jacqueline Vitan



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292 Locust Ave., Freeport, L.I., NY 11520
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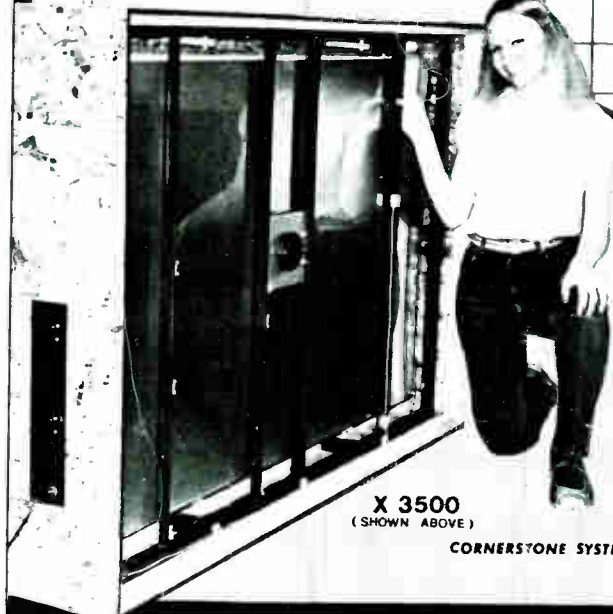
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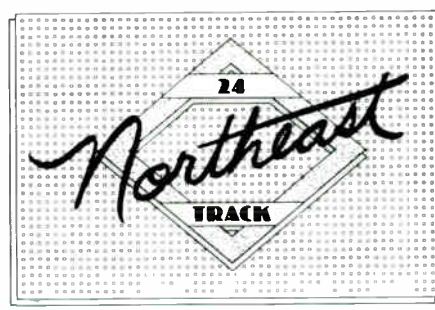
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Comito, and freelance engineers
Dimensions of Studios: Studio A 25 x 14; Studio B 28 x 20; Live room: 22 x 14.
Dimensions of Control Rooms: Studio A: 18 x 14; Studio B: 12 x 9
Tape Recorders: MCI JH-16 16/24 track; TEAC/Tascam 80-8 8 track; Ampex ATR 102 1/2 & 1/4" 2 track; Technics RS-1500 US 2 track; Otari DP 40-50 OCF hi-speed duplicator.
Mixing Consoles: Studio A: Trident Series 30 24x24x24, Studio B: Sound Workshop Series 30 24x24x8
Monitor Amplifiers: Studio A: UREI 6500 (2) Crown 400; Studio B: McIntosh 2200; Crown 300
Monitor Speakers: Studio A: JBL 4430, Yamaha NS10, AR13, JBL 4301; Auratones; Studio B: JBL 4433B, Yamaha NS-10, Auratones
Echo, Reverb & Delay Systems: Lexicon Prime Time; Lexicon Delta 92; DeltaLab D1.4, DL1, (4) Loft 440s; (2) Echo Plates; Master Room, Super C reverb; 8x32 Ursa Major digital reverb; Lexicon 224X
Other Outboard Equipment: (2) racks dbx 900 series—compressor limiters, parametric EQs, noise gates, de-essers, flangers, dbx 165s; Orban 418A stereo limiter; Orban de-esser 526A; MXR pitch transposer, EXR Exciter
Microphones: 70 different mikes including Neumann, AKG, Electro-Voice, Sennheiser, Audio Technica, Shure
Instruments Available: Oberheim, Moog, Kawai, Linn, Marshall HH, Mesa Boogie, Fender, Rhodes, Hammond, Ludwig
Rates: On request

.....SORCERER SOUND
also REMOTE RECORDING
19 Mercer St., New York, NY 10013
(212) 226-0480
Owner: Acoustilog, Inc.
Studio Manager: Dave Avidor
Engineers: Dave Avidor, Mano Salvati, Al Fierstein
Dimensions of Studios: 12 x 27 and 12 x 5 vocal booth
Dimensions of Control Rooms: 13 x 17
Tape Recorders: Studer A80 MkIII custom transformerless 24/16 track; Studer A80 custom transformerless 1/2" 1/4" 2 track; (4) Technics 1500 2 tracks; Nagra Model III full track; TEAC 80-8 8 track w/dbx
Mixing Consoles: Acoustilog GB1, 32 x 24; Allison VCA automation and Spectrum Analysis peak/ave metering via Plasma meters
Monitor Amplifiers: Phase Linear, BGW, SAE
Monitor Speakers: Altec 604s w/UREI horns (bi-amplified), ROR E cubes, ROR Model B
Echo, Reverb & Delay Systems: EMT 251, EMT 140S stereo plate, Lexicon 224 digital reverb, DeltaLab DL1 (2), Lexicon Delta-T, Lexicon Prime Time, Lexicon PCM41, Eventide H949 Harmonizer, auxiliary machines for tape delay, Publison stereo delay, Prime Time II, PCM 42, Publison Keyboard
Other Outboard Equipment: 24 channels of both Dolby and dbx noise reduction, ROR parametric EQs, UREI 1/2 octave EQs, Pultec, Kepex IIs, Gain Brain IIs, Teletronix LA2A, dbx 162 and 164 stereo compressors, UREI digital metronome, Acoustilog Phaser 5, 1E-100 Image Enhancers, dbx or Dolby mixdown
Microphones: AKG 414s, 451s, 224, D160s, D12, D310, C33, C34, 422, AKG stereo mikes; Sony C22, C37; Neumann 87, 47 FET, M49, KM86, Beyer 160; Sennheiser 421; Shure SM57, 58, 545; RCA 77DX; E-V RE15, 16s, 20, DS35, 664; Crown PZMs
Instruments Available: Steinway B, Sequential Circuits Prophet 5, Fender Rhodes, Clavinet, ARP String Ensemble, Hammond w/Leslie, MESA/Boogie amp, Fender Pro Reverbs, Champ, Ampeg B15, Tama drums w/Paiste cymbals, percussion, Linn-Drum
Rates: Call for rates

.....SOUND DESIGN RECORDING STUDIO
also REMOTE RECORDING
80 Rear Cambridge St., Burlington, MA 01803
(617) 273-1548
Owner: Bruce Mancinelli
Studio Manager: Bruce Mancinelli
Engineers: Brad Zuszek, Bruce Mancinelli, Mark DeCisto
Dimensions of Studios: 25 x 32 x 10, iso booth: 10 x 12 x 10
Dimensions of Control Rooms: 15 x 25 x 9
Tape Recorders: Studer A80 MkIII 24 track, MCI JH114 24 track, Ampex MM1100 16 track, Otari 5050B 2 track; Technics RS-M85 MkII; Ampex ATR 102 1/2" track, assorted 1/4 track and cassette decks.

Mixing Consoles: (2) APSI 3000, 24 in x 24 out, 32 in x 24 out, with 4 stereo effects sends, 1 stereo effects submaster, plus two stereo cue systems
Monitor Amplifiers: Phase Linear, BGW, Crown
Monitor Speakers: JBL 4311, JBL 4430, Auratones, custom built Altec
Echo, Reverb & Delay Systems: (2) Lexicon 224 digital reverb, (2) Lexicon Prime Time, (2) Eventide Delay H949, Lexicon PCM 41, DeltaLab ADM Models 64 & 1042
Other Outboard Equipment: (4) Ashly Model SC33 noise gates, Pultec tube program EQ, (2) Eventide Harmonizers H949, Eventide Flanger, Ashly parametric EQ, Allison Kepex, (2) dbx 160 com/limiters, UREI LA4 limiters, dbx 900 rack, (2) dbx 160X limiters
Microphones: Neumann U87, AKG C414EB, 451, D222, D1000; Sennheiser 421, 441, MKH406; Shure SM53, SM57, SM58, SM81; Beyer M500; E-V RE20; RCA 77DX, Sony ECM56F and PZMs
Instruments Available: Steinway Model M grand piano, Hammond B3 w/Leslie, Ludwig drums, Fender Strat, Jazz Bass, others on request plus various guitar amps
Video Equipment & Services: Complete 3/4" and 1" video on request. Studio or location avail. w/full multi-track audio
Rates: Please call studio manager

.....SOUND HEIGHTS RECORDING STUDIOS
124 Montague St., Brooklyn, NY 11201
(212) 237-0250
Owner: Sounds Heights Recording Studio, Ltd.
Studio Manager: Bob Motta
Engineers: Vince Traiana, Chief Engineer; Questar Welsh, Tim Benedict
Dimensions of Studios: 25 x 30
Dimensions of Control Rooms: 9 x 15
Tape Recorders: MCI JH114 24/16/8 track; Scully 280 4 track, Scully 280 2 track
Mixing Consoles: MCI 416, 24 in x 24 out w/transformerless inputs (trans-amp)
Monitor Amplifiers: Phase Linear 700B, CR; 400; studio; Crown DC300A, cue
Monitor Speakers: UREI Time Align 811, Big Reds with Mastering Lab crossovers
Echo, Reverb & Delay Systems: EMT plate, Lexicon Prime Time DDL, Eventide
Other Outboard Equipment: Eventide Harmonizer, UREI parametric EQ, Pultec EQ, UREI graphic EQ, UREI 1176 limiter/compressors, UREI LA4A, UREI LA3As, UREI LA2, Allison Kepex, Roger Mayer gate All tape recorders variable speed Pultec filters, UREI digital metronome, MXR doubler/flanger
Microphones: Neumann U67s, U47s, KM84s, U64; Sennheiser 441s; Synchron S10s; AKG 224E, D170E; Sony ECM 377, ECM23, ECM22P; E-V RE11, RE20, 666; Beyer 713, 201s; Altec M5 Birdcage
Instruments Available: Steinway Model A (1914) 7' grand piano, Rogers drums, Hammond B3 organ w/Leslie, Fender Rhodes 73 (stereo), drums, percussion devices All at no extra charge
Extras: Instrument amplifiers, Fender, Ampeg All at no extra charge. Separate copy and editing room.
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.....SOUND LAB STUDIOS LTD.
2687 E. 14th St., Brooklyn, NY 11235
(212) 934-8585
Owner: Peter C. Diono
Studio Manager: Michael Potash
Engineers: Peter C. Diono, Michael Potash
Dimensions of Studios: 30 x 20 x 10
Dimensions of Control Rooms: 20 x 14 x 10
Tape Recorders: MCI 24 track, MCI JH114 2 track, TEAC 3440A 4 track; TEAC 1230 2 track
Mixing Consoles: Series 30 Sound Workshop, 36 in x 24 out
Monitor Amplifiers: (3) Crown DC300As, Crown D60, Crown D75
Monitor Speakers: Big Reds, E-V Sentry 100s, Auratones, and RORs
Echo, Reverb & Delay Systems: Lexicon 200 digital reverb, Echo Plate, MICMIX reverb, Prime & Super Prime Time digital delays, DeltaLab DDL-2, tape delays
Other Outboard Equipment: UREI limiters, (5) Kepex and (6) Gain Brains, (2) Orban parametric EQs, MXR doubler/flanger, Eventide Harmonizer, dbx comp/limiter
Microphones: Neumann U89, U87, U46, KM84; AKG 414, 451EB, D244; Sennheiser 441s, (5) 421s, E-V RE20; Shure SM57s and 58s
Instruments Available: LinnDrum, DMX drum machines, Yamaha grand piano, Prophet 5, Korg CX3, D6 Clavinet, Fender DynoMy Rhodes, Ludwig drums, Fender Twin, Music man, and Marshall amplifiers.

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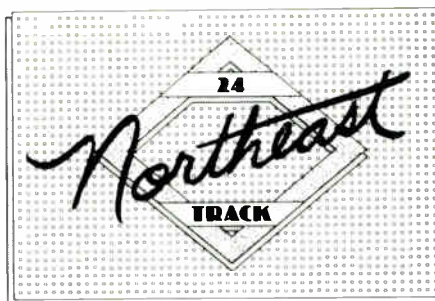
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Microphones: E-V 664, Neumann U87s, 259, E-V RE20, AKG 414s, 502Es, 451, D1000Es, D12, Sennheiser 421, Beyer M201, 160, Sony ECM 22Ps; PML, Shure SM57s, SM58s, SM59, SM60, SM81, SM7, (2) Crown PZM

Instruments Available: Steinway grand piano, Baldwin harpichord, Hammond B-3 organ w/ Leslie, Steinway upright grand piano, Fender Rhodes, ARP String Ensemble, Fender, Marshall and Lab amps, Ashly instrument pre-amp, Mini-Korg synthesizer, Ludwig drums, Tama drums, Roto-Toms, SVT cabinet, Roland JC120 amp, Roland JCG0 amp, Mini Moog, JBL 2x15 cabinet, Phase Linear 700B, Hohner Clavinet. Also available for rental: Oberheim DMX, Sequential Circuits Prophet 5

Video Equipment & Services: ¼ & ½ inch playback capabilities, sync to music

Rates: Available on request

••••THE WORKSHOPPE RECORDING STUDIOS

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40-35 235th St., Douglaston, NY 11363
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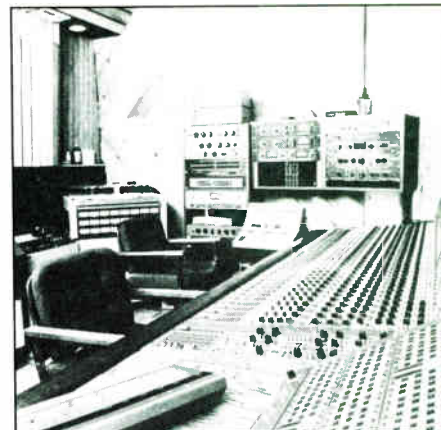
Owner: Kevin Kelly

Studio Manager: Kevin Kelly

Engineers: Rob Bengston, Kevin Kelly, Lee Pomcrantz, Rob Alexander

Dimensions of Studios: A 31 x 19, B (overdub booth)

Dimensions of Control Rooms: A 21 x 19, B 15 x 12



THE WORKSHOPPE RECORDING STUDIOS
Douglaston, NY

Tape Recorders: Otari MTR90 MkII 24/16/8 track, MCI JH110 1/2/4 track, Scully 280 2 track, Otari 5050BII 2 track, Otari 5050BII ½ track

Mixing Consoles: Sound Workshop Series 40/Automated 36/24, Sound Workshop 1280B 12/8

Monitor Amplifiers: Bryston, Phase Linear, Crown

Monitor Speakers: UREI 813s, Altec 604Es, Auratones

Echo, Reverb & Delay Systems: Live chamber, 2 plates, Lex icon, Eventide, DeltaLab DDLs

Other Outboard Equipment: Eventide Harmonizer, flanger phaser, UREI 1176LNs, LA-3As, Spectra & dbx limiters, Kepexes, De-esser, many Pultecs Vocoder, outboard EQ (various)

Microphones: Neumann U47s (tube), U67s, E-Vs, Sennheisers, AKGs, Shures, RCA, etc

Instruments Available: Oberheim DMX OB-8 Yamaha C-7 grand, B-3, Rhodes, Clavinet, assorted synths Ludwig drums, congas, Rotos, percussion kit vintage Fender & Ampeg tube guitar amps

Video Equipment & Services: Shadow system, JVC CR6650 JVC color monitors

Rates: On request.

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- Directory of Recording Schools and Programs
- Education Forum
- Summer Video Production Supplement

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Materials Due: May 15th

AUGUST: Studio Design Special Issue

- Listings of Studio Designers and Suppliers
- New Trends in Design and Construction
- Acoustics Update

Ad Closing: June 7th

Materials Due: June 15th

SEPTEMBER: Southern California Recording

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- L.A. Studio Spotlight
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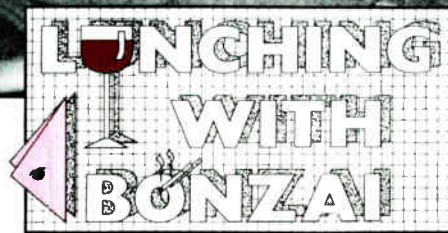
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by Mr. Bonzai

Robert Moog

Still synthesizing after all these years.

"I WAS JUST A KID AND MY PROTOTYPE was made out of orange crates and chewing gum," says Robert Moog of the instrument that changed the shape and waveforms of modern music.

His name is the one most associated with electronic music—and justifiably so. Moog is himself a synthesist, and in fact, gave the instrument its generic name. He and a handful of experimenters are responsible for the quantum musical leap of the 20th Century.

Robert Moog was born in Flushing, New York, and was schooled at Queens College and the Columbia University Engineering School. He earned B.S. degrees in both Physics and Electrical Engineering and went on to Cornell to get his Ph.D. in Engineering Physics. As a sideline, he began building theremins while still a teenager and selling them to "anybody who would buy them."

The theremin, named for its Russian inventor, appeared in 1920. An electronic instrument with two antennas, it is played by moving the hands and disturbing an electromagnetic field. The theremin achieved notoriety for its mysterious musical presence in such films as *Spellbound* and *Lost Weekend*. A variation on the principle utilizing ribbon control was developed by Moog for the Beach Boys' "Good Vibrations."

We met at this year's NAMM show, a fitting place for a discussion of the past, the present and the future of electronic music.

Bonzai: Are people still buying theremins?

Moog: Maybe one a year. I still make them—I have sort of an attachment to them.

Bonzai: How many have you built?

Moog: Maybe a hundred complete theremins that a professional musician would play, but we also made small theremins that you plug into a home amplifier. We sold about a thousand of the gadget variety.

Bonzai: How did you move from the theremin to the instrument that bears your name?

Moog: I built theremins all through college and in 1963 I was exhibiting them at a music teacher's convention. I met Herb Deutsch, a professor at Hofstra University, and he asked me if I knew anything about electronic music. He invited me to attend one of his concerts—my first real exposure to this type of music. Early in 1964 we got together for a few weeks of experimenting—I built things and he tried them out. Out of those few weeks came the basic idea for the electronic music synthesizer.

Bonzai: What did electronic instruments consist of when you came on the scene?

Moog: Anything that people could get their hands on: tape recorders, laboratory oscillators—anything electronic that would make a sound.

Bonzai: Did you put these elements together into one instrument?

Moog: That was part of it, to rationalize

the components and then to introduce the concept of voltage control—the use of an electrical voltage to change some part of the sound. If you used a keyboard, it produced the voltage that could change the pitch, the loudness, the tone color or half a dozen other things. These were the building blocks. You had one module—one circuit that made a waveform, another circuit that filtered it, a third that shaped the loudness and then you had a keyboard with maybe a ribbon controller and you could interconnect these things. The voltage from one controlled the other and you built on that to make a complex sound.

Bonzai: Were you the first person to put all these elements together?

Moog: No, there is no first. People were working on the concept. Harald Bode, who was instrumental in developing electronic organs immediately after World War II, published an article in 1961 on modular electronic music systems that had some of the ideas we used. There was a television engineer in Rome, Paul Ketoff, who built a performance synthesizer—although he didn't call it that. This was 1963, and he called in the Synket. It had a few patch cords and a lot of switches and three touch sensitive keyboards. It turned out that

Don Buchla and I were working simultaneously on this modular idea with voltage control. He was on the West Coast and I was on the East and we knew nothing of each other.

Bonzai: When did the instrument bearing your name make its first appearance?

Moog: The first public showing of the prototype modules was at the AES Convention in New York in 1964. I was just a graduate student and didn't know what the hell I was doing. I guess it was a company—we took a few orders. You're going to think I'm exaggerating, but this is how it happened: Herb and I had been experimenting and we showed our equipment at an electronic music studio in Toronto. They were encouraging and let the word out. The next thing I knew, I got a call from the AES and they said that CBS wasn't going to use their exhibit space. They asked us to participate. There we were alongside Ampex and Scully and 3M. I sat behind my card table with my modules, and a choreographer, Alwin Nikolais, came up and said he would take one. We had modules in hand-made boxes that cost about \$200 apiece. The first order was for \$735 and the second was for \$1,400. That was three months work for us.

Bonzai: How long were you active in the company?

Moog: The company grew by fits and starts and in 1971, we sold our controlling interest to a guy who puffed the company up for two years and then sold it to Norlin. I remained with Norlin under an employment contract for four years and left in 1977.

Bonzai: Why?

Moog: Just thought I could do better by myself.

Bonzai: What have you been doing since then?

Moog: (chuckles) My family picked up and moved from Buffalo to North Carolina. For two years I did nothing but build my house. Then I started up a business called Big Briar, Inc., to do custom electronic music work. I do some consulting and we have a small line of touch sensitive control devices for electronic music—devices that you actually put your hands on to control the sound.

Bonzai: What is the basic contribution you have made to electronic music?

Moog: I don't think there's anything basic. I was one of the first to put it all in

—page 119, Moog

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Herbie Hancock and his "robots" steal the show.



Courtesy of NARAS

A Bonzai View

Ah, the Grammys—the annual Senior Prom of the recording industry. It's a two-day blowout with traffic jams of tuxes and limos, an eclectic gathering from all corners of the music business.

Bones Howe, sound consultant to the Academy and live mixer for the show, commented: "I enjoy it—it's my annual adrenaline rush. It's really the last vestige of live mixing. With three rehearsals I am expected to make the acts sound as good as records that took six months to make. The clock goes straight up and you're live to the network. There's no second take. I love it—you finish up, close the master fader and go to the party. There's no kitchen drudgery."

Things actually start heating up the night before the ceremony. The nominees' party at the Biltmore is a low-key meeting place for artists and NARAS folks. There is usually a legend or two around, and this year we got to chat with two Kings: Albert *and* B.B.

The next afternoon, people began arriving early at The Shrine for the pre-broadcast presentations. As the audience meandered in, Gary Owens masterfully emceed the first chunk of award presentations. At this point it was quite casual, but as air time approached, the mood intensified. Guests lingered in the aisles congratulating each other as the warnings to "take your seats, please!" got more urgent as the big moment approached.

I was wondering why a girl in an astronaut outfit was doing leg stretches in the aisle when the lights blazed up and computerized spotlights scanned the hall like it was a wartime air



Courtesy of NARAS

Backstage (L-R): Eurythmic Annie Lennox, Stevie Wonder, Quincy Jones, and Dave Stewart of the Eurythmics

raid. The astronaut joined other "working girls" as they danced to the stage for Donna Summer's big opening number.

There were some colorful moments: Annie Lennox of The Eurythmics in macho Las Vegas drag, Boy George via satellite from London, the cast of *La Cage Aux Folles*. The '84 Grammy show had an amusing undercurrent of androgyny.

Herbie Hancock's live recreation of his "Rockit" video tore the house down. Conservative jaws dropped to radical levels as Herbie took us all for a ride in the funhouse and fooled us with his living robots.

After Ann Miller misannounced the winner for Best Cast Show Album, the show lurched into a commercial break. As the podium

descended, Mickey Rooney followed it down, trying to rectify the mistake, and ended up on his hands and knees. The producer was calling for law and order and Mickey was mugging and kicking his legs in the air like a billygoat breakdancer.

After the show, there was a mass migration back to the Biltmore for the *après* TV party. Huge ballrooms were set up for a buffet feast where artists and guests were free to roam among live performances of jazz, classical, country, rock and big band music. NARAS is always criticized for neglecting some segment of the music industry, but all things considered, the Grammy Awards is a celebration that is reflective of many tastes, styles and sales figures. ■

—from page 117, Moog

a box so that everything worked together. I explored and exploited the use of voltage control. I guess the single thing that accounts for the success is that I pointed the development toward the use of keyboards and the making of sounds that turned out to be popular. The Mini-Moog was just a distillation of the early modular synthesizers, with convenience and a sound that became a standard.

Bonzai: Synthesis is an appropriate term for what you did. . .

Moog: We started using the word "synthesizer" three years after we began in 1967. We picked the word because synthesis means to create something from component parts. That's how you think of sound when you use a modular synthesizer. Each module corresponds to a part of the sound that you control individually.

Bonzai: Do you play?

Moog: A little bit. I'm not a musician by profession but I have some musical training and I like to do a gig once in awhile, but on my own terms.

Bonzai: After touring this year's NAMM show, what is your evaluation of the electronic music business?

Moog: After a stagnation of many years, the industry seems to be moving forward again—searching out new uses of electronic technology that will have a lasting value for musicians. I think the MIDI—the musical instrument digital interface—has lasting value.

Bonzai: Is there anything you would change about the MIDI?

Moog: It does a great deal, but it doesn't do everything. When you think of how much there is behind MIDI—the specification is 1/4" thick—of course you can find things that you would like to change. Everybody has different interests, so the MIDI is one enormous set of compromises. But I think the way the compromise is positioned is very good for the industry. With perhaps an additional five dollar cost to the manufacturer, the interface can be put in and you have the capability of a standard interface that will connect your ax with any other MIDI-equipped ax, to a computer, or any other piece of equipment that's made to the specification. This enables you to think of a synthesizer as one building block and create a very complex set-up without having an engineer on the job.

Bonzai: What is the focus of your work today?

Moog: What I'm doing now is certainly not at the heart of the musical instrument business, but it's what interests me. I'm experimenting with touch sensitive control devices. I think the one weak feature of all electronic instruments is the ability to control them. A lot of the instruments make very fine sounds and they're flexible and slick, but what you're putting your hands on is basically a plastic keyboard. If your Sears-Roebuck piano felt that way you'd send it back. You're putting your hands on the same kinds of knobs and controls as those on the front panel of your TV set. These instruments are musically useful and musicians are familiar with them, but they are not optimized. They're not finely crafted the way musical instrument interface surfaces have always been traditionally.

Bonzai: If MIDI is the current breakthrough, what can we expect to see next?

Moog: Well, I'm sure that in the next five years we'll see an awful lot of expansion of computers with a whole bunch of MIDI ports designed especially for controlling musical instruments. There will be all kinds of devices to exploit MIDI, to let musicians do interesting things that we can only fantasize about today. ■

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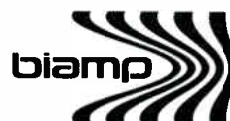
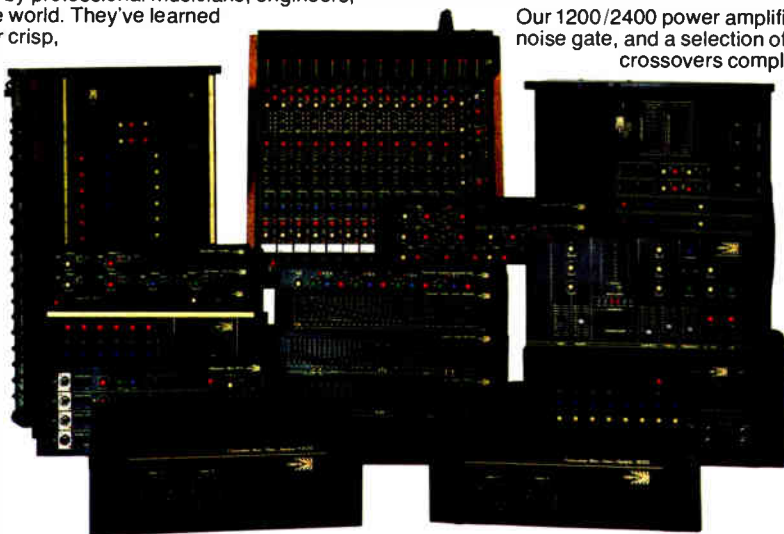
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EQUALIZERS

Use and Abuse

Believe it or not, the most used, mis-used, and misunderstood piece of recording equipment is the equalizer. If the recording is sick, the equalizer is the last resort, the common cure, and the fix-all. Just tweak the EQ. It's ± 4 dB @ 10 kHz, ± 6 dB @ 5 kHz and -4 dB @ 60 Hz, and so on and so forth. How much bearing do equalizers have on the finished sound? Do they add color or noise to the signal? What kind of equalizers are there, and when should they be used? These and other questions will be covered in this article.

To understand the equalizer better, let's go back to its birth. It was first introduced in the 1930s on the big radio consoles, dubbed by its creators as the tone control. The competition for sales forced radio manufacturers to build larger sets with bigger speakers. The tone control was added as an additional feature, to give the listener the option of a bright sound for vocal broadcasts, and booming bass for music. You could never get both strong bass and bright treble at the same time. The tone control lasted for more than twenty years.

Next came the dual tone controls, introduced in the mid-1950s with high fidelity sound. Now it was possible to push the bass response with the bass control, and add dazzling brilliance with the treble control. As with all good things, this new innovation created a

whole new set of problems. Not only could you get more bass and treble, but if you tweaked enough, it was possible to destroy the entire mid-range frequency response.

Enter the graphic equalizer. As the recording technology improved, a sophisticated new group of listeners emerged calling themselves audiophiles. These enthusiasts wanted more control of the sound, and soon got the manufacturers to put out a new equalizer, which worked in octaves. It was now possible to split up the entire audio spectrum into 10, 15 or 27 individual bands. This new creation started at 20 Hz at the bottom to 20 kHz at the top. Each band could be raised or lowered by 10 to 15 dB.

CONSOLE EQUALIZATION

The early mixing consoles used the two band equalizer. The low band treated the 100 Hz and below range, while the top band treated frequencies from 5 kHz to 10 kHz. Later, these equalizers were modified for multi-band operation. Instead of two knobs there were four. They became EQ pairs. There were two for the top, and two for the bottom. For each pair, one selected the frequency, and the other the gain or reduction, usually in 2 dB steps.

The next development was the three band equalizer, which allowed the user to overlap or fill in between the frequencies. The mid frequency equalizer added a new dimension to the recorded sound. It was now possible to treat the top, middle, and bottom of any sound, and make up for deficiencies in the microphone or instrument. The mid frequency equalizer became very useful in disco music, because the pulse of the drum is in the mid frequency

area. Now if you combined low bass for the bottom and mid boost for the pulse, a real throbbing bass drum sound could be achieved.

The first of the modern day equalizers we'll discuss is the four band EQ, consisting of high frequency, mid high frequency, mid low frequency and low frequency bands. Each section has its own gain control which is capable of adding or subtracting up to 15 dB in 2 dB steps. The mid frequency sections slightly overlap each other, creating a very smooth equalizing transition between highs and lows. The four band EQ can be found on most well built consoles today and is available in both step and parametric versions.

The parametric equalizer usually comes in four bands, and is probably the most popular of all equalizers used in recording today. Its equalizing range is the same as the four band step EQ. The mid high and mid low overlap their counterparts. Parametrics, however, allow the flexibility of being able to equalize between frequencies, while changing the gain in any increment. Their only drawback is that when remixing, it's not always possible to come back to the same settings, unless a true parametric (as opposed to a quasi-parametric type) equalizer is used.

SHELVING PEAK AND "Q"

Have you ever overheard these words "Shelving, Peak, or Q"? Have you wondered how they relate to equalizing? Let's see if we can simply explain these words, and their functions. Shelving is merely the top and bottom range of an equalizer. For example an equalizer with the range of 20 Hz to 20 kHz shelves at 20

Input module from Speck Electronics console. Equalization section allows ± 15 dB of cut or boost in three adjustable bands: low, 50-500 Hz; mid, 500-5000 Hz, and high, 5k-15k Hz.

Milam Audio equips Westwood One's new world class mobile.

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We wish to thank Westwood One for contracting Milam Audio as a major audio supplier during the construction of both Westwood One mobiles built since 1981. We also wish to thank project engineers, Arnold Rosenberg, Biff Dawes and Richard Kimball for their very fine assistance, and Mr. Rosenberg for his following comments:

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Hz on the bottom and 20 kHz at the top. To explain "peak", think of the frequency selected as looking like a mountain with a flattened top or peak, hence "peak". When you select a frequency, the peak is represented by a waveform which looks like a flattened mountain, as Devil's Tower in *Close Encounters*. The "Q" changes the wave shape. It makes the peak either flat or very steep, resembling a sharp pointed spike. Sharp peak EQ'ing is useful when the sound you need to extract is camouflaged or scrambled within other coloring frequencies.

TO EQ OR NOT TO EQ?

That is the question. The best answer is to use a light touch. Over EQ'ing takes its toll in the finished sound. The most important point to remember when using an equalizer is that it is an extension of sound. If different microphones, or acoustical treatment will improve the sound then make the necessary changes and do not use the equalizer. On the other hand, if microphones and acoustics can't improve the sound then equalize to your heart's content.

Usually, the best time to equalize is during the recording. Equalizing in-front reduces the noise you'll undoubtedly get if you add it at the re-mix, since the noise floor comes up once the signal is re-equalized from the master tape. You can alter the sound, but you also enhance the tape noise at the same time. There are exceptions to the rules. Sometimes you have no choice, and must use the equalizer. This is where careful use will obtain good results. Solo the signal desired for equalization, and listen for noise. Another good tip is to know the range of the instrument being recorded and pre-equalize it during the session. Don't panic, add a little more EQ than what's needed, especially if it's in the top end range, because you tend to lose the top end on tapes after prolonged use.

Some equalizers are more musical than others. Experimentation is the only way you will determine credibility of the equalizer. The most important equalizer is the one found on your mixing console. Learn its limitations, and if you use it to reinforce good recording techniques, you'll stay out of trouble. If you know what you're doing you can make almost any equalizer work for you.

This article was written to give the reader a basic general knowledge on the equalizer. In a future issue, we will get into more specific uses of equalizers and their technical applications. Once again, if you have any further questions regarding this article please write me at *Mix* and I will try to answer your questions. ■



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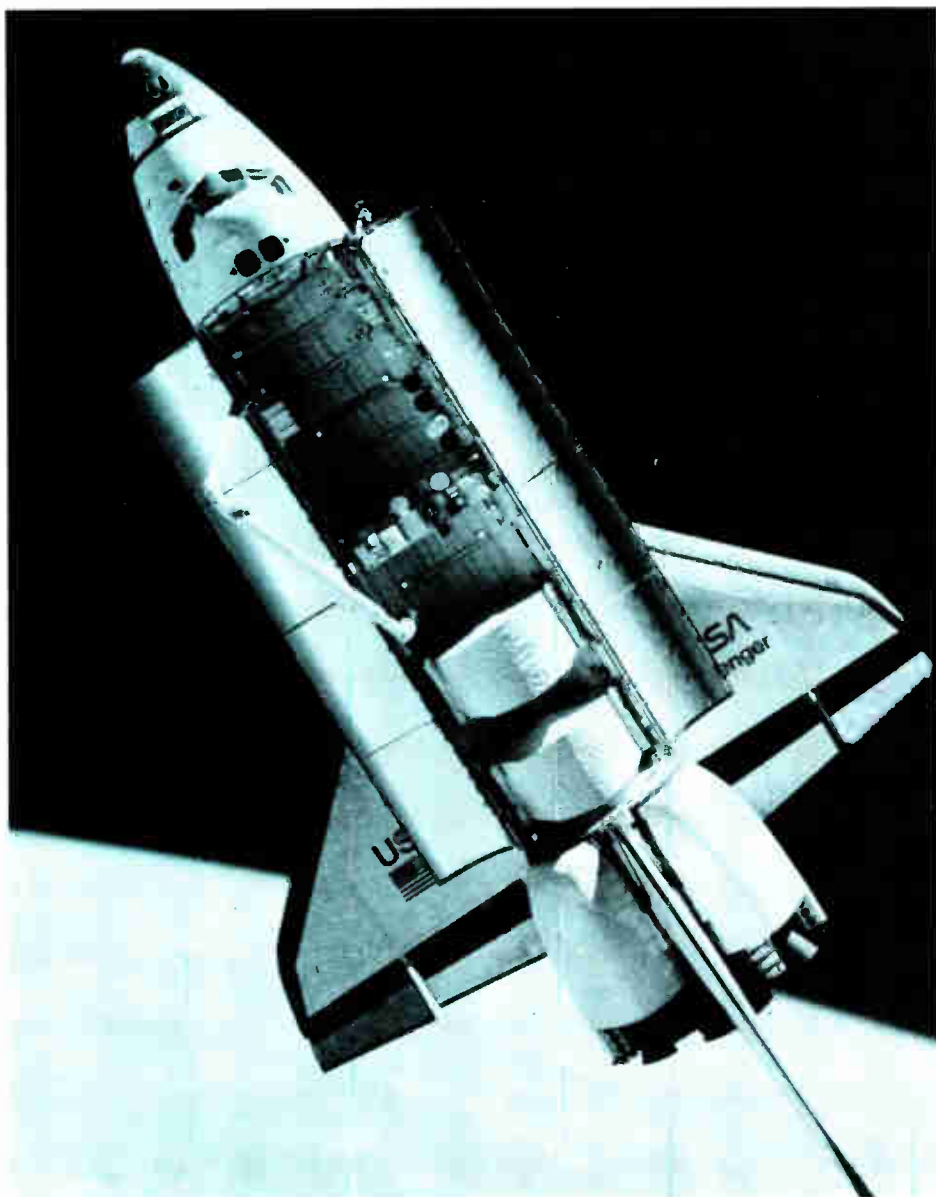


PHOTO NASA

by Hank Lam

As the space shuttle Challenger orbits the Earth, communications and data are accumulated and transferred from thirteen tracking stations around the planet. Mission 41B is the tenth in America's Space Shuttle Transportation System program, and it represents the leading edge in just about every branch of science and technology. This reusable spacecraft orbits the Earth 127 times in its eight-day flight, and hundreds of thousands of people have contributed to its success.

We are at NASA's Lyndon B. Johnson Space Center (JSC) in Houston, it's 5:00 in the morning, and the Space Center is coming to life as the mission continues into its 92nd orbit and wake-up begins on the spacecraft.

Media Services Corporation, one of the hundreds of contractors, is responsible for the flow of audio and visual information to the news media

Visible in the cargo bay are the support stations for the two MMU backpacks, the sunshields for the palapa B and Westar VI satellites, Mu-band antenna and a number of getaway special (GAS) canisters.

The Shuttle pallet satellite is configured mid cargo bay here as is Astronaut Robert L. Stewart, standing beneath the remote manipulator systems (RMS) arm.

A fixed camera on Astronaut Bruce McCandless's helmet recorded this scene of the Space Shuttle Challenger some 50-60 meters away during a history-making extra-vehicular activity (EVA), Feb. 7, 1984.



PHOTO. NASA

and to the public. From the Public Affairs Office come photographs, video displays, press and video conferences, written information, logs, film support and audio.

Glenn Osborn is Media Service Corporation's technical "brain," the chief engineer responsible for the miles of wire and tons of equipment that comprise the audio information system. He is something of a mind-reader, constantly responding to the needs of countless scientists, centers and newpeople in operating the information links from space and around the planet—the interface between NASA and the public.

Craig Jackson is the head of the hands-on operation. Coming to NASA as a freelance engineer and composer, he actually runs the audio board and directs Earth-based audio information activities. His forte is the production of musical scores for NASA public affairs films; he works with an Ampex MM 1200 16-track and a Quad Eight Ventura board. But during a mission, art takes a back seat to technology and the mixing board is interfaced with satellites, radios, landlines and commentators all around the world. At least three of the Audio Control Room's ten monitors seem to be active at any given time, and Osborn and Jackson are always busy.

The NASA Public Affairs Office's Audio Control Room (ACR) handles many signal flows during a mission. This article will detail three of them: a multi-location, televised, interactive press conference; an air-to-ground in-flight press conference; and a terrestrial press conference. A phone call to the astronauts from a world leader is routine by comparison, but that, too, can be routed through the

Audio Control Room.

Air to Ground is the world's largest remote wireless recording studio. All voice information between the shuttle and NASA is transmitted and received on radio frequency bands: S-band (1.7-2.3 GHz), Ku-band (13-15 GHz), and UHF (240-300 MHz). The mode of transmission can be frequency modulation or pulse modulation. Pulse

**During a mission the
Audio Control Room
mixing board is
continually interfaced
with satellites, radios,
landlines, and
commentators all
around the world.**

modulation can be pulse amplitude, pulse code, pulse width or pulse position. On these signals can also ride telemetry, video, commands and control. All transmissions show up at the Flight Control Room (FCR) and at the Payload Operation Control Center (POCC) and are bussed to the audio and video facilities for processing and distribution.

There are thirteen sites on Earth which link non-satellite transmissions. Each of these dishes or antennae has a "footprint" of operation, line of sight to the horizons, so there are communication "dead zones". Communication satellites will be orbited to eliminate terrestrial direct-link earth stations, and thereby maintain constant transmission contact throughout a mission orbit. Currently, there is one Tracking and Data Relay Satellite (TDRS), with a dedicated earth station at White Sands, New Mexico. Two more TDRS units are planned in order to provide full rotational orbit contact. TDRS repeats (receives on one frequency and transmits on another) on both the S-band and the Ku-band, to a dedicated Domestic Satellite (DOMSAT) linking White Sands to JSC. The present TDRS "footprint" starts in the Pacific between Hawaii and California, at the acquisition of signal (AOS) line. TDRS coverage, audio and video, extends to loss of signal (LOS) area of the Indian Ocean.

The Earth stations used for non-satellite (TDRS) downlinking are called Ground Space Tracking and Data Stations (GSTDN). Radio stations for on-orbit coverage, GSTDNs repeat S-band and UHF to JSC by phone line or DOMSAT. STDNs are located at Ororral Valley, Australia (ORR); Goldstone, California (GDS); Merritt Island, Florida (MIL); Bermuda (BDA); Hawaii (HAW); Guam (GWM); Santiago, Chile (AGO); the Ascension Islands (ACN); Madrid, Spain (MAD); Yarragadee, Australia (YAR); Botswana (BOT); and Dakar, Senegal (DKR).

Space walks, or extra-vehicular activities, are transmitted UHF to the shuttle, then repeated to Earth.

SATELLITES

TDRS, like all newer communication satellites, orbits 22,350 miles above the Earth in a geosynchronous orbit. This means the satellite sits directly over the equator and never shifts with respect to the Earth. The shuttle flies about 150 miles up at Mach 25, completing an earth orbit every 90 minutes. Because there is only one TDRS orbiting now, constant communication is only possible between the Earth and the shuttle for a period of one half an earth revolution, the TDRS "footprint". TDRS shuttle circuits are both Ku-band and S-band, but earth downlinks are Ku. The TDRS network consists of the TDRS satellite and a TDRS-configured, dedicated domestic satellite (DOMSAT). TDRS sits in the sky at 41° W. RCA provides the two current DOMSATs used for NASA information relay. The DOMSATs are configured in one of three link patterns:

1. From HAW, GDS, or MIL, a DOMSAT repeats STDN to JSC.
2. From the TDRS station at White Sands, a dedicated DOMSAT will repeat TDRS downlinks to JSC.
3. From JSC, a DOMSAT repeats video and/or audio for NASA or domestic distribution.

Only if video comes in from TDRS and the second DOMSAT (SATCOM) is "free" can JSC repeat audio and video (NASA Select) domestically. SATCOM cannot repeat the TDRS information directly. When domestic STDN sites are used for the JSC downlink of audio and video, domestic distribution of NASA Select is recorded and played back after the domestic STDN passes.

SATCOM FIR uses trans-

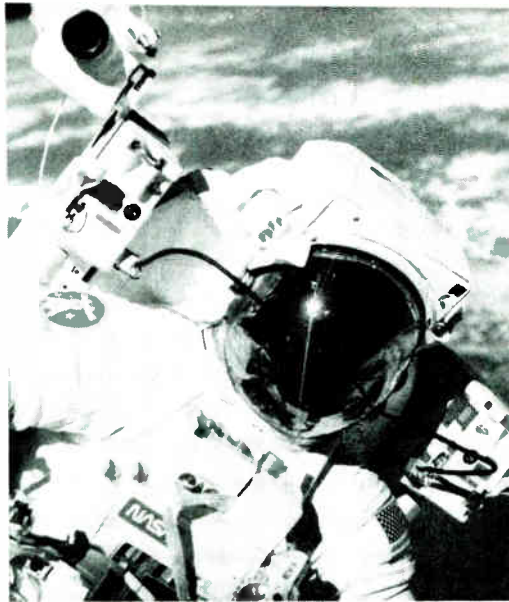


PHOTO: NASA

ponder XPB-13 (3960MHz) and sits at 139° W. Due to the distance between the Earth and the communications satellites, each transmission jump (an up AND a down) takes 256 msec.

TELEVISION AND AUDIO

Video and audio travel from the orbiter together in sync to a STDN. If a TDRS pass is involved, the signals uplink from the dedicated TDRS STDN & White Sands to a TDRS dedicated DOMSAT for downlink reception at JSC. The two satellite jumps account for a travel time of 512 msec. If the signals travel by STDN non-TDRS, video is uplinked to a DOMSAT (SATCOM) and downlinked to JSC. Audio can uplink to SATCOM to JSC or travel

from a STDN by phone lines to JSC. A single DOMSAT jump takes 256 msec., while ground lines are "instantaneous". Note that video can arrive at JSC before audio, depending on the travel paths. If audio were to go by TDRS and video by STDN, video would lead audio. With video delays being cost-prohibitive, audio must be re-routed to lead video. This situation can occur during a TDRS pass when the shuttle's Ku-band antenna has a blocked line-of-sight to TDRS.

In the future, the Department of Defense will transmit audio and data in an encrypted format. Based on an algorithm, this coded digital data stream will be decoded at Stateside and passed on, as required by the secrecy of a mission. Video information, though not encrypted (scrambled), does have a transmission format, depending on the method of generation and synchronization. Today, two downlinked video formats are used—NTSC and Field Sequential. NTSC is the common U.S. transmission standard. When power or bandwidth need conservation, Field Sequential color video is used. A low-light black and white RCA camera, shooting through a rotating red, blue and green filter disk, locked on the scan rate, generates a flickering image. At JSC, the signal is processed into a NTSC color picture. If necessary, any data or audio interleaved with the video is stripped out by the Ground Data Systems Division (GDSD) of JSC. Video processing is done by Taft Broadcasting, a subcontractor at NASA for video services. Color processing takes 68 msec.

During a normal TDRS pass, after signal processing and synching at JSC, an NTSC synched signal (NASA

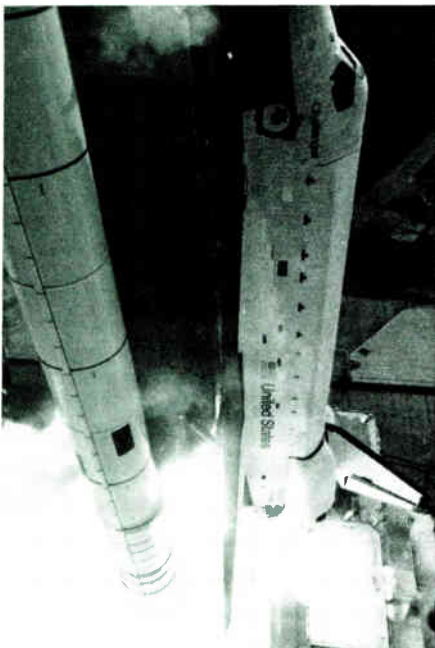
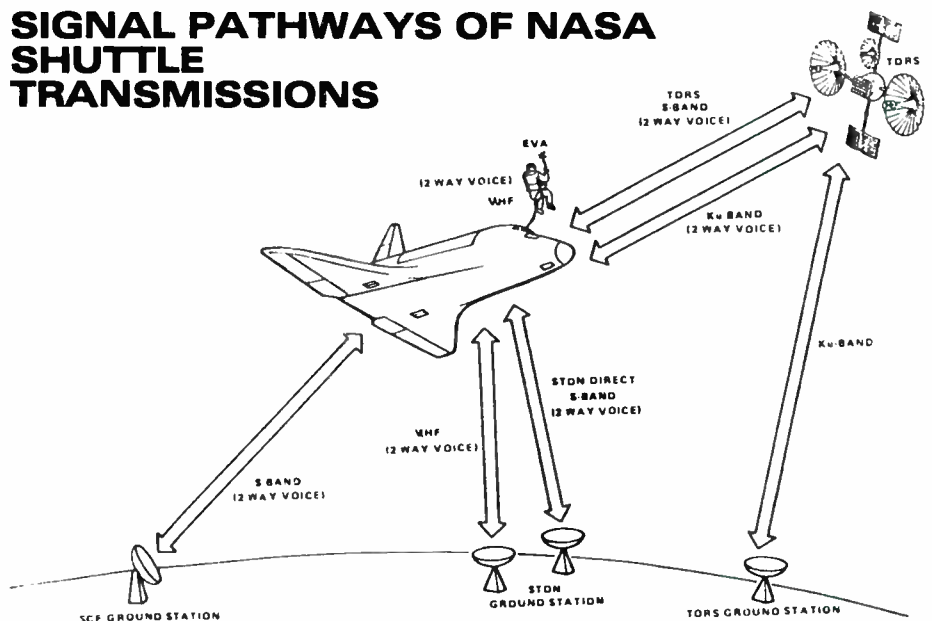


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SIGNAL PATHWAYS OF NASA SHUTTLE TRANSMISSIONS



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Select) is distributed nationwide by DOMSAT/SATCOM. This is an automatic turnaround. If video is relayed by STDN to JSC, DOMSAT/SATCOM is used and NASA Select is distributed after the pass.

Added to the satellite signal travel times are signal processing times. Field Sequential video must be converted to NTSC by Taft, which takes 68 msec. TDRS audio always requires de-interleaving from the data stream by GDSO; this consumes 38 msec. NTSC video requires no correction, and audio by non-TDRS STDN, whether digital or analog, requires no stripping. However, the ACR must sync audio and video. Sync, then, depends on signal path and signal processing.

By means of six constants and a formula, the ACR can calculate the sync delay time and necessary signal path:

1. TDRS audio always is delayed 38 msec (when stripped from data).
2. Field Sequential video is always delayed 68 msec. (conversion to NTSC).
3. One satellite jump takes 256 msec.
4. Two satellite jumps take 512 msec.
5. STDN land lines are instantaneous.
6. A NEGATIVE delay time, into the ACR, requires an alternate audio path.

AUDIO TIMES

- a. TDRS: 2 jumps = 512 msec. + 38 msec. for GDSO de-inter-leaving = 550 msec.
- b. STDN: 1 jump = 256 msec, no processing required = 256 msec.
- c. STDN land line is instantaneous.

VIDEO TIMES (Field Sequential Processing takes 68 msec.)

- a. 1 STDN jump: 256 msec. + 68 msec. = 318 msec.
- b. 2 TDRS jumps: 512 msec. + 68 msec. = 568 msec.

VIDEO TIMES (NTSC)

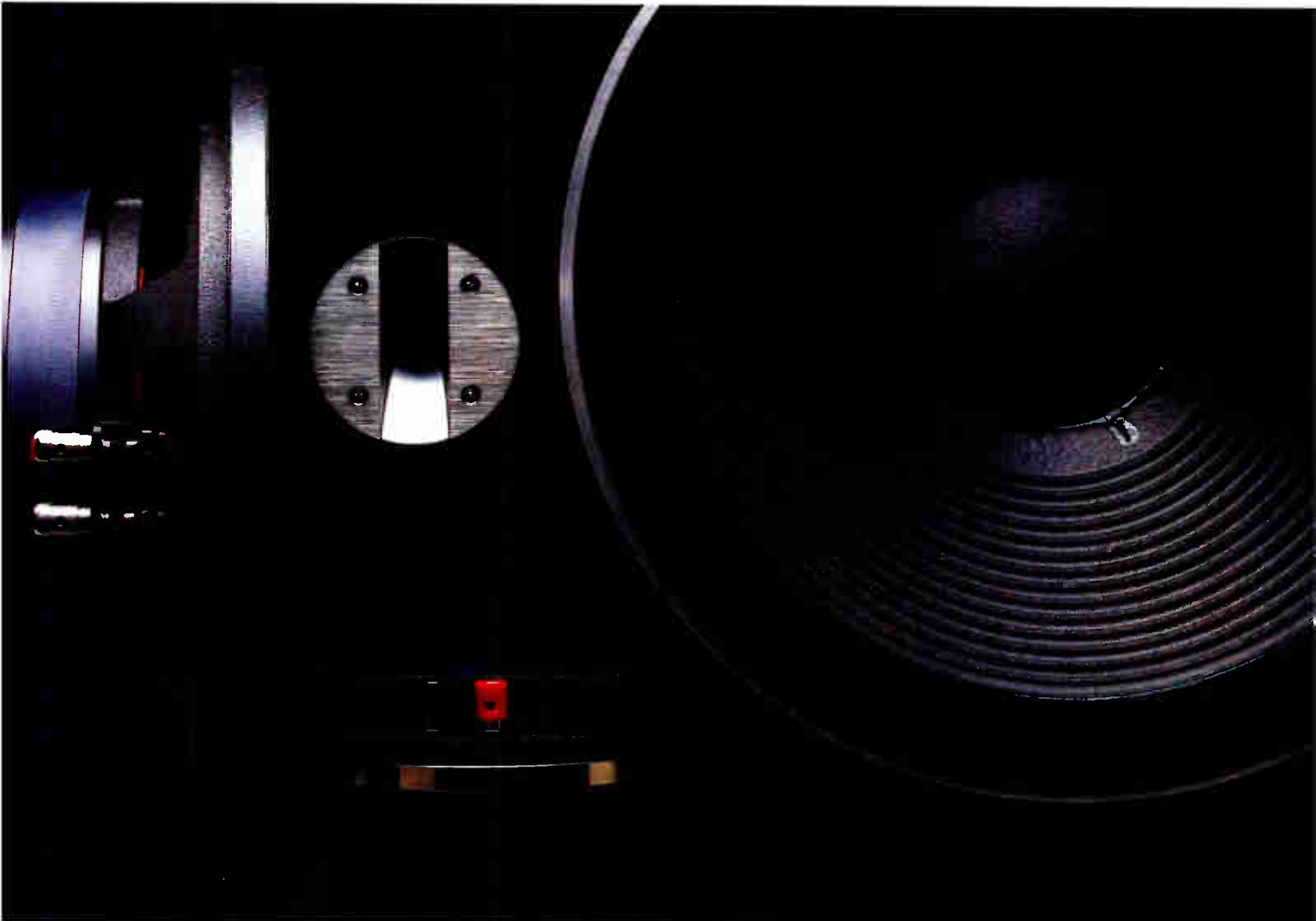
- a. 1 STDN jump = 256 msec.
- b. 2 TDRS jumps = 512 msec.

VIDEO TIME less AUDIO TIME = ACR delay required.

The SCR is production-oriented. The communications section may see good signals on meters, but the ACR must organize and sync all communications, downlinks, uplinks, or worldwide space centers, and present a program, on speakers and picture tubes, to the "real world."

According to Osborn, the job of the ACR "is building Mission Audio". The ACR board receives and sends air to ground communications (A/G 1, 2 or UHF), the Public Affairs Office (PAO) Commentator, the POCC Commentator, AT&T phone lines, delay lines, the Vertical Interval Data Detector (de-interleaved audio), cassette decks, Sup-

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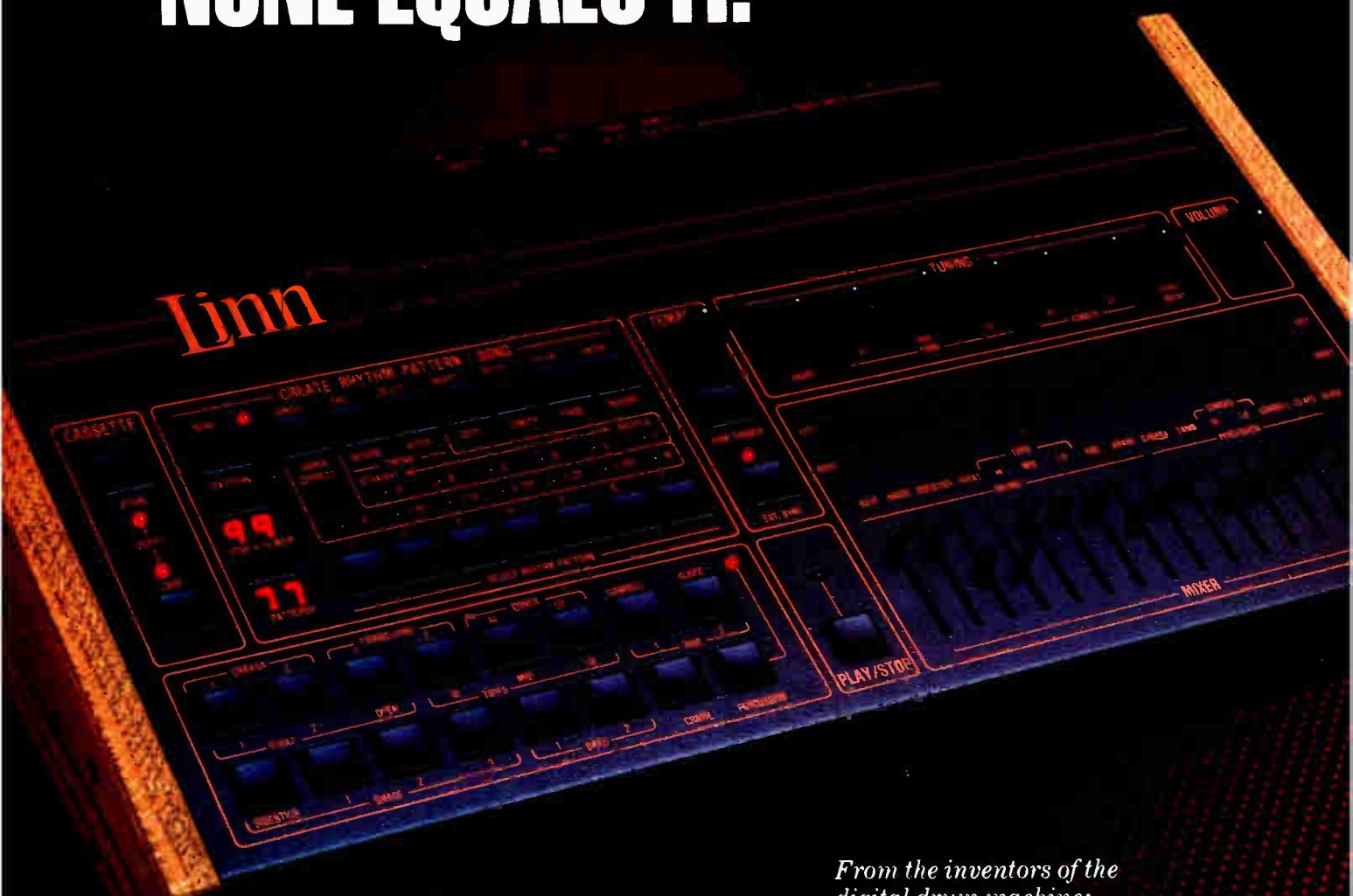
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port Audio and Mission Audio. The 24 x 8 console juggles ins and outs to generate Mission Audio and NASA Select simultaneously. Support Audio is the four-wire circuit path which links all NASA centers. Mission Audio is comprised of A/G lines and the PAO commentary. Mission Audio is made in the ACR, and may be used as the audio for NASA Select. NASA Select is the finished, in-sync audio and video. NASA Select can be a live space mission, a press conference, meetings or any NASA generated programming.

The ACR is loaded with effects equipment. A 2200 point patch bay connects delay lines (Lexicon and Eventide), gates, mutes and ducking amps (Valley People DynaMites),

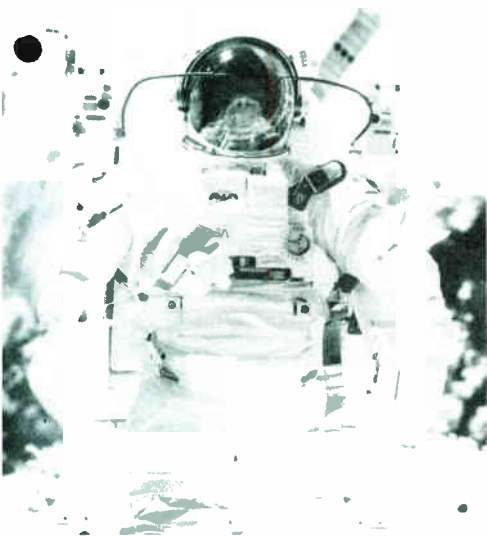


PHOTO NASA

distribution amplifiers (Heaco), and telephone hybrids (custom units and Studer). Much of the electronic path is Osborn's custom design, as the NASA interfaces and switching systems are unique. A board parallel mixer/switcher is used for off-time signal routing. A mute and "running mixer," it is an assist for Support Audio, interfacing five space centers. The gates and mutes provide visual signal monitors, preserve signal-to-noise on telephone lines and duck the Mission Audio when the PAO Commentator speaks.

The ACR feeds auxiliary 8-track recorders (Otari), logging component and finished audio and timing information.

- Track 1: SMPTE Time Code (video backup)
- Track 2: PAO Commentary
- Track 3: A/G 1
- Track 4: A/G UHF
- Track 5: A/G 2
- Track 6: Mission Audio
- Track 7: NASA Select
- Track 8: IREG B (National Bureau of Standards master clock)

Scully voice-activated recorders (with delayed inputs to eliminate first-word chopping), also assemble transcription logs of Mission Audio and A/G.

An eight-channel Communications Loop Intercom (COMM), strung on dedicated four-wire, two-way telco lines, runs to every and any mission center in the world. Mixed and monitored through an Altec AMM 1628 automatic microphone mixer, the COMM stays so busy that normal AT&T phone lines still must supplement for coordination. COMM is made up of TD ACR (technical director/audio control room), PAO COORD (public affairs management and coordination), PAO ENG (a problem line), PAO CUT (TV event coordination), 4TV (TV management and technical), VIDEO OPS (video engineering and coordination), COMM CONTROL (all systems operation), and a floating AUXILIARY.

Mission Elapsed Time: 5 days, 3 hours, 6 minutes

The COMM is busy. Zero level is being set on six mixing boards simultaneously around the U.S., as Jackson prepares for a press conference, which will be video-linked across the country. From NASA Headquarters in Washington (HQ), officials of the space agency will announce with 3M Corporation in St. Paul, Minnesota, their combined efforts in developing space manufacturing. Industry leaders and members of the press at JSC, Kennedy Space Center (KSC), and Marshall Space Center (MSFC) will watch and ask questions of officials at HQ and 3M officials in St. Paul. HQ, Goddard Space Flight Center (GSFC) and 3M are on AT&T's ground audio and video circuits; they are in sync. All audio, on phone lines around the U.S., will come to Jackson at ACR/JSC. Now comes the interconnect. He will return a mix to each center by land line—this is Support Audio. Video, produced and switched at HQ, goes up to SATCOM from GSFC: this is NASA Select Video. All Support Audio will be delayed ¼ second to catch up with the video, downlinked by satellite. Because this is an interactive conference, questions asked by reporters must be monitored in real time to avoid an echo. HQ and 3M respond in real time, so a split is taken in the ACR of audio originating from HQ and 3M. HQ and 3M will get their audio and video direct by land; they have no sync problem. Audio to KSC, JSC and MSFC is delayed 256 msec. Now, each center is in sync with itself, both directions, although KSC, JSC and MSFC are all 256 msec behind 3M and EQ.

Mission Elapsed Time: 6 days, 22 hours, 51 minutes

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The conference room at JSC fills up with reporters and photographers from the world's leading information networks. As Osborn and Jackson look down from the ACR window into the conference room, three TV monitors above the glass show the organization of the video programming. Screen 1 is PAO 1—the forward camera in the Flight Control Room (FCR). It sees the data screens, orbit paths, downlink pictures and Flight Controller. Screen 2 is PAO 2—the real view of FCR. Screen 3 is NASA Select. NASA Select can be PAO 1, PAO 2, a downlink or any incoming, originating video. Right now it's the space shuttle downlink, as six astronauts prepare for an interactive in-flight press conference. PAO 2 switches to a NASA commentator in the conference room and the interview begins.

TDRS can downlink about 40 minutes of TV times during this orbit. The shuttle has crossed the acquisition of signal line. Vega wireless mikes are fish-poled in front of correspondents, starting with NBC's Roy Neal, while Taft runs cameras and the questions proceed. Questions come in by phone from KSC and Dryden Flight Center (DFRF). Flying upside-down to earth and tail first, the Ku-band antenna pointing at TDRS, audio and video (Field Sequential) leave the orbiter. TDRS downlinks the signals to White Sands, which relays up to the dedicated DOM-SAT. Downlink goes to JSC. The video is a flashing red, blue and green picture, mixed in a data stream. The video is stripped, sent to Taft, and converted to NTSC. The audio is de-interleaved from data, sent into the ACR, and delayed. An NTSC picture with sync audio will go up to SATCOM for distribution. Questions to the astronauts go into the ACR, where they are mixed and uplinked to the shuttle on A/G 1. The shuttle gets no return video, only audio.

The astronauts use a variety of microphones in space: Plantronics StarSets, Swinteks, or NASA custom units developed during the Apollo missions from Electro-Voice military mikes.

If a problem occurs the FCR Commentator uses the INHIBIT key which kills all feeds out of the ACR. The feeds can be individually restored (there are ten inhibited outputs), and the PAO Commentator takes precedence. So far, this system has not been needed.

The simultaneous, spontaneous programming from Media Services Corporation is distributed primarily to the news media. The video and audio feeds from JSC are available to the networks as well as schools, cable operators, the public and the press. NASA Select and Mission Audio are



**Looking into the future,
audio, too, is making
new strides in space.
For instance, sound
waves are used to
levitate matter and
overcome gravity.**

PHOTO: NASA

now carried on an AT&T 900 number by the National Space Institute. Telco lines also carry Mission Audio by direct wire to the homes of mission specialists, the BBC, and foreign governments and industries. Radio monitoring is provided, in the JSC area, by a dedicated government transmitter, on 171.150 MHz.

The networks have different approaches for news dissemination. ABC and CNN use STARSTV video to uplink directly to New York and Atlanta, respectively. ABC does live programming from JSC, and leases phone lines for audio and foldback. (*Nightline* is an example of ABC's interactive link.) CBS and NBC use AT&T and Western Union combinations for microwave and landline connections to New York.

Eighty-five percent of all NASA's press conferences originate at JSC. Conferences can be managerial, scientific or media-oriented. One thing is sure—they will be interactive, multi-centered and linked to an ever-changing combination of centers around the U.S. and the world. During the missions, the commentator and specialists will be in the conference room at JSC. Taft will handle video, the ACR controls audio.

Mission Elapsed Time: 7 days, 1 hour, 30 minutes

The press is interviewing the off-going Flight Director with questions

coming in from MSFC, DFRF and KSC. The Director wears an earphone, monitoring NASA Select and PAO CUE; he has a mike kill-switch, and a COMM set beside him. The audio from outside JSC arrives on four-wire phone lines. Mixed in the ACR, the audio (now NASA Select) and video go uplink to SATCOM for nationwide distribution. The ACR also returns to the participating centers by phone lines, a 256-msec delayed answer feed, on Support Audio. Fed out of the board on the foldback network, Support Audio maintains downlink video picture sync for the answer.

Asked about their need into the future, both Osborn and Jackson quickly responded "more board inputs." The 24 x 8 Ventura is already fully expanded, with at least two Altec automatic mike mixers supplementing the Quad Eight's inputs. With eight output busses, level control of the return lines is restricted.

Other system users could be more understanding, too. The interface, says Osborn, is tricky with the system delay configurations. This point is made particularly obvious when video returns before audio and the ACR must ask the Instrumentation and Communications Officer to send in audio from the UHF circuits.

JSC is building another duplicate FCR. A switching system will be needed to synchronize activities to control rooms, depending on whether missions are real or simulations, or are secured Department of Defense flights. With a space station in the future, two shuttles may be up at once, too. Says Jackson, "We need an automated board, with built-in gates, limiters and compressors, and programmable access for each mission situation."

Looking into the future, audio too is making new strides in space. A Mission 41B payload experiment, the Acoustic Containerless Experiment System (ACES) demonstrates a technique for materials processing in space. Sound waves are used to levitate matter and overcome gravity. Using sound levels of from 125 db to 145 db, two Altec speakers (acoustic levitator drivers), monitored by a mike (sensor), will demonstrate material levitation, the dynamics of a gas in space, and the rotational control of various samples by sound.

Today is Friday. It is 5:00 P.M., CST. The crew on the orbiter is preparing to go to sleep, and awake for a landing tomorrow. The second shift at JSC came on at 2:00 P.M. Jackson says the hours are ruining his love life. He and Osborn will be in at four in the morning, the orbiter landing at KSC at 7 days, 23 hours, 19 minutes MET. The mission continues. ■

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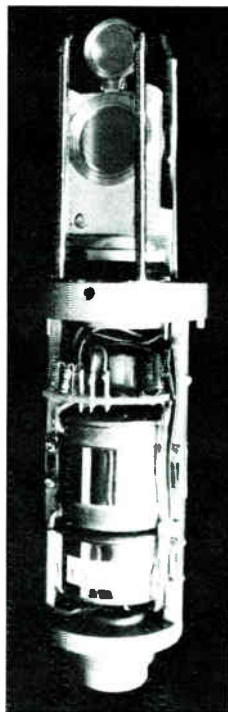
Sanken CU-41 Microphone

by Bob Hodas

A new Japanese competitor in the microphone marketplace has entered the U.S. The Sanken CU-41 is a phantom powered, cardioid pattern condenser with a rather unique design. The microphone was developed as a combination effort between Sanken and the NHK research labs for use in digital audio systems. Although Sanken has been producing microphones for 58 years, this is their first export.

The manufacturer claims some excellent specifications for this mike. Frequency response is 20Hz to 20kHz ± 1 dB; self noise is 15dB or less; dynamic range, 119 dB; maximum SPL for 0.5% THD at 1kHz, 134dB. (See Fig. 1 for complete specs.)

The secret of the smooth extended response and high dynamics is their piggy-back double capsule design. One small diameter capsule is mounted vertically over a large diameter capsule. No longer do you have to make a decision as to capsule size for recording low or high end information. The small capsule is most efficient at high frequencies while the lower capsule handles the lows. Think about it. It's the same proven theory we use for speaker reproduction only taken at the source. Also, the diagrams are made of titanium membranes one micron thick. This material proves to be humidity and temperature resistant, and corrosion free, making it a good candidate for consistent quality remote dates as well as for vocalists who thometimes thing like Sylvester the Cat. Attention to detail has resulted in a very tight, uni-



Microphone with outer housing and windscreen removed reveals the CU-41's unique dual capsule design and on-board electronics.

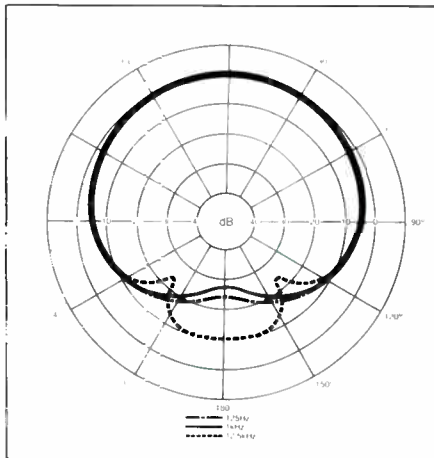
form polar pattern over the extended frequency range (Fig. 2).

A pair of CU-41's plus shock mounts arrived for evaluation. Microphones come inside plastic bags, in form fitting, foam-lined plastic boxes, each with its own frequency response chart. Shock mounts were packed inside bubble pack in strong corrugated boxes. Sanken obviously understands the perils of oversea delivery. Phantom power supplies were not provided so I simply used board power at the different studios during the testing.

Mechanically I would have to say this is one of the best built mikes I have seen. Outside the heavy duty case is brass with a satin nickel plated finish. The windscreen is a tight mesh stainless steel with a protection bar running up the sides and across the top. It's a handsome, professional looking microphone with a solid sturdy feel. Inside, the component assembly is also superior.

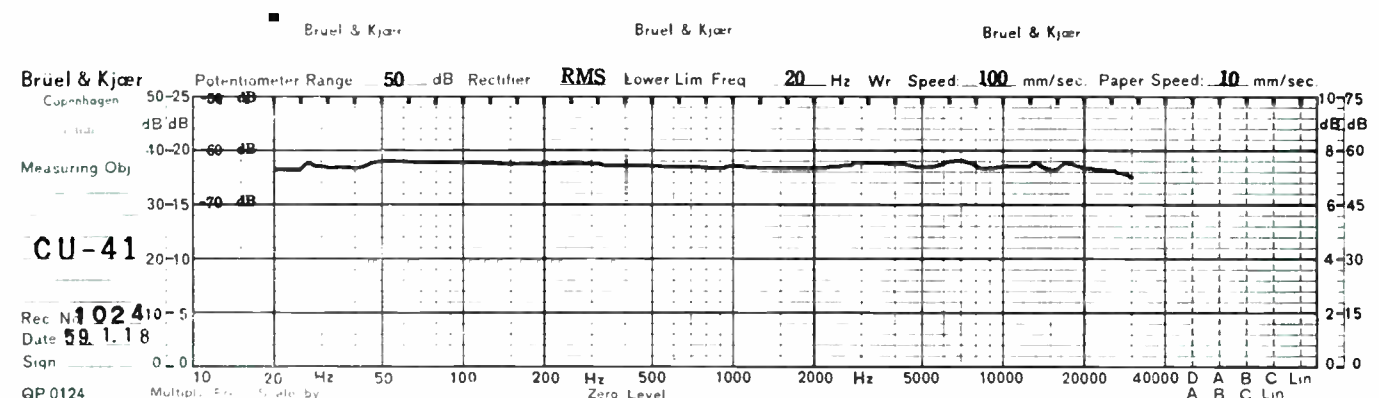
Transformers are copper clad for high RF protection. Electronic component assembly is very clean with good solder joints and strong mounting. This mike would be very easy to work on if necessary. Capsule protection is first class. On each side of the dual capsule assembly is a stainless steel U-shaped stock that would defy the heaviest drumstick from reaching the mark. I could never endorse dropping a mike (especially my tube mikes), but we all know it happens occasionally and this mike is built to take it.

So does it sound as good as it looks, or is it just another dumb blonde in a tight package? I must admit that I was skeptical of the capsule design, but when I let my ears do the judging I was impressed. Drums are a favorite of mine, so that was the first choice. The CU-41's were placed between three and four feet over a rack of four toms



Polar Pattern

Frequency response plot for Sanken CU-41 microphone



for O.D.'s. Even at that distance the low end of the drums was clear, present and well balanced with the attack. The overall response was much more full and rich than a popular mike of European design. Stereo imaging was very good and the pattern cross was quite smooth. Close up on toms, the extended low end demanded more of an off axis mike technique than a directly over the head method. This was absolutely no problems on bleed though, since the polar pattern response is so smooth that adjacent toms sounded true and full range while being simply reduced in volume. The CU-41 handled close miking with ease, showing no signs of overload and delivering a very pleasing drum tone.

Electric guitar at high SPL was the next test and in a close mike configuration the CU-41 exhibited a clear transparent top end, good punch and no sign of closing down or compression sometimes experienced at high volume. On acoustic guitar, a solid midrange and very transparent high end was pleasing that combined well with the bottom that never got boomy when moving in for presence.

On vocal, the extended high frequency response made for a crisp clean vocal with no high EQ boost necessary and no problem with sibilance. Next to other popular vocal mikes of European origin, the CU-41 had the most realistic sound with a transparency that cut through the track. Miking acoustic piano for stereo once again showed the advantage of their side rejection with bleed coming in without peaks and shifts, only a true sound of reduced volume.

There are some options on microphones of comparable price that Sanken has not included for stated reasons: There is no pad built into the mike but no real problem of overload was found so it did not seem to be essential. There is also no low roll off switch as with competitive products, but the designers wanted no coloration from the mike and decided to leave filtering up to the engineer at the board. Finally, this mike is available only as a cardioid. This may be limiting for some who like to do bi-directional background vocals or omni room miking, but personally the sound of the mike made up for these factors.

I would have to say that this is one of the best solid state condensers I've worked with. Because audio is such a subjective field I would never say rush out and buy one, but if you're looking for new mikes, you should find an opportunity to demo the Sanken CU-41. Since the CU-41 does truly extend down to the low frequencies, I would not recommend using it without the shock mount. Finally, I would like to thank Jeff "Skunk" Baxter for his experiences with this microphone. ■

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PREVIEW

the CPU, and two clock modules in a modular 19" rack mount package. Other modules, such as the TTL system interface and delay units shown above, are also available and a number of software updates are planned for additional flexibility.

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Speckmix MkII Console

Speck Electronics has introduced the Speckmix Mk II, a 16x8x16 console designed for professional recording applications. Each input features three band parametric equalization, two pan pots, cue and echo sends, solo, mute, and the ability to select between 2 line input signals. The Line A/Line B select feature is very convenient for studios that operate with digital drums and synthesizers.

The output section consists of three stereo output feeds, dual echo returns, communication facilities and +4 dBm outputs on the eight buss and stereo feeds. The Mark II is priced at \$4,375 and Jensen mike preamps are available as an option.

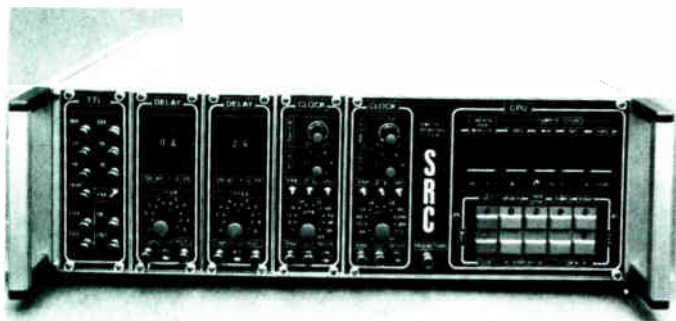
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Altec 515-G LF Drivers

Altec Lansing has introduced three new 16" low frequency loudspeakers engineered specifically to optimize the performance of LF horn and vented horn enclosures. This line, dubbed the 515-G series, incorporates massive 132 ounce ferrite magnets, edgewound flatwire voice coils, and lightweight, durable cone assemblies with cloth suspensions for wide response, high efficiency and low distortion. The eight ohm model 515-8G produces extended bass response to 50 Hz (-3 dB); the 16 ohm 515-16G is designed for multiple bass driver applications; and the high performance 515-8GHP is the most efficient loudspeaker Altec has ever produced, yielding high sound pressure levels and reliable performance even under extended use conditions.

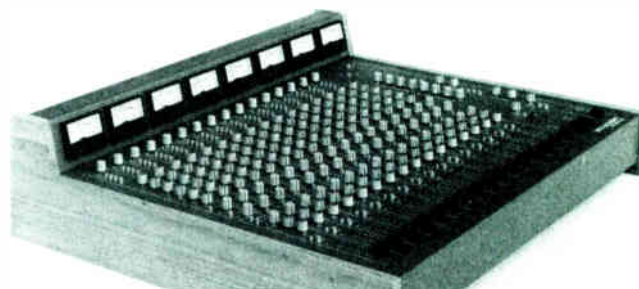
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SMPTE Reading Clock from Friend-Chip

The SRC (SMPTE Reading Clock) from the Friend-Chip company of Berlin, West Germany, is a unique device designed to solve some of the problems which can occur when synchronizing synthesizers and drum machines to SMPTE time code. The SRC reads and generates 25 or 30 frame time code and a start time is entered which informs the unit's CPU of the proper time to begin the synchronized instrumentation. A built-in metronome function insures that all instruments are locked in to the same beat, and two independent 63ms delays are incorporated to permit the time-shifting of various instruments relative to the start time, and tempo is adjustable from 30 to 255 beats per minute.

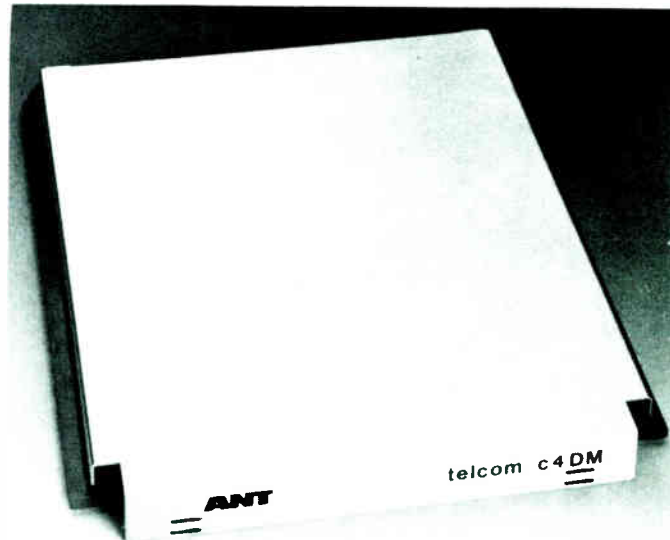
The basic version of the Friend-Chip SRC includes



Telcom c4 DM Noise Reduction

The Telcom c4 DM noise reduction system from ANT Telecommunications offers a 30 dB gain in dynamic range, improved crosstalk attenuation, reduced print-through and modulation noise and a clean natural sound, in a plug-in module which fits into standard noise reduction frames. The c4 DM is also available in other configurations including a special low power consumption version with extended ambient temperature range for mobile audio and video applications, and a module designed for processing at lower attack and release times for half speed mastering.

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Stereo Simulator from Studio Technologies

The Model ANL-1 Stereo Simulator from Studio Technologies, Inc., is designed to create a convincing stereo impression from any single channel source. The unit is especially useful when the number of available tracks is limited, and another advantage is realized when recording monaural instruments such as synthesizers and guitars. The ANL-1 is fully mono-compatible, so the balance of the final product will not be altered when heard over standard AM radio.

Inputs and outputs and +4 dBm balanced, frequency response is from 20 to 15k Hz (± 2 dB), and THD at operating level is rated at .5%. Front panel controls are provided for stereo width, and a modulation section allows the creation of stereo chorusing and pitch bending effects.

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Valley People Audio Noise and Level Meter

The Advantage Model 310 Audio Noise and Level Meter from Valley People was created to provide recording studios and broadcast facilities with a low-cost, high quality

measuring instrument. The Model 310 has balanced isolated Trans-Amp™ differential inputs which allow the measurement of extremely low level signals while providing protection from unwanted hum, noise and interference. A wide range of internal filters are included (20-20k Hz, 400-20k Hz, "A" weighted, and CCIR weighted), and a provision has been made for inserting an external filter network. Selectable detector response for average, RMS or peak measurements, and a large dual scale meter with a range of 70 dB in 1 dB increments facilitates testing procedures. The Advantage Model 310 sells for \$399.

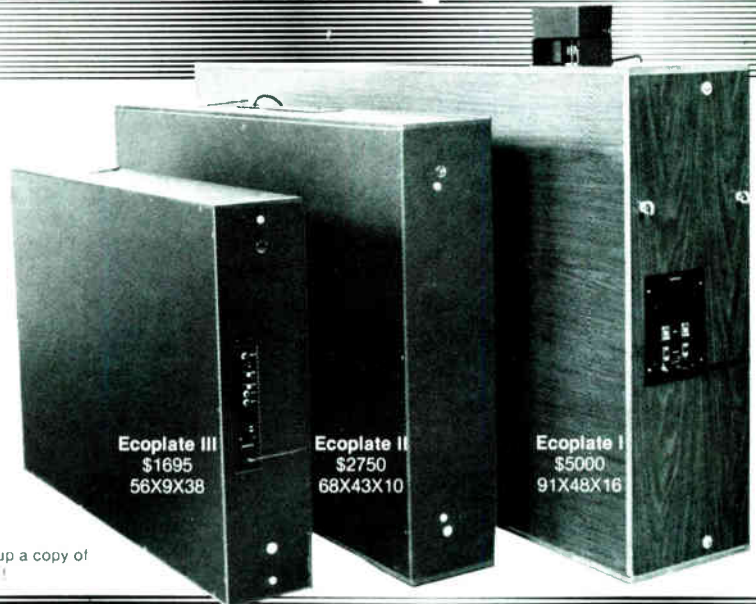
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The Bigger... The Brighter

That's our way of describing the difference between the sound of the three models of Ecoplates. The larger the plate, the more high frequency decay time it can have. Since the highs last longer, the sound is brighter! Yet even our smallest plate has more highs than any other mechanical reverb at any price.

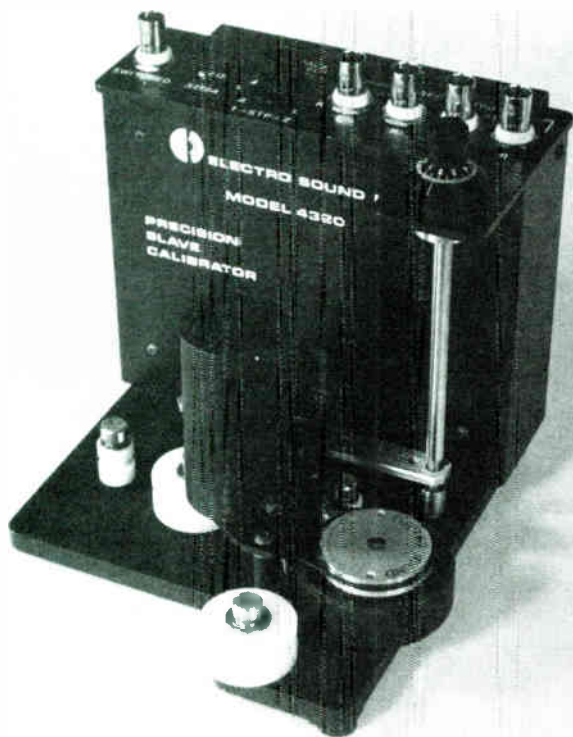
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Circle #095 on Reader Service Card



Electro Sound Slave Calibrator

The ES 4320 Precision Slave Calibrator from Electro Sound permits on-line performance monitoring of high speed cassette duplication systems. Simultaneous and independent full response playback of all four audio tracks is possible, and

a built-in precision calibration mechanism simplifies the correction of record azimuth errors. A self-contained tape tension system maintains constant tape-to-head contact and stable output signals. The unit operates at both 64:1 and 32:1 duplication ratios and fits all Electro Sound 8000, 5000, 6400, and 6000 slave recorders as well as a variety of slaves from other manufacturers. Circle #102 on Reader Service Card

Stephens Q-IIA Autolocator Update

Stephens Electronics has announced a software update of their Q-IIA Autolocator which permits the footage counter to alternately display in playing time at 15 or 30 ips. A tape speed indicator may also be selected which reads actual tape speed in inches per second to tenths of an inch (ex. 26.7 ips) allowing more versatile and accurate use of variable speed effects.

The updated software is available at a price of \$250.00. Some of the earlier model Q-IIA Autolocators may also require minor rewiring at an additional cost. For the owners of the original Q-II Autolocator a more elaborate update is required, at a cost of \$1000.00.

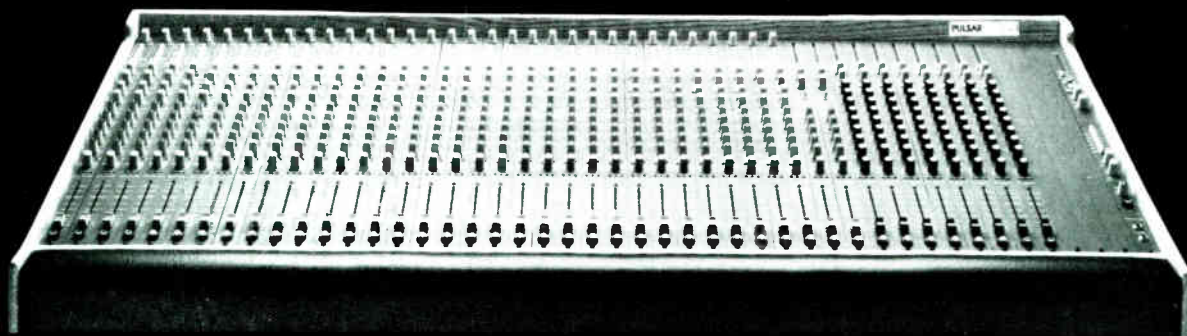
Circle #103 on Reader Service Card

New Scamp Modules

Audio + Design has introduced two new modules to be used with the popular Scamp Rack system: The S30 expander/gate and S31 compressor/limiter. The S30 features a hold circuit, log/antilog release network, a 60 dB attenuation range, side chain pre-emphasis, variable expansion/gating slopes, and a key input for an external control source. The S31 is a dual function unity gain comp/limiter module featuring compression ratios of 1:1 to 20:1 (continuously variable),

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EFFECTS

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FEATURES

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Optional on board signal processing, such as comp-limiters, etc.

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Distortion - less than .02%
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Max. output +18 dBV unbalanced

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Circle #150 on Reader Service Card

a separate limiter threshold, side chain access, and selectable logarithmic/linear release. Both the S30 and the S31 Scamp modules can be operated via a computer controlled mute input for additional flexibility. Circle #104 on Reader Service Card



Roland SDE-1000 Digital Delay

The Roland SDE-1000 offers delay times of up to 1.125 seconds (adjustable in increments of 1 ms), with four channels of programmable preset memory. LED readouts show the delay time and other status functions, and remote jacks are provided for controlling a variety of functions: Delay on/off, infinite hold, the remote setting of delay times, and preset delay select. The SDE-1000 fits in standard 19" racks and retails for \$499.00. Circle #105 on Reader Service Card

New Audio Digital Delay Units

Audio Digital Inc. has expanded their line of audio processors with the introduction of three new units: the TC-3, a pre-reverb digital processor; the TC-4, a broadcast profanity delay; and the TC-5 industrial delay.

The TC-3 is designed to enhance mechanical reverb systems by adding 260 ms (expandable to 520 or 1040 ms) of pre-delay at a rated bandwidth of 20 kHz and a 90 dB dynamic range. The unit's built-in mixing and regeneration controls allow the TC-3 to perform as a stand-alone delay unit for live and studio applications. The TC-4 features 6.8 seconds of delay at a 15 kHz bandwidth for profanity protection in live broadcast situations, and the TC-4 is designed for permanent installations with 500 ms of delay (expandable to one second) with a 20 to 20k Hz frequency response. Suggested retail prices are: TC-3, \$599.00; TC-4, \$1395.00; and the TC-5 lists at \$649.00.

Circle #106 on Reader Service Card

Penny & Giles Joystick Controller

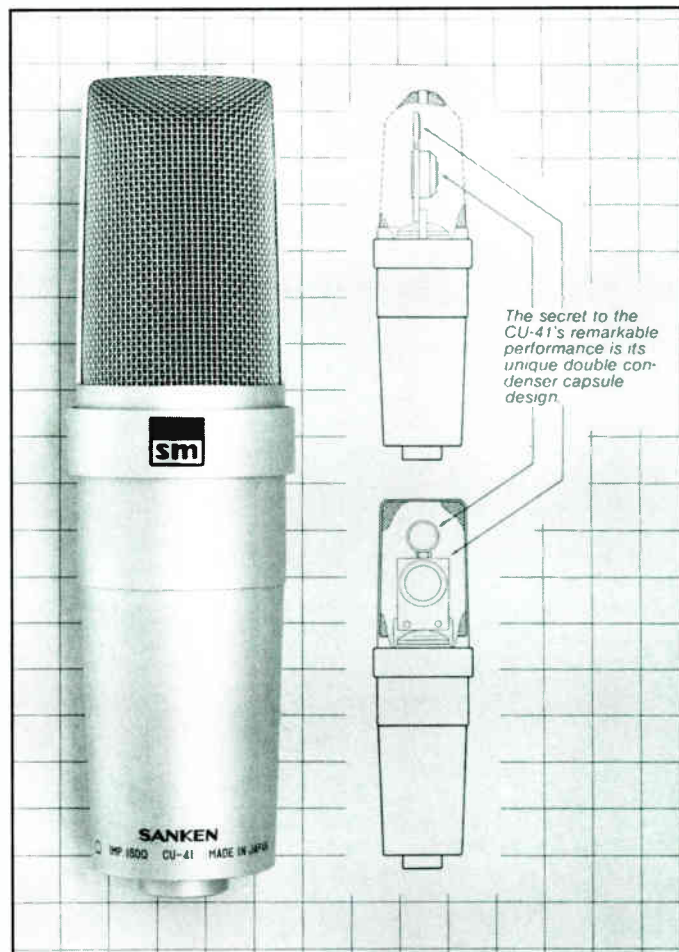
A new joystick controller introduced by Penny & Giles features single, dual or triple (X, XY or XYZ) axis control. Conductive plastic potentiometric elements offer infinite resolution, while precious-metal multiple finger wipers provide for long life and low contact resistance. The actuator shafts are mounted in precision ball races for ultra-smooth mechanical operation. The operational temperature range is -20°C (-4°F) to +90°C (+194°F). Options include a selection of five separate types of handles, self-centering or non-self-centering, and a deadman's switch.

Circle #107 on Reader Service Card

Audiolab Tape Degaussers

The new TD-4 and TD-5 tape degaussers from Audiolab Electronics Inc. were designed to meet the increased gauss requirements for the higher coercivity tapes that are becoming more prevalent in all formats. The TD-4 provides 2550 effective gauss to erase U-matic cassettes and up to 1" audio or video reels with a maximum diameter of 14". The TD-5 provides 3500 effective gauss to erase up to 2" audio or video reels with SMPTE time code up to 16" in diameter. Both models are available in 120 and 220 volt versions.

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Circle #151 on Reader Service Card

by Carol Kaye

As many of you may know, I was a jazz guitarist working gigs in Los Angeles when producer Bumps Blackwell walked into a club where I was playing and asked me to do a record date. Tired of the meager amounts of pay the jazz gigs offered, I learned the ropes of becoming a successful studio player. To do so, I knew I would have to be responsive and cordial, as well as have reading knowledge, good equipment and a feel for all the latest pop styles in order to make it. I was afraid that studio work would eventually hurt my live playing, but I took this challenge to help create hits that I am proud to have been a part of.

This month I talked with top session bassist Chuck Rainey and arranger/composer/musician/studio owner Artie Butler concerning their views and outlooks on this most rewarding and satisfying profession.

A partial listing of Chuck's credits include albums with Quincy Jones, Steely Dan, Aretha Franklin, Donald Byrd, King Curtis, and his personal favorite, the *Lena and Gabor* LP with Lena Horne and Gabor Szabo. The rest of Chuck's credits could practically fill a book, and what he has to say is especially valuable, as he has been successful working on both the East and West Coasts.

"On the East Coast you usually play with bands that have recording musicians in them. A musician is recommended by another musician," he says. Chuck often played live with King Curtis, who was recording steadily in studios, and guitarist Eric Gale, who recommended Chuck for work. "On the West Coast you do have to be a lot more mellow and maybe a little more egotistical about your work, and you don't actually have to be an all-around great jazz musician to make it," he comments. "You can be a specialist and have something to offer. Resumes do not get it—playing in groups does. Or knowing somebody or cutting a hit song could get you in. It is rougher back East—one has to be more up on the instrument."

Chuck also noticed that L.A. has more of a socialness as far as getting in—who you know, playing golf, hanging around with recording musicians, etc. While doing the Grammy Award Shows for six years, he ad-



mired such talented arrangers as Jack Elliot, Allyn Ferguson and Dave Grusin, who were actively trying to make Hollywood a better place for all good musicians trying to make it. Chuck feels that his success did cost him by "arresting his playing" a little, but he tripled his income. If you go into session playing with eyes wide open and invest your money for future security, this helps make up for the exchange of creativity and eventual "bottoming out" effect many players experience after a few years.

Chuck first met the late James Jamerson (Motown's electric bassist who set the style for Motown records) about 1960 when he was playing live in Ohio behind Sam Cooke and James came in to play with Smokey Robinson. Chuck's amp went out and James graciously loaned Chuck his amp. Chuck expounded at some length as to why James didn't get the credit he deserved for the contribution he made to the Motown style: "There were a lot of producers in Detroit that didn't play instruments. Everyone sort of grew up together and James was not the kind of person to insist on being recognized—it was hard enough just being paid on time. It was no one's fault, just a product of the environment at that time." Chuck had grown up playing the trumpet, then switched to blues on the bass until he heard Jamerson, who influenced him greatly.

I have to add that coming from a stone-jazz guitar background, I was also influenced by Jamerson as I picked up the electric bass in the studios in 1963 for the first time. James moved out to Los Angeles from Detroit and was used by other producers, but tended to stick close to Motown, which had a long history of using local musicians in the L.A. area.

Chuck first came to L.A. about 1971 after being a successful New

York bassist and after recording for Quincy Jones in New York while on the road with his big band. That was about the time that the *Tonight Show* moved out West from New York and brought some fine East Coast musicians with it such as saxophonist Jerome Richardson. Quincy was doing a lot of recording on both coasts at the time, and Chuck gives a lot of credit to Quincy, Jermaine Jackson and Smokey Robinson for their graciousness in recognizing his talent and helping his career.

Recording is a business like any other—you have to treat it as such and sometimes forget your dedication as a live musician. You are hired to help other people make it big, although stars are starting to give credit to the talents of excellent creative musicians who back them. Rhythm sections especially make big contributions with licks and grooves which lay the foundation for the record. Chuck made me laugh as he spoke of "Alan Cranston-type" players. It is true that you can be successful if you are just a technician of some sort—sometimes that is all that is required. I feel that a combination of feeling and the tools of reading, knowing all styles of music and being up on today's styles and sounds is necessary. The rest is having an easy-going personality, self-discipline and the ability to focus attention on the music as well as create a line here and there that will enhance the music.

Chuck Rainey is currently living and working in Dallas and is involved with Charlie Pride's company, Pri-Pick Productions, so watch for an injection of great soul coming out of Dallas.

For another viewpoint, I decided to chat with a dear friend and former employer, Artie Butler, who played that great piano solo on Joe Cocker's "Feelin' Alright." Artie, who is also co-owner of Evergreen Studios in Burbank, CA, (one of the first studios built from the ground up to cater to both record dates and film scoring) began as a second engineer at Bell Sound Studios (NY) while playing piano for artists such as Dinah Washington—he can be heard on her records in the late '50s and early '60s.

His first hit was "Sally Go 'Round the Roses." Later, he became a highly sought after arranger/player, working with Neil Diamond ("Solitary Man"), Janis Ian ("Society's Child"), Paul Revere & the Raiders, Dionne Warwick, Patti LaBelle & the

Bluebells, the Shangri-Las, the Drifters, the Coasters, Connie Francis, Little Richard and Paul Anka. From 1967 on, in California, he worked with Barry Manilow ("Can't Smile Without You," "Even Now," "Copacabana," etc.), Tom Jones, Dusty Springfield, the Fifth Dimension, Andy Williams, Helen Reddy, Thelma Houston, Mac Davis, Neil Sedaka, Billy Ekstein, Gladys Knight & the Pips, O.C. Smith, and Bobby Vinton, to name a few.

Artie says music is a gift that he feels is one of life's real thrills. He's in love with the process of "making music" and defines conducting an orchestra as "bathing in music." His Evergreen Studios has customized Harrison consoles and Ampex multitracks. It is a two-studio complex (larger room, 70-73 players, smaller room being enlarged to 37). Now in its fifth year of operation, many major motion picture scores and TV specials, TV movies and commercials having been recorded there. The likes of Frank Sinatra, Ringo Starr, Dionne Warwick, Neil Diamond, Gladys Knight & the Pips, Ray Charles, Barry Manilow, Julio Iglesias, Johnny Mathis, and opera singer Placido Domingo have also recorded there over the years.

"You can break into studio work by having a studio in your house," explained Artie. "High tech has changed so much that it gives the young musician a chance to be a songwriter/artist/producer at home and allow time to develop." He feels that formula type dates are a thing of the past and music has developed into broader styles with the synthesizer opening up unlimited sounds. He also says that the '60s saw the start of the songwriter/artist implying the arrangement within their tunes. His advice to the would-be studio musician on how to break in includes hanging around studio musicians and working in clubs. "Producers love to go to clubs to listen to young hot players who have professional attitudes and work well in a group. What *not* to play is important: relating musically to the rest of the group is essential. Also, hone your skills by attending a good music school."

On that note, I recently had a wonderful opportunity to visit the Charlie Parker Academy (4605 Paseo, Kansas City, MO 64110—Telephone: (816) 924-2200. In-depth musicianship is taught there. It is a bonafide school well run by Edward Baker. Other schools East and West Coast can help develop your musicianship too—check out accreditation. A few lessons from great recording musicians help too. Good luck. ■

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- Providing sub-millisecond TV audio editing capability for dialogue replacement.
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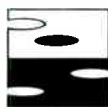
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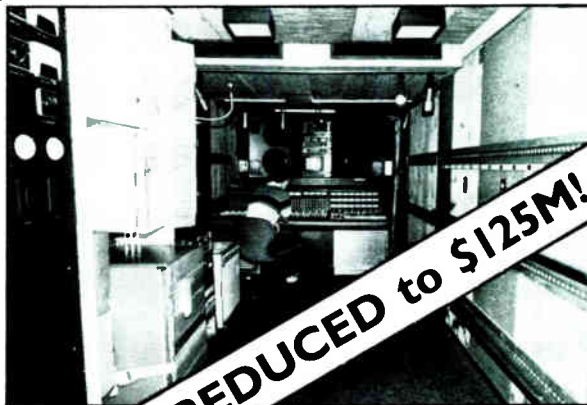
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EUMIR DEODATO'S

DUPLEX

Not too many artists would consider putting a recording studio in an apartment building. Problems such as weighty equipment, zoning limitations, poor security, noise, and nosy neighbors usually act as deterrents.

Said problems are all happily absent at Eumir Deodato's Duplex Sound, located in the landmark-status American Thread building in the Tribeca section of Manhattan. It was refurbished into residential co-ops, with the second and third floors (Duplex's location) leased commercially.

Mallory Earl, whose engineering credits encompass everyone from Julius LaRosa to Jimi Hendrix, is Deodato's chief engineer. He says that Duplex was built and framed within the already existing apartment structure, and no major construction was necessary. Neither was major renovation, since Duplex was created to be digitally state-of-the-art. It was opened in May 1983, but is not, at this point, available to the general public.

"We're aiming for a full live sound, and by working *within* the existing apartment set-up, we were able to get it," he says. How?

The studio itself measures around 18' x 20', and can comfortably accommodate about six musicians on a rhythm date. It was constructed utilizing basic fiberglass and wall board treatment. The floors are all floating, and the studio windows are all blocked up, so there's no noise leakage either in or out. (A minor ventilation problem has since been corrected.) The studio itself is a dead sounding room, with the live end closest to the control room window. That is further livened up with plywood convex strips, and this is where vocalists are always placed. The acoustics in the upstairs lounge (strip-wood on the floor and plaster walls) also render it suitable for live sound.

The control room is recessed back and represents a combination of soft and hard surfaces, with a full array of equipment including an MCI console (JH-500 series; 32 input, 24 output)



Eumir Deodato

SOUND

by Rosanne Soifer

MCI 24-track machine; Studer A80 2-track; 28 tracks of dbx 160 noise reduction; Kepex II by Valley People; Dr. Click by Garfield Electronics; Lexicon PCM 42 digital delay; tape eliminators; Eventide Harmonizer; limiters by Pultecs and UREI; Roland Space Echo; mikes by Sennheiser, Shure, RCA, and Neumann. Future

PHOTOS: ROSANNE SOIFER



Engineer Mallory Earl

equipment plans include purchase of an acoustic baby grand piano, a Jupiter-8 synthesizer and an Emulator. Since the majority of digital delays and reverbs are used only during a mixdown (224X with Larc Controller, sibilance controllers, etc.), these are rented as needed from Audiotechniques in New York.

Part of the control room is devoted strictly to synth equipment where any and all of the following can be utilized as needed: OB-Xa by Oberheim, Mini-Moog, Arp Omni, Oberheim-DSX sequencer, along with 2 LinnDrum machines and a Roland TR808 drum machine.

"I wanted direct access to new digital equipment with no time restrictions, especially on my own projects," says Deodato. Deodato, who has produced four Kool and the Gang albums, and has had numerous hits himself, is now in the process of recording a new album for Warner Bros., as well as producing a David Spinozza live album (for Sony Japan) and a rock and roll album by a new group called Metro Logic.

The recent *Fever* album by ConFunkShun, produced by Deodato and engineered by Mallory Earl for Mercury Records, illustrates the type of music currently coming out of Duplex Sound. One cut, "Baby, I'm Hooked", reached #5 on the R&B charts in early January, while the album itself hit #75 on the pop charts. Another ConFunkShun album is scheduled, along with a possible concert/concept video.

As Earl happily points out, being located in an apartment building does turn out to have several unexpected advantages, including excellent outside maintenance and tight security. Another added plus (which you normally don't find at a studio located in an office building), is access to a sunroof, health club with a full universal gym, sauna and shower. All of these amenities undoubtedly help contribute to what Earl and Deodato say they're striving for: "GOOD, DIVERSE LIVE SOUND." ■

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Beyer M 88



Beyer M 201



Beyer M 160

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As Sennheiser claims, the MD 421 undoubtedly stands up to extremely high decibel levels and has other features that have contributed to its popularity. But if you're already using the MD 421 to mike loud instruments or voices, we suggest that you investigate the Beyer M 88.

The Beyer Dynamic M 88's frequency response (30 to 20,000 Hz) enhances your ability to capture the true personality (including exaggerated transients) of bass drums, amplified instruments and self-indulgent lead vocalists.

The Beyer M 88 features a matte black, chromium-plated brass case for the ultimate in structural integrity. Beyer microphones are designed for specific recording and sound reinforcement applications.

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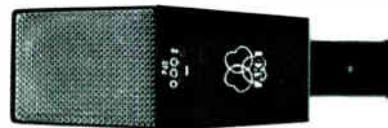


For over 10 years, engineers have used mics like Shure's SM57 for the widest variety of applications in the studio. And we feel that one of the main reasons more engineers don't use the Beyer M 201 in this context is simply because they don't know about it. Those who have tried it in the full gamut of recording situations have discovered how it can distinguish itself when miking anything from vocals to acoustic guitar to tom toms.

The M 201's Hyper-Cardioid pattern means that you get focussed, accurate reproduction. Its wide and smooth frequency response (40 to 18,000 Hz) provides excellent definition for the greatest number of possible recording and sound reinforcement situations.

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Some engineers prefer condenser microphones like the AKG C 414 to accurately capture the subtle nuances of a violin or acoustic piano. But should you have to deal with the complexity of a condenser system every time this kind of situation comes up?

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ing of major talent, as it always has been. On the other, The Palace not only had more than a half-century of large-crowd wear and tear, but also a number of structural and cosmetic changes from the original. Much of the interior had been spray-painted black, the facade had been spackled over, and it sorely needed to be brought up to code.

Columbia Records sales seminar the next.

To date, the house sound system for live shows has been provided by an outside contractor. For the late-night disco dancing sessions however, a custom system was designed by Bose Corporation that according to Lidtke has "provided a beat that is well worth the good money people pay



In the lounge area adjacent to the Jazz Club, you can relax as you await your turn to visit what the *L.A. WEEKLY* voted the "Best Bathrooms in L.A."

Aesthetically, the restoration has brought back much of the ornate elegance of the original, and then some. The liberal use of such appointments as art deco mirrored walls, black Italian marble floors and columns, brass and black glass doors, and even gold-plated fixtures in the bathrooms, reflects The Palace's commitment to its position as a first-rate entertainment boutique.

The investment in equipment to handle The Palace's diverse musical functions is equally impressive. To suit a consistent schedule of video production during the day (NBC's weekly *Rock Palace* and a number of HBO and Showtime concert films originate there), live concerts on weekend nights, disco dancing from 10 PM to 4 AM, bar mitzvahs, multi-media presentations, legitimate theatre, awards ceremonies, and hungry patrons in its distinctively French restaurant, the house is stocked, wired, and lit with nothing less than state-of-the-art.

The computer-assisted laser system, for instance, manufactured by Laser Media, is nearly as diverse as the functions held at The Palace. The same system may be used to produce a kaleidoscope of rock-oriented visual images for a Eurythmics concert one night, and to project a flow chart for a

for admission". Bose became involved with The Palace sound project late last summer when Lidtke and associates became dissatisfied with their old system and went shopping for another. Upon the suggestion of a friend, Lidtke contacted Bose, which coincidentally just happened to be looking for a prominent showcase for their new pro line of loudspeakers that would later debut at the AES Show in November.

After a few months of back-and-forth haggling, Bose sales rep Rome Baily negotiated a deal that was acceptable to all, and the work officially began on Steve Romeo's (Bose Manager of Business Development for professional products) drawing board back at Bose headquarters in Framingham, Massachusetts.

With a philosophy of "simple is best" in mind, Romeo began devising a system that would provide an even sound throughout the room without being physically obtrusive. For reinforcement, 16 of Bose's new 302 Tandem-Tuned Bass Systems were chosen for the low end, and 16 of their 802 Series II Articulated Array loudspeakers got the job of handling the mid-to-high frequencies in a bi-amped mode. To round out the package, Romeo called upon Bose's 802-C System Controller to pro-

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Billy Joel & Jim Boyer

THE SYMBIOSIS OF ARTIST & ENGINEER

by David Schwartz



PHOTO BETH GWINN

Since his 1977 breakthrough album, *The Stranger*—with the Grammy-winning “Just the Way You Are” leading the way to gold and platinum—Billy Joel has worked with producer Phil Ramone and engineer Jim Boyer. Since then, the team has collaborated to create *52nd Street* (1978), *Glass Houses* (1980), *The Nylon Curtain* (1982), and the current chart-topper, *An Innocent Man*—each of which has strengthened Joel’s position both as an artist and as a commercial force.

The formula is a complex one. At the outset of his collaboration with Ramone and Boyer, Joel insisted on using his road band (which currently consists of drummer Liberty DeVitto, bassist Doug Stegmeyer, guitarists David Brown and Russell Javors, and reedman/percussionist Mark Rivera).

They live with the songs, Joel noted, so they know better than anyone what to do in the studio. But the engineer and producer are as much a part of contemporary recording as the writer and players, and great albums are nearly always the result of inspired teamwork rather than the dictates of an autocratic singer/songwriter. *Thriller*, for example, couldn’t stand on Michael Jackson’s talent alone; it took the ears and mind of Quincy Jones and the flawless engineering wizardry of Bruce Swedien to come up with an album so much greater than the sum of its tracks.

An Innocent Man is much more than a collection of new songs. It’s a stylistic exercise, a foray into early ‘60s musical motifs with homage paid to such diverse influences as doo-wop, James Brown, and the Four

Seasons. The presentation is perfectly sympathetic to the style of each song, and the album’s overall texture is consistent with today’s sonic standards while evoking the atmosphere of 20 years past. It’s got everything to do with teamwork, with Billy and the band and Boyer and Ramone all having stuck together for years to create this magic.

We caught up with Joel and Boyer in Nashville, taking a night off in the middle of a six-month tour in support of *An Innocent Man*. We discussed the relationship between artist and engineers, an important subject to Joel. He views Boyer not as an employee or technician, but as a key member of the band.

After graduating from the University of Delaware with an electrical engineering degree in 1973, Boyer spent two years at Bethlehem Steel designing computer systems to operate steel mills. He then surrendered to his love of music and moved to New York City to accept an offer to work at A&R Studios under the tutelage of Donny Hahn, Elliot Scheiner and eventually Phil Ramone. It was with Ramone that Boyer made the transition from jingles to album projects, and when Billy Joel came to Ramone with the songs that became *The Stranger*, Boyer was enlisted to man the board. It was, as Boyer said, the beginning of a beautiful friendship.

Mix: What is the most important aspect of your relationship with the recording engineer?

Joel: That he plays his axe the best he can—that is, the studio, the board, and all the machines that are in there.

To me, the engineer is like one of the guys in the band, and he’s got to bring his own particular personality and creativity to his instrument. I talk to him like I talk to the musicians. Jim and I have a language we’ve developed, a kind of shorthand that helps get things done. If I can get something without going through a whole lot of rigamarole, that just helps everything.

—page 152, Joel



Mix: As the engineer, Jim, what do you need to get from Billy?

Boyer: Well, I'm one of those guys waiting for him to get there the first day. Music is what I'm waiting for; I'm waiting for the song. I'm waiting for a little bit of inspiration, knowing I'm taking part in something really important.

Mix: Do you feel like a member of the band?

Boyer: Yeah, absolutely. A lot of people don't look at it that way, but I do.

Joel: He's there before the band gets there and he's there after the band leaves. He's with me through the entire process, and he's there after I'm gone, when they're mastering. He

sees the thing through from conception to birth, and to buying shoes for the baby. To me, he's the key figure—even more than the band, because the band goes away and they don't hear what's going on with the overdubs, what kind of sound effects, or the mixing and sequencing. They're not involved with 65 or 70% of what's going on.

Mix: Are they surprised when it all comes together and they hear it back? [laughter]

Joel: Sometimes they'll pop in after an orchestration session, and when you're doing that you have the orchestra far up in the mix. The band members will come in and hear the strings wailing

away . . .

Boyer: In an overdub session, whatever we've just done—horns, strings, percussion, or something—is always too loud. You have to turn it up in the mix just to listen for pitch and mistakes, but you never back it down quite far enough to put it where it belongs. You can always tell which overdub you did that day, because it's too loud in the mix. It's like a running joke with us, the infamous post-overdub rough mix.

Joel: The band members come in and they're in shock. "You've ruined it! What's all that stuff?" You have to calm them down and go, "No, wait—you're not seeing the big picture."

Mix: And you trust the engineer to keep that big picture in focus?

Joel: I guess in a lot of recording situations the engineer is not supposed to say anything, is supposed to be seen and not heard, and just quietly go about doing those technical things that an engineer is supposed to do. But I won't buy that. I mean, I've done sessions before Jim with engineers who couldn't care less what was going on. They weren't involved. And it really bothers me, because I want to feel like this thing is so great.

I want that guy nearby. I need his hearing; I need his ears. He translates the sound into the hard thing, you know. It's such an up for me as a writer and a recording artist to know that the engineer is emotionally involved with it. It makes me sleep easier at night.

Mix: How do you factor in the role of the producer?

Joel: The producer is the X factor, the wild card. Phil [Ramone] will come up with something out of left field that neither Jim as a technician, nor I as a musician, might have perceived. It's some kind of spiritual thing.

Boyer: And he'll say something to me on the other side of the coin, hearing some technical thing I would never hear or suggesting a totally different approach.

Joel: He's the wild card, the thing that neither of us is. The good producers that I know, like Phil and Quincy Jones, are song-oriented. The producer's role has changed as musicians have become more and more technically aware and engineers have gotten more creative. He's in a squeeze play, to an extent, but he's still that X factor.

Mix: What's important to you in finding a studio for your recording?

Joel: I don't even go see them until

—page 156, Joel

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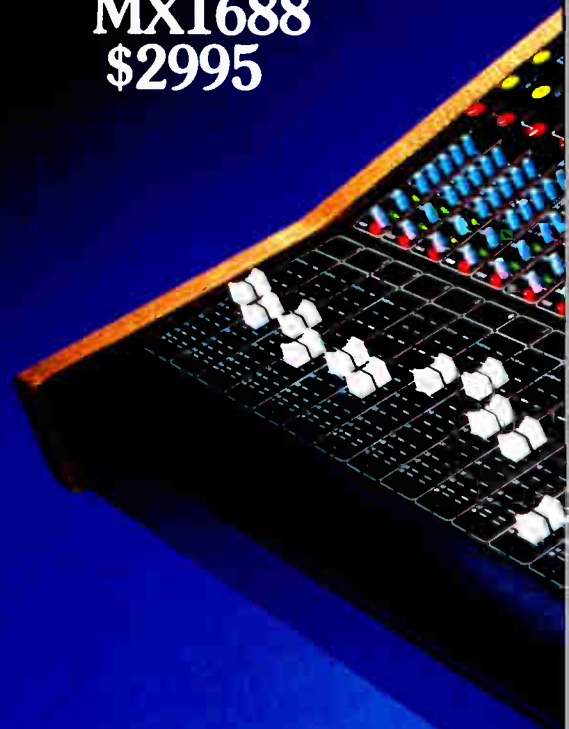
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—from page 152, Joel

Jim's checked them out, because he's going to be spending more time there than anybody.

Boyer: First consideration is the size of the studio itself. It has to be big, just from an acoustic point of view, because they all play so loud. They're used to playing on the road. And even though they have phones on, they play and listen and react to each other acoustically.

The room has to be big enough so I can isolate instruments and the control room has to be big because there are a lot of people involved. The board has to be able to accommodate a lot of inputs and outboard effects. When we were at Media

Sound [in New York] for *The Nylon Curtain*, I think the board had 52 inputs and we still ended up using outboard mixers—and that was just for basic tracks. It's like a live show, if not bigger.

Joel: It has to be a big room, but it can't be too big because it doesn't work if we get too far away from each other. And there's also the visual aspect: I have to be able to see the drummer and bass player, and I have to be able to look right into the control room and deadpan at Jim. When I'm singing, he tries to pokerface me all the time. As I'm looking into the control room and wondering, Is this any good? And Jim pokerfaces me,

because he may not be crazy about something that went down—but he knows the track may end up saving itself. So I'm trying to read his eyes. I need that contact, so the piano has to be centrally located where I can get a commanding view of the musicians and the control room.

Mix: What's it like on a typical session? How do you begin recording a new album?

Joel: Everybody in the band is kind of looking at me, I think, when we first go in. It's sort of like the first day of school: Okay, who's going to organize this? What are we doing? What's going on?

I don't really come in and say "Okay, this is the direction we're going, and at the end of the term we're going to have X." It's usually kind of anarchistic at the beginning, and I have to have something [ready to work on] because otherwise they'll jump all over me.

Monitoring is very important. Everyone has to like what he hears in the cans. It's got to be just right.

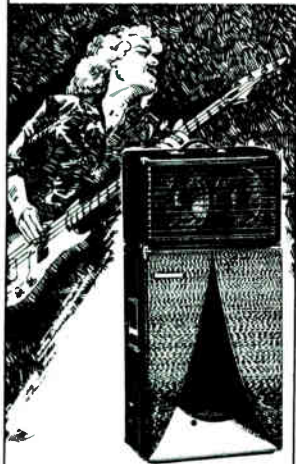
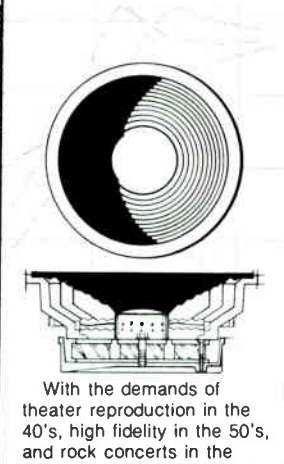
Boyer: The place is prepared for them, obviously, before we ever start. Everybody has his spot and everything's set up in the room.

Visually they set up pretty much the same way every time, and we've been in a lot of different rooms. They like to hear each other and react visually to each other. Billy's got to be able to see Liberty [the drummer] and the bass player—they're the people he keys off of.

We always have to have three cue [mixes], because there are always three groups of people who fight over it. Billy gets his own cue because what he hears is totally different.

Joel: It's always such a gas for me after a session to go out and listen to the different cues and hear what people really think is valuable. I've been doing it for years just for fun. The guitar player might hear himself and the bass drum—no artist, no nothing. Liberty doesn't like to hear a whole lot of effects when he's playing on a basic track; it throws him off. Just hearing himself and the things he needs is enough, whereas I'll say to Jim, "Let me hear a whole bunch of echo on the snare" and a certain EQ on the drums, because that'll make it closer to what I have in mind down the road. And when I hear it back on playback, those effects won't necessarily be there. Liberty doesn't really know what it's going to end up sounding like. He just wants the simple, basic essence: drums, piano, voice, bass guitar. He doesn't even have guitars in his cue, does he?

Boyer: No. Billy's the most important in his cue—piano and vocal.

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Joel: Yeah, he plays to the vocal.
Boyer: He really listens. He's one of the best drummers for that I've ever worked with. He concentrates on the vocal to the point of ridiculousness. If Billy comes in to do a song and he doesn't have a lyric, Liberty gets upset.

Joel: Yeah, he can't play it. He won't play it.

Boyer: He won't play to la-las. But when he does have a lyric, it's like one person singing and playing.

Mix: Do you have a standard approach to miking Liberty's drums?

Boyer: He's elevated enough to be able to see everybody in the room. He's like the focal point, after Billy.

I use Beyer M88s and M69s for toms, Sennheiser 435s for overheads. I like small transducer mikes because they sound a little bit clearer; they're a little bit more transparent for cymbals. I like [Neumann] KM84s on the top of the snare and a [Sennheiser] 421 or [Shure SM] 57 on the bottom, and [AKG] D12s for the bass drum. That's the contemporary miking. I don't really like to use condensers on toms. I never have, because of the leakage.

Mix: How do you work with guitars?

Boyer: We use Neumann U-87s, or AKG 451s or 452s—condenser mikes—because they just sound better than dynamics for this application.

Joel: It also depends on whether the guitars are on the basic track, because sometimes they're not. If it's not absolutely essential, if it can be put on in an overdub, we will do that.

Mix: How about bass?

Boyer: Mostly direct. Doug [Stegmeyer] uses a Yamaha bass amp. I've miked his speaker with an [Electro-Voice] RE-20, and I've used an AKG D12. But there's a new mike by Fostex [M77RP] which looks like an old Shure. It's long and it's got ribs on it. It's an incredible bass amp mike, one of the best I've ever heard.

Mix: Do you ever work with drum machines in the studio?

Joel: If we brought one of those machines into the studio Liberty would look at it, spit on it and say, "Get that thing away from me!" Recently, I think because of the work Phil Collins has done, Liberty's started to think, "Oh, yeah, that's pretty cool"—as long as the drummer's playing it.

Mix: How do you relate to the technology of sound in the studio?

Joel: After making a lot of albums, I'm just finding out about the things you can do with sound. *The Nylon Cur-*

tain took almost a year to make, and it was all based on sound.

Boyer: That was Billy's baptism of sound, I think. It snapped into his brain that sound was paramount to him, important enough for him to consider as part of his writing.

Joel: That's also where the basis for a lot of our communication developed. I needed to learn how to ask for a certain thing in the phones or how to try a new sound, so a lot of that went on during the album. I'd say something to Jim like, "Can you give me some kind of echo that has like silver on the top of it, but kind of gloomy, but not like a rainy day?"

Boyer: Because it's a learning experience for him, it's a chance for me to be creative as an engineer. A lot of times you don't get that opportunity with people. You don't get a chance to play your instrument.

Joel: Which the studio is: It's an instrument.

Mix: On your latest album [*An Innocent Man*], you seemed to go back to something like 1963 and do a period piece, covering a spectrum of artists from the Four Seasons to James Brown.

Joel: That was a singer's album. I never really stretched out vocally like that before. But those harmonies that we thought were so magical back in the old days, when you really listen to them you hear that they're flat—off key. And the backgrounds are as loud as the lead vocal, if not louder.

Boyer: Those old records are very hard to listen to soundwise, because they're so bad. But who listened to sound back then? When I listened to those records, I never listened to sound. I was listening more as a musician then; I listened to the song.

Joel: We decided instead of trying to reproduce how those albums actually sounded, we were going to reproduce how they *felt*—how we could perceive them to sound.

Mix: You say this was a singer's album. Did you do much of the background vocal work?

Joel: I did most of the backgrounds. I didn't really want to do the backgrounds on "The Longest Time" because I wanted each voice to have a different character. Usually when I do the background vocals I sing the same, like the blend the *a cappella* groups got. But I ended up doing all the vocals on "The Longest Time," so I adopted a different character and personality with each harmony part.

For the bass player I pictured being Too Tall Jones—you know, seven feet tall and muscles coming out of my ears. For the higher part I pictured

myself as a skinny little Italian kid from Newark. I made myself have a different voice with each harmony. It was very time-consuming and a lot of effort, but that was—method singing.

Mix: I guess my favorite song on that album is "Uptown Girl." It seems to be the quintessential Four Seasons song.

Joel: That was the essence. Me and my friends used to get all dressed up in our greaseball suits and go to a party. It was the Four Seasons and you could stomp to it. In fact, what made it for me on that track was the handclapping and footstomping. I don't now how audible it is; it sounds like part of the percussion—that marching hoodlum sound.

Boyer: The footstomps gave us the depth that the handclaps couldn't get. We put a couple of the guys in the band on boards, and I think we used two [Neumann] U-47s.

The basic track was treated differently [from the rest of the album]. It was much more open, with fewer mikes for more of a room sound—but not too much room sound. I wouldn't take the chance of having things not discrete to the point where I couldn't deal with them later.

Mix: Was this a song that came together in the studio, or had you ironed it out ahead of time?

Joel: I had the song pretty much finished when we came in to cut it. Phil flip-flopped a verse—his input is good on things like that. But we had a great sound from the git-go.

That's the kind of track that, as you're doing it, you start to get excited because you know what's happening to it and it's turning into what you really want it to be. This was one of the ones we actually came into the control room and said, "It's a hit!"
Boyer: As a matter of fact, we were so psyched we did it too fast the first couple of takes. We were running away with it, and we had to tell ourselves to hold it down.

We tried to record stylistically as much as possible. We used an old drum kit and recorded it with two mikes, one high up in the air and one close to the snare. Carroll Music Rental in New York City is like an archive of musical instruments, and we got a 28-inch bass drum from them. You don't see 28-inch bass drums anymore; now everybody uses 22- and 24-inch drums. But the sound that thing creates is phenomenal. It's a real *bass* drum.

We had a good room sound, too. Before we started that record we marched around Manhattan and looked at about eight or nine studios. We settled on Chelsea Sound, on

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42nd Street, in the Wurlitzer Building. It was a big room, and we knew the minute we walked in it was going to be good.

Mix: You've had a lot of success with your recent videos. How much has that affected the way you write songs?
Joel: Basically, I'm a microphone-oriented person. We've made some good videos, but that's not really my element. Most of my energy goes into making records, working with sound and making sound become the thing people "see."

I get involved in the scenario and the script, but I can't honestly say I'm 100% behind the videos. I'm not that familiar with the technology, so I'm not in control as I am in a recording situation. I look at video as a promotional vehicle. We spend months in the studio making the record and then go out to make a video and it takes two days on a shoot and maybe five or six days in production. The video is kind of like a little strawberry on top of the cake—but the cake is the thing.

Mix: What are some of your stylistic influences?

Joel: As a singer, I always like Ray Charles. As a piano player, I have

always liked the great jazz pianists—Bill Evans, Art Tatum, Oscar Peterson. As a recording artist, I like a lot of the British recording artists, like Bowie—not necessarily his records so much, but the sound he gets.

Boyer: It's really subject to the times, too. We're all subject to what's popular.

Joel: And we go on crazes. Like, we'll come in and jam Police stuff. We'll want to be The Police for a couple of days.

The Beatles opened up the possibilities, the whole realm of what recording could do. Phil Spector did some magic things with sound, but when the Beatles got into their crazy times—*Sergeant Pepper* and *Magical Mystery Tour*—from what I understand, John Lennon didn't really know what he was doing. They'd throw tape up in the air and then splice it back together, those kinds of things.

Boyer: They had that kind of childhood fearlessness. They weren't governed by technical laws; they were just musicians and artists, and they had access to the tools. And George Martin helped them—

Joel: That combination. It was George Martin knowing all the things he knew, and all the things the Beatles

didn't know, coming together. Bango! That's the way magic happens in recording.

Mix: Your bio says that you studied piano for eleven years. What part does that training play in your career?

Joel: I've forgotten a lot about how to read music. I'm not technically that accomplished; C is always home base to me. I like G because it's not that far away, and F is related to it—that's how I get to B flat. I do a lot of writing like that. I'm just starting to explore, like writing in E flat. I wrote a bridge on *The Nylon Curtain* in D flat and amazed myself. To somebody who's really technically accomplished, D flat is nothing—they can play scales in it and everything. But to me, D flat is [sings weird]—you know, it's like Venus, man. I don't know anything about it. But I like that innocent approach of exploring and finding those things out.

Mix: You stopped reading music?

Joel: Actually, I stopped when I was still taking pinao lessons. I went out and got the records instead. I played the Beethoven Sonata—it's in D or something like that. I'd get the record and play it—di-di-di-di—just work it out. I'd start making up my own music

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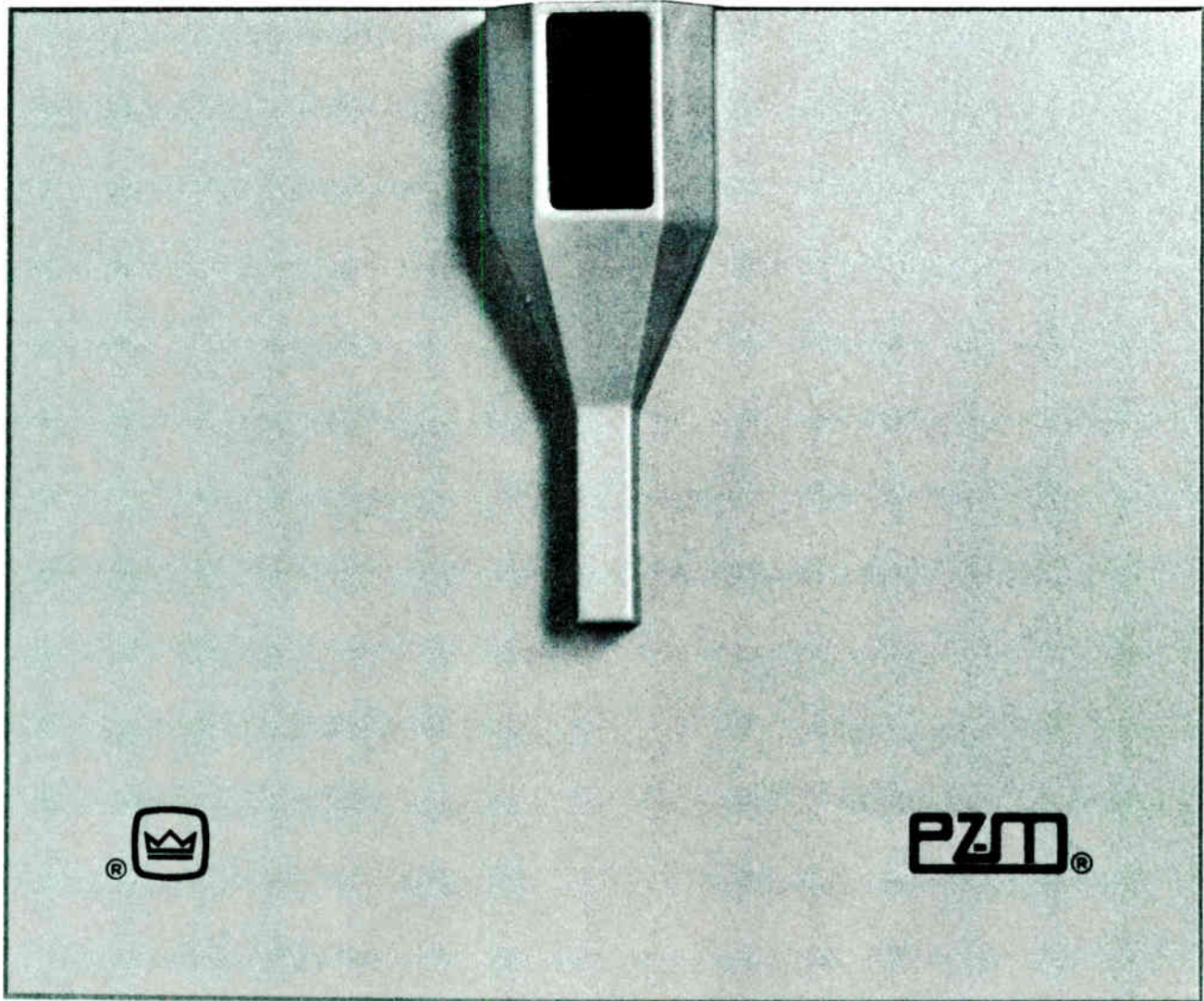
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in the style [I was studying]. My mother'd be listening, and I'd be making it up. Next day I forgot what I did, so I'd play something different. She'd say, "What's that?" "Oh, that's the second movement, you know." At the end of the week I wouldn't know the piece at all. The teacher would be screaming at me: "Your mother's wasting her money."

They never really encourage you to write when you're taking piano lessons, which is one of the bad things about piano lessons. They teach you how to play stuff, but I kind of had to hide to write. You know, I'm supposed to be practicing everybody else's stuff.

Mix: How does your background relate to your songwriting?

Joel: I like the writing to be simple. I don't like to hear the seams and the nuts and bolts that go into it. I like it to be pure and efficient. I don't like writing Meat Loaf type stuff where it sounds labored and Wagnerian. I like it clean, concise, to the point, clever, ingenious and small. If you can do it smaller, I think it's better.

Mix: Where do you get your songwriting inspiration from these days?

Joel: A lot of the writing goes on in the studio, after hearing myself in the

headphones. The songs usually grow out of the sound I hear in the phones, after Jim adds some effects to my voice and piano.

We have our language. I'll go, "Give me a *f'dap!* [Jim translates to a slap echo] or a *wooish* [live chamber]," and you become larger than this person sitting at the piano. You become orchestral; anything goes. You can just go crazy. You're finagling with this thing called sound, and that's where the song comes from. It's the monitor bone connected to the writer bone.

Mix: Since you've explored the '50s and '60s over the last couple of albums, where do you plan to go musically on the next album?

Joel: I think I want to do a great pop album. It's not a sin anymore to be pop. Hall & Oates have made great records; I've got to hand it to those guys.

This may change. I may throw the whole idea out next week, but this is the way I've been thinking about it. *Glass Houses* was fast, it was fun, power stuff. And this album [*An Innocent Man*] was a lot of fun. It went real quick. We had fun doing it and it shows in terms of sales acceptance—and even critically. If you have

fun, it makes for a better record. You can hear the fun in the record.

Mix: Any other changes planned for the next recording?

Joel: Instead of writing in the studio, I want to do a lot of the writing at home. I'll probably do a lot of work with Jim, and do demos and things so we can just go in—boom!—and play it.

Mix: Any idea where you're going to record?

Joel: It would be nice to go to Montserrat. The thing that appeals to me about that is, if I've done all the work on the material, then don't I deserve to fly down to the Caribbean and lie on the beach all day?

The typical style at Montserrat, I've heard from people who've been there, is that you start work at two or three in the afternoon. If you've been out in the sun for a couple of hours, it's time to go in and work at night.

It wouldn't be a good place for me to write, but it *would* be a good place for me to record. And that's what I was thinking—I'm going to reward myself. I'll do all the work at home, and then go to the studio and just record.

Boyer: I could make that sacrifice. ■

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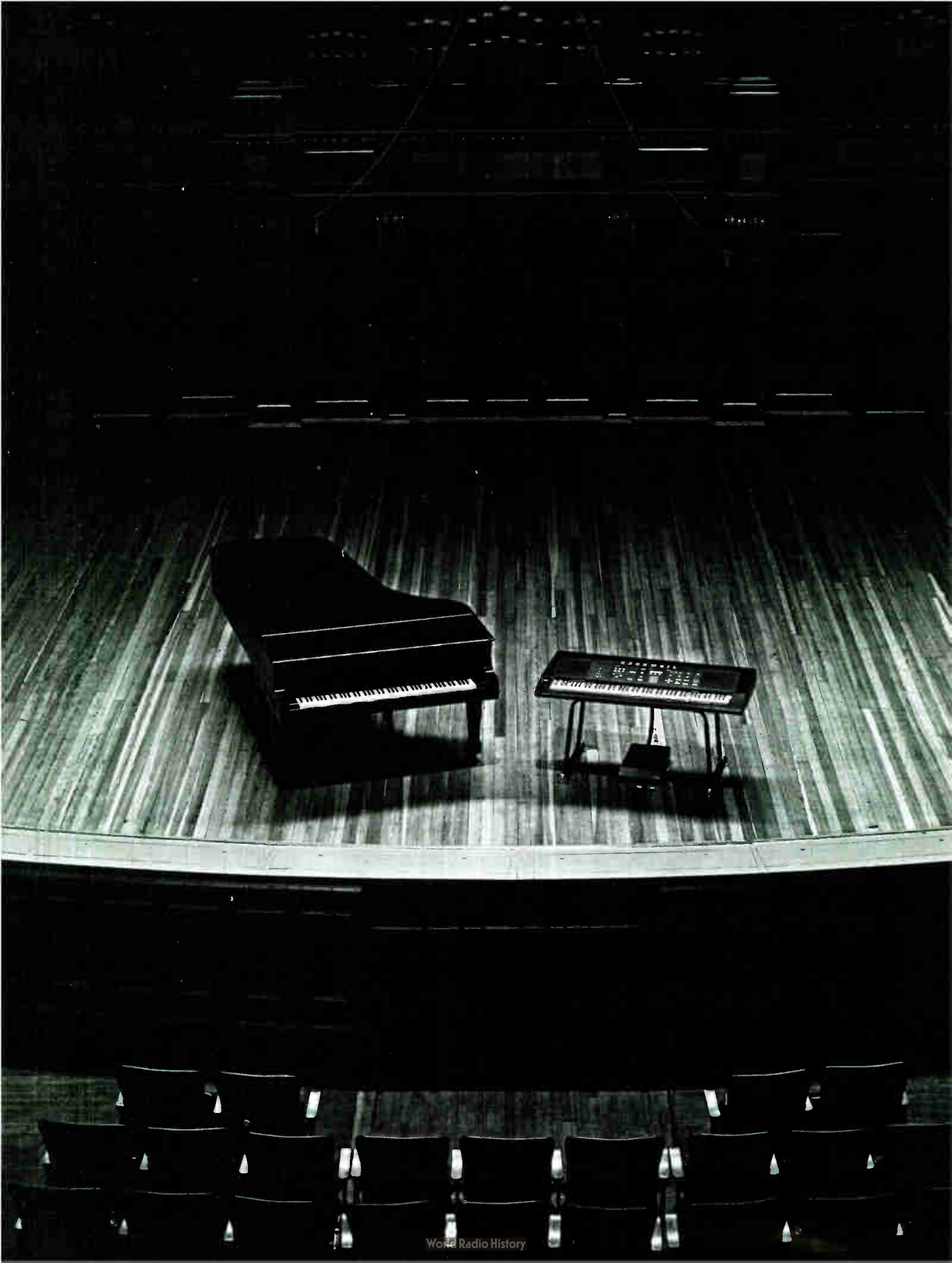
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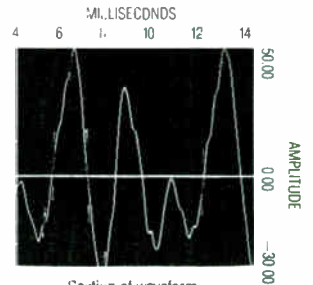
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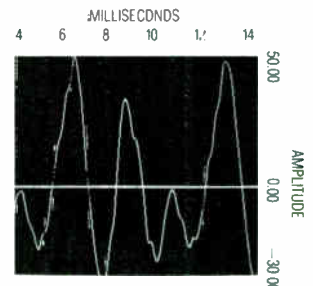
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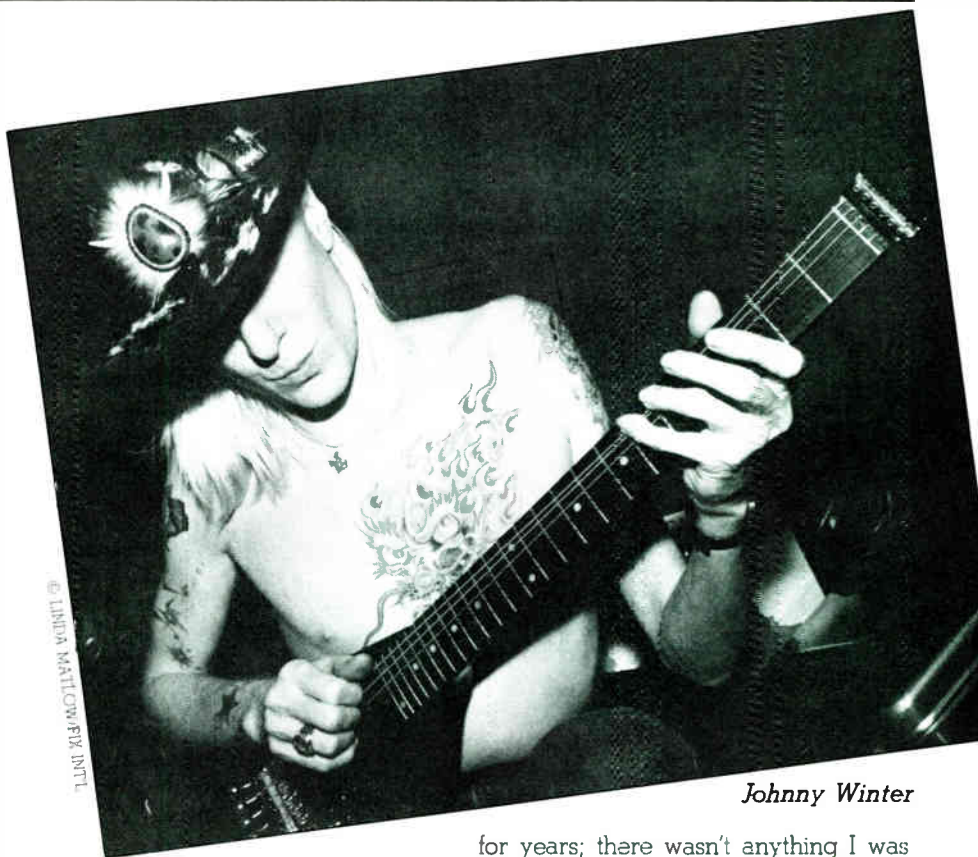
Johnny Winter Does It His Way

When Johnny Winter was just a sprout back in Beaumont, Texas, making a name for himself as a down'n'dirty blues guitarist—cutting records with keyboard-playing brother Edgar as Johnny and The Jammers, guesting with his licks in Houston and Beaumont studios when B.B. King or Bobby "Blue" Bland came around—he figured what he really had to do to complete his blues indoctrination was go to Chicago. All his most cherished blues records had "Chicago, Illinois" printed on the back, after all. It was the home of just about every living blues great, and he figured all he'd have to do was hit the Windy City and he'd find bluesmen blowing in every bar and jamming on every corner.

Well, when 20-year-old Johnny finally got to Chicago, a mere stripling with his guitar, not only didn't he find bluesmen on every corner, but it seemed nobody in the tourist-trap nightclub district of Rush Street had even *heard* of Muddy Waters. They were more partial to Ral Donner, who was sort of the Midwest's answer to Elvis.

So Johnny ended up playing twist music rather than his beloved blues, a situation he stuck with for about eight months before hitting the road again and heading south. And as we know, he finally struck the big time in the late '60s, cutting a dozen albums for CBS Records and developing a rep as not only the hottest Texas blues guitar player in the world of pop—a guitar hero on the order of Beck, Clapton and Page—but as a flamboyant rock-star type known for excesses of all flavors. Fortunately, sensible guy that he is, Winter eventually knocked off the high life and dropped out of the public eye for awhile. He worked with his idol, Muddy Waters (producing and playing on four LPs, two of which earned Grammys), and then started putting out records himself. By this time, though, public interest had waned; Winter's CBS contract wasn't renewed after its 1980 expiration, so there wasn't much to do besides hit the road again.

It's been 21 years since Johnny Winter first headed north looking for Blues Heaven, and Chicago is a changed place. There are a couple of new generations of bluesmen packing them into the clubs that dot the white, upper middle class Near North Side; the names of Muddy Waters, Howlin' Wolf, Lightnin' Hopkins and the ever-active Willie Dixon were no less than revered; the Rush Street denizens are probably



Johnny Winter

at least listening to Michael Jackson in their touristy discos . . . and Johnny Winter is back in the studio after a four-year hiatus, back in Chicago after a long absence, back doing the music he loves the most: basic, gritty, low-down blues.

Winter spent most of February in Chicago laying down tracks for his first album since 1980's *Raisin' Cain*, under the aegis of Alligator Records, the renowned Chicago blues/reggae label. The 10-song LP, *Guitar Slinger*, features compositions by Dr. John, Muddy Waters, Lonnie Brooks, Bobby "Blue" Bland, Clifton Chenier and Earl King, and was co-produced by Winter, producer/journalist Dick Shurman, and Alligator's head honcho, Bruce Iglauer.

This is the kind of record Winter has wanted to make for a long time, he says. Record company strictures had prevented such a move: The last couple of albums he'd done for CBS were rocked up, primarily to keep the label execs happy. By the time *Raisin' Cain* was released, "they [CBS] had already made up their minds they weren't going to renew my contract—but I didn't know it at that point," says Winter in his dulcet drawl.

What CBS had done, he explains, was cut loose the roster of the label's Blue Sky subsidiary, of which he was a part. Johnny wasn't eager to jump right into another contract, he notes. "At that point I'd been making records

for years; there wasn't anything I was dying to say. The way music was going, I didn't want to sign a deal with somebody where they had all the control and I'd be making records I didn't enjoy."

Johnny and band jumped on a bus and played anywhere they could get work. Winter hooked up now and then with old friend Muddy Waters, and at one point produced ace harpist Sonny Terry for an LP which he tried without success to shop to a major label.

—page 178, *Winter*

THE FAR SIDE

By GARY LARSON



The birth of jazz

PHOTO: DAVID GANS

Pretenders Live

Chrissie Hynde Grows Up

You have to remind yourself that only a short time ago The Pretenders were a struggling, underground band. That's why they're on Sire, after all, and not big brother Warner. Be it because of the newsmaking deaths of half the original band members or because the world finally caught up to Chrissie Hynde's gut-wrenching material, The Pretenders are now a world-class act. They sold out four nights at the 6,250-seat Universal Amphitheatre, and that's something performers far more mainstream are unable to do.

Curiosity was rife about this show. What are the new bandmembers like? Can they play better than the old ones (who couldn't play very much at all)? Has motherhood softened Chrissie Hynde? Will she sing about doing laundry? Is she going to storm off when security guards stop the fans from rushing the stage, as she did in Seattle?

Briefly: good; yes; a little; no; no, but she was plenty pissed off.

This tour is being "presented" by MTV, and former Los Angeles disk jockey J.J. Jackson was flown in to pop out and tell everyone The Pretenders would be right on. That was the last tacky moment of the evening, because the band proceeded to put on one of the hottest, tightest, gutsiest shows you could want from a rock and roll quartet.

Hynde came out dressed in black leather pants, white guitar and tweed jacket. Her demeanor is sensually androgynous, with neither the campiness of an Annie Lennox nor the snarl of a Joan Jett. When she pulls a harp out of her back pocket to blow the break in "Middle Of The Road," it is a perfectly unselfconscious masculine gesture, and the more entrancing for it. Her spine-chilling voice was in perfect timbre all evening; she commanded the stage like a beast of prey and delivered every song like a registered letter.

The new boys—bassist Malcolm Foster and guitarist Robbie McIntosh—are ideal additions to the line-up, musicians far more skillful than those they replaced. (If this be heresy, so be it. Of all the good things the Pretenders ever did, being technically slick was never one of them.) McIntosh repeated Billy Bremner's "Back On The Chain Gang" guitar solo with bell-like perfection, and his B.B. King-like licks in the otherwise boring "My City Was Gone" made the song worth listening to.



If anyone can steal the spotlight from Chrissie Hynde, it's only drummer Martin Chambers. His kit is a strange and twisted sculpture in white, a Salvador Dali dream of a drum set. His sits there like a hookah-smoking cater-

pillar whose pipe is burning crystal meth: flailing away at his snare, flinging his sticks into the crowd, cascading sprays of water off his tom-toms, he is an electric presence. And it his sense of pause-and-ponder that makes the Pretenders' material so enticingly unpredictable.

Using wireless amplification, the three guitarists roamed the edge of the stage, leaning toward the outstretched hands of the fans. The band concentrated on neither old material nor new; the set went from "Stop Your Sobbing" to "Middle Of The Road," "Message Of Love" to "Precious," "The Adultress" to "Brass In Pocket." The only song I wished they'd played but didn't was "Cuban Slide."

Are The Pretenders sounding more and more like The Kinks as time goes on? Maybe. But that's hardly a negative appraisal. From a first album so muddy that you needed a stethoscope to appreciate the pungent lyrics, the group has come to honing perfect

—page 168, *Pretenders*

Warner Hodges: The Scorchers' Five-String Guitar Hero



Scorchers' guitarist Warner Hodges (right) with Cajun rocker Will Rambeaux at Nashville's Treasure Isle Recording.

On New Year's Eve of 1982, the current members of Jason & the Nashville Scorchers first introduced their rambunctious blend of raw country and bashing punk to revelers at a now-defunct niterie in Murfreesboro, Tennessee. Nobody at the time—band members included—took the whole thing very seriously.

Two years later, Jason & the Scorchers (the name shortened to prevent confusion with "ordinary" country music in overseas markets) have a multi-album contract with EMI America, a video moving up in MTV's rotation, and a growing stack of rave reviews from the hip New York rock

—page 172, *Scorchers*

—from page 167, *Pretenders*

pop songs like "Chain Gang"—without losing its impact in the process. They're growing up without growing old, and isn't that what rock and roll is all about?

The set was a tad too short (an hour and twenty minutes, including encore) but featured its share of surprises. One was that the band walked on—and off—to the strains of Frank Sinatra singing "That's Life." Another was that Hynde dedicated a song to the late Karen Carpenter, "one of the greatest voices of all time," as she put it. Then there was the marvelous moment in the encore when Hynde finally unstrapped her guitar and sang "Brass In Pocket" with a hand-mike, kneeling and crooning to her untouchable lover and forcing the listeners to internalize what that song is about. And then when she left the stage, she stopped to lean over and autograph a picture of herself for a kid at the railing. She's so *human*, that woman.

Now for a change of pace from all this heady praise, let's talk a moment about opening act The Alarm. This IRS band has been getting a lot of good publicity for its "post-punk Bob Dylan" approach—and unfortunately they've

been reading all of it.

The Alarm has a good gimmick—acoustic guitars, a political message, not to mention matching hairstyles—and even writes some decent tunes. "The Stand," "68 Guns," "Marching On" and "Going Out In A Blaze of Glory" have little to fault them. Nigel Twist is a great drummer, if you like military rolls.

But lead singer Mike Peters (whose voice was decidedly off-kilter) stands up there holding his guitar over his head, all back-lit and haloed, like the chosen martyr for a cause as yet undetermined. Guitarist Dave Sharp, unsatisfied with the lukewarm response the crowd was offering, yelled "This ain't a library, for God's sake! This is a rock and roll gig!" Hey, Dave. If they wanted to scream and cheer, believe me, they'd do it without your permission.

The band spent five minutes too long on their closing song, and then rushed back for an encore no one was requesting. I've heard these guys before—and liked them—but somebody had better tell the Alarm that you can't rest on your laurels until you've earned some.

—*Ethlie Ann Vare*

Field Testing Pearl's 'Spice Rack' Effects

With a complete line of very high-quality effects pedals imported from Japan—and an aggressive pricing policy to move them—Pearl has stepped outside the realm of percussion instruments in a major way. I recently tested nine of these pedals in my Top 40 lounge gig and found the results pleasing.

The pedals came to me in two of Pearl's "Spice Rack" boxes, each a black vinyl covered wooden case that holds five effects and a power supply. The pedals are connected by double-ended ¼" phone plugs and secured by machine screws which pass through holes in the Spice Rack, making it a little inconvenient to change the order of the effects. Because of the way the sides of the case are cut, you can't just remove one effect at a time. If you want to experiment with the order of the effects in the signal path, your best bet would be to shuffle them around outside the case and then screw them down. The Spice Rack system does allow use of effects by other manufacturers (notably Boss) that use the same type of power connections, although you'll have to figure out a way of securing them in the box.

All the units I tested were at least very good, and some were among the best I've heard. In addition to good sounds, you get attractive matte black aluminum cases with colored strips that help you identify the different effects; four controls on each pedal for maximum flexibility; and reliable, easy-to-operate footswitches.

The Flanger's four knobs let you control Manual (delay time), Depth, Feedback and Speed. You can really get some weird sounds out of this lil' gizmo, and the presence boost that seems to be built in is very useful for more normal uses like enhancing a funk rhythm part on guitar. This unit leans toward the "harder" more "metallic" flanging sounds.

The Chorus is, to my ears, the best of the Pearl effects. With controls for Mix (of the dry and effected signals), Depth, Speed and Tone, you can get almost any kind of chorusing sound you want. The tone control allows you to boost or cut highs, eliminating the slight "swoosh" you usually hear with a chorus effect and helps to produce a very realistic simulation of double-tracking.

—page 178, *Pearl*

February 15, 1984

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Hosted by Dartmouth College, Hanover, New Hampshire

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Pat Metheny



Laurie Anderson



Oscar Peterson

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Due to the overwhelming success of the previous Synclavier II seminars, New England Digital has decided to schedule another in 1984.

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New England Digital Corporation reserves the right to select all seminar students.

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Laurie Anderson

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World Radio History

Duran Duran Isn't So Bad Bad

Picking on Duran Duran would be the easy thing to do. Lord knows the majority of critical opinion toward the so-called Fab Five has been about as positive as the JDL's reaction to Vanessa Redgrave's playing Golda Meir.

But that's *critical* opinion—you know, the folks who love Elvis Costello because they see his face in the mirror every morning. The real majority opinion—the view of 99% of the people who attended Duran Duran's performance at the Forum in Los Angeles—was unrestrained acclaim. And while I was not one of the screaming admirers, it's only fair to admit that the music those passionate teenyboppers were drowning out was perfectly good stuff.

The 17,000-seat Forum was packed to the rafters for the second of two shows when Duran Duran came out, fronting two backup singers, a horn player and an extra percussionist. The stage set featured Grecian columns and a curtain with a white squiggle against a red background (guess which soda pop company is sponsoring this tour?). The band opened with its hit "Is



PHOTO DENNIS O'REGAN

There Something I Should Know?" and proceeded to count down their Top Ten: "Hungry Like the Wolf," "The Reflex," "New Moon on Monday," and "Union of the Snake."

Simon LeBon (vocals), Nick

Rhodes (synth), and the Taylors—Andy (guitar), John (bass) and Roger (drums), who are not related to one another—are hookmakers, pop craftsmen who can put their appealing ditties over quite nicely, thank you. This ain't The Monkees: Andy Taylor plays flaming licks that any metalhead would admire, should you ever succeed in enticing one to a Duran show. And John Taylor's throbbing bass provides the necessary insistent backbone for the dance-oriented tunes... and he's got the *cutest* blond streak in his hair.

LeBon, who insists that's his real name, is the weakest link in the group. He's a little too pudgy to be a proper sex symbol, and his vocal abilities are limited. Still, he works his medium-sized buns admirably on stage; after an hour, his carefully coiffed locks were plastered to his forehead with perspiration.

Each of Duran Duran's songs makes great radio fare taken individually, but strung together in an hour and three-quarters they begin to show their sameness. The band is either too smart or too genuinely musical to read their catalog in groove-perfect three-minute renditions. The songs featured instrumental breaks, extended jams, and some fine horn work from Andy Hamilton. Yes, the squealing of the crowd ruined slower passages of songs like "Save a Prayer," but the sound system managed to overpower even the most flushed of fans.

In a predictable move for a band which made its reputation via video clips, the stage was topped with a 20-foot video screen. And judging from

—page 172

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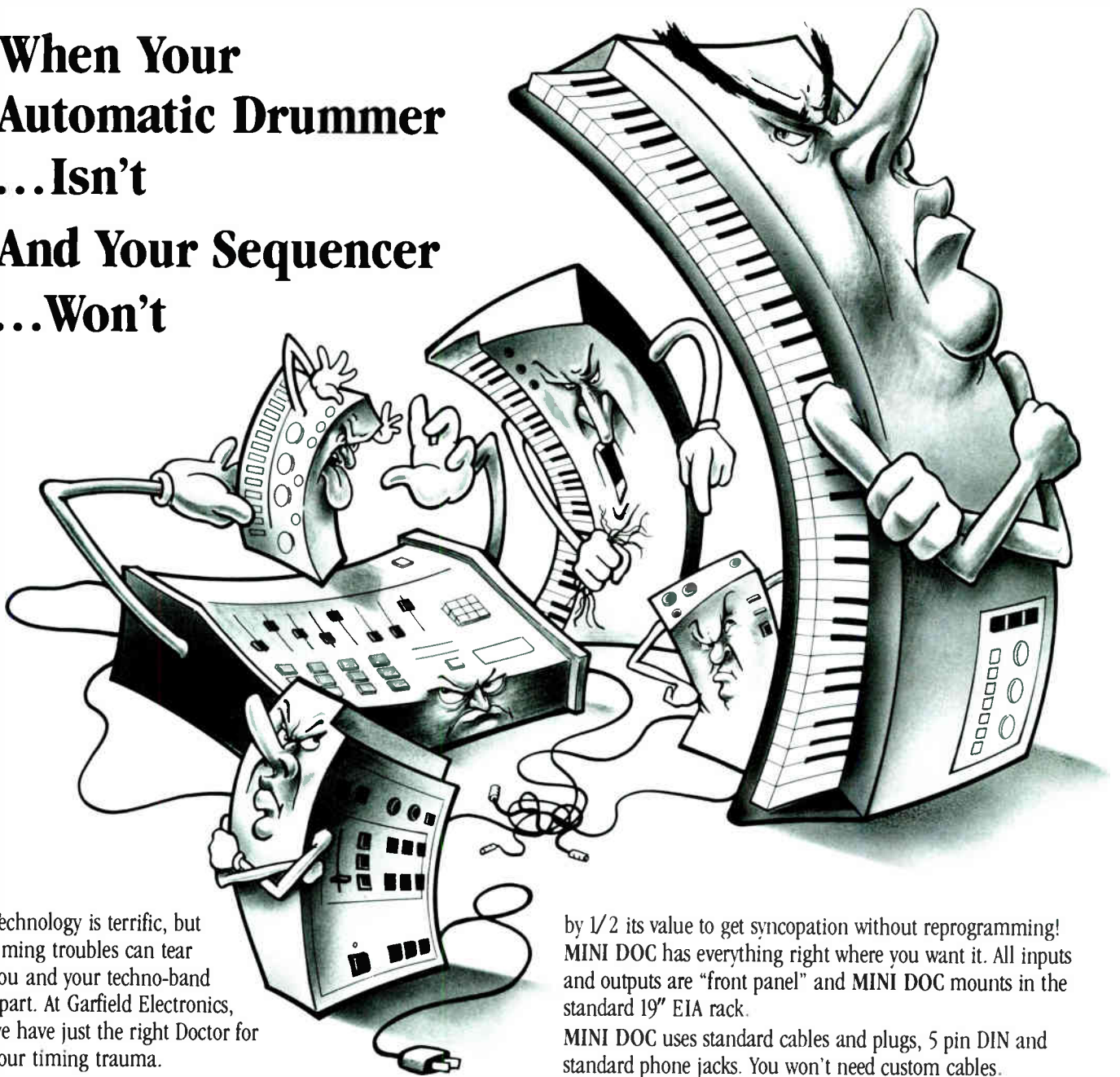


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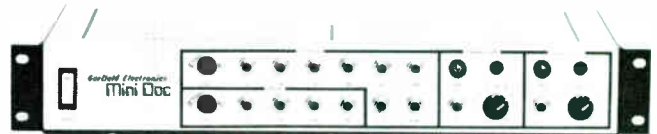
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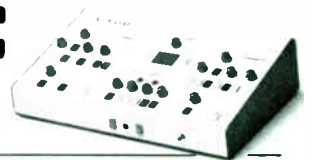
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Gary Mullen, concert sound manager for McCune Audio/Visual says, "We tested the Hi-Energy Miking System for over a year, live, on tour, in all situations against every mic on the market. All of our sound engineers raved about the great sound, compactness, convenience and durability of the system. For drum miking, no other mics come close."

Chet McCracken, veteran drummer of hundreds of recording sessions with groups like the Doobie Brothers, America and Rare Earth says, "There are no phasing problems with the Hi-Energy System because all of the mics are the same. This eliminates a number of problems for the drummer and the sound engineers. And the kick sound is so solid I am truly impressed."

Rik Shannon, Sound Engineer for the Hollywood Palace, Tina Turner, Berlin and others says, "I can get a great drum sound in minutes instead of hours. If the drummer tunes his kit properly, the system does the rest, and every drummer has loved the fact that there are no mic stands to get in the way."



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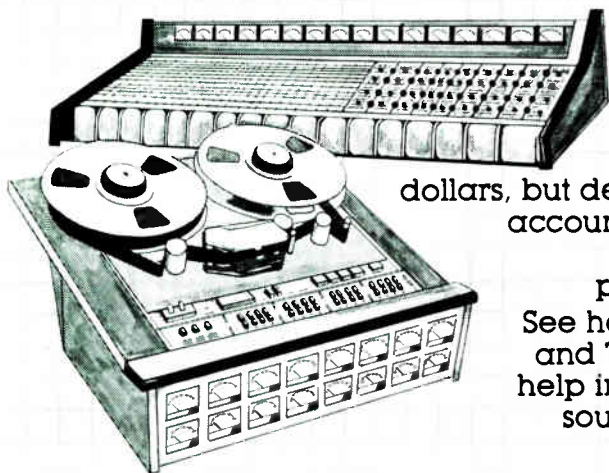
the caterwauling whenever John Taylor or Nick Rhodes came on screen, it seemed the audience was more comfortable watching the TV than the stage. Too, it gave the kids in the back an opportunity to see their heroes.

The group let the audience yell for five minutes after the end of the set, then returned to the stage with "Rio." A like period of time passed before they returned again with a show-closing "Girls on Film," during which LeBon fittingly produced a minicam and put a few girls on film—er, videotape. Then the Los Angeles Raiders' Marcus Allen and Mike Davis were paraded out to hug LeBon, increasing the decibel level in the audience by a few more painful notches.

Sure, it all sounds pretty manipulative and glitzy. It even took place on the 20th anniversary of the Beatles' invasion of the U.S. But underneath the glossy presentation there was listenable music, tight musicianship, and the hard work of five guys who really wanted to give their ardent admirers their money's worth. And you know what? They seemed to be enjoying themselves up there every minute.

—Ethlie Ann Vare

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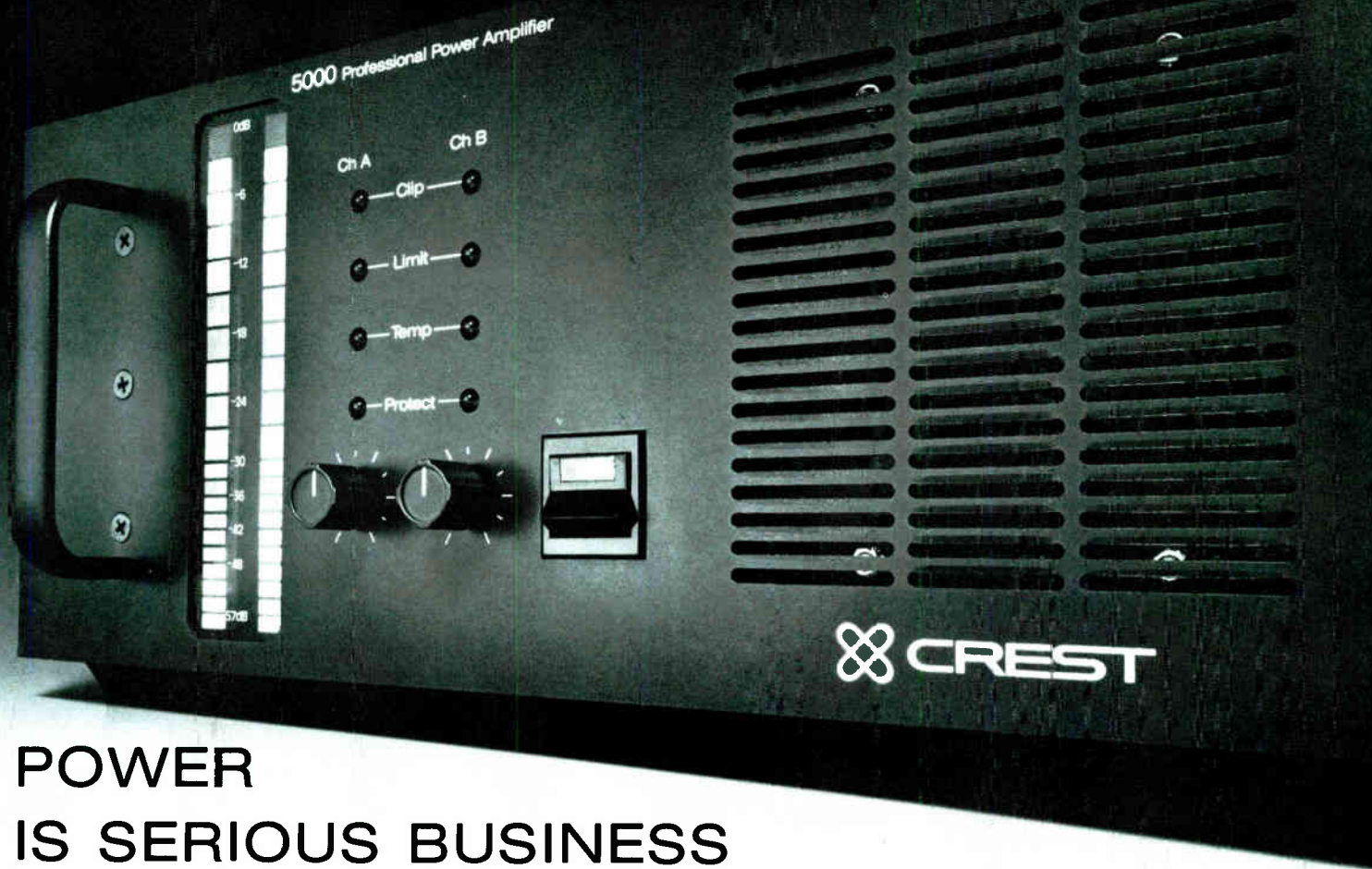
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—from page 167, *Scorchers*

critics. Their acclaimed mini-LP, *Fervor*, first released on the independent Praxis label, has been remixed for re-release by EMI, augmented by the group's current single, a torrid version of the 1966 Dylan classic "Absolutely Sweet Marie."

Relaxing between tracking session for Cajun-rocker Will Rambeaux at a Nashville studio, Scorchers lead guitarist and co-producer Warner Hodges reflects on the group's sudden rise to national notoriety. "Yes, I was surprised," he admits between puffs on the ever-present Salem dangling from his lips. "I really didn't expect the New York critics to take to us. God only knows why they did. I really haven't the slightest idea—other than, possibly, the authenticity of the band."

Authenticity is undoubtedly a key element in the Scorchers' novel synthesis of elemental country and the New Music. These are not L.A. drugstore cowboys borrowing country roots second hand. Jason & the Scorchers have lived them. The group's front man, singer/songwriter Jason Ringenberg, was raised on a hog farm in rural Southern Illinois, where he played his harmonica while walking the nearby tracks of the Rock Island Line. Drummer Perry Baggs and bassist Jeff Johnson are long-time Nashville



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residents who have absorbed the gut emotions that still survive in seamy honky-tonks along Lower Broadway, down by the river.

But it's guitarist Hodges who provides the band with a direct link to the musical traditions of the past. His father, Edgar, is a veteran country picker who played with Lefty Frizzell and Johnny Cash. For years, the senior Hodges toured with his wife Betty as a country/gospel act, and the drummer on many of these tours—which often extended as far as USO clubs in Germany—was none other than their son, Warner.

"I started playing drums when I was six or seven," says Hodges, "and I was playing professionally with my parents by the time I was nine. I played in their country band until I was seventeen." And why did he make the switch to guitar? "Well, I was real pissed off because I had to sit there on the stool while everybody else got to move around!"

Somehow you suspect the elder Hodges had something like this planned all along. Years of training on drums gave the younger Hodges the precise rhythmical drive which now powers his guitar style. But no sooner

had his son taken up the drums than Edgar Hodges also provided him with a 1962 Fender Jazzmaster guitar. Warner pretty much ignored the instrument until he was thirteen, when he began playing under the tutelage of his older brother.

"That was the time of the Hendrix/Zepplin explosion," Hodges recalls, "so I heard this great mixture of hard-core country and English psychedelic rock. It was a weird thing to evolve on guitar with that kind of mixture coming at you." As other influences Hodges lists the New York Dolls, the Rolling Stones, and other bands that played "heavy, crunching rhythm guitar."

Hodges' current style wraps tightly coiled lines of lead guitar notes around pummeling rhythm chords. To deliver this sound, he still relies on his veteran Jazzmaster, which has since been modified by replacing the stock pickup assembly with one from a 1971 Gibson Firebird—"a hand-wound one with way too many winds in it that beefs it up a little."

Hodges uses Dean Markley regular gauge strings on his Jazzmaster, except for the top E string, which he usually dispenses with altogether. "I just don't like using the damn things," he remarks. "They just get in the way when I'm playing live. It's just easier to control without it. I set my amp right at feedback level on stage, and the only effect I use is a noise gate to control noise when I'm not playing. Now, instead of six problems, I've only got five to deal with. And I've also cut out one sixth of my mistakes!"

For supplementary guitars, Hodges uses Ibanez Roadstar I and Roadstar II models, one usually tuned to open D. Both have had the stock pickups replaced with Bill Lawrence XLT series pickups.

Hodges' primary amps these days are Spectra (Dean Markley) 120T tube models beefed up with Gauss speakers. "I'm very hard on speakers," Hodges confesses. "I get my distortion by running the speaker all to hell. I run my amp pretty clean and hard—though you'd never know by my sound—and just overdrive the speaker."

Hodges also used a variety of other amps while recording *Fervor*, including a Mesa Boogie, a stack of Marshalls "turned up as loud as God would allow," and a Rockman running straight into the console.

Regarding effects, Hodges avoids them because he admits a tendency to use things to excess: "If I owned five effects, I'd want to have six

—page 178, *Scorchers*

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When you need to split a mic, you should use a transformer because it provides a balanced, isolated signal to the input of each mixer; none of the mixers' grounds need be connected to each other (via the mic cable) so ground-loop induced noise is easily avoided. There must be a Faraday shield on each winding so that the transformer will not provide a path for capacitive coupling of common mode noise.

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ON MICROPHONES



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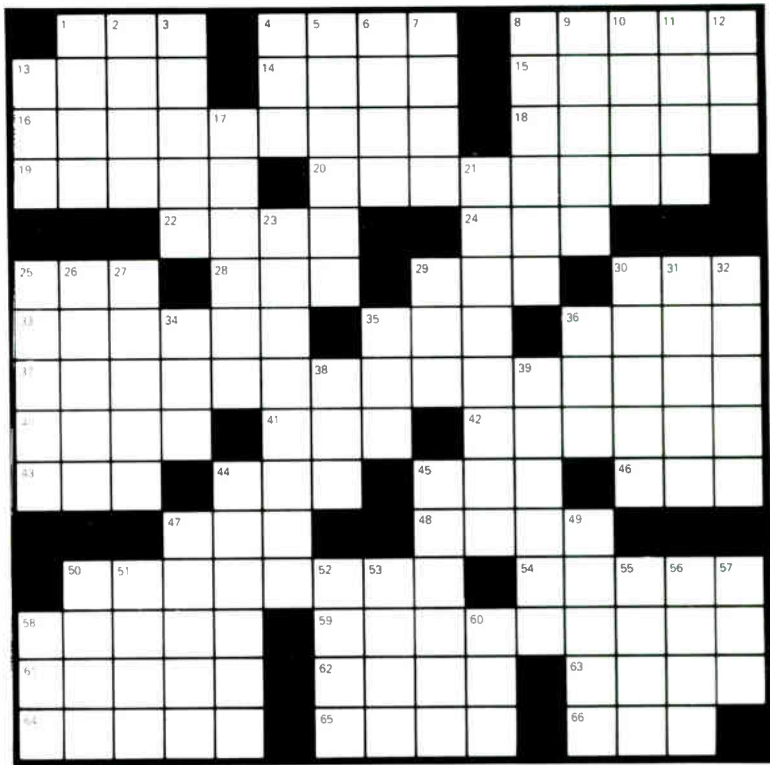
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8. Pop-up stoppers
13. Words of understanding
14. Eventide, to Emerson
15. _____ box
16. High-tech environment, with "steel"
18. Film about a notorious comedian
19. WWI battle site
20. VDT offerings
22. Being
24. Mr. Paui
25. Physician org.
28. Several of 15A
29. Otic unit
30. California music publication
33. Praise
35. Lady's name
36. _____ Guthrie
37. Huxley might engineer in these
40. Numerical prefix
41. Mr. Whitney's invention
42. Historical periods
43. Part of a deli order
44. Eighty-six
45. Something a human might do
46. Past maker of guitars and basses
47. _____ Pot regime
48. Hebrew lyre
50. End point
54. High home
58. Phone device for techies
59. Create compatibility
61. Nine (prefix)
62. Financial encumbrance
63. "... _____ and a day"
64. Tilts
65. Raison d' _____
66. Get _____ of

■ DOWN

1. Moviedom canine
2. Bring up
3. Parisian waterway
4. 2nd largest ocean (abbr.)
5. Stockholm folk
6. Pedro's assent
7. Polanski film
8. Author Arthur

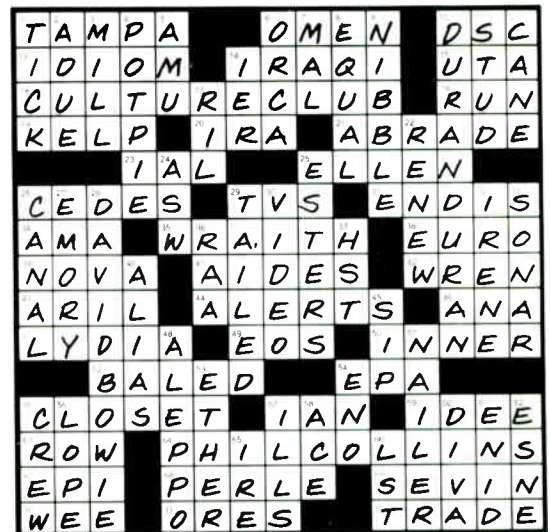
9. Concepts

10. Wee
11. Capacity measure for ships
12. Hovel
13. A distinctive doctrine
17. Snuggle up
21. Gentlemen farmers
23. Notorious mystic
25. Ann _____
26. Leniency
27. Certain marble
29. Printers measure
30. Adobe unit
31. Famed tower in Hawaii
32. Uchousous likeness
34. One Gardner

35. Grain beard

36. See 39D
39. Clamor
44. Punctuation marks
45. Spring holiday
47. Primp
49. Allude (to)
50. Sonic quality
51. Ms. Milley
52. Where Cleo barged
53. Window _____
55. Shankar _____
56. Prepared champagne
57. 63A, to the poets
58. The "Velvet Fog", familiarly
60. Compass pt.

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—from page 174, *Scorchers*

switched on when I was playing. I used to have an old Echoplex, and before I knew it I was trying to use it 35 times in one song."

Instead, he relies on sheer technique to wring an astonishing variety of sounds from his guitars. "Most of the things I do are all in the hands," he says. "I set my amp and leave it, with the treble at about 8, the mid at 2 or 3, and the bass off. I control things with the palm of my picking hand to get the tone and the bite I want. I also use a lot of variation in the attack of my right hand on the strings."

One thing Hodges neglected to mention: you can't fiddle with your amp or toe-tap on effects boxes when you're busy careening back and forth across the stage, whirling and flailing. His guitar style is built around maximum motion, and once he and his fellow *Scorchers* get the momentum going, the frenzy of rhythm quickly becomes infectious. Everybody inside a country mile suddenly wants to dance.

Even jaded New York rock critics, confronted by this musical mating of Hank Williams and Johnny Rotten, have been known to shake a tailfeather or two.

—Sam Borgerson

—from page 166, *Winter*

As it turns out, Alligator has put that one out, too; it's called *Whoopin'* and features Winter on guitar, Willie Dixon on bass, and Stuve Hornick on drums—but we're ahead of the story, in which Winter is going through much wailing, gnashing of teeth and banging of head against wall at the disinterest in the blues—his, Sonny Terry's, anybody's—shown by the major labels.

"For the last year and a half, it's been bothering me *bad* that I didn't have a record deal," Winter says. He made a five-song demo, which manager Steve Paul took around to the majors. They said, "Well, Johnny's singing and playing great—but we just don't think the material's the kind of stuff that's going to make his career any bigger than it is right now." At that point I told Steve, "You've had your chance; now I'm going to make my record the way I want to make it."

Winter and Iglauer had been discussing the possibility of a Winter blues project on Alligator for several years, but as Johnny himself admits, "I probably wouldn't have been ready to do this three years ago." On the other hand, he muses, "I always thought Alligator was the right label to do this

kind of thing. Major blues releases are out there for maybe three months, and then—forget it. Bruce *keeps* his records out there.

"I should have gone with Alligator a couple of years ago," Winter reflects, "but it just makes everyone that much more ready to do it *now*."

Accompanied by fellow Texas bluesman and Alligator artist Albert Collins' bassist and drummer, Johnny D. Gayden and Casey Jones respectively, as well as keyboardist Ken Sajdak, saxist/arranger Gene "Daddy G" Barge, harmonicist Billy Branch, and the Mellow Fellows horn section, Winter entered Red Label Studios in nearby Winnetka and proceeded to lay down basic rhythm tracks for his back-to-basics blues record. Engineered by Fred Breitberg, the rhythm section was cut live and miked for wide-open sound. Some scratch vocals recorded at the time were eventually used in the final mix.

Guitar and vocal overdubs were laid on at the Streeterville Studios downtown. According to engineer Justin Niebank, the raw, live feel of the recording was played up by using Mesa Boogie, Roland, and old tube Ampeg amps for guitar overdubs. To ensure "presence and proximity," Niebank miked Winter's amp at the grillecloth with a Shure SM57, while setting a Neumann U-87 slightly back from the amp when a brassier sound was called for. Boom mikes were used throughout the session for room ambience, and Niebank says he had "big success" with the Crown PZM.

"The producers decided that in order to get that live-in-the-studio feel they'd have to put up with things like pops in the vocal and sacrifice some of the instrumental dynamics," says Niebank, "but that good-feeling vibe was definitely there. Some tunes, we'd just put the faders up and let 'em fly." The LP was subsequently mastered at New York's Frankford-Wayne with Tom Coyne at the helm.

Winter's pleased with the outcome, confirming that he's been "chompin' at the bit" to see the inside of a studio again. "I just enjoyed the hell out of making this record," he enthuses. "In fact, I don't think I ever enjoyed making a record this much. It's the kind of music I love, and I don't feel I've had to compromise to get it.

"We did all kinds of material," he continues. "It stays in the blues form, but there's a lot of variety. Some people may think all blues sounds the same, but this album never gives you a chance to get bored whether you like the blues or not.

"We did real raw blues, big-

band pretty-type blues with a horn section, rockin' blues—everything except acoustic blues, and I was *gonna* get around to that, but we had 15 songs already done. So we decided to wait until the next album to do the acoustic stuff."

One cut Johnny is particularly pleased about is a Muddy Waters tune called "Iodine in My Coffee," with its tender refrain, "She puts iodine in my coffee, rat poison in my bread, when I get a little sleepy she sprinkles lye all in my bed."

It's the only Muddy song on the album, but it's one of the tunes that might have ended up on a proposed "super session" Waters LP that Johnny and Muddy had been planning to put together but which never came to fruition due to Waters' death last spring. "We'd wanted to get possibly Eric Clapton, and some of the other people that had been very heavily influenced by Muddy, together for something a little spectacular," Johnny remembers, a trifle wistfully. "It would've been fun, but . . . the world's got a whole lot of great Muddy Waters music. He was basically very happy and satisfied with his career—it's not like he left very much undone."

Guitar Slinger also marks the debut of Johnny's new Lazer guitar, a lean, mean-lookin' thing with a sparse black body and no headpiece, given to Winter by its Austin-based inventor Mark Erlewine at a recent Texas gig. Having touched nought but a Gibson Firebird all these years, Winter found the Lazer a little tricky to handle at first, but observes happily that it "plays like a Gibson but with that biting, cutting, treble sound Fenders have," Fender guitars having proved most difficult for Winter to wield.

Already on the road in America in support of *Guitar Slinger*, Winter will spend July touring Europe, where the album is released on Sonet Records. A final word on *Guitar Slinger*, courtesy of Johnny Winter: "I would recommend it for almost-family consumption," he says with a devilish gleam in his rosy eyes. "Well, not quite the whole family—maybe those over 18. Play it with a parent or guardian if you're under age. They can explain the words."

—Moira McCormick

—from page 168, *Pearl*

The Phaser has Manual, Depth, Feedback and Speed controls, so you can get deep wah-wah phasing, or pitch-shifted Leslie-type sounds out of it. This unit does cut your highs a little

bit, as is typical with floor units of this kind.

This Compressor is the first floor-box model I've heard that has eliminated the annoying backlash, where an extra-hard pick attack causes your volume to drop, as the compressor's VCA overreacts to the input voltage. As if eliminating backlash weren't enough, Pearl's unit gives you a tone control that boosts or cuts the high frequencies, and an attack control that lets you dial in anything from a slight emphasis of pick noise to an all-out burst of grunge. This is very useful when the compressor is used along with one of Pearl's distortion units.

The Overdrive is Pearl's "tube-sound" fuzzbox, and along with Overdrive and Level controls, allows you to boost or cut any frequency between 100 and 4kHz. This semi-parametric equalization does a lot to smooth out the Overdrive's sound. My Strat never really pushed the unit to the point where it would sustain well, but in conjunction with the compressor this unit puts out a very nice sound.

The compressor also works well with the Distortion unit, which really deserves a more poetic name like Monster Metal or Guitarzilla. Along with the Distortion and Level controls, this effects has a Spectrum section which lets you boost (with a Level control) six different frequencies, or Modes. So along with lots of sustain and wild, fuzzed-out distortion, you can get some extremely nasty tones.

The Octaver is such a hot seller that I couldn't even get a test unit, so I guess lots of people are already picking up on its sound. I was able to check out the Analog Delay, Pearl's other best-seller, which features the longest delay time available in a floor box (400 msec).

It's a clean and quiet effect that has very good frequency response for a unit of this type, and plenty of flexibility, with controls for Delay Time, Feedback, Dry Level and Delay Level.

The Graphic Equalizer gives you control over nine frequency bands, plus overall level. This comes in very handy when you want to boost or cut certain frequencies without affecting the volume of your instrument. The unit does distort at extreme settings, but I still found it very useful for enhancing the "acousticness" of my Strat's neck/middle pickup sound.

An even better equalizer from Pearl is their Parametric, which gives you two separate stages, each with controls for Frequency (from 100 to 6.4kHz), Q, and 15dB cut or boost on each one. There's nothing like a good parametric for making your Fender im-

personate a Gibson or vice versa, and this one is very good, disguising your sound without audible distortion or noise.

Pearl's ongoing R&D effort has already come up with three effects that allow you to footswitch between two previously set sounds, and the first floor

box Exciter is soon to hit the market, so keep an eye on this line. They may not be the biggest name in effects right now, but if they keep the quality as high as that of the effects I tested, this is a company to watch out for in the '80s.

—Chris Doering

PHOTO: ANDY CAULFIELD



Diamond Guitar

No, it's not a gem-encrusted instrument for millionaires; the guitar pictured at left with its designer Dave Diamond (of the band Berlin) is the second issue in the B.C. Rich "Designed by the Professional" series. Dubbed the "Xytyryan Rex", the guitar features two on-board preamps, a Kahler tremolo, and a Bill Lawrence pickup. The first guitar in the series was the "Stealth" guitar designed by Rick Derringer. Who'll be next?

—George Petersen

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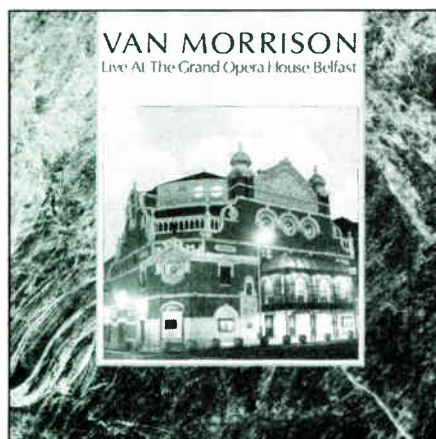
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VAN MORRISON
Live at the Grand Opera House, Belfast
(Mercury Import)

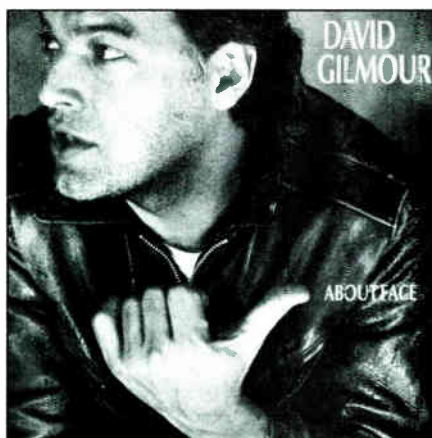
Something is rotten in Burbank. After fourteen years on Warner Bros. records, Van Morrison has been dropped by the label because the company was dissatisfied with the sales of his last few albums. Once again, money dominates art and one of the most gifted and important writers in the world doesn't have an outlet for his music in this country. What a crime!

This import album is loaded with reasons why we should all still be listening to Van Morrison. It's dominated by songs from his last few albums, particularly the exceptional *Beautiful Vision*. Morrison is in excellent voice throughout, and his band is his best since the early '70s Caledonia Soul Orchestra. Propelled by the horn work of Mark Isham and Pee Wee Ellis (who is also responsible for the imaginative, utterly original arrangements), this band is extremely versatile, adept at shifting from delicate, meditative pieces to spunky mid-tempo rock. Morrison's long-time musical partner David Hayes keeps the bottom steady with his liquid bass lines, and guitarist Chris Michie adds much texture to the music; he is Van's finest axe man since John Platania.

Most of Morrison's music since his last blatantly commercial album, *Wavelength*, has been intensely spiritual and introspective, and it is that music which makes up most of the album. But Morrison's delivery is so powerful and his songs so varied that the record never sounds like a religious polemic. Besides, Morrison's spirituality is couched in often exquisite lyrics that imply, rather than shout, the message. With great versions of such tunes as "Dweller on the Threshold," "Haunts of Ancient Peace," "Vanlose Stairway," "Rave On John Donne" and "Cleaning

Windows," there is ample evidence that Morrison is at the peak of his latest period of writing. When's the last time you sailed "into the mystic"?

—Blair Jackson



DAVID GILMOUR
About Face
(Columbia)

Although Pink Floyd was essentially the vision of bassist/songwriter Roger Waters, guitarist David Gilmour provided the key element in the band's sound, with his crystalline runs that were often bathed in echo. What we have in Gilmour's solo album is the sound of Pink Floyd but without Waters' brooding, occasionally heavy-handed lyrics. Personally, I've always liked Waters' writing immensely and I find Gilmour's lyrics about love rather pedestrian; certainly they are less interesting than his music. Because Pink Floyd tended to deal with fairly epochal themes, the bombast of the music always seemed somehow appropriate. Here, it is occasionally out of place, with the sentiments in the lyrics not matching the music particularly well. Still, there are some good moments. "Blue Light," which has been getting the most airplay from the record, is a powerful rocker solidly in the Floyd tradition, as is "Until We Sleep," which is Gilmour's best marriage of music and lyrics. Pink Floyd fans should like this album just fine, and I'd think that people who were put off by that band's unrelenting gloom might enjoy the bright melodies and sparkling guitar work here.

—B.J.

ROBIN AND THE ROCKS
Unknown Lover
(Dublab Records)

The highly affected vocal styles of some of the current chart toppers often wear thin quickly, but Robin Pearl doesn't have that problem. Hers is



a strong instrument, and she uses it in a straightforward way, relying on an honest delivery and letting the material speak through her.

Unknown Lover was produced by Bonnie Hayes (whose Wild Combo is about to bust out of the Bay Area with *Brave New Girl*) and employs the Wild Combo—guitarist Paul Davis, bass player Hank Maninger and drummer Kevin Hayes, plus Bonnie herself on keys here and there—as backup musicians for Pearl's partner, Ned Selte. The six songs here (all written by Pearl and Selte) fall in the ballsy pop/tuneful rock genre, a happy wedding of hot (not heavy) rhythm and bright melodies.

Ned Selte has taught his pedal steel guitar (!) a whole new set of moves. His melting-point sound betrays not a trace of twang. Only one cut ("Enough Heartache," the album's only weak composition) has anything that sounds at all like traditional steel; elsewhere, Selte's E-bowed sound meshes perfectly with Davis' electric six-string.

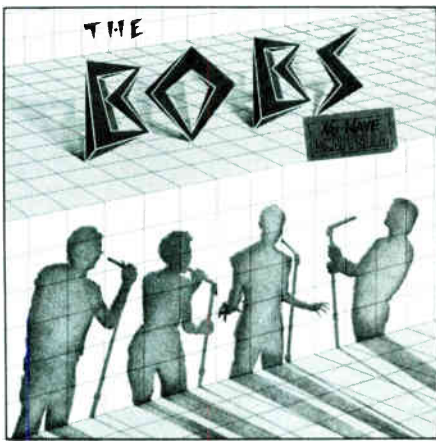
Excellent '60s-flavored vocal arrangements (e.g., "Next Thing You Know") complete the picture. A good star: for a duo with good potential.

—David Gans

THE BOBS
The Bobs
(Kaleidoscope)

"Nu-Wave A Cappella," reads the advisory sticker on the front, and on the back there's this message: "Warning: All the sounds on this record were produced by the mouth or other parts of the body." This is no barbershop quartet, folks, and it ain't the Moonglows, either—not with titles like "Prisoner of Funk," "I Hate the Beach Boys," "Bus Plunge" and "The Deprogrammer."

If the "Warning" message is accurate, one or another of these Bobs



does a remarkable imitation of an electronic rhythm machine and bass drum behind Janie "Bob" Scott's lead vocal on "Prisoner." And they're all masters of nonsense syllables, doo-wop taken 'round the bend, and too-close-for-comfort harmony. Gunnar "Bob" Madsen co-wrote nine of the eleven songs with Richard "Bob" Greene; the latter produced and co-engineered the record as well. And the songs are as clever and funny as The Bobs' renditions deserve. "I Hate the Beach Boys" could have been a well-deserved tirade against the over-the-hill gang and an argument for the euthanasia of Mike Love—but it turns out the Beach Boys are only a symbol for the California Climate, which the singer finds depressing ("I've been warm for too long/Let me go where the air is cold"). "Through the Wall" is a great new twist on the girl-next-door theme: "I hear you in the morning shower/How can you sing that song at that hour?" But the capper is the Bobs' rendition of "Helter Skelter," which somehow captures the raucous energy of the original without a single watt of electric instrumentation. *The Bobs* is a great gift idea.

—D.G.

NUDE ANTS

Access
(New Deal)

The second EP from this New York-based quintet is an uneven but promising effort. "America (We're on Holiday)" is a comic gem, with a chattering beat that never quits and a vocal refrain as blatant and insistent as the polyesters worn by American tourists in Europe. "I Can't Remember" is a rollicking party song complete with sound effects; groovy good fun.

That's Side 1. Side A (isn't that just too cute?) consists of two well-orchestrated, driving rock tunes well recorded but lacking in depth. "America" ought to make a hilarious video, but Nude Ants will have to rein in their self-conscious cuteness in the future.

—D.G.

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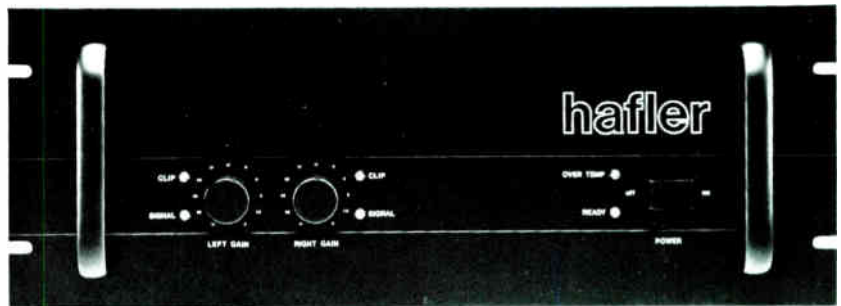
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Some of the team that made Lionel Richie's "Runnin' with the Night" which was edited by Larry Bridges of Red Car Editing. Left to right: writer/director Bob Gibaldi, choreographer Michael Peters, Lionel Richie, Fashion Stylist Faye Poliakin and producer Antony Payne.

RED CAR FILM & VIDEOTAPE EDITING

by Lou CasaBianca

In last month's *Mix* we met with Red Car creative director and owner, Larry Bridges. As the film and videotape editor for Michael Jackson's "Beat It", Lionel Richie's "Runnin' with the Night" and many other well known and critically acclaimed music videos, Bridges has a unique perspective on the production, direction and editing of videomusic. In this free-wheeling conversation, we covered everything from the nuts and bolts of real time on-line video editing, to his candid comments about his working relationship with award winning director Bob Gibaldi and executive producer Antony Payne of Bob Gibaldi Productions. We pick up the discussion with his approach to the film editing process.

Mix: Let's start out with your approach to editing film since that's the principal medium you're working with and the originating format for most music videos.

Bridges: Yes, I believe in film. When we have digital video, and when you're able to store all your film and transfers digitally, I'll change my ways. I'm looking forward to that.

Mix: So you're working with gloves,

AN INTERVIEW WITH LARRY BRIDGES PART 2

split reels, film baskets and the whole traditional film approach?

Bridges: I call it film off-line, because we can transfer directly from the film that we then cut to conform to the tape that we eventually assemble.

Mix: So you don't do a total film-to-tape transfer, you edit on film and transfer your work print only?

Bridges: Yes, selected takes, flash to flash, a cut negative is necessary. Thus we economize on our transfer and we preserve the negative without having to cut into it in case we want recuts and we minimize the dirt factor, which is significant.

Mix: You're actually cutting which version of the film?

Bridges: We're cutting the work print, a print of the negative and then we

assemble. We take all the scenes from camera stop to camera stop, all the scenes that are in the rough cut, put them all on a big roll, transfer and lay them down and then the computer does the rest. It just goes and finds the exact time code equivalent of the frame that you're cutting.

Mix: What computer do you use and can you tell us a little about the programs you've developed.

Bridges: It's very simple. It's written in Basic for the IBM PC. You input the "in" and the "out" of the film code and a couple of other data points and out comes your SMPTE time code. You punch tape and it goes right on to CMX.

Mix: It's basically a mathematical conversion program that takes film edge numbers at 24 frames per second and converts them to video frame numbers at 30 frames per second?

Bridges: Yes. The software accounts for the 3-2 pull down and makes sure that you're in sync, and some other little tricky things that I've developed over the years which are required for the 24 to 30 frame match.

Mix: Recently a number of directors have started shooting 30 frames per second on film to start out with. How do you feel about that approach?

Bridges: I don't think it's correct. I've seen a lot of 30 frame film and I don't think there's an appreciable difference. I think it's just somebody spending a little more money, thinking that they have a better look. If you shoot 60 frames a second you're not going to change the fundamentals of film and I don't think you're going to achieve an appreciably different look.

Mix: Especially since you still have to go to a film-to-tape transfer anyway.

Bridges: Well, what it does give you is frame by frame sync and it also gives you a little more information per second but you quickly reach the limit of video compared to film. I think it's an interesting departure from the normal way of shooting a video, but I am yet to be convinced of its aesthetic value. In other words I am not convinced of the fundamental difference of just shooting plain old 24 frames per second. A lot of directors come in and think they've changed the world if they shoot 30 fps and we get into problems. First of all, in many cases they fail in their syncing process, they can't get 30 frame numbers and it can become a mess, and their playback ends-up out of sync. It also means that we have to convert film handling speeds on our KEMs (flat bed editors). As a facility we discourage it.

Mix: If you're going directly to video, at 30 fps, it might not be as complicated, but in the film editing mode it could become a nightmare.

Bridges: And you're also spending more money. I just wish people would take a hard look at the filming situation before they do it. I think it's effective in a lot of bright light environments, a lot of controlled bright lighting. It does give kind of a video look. But if you want a video look, shoot video.

Mix: How do you develop your edit decision list? Does it all basically come off the computer?

Bridges: Straight CMX compatible, Mark I compatible or anything. I don't have any tricks that way. It will work with any computer system.

Mix: It generates a list on floppy disk and paper tape?

Bridges: It comes off on tape, floppy disk or hard copy.

Mix: Have you considered marketing the software, or is it a "secret weapon" you want to hold onto?

Bridges: It's proprietary, I don't think it's highly marketable. I have considered it. Red Car Software! I haven't had time to develop the product line. We have everything we need for editings and business. I mean honestly,

I have developed software for everything that goes on in post production, bid programs, invoicing, check writing, and accounting. We also work with Jim Corbett at Mix Magic. He's got an incredible program with a lot of computers in an integrated system. He's got a computerized mixing board. You don't lay it down, you just rehearse it and it remembers the moves. It remembers everything but the EQ. It sends it back so when you do your final mix you're on first generation. You know, just performing things from dub units.

Mix: Is it custom or standard gear?

Bridges: It's something that's been used in the record production but he's utilized the technology in the editing of tape. I think Neve is the manufacturer.

Mix: Are you using existing software or have you created your own software for the bidding and financial spread sheet?

Bridges: I wrote it all myself. That's what my MBA got me. I learned Basic at Dartmouth where they invented it.

Mix: In the preproduction phase, let's say Bob (Giraldi) and Antony (Payne) have a developed shooting script—how much have you been involved with the process at that point, and how much knowledge do you have of what they're going for in terms of a production concept?

Bridges: Not too much, honestly. They have a script and a story board. I've never sat down and previsualized it with them. They've never dictated where the cuts are going to be. Bob's very good about that, he knows. But with other directors, I have told them where the cuts are going to be and told them exactly how long the scene should be. If someone wants that kind of support when they come in they get it. When I do my own directing I break it down very carefully shot by shot. Your first duty is to cover the track and then you can be inventive, but you can't shoot without preparation because you may have one or two good ideas and you might end up with a whole lot of holes.

Mix: Are there any other production techniques you would recommend that can save money in the editing process?

Bridges: Other than the Red Car Systems, I think that the highest level of productivity is in the film to tape interface, mainly because you can maximize your creative time at a lower cost. Low cost being the Kem editing time vs. video, minimizing your hard out of pocket costs for transfer and on-line editing, keeping only the intermediate step of off-line. You go directly from

your film to tape. I recommend a nimble and creative video tape editor, and going with facilities that can give you a visual consistency throughout a film-to-tape transfer. I recommend highly the use of the ADDA transfer so you can save a scene, or save a frame from a scene and go on to the next, so you can match because you've got a lot of continuity to work with. I suggest the use of a system that has an "x + y" zoom on your transfer so you can recompose some spots, and edit in your transfer. You can add that as a generation saver or a quality saver, to do moves, reposition, and I recommend the use of the Grass Valley 300 switcher. The ESS (electronic still store), the ADO (Ampex digital optics) and the Grass Valley 300 are my favorite toys.

Mix: Where do you do your on-line video editing?

Bridges: Pacific Video. We get the negative and put it into shape in whatever form we're working in. Sometimes we cut it, sometimes we don't. It depends on how much of a hurry we're in. We develop the list, load and assemble it. It's really just a lab process. Once the thing is transferred it's all over as far as I'm concerned, unless we're doing creative tape editing, which I did with the Gap Band. The Gap Band video didn't come together until the tape session. It was \$8,000 worth of ADO and on-line editing. Ninety-nine percent of the production was on-line tape editing, and that takes guts. You really have to have a good editor and know what you're doing at \$600 an hour and be able to pull it off. Bob's stuff is mainly cuts, so in the final tape assembly you're just an observer of a series of decisions that have been made beforehand.

Mix: How long did it actually take to edit "Beat It"?

Bridges: The edit from start to finish took about 10 days, including all sound editing which before "Beat It" was typically not part of this process.

Mix: In terms of technique and style, you mentioned that internally as a writer you're concerned with exposition and concept, things that are almost absent from most of the videomusic on MTV. If it's not too intangible, can you comment about your approach from an aesthetic point of view.

Bridges: When the material is handed to me I'm curious about finding plot. I think it's the first thing we look for in a video or in a film. We're gratified by a plot because a plot tells us that all is well with the world and that we can find our way through it. When you get to the end of the plot, when you reach the denouement, something is telling you

that you can work things out, you can work this life out. I think that deep inside of us is a need for plot and happy endings, or witnessing cathartically to sad endings the comedy and tragedy of existence. I think that I'm like anybody else, I want to find that plot, even if it's hooking two shots together and telling a story just in terms of color. If something red has been going on in four scenes and then something yellow happens I hesitate to put that yellow in because it's not part of the story and if I want to tell a story about yellow things, I wait till I can get a sequence of yellow things and do those. In general terms of human destiny in "Beat It," you've got a guy who wants to stop a fight. In the beginning you have the potential for conflict and in the end you've got the conflict metamorphosed into a dance of peace. I guess that's what everyone has been saying about the meaning of "Beat It." I'm always watchful of the tendency to be too rational about plot. One example is Bryan Adams' "This Time", which is a black and white video shot by Laslo Kovacs and directed by Steve Barron that we did with Limelight. It was shot in the Mojave desert landscape.

Mix: I've seen it. It has the look and feel of a surrealistic '30s western.

Bridges: A very oblique kind of plot

but the whole thing revolved around the story. It was justified not at the level of forms and shapes or irony. It was truth. Something happened and the guy got the girl and the girl got the guy. I think this is what that story said. I'm a firm believer in plot. I also believe that people like to be told stories in a stylish way. They don't like to be told a straight story; they don't need that. They can get that by watching prime time TV. They want the oblique move. They want the imponderable image before the one that clues you to what's coming next. They want to be confused. I think the MTV audience is an extremely intelligent audience that scrutinizes what they see very carefully. More than any other visual form now people are making comparisons and looking at relative values when they see videos. They respond to quality. In "Beat It" it was a requirement showing a story that maybe really didn't happen in life. If you don't have that seed of intelligence in the work, people are going to scoff at it. Even if it's in something that's inadequate visually or if it's in a weak story, even if it's in something that doesn't have the production values of "Beat It." It can distinguish a poor video and make it watchable, sustaining, interesting, and valuable at the third viewing.

Mix: One of the things that really makes some videos boring and uninteresting is their obvious predictability. Isn't the unexpected or the unpredictable as important in music video as it is in music?

Bridges: I really believe in irony as an attention grabber, an intelligence sharpener, because it creates an opposition with the very trusting attitude you have in what may be the complacencies of design. Through this sort of basic irony with ideas you create another tension which again comes back to a sort of prose style of presentation. I think that makes the sequencing more interesting, because straight story telling can be boring. Like cubism—if you just focused on everything in a cubist painting, you'd say "oh wow, lots of ordinary objects," but the way they are thrown up on the canvas creates the power and tension of the image. That's what I like to think of some of our videos as having a surface tension created in the editing.

Mix: In general, how much of the "surface tension" of a piece would you attribute to the editor.

Bridges: You would not necessarily get it if you didn't use a particular editor, namely me or someone else here. I really believe in that, and as creative direc-

—page 190, *Bridges*

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Left to right, Peter Karp, Wayne Hyde, video editors.

VIDEO NEWS

by Mia Amato

ON THE CUTTING EDGE: EDITEL NY

What do *Anne Murray*, *Ashford & Simpson*, *Lou Reed*, and *Lords of the New Church* have in common? One answer is promo clips edited at *Editel* in New York.

Rock visuals are the specialty of staff editors *Wayne Hyde* and *Peter Karp*, whose domain includes a battery of special effects equipment interfaced with CMX one-inch editing.

"For example," says Karp, "We Ultimatted concert footage of Reed against a background by skip-frame—automatically deleting every third video frame [about one-thirtieth of a second] is an easy command for the CMX. For cubes and other three-dimensional effects, we have the new Quantel "Mirage," two other Quantel processors, and two Ampex ADOs."

Like many northeast facilities, Editel built a 24-track audio studio with its video studio for projects brought in by video music clients. Sound mixers like *Johnathan Porath* add the extra touch of sound effects, dialogue, and incidental music to enhance the theatricality of the clips.

"Simply cutting a video to playback is a thing of the past. The trend is to add sound effects and dialogue," says Porath. "We say, first cut the visuals [to a scratch track] and then let us cut a soundtrack, in a fully equipped recording studio environment."

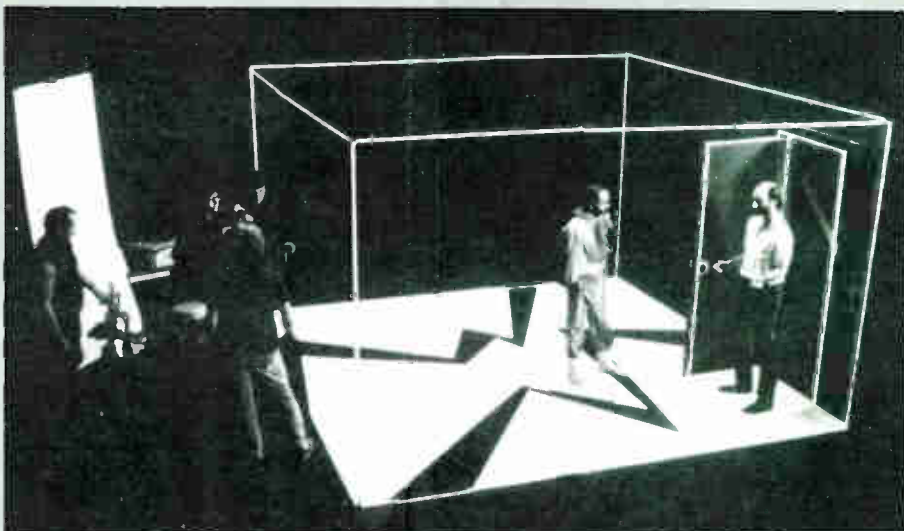
The mix-down room is all-Studer; its console is actually Solid State Logic's design prototype for the SSL-6000 series. Porath says the room was built for both record and television work, "but the bulk of the work is sweetening for videotaped concerts and clips."

Work may be "fixing up" bad sync or reworking a multitrack recording to bring up certain instruments as they appear on screen. As clips have become more like mini-movies, Porath sees audio engineers "taking a more creative role" by adding dialogue and effects. Adding additional audio and synched dialogue for *Pat Benatar's*

"Love Is A Battlefield" clip was one of his early projects in this area.

Other TV work includes all musical segments for NBC's *The New Show*. The weekly series typically uses pre-recorded drum-rhythm playback for its musical guests. Vocals and other instruments are recorded live during shooting. The Editel team gets this 16-track result and the original rhythm track.

"The program is mixed digitally using Sony's F-1 digital processor, which converts the analog signals to digital and then to an output of NTSC video," Porath explained. "The processor is actually a high-end consumer



product from Sony, but a lot of studios like ours have modified it and found it's great for professional uses."

CHANGES AT ZOETROPE, REEVES

The darkened stages of *Francis Ford Coppola's* Zoetrope Studios were sold off at a bankruptcy auction to Canadian real estate developer *Jack Singer* for \$12.3 million. Singer, an investor in the ill-fated Coppola film *One from the Heart*, plans to build a new studio complex which may bear his own name.

The *Kaufman-Astoria* stages in Long Island, built in 1919 and renovated for such feature as *The Wiz* and *Cotton Club* will be the new home of a videotape division of *Reeves Telecommunications*, which will provide facilities and services for the busy film community springing up across the river from Midtown Manhattan.

In Los Angeles, *Homer & Associates* used computer-generated graphics and four-channel ADO effects to conjure up a four-walled room that didn't exist. Inside they put *Al Di Meola*, *Phil Collins*, and a team of martial-arts experts. Result: a video clip for Di Meola's "Sequencer," produced by *Peter & Coco Conn*. Final editing was done at *The Post Group*.

Other studio news . . . *The Post Group*, (LA) handled all editing and effects for *Stray Cats'* "Look At That Cadillac" and *Rockwell's* video, "Somebody's Watching Me." *Francis P. Delia* directed both. The French National Television Network called on *Ardent Teleproductions* (Memphis) to post an hour concert of that country's pop idol *Johnny Hallyday*. Producer for the ever-avant-garde *Antenne 2* was *Antoine de Caunes*.

Video Post & Transer (Dallas) used its Rank Cintel Mark III film-to-tape scanner to transfer a portion of historical films discovered in a Texas warehouse and donated to Southern Methodist University. The films, a collection of movies produced and directed by blacks in the late 1930s, have since received nationwide attention . . . The studio also transferred a 16mm documentary on traditional hispanic music to one-inch and cassette video formats for distribution by *Public Media* of Sante Fe. Not resting on its "past" laurels, though, VP&T is also the first studio in the country to install NEC's "Optiflex" perspective/rotation special effects accessory . . . and they have TWO of them.

—page 190, *Video News*

(Opposite) *Al Di Meola* and director *Peter Conn* in the bare bones of a room later transformed with computer-generated "walls" for the clip "Sequencer."

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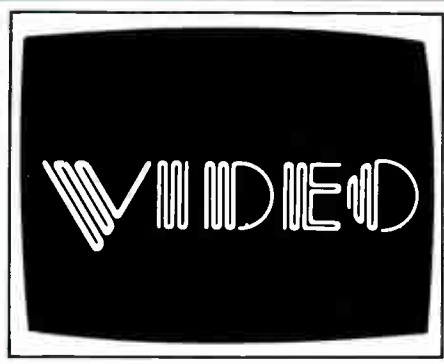
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INTERFACE

The Software Interface

by Neal Weinstock

"You thought you needed a mainframe for that? I'll show you how to cut a couple of corners and do it on a micro." Ever since the microcomputer was counterculture—a relatively powerless little eight bit, 16 K RAM counterculture period that lasted from about 10 years ago to, say, five years ago—micro users have been surprising the more sophisticated, establishment technoids with this sort of Pepsi Challenge up against the hard whiskey of the big computers. That micro challenge is now operative in our own highly computer-interfaced field, too.

While hotshot video effects are the hallmark of all too many music videos, when used intelligently they are worthy ingredients in the video "mix." The only problem is that digital effects generators can cost up to a quarter of a million greenbacks. However, if you have an Apple or two, or IBM or other micro hanging out in the accounting department, you may be able to achieve some fresh-looking video images without such a blow-out of *mazuma*.

Software is the key. Okay, that's a catch-phrase you've been hearing about anything computers are used for; but software is even more the key in a micro graphics systems, because there just isn't all that much of it. The lack of much good graphics software kind of makes this area of micro use resemble that old counterculture, in which users customized their own soft-

ware, traded it, and some eventually got very rich on it. Micro graphics are still squarely in this semi-pro state, because all the big money action has been on either dedicated systems or software for 32 bit minicomputer-based systems.

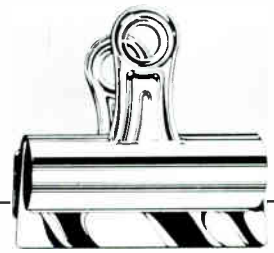
What do the megabucks systems have over micros that makes them draw pictures better? Resolution is an important parameter—that is, just how many dots, or "pixels," an image is made up of. Until recently, micros pretty much standardized at the Apple II's level of resolution, which is about half that of a television screen. Now, however, 16 bit machines, compatible with the IBM PC or not, can generally come up with at least the basic colors and resolution equal to a TV screen. Software determines how to make that resolution usable: how to smooth rough edges in the picture (that is, "anti-aliasing"), how to move images around quickly from machine memory to the screen ("buffering"). Software also determines the variety of shapes and details that can be presented.

Most of the software that has been offered for sale to micro graphics makers has concentrated on business users. Some of this is adaptable to creative video uses, and some has been quite creatively designed from the outset. Much of it at least allows creation of good looking still-frame images—and even these programs are adaptable to motion graphics, quite often, with either a program modification or some hy-

bridization with standard film animation. For an example of the latter, just visualize a still picture created on a TV screen, with the computer able to plot each of the next mini-moves necessary for animation. You shoot a single frame of each of these frames shown by the computer and achieve animation, though it's not done in "real time," as in most of the packaged video effects we're used to. The benefits of such a hybrid system include not merely low cost, but the originality that comes with images that were not pulled out of the same can everybody else is using.

Peripherals necessary to achieve micro graphics most often include a digitizing tablet and light pen, along with the usual disk drives and enhanced memory cards. A particularly lovely addition to such a system would be Sony's new single frame video recorder (BVH-250), but that might be above a budget or two. Anyway, it's something to shoot for.

Now, all of this is not to say that computers are not extremely handy in other areas of the video production process, and in coming columns we hope to look at more interesting scripting, bidding, and production scheduling software, as well as hardware. For the blooming field of micro graphics, however, this column can think of nothing so helpful as a list of all the graphics software now available. Of course, this stuff changes every day and Video Interface's knowledge is not perfect, but here we go, trying our best:



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*23 Innovative Software	Fast Graphics color graphics	
*24 Key-I Computer Systems	Keytools painting, combined text	40
*25 Koala Technologies	Koalapad Touch Tablet	99-149
.	Logo Design Master	149
.	The Illustrator	149
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*28 Metasoft	Graphics	599
*29 Micro Compatibles	Grafmatic 2D & 3D graphics	95
*30 Microcad	Microcad 3D graphics, CAD	500
31 Micropro International	Chartstar business graphs	
*32 Miracle Computing	Easy Graph	35
.	Graphit	80
.	Joydraw	20
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34 Non-Linear Products	Plot! plotting curves	30
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37 Redding Group	Graftalk	450
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39 Softrend	Aura general business	495
40 Softstyle	PC Showoff visual effects	
41 Software Publishing	PFS: Graph business graphs	125-175
*42 Software Solutions	Graphease	
43 Software Technology for Computers	The Creator general business	250-300
44 Statistical Graphics	Statgraphics gen. business	575
*45 T&W Systems/Cadapple/Verscad	CAD, drafting	2000-6000
46 Technical Analysis Group	Compu Trac financial	1100-1800
*47 Transparent Data Systems	Ugraf	495
*48 Ultragraphics Systems	Ultradraw Graphics 2D graphics design	195
49 Visicorp	Visicalc IV general business	250
	Visitrend Plot	300
50 Wadsworth Electronic Publishing	Statpro business graphs	
*51 Waresoft	Micro Sketch general graphics design	
52 West Coast Consultants	Curve II Program science	275
*53 Xiphias	Videograph visual effects	1000-2000

*Denotes particular interest to the video effects maker. All of these programs, astensked or not, are available for the IBM PC and compatibles. Most are also available for Apple

—from page 187, *Video News*

Diamond Group (Dallas) deployed its Detacam to assist *Duran Duran* when management requested last minute coverage of two Los Angeles concerts. *Showtime/The Movie Channel* has asked *Sound Shop* (NY) to handle all future in-house audio production for the merged cable services. *Videoworks* (NY) used its custom-built computer animation stand with ADO effects to concoct the clip "Lies" for *Pal Joey*, a new act for *Sutra Records*. A new company in New York is *Small Biggie Burns*. First clip clients include *Charlie Pride*, *K.C.* (now solo from the *Sunshine Band*), *B.E. Taylor*, and the *Exotic Birds*. Company principals are *Alan Hecht*, video columnist for *Rolling Stone's Record Magazine*, theatrical and concert impresario *Robert Small*, and designer *James Burns*, formerly with The Museum of Modern Art in New York.

Intercontinental Televideo (NY) is the place where many British acts convert their video clips from PAL to NTSC for American television. The company also transfers from NTSC to PAL and will rent multi-standard U-matic playback equipment . . . our British friends also mentioned that *Top of the Pops*, BBC's long-running clip program, presented its first award for video to *Keith McMillan* of *Keefco* (LA & London) for *Paul McCartney's* "Pipes of Peace" which the former scripted and directed. MacMillian says it's the 598th he's done.

VIDEO EVENTS COMING UP . . .

New York Siggraph, an organization of computer artists, producers and programmers, presents an exhibition of computer animation and image processing techniques May 21 at the Lighthouse Church Building, 660 Sixth Avenue in Manhattan. Hardware demos, hands-on workshops and a live laser and video performance are planned. For admission info call *Carol Chiani* (212) 564-7652 or *Richard Horner* (212) 807-8050.

Banff International Festival of Film for TV is now considered the place to spark Canadian co-production deals, while one scouts locations in the scenic Canadian Rockies. It happens in Banff May 20-26. Call (406) 762-6248 for festival details.

National Cable Television Association (NCTA) examines the state of that industry June 3-6 at the Las Vegas Convention Center, offering an opportunity to meet with packagers and programmers. Call NCTA at (202) 775-3550.

Rockamerica plans its second annual *Video Music Seminar* August 9-10 in Manhattan, a must for anyone working in/breaking into the club video scene. For info call (212) 475-5791. ■

—from page 185, *Bridges*

tor of this shop I try to look at other people's work and encourage them toward that end because I think that's the only thing that film has going for it. The camera is so truthful. It sees too much, much more than we need to see. The only way you can pull back from allowing the camera to control your view, or your artistic intention, is to edit it against what is normal and expected. Edit against the total realism that you're locked into all the time, so that's why a narrative approach is good but dangerous. It's almost better to be totally chaotic and that's why most filmmakers achieve a lot more recognition and people basically trust them more if they're avant garde.

Mix: How would you relate this specific aspect to your work with Bob Giraldi Productions?

Bridges: People are suspicious of slick filmmakers and I think they're suspicious of Bob Giraldi for that reason because he's commercial slick. They don't have the key to what turns into a spirituality of the avant garde—"wow this is a real artist at work here, someone who has a key to the secrets of the culture and the craft." You can come at it with chaos and obliqueness, with surprises and non-sequential images, with ellipsis and an attitude that amounts to, "if you can relate to this story or you can relate to meaning, then I don't want to have anything to do with you as an audience." People for some reason trust that, and I think that the only reason is because they've overcome the power of the camera to just reproduce. So I think in editing you've got to do that a little bit, you've got to pull away and you've got to scramble.

Mix: One of the things you did in "Beat It" is the really obvious use of jump cuts, such as when Michael Jackson is halfway down the stairs and the next thing you see he's walking and there's no way in real time that could happen but you go with it.

Bridges: It's jumped ahead. I think a lot of it is the way Bob Giraldi shoots. He shoots with camera movement a lot of multiple story telling. One shot gives you several stories. He's a great mover of the camera, one of the greatest I've seen. He surpassed himself in Lionel Richie's "Running with the Night." It's obscure, that's what gives it its force. It's an obscure world that few people ever get to see. Certainly the MTV audience doesn't go downtown and relate to the Mexican-American community in Los Angeles. That's what gives that video its feel. Bob has a real sense of the comedic and I hope he does more of that. He's very much in control. Downtown, he's always going down to the streets, down to the underworld. ■

Mix: He has mentioned that as a kid growing up in Patterson, New Jersey, that the street was both fun and a dangerous place, and it seems he's trying to restate that in "Love Is A Battleground," "Beat It" and in "Running with the Night". Can you talk about the psychology of editing as it relates to working with Bob?

Bridges: Let me just say in general, that the way you work with people in editing is that first of all no shot is sacred and you have to be able to perform fast. You have to be able to give people what they want because it is a performing art and it's a service at the same time. The psychology is to bring the energy up, keep on moving, keep the enthusiasm there, jump over blocks, go on to other things and get a string of successes under your belt, and then go back to the hard things and then maybe you'll have found the pattern that you couldn't see before. Bob Giraldi is a star in his own right. He acts like a star and you deal with a star when he's there. As is the case with most client situations, you take a little more of a back seat to their ego and you understand that sometimes a king can be blind; King Lear if you will. You have to find some way to communicate even if it's by playing the fool. That power can be blinding and even the greatest and most schooled opinion in the world can be wrong. No one's going to reject something that's obviously good for the production.

Mix: Could you capsule how you see the future of film and video editing being affected by the new technologies?

Bridges: Yes, digital video is going to change editing. Nothing's going to change going out and shooting something and coming back and looking at it and hooking it together and making a finished master; nothing's going to change that part of the process. That's film making, and recorded images are what we're into, whether you record it on film, tape, digital video or whatever. In the future it's still going to be a recorded reality turned into an art form. Whatever the tools are, that same need to create a form and pattern and a structure is going to be there and that's our job. Whether it's two dimensional, three dimensional or a million line, I don't think the process will change. It's the tools that change. It's like T.S. Eliot said, art has not changed, it's the tools of the craft that have changed. Look at the cave paintings. There's not a whole lot of difference in the content of what they did in the caves of southern France and what we're doing on TV. That's all I can say about that. I really don't care about the technology—if a new thing comes along and it works, I'll use it. What I care about is the creative process. ■

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—from page 12

new talent. . . . **Paul Christensen**, president of Omega Audio, Dallas, announced recently that **Curtis Drake** has joined the firm as Operations Manager. Prior to joining Omega Audio, Drake was a staff engineer at Cherokee Studios, Hollywood, CA. . . . **Cloud Nine Recording** in Mount Dora, FL, owned and operated by **Steven** and **Sharon Farrell** has gone 16-track, updating the facility with an Audioarts 8x16x16 recording console and a Tascam 85-16B tape machine. . . . **Patchbay Studios** in San Rafael, CA had new Meyer Sound Labs 833 Control Room Monitors installed recently. . . . **Track Record Studios**, Minneapolis, has upgraded to 16 tracks with the acquisition of Tascam's 85-16 16-track tape machine. Track Records has also added a baby grand piano, 4 Pandora limiters, Audi-ence plate reverb, Effectron delays and Neumann U-87 microphones. . . . **Hedden West Recorders** in Schaumburg, IL, changed its name on January 1, 1984, to **Remington Road Studios**. The studio complex continues to operate under the same ownership and management at its original location. . . . **Daniel R. Van Patten** has announced the opening of his new 24-track recording studio, **Advanced Media Systems** in Orange, CA. This new facility features a Neotek Series III-C console with eight subgroups, Studer A-80 24 track, Otari MTR-12 half-inch stereo master recorder,

Neumann, AKG, Sennheiser, E-V, Shure and PZM microphones. As an added attraction, A.M.S. also has one of the most comprehensive collections of in-house synthesizers in the United States. Their number is (714) 771-1410. . . . **ASR Recording Services, Inc.** of Glen Rock, NJ (the cassette duplicator) is now custom duplicating floppy disks for the computer software industry. . . . **Harlequin Studios** in Northridge, CA purchased a new Stephens 821B 24-track recorder with autolocator, UREI 813 monitors, Yamaha NS-10 monitors, a 3M M64 30 ips 2-track, and a new Lexicon digital reverb. In their video room, they've installed a complete lighting system including lights, grid matrix, 24K dimmer packs, and 2 scene 12-channel lighting controllers. . . . **Cantrax Recorders** of Long Beach, CA has moved to a new, larger facility. Equipment at the new facility includes Studer Revox, Sound Workshop, Sennheiser, ElectroVoice, JBL, Bose, Tascam, Technics, Yamaha, Valley People, etc. The new address is 2119 Fidler Ave., Long Beach, CA. . . . **Modelia Recording** in Wailea, Maui just installed a new pair of Auratone 5C reference speakers on their Soundcraft Series Two 16 channel board. They also added an MXR Flanger/Doubler to the rack of outboard equipment in conjunction with the recently upgraded Scully 284 8-track deck. . . . **Soundcastle Recording Studio** in LA added another million dollar studio to their current facilities. This new room

features a Neve 8128 console with Necam II automation interfaced to the Q-Lock synchronizer for the fastest automated mix to picture available. In addition the studio is equipped with Studer A-800 24 tracks, Mitsubishi X-80 2-track mastering recorder, Ampex ATR 100 2-track and 4 track analog machines, a BVU 800 videocassette recorder, and a Sony BVH 2000 1" videotape machine. . . . **The National Recording Studio** in Baltimore, MD is now offering 24-track recording with Allison automation. After a brief shut-down period for some minor interior renovation to its Studio A and control room last fall, it has re-opened with lots of new additions, including a 3M-M79 machine. . . . Howard Cook owner of **Euphoria Sound Studio** in Revere, Massachusetts, has upgraded his studio to 16 tracks. New equipment includes a state-of-the-art Otari MTR 90 16-track recorder, reproducer with remote control and autolocator, as well as a new Soundcraft recording console. . . . **Chestnut Sound, Inc.** of Philadelphia installed a 16-track, 8516-B and Ecoplate Reverb System. . . . **Music One** in Syracuse, NY is a new 16-track facility formed by a merger of **Dayson Studio** of Syracuse and **The Music Workshop** of Utica, NY. The studio features a customized Interface console, a Scully 100 16-track with 16 channels of dbx noise reduction, an Ampex ATR 800 2-track with 1/2" mix available, and much more. Their number is (315) 656-8389. . . .

—from page 5, *Feedback*

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Thank you,
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To all our readers who would like to address the editor on articles and issues that have appeared in the *Mix* please send letters to: *Feedback*, 2605 9th St., Berkeley, CA 94710.

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