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U.S. \$4.95 CANADA \$5.95 NOVEMBER 1988

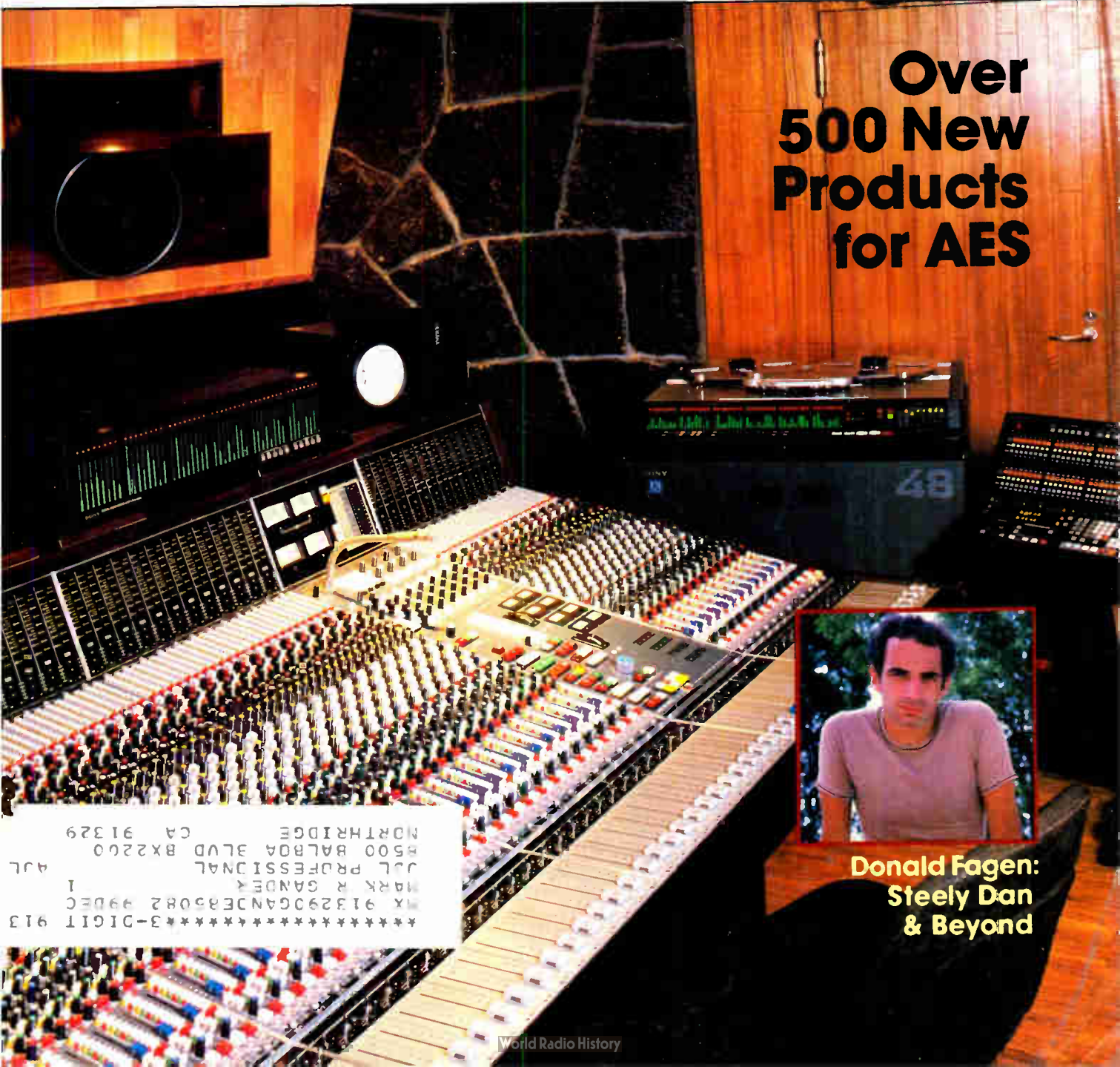
MIX

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THE RECORDING INDUSTRY MAGAZINE

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MIX

NOVEMBER 1988

THE RECORDING INDUSTRY MAGAZINE

VOL. 12, NO. 11



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FROM THE EDITOR



Cover: Sony PCM-3348 48-track digital recorder being tested at a CBS/Sony studio in Tokyo. The machine will make its U.S. debut at this month's AES show in Los Angeles. Photo: courtesy Sony Corp. Inset photo: Donald Fagen by James Hamilton

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It's AES time once again, signal-

ing the parade of new pro audio products for 1989. And from the look of things, it's been a very productive year for manufacturers. Our survey of these folks turned up more than 500 new audio engineering tools. The fun begins on page 207.

With AES also come the TEC Awards, our readers' poll of the most significant contributions over the past year in product design, creative performance and institutional excellence. Those champions will be announced and celebrated November 3rd, the first night of AES, at The Biltmore in L.A. Watch the next issue for a complete rundown of the winners.

A new aspect of the TEC Awards this year is the Hall of Fame, elected by our blue-ribbon nominations panel of industry leaders. The TEC Awards Hall of Fame is designed to recognize exceptional career contributions to our industry, with up to three names being added each year. The first inductees into this esteemed category are Les Paul and the late Bob Liffin.

Les Paul, as regular *Mix* readers are most aware, is a kind of founding father in our industry. Both as a performing artist and an inventor, Les closed the gap between technology and music making. His list of technical breakthroughs is nearly as long as his string of hit recordings, and his illustrious career personifies the spirit of the Technical Excellence and Creativity Awards.

Bob Liffin, who passed away early this year, was another guiding light in the development of professional audio. His tireless energy and love for his work led to many important developments in television sound and the audio/video interface. A founding member and former president and board chairman of SPARS, Bob launched Regent Sound Studios in New York in the late '50s and helped to educate a generation of engineers dedicated to bringing quality sound to the television medium.

The TEC Awards Hall of Fame is a way we can recognize and remember lasting greatness and lifelong contributions to our industry. As the years go on we hope this collection of heavyweights will serve as inspiration to those working their way up in our field, and point the way to high achievement and meaningful careers.

Keep reading,

David Schwartz
Editor-in-Chief

Introducing the designed by ed



digital editor itors.

Who knows about the ins and outs of the editor better than an editor. So it's no wonder that Sony, the leader in digital audio, talked long and hard to editors before they introduced the latest innovation in digital editing—the DAE-3000.

In fact, for five years our engineers filtered through the requests of editors industrywide, plugging key features into the DAE-3000.

Features like multiple interface—so you can utilize the Sony family of Dash and CD Mastering recorders to achieve maximum creativity and efficiency.

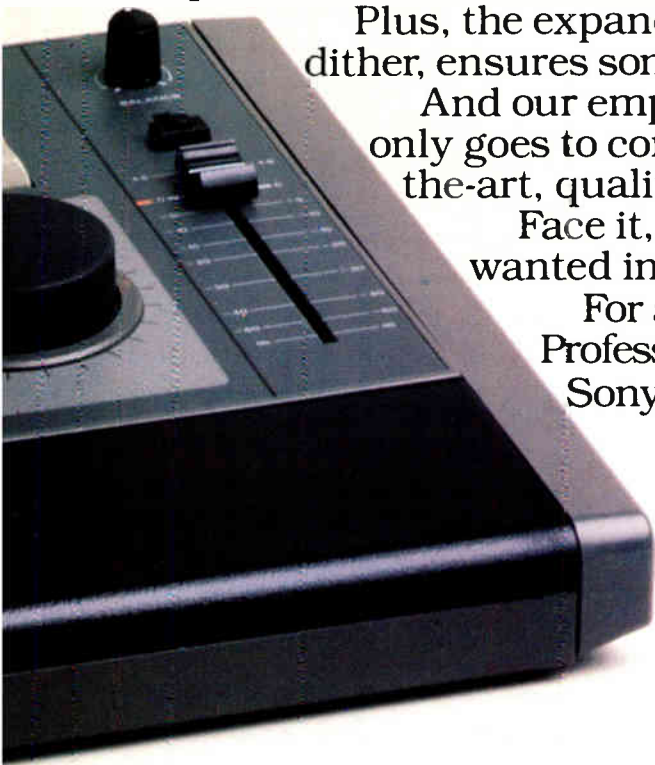
You can incorporate 16 bit stereo jog audio from the 12 seconds of digital audio memory, adjust crossfade time up to .999 millisecond, and trim edit points with word resolution to get just what you want.

Plus, the expanded digital fader with selectable dither, ensures sonic performance.

And our emphasis on software expandability only goes to confirm Sony's commitment to state-of-the-art, quality products.

Face it, the DAE-3000 is everything you ever wanted in a digital audio editor.

For a demonstration contact your Sony Professional Audio Representative. Or call Sony at 800-635-SONY.



SONY

Professional Audio

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CURRENT

Companies Announce Joint Development of Extended CD-ROM Format

Philips and Sony, in cooperation with Microsoft, have announced their agreement to jointly develop an extended CD-ROM format, called CD-ROM Extended Architecture (CD-ROM XA). This format will incorporate audio and graphics technology from the CD-I format and serve as a bridge between CD-ROM and CD-I.

The companies have agreed on a development approach for the CD-ROM XA format that includes interleaved ADPCM audio, as defined in the CD-I standard (detailed specifications for this part will be released soon), and a text/graphics screen format (to be defined).

CD-ROM XA will allow publishers to create disks that are playable not only on any suitably equipped personal computer, but also on any CD-I system. A first draft of the reference document for the complete format is planned before the end of the year, with final specifications expected in 1989.

Carillon Acquires dbx/ADC, BSR Japan

Carillon Technology, Inc., a privately owned San Bruno, CA, company, recently acquired the business operations of dbx/ADC and BSR (Japan) Ltd. Michael L. Kelly was named dbx president, succeeding A.J. Menozzi, who resigned in April. Kelly is former executive vice president for research, product development and manufacturing for Analog and Digital Systems, Inc. in Massachusetts.

The dbx production and manufacturing facilities will be moved to the West Coast and other locations, with dbx operations (marketing, sales, engineering) remaining in the Boston area. ADC, which has

been operated and managed by dbx, based in Newton, MA, has been organized as a separate company—Audio Dynamics Corporation—and will move its operations to San Bruno. Engineers at dbx will continue to design and develop products for ADC and Audio Dynamics brands.

Audio Dynamics Corporation products include equalizers, CD players and phono cartridges. Products sold under the Audio Dynamics brand include audiophile-quality stereo components. dbx is known for the development of the MTS Stereo-Television noise reduction system.

CD-ROM Conference Dates Set

The Fourth International Conference on CD-ROM, to be held March 28-30 in Anaheim, California, will focus on multimedia CD-ROM applications, according to its host, Microsoft Corporation.

"We hope to foster greater interaction between CD-ROM experts and people from related fields," says Min Yee, conference chairperson and publisher of Microsoft Press.

Registration is \$950, or \$750 if received before December 15. For conference information, contact Sherrie Eastman at (206) 882-8080.

Booth Space Available at Video Expo

Booth space is now available for Video Expo San Francisco, slated for February 14-16 at the San Francisco Civic Auditorium. More than 8,000 qualified buyers are expected to attend the three-day show. Video Expo San Francisco is Northern California's only major exhibition and seminar program for video professionals. For information on booth reservations, call (800)

248-KIPI (in New York, [914] 328-9157).

AES Schedule Announced

"A Century of Technology in the Service of Artistry" is the theme for this year's 85th Audio Engineering Society Convention to be held November 3-6 at the Hilton in Los Angeles. The four-day event will include 66 papers to be presented during nine technical sessions, 20 workshops and four off-site tours.

The technical sessions and chairmen are: "Electronic Music Session," Dr. John Strawn, Yamaha Music Technologies; "Digital Signal Processing Session," Dr. Jeffrey Borish, Euphonics; "Analog Circuitry and Signal Processing Session," Eric Benjamin, High Speed Engineering Company; "Microphones Session," Cal Perkins, Fender Musical Instruments Corporation; "Technical Council Tutorial," AES Technical Council; "Sound Reinforcement and Intelligibility Session," Dr. David Klepper, Klepper Marshall King Associates; "Audition Session," Dr. Floyd Toole, National Research Council of Canada; "Recording Sessions (I & II)," Scott Robinson, Dolby Laboratories; and "Measurement and Instrumentation Session," Dr. Gary Sokolich, Custom Sound Systems.

The Awards Banquet will be held Saturday, November 5, in the Ballroom of the Los Angeles Hilton beginning at 6 p.m. Speakers lined up for the evening are Oliver Berliner, who will speak about his grandfather, Emile Berliner, the inventor of the microphone, and Frederick Engel, a noted historian in the field of magnetic recording techniques, who will speak about Oberlin Smith, publisher of the first essay on magnetic recording.

For more information, contact the AES at (212) 661-8528. ■

In an age of disk and digital, why buy analog?

We know there are some applications where our 32-channel digital machine, the DTR-900, is the only answer. But if your business is such that you can do anything you want to do in the analog domain, and at the same time do less damage to your budget, then our brand new analog 24-channel MTR-100A may be the perfect machine for you.

When you consider that the MTR-100 will literally *change forever* the way engineers interface with audio machines, and

transport is pinchrollerless to give you the legendary tape handling ballistics of our MTR-90.

What's more, with its optional EC-103 chase synchronizer, the MTR-100 maintains frame-lock in forward and reverse from 0.2X to 2.5X play speed, and will typically park with zero frame error.

Then, there's the sound. New cylindrical-contour heads built by Otari especially for the MTR-100 result in remarkably low crosstalk and outstanding low-frequency performance. Pre-amps are located directly beneath the heads to further improve frequency response, and HX-Pro* is built-in for enhanced high frequency headroom. (An optional internal noise reduction package houses Dolby* SR/A.) Add all these features to gapless, seamless, punch-in, punch-out, which is also built-in, and your

MTR-100's sonic performance will rival, or beat any digital machine in the world.

So there you have it. With these powerful benefits available in analog, does it make sense to go digital? Sure, for some applications. But analyze your needs carefully before you buy. For many applications, a hot

analog tape machine like the MTR-100 is the right choice.

And because we can see both sides of the question, put us to work. We have information that can help you make the right decision. Call Otari at (415) 341-5900 for the "Technology You Can Trust".



Reel motors that approach one horsepower are driven by pulse width modulation amplifiers to tape speeds up to 474 ips.



The MTR-100's auto-alignment saves you hours of time by eliminating constant tweaking and re-tweaking between sessions.

that this new way will save you hours spent in non-productive time, the analog choice begins to make even more sense. You see, the MTR-100 features full Auto-Alignment that allows total recalibration of the record and reproduce electronics. This means you can compensate for different tapes in a *fraction* of the time that it previously took, and your studio is not bogged down with constant tweaking and re-tweaking between sessions.

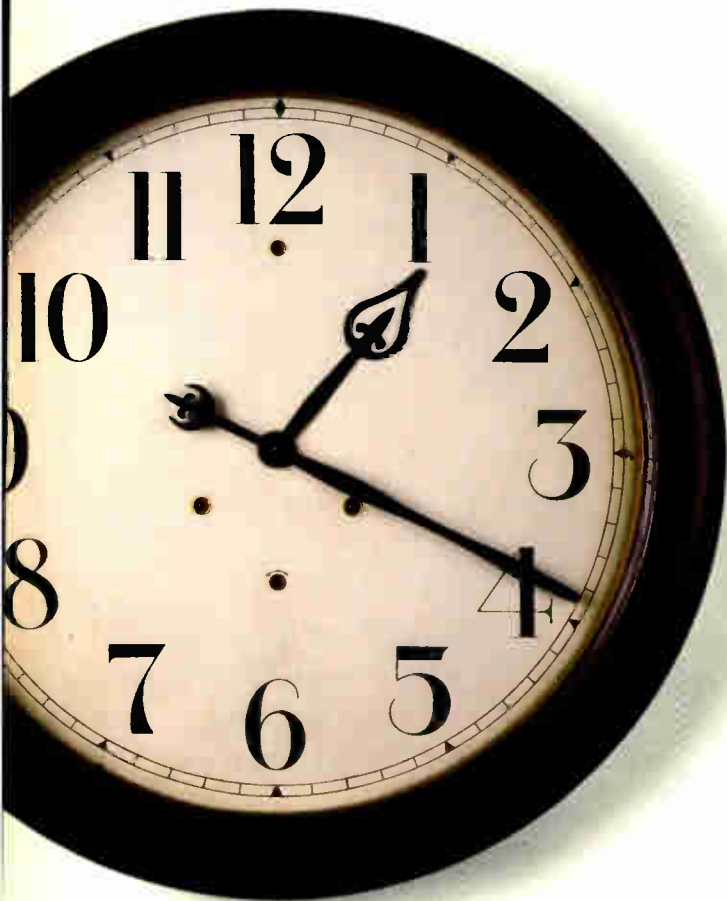
And if you think digital machines have a corner on high performance transports, think again! The MTR-100's new transport incorporates reel motors that approach one horsepower—you'll get fast wind speeds of up to 474 inches per second! Of course, the

Trademark Dolby Laboratories Licensing Corporation

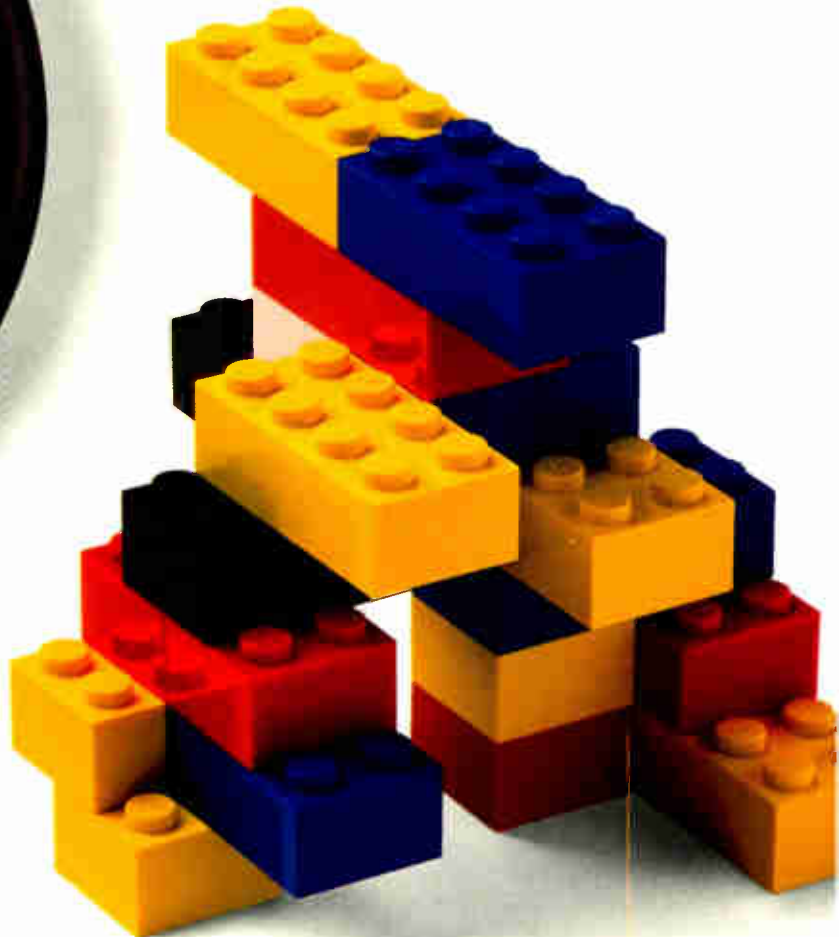


OTARI

Maybe the best argument doesn't involve



Many digital audio products are based on a closed architecture, so they're obsolescence-prone. At New England Digital, on the other hand, we've operated from day one with a different philosophy. Our products are modular, expandable and software updateable, providing an upgrade path that protects your investment.



We built the first Synclavier in 1977, which means we've been at this longer than anyone else in our industry. Today, we have more than 70 man-years of programming invested in our software code and better than 600 systems installed worldwide. And we're not about to rest on our laurels.

The audio equipment that bears the New England Digital logo—like the Synclavier[®] Digital Audio System and the Direct-to-Disk[®] Multitrack Recorder—is widely regarded as

digital audio technology at its productivity-enhancing best.

Which is a very nice compliment to us. But which, we submit, is far from the total picture.

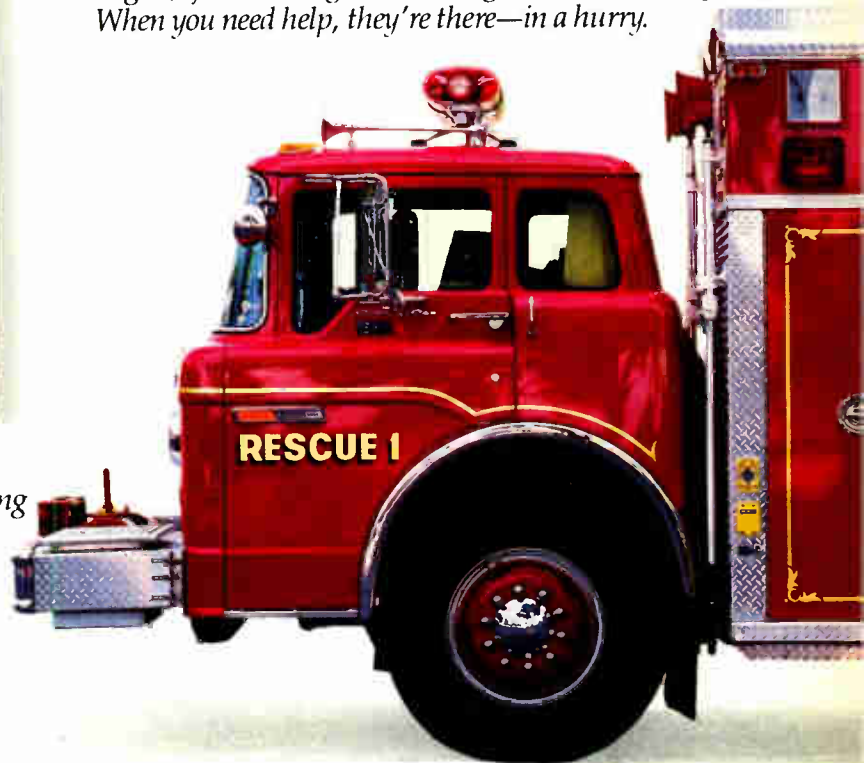
You see, beyond our commitment to remaining at the forefront of digital audio technology, there's another component to our business—a business component.

ent for our equipment our equipment.



A
B
C

Some of our competitors have a peculiar way of providing service to their customers—they send over the salesperson who sold them the equipment. We, on the other hand, have a global service staff that's among the largest, if not the largest, in the digital audio industry. When you need help, they're there—in a hurry.



We provide extensive education and training—in conjunction with Full Sail Center for the Recording Arts, at dozens of colleges throughout the world, and through a staff of product specialists whose only job is to make sure our customers master the technology.

We're talking about the things we do to make sure that the money you spend on our products is money well spent.

These aren't glamorous things necessarily. They're just

what it takes to make New England Digital customers better equipped to do their jobs.

New England Digital,
White River Junction, VT 05001.
The number: (802) 295-5800.



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Why the world's top studios overwhelmingly choose Mitsubishi digital

Of the top studios in Los Angeles, Nashville, New York and London, the overwhelming choice for digital is Mitsubishi. Why? Because the vast majority of top producers insist on Mitsubishi for their digital work. And why is that? Because Mitsubishi sounds best.

Mitsubishi machines make digital recording profitable for the studio owner. They attract more and better clientele—and command higher rates. Plus they're more productive and more reliable in professional recording applications.

New X-880 32-channel digital

Mitsubishi's new X-880 is smaller and lighter thanks to LSI technology. It uses less power and runs quieter. It's our *third* generation multi-track (we've been at this longer than any-one). And it's fully compatible with X-850 recorders, so you'll be compatible with most other top studios.

All the features of its predecessors are here and more, including improved design auto-locator and a sample accurate chase synchronizer option for 64-track lockup.

Call for a brochure or demonstration in your studio.



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INDUSTRY NOTES

The **AES Educational Foundation** announced the five recipients of its grants for graduate study in the 1988-1989 academic year. The awards, made possible by contributions from AES, Inc., *Mix* magazine's TEC Awards and private benefactors, will go to: **Robert Maher**, a PhD student at the University of Illinois; **Kenneth Blair** at the University of Surrey; **Pablo Espinosa**, a physics/audio technology student at American University; **Robert Rapley** at McGill University in Montreal; and **Eric Schuyt**, who is pursuing a Master of Music Engineering at the U. of Miami School of Music. . . **Tore Nordhal** has been named vice president and general manager in charge of operations at **Studer Revox America, Inc.** Nordhal, who previously served as president/CEO of **Rupert Neve, Inc.** before moving over to launch the **Mitsubishi Pro Audio Group**, is seen as an important part of SRA's continuing organizational changes. . . **WaveFrame Corporation** of Boulder, CO, announced the appointment of **James S. Mays** as its new president/CEO and **Steven Krampf** as senior VP, sales and marketing. Mays comes to WaveFrame from **NBI, Inc.**; Krampf is a former product manager for **Ampex Corporation**. . . New members on the board of directors at **Solid State Logic**: **Anthony David**, sales director; **Chris Jenkins**, director of product development; **Mike Kervell**, manufacturing director; and **Graham Longton**, finance director. . . **Thomas E. Mintner** will fill the newly created position of director of sales and marketing/U.S. at **Audio Precision**, Beaverton, OR. Mintner is a former GM of Studer Revox's U.S. operations. . . American technology going to Japan? **BBE Sound, Inc.** of Huntington Beach, CA, announced a licensing agreement with **Aiwa Co., Ltd.** of Japan for BBE's patented technology to be incorporated into Aiwa's audio products. . . MacMusicRoom, the world's first desktop music publishing studio for hire, will be featured at **MacMusicFest 2.0**, a festival sponsored by **Apple® Computer** and **Filmsonix, Inc.** in Hollywood.

For information, call (213) 653-0240 . . . **Michael Costanza** has been named national accounts manager at **Sony**, moving up from Eastern regional sales manager, consumer tape division. . . **Ampex Corporation**, Redwood City, CA, has appointed **Ronald Ritchie** as vice president and division manager, recording systems division. Also, **Douglas Rowan** will be the new vice president of the worldwide marketing sales and service organization . . . Again at Sony: **Steve Johnson** has been named to the new position of promotions manager, Sony Magnetic Products Company; **Terry Younce** steps in as Midwest regional sales manager, Broadcast Products Division; **Robert Elman** is the new Midwestern zone manager, **Joseph Fusco**, the Eastern zone manager, and **John Ward**, Western zone manager, Magnetic Products Company. . . **Precision Monolithics, Inc.** (PMI) of Santa Clara, a Bourns Company, has entered the high-end consumer audio market with the acquisition of neighboring **SSM Audio Products**. SSM founder **Ron Dow** will become PMI's staff director of design engineering. . . **Lexicon Inc.**, sensing major response to its Opus digital audio production system, has appointed a network of manufacturer's reps specifically dedicated to Opus in the Eastern U.S. . . **Martin Galloway**, founder of *Recording Engineer/Producer*, will consult for **Gary Davis & Associates** of Topanga, CA, broadening the advertiser's base to include public relations and marketing research services. . . On the international scene, **Goldmund SA** of Geneva recently entered the pro audio market with the purchase of **Stellavox**, the Swiss tape recorder manufacturer. The new company, known as **Digital Audio Technologies**, has announced some new products, including a line of synchronizers for the film and TV industries. . . The **1988 Digital Information Exchange** will take place November 22-24 in London, sponsored by **HHB** and **Sony Broadcast**. For information, call Nick Hopewell-Smith at (01) 381-1991. ■

SESSIONS AND STUDIO NEWS

SOUTHEAST

At **Musiplex** in Atlanta, **Brand X** has been collaborating with producer **Joyce Irby** on tracks for its next album for MCA Records. **George Pappas** engineered the sessions. . . Tony Award-winner **Jennifer Holliday** recently recorded tracks for Imani Films at **Omega Recording Studios** in Rockville, MD, with **Billy Brady** engineering. . . **Cheshire Sound Studios** in Atlanta reports that **.38 Special** completed mixes on a new album for A&M with producer **Rodney Mills**. **Edd Miller** and **Thom Kidd** assisted at the board. . . Among the plethora of artists recently in at Nashville's **Music Mill** was **Jeff Chance**, tracking for an album on the Curb label. **Harold Shedd** was producing, with **Jim Cotton** and **Joe Scaife** engineering. . . In other news from Nashville, **Sound Emporium** reports that **Ron Bledsoe** was producing tracks by **Lynn Anderson** and **Butch Baker** for PolyGram, with help from engineer **Gary Laney**. . . **Nestor Torres** was recently at **Criteria Recording Studios** in Miami to record his next LP. Production was handled by Nestor and **David Johnson**, with engineering by **Mike Couzzi** and assistance from **Dana Horowitz**. . . Nashville rock group **Jade** recorded tracks for its new album at **Pat Patrick Studios** with producer **Gary Sinz**. **Todd Carpenter** and **Rob Dalton** engineered. . . Also from Nashville, artist **Lisa Angelle** was at **The Bennett House Studios** working on a demo with engineer **Tom Harding**. . . Among the recent projects at Fort Lauderdale's **New River Studios** was a **Leon Redbone** session engineered by **Dave Barton**, with help from **John Portuondo**. . . **Richard Hinchman** and **Rick Monday** have been engineering sessions for **Loose Change**'s upcoming album at **Soundtrax Recording** in Johnson City, TN. . . **Miami Sound Studio** was recently in production with Latin duo **Hansel and**

Raul. Carlos Dias-Granados engineered and **Gina Harlow** assisted. . . Steel guitarist **Buddy Charleton** was cutting tracks for a new album with engineer **Peter Bonta** at **Wally Cleaver's Recording** in Fredericksburg, VA. . . Recent activity at **AMR Studios** in Nashville include a capella group **Take 6** adding background vocals to **Kenny Rogers**' new LP. **Jim Ed Norman** was producing with **Eric Prestidge** engineering, assisted by **Daniel Johnston**. . .

NORTHEAST

Peter Gabriel used the New York City-based remote recording company **Effanel Music** facilities and personnel for the final portion of recording and mixing the score for **Martin Scorsese**'s controversial *The Last Temptation of Christ*. . . At **Pyramid Studios** in NYC, songwriter **Rosanne Soifer** teamed up with producer **Frank Doyle** for the recording of two songs, one to be used for the upcoming film, *On The Make*. . . **Gayle King** and **Mike Costanzo** produced a solo record for singer **Karen Diggs** at NYC's **Sound Design** studio. . . Guitarist **Larry Coryell** and songwriter **Jim Webb** recently collaborated on a project at **Giant Sound** in New York. **John Wolfson** and **Jeff Cox** were behind the board. . . Canadian artist **Hugh Ball** was recording his debut album at NYC's **Record Plant**, with help from producer **Yank Barry** and engineer **Tom Swift**. . . Local band **The Chasers** were finishing their new album at Philadelphia's **Studio 4**, with engineering help from **Jim Hinger**. . . NYC's **D&D Recording** saw **Madonna** working with producer **Patrick Leonard** on several songs for her next album. **Kieran Walsh** was engineering. . . The **B-52's** visited New York's **Platinum Island** studios recently to cut tracks for their next LP. Producer/engineer **Carl Beatty** was at the SSL while **Oz Fritz** assisted. . .

Producer **Justin Straus** has been working on overdubs for the remix of "Nothing" by **Depeche Mode** at **I.N.S. Recording** in New York, with **Gary Clugston** at the board. . . At **Normandy Sound** in Warren, RI, **Marcus Lewis** recorded and mixed his new CBS LP, produced by **Dan Serafini**, with **Tom Soares** at the console and **Jamie Locke** assisting. . . **Mirror Sound Studios** in Cinnaminson, NJ, completed work on a Roadrunner Records release by **Pagan Babies**. . . **Force Field's Dave Iglar** and **Shari Richards** were working on an album project at **Gamut Productions** in Latrobe, PA, with engineer **Robin Leachman Baluh**. . . At **House of Music** in West Orange, NJ, **Richard Gottehrer** was producing an upcoming LP for artist **Christine Lidon**, with **Carl Beatty** engineering, assisted by **Nelson Ayres**. . . Recent remote recordings by engineer **Steven Remote**'s Flushing, NY-based **ASL Mobile Audio Unit** include a **Beach Boys** concert in Groton, CT, for Brother Records. . . On New York's Upper West Side, **Evergreen Recorders** has been booking time with singer **Theresa Davis**. **Noel Scott** was producing the solo album project, with help from engineer **Alan Henry** and assistant **Josie Lynn**. . . Producer **Paul Simpson** was at **Quad Recording Studios** in NYC working on **Rick James**' latest single for Warner Bros. Engineer **Jim Lyon** was assisted by **Robbie Norris**. . . In Jersey City's **Quantum Sound** recently were the **Del Fuegos** working on their new album for Slash/Warner Bros. **Daniel Ray** was producing, with **Mark Pawlowski** engineering and **Steve Sisco** assisting. . . Island/Megaforce recording artists **Anthrax** completed mixing their forthcoming album at New York's **Electric Lady Studios**. **Mark Dodson** produced, **Alex Perialis** engineered and **Bridget Daly** assisted. . . Producer **Steve Addabbo** has been at **Baby Monster Studios** in NYC working with **Eric Andersen** on his upcoming album

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... **Avi** was recently at **Power Plant Recording Studios** in North Bethesda, MD, to wrap up a **Genesis** package. . . At **Oasis Music** in NYC, **Ringo Starr** was recently working on a new children's TV series, *Shining Time Station*. The music was produced by the series' music director **Steve Horelick**, along with **Daniel Shklair** and **Larry Wolf**. **Peter Darmi** was at the console. . .

NORTH CENTRAL

Radio Braille mixed their upcoming EP at **Sound Recorders/Kansas City**, with co-producers **Joel** and **Victor Hahn**. "The Dude" was at the board. . . Word from Lake Geneva, WI, is that **Adrian Belew** has been at **Royal Recorders** working on his latest effort, with engineering help from **Richard Denhart**. . . Engineer **Jerry Soto** helped blues harmonica legend **Carrie Bell** record his latest album for JSP Records at **Soto Sound** in Chicago. . . At **The Recording Workshop** in Chillicothe, OH, **Dan Smart** engineered and produced an EP for **Scales of Justice**. . . Canadian classical guitarist **Liona Boyd** was at **Overture Recording** in Novi, MI, recording duets with guitarist **Lee Dyament** for his upcoming debut album, produced by **Rick Cioffi**. At the board was **Jade-the-Blade**, assisted by **Mary Stuart-Santos** and **Laura Santodonato**. . . At Chicago's **Seagrape Recording Studios**, final mixes were completed for the latest single by Latin band **Rima Zinko**, with engineering guidance from **Tommy White**. . . **Scharren Studios** in Toledo, OH, recently finished tracking on an album by Select Records' recording artists **Damien**. Engineering the sessions were **Steve Scharren** and **Stephen Budd**. . . **Sam Fishkin** was recently at Chicago's **River North Recorders** laying tracks for the new group **Nectoh**. . .

NORTHWEST

At **Granny's House** in Reno, **Sid Griffin** and **Billy Bremner** have been working with British producer **Neill King**. . . **Mofa and The Bro** were recording their latest LP at Seattle's **Steve Lawson Productions**, with engineer **Brett Eliason**. . . At **Mobius Music** in San Francisco, bassist/composer **Michael Manring** recently cut tracks for his new Windham Hill release. **Jane Sciolieri** assisted engineer **Oliver Di Cicco**. . . A stable of Windham Hill re-

ording artists recently worked at San Francisco's **Different Fur Recording** on a second *Winter Solstice* album (all digital) for the label. **Will Ackerman** and **Cookie Marengo** produced the project with **Stephen Hart** engineering. . . Guitar wunderkind **Marty Friedman** has been at **Prairie Sun Recording** in Cotati, CA, producing the second album by Las Vegas-based band **Apocrypha**. **Steve Fontano** has been handling the engineering chores. . . **Axis Power** was in **Studio Center** in San Jose, CA, mixing tracks for their upcoming debut album with producer/engineer **Jerry McReynolds**. . .

SOUTHWEST

The Corpus Christi-based group **The Urge** was at Dallas' **Crystal Clear Sound** cutting new tracks, with **Keith Rust** producing and engineering. . . **Wayne Watson** is back at Houston's **Rivendell Productions** with **Paul Mills** of Ars Musica working on his latest album. . . Among recent projects at Houston's **Digital Services Recording** was a set of vocal overdub sessions for **Placido Domingo's** new Christmas album. **Dick Carter** produced, with **Dick Bogart** engineering. . . **Street Toyz** visited **Planet Dallas** to record their next release, with **Rick Rooney** engineering the sessions. . . **Soundworks Recording Studios** in Las Vegas recently recorded the theme song for the upcoming film *God Won't Tell*, starring **Redd Foxx**. The song was written by **Terry Donahue** and arranged and produced by **Nick Thorpe** and **Tom Lyons**. . .

SOUTHERN CALIFORNIA

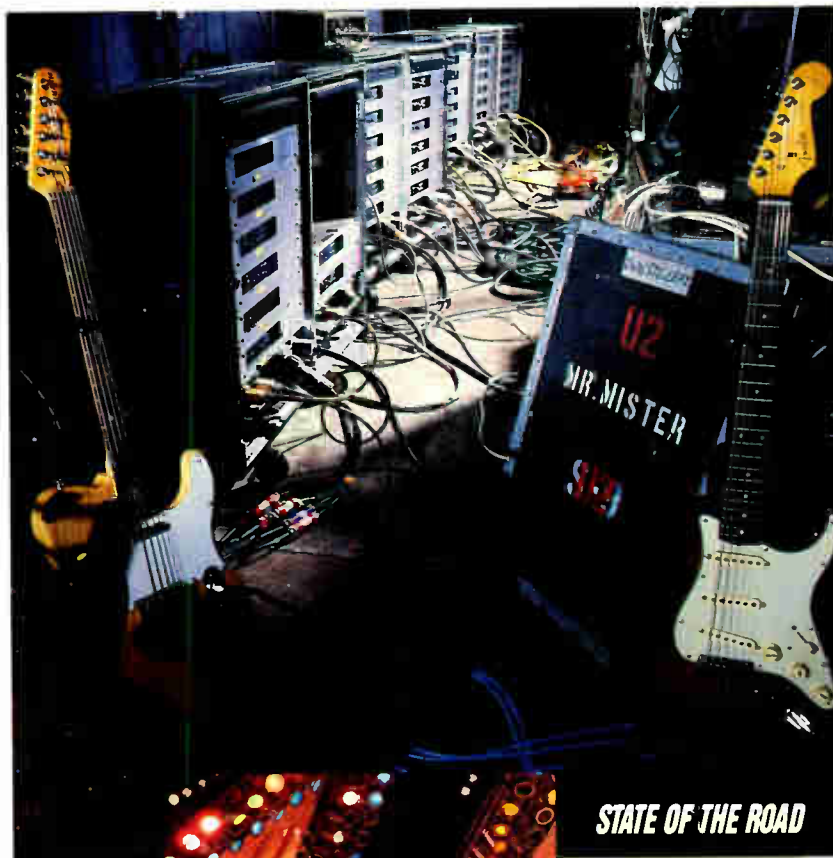
Action at **Conway Recording Studio** included **Tony Joseph** and **Larry Robinson** post-producing and remixing a single for **The Boyz**. **Gerry Brown** ran the board with assistance from **Rob Von Arx** and **Gary Wagner**. . . Among the recent clients at **Smoketree Productions** in Chatsworth, CA, were Warner Bros. artists **Big Country**, with **Peter Wolf** producing and **Brian Malouf** engineering. . . L.A. jazzers **Vocal Point** recorded basic tracks for their new record at **41-B Studios**, with **Frank Sacco** producing and **Bruce Jackson** engineering. . . Hitmaker **Michael Masser** was producing tracks for **Natalie Cole's** upcoming album at **Hitsville Studios** in Los Angeles. **Rus Ter-**

rano engineered the sessions. . . At **Preferred Sound** in Woodland Hills, CA, **John Stronach** was producing and engineering for the band **Big Business**, with assistance from **Scott Campbell**. . . Island Records artist **Leslie Drayton** was at Hollywood's **Galaxy Sound Studios** working on his new project, with engineer **John X** at the board and **Bill Zalin** and **Spence Chrislu** assisting. . . Burbank's **Red Zone Studios** saw **Madam X** completing a new Atlantic LP with producer **Bernadette Cooper** and **Gerry Brown** at the console. . . **Alphonse Mouzon** has been at Burbank's **Take One Recording** working on his next release with engineers **John** and **Carol Kliner**. . . Over in North Hollywood, sax player **Bill Bergman** finished recording and mixing his second album at **Kingsound Studios** with **Eddie King** engineering. . . Engineer **Richard Rosing** was working with composer **Parmer Fuller** on three songs for the upcoming motion picture *Saturday the 14th Strikes Again* at **Genetic Music** in North Hollywood. . . Producer **Mitchell Froom** was recently at Hollywood's **Sunset Sound Factory** working on **Tim Finn's** album for Capitol Records. **Tchad Blake** engineered with **Mike Kloster** assisting. . . **Crosby, Stills and Nash** were at **Devonshire Studios** in North Hollywood doing vocal overdubs with engineer **Stanley Johnston**, assisted by **Larry Goodwin**. . . Producer **Richard Perry** worked with **El De Barge** on a release for Warner Bros. at **Hit City West** in L.A. . . **Eddie Money** was recording his newest album for CBS at **Rumbo Recorders** in Canoga Park, with **Richie Zito** producing and **Phil Kaffel** engineering. . . Work was in progress on a Virgin Records album by **Julian Lennon** at **Skip Saylor Recording**. **Pat Leonard** was producing and **Brian Malouf** was engineering the sessions. . .

STUDIO NEWS

L.A.'s **Soundcastle** signed a contract with KRK Monitoring Systems for a custom, 4-way active monitoring system as their main studio monitors. . . Hawaii's newest recording facility is the 24-track, Harrison-equipped **Audio Resource** in Honolulu. . . Detroit-based **Ron Rose Productions** recently opened a fifth facility, which features a 35-input NEOTEK Elite console, Dolby SR and full video post capability. . . **Big Guy Studios**, designed and built by Technical Service Specialists, has recently been completed. The new 24-

track facility is located in Putnam County, New York. . . Among the studios that have recently installed Amek's G2520 music recording and post-production console are **James Guthrie's Slippery Studios** in L.A., **Total Access Recording Studios** in Redondo Beach, CA, and the Chicago-based **Moody Broadcasting Network** . . . **Amos Studio Designs** reports completing reconstruction of **M'Bila Recording Studio** in Hollywood. . . Earlier this year, New York's **Marathon Recording Studios** installed a 60-input Neve V Series with Necam 96 moving fader automation in Studio A, and a 32-input Neve 8232 console in Studio B. . . The Glendale-based **Studio On Wheels** has added a second remote truck. The new vehicle boasts a 16x8 ft. air-conditioned control room with an Amek console and Ampex MM1200 machines. . . **Studio A** in Dearborn Heights, MI, recently installed a Synclavier/MIDI 24-track system and an array of video equipment. . . **Memphis Sound Productions** recently announced installation of a 48-input Neve V Series console with Necam 96 moving fader automation. . . After 17 years on W. 46th Street, **Sear Sound** has moved to new, larger headquarters at 353 W. 48th Street, NYC. Formerly the home of **The Hit Factory**, the facility includes a Neve 8038 console and an impressive array of equipment. . . **Odyssey Sound Studio** in Long Branch, NJ, has installed a Soundcraft TS 12 console with a Sony JH-24 24-track machine and Dolby SR noise reduction. . . NYC's **Skyline Studios** announced the recent opening of its third 24-track room, a MIDI suite equipped with a 36-input Amek 2500 Series console and a large selection of samplers and synths. . . **Bertelsmann Music Group Studios** has taken delivery of six Sony MXP 3020 digital recording consoles, bringing the total number to eight Sony 3000 series consoles at its NYC facilities. . . Other studio news from the Big Apple includes the installation of Digital Creation's Diskmix moving fader automation system on the NEOTEK Elite console at **Sound On Sound Recording**. . . **Neal Schon** has purchased a 36-input Soundcraft TS 12 console for his **Gush Studio** in Oakland, CA. . . Other recent installations of Soundcraft consoles include **Logos Productions** in Clayton, OH (TS 12), and **Nickel Recording** in Hartford, CT (6000). . . **Sabella Recording Studios** in Roslyn Heights, NY, recently upgraded to a Neve 8068 console. . . Hollywood's **Acme Sound Works** recently bought a Tascam M600 mixing console for sound effects assembly to complement its 24-track room.



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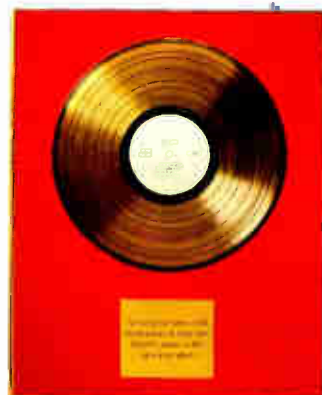
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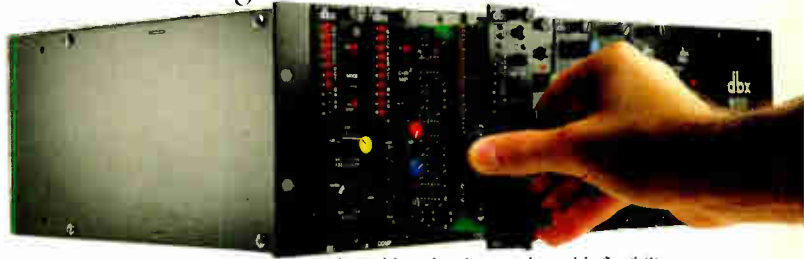
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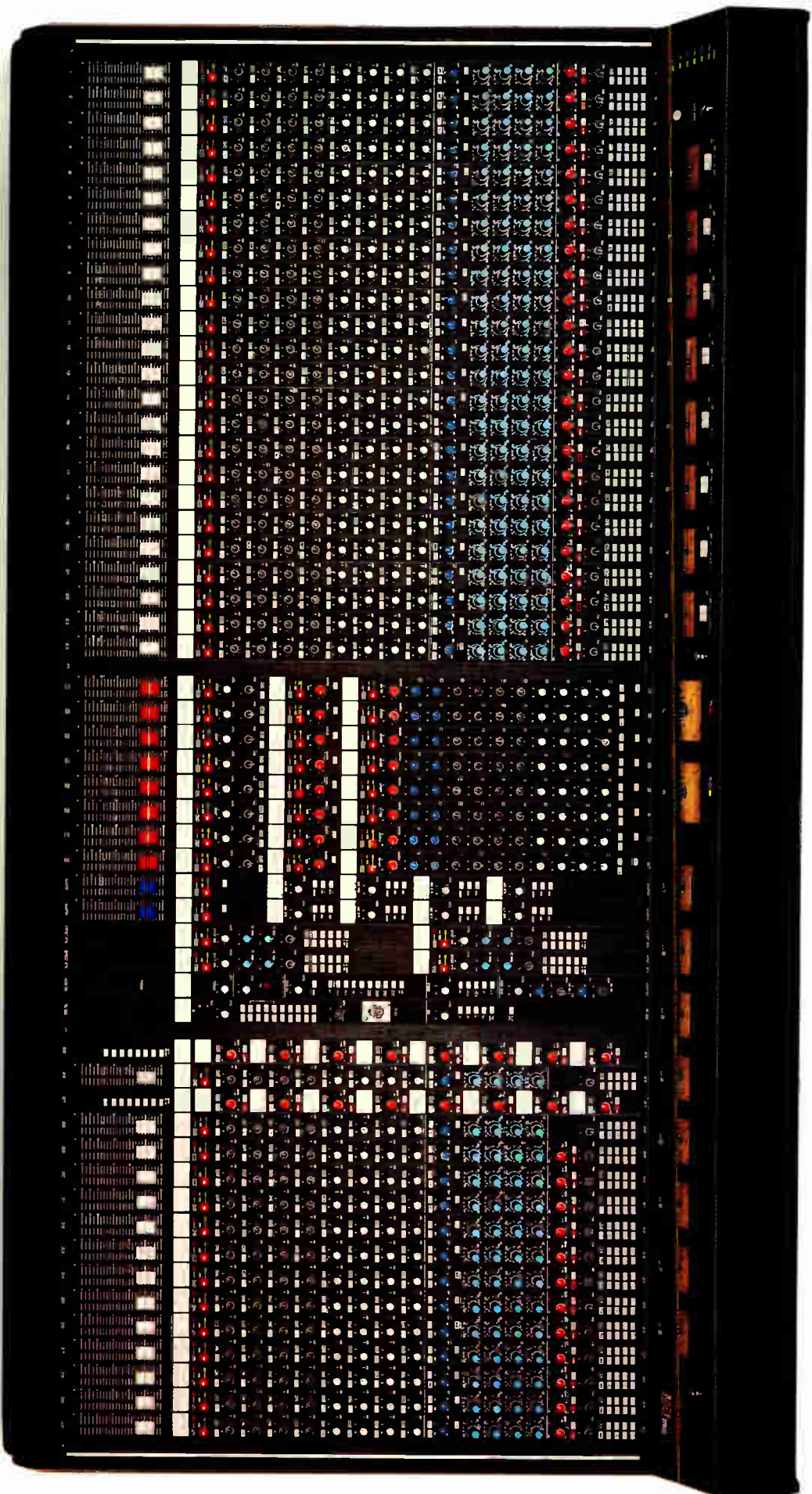
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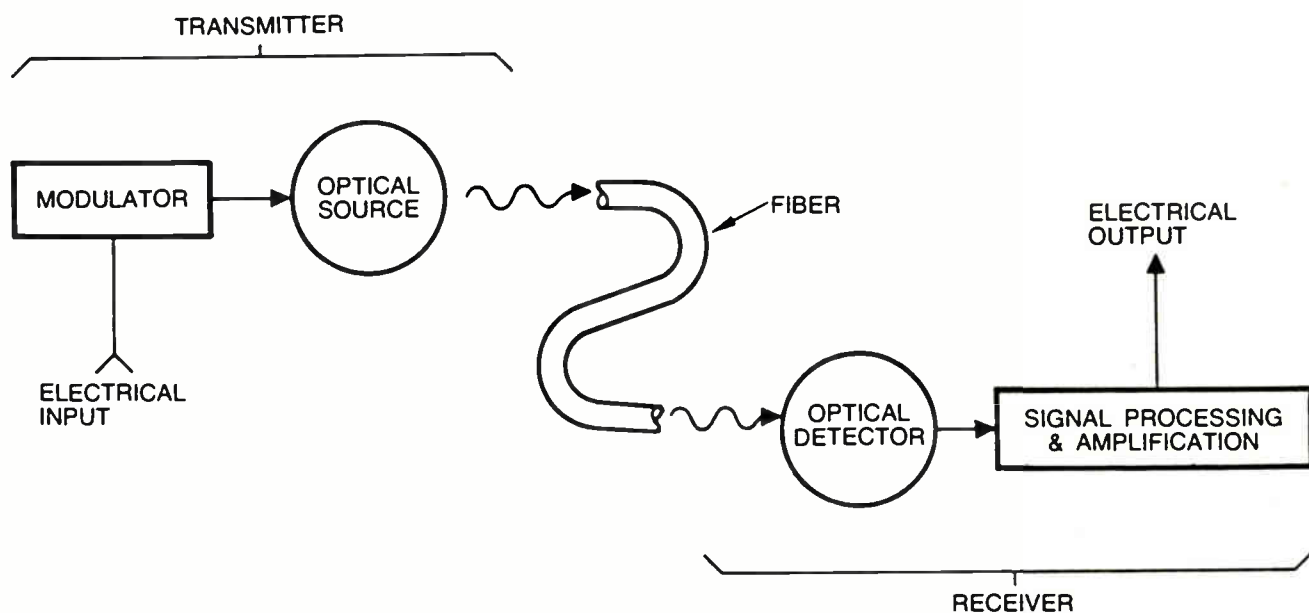
Panasonic
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by Ken Pohlmann

THE REALITIES OF FIBER OPTICS

Over the past 100 years or so, audio engineering has become synonymous with wires. It is wire that literally binds together the electrical components to make audio devices, wire that binds together audio devices to make audio systems, and wire that binds together audio systems to make audio networks. That great rite of passage, that

ductors and turned to fiber optics to convey their information. For the same reasons, the alternative of fiber optics presents itself to the audio environment. Both off-the-shelf systems and proprietary designs assembled from discrete components can be employed to build a fiber optic system offering a number of advantages over wire.



first test of audio manhood (and womanhood), is the soldering together of wires. From the first phonograph to the 48-track digital recorder, it is wire that conveyed the signal. Without wire, there would be no audio.

Today the world is a far different place from that improved upon in Menlo Park. It is an environment of high-speed computing and software-intensive transmission. Because of the need for speed, large-scale networks have abandoned metallic-based con-

In fact, fiber optics is superior to wire in almost every respect important to signal transmission: complete electromagnetic interference immunity, low attenuation, high crosstalk, high bandwidth, high data rates, low propagation delay, low bit-error rates, small size, light weight and ruggedness. Because fiber optic cables are insulators, ground loops are avoided. In particular, bandwidth is fiber optic's forte; transmission rates of 1 gigabit/second are common, and experimental sys-

Basic Fiber Optic System

tems have achieved rates of 27 gigabits/second over a 58-kilometer fiber. Put into perspective, that's the equivalent of over 400,000 simultaneous telephone transmissions over a single hair-thin fiber.

With electrical wire, information is transmitted by means of electrons. With fiber optics, photons are the carrier, and a signal is conveyed by sending pulses of light down an optically clear fiber cable. The purity of the glass is such that light may pass through 15 miles of it before the light's intensity is halved. In comparison, one inch of window glass will halve light intensity. Because its frequency is thousands of times higher than standard electrical signals, fiber optic communication is not affected by electromagnetic and radio frequency interference, lightning strikes or other high-voltage and other conditions hostile to electrical signals. For example, fiber optic cable can be run in the same conduit as high-power cables, or along the third rail of an electric railroad. Moreover, because fiber optics does not generate a flux signal, it causes no interference of its own.

Any fiber optic system, whether linking continents, cities or supercomputers, consists of three parts: an optical source acting as an optical modulator to convert an electrical signal to a light pulse, a transmission medium to convey the light and an optical receiver to detect and demodulate the signal. The source may be an LED, laser diode or other component. Fiber optics provides the medium. Positive-intrinsic-negative (PIN) photodiodes or avalanche (APD) photodiodes may serve as receivers.

In general, low-speed systems use LEDs and PINs, with TTL interfaces, whereas high-speed and/or high-bandwidth systems employ lasers, single-mode fiber and APDs, with ECL interfaces. Laser sources are used for long distance applications; however, their sensitivity to temperature necessitates careful thermal design. The laser sources may be communication laser diodes, distributed feedback lasers, or may be very similar in design to those used in compact disc players. Although the low-power delivery available from LEDs limits their applications, they are easy to fabricate and useful for short-distance, low bit-rate applications

when coupled with PIN photodiodes. Over longer distances, LEDs can be used with single-mode fiber and avalanche photodiodes. Similarly, selection of the type of detector often depends on the application. Data rate, detectivity, crosstalk, wavelength, available optical power and price are all factors.

As with electrical systems, the transmission loss of fiber optic cable necessitates repeaters to boost the signal, but the transmission distance is much greater with fiber optics—100 miles or more. New fluoride fiber may extend the range to thousands of miles before a repeater is needed. In any case, because fiber's losses do not depend on modulation bandwidth, there is no need for equalization. Although their bandwidth is very high, the physical dimensions of the fibers are small. Fiber size is measured in microns, with a typical fiber diameter ranging from that of a human hair to a millimeter. Even with protective sleeving, 20 or 30 individual fibers can be housed in a half-inch diameter cable.

Glass fibers may be fabricated through two different processes: the inside, or modified chemical vapor deposition (MCVD), or outside vapor deposition (OVD). In the MCVD process a pre-form is made by spinning a quartz tube on an optical lathe. As the tube is spun, gas vapors of a reactive composition are fed into the tube and burned. Soot is produced and deposited on the inside walls of the tube, building successive layers with the desired refractive index profile. Following deposition, the soot is sintered, and the tube is collapsed to create the pre-form. In the OVD process, the soot is deposited onto the core material, building up outside layers prior to sintering into a pre-form. In either case the pre-form is placed vertically in a drawing tower, heated, pulled to create an optical fiber and coated with a protective layer.

The glass fiber itself is simply a light pipe that traps entering light. It is a glass or plastic rod, called the core, with a reflective covering, called the cladding, to reflect light back toward the center of the fiber, and hence to the destination. The cladding is comprised of a glass or plastic material with an index of refraction lower than that of the core; this boundary creates a highly efficient reflector. When light traveling through the core reaches the

cladding, the light will be either partly or wholly reflected back into the core. If the angle of the ray with the boundary is greater than a critical angle (determined from the refractive indices of the core and the cladding), the ray is partly refracted into the cladding and partly reflected into the core. If the ray is incident on the boundary at an angle less than the critical angle, the ray will be totally reflected back into the core. This is known as total internal reflection (TIR). Thus, all rays at incident angles less than the critical angle will be guided by the core, affected only by absorption losses.

Most fibers are best suited for operation in visible and near-infrared wavelength regions. Single mode systems employ fiber in the 1,300 and 1,550 nanometer ranges. Multimode systems use fiber optimized in the 800 to 900 nanometer range. Single mode systems are used in standard applications such as telecommunications systems, while multimode systems are most useful for special applications where a second wavelength is needed for wavelength division multiplexing. In general, light with longer wavelengths passes through fiber with less attenuation.

The amount of optical power loss due to absorption and scattering is specified at a fixed wavelength over a length of cable, typically 1 kilometer, and is expressed as decibels of optical power loss per kilometer (dB/km). Fibers are optimized for operation at certain wavelengths. For example, less than 1 dB/km loss is attainable in 50/125 micrometer multimode fiber operating at 1,300 nanometers, but only 3 dB/km (50% loss) is attainable for the same fiber operating at 850 nanometers. When properly engineered, the result is a light guide perfectly suited to transmit signals, such as the digital audio variety.

We'll continue this discussion next month. For now—just a warning—watch out, all you electronic signals. Your job may soon be lost to photonics. ■

Ken Pohlmann is an associate professor of music and heads the music engineering program at the University of Miami in Coral Gables. He is author of Principles of Digital Audio and The Compact Disc Handbook, and a consultant to the digital audio industry.

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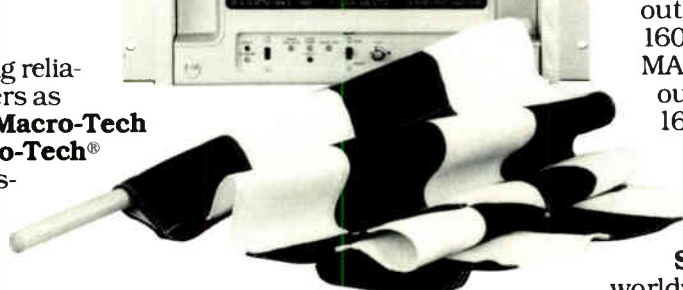
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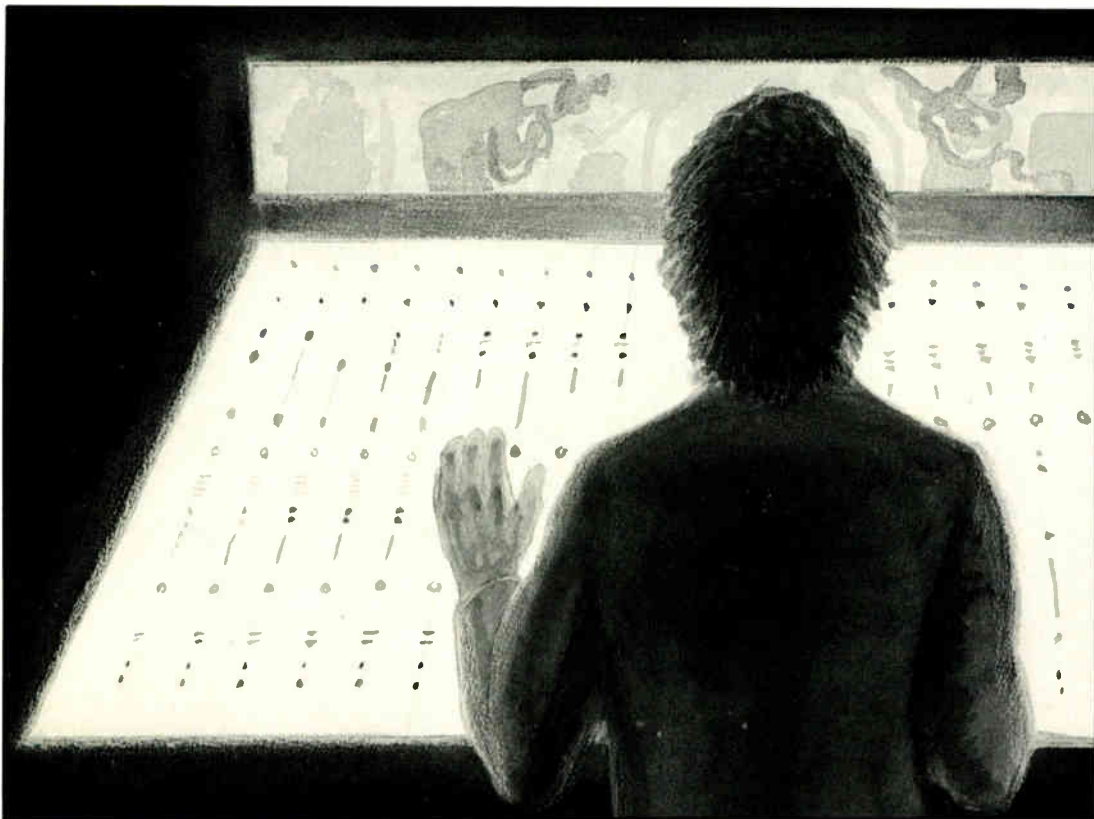


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World Radio History

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– Console Technology

It's no surprise who the innovator

Without a doubt, Yamaha is one of the biggest names in the music industry. Our reputation for being on the leading edge of technology is especially amplified in our new line of digital audio products.



*DMP7D
Digital Mixing Processor.*

Let's start with the DMP7D. Also known as a digital mixing processor. Better known as a landmark in sound technology. From input to output, the DMP7D is fully digital. It's MIDI-controllable. And its applications include mixdown of digital multi-track recordings, digital track

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Our latest breakthrough in



SPX1000 Signal Processor.

digital signal processing is the SPX1000. It's packed with 40 professional effects and effect combinations preset in ROM. Another 60 of your own creations can be stored in RAM. In addition to 20 KHz bandwidth on all effects, the SPX1000 boasts a new reverberation algorithm and dramatic new panning effects.

Among digital equalizers, the Yamaha DEQ7 is unequalled. There's both digital and analog I/O.



in digital audio technology is.

It's loaded with 30 different EQ and filter configurations, in stereo.

And the most unforgettable feature is its 60 user-programmable memory locations.

For clear communication, the FMC1 Format Converter allows direct transfer of Yamaha digital output signals to other standard digital formats. So you eliminate the need for D/A and A/D conversion, while maximizing the sound quality of the final recording. If you



AD808 Format Converter.



DEQ7 Digital Equalizer.

need to convert digital to analog,

there's the DA202. Or, if you're going from analog to digital, the AD808

will get you there. Either way, you achieve sound that'll please even the most discerning ear.

Once again, it's easy to see when it comes to innovation, there's nothing new about the name Yamaha.

Yamaha Corporation of America, Professional Audio Division, P.O. Box 6600, Buena Park, CA 90622. In Canada, Yamaha Canada Music Ltd., 135 Milner Avenue, Scarborough, Ontario M1S 3R1.

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THE FAST LANE

needs of those in control or in the tower.

The few remaining mechanical gauges that have traditionally been augmented with inset mechanical digital displays now have display windows that, while capable of displaying numeric data in a clean, simple fashion, instead use large, elaborate means to *emulate* the mechanical rollover of the older system.

The pilot or copilot on most of these flights had the interesting habit of tapping on those pitiful few remaining mechanical gauges with his fingernails

The human band and nervous system is much happier operating in a feedback loop.

during preflight check. Nothing was wrong with the gauges; they just wanted to tap them. The pilot's true soul has a bit of trouble with the fact that almost all of the real, physical avionics he is used to have been taken away, only to be replaced with electron guns and phosphor-coated glass.

If you tap a mechanical gauge just right on the glass window, it jumps just a bit, and surprisingly often, lands in a slightly different position. This, as racers and pilots know, is *extremely* satisfying. If you tap a CRT display, you get a dull plink sound, nothing at all happens and you look *extremely* stupid.

F-16s have an even more extreme virtual environment. The well-known heads-up display system now shows

not only the same old stuff, such as altitude, air and ground speed, climb angle, remaining armaments and target-lock status, but a plethora of new features as well.

Using ground telemetry, the actual flight, bomb or strafe paths are displayed in the sky in front of the pilot. It is seen as a video game-style violet 3-D channel (sort of like a digital bobbed course), winding in front of you, floating in the sky ahead. Not only do you know where you are in the maneuver at all times, but you have an excellent, intuitive concept of what is going to be happening later, and how much later. If you start to drift from the center of the channel, you can see it instantly, without taking your eyes from the sky, and you or your computer can correct it in time.

This cartoon animation also shows a color outline of the ground below, buildings and highways included, weather above, and other air traffic superimposed right over the real things. Why, you ask? In daytime, it may be used to change the color of a target building from the usual white to red. This makes it pretty easy to identify. At night, or in fog or clouds, the actual visibility may fade to zero, but it makes no difference because the color outline remains. You simply fly in a cartoon instead of the real thing.

At least two automobiles will have heads-up displays available next year, but low-altitude bomb run (blackout curve pullout) displays will probably not be offered.

Several shopping centers already have terminals with touch-sensitive screens to help people find the right store for the products they want.

Recently I have even seen fascinating systems for designing makeup in several department stores. These things are quite fun. You sit down in front of one of these machines, smile, and your face appears on the screen. Then, using a palette and digital brush, you apply *virtual* blush, lipstick, eye shadow and whatever else to your *virtual* face. Then you see how wonderful you look, you pick up the 15 containers of various face chemicals that the computer says you need to duplicate the effect in the real world, and you give them all your money. America! What a country!

Well, this kind of thing is everywhere now. It is virtually a virtual world. And what do WE have in our

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THE FAST LANE

industry today? We have the only thing cooler than virtual interface: *talk* about virtual interface. Why?

Companies have been talking about showing virtual consoles, even virtual studios, for several years now, but nothing significant has appeared yet. There are both technical and conceptual problems that must be dealt with before we can make the jump from the chains of reality to the freedom of virtual environments and beyond.

The first is probably the loss of holistic overviews. It simply is not the same thing to look at a 19-inch color monitor as it is to face a 10-foot wide recording console when you are just "getting the feel of the setup."

Panning across the imaginary console surface is not very satisfying, and showing little tiny knobs is pretty silly, because you end up spending all your time with your nose against the glass.

The answer is a display technology that has enough high-resolution color surface to give you the power to reach out and touch someone's input attenuator without searching for it.

This brings up the next point: human interface problems. If we could develop a display technology that is capable of yielding a satisfactory view of the machine or system in emulation, how would we turn the damned knobs?

The human arm is simply not structured for light pens or any other system of continuous pointing to a vertical surface. While several systems are currently being researched for direct eye control (or even direct brain control) of on-screen faders and buttons, this may or may not be the optimum solution for this application.

The human hand and nervous system is much happier operating in a feedback loop. Take away the feel, and you can lose the whole deal. The pilot taps his gauges, and the engineer lifts the faders off the bottom and sharply returns them from time to time to be sure they are really zeroed.

On the other hand, if we design a system that has the advantages of a truly virtual display, in particular the ability to change totally the entire control surface at will, we must unfortunately give up tactile feedback. We had

better get a lot in return.

Several existing attempts at interfacing are already showing their weaknesses. The popular multiple page concept is proving to be a very poor answer for insufficient display area. There also seems to be a problem with giving somebody one knob and telling him to assign it to anything that he wants to change. Too slow, too non-intuitive.

Further, there are real technical limitations today that must be overcome, such as screen size, update and pan speed, and the type of general computer horsepower needed to handle 40 channels of DSP.

The inability to integrate arbitrary third-party equipment is another area that has to be addressed before the virtual studio can become a truly viable reality (or virtual emulation of a reality).

As the technical problems are overcome (time and capitalism should do this in one year), the conceptual ones must be faced, or we will find that there is more technology helping us drive to work than there will be helping us after we get there.

It is my guess that the first realistic shot at a functional virtual studio is going to be a large, very high-res color monitor system, set up a few degrees off horizontal, as a glass desk, with the entire surface touch-sensitive. Somebody is going to have to figure out how to make space underneath for the operator's legs, but the proper view angle puts the CRT neck out in front a bit anyway.

You could run the film you are scoring right in the middle of the screen if you want. It would definitely be fun to touch it in the right place and have *your* last mix, along with *your* special custom rack of special effects devices magically appear just as you left them last week. You could even clean the screen in an instant with Windex.

All actual converters and hardware (along with the actual disk recorders) will be in some other small, cold room, with one nice little high-speed fiber optic bundle connecting the control room to the processing room.

It seems a simple enough idea—sometimes the most simple approach really is the best. I am ready and waiting. ■

Mr. St. Croix is actually ready and waiting for virtually anything.

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BRYSTON



*Bryston Model
2B-LP PRO XLR*

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BRYSTON design philosophy incorporates three general concepts.

1. Musical accuracy
2. Long term reliability
3. Product integrity

MUSICAL ACCURACY

Musical accuracy is reflected throughout all Bryston power amplifiers and includes the necessity for wide-band transient accuracy, open loop linearity ahead of closed loop specifications, and power supply design as an integral part of the overall sonic and electrical performance of a power amplifier.

We have found that a simple carbon film resistor can contribute more static distortion to a signal than the entire remainder of the amplifiers circuitry combined. We discovered that some parameters of transistors must be controlled as much as 1000 times more closely before their contribution to audible distortion is rendered negligible.

We discovered that under certain actual conditions of speaker loading, amplifiers were incapable of yielding high-power transients without distortion.

Each of the various steps or stages in every Bryston amplifier, from the input section to the output section, without exception, are designed to optimize the musical experience.

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WE consider this criterion to be exceedingly important. We have applied techniques and materials in our everyday construction of electronic equipment more typically utilized in the military and aerospace industries.

All components used in Bryston power amplifiers are specified for continuous duty at maximum power, with typical safety margins of 250%.

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

Following the burn-in period, the amplifiers are monitored for DC bias stability for approximately another full day. At this point, they are returned to the test bench for another complete checkout of all operating parameters and functions, at which time a test sheet is made, and included in the packing with the unit.

As may be seen, Bryston takes very seriously the correct functioning and long term reliability of its products.

INTEGRITY

BRYSTON contends that the term 'best' should apply to the honesty, pride and courage with which we conduct our business, as well as to the performance of our products.

For this reason, you will not find Bryston's products being cosmetically "updated" on a regular basis merely in order to keep the customer's interest in something 'new'. If we make a change in the circuitry, it will be because, and only because, it yields a worthwhile performance or reliability improvement.

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by Mel Lambert

CONNECTIVITY & NETWORKING

AN AES CONVENTION PREVIEW

It's that time of year again. This month we get to spruce up our sharp-looking apparel, dust off those comfortable shoes, fall into planes from every part of this noble country and then stay up talking about things audio into the late hours. Yes, indeed, it's AES Convention Time!

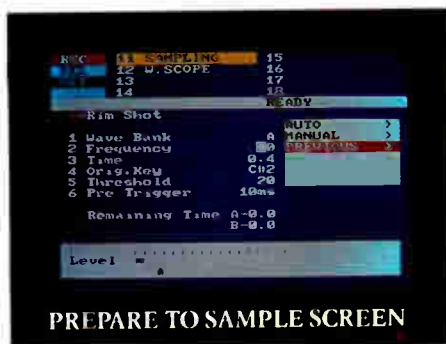
I always look forward with great anticipation to the Audio Engineering Society's annual fall fest. If only because of the opportunity it affords us to catch our breath and inwardly reflect on the kinds of rapidly evolving technology that'll be finding their way into our recording and production facilities, or with which we'll be handling audio tasks out on the road. Dusting off the trusty crystal ball, I'd like to speculate about the primary themes and influences I expect to encounter at the forthcoming convention in Los Angeles.

Small, for certain aspects of the audio industry, can definitely be beautiful.

How are these systems and peripherals going to "talk" to one another?

Pivotal, I predict, will be a refining of the various digital trends that have been permeating the pro audio industry during recent years. Having followed with great interest the dozen or so key players in the race towards marketing a viable digital audio workstation, I expect great things from at least half of them, and the inevitable casualties by mid-year. As in the past, I expect a strong reaction from most of these manufacturers to my (sometimes purposely impertinent) suggestions that they might not have given full and thorough consideration to the usefulness of their (fill in a topic of your choice): assignable/non-assignable control functions; display schemes for presenting system information to the user; techniques for interrogating the system status via front-panel control elements; and so on. Again, I expect the dialog to be long and healthy from all sides. (Drop by

SAMPLE THE POWER OF THE ROLAND S-50



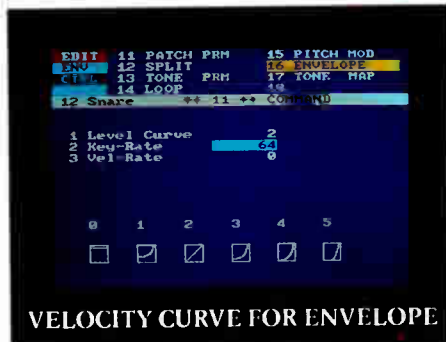
PREPARE TO SAMPLE SCREEN



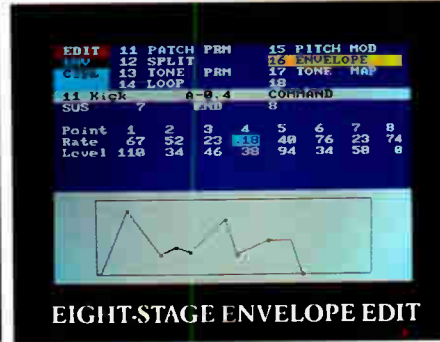
EDIT LOOP SCREEN



MULTI-TIMBRAL PLAY SCREEN



VELOCITY CURVE FOR ENVELOPE



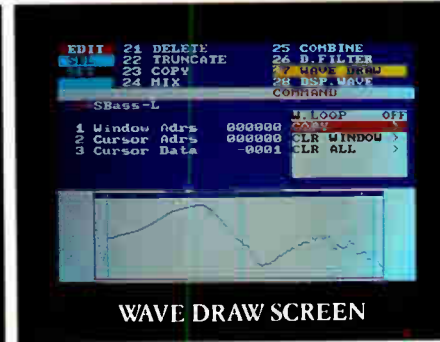
EIGHT-STAGE ENVELOPE EDIT



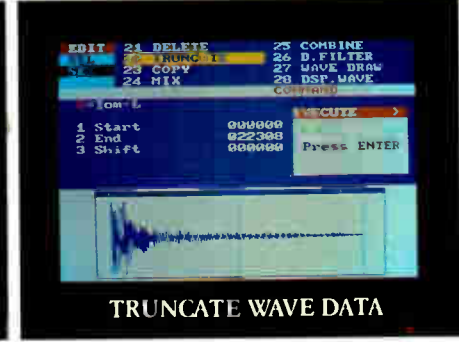
TONE MAP GROUP EDIT



WAVE BANK DISPLAY



WAVE DRAW SCREEN



TRUNCATE WAVE DATA



SYS-503 SONG PLAY



SYS-503 PATTERN WRITE



SYS-503 MIDI AND INFO SCREEN

THE SAMPLER THAT DOES MORE TODAY



World Radio History

Roland S-50

Roland DT-100

PLAY	P1	Drum/Hiute	P2	FLBank/Shell
	P3	Drum/Hiute	P4	Drum/Hiute
	P5	Drum/Hiute	P6	Drum/Hiute
	P7	Drum/Hiute	P8	Drum/Hiute
	P9	Drum/Hiute	P10	Drum/Hiute
	P11	Drum/Hiute	P12	Drum/Hiute
	P13	Drum/Hiute	P14	Drum/Hiute
	P15	Drum/Hiute	P16	Drum/Hiute
	P17	Drum/Hiute	P18	Drum/Hiute
	P19	Drum/Hiute	P20	Drum/Hiute
	P21	Drum/Hiute	P22	Drum/Hiute
	P23	Drum/Hiute	P24	Drum/Hiute
	P25	Drum/Hiute	P26	Drum/Hiute
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	P29	Drum/Hiute	P30	Drum/Hiute
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	P95	Drum/Hiute	P96	Drum/Hiute
	P97	Drum/Hiute	P98	Drum/Hiute
	P99	Drum/Hiute	P100	Drum/Hiute

THE SAMPLER THAT DOES MORE TOMORROW

The Benefits of Open Architecture

There's no question, digital sampling is one of the most rapidly developing technologies in music today. So when you buy a sampler today, you don't want it to be made obsolete by some new development tomorrow. That's why there's one line of samplers that not only provides top quality today, but allows for future developments tomorrow. Naturally, they're from Roland, the company who always has one eye on the future.

Roland samplers are based around a "clean computer" design of open architecture. This means that the main performance data

of Roland samplers is resident in software — software that can be updated with new

features and performance just by loading a new disk. Neat trick? That's exactly what our customers think. They've already benefitted from one software update, giving their samplers loads of new features. And more updates will follow.

Professional Performance Sampling

But before we get too far into the future, let's talk about today. The Roland S-50 Digital Sampling Keyboard and S-550 Digital Sampler Module deliver the professional-quality sound and extensive editing capabilities found only in instruments costing many times as much, all thanks to Roland's breakthroughs in proprietary VLSI Sampling technology. The S-50 offers a wave oscillator, amplifier, LFO, and an eight-stage envelope generator for each of its sixteen voices. Although the S-50's features list is far too extensive to be listed here, among its chief attributes are a 512k word of Wave Memory and 16-bit processing, sampling time up to 14.4 seconds at 30kHz, multi-timbral capabilities, and four polyphonic voice outputs.

The S-550 provides all of the S-50's performance with the addition of a 1.5M Byte memory (for up to 64 tone memories and 16 patch memory banks), and expands upon the S-50 by providing eight polyphonic voice outputs.

Quality Sound in the Roland Bank

But we think the best way to judge a sampler is with your ears. That's where the Roland Samplers really shine. Play any Roland Sampler and you'll hear a warm and full sound, with a better bandwidth and greater headroom that especially shows up in dynamic instrument samples. You'll experience an evenness of sound across the entire keyboard without the problems other samplers have of obvious split points. And you'll never run out of sounds, because the purchase of a Roland Sampler gives you access to the Roland Sound Bank — a continuously growing library of great sound samples. Plus, the S-50 is

already enjoying one of the fastest-growing bases of third party software support.

Quality In Means Quality Out

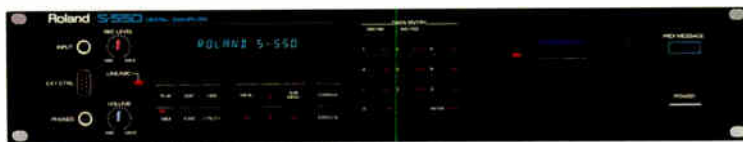
When it comes to user interface, Roland Samplers are simply unrivalled. Both the S-50 and S-550 allow the connection of a video monitor to greatly facilitate sampling process and use such new features as Wave Draw. The S-550 even allows the flexibility of mouse-style input by connecting the new DT-100 Digitizing Tablet. This kind of interface makes the experience of sampling sounds as fun as it is productive.

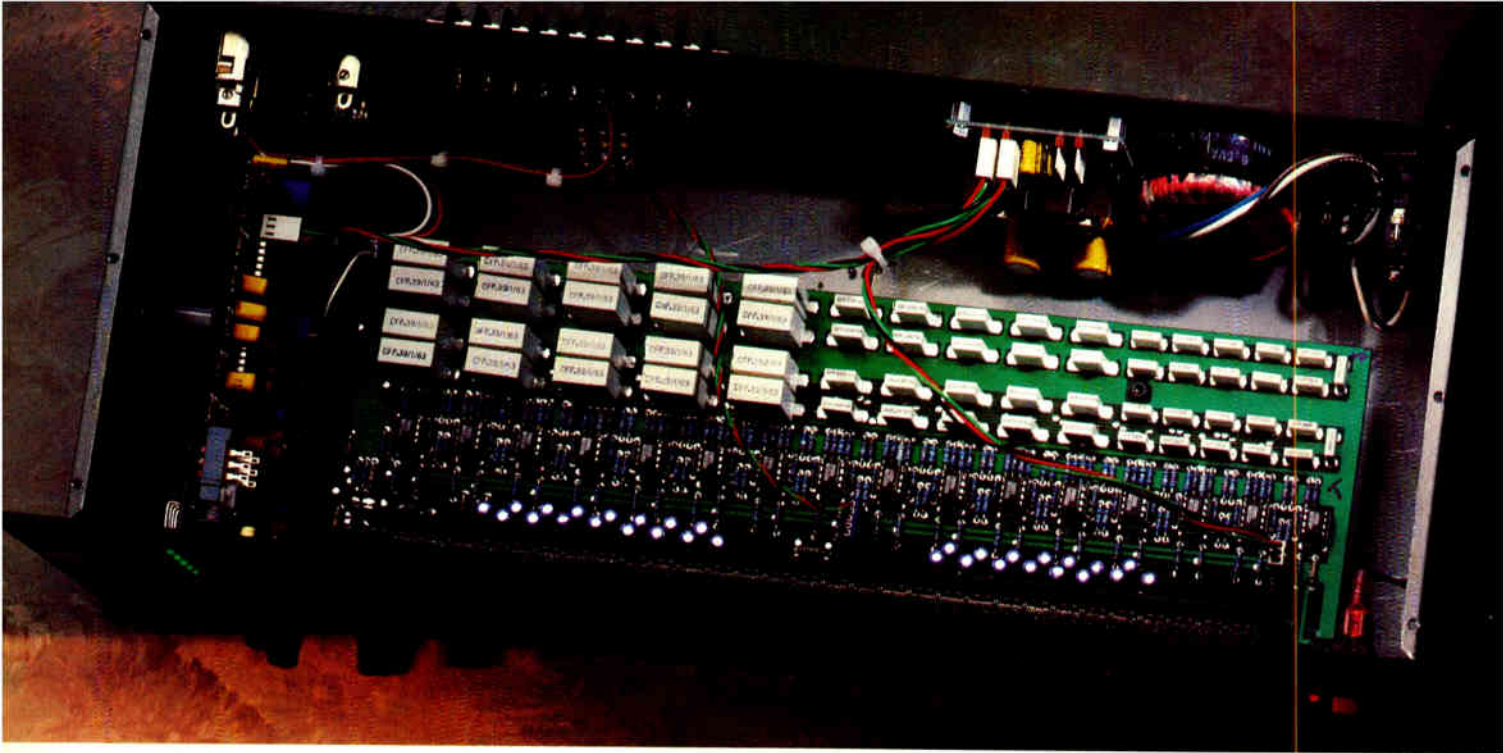
Today's Updates

The new 2.0 Software Update (available to all owners for a small handling charge) can now add in loads of new features — including twice as many tones, Automatic Loop Search, combined Wave Data, Polyphonic Multi-timbral performance, and much more. Not just new sounds, entirely new performance. Another new software program — the SYS-503 Director-S — can turn the S-50 or S-550 into a sixteen-channel MIDI sequencer, playing its own sounds as well as those of other MIDI instruments.

Put all this together and you can see why Roland Samplers are the choice of so many top pros. And why shouldn't they be? Because if Roland Samplers do this much today, imagine what they'll do tomorrow.

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It takes a lot of guts to compare yourself to some of the biggest names in professional audio.

Of course, when you offer the quality and features found inside the Audio Logic SC31 Graphic Equalizer,

it's easy to display more than a little extra intestinal fortitude.

The SC31 is a powerful signal processing tool designed for professional use. It features 31- $\frac{1}{3}$ octave centered bands of equalization with selectable 6 dB or 12 dB of boost and cut. But that's just for starters.

Take a look at the chart. It shows how the SC31 stacks up against the competition in the specs most important to audio engineers and sound contractors.

Maximum output. Dynamic Range.



	Audio Logic SC 31	RANE GE 30	JBL/Urei 5547A	Klark-Teknik DN 300
Noise	Less than -90 dBm	Less than -90 dBm	Less than -90 dBm	Less than -90 dBm
Maximum Output	+27 dBm	+24 dBm	+22 dBm	+22 dBm
Dynamic Range	+117 dBm	+114 dBm	+112 dBm	+112 dBm
Frequency Response	18 Hz to 30 kHz +/-0.5 dB	10 Hz to 40 kHz +0/-3 dB	20 Hz to 20 kHz +1/-2 dB	20 Hz to 20 kHz +/-0.5 dB
Number of Bands	31	30	30	30
THD plus noise	Less than .005% @ +22 dBm @ 1 kHz	Less than .01% @ -4 dBm	Less than .5% @ +22 dBm	Less than .01% @ +4 @ 1 kHz
Suggested Retail Price	\$550.00	\$699.00	\$849.00	\$995.00

Frequency response. Number of bands. Total Harmonic Distortion plus noise. In every category, the SC31 comes out even or on top.

In every category, that is, except price. Because the SC31 gives you all that capability, plus

incomparable sound quality, for considerably less than any other professional graphic equalizer. And that's what galls the competition most of all.

For a hands-on demonstration of the SC31, visit your professional audio dealer or sound contractor. Or write for additional information:

Audio Logic, 5639 So. Riley Lane, Salt Lake City, Utah 84107.
Or call (801) 268-8400.

AL
AUDIO LOGIC

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*All specifications taken from manufacturer's published literature.

JUXTAPOSITIONS

the various booths and make your presence felt; just tell them "The Mole from *Mix* magazine" sent you!")

Design concepts, operating philosophies and marketing rationales aside, however, there is one vital parameter to which users and manufacturers alike need to pay particular attention, as do the dozens of new and upcoming firms contemplating the production of peripheral equipment for the latest workstations: how are these systems and peripherals going to "talk" to one another?

I've waxed long and lyrical before in these hallowed pages about the importance of viable interface standards; as we stand on the threshold of a virtual explosion in creativity and operational flexibility offered by digital audio workstations, the need for user-transparent serial control and data transfer is greater than ever. It seems to me that systems that expect to earn their keep in audio facilities of the next half-decade should possess the following basic capabilities:

- the ability to import and export digitally encoded audio of a standardized data format, at upwardly appropriate sampling frequencies and bit lengths;

- the ability to generate and respond to standardized record, mixing and editing commands (plus others); and

- the ability, dependent on the unit's design, to function as a firmware module within a mainframe-based processing engine from a different company.

The concept of "connectivity" is one that will strongly impact the recording and production industries over the next half-decade. If nothing else, we need to agree on a logical and efficient way of inputting and outputting digital data. What happens inside the bowels of your favorite workstation, and how you get to control such functions, will be highly user-definable; data transfer, however, is a more prosaic function, and its standardization can do nothing but enhance the system's upward, downward and lateral compatibility.

We have witnessed the evolution of standardized control and digital transfer schemes. A growing number of manufacturers of time code synchronizers, editing controllers, automation

systems, and audio and videotape machines are implementing ES-bus control protocols using (thankfully) standardized RS-422 interfaces, allowing a growing variety of production tasks to be handled by networked transports and controllers. I also applaud the sterling work with MIDI and MIDI Time Code. For a growing variety of production tasks in the studio—including many that do not involve the use of synthesizers, sequencers or MIDI-equipped drum machines—there is little doubt that MIDI provides a powerful and, in well-engineered systems, a sufficiently fast control scheme.

Similarly, the appearance of standardized two-channel AES/EBU and MADI (multi-channel audio digital interface) schemes means that audio data can now be transferred easily and conveniently from hardware bearing different brand names. (There is still some work to be done on our agreement to use one, maybe two, standardized connector types for differential stereo and multi-channel interfaces, utilizing possibly XLRs and D series connectors, respectively.)

In addition, there are other, equally appropriate interface designs we might expect to see on digital components. These include the Sony-developed SDIF-2 format used on PCM-1610/30 digital processors, DASH-format transports and various Sony digital editing and mixing systems, as well as the Lexicon Opus and AMS Audio-File editing systems, among others. (I can live with a mixture of BNC and D series connectors, but we really do need to draw up a standardized pin layout scheme for multi-channel systems, before anarchy begins to reign!) And we are starting to see S/P DIF ports on a growing number of signal processors, cost-effective digital mixers, R-DAT machines, CD players and similar devices. I predict that any manufacturer ignoring the need for such basic input, output and control flexibility will be faced with an uncertain future.

But I don't want to simply dwell on the physical parameters of effective digital and control interfaces. I also predict the emergence of a tacit cooperation between various firms whose logos will be gracing the front

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processors and similar gadgets. Small, for certain aspects of the audio industry, can definitely be beautiful.

Just as our current world of analog audio is populated with dozens of mom- and pop-sized companies making a decent living by producing frequency- and time-domain processors and accessories, there will be space in the audio industry of 30-Minutes-into-the-Future for their digital equivalent. Aside from the dramatic increase in audio quality that digital systems provide, the enhanced functionality we can achieve with an all-digital mixing and recording system comes as a direct result of the interrogation of all processing functions within the one computer mainframe and companion control surface. All of which means that in terms of hardware, digital means more and more audio production tasks being performed by a centralized system.

However, the tasks performed by these integrated systems will be controlled by specialist software that is most certainly the realm of an audio production screen jockey. As we have panels of these new items of technol-

ogy. Without a full and free (well, “reasonably unrestricted” is probably all we can ask for) exchange of basic ideas, there is the extreme risk that long-term development will be severely stymied.

I’m reminded of the fledgling attempts made, not so long ago, within the video industry to standardize a file structure for edit decision lists. Even though these days we might take such tasks for granted—depending on who you talk to, and what you attempt to achieve with the imported data—there was a long and protracted tussle for dominance between the major manufacturers of video editing systems. While the circumstances were/are rather different from those in the world of audio production (for one thing, capital costs are usually less, while the buying habits and brand loyalties of audio houses quite often are not as inflexible as those of our video-based brethren), we should still endeavor to refrain from bickering among ourselves about the trivial. After all, there is enough precedence within this industry to suggest there’ll always be room for the smaller, specialist firm developing high-tech digital signal

seen in the past, manufacturers who expect to be able to provide all the hardware and software we need to get the last drop of processing power from their systems run the severe risk of rapidly obsoleting themselves. This industry is populated by individuals whose reputation rests on being able to do something nobody else can achieve. Sure, we’ve all learned to mic this or that ensemble, what all the gadgets do, and how to balance vocal and instrumental textures. What sets us apart from all the rest, though, is that extra “something” which gets us the repeat gig, while the guy down the hall fares less well.

In the age of all-digital recording and production console/recorders, that “edge” will be an understanding of the myriad additional functions that well-designed systems can offer, which includes an intimate knowledge of the tricked software modules and turbo-charged replacement processor boards that add that little “something” we all need (at least *think* we need) to get the job done and leave the client well-pleased with the end result.

I am reminded of a recent conversation with the marketing director from a well-known developer of digital workstations. He told me his well-capitalized firm had no intention of supplying every element for the all-digital studio of the near future. Rather, this company would concentrate on providing a basic framework system into which could be dropped specialist modules developed by other entities. That way, he concluded, there would be hundreds—even thousands—of talented individuals helping to expand and refine the proposed system, rather than the dozen or so employed by its manufacturer.

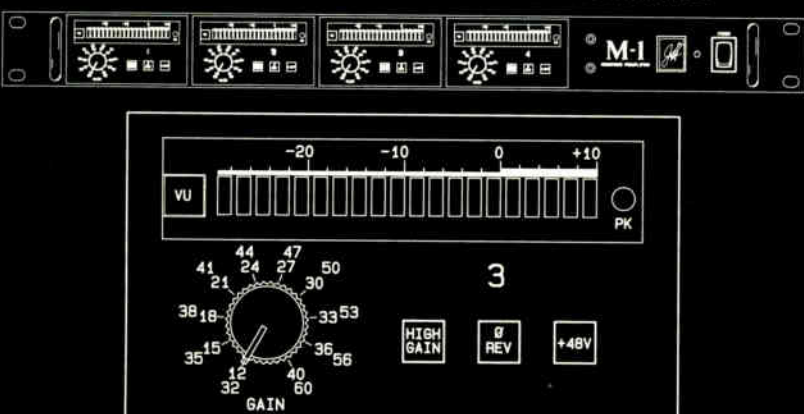
It’s just that sort of philosophy which will be vying for my attention in L.A. I hope to see you there; come visit me at the *Mix* booth. ■

Mel Lambert has been actively involved with professional audio on both sides of the Atlantic for the past decade, and served most recently as editor of Recording Engineer/Producer. Currently the president of Media & Marketing, a consultancy service for the pro audio industry, he is still hot on the trail of a sensible, one-word alternative to the clumsy expression, “digital audio workstation.” Hope springs infernal, he concedes.

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World Radio History

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CONNECTIVITY BEYOND THE PATCH BAY

by Greg Hanks

Three scenarios:

 The room is a *mess*. You know how it is. "We have the slickest audio post room in the city, but do they use our built-in conveniences? Noooo, they're bringing in all their own stuff from the outside! The lock-out session over the last couple of days has left keyboards, racks, video monitors and MIDI cables scattered over every inch of available control room space. And you don't want to touch it, 'cause it took the first day and a half of the session to get it working the way the client wanted. But you've got to, because the VAPP (video-audio-post-production) date is coming into the room in an hour. That means a day for the previous lock-out session to get back into gear, and they are *not* going to want to pay for it . . ."

2 "Great, we've had the room working successfully for almost six months, all the cable hidden, and our synthesist has to be surgically removed from his programming position. The client wants to use his PC instead of our Mac, and the Jam Box will be replaced by the Cooper. SBX-land! SMPTE lines draped across the outboard, and on top of all that, *he doesn't like the location!* Oh well, it was too good to last. Just as well, we don't have the lines in place for the master controller anyway, so we just have to do it all over again . . ."

 "While running the multi-track as a slave to the video machine, the room has no operational problems. But now the new "main client" wants a 32-track digital machine and everyone feels it's too noisy to keep in the control room. Now we have to rip out the transport control lines from the trough, move the audio feeds and put the synchronizers in a position that will be common to three different areas. We were

warned that the maximum length we can run on the control line for the capstan is about 35 feet, and that's not even half the distance we have to cover. This is going to be a lot of work if they don't like working that way."

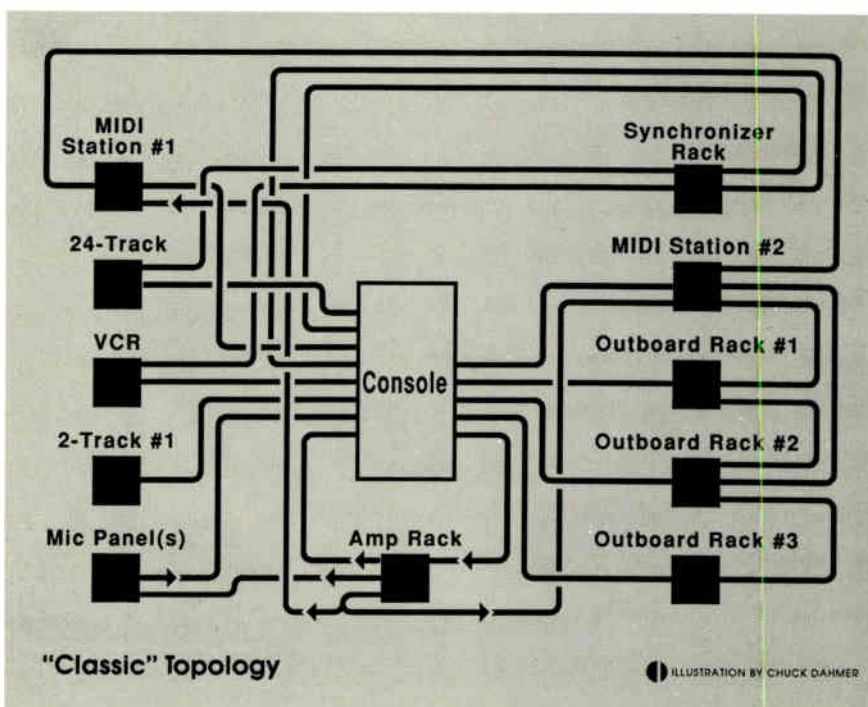
Change . . . it's one of the only constants of the recording industry. As an industry, we have accepted the necessity of being able to "shape-shift" our business plans to stay alive. Becoming a specialist and targeting a small segment of the market has been one route of survival for many, while others see being a "generalist" as the key ingredient to success. To accommodate the diverse clientele that the industry offers, our equipment selection, orientation and functional control room/studio ergonomic environment must also be able to change. Often we do not know where the business is going, which makes it extremely difficult to allocate our resources in

one given direction with complete confidence. This is illustrated by the extreme changes in studio methodology that MIDI has brought about. We therefore must be as flexible as possible, not only in our business plans but also in our equipment choices and room design and construction.

Our company, New York Technical Support, provides efficient working environments, designing around the above-mentioned problem scenarios by anticipating the demands of the clientele. Over the course of designing and installing the last eight to ten studio/control rooms we did, we have included:

A. A 25-conductor cable to outboard equipment locations. This cabling is intended for use with synchronization equipment.

B. "Synthesizer stations" in the rear of the control room with audio and MIDI capability.



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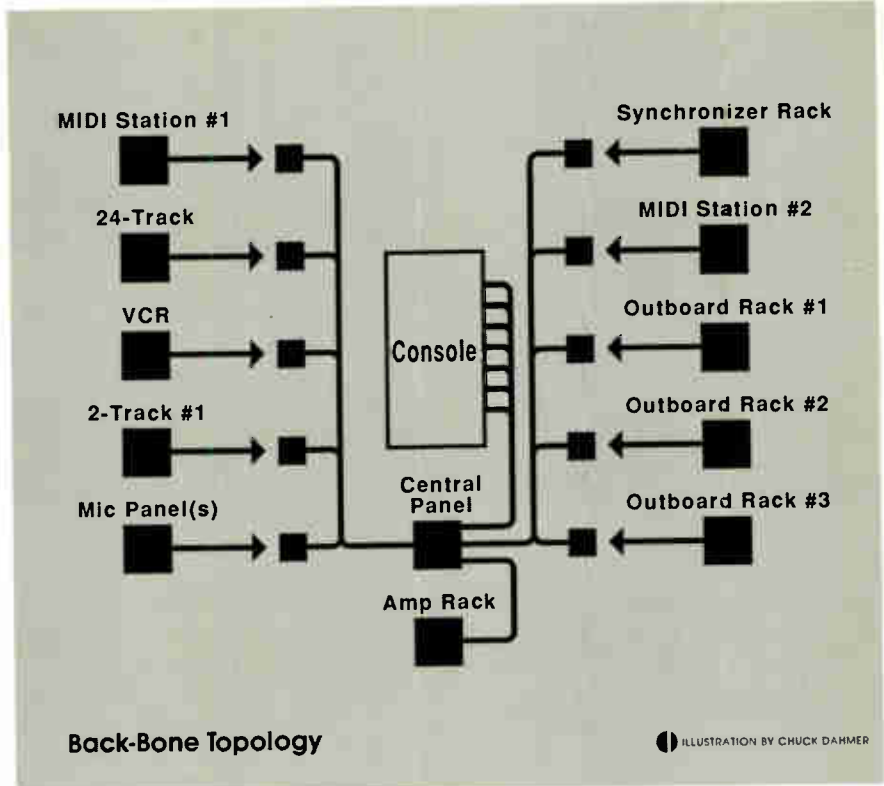
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C. MIDI jacks on connector panels on the top and rear of outboard equipment racks for external synthesizers and processing gear. These jacks terminate in a wiring location that is perceived as central to the operation of MIDI-based equipment, such as at a MIDI patch bay.

D. High-level cable to the outboard racks, console and synthesizer locations.

When a new installation is complete, everything works fine. As long as the room's function is not required to change, the solutions originally offered by the installation prove highly successful. When the business climate requires a radical re-direction of a studio's equipment use, in some cases we found the above remedies to be insufficient. For instance, when we provide one data line, the needed equipment rearrangement requires two. When we provide two data lines, we find we now need one for data and one for video. We found ourselves in that position one too many times. An established client of ours commissioned us "way back when" to assemble a little 8-track pre-production room. When we were requested to rewire the room to accommodate a second synthesist, second 24-track, a synchronizer and video system, we decided that a new approach was necessary. This article is an outcome of that decision and the resulting room.

Using traditional design methods, we allocate a piece of equipment to a location the user desires, typically in close physical proximity to other equipment of a similar type. The wiring necessary for accessing its functions is then put in place. Normally, a few flies get into the ointment along the way and these flies are what we strive to eliminate. For example, have you ever successfully integrated a PC into the console automation system, only to have the computer's fan and hard disk noise become a major annoyance? Well, the answer is to put the computer in a soundproof box, or move it out of the control room (a convenient location might be the amplifier closet or the room closest to the control room). Either way, the disk drive is now inaccessible for the person attempting to back up the hard disk, making that task even more onerous and less often performed than before. It also means we must add a second keyboard and monitor at the new computer location, and add



SMPTE, automation data, keyboard extension and monitor extension cabling from the new computer location to the operator's position.

When contemplating any change in console location, rack location or an equipment addition, keep these cables in mind. Most wiring systems we've created allow for expansion and modification of the system design, but change sometimes requires different facilities than anticipated.

Driven by such difficulties, we set out to find an equipment installation method that could be all things to all people, over a long period of time. We wanted to provide our clients with an environment that could accommodate almost any rearrangement of the control room that *their* clientele might request, as well as integrate as yet undefined technological advancements in the areas of console automation, MIDI sequencing, synchronization and video post-production.

Our list of requirements included:

- (1) ability to hide all MIDI cabling;
- (2) ability to place the video monitor(s) or VCR where it is most convenient, not where someone laid cable for it a couple of years ago;
- (3) feasible relocation of the synchronizers to a convenient operator position, with the ability to add a controller by adding a few wires and changing some jumpers;

(4) coherent signal grounding with all processing gear, including video and data;

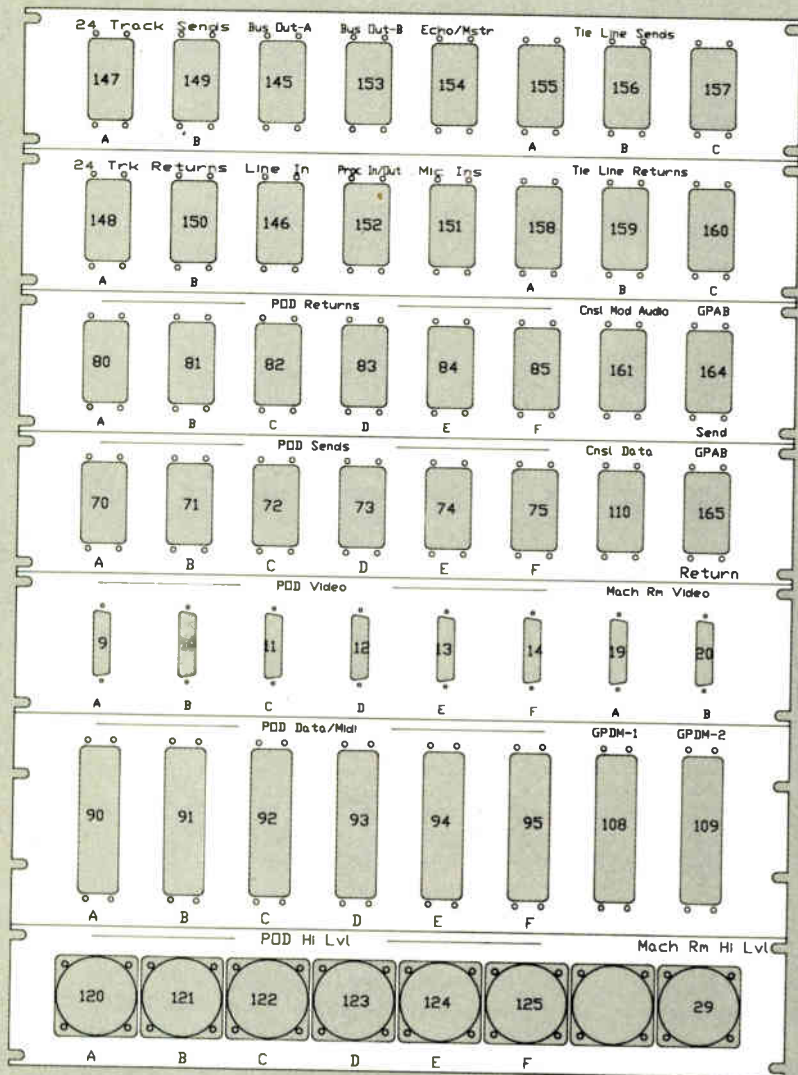
(5) ability to easily move noise-producing equipment, such as computers, out of the control room, while maintaining their functionality; and,

(6) ability to easily change the configuration of a single piece of equipment, as well as a large grouping of equipment, and then reconfigure the system as it was before, when the need for the change ceases to exist.

We are not the first to arrive at these requirements, and many before us have accommodated these needs via the concept of a "central patch" facility, in which all wiring to and from all equipment terminates at a central location. (See "Lucasfilm's Skywalker Ranch," *Mix* August '88.) This does not overcome the difficulties of physically relocating a piece of equipment, but makes changing its interface easier. A central patch is more oriented to multi-room facilities and does not address the individual control room vagaries.

A New Alternative

A different type of wiring topology was required to satisfy the above needs. We found a system that has been in use in other industries for years: the "backbone" interconnect system that serves telephone, data and



A typical POD terminal configuration (24-track system).

terminate in a “central patch” by treating the central patch as one or more “pod” locations. Such a system is hierarchical in organization but distributed in function. For cost considerations the central panel can be located under the console, although alternately it can live in a closet down the hall from the control room. The uniformity of pin-outs and the consistency of connector types are the essential elements of success in achieving system flexibility. All audio connections are made through the same type of connector. All data connections are made through the same type of connector as the audio, but in a different shell type, so as not to inadvertently cross-connect the two signal types.

Pod: A grouping of equipment that lives at any of a number of locations. The most common pod is a rack full of outboard gear. This equipment is assembled as desired within a rack, and wired to the pod termination, which is location-independent. There are many locations where this pod can be connected.

GPAB: The acronym for “general-purpose audio bus,” and the name of the audio trunk line that serves as the audio “pipe” in the backbone system. In our design, this is a directionally oriented line, so it has two parts: sends and returns.

GPDM: The acronym for “general-purpose data and MIDI trunk,” which provides for all the data, MIDI, SMPTE and control lines needed for a given function. We also directionally orient this trunk to provide for proper shielding and grounding with the many diverse requirements imposed upon it.

Video: A bi-directional series of lines for general-purpose, constant impedance use.

High-level: We provide two stereo cue systems and one stereo pair of bi-directional, general-purpose, high-level lines. High-level lines are designated for use with speaker levels.

Some functional groups require a dedicated location. Their locations are mandated by many different criteria, including size, heating and cooling requirements, acoustic relationship to the monitor speakers and electrical power requirements. Considering such criteria, we can see that the console, monitor rack, computer rack and monitor speakers fall into this category.

These functional groupings are not what give us grief when we need to

PABX networks.

The concept of a backbone system is one whereby all of the conductors necessary to accommodate any given system task appear at all equipment locations. This implies that at all equipment locations we have the ability to access a wiring system that will enable us to interconnect:

- audio, both sends and returns of mic level, line level and speaker level;
- video sends and returns;
- data: serial and parallel formats of dynamic data as well as machine tally, DC levels for things such as servo control, and static data lines for monitor and machine selection and control;
- SMPTE and MIDI;
- grounding and shielding.

In the traditional methods used by telephone companies, this simply means there are two to 34 conductors

running from a central panel to each “user” location. A few minor changes are needed to make the concept fly in the modern recording environment. After all, it’s difficult to get an M-49 to sound right after it has been routed around the building on a twisted pair!

To implement a backbone design in the recording environment, we must first determine the type of functional groupings we’ll have, how to interconnect them and the manner of internal cohesiveness that will make the system truly flexible. In doing so, we must define several system concepts:

Central panel: The location at which all conductors forming the backbone terminate. At this location, each grouping of function will be interconnected. This is oriented to a single control room. In a multi-room facility, each control room’s central panel can

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...look at the ease with which we can change the face of the control room to match a desired function...

change the control room functions, but remain stable in the functional equation. We therefore find that all other functions fall within our stated definition of a pod. A pod can be a multi-track tape recorder, a Dolby system, a rack of MIDI-based synthesizers, a 2-track, a rack of cassette recorders or another complete control room! We must accommodate the console, the monitor rack and the computer rack interface at the central panel as well as provide for all the different pod locations. At each pod location, as well as at each dedicated function location, we allocate these signals: audio (mic level, line level and high level); data and MIDI signals; video; and grounds.

Next, we must decide upon the system's level of capability. This is most easily stated as, "How many different pod locations do we need?" Looking at the cable requirements (pg. 42) for *each* pod location, we see that with an excessive number of pod locations, our cable, connector and labor costs start to escalate drastically. At a minimum we must support all console functions, all monitor and computer rack functions and at least six pod locations.

In our first backbone installation, we decided to integrate the monitor and computer racks, supplying one GPAB, two GPDMs and two video trunks. This has proven sufficient. Expandability has been accommodated via modularization of the wiring system, which was accomplished through using a standardized connector panel and a standard definition of the pod. If we need more pod locations in the future, we simply bolt in another couple of connector panels, construct more pod trunks, drop them in the trough and we're done. The only limiting factors are rack space at the central panel location and room within the trough for the additional wires.

Use of the Backbone Concept

In setting up the backbone, we defined certain functions.

Console: The entire console was installed to the central panel. We performed several modifications to the console, so we put additional connectors on the console-to-central-panel interface to accommodate data, MIDI and other audio. These lines all follow the same pin-outs as the pods' and machine room GPAB and GPDM lines. We recently realized we could replace the console within an hour or two using the backbone system, assuming that we preassembled the console-to-central-panel interface.

Multi-track machines: Because we did not wish to access the audio and transport remotes of two multi-track tape recorders via the central panel, and the multi-tracks were set up right near the amp rack in a machine room, we decided to dedicate those functions rather than commit an entire pod trunk to each machine. We allocated one GPAB to each machine. All remote audio and transport functions to be accessed by other systems are interfaced through the first GPDM trunk of the machine room. We even have a remote VSO running from the console through the backbone!

Two-tracks: We have five 2-track machines in this system. Two-track #1 is a digital recorder, and lives near the multi-tracks. The feeds to and from traverse the machine room GPAB, and the transport and audio remote are via the first machine room GPDM. The other 2-tracks live in a rack with other outboard equipment. We use that rack as a pod, and the outboard, cassettes and F1 all live happily together. In that rack we do have a remote monitor selector for the last two machines. The to and from wiring for this selector is handled through the central panel, making this selector easily moved and/or changed.

Console automation: We're using a PC-XT, disk-based automation system for the room. The computer lives in the machine room, while the keyboard and monitor reside at the console.

MIDI instrumentation: The MIDI-based sources in the room show up in three different pods. One is a dedicated keyboard controller, with an IBM AT monitor, mouse, printer and keyboard living in the control room. The computer itself, along with a Roland MPU-401 MIDI interface, lives in the machine room. At another location we have an additional dedicated controller, keyboard, mouse and monitor. This location uses a Mac II and again, the computer lives in the machine room. At yet another location, we have a J.L. Cooper 1620 MIDI patch bay operating in conjunction with a Jam Box. All MIDI information from each synthesizer, computer and keyboard routes through the central panel to these MIDI patching devices. Within the machine room itself, we have another pod position for other MIDI-based sources that do not require direct operator access. We can easily relocate the pod that lives at the location by changing a couple of connectors (about five minutes work!).

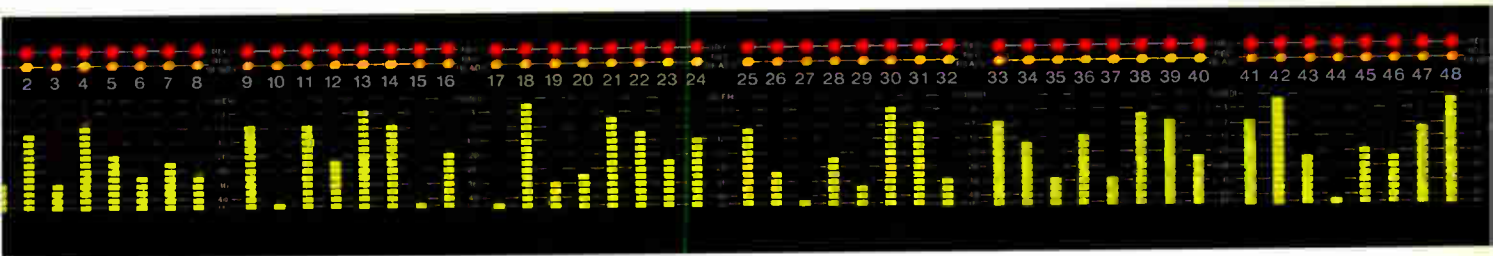
Outboard equipment: We have two racks dedicated to audio outboard. These racks, as well as the MIDI instrumentation groups, have our traditional panels on the top of the rack for interfacing external outboard (equipment brought in from rental or other sources). These panels now incorporate MIDI lines that show up at the MIDI patch bays.

To appreciate the benefits of this wiring approach, we have only to look at the ease with which we can change the face of the control room to match a desired function. An example of this would be, say, to build a rack of eight cassette decks for real-time duplication. Add a monitor selector and a source selector and terminate the whole sucker as a pod. You can pick up the control lines from the console through the GPDM lines, pick up the source signals through the GPAB sends and return the output of the monitor selector to the console through the GPAB returns.

Another example would be to decide to run the 24-track from where the outboard equipment rack was be-

—CONTINUED ON PAGE 204

Sony sets a new track record.



Introducing the world's first

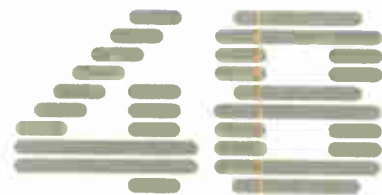


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by Bruce C. Pilato

JAN HAMMER'S AMERICAN DREAM

THE LONG ROAD TO RED GATE STUDIOS

During the summer of 1968, as Russian tanks rolled through the streets of his native Prague, jazz pianist Jan Hammer dreamed how wonderful it would be one day to live and play in the United States. Twenty years later, Hammer's dream is not only a reality, it has gone far beyond anything he ever imagined as a young man in Czechoslovakia.

At 40, Jan Hammer remains one of the most respected (and in-demand) keyboard players in the world. With countless recording sessions, live gigs, nine critically acclaimed solo albums, and a Number One pop record on *Billboard's* Hot 100 behind him, Hammer now spends most of his time as a composer and performer of motion picture and TV soundtracks, the most

notable being NBC's *Miami Vice*.

As a personal celebration of his 20th anniversary in the American music industry, Hammer has finally built and opened the recording studio he has fantasized about for over 14 years, a spacious and technologically advanced facility known as Red Gate Studios. He has also released *Escape From Television*, a collection of his favorite *Miami Vice* material (and his first album since 1983). It is selling briskly in the U.S., and the single and LP have gone gold and/or platinum throughout Europe.

"I never expected such success," says Hammer, leaning back in the mauve-colored control room at his studio. "The Number One record and the sales and all those things are just above



PHOTO: EBET ROBERTS

and beyond my wildest dreams. But, after a while you just try to graciously accept it and go on with your work.”

Hammer is certainly no stranger to work. Conversant in a wide spectrum of musical styles, he has been active since he first came here on a scholarship to the Berklee College of Music in Boston. At present, he works an average of 14 hours a day at Red Gate, usually beginning at 8 a.m. But Hammer doesn't mind the schedule, partly because of the homey atmosphere of Red Gate. Like the legendary Caribou complex in Colorado or the popular Bearsville facility in nearby Woodstock, NY, Hammer's studio effectively combines a highly advanced technological work environment with a scenic, rustic surrounding.

Unlike those other studios, Red Gate is a private studio, used only by Hammer for his own projects. It is, however, one of the ultimate examples of a home studio. Built within and around a large wooden barn that came with the property, Red Gate took years to plan and nine months to complete. Even though financial solvency came to Hammer several years ago, he decided to wait until now to build the studio. “I wanted to do this place right,” says Hammer.

For years, Hammer had written and recorded nearly all his music in a small studio that engulfed the dining room of his upstate New York farmhouse, working constantly in the way of his wife and two small children. “Forget it,” says Hammer with an embarrassed smile, “there was just no home life at all.” Still, he had opted for the serenity of his farm, located deep in the hills of Dutchess County, NY, about 70 minutes from Manhattan.

For the last four years he has recorded everything for *Miami Vice* at his home, editing the music for each weekly episode to sync-cued videocassettes during marathon phone calls to Universal Studios in Los Angeles. Even outside projects that Hammer has been involved with, including Jeff Beck's classic *Wired* album, were mostly recorded at the old Red Gate.

Hammer originally bought the farm with several acres of land—named Red

Gate because of the huge red painted iron gates that serve as the entrance—with the money he earned from his tenure with the pioneering group, the Mahavishnu Orchestra. “After Mahavishnu broke up, I *had* to get out of New York City,” he says, “so I went looking for a place in the country where I could be creative, and I found this.” In addition to the rustic barn-studio and his large farm house (which now serves solely as his residence), the facility also has a medium-sized guest house located in the back.

Last summer, when Hammer decided to get serious about building the new studio, he assembled a team to put it together, consisting of himself, his longtime technical associate, Andy Topeka, and studio designer Dan Vitalo Jr. Topeka, who has worked as a technical director for such acts as The Cars and Aerosmith, has remained a close friend and working assistant to Hammer since his Mahavishnu days. In addition to handling all maintenance and customizing of his keyboards and recording equipment, Topeka has provided Hammer with several custom wiring designs, as well as setting up the computer systems that run his studio, his Fairlight and a huge arsenal of keyboards and drum machines.

“It's hard to put a label on what Andy does,” says Hammer. “All I know is that the man is indispensable. He can take anything apart—a board, the Fairlight—and figure out how it works. He's amazing.”

It was Topeka who brought in Vitalo and his company, Personal Recording Environments, to design and construct the facility to Hammer's specific needs. “Jan just told me what he had to have, and I did my best to provide it,” says Vitalo. “The idea was to make it as flexible as possible and utilize every space in the building.”

Vitalo, who's worked on Electric Lady's Studio C, as well as on rooms for Kashif, Michael Brecker and others, employed a crew of seven and used several unusual techniques to achieve the finished product.

“Jan told me he needed air to come inside for natural ventilation and so he could experience the vibes from out-

side,” says Vitalo. To comply with Hammer's request, Vitalo built large, opening windows in both the control and tracking rooms. Since both rooms are floated within the existing structure, each opening contains two windows that are separated by a 6-inch space. Because most of Hammer's recordings are done with direct input lines to the console, he will be able to keep the windows open during good weather to enjoy the fresh air and surrounding countryside.

The control room also has a large skylight, positioned just behind the console, allowing for natural light during the day and a view of the stars at night. “The light is uplifting,” says Hammer. “You look up there and you see clouds, which is wonderful. It's so much nicer than looking up and seeing a smoke detector.”

The facility itself is built into a gradually sloping hillside. On the first floor are a concrete garage, a kitchen and lounge area, and a rest room. The control room and main tracking room fill the second floor, which is level with the hilltop in the back. Vitalo built huge sliding glass doors in the tracking room for easy loading in and out of large equipment, including Hammer's huge concert grand piano.

But construction of the new Red Gate was not without its share of headaches. The control room sits on top of the garage and is a brand-new addition to the existing structure. In order to build it, a new concrete foundation had to be placed around the garage. This is where Hammer's problems began.

“He had boulders under the ground that we had to work around,” says Vitalo. Adds Hammer, “We couldn't nudge them, even with huge machines. The next step was dynamite, but that would have taken down the entire barn, so forget that.” Eventually, the foundation was built into the boulders, and water lines were routed around them.

Among the most interesting aspects of Red Gate is the shape of its control room. Designed like an amphitheater, the 24 x 24-foot room features a sloping ceiling with ridges that go from 7½ feet at the front to ten feet at the rear.

The effect is remarkable, allowing for the sound to be truly balanced from any point in the room.

"We didn't have to do anything to the room once we got everything up and going," says Topeka. "There's no build-up in the back of the room," Hammer notes. "It's even throughout the entire room."

Vitalo hung the ceiling from a large metal grid that was placed under the roof. The interior of the room was done in a three-layer wall construction, consisting of sheetrock, sound board and sheetrock. Vitalo also used a custom studding technique, which he says "definitely affects the sound."

The batting that covers the room is a Gabardine-like cotton and synthetic material, which, says Vitalo, allows the room to "breathe freely." The wall construction and the covering fabric together are somewhat similar to a box spring that sits under a mattress. It is both reflective and absorptive. "The old technique was just to use a lot of insulation on the wall. And that's just too dead for me," Vitalo says.

The tracking room is 24 x 30 feet and has a wooden ceiling that peaks at 15½ feet. "It's fashioned after a church," says Vitalo. "It's large but not boomy."

"I wanted the tracking room as live as possible," says Hammer. "Less carpet, more wood. For the acoustic piano, I wanted more of a classical ambient sound. Same thing for the drums. It had to be live. It's basically a drum and piano room."

The staircase up to the studio and a hallway with a 10-foot ceiling separate the two rooms, but large broadcast studio windows on both sides provide a clear view around the entire complex. Inside the hallway, Hammer stores his amp heads and the main body of his Fairlight, which he describes as "incredibly noisy."

Once the basic design of the studio was complete, Topeka and Hammer went to work on the equipment placement and the wiring. Most of it was laid out on an Apple Macintosh computer, using the *MacDraw* and *Superpaint* software programs.

"Once we had the physical measurements of the control room," says Topeka, "we started playing around with console placement on the Mac. Eventually we placed all the equipment on the diagram we had created. Once we

did that, we never did anything again with a paper and pencil. The big advantage was that we were able to clearly visualize exactly where everything would go."

As for the wiring, "Andy just went crazy," says Hammer, breaking into a laugh. "We've got everything running everywhere. We've got inputs in the hallway, and we can even run lines into the garage. If I want to record a garage band, now I can get the real thing! You can bet I'm going to record some guitar sounds down there."

The input panels throughout the studio use Canar lines for guitars and other instruments, and Monster M-85 cable for speakers. Each panel is also fully equipped for MIDI and video. There is even an aux panel in the studio and control rooms that carries stereo guitar and speaker lines. They interface with each other, enabling Hammer to play out of a Marshall amp head

**"This is a place
that will not be
forced to
become a
public domain
studio."**

while sitting in front of his console, with the speaker bottom placed in the tracking room across the hall.

Because Hammer usually plays and engineers at the same time, much of this custom wiring had to be developed. "I built a remote wiring setup, including a secondary transport remote," says Topeka, "which allows Jan to operate his 24-track tape machine from anywhere, especially from the grand piano. With the foot switch, he can punch in and out."

Topeka adds that Hammer is among a new breed of technologically educated musicians who prefer to work completely alone in the studio. "Musicians like Jan want a place where they can go and make their music without technicians hanging over them," he says.

"In the world of scoring, you don't have the time to work with other musicians or engineers who can't make up their mind when it comes to the tech-

nology," Hammer says. Looking briefly over to the bank of keyboards to the left of him, Hammer adds, "It really is a first-take business."

Oddly enough, most of the equipment in the new Red Gate came out of the previous small studio in his home. The console is a Sound Workshop 34 with DiskMix automation that is run by an IBM XT computer. His tape machines are an Otari MTR-90 24-track analog, and an Otari MTR-10 30-ips 4-track. Hammer also has the head stack to do 2-track masters on the same machine.

He currently uses Hafler amps and Yamaha NS-10s for the small monitors and JBL 4333s for the big monitors. "They're fairly old," says Hammer of the JBLs, "but they still sound great." Hammer decided to have stands built for the big speakers, rather than have them installed in the walls, because "I like to have the boxes work for themselves."

The studio is filled with a wide range of outboard gear, featuring various compressor/limiters, noise gates, digital reverbs and various other audio gadgets, of which, Hammer says, the Yamaha SPX90 remains his favorite.

Since grounding seems to be a major problem in most non-commercial home studios, Topeka also installed a single-point star grounding system in the studio. That means each piece of equipment goes to the same ground, which in this case is the right leg of the mixing console.

Just as important as the recording equipment in his studio are the instruments Hammer uses to compose his music. The Fairlight remains his main tool, but he has been doing additional sampling on the Lexicon 480. Basic keyboards include the Yamaha DX7-IIIFD, which he uses as his master keyboard controller, as well as various other instruments by Yamaha, Roland and Kawai. He also has an Oberheim Xpander and, from the museum department, an original Memorymoog, which he still views with great affection: "I'll never let that go. There are sounds in there that you can't get anywhere else."

His drum machines include Linn (equipped mostly with Hammer's custom chips) and a Kawai R100. He also has an old wooden set of Gretsch drums, which make quite a statement in the studio with their bright, canary-yellow finish.

Hammer uses both his IBM and Macintosh computers for sequencing and says he prefers the Roger Powell *Texture* software program to most others.

"This is the only studio I know of where existing equipment was good enough to keep," says Topeka. "We were able to keep the cost reasonable, and that allowed Jan to spend more on the facility itself. We were even able to keep 25% of the wire from the old studio."

Now, with Red Gate the way he has always envisioned it, Hammer will most likely expand more into film scoring, a field in which he is already a leader. His latest score is an HBO film production called *Clinton & Nadine*. Last year, because of his commitment to *Miami Vice*, he had to turn down several other major studio films.

But after scoring over 30 hours of original music for 77 episodes of the popular crime show, Hammer has decided to step down as composer for the show. He replaced himself with a young, New York jingle writer named John Petersen, whom he met at the last L.A. AES convention. Now Petersen writes and records most of the music for the show, though Hammer remains its musical director and still edits the music.

"I love the show," says Hammer, "and it's absolutely the best thing that ever happened to my career, but it was certainly limiting, schedule-wise. When you have to write and record and edit an entire show's worth of music each week, it's an unbelievable pressure situation. And I really didn't have the time for anything else."

With the studio construction behind him and his work for *Miami Vice* over for a year, Hammer plans to dive into a number of different projects, including contributions to the new Jeff Beck album and another solo album.

"This is a place that will not be forced to become a public-domain studio," says Topeka of Red Gate. "It will remain a private use facility, and that's pretty good when you consider that even Pete Townshend eventually had to rent out Eel Pie."

"It's taken a lot longer than I expected," says Hammer, looking around like the proud parent of a bouncy baby boy. "But believe me, it was well worth it." ■

Bruce Pilato is a Mix contributing editor. He lives in Rochester, NY.

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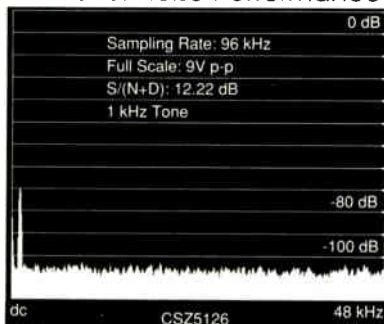
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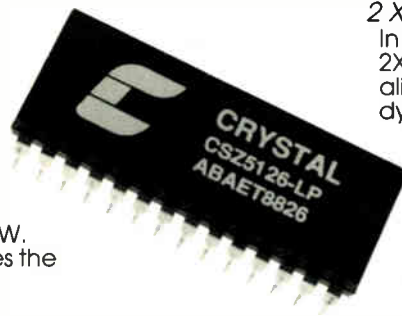
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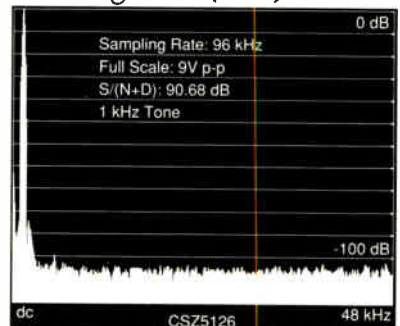
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Circle #051 on Reader Service Card

by Paula Parisi

MITCHELL FROOM

CROWDED SCHEDULE

F

or years, producer Mitchell Froom had been overseeing a quietly successful career, before being thrust into the spotlight with last year's double-header hits—a gold debut album by the New Zealand band Crowded House and a Number One single from Los Lobos with “La Bamba.” Prior to that, the softspoken Froom had been known mainly to insiders for his production work for Richard Thompson and the Del Fuegos and his musicianship on The Bangles’ *Different Light* and Elvis Costello’s *King of America* albums.

At home behind a keyboard or a mixing board, he took to the road with Costello’s alternate backup band, The Confederates, for the musician’s highly publicized “Spinning Songbook” tour in 1986. The 34-year-old Froom began his career as a keyboardist in the San Francisco Bay Area, developing a distinctive Hammond organ style that at once paid tribute to and updated the instrument’s traditional sound. In the early ’80s, as a synthesist, he played with Ronnie Montrose, first in Gamma, then as a guitar-keyboards duo.

Froom’s virtuosity is in evidence on *Crowded House* as well as the group’s most recent album, *Temple of Low Men*, playing on both as well as producing. He can also be heard on Los Lobos’ *How Will the Wolf Survive?* and all three Del Fuegos albums, which he produced. He got his first big break in 1982, scoring the artsy, X-rated film *Cafe Flesh*. Two years later Slash decided to put the music out as a soundtrack. More recently Froom scored the

Island picture *Slamdance*, describing the music as “Prokofiev meets James Brown.”

Last year, Froom joined the elite ranks of Warner’s Russ Titleman and Island’s Steve Lillywhite by becoming an in-house producer for Capitol Records. Eschewing the glitzy trappings



of record industry success, Froom lives with his wife and young daughter in an urban area of Los Angeles known as Silverlake, only minutes from the Sunset Sound studios he calls home during working hours.

Mix: Why did you decide to go in-house with Capitol?

Froom: I was in a position where I could work as much as I wanted to

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work without any affiliation. I didn't need the job. But the artists they signed happen to be those I'd want to work with under any circumstances. And it works out better for the groups, because they don't have to pay me out of their budget. I like that idea a lot, because as you get more successful, it gets to the point where your fee can actually be prohibitive to a record budget. Now the artist gets me for free, and whatever's left we have for recording. It's not involved with money or prestige. It's a very simple situation, and I can still work with whom-ever I want outside the label.

Mix: Richard Thompson has said that because you're a musician yourself, you have a great ability to approach things from an artist's point of view.

Froom: Yeah, I don't believe in the dictatorial style of producing, though I would hope that if I had strong opinions, the artist would at least give them an airing. I do play on most of the albums I produce. But I'm not the right keyboardist for every situation, and I'm thrilled to hire one when there's something I can't do.

Mix: As a second-time producer following up on Crowded House's big hit, did you feel a lot of pressure to outdo the earlier effort?

Froom: We didn't have any fear about topping that first effort. We felt that we could do that pretty easily. If you have a massively successful record, the only danger you face is complacency, just trying to duplicate the original success. On the other hand, the record company worries if you get too adventurous. In the case of a group like Crowded House, as long as they continue to write great songs, they can get a bit eccentric and still be accessible.

Mix: Tell me a little bit about the success of the "La Bamba" single, which ultimately went to Number One.

Froom: That was a complete fluke. The movie *La Bamba* was finished, and they wanted to put out a soundtrack album, so Lenny Waronker, the president of Warner Bros., called and said, "Look, there's a version of 'La Bamba' in the film, but it wasn't recorded as a single. Would you be interested in trying to recut it?" So I called Los Lobos' manager and he said, "Sure, you can do it, but you can only have the band for one day because

frankly, they've played that song so many times for the movie that they're sick of it." It was a thing that nobody was keen on doing at the time. But we went into the studio for one day, I worked with the tapes another day-and-a-half mixing. Then I turned it in and it just took off.

Mix: So your song was released as a single and on the soundtrack album, but it wasn't in the film?

Froom: Right. The way that "La Bamba" was recorded in the film it was supposed to sound fairly amateurish, like a young band playing live in a dance hall. They did a really good job of doing it that way, but it wasn't something that jumps out and sounds like a single. We made it sound a little more high-fidelity.

Good underscoring is a lot more emotionally powerful than a pop song.

Mix: You got involved with film scoring early in your career, and it's something you've continued to dabble in, most recently with *Slamdance*.

Froom: I did all the underscoring and a couple of songs for it. In fact, it came out as a soundtrack album from Island. I'm really happy about that because for anyone who is interested, my own music is never available on records. The last time was a soundtrack I did for a film called *Cafe Flesh*. For that one I had a budget of about \$2,000. This time it was more of a record budget, although it's not a movie with a lot of songs in it. It was more underscoring, which I prefer for a film. I wasn't interested in *Flashdance* or *Footloose* with a million songs. The only times

we used songs were on the opening credits, the end credits and one in a nightclub scene. There aren't songs coming out of nowhere, a technique that I think has been a bit overused. Good underscoring is a lot more emotionally powerful than a pop song.

Mix: How do you go about scoring?

Froom: Basically, I do it in my house. For *Slamdance* I just had a TV screen. I didn't have any sophisticated SMPTE lockup or anything. I just did it with different drum machine clicks, watching the film over and over again. There was very little time. I had two weeks to write and a week to record it. It's a real aggravating business, doing film scores, because you have people that aren't necessarily musically inclined that are making decisions about your work. Even if it's good, they can say it doesn't serve the interest of the film, which is the most important thing. But everything is done by committee, and it's a little disorienting if you're coming from record production where it's just you and the artist, and it's very clean. After producing a bunch of bands in a row, it was a liberating experience getting away from any kind of song form and structure. You can be adventurous.

Mix: What kind of setup do you have in your house?

Froom: I just pull a few synthesizers into the house and plug them into an amplifier. I have a blaster box that's about four times the size of a tape recorder, and that's all I use to write. I don't like making demos any better than that, because you put too much of your original idea onto tape, and then you're faced with the situation of having to re-record it exactly the same way, and it's never as good.

Mix: What kind of synthesizer do you use?

Froom: An Emulator II. It's just as good as a Synclavier and one-tenth the cost.

Mix: Are there any pieces of equipment you find indispensable in the studio?

Froom: The Publison Infernal Machine is a great piece of equipment. It has the equivalent of a harmonizer setting, which is a really powerful setting. It also has a number of delays, digital reverbs and pitch transpositions. It's quite versatile. The other things I use a lot are Calrec Soundfield four-capsule microphones. They eliminate phase cancellation when

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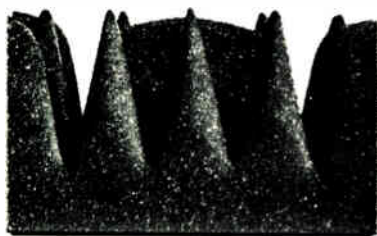
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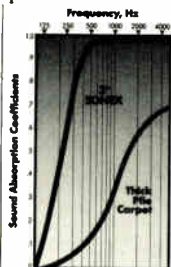


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PRODUCERS · DESK

you're recording and give a very true sound.

Mix: What are the most critical elements of recording?

Froom: The most important thing in digital recording is having a great engineer. People say it sounds brittle, it sounds harsh, but if the engineer understands what the machine is and how it works, you can get whatever you want out of it. I'd rather have a good engineer and record 8-track than a fair engineer and record digital 32-track. I'm particularly happy with the one engineer I've been working with for the past year and a half, Tchad Blake.

Mix: It must be crucial to have a person you can rely on to get the sounds recorded.

Froom: Not only getting the sounds recorded, but then taking it a step further. If you have a radical idea of what you want something to sound like and you're working with an engineer for the first time, chances are you're going to get what that person hears. You don't have any real dialog in terms of sound.

Mix: How does *Temple of Low Men* differ from the first Crowded House record?

Froom: When someone writes melodies like Neil, songs like that stand up so well by themselves, you're free to do things like the Beatles did—you don't have to have drums in a song; the melody can hold the whole thing together. You can probably have him singing and water dripping and it would sound great. We tried some fairly radical experiments on this one. I think it's a better, more consistent record. We were really searching the first time. The band hadn't played very much live. They got quite a bit better as musicians on tour for a year and a half. We wanted to make this record more colorful, and I think sonically it's more powerful.

Mix: What about the overall sound of the record?

Froom: For some songs we used two snare drums, but basically, the attempt was to try to use acoustic instruments in an unusual way. We tried to give each song a unique treatment. Its biggest similarity to the first record is great melodies and very rich harmony. I think the band's real strength is being able to use harmony for emotional

effect. I don't just mean singing harmony, I mean the chord structure itself, so the songs open up in unusual ways. And if you work it right, actually, the song can feel like it's pointing toward one moment at which an interesting bit of structural harmony happens.

Mix: Did you use any unusual instruments? On the last album you told me you used a theramin and a toy piano.

Froom: We used some unusual keyboard things, a stereophonic ophthagon and a chamberlin.

Mix: Last time we spoke we were just entering the digital domain. Do you feel comfortable now recording digitally?

Froom: Definitely, much more so than analog. There's less tape hiss. And there's better top end response and better low end response, and you don't lose anything, you just gain. It's getting to the point where it's not that prohibitive in terms of cost, either, so I think it's something more producers are going to be using. With Richard Thompson's record, I think we're going to end up recording the basic tracks analog with a Dolby system, because digital is hard to edit. What would take two minutes to edit on an analog system may take a number of hours to edit digitally. Richard's record is going to involve so much live recording that we want to have the ability to edit when necessary. You have to accommodate the artist's style in the studio. Richard plays rhythm and lead guitar live. So we're going to record those tracks analog and then bounce it back to digital.

Mix: Give us a chronological look at what you've done this past year.

Froom: I did Pat McLaughlin in the fall, and then we recorded four tracks for Tim Finn's album. Then Crowded House. We did the basic tracks in Australia and Bob Clearmountain mixed it in New York. Next up is Richard Thompson. That's always real fast. We finished up 80% of the record in six days on the last record. Then I'll be finishing Tim Finn's record.

Mix: What studio did you use in Australia?

Froom: We used Platinum. Things worked out. In many ways it's more difficult to record in Australia because you don't have the mic selection, and there's not as much of everything as

—CONTINUED ON PAGE 170

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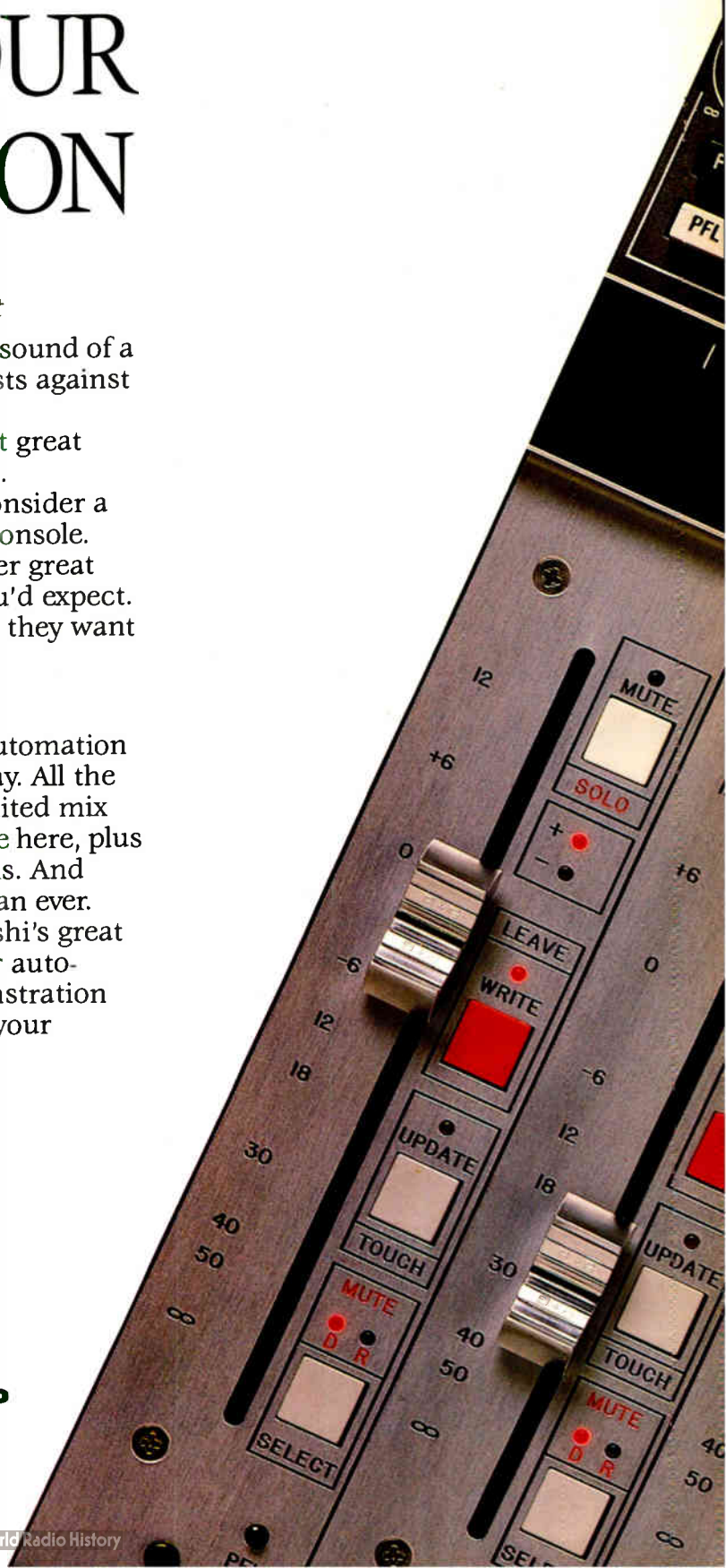
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World Radio History



by Lou CasaBianca

EDIT LISTER 3.0

A COMMON GROUND FOR AUDIO, FILM & VIDEO EDITORS

There is one common element in the education of audio, film and video editors: time code editing. The edit decision list (EDL) is the document developed in the off-line environment where creative and technical decisions can be made without incurring huge post-production bills. Audio editors have increasingly been drawn into a

Lister is an edit list compiler, manager and translator that runs on MS-DOS compatibles, the Macintosh Plus, Macintosh SE and Macintosh II computers with two floppy disk drives or a hard disk. Since the on-screen look of the industry standard CMX editor emulates the "look and feel" of MS-DOS software, the Macintosh version does not

File List Marks Types E-Link Soft Scrub Settings

MUSIC VIDEO - "HOW DO YOU FEEL?" - OFF LINE - 10/25/88

U Only

	RECORD	IN	OUT	DURATION	(N)
	A-0001	01:22:15:26	01:22:15:26	6:05:09	(N)
DISSOLVE	B-0001B	01:27:18:08	01:27:20:06	1:28	(N)
A TO B 10	C-0012				(N)
	D-0008				(N)
	AUX				
	BLACK				

SORT REC-IN
EVENT * 215

214	001	U	C	01:22:01:02	01:22:15:26	01:01:12:29	01:01:27:23
006	001	U	C	01:16:12:19	01:16:16:08	01:01:16:02	01:01:19:21
028	001	U	C	01:22:20:15	01:22:22:28	01:01:19:21	01:01:22:04
007	001	U	C	01:01:39:00	01:01:47:24	01:01:22:04	01:01:30:28
204	001	U	C	01:01:27:23	01:01:43:18	01:01:27:23	01:01:43:18
031	001	U	C	01:22:31:23	01:22:36:24	01:01:30:28	01:01:35:29
008	001	U	C	01:16:32:18	01:17:00:28	01:01:35:29	01:02:04:09
009	001	U	C	01:18:50:29	01:19:11:18	01:01:40:21	01:02:01:10
010	001	U	C	01:05:15:11	01:05:16:20	01:02:01:10	01:02:02:19
032	001	U	C	01:23:05:11	01:23:05:27	01:02:04:09	01:02:04:25
104	003	U	C	01:02:04:23	01:02:15:17	01:02:04:15	01:02:15:09
105	003	U	C	01:06:52:05	01:07:02:29	01:02:04:15	01:02:15:09

SMPTE-based audio-for-video or audio-for-film editing mode. Personal computers have been adapted to handle the kind of work that was once limited to dedicated or proprietary editors, and some new software products have the ability to serve as tutorials as well as functional tools in the editing suite.

EDIT LISTER

Comprehensive Video Supply's *Edit*

leverage the Mac interface to full advantage. Edit Lister supports 30-frame NTSC SMPTE time code, 25-frame PAL/SECAM EBU time code and 24-frame film rate time code. A paper tape punch/reader option allows industry standard edit decision lists to be generated. In addition, it can create lists in the form of standard ASCII text files, which can be transferred via modem.

The program and documentation were written by producer/director/

The Edit Lister main display, showing the scrollable off-line music video list.

programmer Lon McQuillin. The software manual is designed to handle the needs of both experienced editors as well as those just getting started. The first two sections, Introduction and Operation, are straightforward sets of operating instructions, designed for experienced computer editors who simply need to learn the keyboard and minor operating differences between Edit Lister and high-level editing systems.

The third and fourth sections are tutorial in nature, designed for those experienced mainly in control track editing. In addition to teaching the theory of compiling an edit decision list for on-line auto assembly, these two sections also teach the basic principles and operation of high-level systems and list management techniques. The fifth section consists of the Appendices, and the sixth section is a glossary of editing terminology.

Program Overview & Description

In its keyboard entry mode, Edit Lister emulates the operation of a high-level editing computer with the "Record" function turned off. This means the computer does not control VTRs, switchers, etc. Edit Lister can be used as an adjunct to off-line editing systems, adding and/or increasing list memory and adding extensive list management and list cleaning capabilities. The software is designed to be used as an aid to off-line editing in two main ways: off-line edit decision list compiling and off-line management.

With the high cost of on-line editing, off-line list generation can be a very cost-effective tool for controlling off-line development and on-line costs. Edit Lister can compile edit lists during off-line editing in conjunction with a time code off-line system via the "E-Link" section (see below), or by keyboard entry while editing or viewing "window dubs" (copies of master footage with the time code numbers visually inserted into the video). In the latter mode, it takes the place of paper edit log forms, resulting in two major benefits: entering the time code numbers on the computer is faster and neater than using paper forms, and the computer will keep track of record-in times (a task that is very difficult using paper logs), a valu-

able aid in determining the placement of inserts and cutaways on the edited master tape. In both cases, Edit Lister can transmit a completed edit decision list directly to an on-line editing system, or, with the use of an accessory paper punch unit, generate a paper tape.

E-Link (Edit System Communications) provides an interface to time code editing systems (including the Convergence ECS-series, the IVES, the JVC VE-92, VE-93 and VE-94, the Paltex Abner, Sony BVE-800 and BVE-900), that can send edit information out of an RS-232 serial port. It allows these systems to use Edit Lister to build and edit decision lists in the computer during off-line time code editing. E-Link can also be used to transmit lists directly to an editing system.

The Manual Operation mode is used during control track off-line editing using window dubs of the original footage. The procedures are fairly simple: make an edit, noting the starting and ending time codes by examining the time code numbers in slow speed search, and enter those points into the computer. While the actual rough cut tape contains only cuts, you may designate cuts, dissolves, wipes or keys while building the list in the computer, with the final printout, paper tape or disk conforming to the selected format. This mode can also be used to build an edit decision list while simply viewing window dubs and selecting edit in and out points.

In off-line list management mode, Edit Lister loads an existing edit decision list from a previous editing session and performs list management and/or cleaning off-line. When connected via an RS-232 cable to an on-line editing system, or if equipped with an accessory paper punch unit, it can be used to load a list, perform list management operations, and then generate a revised paper tape or transmit the list directly back to the on-line system.

Some of the functions supported by Edit Lister include: an edit list capacity of 999 events in memory and per disk file (capacity is event-oriented, rather than line-oriented); six source channels; six edit types (cut, dissolve, wipe, key out, delayed key, still); keyboard time code entry; nine constant regis-

ters; split edits, delaying video or audio channels; and a total of 80,000 characters available for notes and on-screen memos.

When set for NTSC 30-frame mode, Edit Lister will properly handle either type of SMPTE code, including mixed frame code modes. Since edit lists are saved to and loaded from standard Macintosh 3½-inch disks, multiple edit lists can be stored on the same disk. Files saved in the Edit Lister format are not compatible with disks used for editing systems. Edit Lister can also create and read lists stored as ASCII text files, allowing for modem file transfer using standard communications software, and providing the capability of merging lists. I was able to "dump" a test list directly to CMX through ASCII protocol, which saved the tedious manual re-entering of every edit.

An animation function provides for user entry of a source interval, number of frames per "exposure," and total number of "exposures," up to the capacity of the system computer. This function is very useful for building lists of single-frame events in videodisc pre-mastering. Cuts in a list may be automatically converted to dissolves or wipes with a minimum number of keystrokes. If the preceding event used the same reel number as the event being converted, the auto-convert function will automatically create a B-roll number.

The Soft Scrub multi-function module performs automatic list cleaning and offers extended list management capabilities. Auto Clean cleans the list for either A-Mode (sequential) or B-Mode (checkerboard) assembly. It goes through a list, looking for and cleaning overlapping edits, and removing edits that have been superseded in the list. Convert Edit modes can be used to convert a list containing a mixture of edit types into a list of either just the audio or video elements in the list. This is particularly useful when separate audio sweetening is performed using multi-track equipment. A help screen, available from the main Edit Lister display, provides a summary of all the main system keyboard commands.

When the list in memory is displayed on the screen, one event is

—CONTINUED FROM PREVIOUS PAGE

highlighted, indicating that it is the current event within the list, the one most recently entered into the list, scrolled to, acted upon, or, after loading a list from disk, the first event.

Edit Lister coexists with *Switcher* and with *MultiFinder*. It automatically requests a 400K memory partition when used with either system. Edit Lister 3.0 uses a fixed screen size and location. When used with MultiFinder, switching to another application will leave Edit Lister's screen on the desktop, with whatever you switch to appearing over it. While this may look a bit odd, it does no harm, and Edit Lister's screen is restored when you return to it.

While Edit Lister makes use of standard Macintosh conventions to a great degree, there are a few instances where it does not. With most editing systems, you first tell the system what type of operation to perform (move, delete, etc.), and then indicate the event or events to be affected. With most Macintosh applications, the procedure is just the opposite: you first select a piece of data or range of data (word, line, paragraph, range of cells, etc.), and then tell the applications what to do with it.

My experiences with this program are based on my participation in the "beta" testing phase of Macintosh Edit Lister 3.0. I found it to be a huge step forward from manual or spreadsheet assembly of the edit decision list. If you are new to time code editing, having experience mainly on control track systems, the Edit Lister documentation will give you both an overview of computer editing and the basic experience necessary to get the most out of time code editing. If you are experienced with high-level systems, you will find it to be a valuable tool for generating an "on-line" quality EDL at off-line costs. ■

[Note: *Edit Lister 3.0* is also available through *Mix Bookshelf*. Call (800) 233-9604 or (415) 653-3307 for more information.]

Lou CasaBianca is involved professionally in advanced music, film and TV production, interactive authoring and visual design, and computers in media production. He heads the New Media Learning Center in San Francisco.

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The spacious control room at Westlake Audio's Studio D is crowded with equipment and people. A handful of assistant engineers are busily aligning tape machines, patching signal processors and engaging in the countless other preparations that go into a remix session for a Michael Jackson single. In the center of all this bustle, Bruce Swedien sits calmly at the console. With his easygoing manner and avuncular handlebar moustache, he radiates an air of relaxed assurance.

The Grammy-winning engineer is clearly in his element. Studio D was designed for his needs and those of his longtime associate, producer/composer Quincy Jones. The L.A. studio is where Jones and Swedien cut Michael Jackson's blockbuster *Thriller* and *Bad* LPs, and where work is now underway on Quincy's new solo album, the long-awaited follow-up to 1981's *The Dude*.

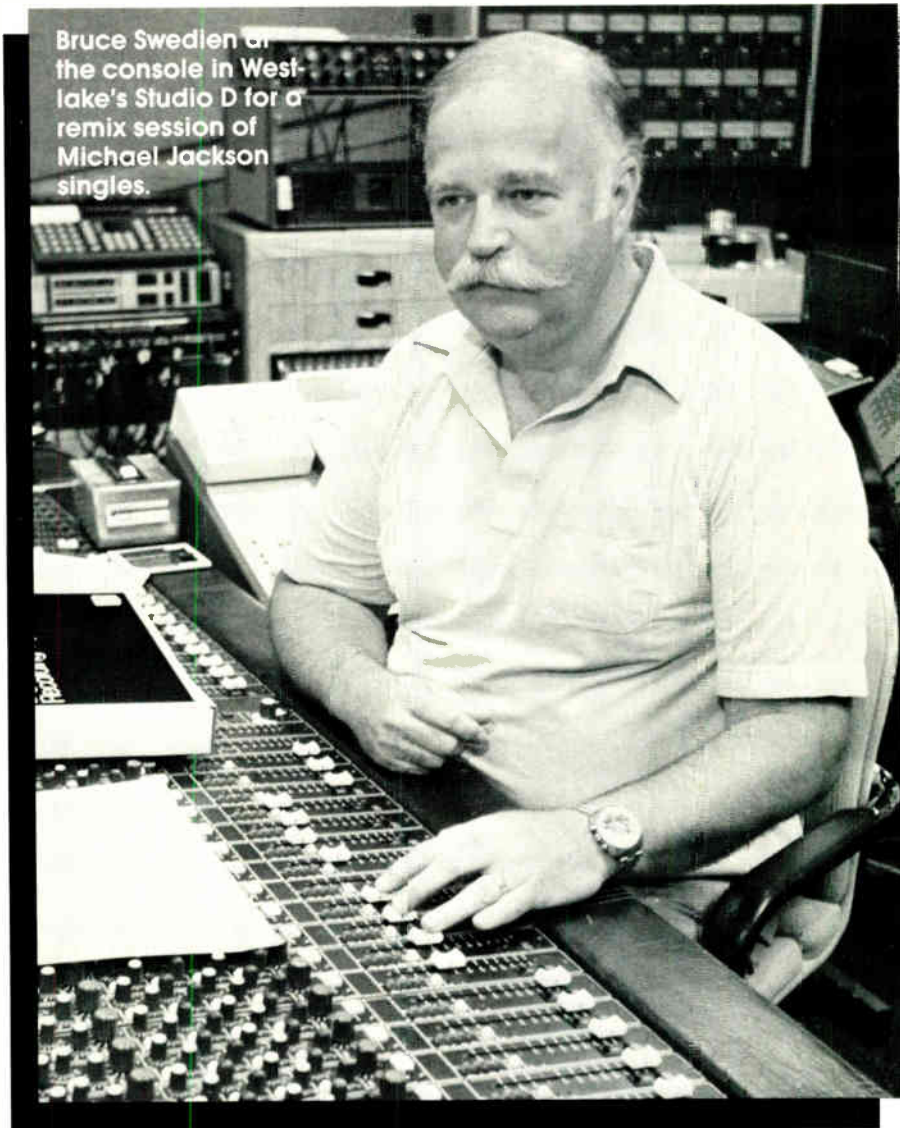
These records are only the most recent in the string of remarkable recordings that has established Bruce Swedien as an engineer *par excellence*. Indeed, Swedien has been around high-quality audio since his childhood in Minneapolis. His father was an electrical engineer and both his parents were musicians. He was experimenting with recording gear before he entered the University of Minnesota to major in electrical engineering and minor in music. After graduating, he spent a year (1956-57) with RCA, recording the Chicago Symphony Orchestra under the direction of Dr. Fritz Reiner. Then, in 1957, he joined the staff at Chicago's legendary Universal Recorders.

It was there that he met Quincy Jones, then the 23-year-old vice president of Mercury Records. For the next ten years, the duo collaborated on records for everyone from Sarah Vaughan to Leslie Gore. In 1967, Jones moved to Paris and Swedien went on to forge a distinguished freelance engineering career. The two were reunited in 1977 to record the soundtrack for *The Wiz*. The project laid the groundwork for Jones' and Swedien's work with Michael Jackson, an association that seems to grow more fruitful every year.

You began to get interested in recording earlier than most people generally do, didn't you?

Yes. My dad started my interest with recording. When I was 10 years old, he gave me a disc recording machine.

Bruce Swedien at the console in Westlake's Studio D for a remix session of Michael Jackson singles.



BRUCE SWEDIEN

Four Decades of Engineering, from Disc Recording to Digital

by Alan di Perna

This was in 1944—before tape. By the time tape did come along, I was totally hooked. I started out with 3M's paper-based Scotch recording tape. In fact, I still have the "Scotch Tape Talk" bulletins, starting with issue number one from 1949. I was still in high school when I began collecting them.

A few years ago, I had to furnish 3M with copies. Even they didn't have them anymore.

It would seem that the desire to push tape machines beyond what's thought of as their usual limitations is one lifelong hallmark of your career.

Oh, definitely. Even in the late '50s and early '60s, Quincy and I were experimenting with stereo. We had a separate control room in the back of the building that was dedicated to stereo mixing. It was just for our own use. We never even thought of stereo as a commercially viable device. Everything was in the mono mix then. But I have a stereo tape of a Sarah Vaughan record that Quincy and I did in 1958, and it's just incredible. We were on 3M's Scotch 111 tape by that time.

It was also back in Chicago that I started messing around with syncing two 4-track machines. I used to record a 60Hz sync pulse on both machines, make a physical mark on each tape, resolve both tapes and then hit the two "play" buttons together, so that the two machines ran perfectly in sync. It was an incredible pain to ma-

nipulate. But it did work.

So this was long before the era of SMPTE time code.

Oh, way before. The next step after that was mag link. And then there was an offshoot of that called mini mag. SMPTE didn't come into my recording work until after that.

And all of the techniques laid the foundation for the Acusonic recording process that you devised?

Yes. But, Acusonic is just a word that Quincy and I coined. It's registered, but it's just a word that describes the way I work with multi-track tapes. I never felt it was good to commit to value judgments in premixes of background vocals, synths or horns until I could hear all the other elements in a piece of music. So I'll devote an entire 24-track analog tape or 32-track digital tape solely to vocal backgrounds or horns. I won't finalize the premix of those parts until I've heard all the other elements in their proper perspective. I do a lot of stereo miking; and this process lets me change the width of the stereo field on each part in relation to the other parts.

So you work with both digital and analog?

Oh, yes. Digital is wonderful, and I use it a lot; but I have not been able to cut analog recording loose entirely. That analog sound is impossible to deny. So I use my Studer A800, and I also have an MCI 16-track. I record all the drums and percussion on 16-track analog, non-Dolby. I record all of Michael's lead vocals on analog, too. I'll do several takes and then composite the vocals to digital. 3M 250 is the only analog tape I like to use; I like its audio texture and consistency, and I use miles of it. Because of the very nature of analog, you lose transient response if you use a magnetic level of greater than 250 nanowebers. And being a transient fanatic, that's always been very important to me. So 250 tape at +3dB is what I like to use.

What qualities do you like about digital?

What digital does well, it does so dramatically well that there's really nothing to talk about. But one thing that's important to me is this: once I've captured the warmth and beauty of analog recording, I can transfer it to digital and it will always be there.

Speaking of capturing elusive qualities on tape, you're currently work-

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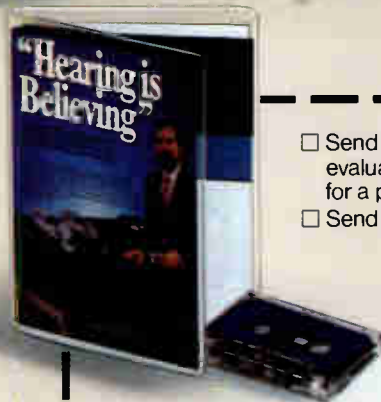
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ing on Quincy's new solo album, aren't you?

Yes. We've got one track that we're extremely pleased with. But it is going slowly. The thing is, we specialize in musical events, rather than merely making records. So that places a lot of demands on us in terms of the quality and caliber of the material and production. Quincy is a master at having an overview of the musical values for the whole album. Superb music is very hard to find.

At what point do you generally get involved in a composition that Quincy's doing?

We get asked that a lot. And it's hard to say. But my input is there right along. Virtually from the beginning. Quincy will run songs by me and ask me how I feel about them.

He'll just show you songs on the piano?

Yeah. Or play me a demo from someone else. And he'll say, "What do you think of this song? What do you think we could do with it? How could we put our unique touch on it?"

Will the new album be a radical departure from The Dude?

Oh, no question. Definitely. *The Dude* was seven years ago.

How would you categorize the new record then?

Well, it's like everything else we've done: hard to categorize. We'd be worried if we could put it in a category. We try to have a surprise each time. And I'll tell you this, when this album is done, it will be very special.

Do you have any other projects going on in the meantime?

Right now, I'm still working on Michael's singles. There's five Number Ones now. I've just finished mixing the sixth single right now. That will be "Another Part of Me" from *Captain EO*.

How do you generally approach remixes for singles?

Well, on anything I do—this isn't peculiar to Michael's records—I always like to challenge the original mix. By the time I remix something, I've been away from the song for a while and I've got a fairly objective ear for it. But many times there are songs, like "Man in the Mirror" on *Bad*, that I won't remix. The performance of "Man" was absolutely inspired—the whole recording, right down to the mix.

There is something other-worldly about the choir on there.

Isn't it unbelievable? I recorded that

here in Westlake's Studio D, with just two microphones. That song is a perfect example of combining modern recording techniques with a classic stereo choir recording, using a pure stereo X-Y microphone technique with its resultant acoustical support. It just cried out for that. And the emotional impact, as a result of that acoustical support, is incredible. Multiple microphones would have destroyed the emotion of that moment. You see, what excites me about recording pop music today is that ability to combine natural ambiances with the sort of spaces that could never exist in reality. *Do you do the same mix for each release format of record—vinyl, CDs, cassettes?*

Absolutely.

Are you conscious of those different formats and their different qualities when you're mixing?

Not usually, because the music and the emotion transcend all that. But once in a while I'm aware of format. For example, there are a couple of dance records I've specifically done on analog rather than digital in order to get the effect of analog tape compression.

As someone who has always fostered and welcomed new technology, what's your outlook on the MIDI revolution and its role in the studio?

I love it. Use it all the time. But what I'm waiting for is the ability to record MIDI data directly on tape—analogue or digital. Then we can do away with the whole MIDI/SMPTE interface, which can be very troublesome. I know someone who's working on a system for doing that now. Quincy and I would love to be able to record MIDI directly to tape during a performance. You'd have the audio on another track, of course, but you wouldn't necessarily have to use it. You could go back and tweak the colors—experiment with different synthesizers—at any time. When we can record the MIDI data directly to tape, it will become just a minor technical move to get that performance down in a format you manipulate later on. So the guy can just play his thing and forget about all the technical baloney. And that's what it's all about. ■

Alan di Perna is currently music projects editor for Musician magazine. He was also a founding staff member of Music & Sound Output, and has written for numerous other publications.

ECHO TIMES

9 AudioFiles for 'Streeterville' Chicago

In the largest single order ever placed for hard disc based digital audio systems, Jimmy Dolan of Streeterville Studios has unveiled plans to incorporate 9 AMS AudioFiles (TM) as the heart of his new studio complex situated in downtown Chicago.

Jim Dolan, previously owner of 3 NED Synclavier systems, has been no stranger to disc based digital audio. He and the technical staff at Streeterville have been carefully monitoring the developments of all commercially available and proposed hard disc editors/digital workstations.

“At Streeterville, we are committed to being the best we can be. We want our clients to know that they come first, and that we will perform whatever is necessary to fulfill their most creative vision. This has sometimes meant that our engineers have had to actually invent new methods to address these needs.

In the same way, when we decided that the best overall system for Streeterville would be based on a random access, digital audio storage medium in a central core, we were prepared to start building. However, fortunately for us, while our needs at Streeterville were growing, so was the ability of the AMS AudioFile. AudioFile has come a long way since we first took a look at it 3 years ago, both in terms of operational features and the systems approach which AMS has adopted. Because of its open ended architecture, it has continued to grow and develop in ways that put it way ahead of any of its competition. AudioFile is already unique in the things it can do, and with the coming availability of networking and dynamically automated digital consoles like Logic 1, it is clear that AMS with their experience has a very good understanding of what is needed from these systems. Plans revealed to me recently leave me in no doubt that taking this step at this time with AMS/Calrec is clearly the best way to go, for Streeterville and the clients that depend on us.”

Jimmy Dolan, Streeterville.



Left to right Doug Ordon, Nigel Bramwell (AMS) and Jimmy Dolan (Streeterville).



Douglas Ordon, the Chicago representative for AMS said “In January of '87, I had the privilege of placing the very first AudioFile in America into the hands of Editel-Chicago. Now, almost 2 years later, the pioneering spirit here in Chicago has once again provided us with another first; the placement of the first “multi-room” AudioFile system, comprised of 9 individual units networked together, at Streeterville Recording Studios.

Jimmy Dolan and Steve Kusiciel of Streeterville, took their time in assessing the different disc based systems currently out there. I mean they **really** took their time. They picked every brain they could find. They discovered, as I did, that AMS is constantly moving the goalpost further

downfield, redefining the yardstick by which all such systems are measured.

The audio community in this neck of the woods has been good to me. Once again they've rallied around a leading edge product that I felt was destined to be a long term winner. Streeterville's thorough and careful decision to standardize the use of the AudioFile throughout their facility reinforces what I believe. AMS/Calrec viewed as a total, is the leader in hard disc digital recording technology. I have always believed in the AMS potential, and the continued success we've enjoyed here in America's heartland tells me that I'm not alone.”

Doug Ordon, Douglas Ordon and Company.

Four of the nine systems have already been installed at Streeterville such that work started in one room can be completed in any other without physical relocation of hardware. Streeterville will be employing the AudioFile Networking System (See adjoining story) which will also expand to accommodate the remaining 5 systems, to be supplied to Streeterville as the additional, newly planned suites come on-line.

Chicago is yet another city that has come down heavily on the side of AMS AudioFile for its disc based digital audio post production, as can be seen from the increasing number of facilities who now operate one or more AudioFiles. Chicago Recording Company have just added a second AudioFile to their facility and Szabo Tohtz has ordered the first LOGIC 1 for delivery in the U.S.A.

AudioFile owners with one or more systems in Chicago:

Editel
Chicago Recording Company
Szabo Tohtz
Avenue Edit
Universal Studios
Streeterville

LOGIC

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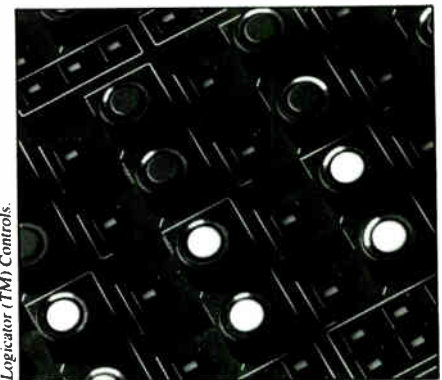
The NAB Exhibition in Las Vegas, U.S.A. during May saw the launch of the first in a series of all-digital consoles from the AMS/Calrec R & D departments.

LOGIC 1, a dynamically automated moving fader console, has been designed to work in conjunction with AudioFile. Together, LOGIC 1 and AudioFile offer a highly comprehensive and flexible production centre for the professional audio engineer, whether working exclusively with sound or with sound to picture.

The console control surface attracted a significant amount of critical acclaim during the exhibition, particularly several unique features for which patents have been applied.

The moving faders incorporated in LOGIC 1 are based on linear motor technology and

World Radio History



Logicator (TM) Controls.

have been so designed as to reduce the uneasy feel that can be introduced by pulleys and springs used in conventional motorised faders.

Every pot control from pan, mic input, aux sends and EQ can be dynamically adjusted and on replay "move" with the automation exactly as adjusted during the automation update mode. This "movement" is courtesy

of a further device that is the subject of a patent application - the Logicator (TM) control. Logicator is a touch sensitive control knob featuring fibre optic technology that allows both pinpoint accurate settings and broad bands of display to be available on the head of any knob on the control surface of LOGIC 1.

The console itself employs 32-bit floating

point processing and operates with an internal dynamic range exceeding 1500 dB. Existing AudioFile owners will be pleased to learn that any AudioFile so far supplied by AMS is capable of being retrofitted into a LOGIC 1.

The first LOGIC 1 in the U.K. will be going to Tape 1 and the first in the U.S.A. to Szabo Tohtz in Chicago, as mentioned in the earlier article on Streeterville.

A DIGITAL AUDIO MINI MIXER

AMS/Calrec launched their second digital audio mixer this year at the IBC (International Broadcast Convention) in Brighton, England at the end of September. EDIT 1 can accept either analogue or digital inputs but has been designed primarily to operate as an automated audio mixer in conjunction with the new generation of digital video tape recorders.

EDIT 1 is an 8 into 2 mixer (any or all channels can be mono or stereo) with a 19 inch rack-mount configuration for direct mounting into existing furniture, or it can be supplied in its own desk top housing.

EDIT 1 and AudioFile can be directly interfaced for those wishing to take advantage of the automatic audio editing software within AudioFile whilst it is under the control of a video edit system.



THE AMS DIGITAL AUDIO NETWORK

AMS AudioFile has now become established in over 20 countries worldwide and can be found working daily on a host of different projects and being applied in a variety of different ways.

The wide scope of AudioFile's operation has resulted in an increasing number of owners purchasing second and even third systems. In such situations, a trend is revealing that each AudioFile, rather than being used on a project from beginning to end, is being used to perform a dedicated function.

An AudioFile in a small room with a sound effects library can be used purely as an editor or for pre-lay. The same system can be available for control from a video edit controller being used in an on-line video edit suite. A second AudioFile may well be used in conjunction with a small mixer for dubbing or ADR work, whilst finally a third may be available in an automated mix room. Once a facility is working in this way, the ability to complete audio work in one area and have it immediately available for continuation of work in another is of paramount importance.

A matrixing system has been available to AudioFile owners for some time, which performs this function by permitting any control surface to be instantaneously switched to operate with any mainframe.

The latest developments have been aimed at providing a circuit card which can be inserted into any AudioFile to allow up to 32 systems to operate on a ring network. This same card is currently being used as a communications card between AudioFile and LOGIC 1.

Significant further advantages of the AMS Digital Audio Network mean that several AudioFiles can be working on the same piece of material at the same time. Also, a single AudioFile on the Network with a large memory capacity (anything up to 16 hours) can hold a company's sound effects library which is then available to any other AudioFile on the Network.



FURTHER UA 8000 AND DIGITALLY ASSIGNABLE CONSOLES FOR UK STUDIOS

Odyssey studios in central London have replaced one of their SSL consoles with a 48 channel UA 8000 with TASC automation. In a move to offer his clients a greater choice for music recording Mr Wayne Bickerton, Managing Director of Odyssey Studios, feels that the UA 8000 has already become a favourite with his clients.

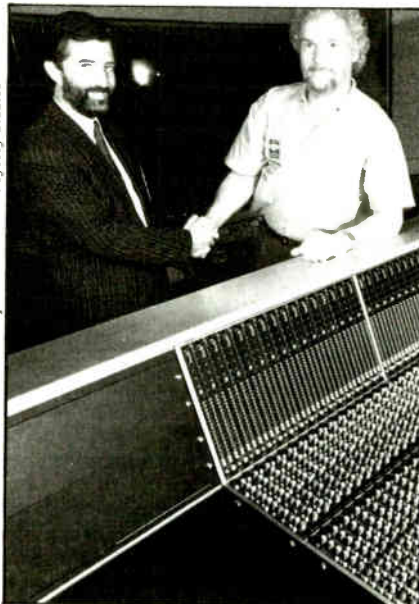
"The audio quality and flexibility of the UA 8000 are things that a lot of people have been talking about. Taken in conjunction with a powerful yet straight-forward to use automation system, it is not surprising that once used on a project, my customers find it difficult to go back to anything else."

Abbey Road Studios, owner of a 64 channel UA 8000 with TASC automation, have recently completed extensive refurbishment work on their Studio 3. The work has involved the swapping round of the studio and control room with acoustic work by Sam Toyashima. Ken Townsend, General Manager of EMI Abbey Road, said "This new room has been designed to be the best in

London and as such reflects what we believe to be the very best that can be made available to the most discerning client."

Music Factory in South Wales have enjoyed a great deal of success since the installation of their UA 8000 and TASC. John Davies, Studio Manager at Music Factory said "When you know music recording studios in London are having a tough time you can bet regional studios like ours should be also. What the UA 8000 has done for us is give us an edge over London Studios and resulted in us being fully booked with advance bookings that typically stretch months ahead."

Scottish TV. have joined the BBC and Thames Television with their decision to purchase AMS/Calrec digitally assignable consoles. The first will be used in Gateway Studios at Edinburgh.



Steve Jagger (L), AMS/CALREC and Wayne Bickerton of Odyssey Studios

HAVE AUDIOFILE WILL TRAVEL

An increasing number of successful sound engineers have looked hard and long at AMS AudioFile and decided that their freelance services can be greatly extended by working with their own AudioFile. By offering a combination of their talents combined with the capabilities of AudioFile, a new generation of sound engineer is finding itself very much in demand - and location presents no problem at all.

Of particular interest is the broad spectrum of applications that these new specialists are beginning to create - from sound editing for film and video to music editing for albums as diverse as Iron Maiden to the Everley Brothers.

What follows is a selection of comments from a few individuals who have geared themselves up with flight cases and an AudioFile and who seem quite happy to travel anywhere with their systems.

AMS AUDIOFILE Anthony Faust
(London)
Tel: 01 437 0516

"I have equipped myself with a completely portable AudioFile facility for tackling anything involving sound to picture. All my equipment is flightcased and fits into an estate car. Besides AudioFile I also carry triple standard U-matic recorders and monitors as well as a centre track timecode Nagra, a tape streamer, timecode equipment, an R-DAT recorder and CD sound effects libraries."

"I've got a package and a formula that allows me to demonstrate greater speed and flexibility of working to anyone currently involved in the post production of sound for film or video."

"Having been a sound editor in film for more years than I wish to remember, I take great delight in witnessing the sparkle in individuals' eyes as they tumble to what AudioFile can mean to them for all their future projects."

AMS AUDIOFILE Andy Hilton
(London)
Tel: 01 708 0483

"With my rental company, Hilton Sound, having offices in Paris and London, naturally any equipment I do business with has to be portable. Transporting AudioFile around the continent is child's play, and getting to grips with AudioFile represents few problems for our clients.

Apart from hiring it out on more traditional projects such as sound to picture work, we are at the same time watching AudioFile evolve as the heart of the latest music post production craze - 'Acid House'. Armed solely with one of our AudioFiles, 'Acid House' Producer 'Zeo' was recently featured live on Channel 4's 'Network 7', transforming a Glen Madeiros single into the Acid House genre. Few demonstrations of the system's real time editing and recording capabilities could have been more pressured, but impressive results were performed live in front of millions!"

AMS AUDIOFILE Andy Macpherson
(Manchester)
Tel: 061 485 8942

"I've got a title of 'Mr Drums' and for me my ideal combination of equipment that does just what I want is a Mitsubishi digital multitrack working in conjunction with an AudioFile."

"I've already had my AudioFile on aeroplanes where a 'fix-it' job has been necessary on a project and going back to an analogue way of working without AudioFile is just unthinkable."

AMS AUDIOFILE Tom Allom/Ted Stein/
Eric Shilling (USA)
Tel: (305) 947 5611

"Between us we own a single AudioFile that has already been used on the creation of the most recent Judas Priest album at PUK Studios in Denmark, the current Everley brothers album project in both Nashville and Los Angeles and also on numerous Miami Sound Machine projects in Miami".

Tom Allom has this to say of AudioFile, "AudioFile is a brilliant aid to record making - it's hard to imagine going back to the old methods having got used to its precision and both time and energy saving features."

AMS AUDIOFILE Dave Aston
(West Yorkshire)
Tel: 0274 566747

"A year after purchasing AudioFile I feel I've learnt an awful lot and I still feel as enthusiastic as ever about this system. A certain amount of my work involves music editing and undoubtedly AudioFile is definitely the best thing since spliced tape! For me and my business, the portability of AudioFile has definite advantages and the inevitable phone calls requesting - can you come now? - doesn't present any problem." "I am just as at home working with sound for pictures as I am editing a broad cross section of music. The best thing about AudioFile for me is that the system is a creative tool where I am an artist and not just an operator"



STOP PRESS

At time of printing, Young Guns, a 1980's western and the first major feature film to have the sound post production done on AudioFile, appears at number 6 in the American movie charts.

Wylie Stateman of Soundelux in Hollywood reports "The entire post production editing of the film was accomplished using the facility's two AudioFiles. First reaction to pre-release viewing of the film and its soundtrack are wildly enthusiastic. The precision and high quality first generation sound could not have been achieved without AudioFile."

S-DMX. A NEW STANDARD OF EXCELLENCE IN DIGITAL AUDIO PROCESSING.

A further series of enhancements to the AMS DMX 15-80S dual channel delay/pitch changer/sampler has been accompanied by a name change for this every popular piece of studio equipment.

The S-DMX is operationally identical to the DMX 15-80S but the system is now fitted as standard with 6.5 seconds of full bandwidth audio delay per channel. Its memory can be expanded with new 6.5 or 13 second delay cards, up to a 52 second maximum. With these much larger memory expansion cards also comes a significant decrease in price, making very large memory S-DMX's a much more affordable option.

Finally, all S-DMX's are also equipped as standard with a MIDI interface, which was previously an optional extra.



JEFF WAYNE interview

Jeff Wayne is probably best known worldwide for his double album creation "War of the Worlds". What is less well known is that he owns multiple AMS digital audio processors and has just purchased an AMS AudioFile to help him complete his new project "Spartacus".

A.M.S. I am correct in thinking that you came from a musical background?

Jeff Wayne: Yes my father was a singer and writer. He was a popular singer in my home country of America from the early forties up until the early fifties when we moved to England. The move to England was for him to play the role of Sky Masterson, one of the leads in the original "Guys and Dolls".

We stayed in England for four years and he got involved more in writing and production.

AMS: So how old were you when you came to England?

JW: Nine. I was brought up in New York before coming to England, and returned to New York for about three years before graduating at high school and college in California. I came back to England in 1966 and decided to stay. The reason I stayed was I wrote a West End musical that ran at the Palace Theatre, which I am sure you know is now owned by Andrew Lloyd Webber. I intended just to come and see the opening of the show and then go home - but as you can see, I'm still here!

AMS: So what made you stay?

JW: Well, I found my first consistent income when I started writing music for commercials. Involvement in this work meant I met a lot of singers, musicians and entertainers and I started producing records - as usual one thing lead to another. By then it was the early '70s and I got lucky because the first artist that my own company ever signed was David Essex and the first record we did got to number 1 in America. That was "Rock On" and we got a Grammy nomination for it.

AMS: Did that herald a long relationship with David Essex?

JW: Yes it did. However I also took on 11 or 12 movie scores and TV work in between working with him and thinking about starting War of the Worlds.

AMS: When did you actually start War of the Worlds?

JW: It was started in 1975 and handed over to CBS in mid 1977. We prepared it for release by making singles from it and doing videos - not quite like the videos of today but, then again, not bad for the time. Sadly, CBS in America didn't want to know about it saying that projects like this never happen! Then, of course, it did!

AMS: So how many copies has it sold so far?

JW: War of the Worlds is still selling and still moving very nicely. It stayed in the U.K. charts for almost 7 years and over a year ago passed 4 million double albums and a couple of million singles.

AMS: So what happened in the States?

JW: It's sold nearly half a million albums in America which is less than it sold in Australia, but we had lots of distribution problems. One of the major problems we had was that it was never listed accurately in Billboard. Somehow it got into the section marked "film soundtracks" whilst it should have been on its way up the charts - and of course there was no film. I can show you some wonderful press reviews of a soundtrack to a movie that doesn't exist! We also had a single that



did very well - "Forever Autumn" but even that was listed as a single off a Moody Blues Album!

AMS: Does that mean the U.S.A. has now missed its chance for exposure to the War of the Worlds project?

JW: Fortunately not. My most recent contract with CBS involves a remixing of War of the Worlds once Spartacus is finished, for re-release

wherever they choose. I'm delighted.

Don't forget, when War of the Worlds was first made in the mid '70s, not only did we not have an AudioFile, we didn't even have RMS 16s and DMX 15-80s. It'll be fun - It won't be a chore!

AMS: Do you remember your first contact with an RMX 16 or the DMX 15-80s?

JW: I started as a musician, not an engineer, so I always have noticed effects that machines can produce. I would think of effects and write for them. My first meeting with AMS equipment was in my original studio in London, being part of JWM (Jeff Wayne Music). It was wonderful and without being overly flattering it was undoubtedly the best of its kind for me.

AMS: Is there any favourite way you like to use the RMX or DMX?

JW: I just don't think I can give you one answer so that, quite honestly, they really are classic "instruments" and as such have a range of facilities that are still viewed and used every day in that respect.

AMS: You've looked hard and long at hard disc recorders before purchasing AudioFile, what do you see the immediate advantages of this particular system are to you?

JW: Spartacus that I'm working on now is my second project. When I look back at War of the Worlds I know that if I had had an AudioFile, and ONLY an AudioFile, my life would have been much different. This is simply because these projects combine both dialogue and music, using both film scoring and contemporary music scoring techniques. The way editing is done on AudioFile, the quality of the sound because you aren't continually laying-off and back - the whole range of facilities couldn't have failed to change my whole professional life. Jumping ahead to where we are now with that experience, I'm sure with what I already know about AudioFile and also what I'll discover - creative expression on the system will definitely make for a very exciting project.

AMS: Whilst the Spartacus album will be receiving your major efforts over the next 18 months or so, will you still continue with other pieces of work for TV where you can take further advantage of AudioFile?

JW: Oh yes, I'll continue to do TV themes such as the TV-AM and Good Morning Britain ones. That's what appeals to me about AudioFile specifically - it has such a width of application.

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TEC AWARDS TO SALUTE FIRST HALL OF FAME WINNERS

Recording pioneers Les Paul and the late Bob Liftin will be honored as the first inductees in the Technical Excellence and Creativity (TEC) Awards Hall of Fame, November 3 at The Biltmore in Los Angeles. The evening's festivities will be hosted by Firesign Theatre's Phil Proctor, with a plethora of industry celebrities on hand to present the TEC Awards.

The money raised from the gala event will go to the House Ear Institute's "Sharing is Caring" Family Camp, and toward audio scholarships for the winner of the Recording School/Program category and the Audio Engineering Society Educational Foundation. Speaking on behalf of the Institute will be actor Richard Thomas, probably best remembered for his role of John-Boy Walton on the TV show, *The Waltons*. Thomas suffers hearing loss in both ears and has benefited from the work of the House Ear Institute.

The TEC Awards Hall of Fame was created to recognize those individuals who most exemplify the spirit of creative and technical excellence in the audio industry. The inductees were selected by the 1988 TEC Awards Nominations Panel and the editors of *Mix*.

Bob Liftin opened Regent Sound Studios in New York City in the late '50s. He was instrumental in developing SMPTE lockup and synchronization of audio and video machines. Liftin also paved the way for much of the computerized storage used today. He recorded such musical legends as Aretha Franklin, Connie Francis and Little Anthony & the Imperials, and for many years was sound consultant for *Saturday Night Live*.

Recording legend Les Paul can claim innovations so paramount as to have guided the direction of an entire genre of music. Among his creations are the first solid-body electric guitar, the floating bridge pickup, the electric pickup and the 14-fret guitar. He also pioneered modern recording techniques, including close-miking, echo delay, multi-tracking and overdubbing.

Fifty percent of the proceeds of the TEC Awards will go to the House Ear Institute in Los Angeles for their "Sharing is Caring" Family Camp, a yearly weekend camp created in an effort to support families with deaf children. The camp provides psychologists specializing in deafness and communication, along with a panel of deaf adults who share their experiences of growing up deaf and in the professional world.

Celebrity presenters include former Doors keyboardist Ray Manzarek, Emmy Award-winner John Tesh of TV's *Entertainment Tonight*, renowned studio engineer Bob Clearmountain, motion picture sound designer Frank Serafine and sound designer/recording artist Suzanne Ciani.



T U C K E R

With the making of *Tucker*, Francis Coppola has realized a long-cherished dream to make a film about another dreamer—innovator and maverick Preston Tucker. In 1946 Tucker's ambition was to design and market America's first completely new car in 50 years. Some of the car's innovations included aerodynamic styling, padded dash, pop-out windows, seat belts, fuel injection and disc brakes—all radical ideas at that time. In the end, financial and legal difficulties—some self-imposed, others the result of the Detroit auto establishment's conspiracy against him—prevented him from producing more than 50 cars. (Ironi-

RICHARD BEGGS TALKS ABOUT THE SOUND DESIGN FOR FRANCIS COPPOLA'S "DREAM" FILM

by Nicholas Pasquariello

cally, most remain road-worthy to this day.) *Tucker* is the story of how that dream came to be realized.

Coppola chose his long-time sound designer, Academy Award-winner Richard Beggs, to head the post-production sound crew of the \$30 million picture. And he hired British pop composer Joe Jackson to create a lively, brassy, "scoring" music track, which owes much to the period depicted in the film.

Beggs and his sound crew divided their six-month post-production schedule between his San Francisco base-ment studio (for multi-track) and George Lucas' plush, comfortable Skywalker Ranch. *Tucker* holds the dis-

CHASING TUCKER: RANDY THOM RIDES AUDIO

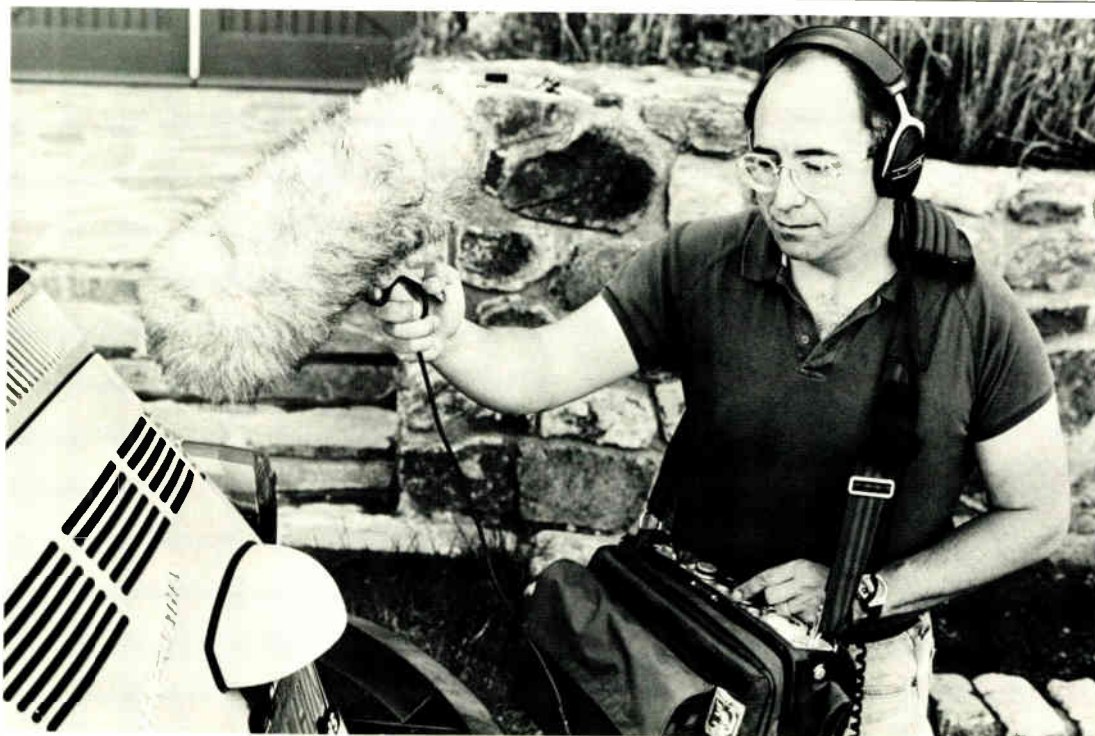
Sound designers like Randy Thom of Sprocket Systems are among the unsung heroes of filmmaking. If the job is done well, we subliminally accept the fabricated acoustic montage as sound reality and get on with enjoying the film. In his 18 years in the business, Thom has

collected sounds for such films as *Apocalypse Now*, *The Right Stuff*, *The Empire Strikes Back* and *Raiders of the Lost Ark*. To create the many layers of effects and ambience so integral to the audio perfection of Lucasfilm Ltd.'s *Tucker*, Thom explored some risky record-

ing situations.

There is only one way to get the close-up sound of a motorcycle engaged in a high-speed chase: climb on board with a portable recording system and hang on for dear life. For that unmistakable growl and

—CONTINUED ON PAGE 74



(Left) Randy Thom of Sprocket Systems on location with a Sanken MS-7 mid-side stereo microphone in a Rycote windscreen.

(Above right photo) Jeff Bridges as auto visionary Preston Tucker.

(Photo right) Director Francis Coppola (R) with producer George Lucas.



inction of having been the first feature film to be mixed at the recently opened facility. In general, Beggs was pleased with the shakedown at Skywalker; and he was especially glad to find technicians at his beck and call anytime tweaking was called for.

Beggs' other recent credits include *Walker* (1988), *Gardens of Stone* (1987), *Spaceballs* (1987), *The Nutcracker* (1986), *Cotton Club* (1984) and *Ghostbusters* (1984).

Mix: How did you create the sound design for *Tucker*?

Beggs: The stylistic antecedents for the picture were discussed [during production]. The camera angles, the idealized family life, these elements all point in a certain direction. This was a genre of period films that was looked at and talked about: the '30s and '40s American genre picture that dealt with American ideals and values à la *Mr. Smith Goes to Washington*.

The car thing element is really, if you'll excuse the pun, a vehicle to carry these other considerations. How does this relate to sound? Rather than jump to conclusions or develop ideas completely early on, my tendency is to hold them back—not let them develop conceptually—and just keep the germ of the idea around. As I look

at cuts of the picture, talk with Francis or go on location, a lot of ideas occur to me, some small, some large. By that time I've seen the picture enough that certain thematic ideas may have presented themselves: acoustical signatures, something that might typify a certain scene or location, elements that will tie the picture together much like music would. And I think about how those sounds can be used for dramatic effect in those sequences rather than for just what they are.

For instance, there's the shop adjacent to Tucker's home in Ypsilanti [Michigan], which is a fairly well-equipped automotive shop with a lot of hydraulic equipment—jacks and hoists. A common sound in those places, though we never see one in the movie, is an air compressor. It makes a rhythmic pumping sound: it starts up, goes for a while, and then when the tank reaches capacity it shuts down with a very characteristic sound. Then it's quiet for a while,



either until the pressure drops naturally or it's used with some tool and it turns on with a characteristic sound, revs up, runs at speed, et cetera.

So I seized on that as a possibility. In this movie I was hard-pressed to find elements I could use like that—rhythmic, acoustic elements that tied

to manufacturing and cars that could be used dramatically. I used it in that sense in several scenes to create a kind of tension. Like in the scene where Tucker explodes after Alex Tremulus [the car's designer] is almost crushed by the car. This device [or effect] is used at the beginning of

the scene, then stops at a very critical point. The fact that it stops helps to create a kind of ambience and mood that is dramatic in nature.

Mix: Specifically what function did you see the effects playing in this sequence?

Beggs: We come from a very relaxed



PHOTO: RALPH NELSON JR.

With his family and friends, Preston Tucker (Jeff Bridges) watches the 50th Tucker roll off the assembly line at his Chicago plant in Paramount Pictures' "Tucker: The Man and His Dream."

—FROM PAGE 72, RANDY THOM

roar of a crankin' police Harley in pursuit of the maverick carmaker Tucker, Thom packed an elaborately windscreened Sanken MS stereo microphone mounted in a pistol grip and rode at high speeds through the Skywalker Ranch in San Rafael.

"I was a little nervous because a friend of mine once broke his back while recording sound effects on a motorcycle," Thom recounted. "You hold on to the rider with one hand, watch your meters and try to position the mic with the other. I tried to be as macho as possible."

Thom was initially attracted to the Sanken, which was recently introduced to the American market by Audio Intervisual Design, because of its pistol-grip, "point-and-shoot" design. "Most MS mics are designed for studio use and it's practically impossible to shock-mount them properly and equip them with the necessary windscreening," he explained. "We tested one

out and it worked so well that we now have two, which we use with a Nagra or a Sony TCD-D10 R-DAT recorder in the field.

"To protect the mic from the rush of air we used a new type of windscreen made by Rycote. It's called the Windjammer, and it's covered with synthetic fur—looks like a puppy. It's an order of magnitude over any other screen I've ever used. Even with all the protection, I still had to hold the mic behind my back and use my body to cut down on the wind noise.

"I used to record with a pair of cardioid mics mounted in an X-Y configuration, which is cumbersome. Other MS mics are larger and have awkward control boxes. The nice thing about the Sanken MS is that both elements are in one casing, with a little matrix box which you switch so that the output of the microphone can be either X-Y with discrete two-channel recording, or it can be mid-side to preserve on two tracks a mid signal

and the two sides separate from each other. Later on, you can decide how much separation you want. While recording, you can also switch how many degrees of separation you want, from 90 to 120 degrees."

In addition to his hair-raising cycle recording, Thom also captured the sound of crowd scenes at an abandoned movie theater in Oakland. "Richard Beggs, who was in charge of sound for *Tucker*, and I knew we couldn't get good recordings of the crowds during the filming because of the concerns of the director of photography, Vittorio Storaro. You have problems with close microphone placement, using booms, casting shadows, and also the unwanted noise of generators and the usual environmental problems of recording on location. If you want good sound, you almost always have to do it separate from the filming."

And that's when the adventure begins.

—David Goggin

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Sound Thoughts on Live Performance

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Meyer strives for professional sound quality that is predictable and neutral over an extended lifetime and across an extended range. Even after extended use, Meyer Sound performance is never compromised.

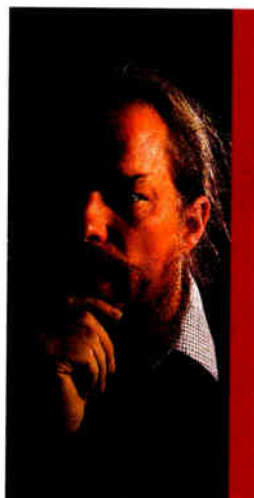
As a consequence, Meyer Sound products have earned a reputation for the highest reliability in the industry. All are guaranteed to meet or exceed specified performance levels when properly installed.

“The general public’s sophistication keeps growing. Soon, if we have our way, the audience will demand the same accuracy in live performance that they get from home recordings.”

Instead of second-guessing the tastes of the market, Meyer produces sound systems that most truly represent the character of the signal they receive, leaving artistic control where it belongs—with the artists and sound designers.

Meyer takes a conservative view of exotic loudspeaker materials, preferring to use proven materials in new, more elegant ways.

Every part of every component undergoes rigorous, comprehensive testing. Meyer Sound controls all aspects of the system design—if not by manufacturing, then by modification and refinement to Meyer’s stringent standards.



John Meyer, Founder and President, Meyer Sound Laboratories

“As expectations rise, our performance standards have to rise even higher. And the only way to increase performance is with increasingly sophisticated measurement.

“Which is how we found ourselves also in the measurement business.”

Meyer originally intended to be solely a manufacturer of high-quality, rugged and reliable loudspeakers, expecting others to pioneer and perfect testing equipment. But the need to accurately measure the performance of Meyer components individually and in arrays outgrew the quality and resolution limitations of available testing equipment.

To make sound work in spaces, Meyer Sound Laboratories developed by necessity its own testing technology and methods.

John Meyer, his engineers and his designers have authored several definitive works, and research remains an integral, driving force behind all production.

SIM™ Equalization

SIM™ equalization is the logical result of Meyer’s commitment to uncompromised sound quality through sophisticated measurement. The non-intrusive SIM technology uses real-world program material (either voice or music) as the test signal. Working interactively with the sound designer, a Meyer SIM engineer helps create superior clarity for every member of the audience.

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John Meyer’s involvement in loudspeaker design began in 1967 when, as a technician for a Berkeley, California Hi-Fi supplier, he set out to discover why a leading manufacturer’s drivers kept tearing themselves to pieces. Further investigations convinced him that the market sorely needed a class of rugged professional speakers that would maintain their characteristics over time.

Research in Switzerland in the early seventies secured his knowledge base. In 1972, Meyer developed the JM3 all horn loaded tri-amp system with rigging, which was the standard for Broadway shows until the introduction of the UPA in 1980. From 1973 to 1979, Meyer sought out the best available parts and designed the first Ultra Series™ reinforcement speakers. In the decade since, John Meyer has established Meyer Sound Laboratories at the forefront of professional reinforcement technology.

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“Noise and light are not music.” John Meyer

Dynamic sound behaves differently in each spatial context. And while schematic arrangement helps dramatically in predicting sound quality, only through live use and exhaustive testing can an installation be tuned for specific desired characteristics.

Some sound designers still use noise, swept tones and light to set up a soundstage, as if projecting sightlines and frequency response in an empty room delivered the pure experience of music.

Meyer Sound recognizes the importance of both frequency response and phase response alignment and maintaining the *order* of the signal throughout a space. (For example, playing a tape backwards doesn't change frequency response, but changes phase response.) And the only way to gauge phase properly is through measurement.



Bob McCarthy
Senior SIM Engineer
at the 1988 Grammys

Results-Oriented Measurement.

A SIM engineer from Meyer operates the system, implementing the sound designer's desired effects.

SIM enhances the mixing function, making the spatial sound dynamics visible to the SIM engineer. Placing SIM microphones strategically throughout a space, the engineer first ensures all areas are covered, and then adjusts each area to attain a uniform sound experience through SIM's straightforward system of resolving complex measurement.

SIM equalization even has the ability to erase a room. The sound designer thus can bring back in the room's ambience or enhance it, to whatever degree deemed appropriate. SIM gives the designer qualitative, as well as quantitative, control of a space.

Clarity for the New Sophistication.

The audience is the true beneficiary of SIM equalization, enjoying better intelligibility and a more intimate relationship with the performers.

With SIM, Meyer is helping redefine the parameters of live performance sound quality.

Meyer Sound's CP-10 Complementary-Phase Parametric Equalizers, designed to correct the types of acoustical problems found in actual concert halls, are an integral component of the SIM equalization process.



Meyer originally intended to be solely a manufacturer of high-quality, rugged and reliable loudspeakers, but finding testing equipment which could meet Meyer's exacting standards proved impossible. To accurately measure the performance of Meyer Sound components individually and in arrays, and to make sound work in spaces, Meyer Sound Laboratories developed by necessity its own testing technology and methods.

SIM equalization grew out of Meyer's uncompromising production philosophy, and as such, SIM is applied only to Meyer Sound equipment installations. Instead of attempting to second-guess the tastes of the market, Meyer produces sound systems that most truly represent the character of the signal they receive, leaving artistic control to the artist. With SIM, Meyer offers an equalization tool that leaves complete control of spatial sound dynamics where it belongs—with sound designers, consultants, and mixers.

SIM Clients:

Irving Berlin Tribute, Carnegie Hall, New York
Budoken Hall, Tokyo
Stevie Wonder tour, Wembley Arena, London
Luciano Pavarotti, several tours
Les Miserables, New York, Boston, Los Angeles, London
Lily Tomlin, The Search for Signs of Intelligent Life in the Universe, San Francisco, Washington D.C., Chicago
Jubilee Auditorium, Calgary, permanent installation
1988 Grammy Awards, New York

SIM Measures Music.

SIM™ equalization, a sophisticated acoustical analysis and correction technique using proprietary Meyer Sound technology, is performed non-intrusively, and with real-world accuracy, because it uses real-world program material (either voice or music) as the test signal. The technique may be used during actual performance, when the audience presents its true effects on the sound reinforcement.

Interactive Process.

SIM equalization involves the sound designer, consultant, mixer and SIM engineer in an interactive process of establishing the subjective sound dynamics of a space. When used with a properly aligned Meyer Sound system, it creates an environment in which both frequency response and phase response are dramatically improved, resulting in superior sound clarity for every member of the audience.

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“Tucker’s stylistic antecedents are the ’30s and ’40s films that deal with American ideals and values, like *Mr. Smith Goes to Washington*.”

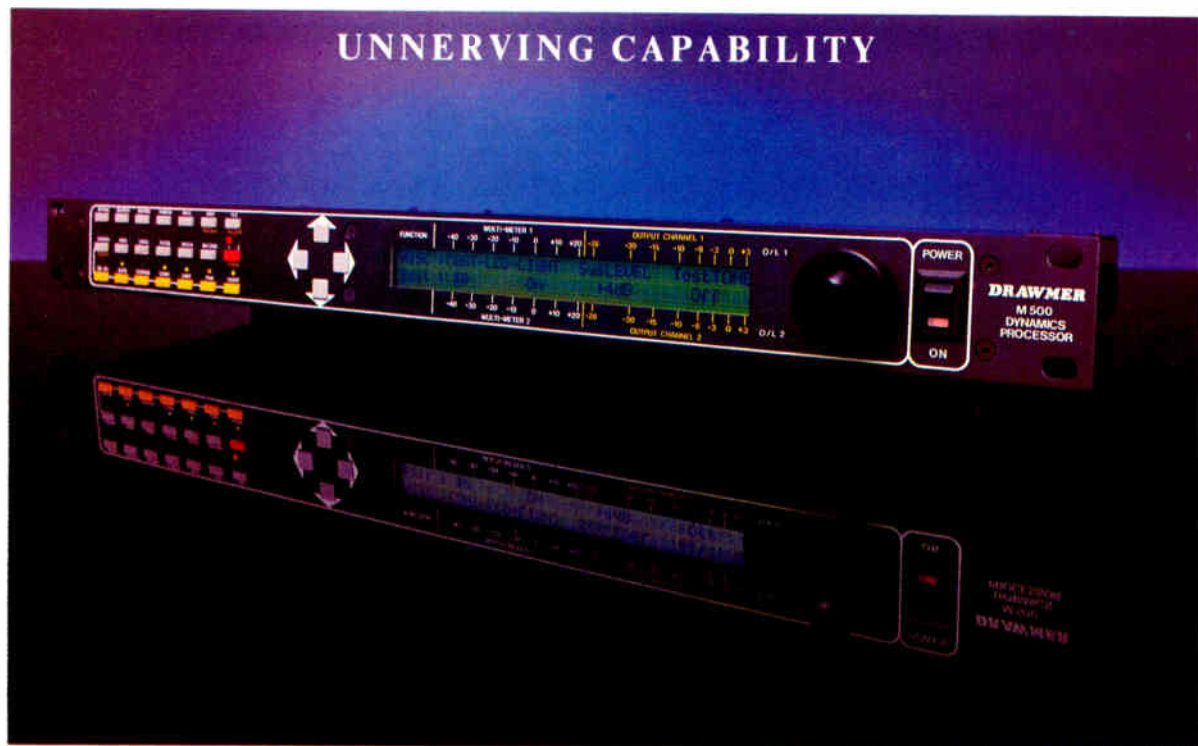
martini sequence with [Joe Jackson’s] adult martini music. Abe [Tucker’s partner], who is visiting Tucker and his family, brings his daughter a dress. They have a little toast, everything seems to be going fine. Then Tucker’s son comes in and there’s this emergency. We cut to the garage. It’s like a pressure cooker—there’s lots of hammering and banging. They’re way behind deadline; there’s all this mechanical cacophony. One of the effects is that of the air compressor: *de-de-de-de-de-de-de*.

As the scene progresses, the tension mounts between the characters. And then the car falls. Alex is almost killed. Almost all the sound in the garage stops because all the workers have gathered around. But the air compressor keeps going, it isn’t something that somebody turns off. The music is stopped.

So the only thing that’s going is the *de-de-de-de-de-de-de*, this insistent air compressor with the dialog. As the dialog continues there are altercations and animosity between characters,

and the sound actually builds in intensity and finally Tucker explodes in this semi-psychotic episode—emotionally he’s pretty out there. He explodes and hits this bulletin board with his fist. When he does that, I took processed sounds of metal being hit and some gongs and underscored his fists hitting the board, which gave a more dramatic impact. And then, as soon as that begins dying away, the compressor goes into its off-cycle: *do-do-do-do-do-do*. . .and the room collapses into absolute dead silence and all you

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hear are his feet scraping and then the dialog resumes with just one person.

At that point Vittorio [Storaro, director of photography], interestingly enough, changes the color in the room as if a cloud had come over the sun outside and changed what was a warmer golden hue into a depressed gray. That was an observation I made later—that these things were all working together.

Mix: Why do you think that particular effect works?

Beggs: In no particular order of importance: the sound is rationalized because of the context of the scene—that is something you would have in that place; it's organic to the scene. Then the sound has a relentless percussive nature: it functions as music—this constant, odd staccato pattern creates a kind of nervous tension. When it stops and the way it stops, it's an obvious relaxing effect—it has an exhaling sound. It's like *abbbbbbbb*. It has a kind of anthropomorphic aspect to it. It's very subtle. A lot of people probably won't even notice it. But if you take it out, the scene isn't nearly as effective.

That's the way sound should work. It functions not in the unconscious but somewhere between the unconscious and the conscious.

By contrast, the way we created the track for *Gardens of Stone* [Coppola's Vietnam-era story set at the military base where soldier's corpses are processed for interment] was much more obvious because there were a lot of sound signatures or motifs there—it was such an eccentric and unusual acoustical environment. *Tucker* wasn't nearly so special. It just had these cars and people working on them so there wasn't any acoustical pattern that would hold it all together.

Mix: What was eccentric about *Gardens*?

Beggs: Here was a place where you hear horses, hooves and wagon wheels in a modern setting all the time. You hear a lot of marching and heel clicking, the constant bark and shout of commands, drums and bands outside rehearsing. So right away you have this fabric, this tapestry, which you can dip into and use, and grab little pieces and threads to weave through the whole plot because that's the environment of the military base.

But in *Tucker*, they live in the country, they have a house, there are some

birds. The garage next to the house, where they're making the car, is where there's any kind of consistent thematic sound pattern. These guys are working with tools, hammers, hoists. So the sound of making the car—when ever we're out in that room I tended to stylize and push that. There are a lot of off-camera effects that create that drive forward. For example, the first time we go into the garage, Joe [Jackson] has this piece of music playing that's a montage sequence, and I used valve grinders, a hydraulic punch press, the compressor.

This sequence is toward the begin-

ning of the picture, when the assembly crew really gets going and they start building the car; the first shot in the garage. It cuts away to Abe selling the car and ends with Jimmy driving the test chassis around the backyard. All those sounds were used against the music to supply the textures—industry-on-parade-in-your-backyard. At one point, Eddie [one of Tucker's mechanics] strikes a hammer in response to something Tucker has told him. And I inserted a comic element, there's a *booing-booing* with a ridiculous slide whistle sequence. It's a

—CONTINUED ON PAGE 188



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by Tony Thomas

HOME ECONOMICS

WORKING IN THE HOME STUDIO WITH ALAN REEVES

The words "home studio" used to be synonymous with noisy P.A. mixers connected to beat-up, ¼-inch 4-track machines. Or cheap stage mics wired up to hissing cassette 4-tracks. Not anymore. The proliferation of inexpensive MIDI gear, effects, consoles and multi-track machines, coupled with the recent affordable near-field monitoring systems, have made the preem-

demo projects into jingle and soundtrack work. Many do it *not* because they are cutthroat businesspeople carefully watching the bottom line, but because they really love music and like to feel "at home" with it. Their success is not always premeditated—it usually is a by-product of that love.

Alan Reeves, a UK export, has scored numerous commercials for such cli-



inance of the home studio inevitable. There was a time when "homemade" records raised eyebrows in the recording business. Now, high-visibility artists such as Michael McDonald and Fleetwood Mac have produced highly commercial, studio-quality gems in the comfort of their own homes.

Other artists have followed suit, and a growing number of these artists are going beyond the home album or

ents as Hewlett-Packard, MJB, Kellogg's, Union Carbide, Chrysler, Gallo and McDonald's. And all those commercials were recorded at home. Reeves began his career as an organist in his native England in 1964, backing up such legends as Wilson Pickett, Fontella Bass, Gene Vincent and Sonny Boy Williamson on their live dates. He also was in a group that included a bass player named David

Alan Reeves at home, and at work.

PHOTO: DEBBIE FRANKLE

Gilmour, later of Pink Floyd.

After moving to France with his band in 1966, Reeves continued playing live until 1972 when he scored his first feature film (with his band Clinic)—*The Road to Salina* starring Rita Hayworth. As a result of that experience, Reeves began to get requests to score TV commercials in France. During that time, he became acquainted with such synthesizers as the Putney VCS3 and the ARP 2600, which he used on some projects. In 1980, Reeves moved to the States to further his musical career, even though his business in France was booming.

At first, he had difficulty finding work, due to people thinking his synthesized demos sounded "too European." The situation changed with the release of Vangelis' score for *Chariots of Fire*—suddenly, synthesized music was in vogue again. His work since that time has earned him over 20 major advertising industry awards including Clios, Beldings, Cannes and Art Directors of New York. We spoke to Reeves in (where else?) his home studio in West Los Angeles, as the workmen were busy building a new home studio in back of his house.

Mix: Have you had any flak from your advertising clients about doing projects at home?

Reeves: No. I was really surprised. When I started in France, I did a L'Oréal commercial for McCann Erickson. They called me one day and had very little money to do the spot and needed it fast. The score was a single 12-string guitar, and at the time I didn't even have a multi-track machine. All I had was a Revox A-77 recorder and a pair of Sony electret condenser microphones. To do the session, I put the guitar in the bathroom and put some towels up to the right amount of reverberation. That is how I started recording at home.

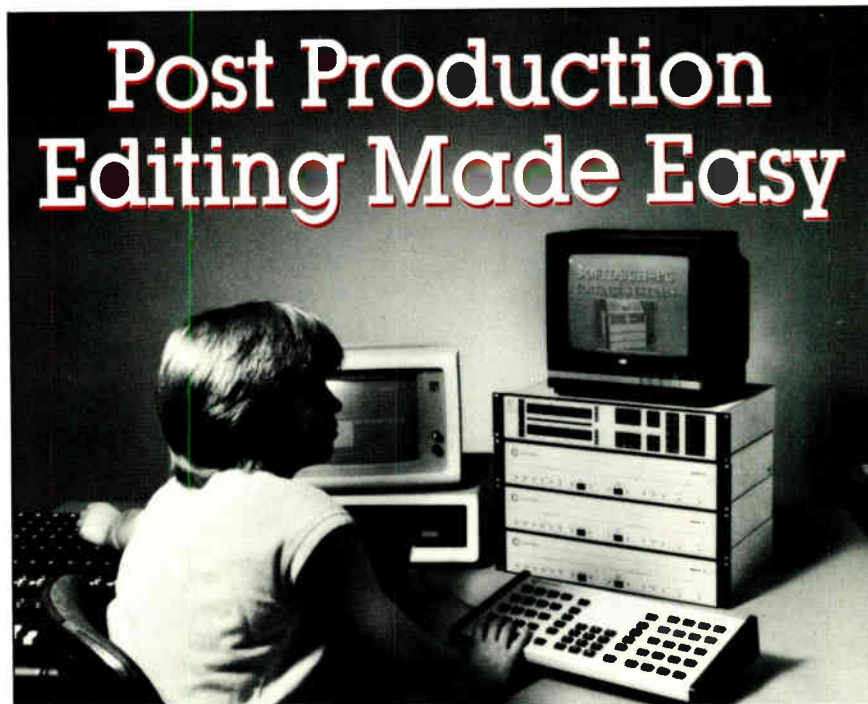
Then, I did a Nivea commercial and I had to do strings for that. The agency needed the spot the next day and there wasn't enough time to rent a studio. So, I rang up the agency, explained the situation and asked if it was okay to record it at home on my Otari 5050 multi-track. After I got the

okay, I rented a pair of Calrec microphones and had 12 violinists from the opera house climb the 100 steps leading to my 16th-century flat with a wooden-beamed ceiling, where we did the session. After that, I decided that was it. From then on, I was going to record everything at home.

Mix: What kind of equipment do you have now?

Reeves: I have a Stephens 821B 24-

track machine and a Soundtracs console. I think the Soundtracs is up there sonically with boards costing ten times as much. I also have a Revox B-77 and a Studer B-62. I do my demos directly from the sequencer to a DAT machine, although I still prefer to do my final recordings on multi-track tape. As far as synthesizers and MIDI gear are concerned, I have a Linn 9000 as my main sequencer, a Roland D-50,



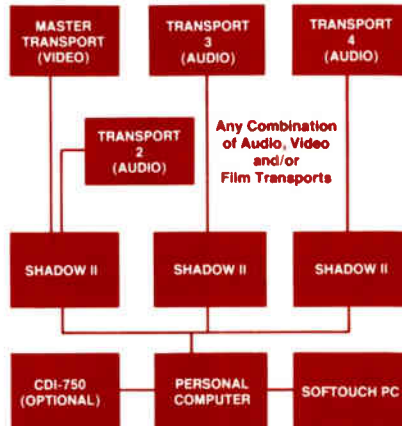
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STUDIO · VIEW

a Prophet-VS rack synth, a Yamaha TX-81Z, a Kurzweil 1000PX, a Casio FZ-10M sampler, an Oberheim OB-8, a Minimoog, a TX-7, an ARP Odyssey, an ARP 2600 and an ARP 2-voice. For effects I have an Alesis MIDVerb II, an Alesis XT, a pair of DeltaLab Effectron 1024s, an Effectron 64, a Roland SRV-2000, a Roland DEP-5 and a Yamaha SPX90.

Mix: How did you go about financing your studio?

Reeves: I basically bought everything one piece at a time. But in terms of somebody just starting out, I would suggest that, if they can afford it, they should buy at least an 8-track recorder. It is possible to do a record on an 8-track machine, while it would be pushing it to try to do it on a 4-track Portastudio. Of course, if you are doing just synth music, it is possible to do it on a 2-track. I still think it is nice to have a few tracks open for percussion or vocals, however. My personal preference, if you have the budget, is still an old 16-track, 2-inch machine, because it sounds amazing.

Mix: What is the main advantage of owning a home studio?

Reeves: Home studios have given composers a sense of autonomy so they can become totally independent, just like painters. With the affordability of current technology, just about any musician can afford at least a small cassette multi-track and a digital processor. Some people say that home studios are putting musicians out of work, but the only ones who are out of work are the ones who just wanted to moan, curse and watch the clock. I know a lot of horn and string players who are very successful playing their acoustic instruments with today's technology and all its possibilities.

It used to be that if a musician wanted to put his or her ideas on tape, he or she had to convince someone that the music was worthwhile and saleable. If the record company didn't think the music was worth investing in, then that music wouldn't get recorded. As a result, a great deal of music sat on shelves without being realized. Now, the only person who has to believe in a piece of music is the musician. He or she now has the power to record a symphony with wonderful sonics. We musicians are no longer at the mercy of A&R people


and the powers that be.

Mix: How do you handle the billing aspects of your business?


Reeves: I have a rep in Chicago who handles all of my clients there. He bills those clients, deducts his percentage and sends the rest to me. I bill all my local clients direct. I don't have any type of accounting program—I just use the word processor on my Mac to type the invoices.

Mix: How much do you typically charge to score a television commercial?

Reeves: It varies, although the range is between \$8,000 to \$14,000. Just about all the agencies insist on doing buyouts, so I do not receive any residuals on those commercials. Sometimes I have to bid on jobs, and if it is a major campaign, I have a set price. On smaller jobs, they tell me what



Now, the only person who has to believe in a piece of music is the musician.



their budget is and ask me if I can do it for what they can afford to spend. If the job is interesting, I usually say yes.

Mix: How do you go about promoting your services?

Reeves: I don't do any advertising, brochures or flyers. Because of my reputation, I get all of my work through word of mouth. ■

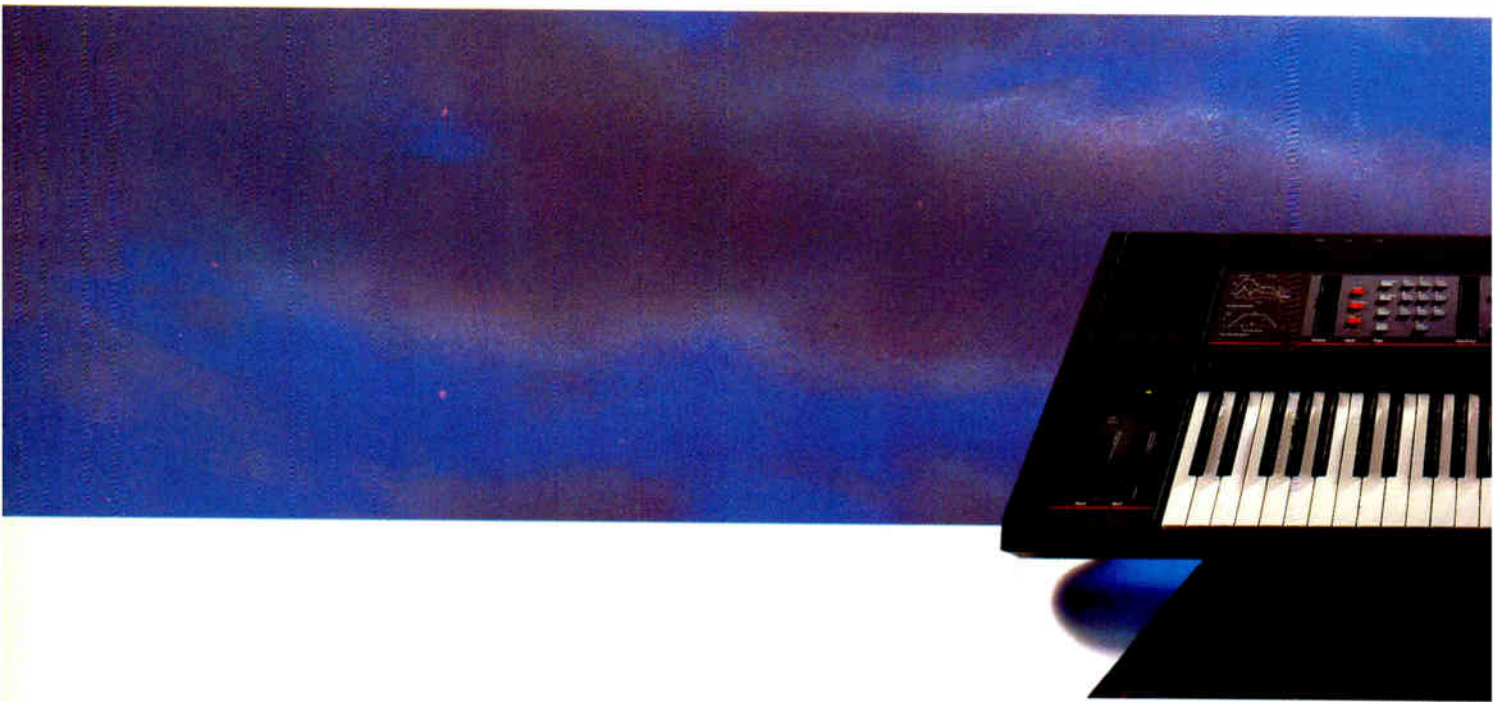
Tony Thomas has been involved in broadcasting, recording and publishing for over a decade. He is managing director of Target Communications International, a full-service ad agency, broadcast production firm and MIDI-based recording studio in Southern California.

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With sample rates of up to 52.1kHz and a 96dB dynamic range, your sampled sounds are crisp, clear and lifelike. The "expert system" loop and edit processing uses artificial intelligence technology to let you quickly and easily put sampling to work for you.

Creative, professional quality sampling is nearly automatic with the EPS. Automatic multi-sampling and automatic volume smoothing make it simple to map complicated sounds across the keyboard. Internal sample rate conversion helps you manage the memory. There's even a choice of 5 different types of crossfade loops.

Poly-Key™ and Patch Select™ for expressive realism

When it comes to creative voice architecture, the EPS has no match. Each voice has three 20-parameter envelopes, two multi-mode digital filters and its own LFO. The 20 voices can be layered up to 8 deep and can be dynamically switched or crossfaded with the Ensoniq exclusive Poly-Key keyboard or Patch Select buttons.

The EPS comes complete with the 13 essential sounds that you need for composing or performing, including: piano, brass, strings, sax, bass, vocals, drums, synth and electric and acoustic guitars. Each sound is specially designed to take particular advantage of Poly-Key and Patch Select.

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Ensoniq pioneered the on-board sequencer concept with innovative features like dynamic voice allocation. The EPS sequencer is the most powerful ever put in any keyboard, with features like an 80,000 note memory, the ability to time-shift individual tracks one clock at a time and an audition page that lets you compare old and new versions of every edit and punch-in.

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The exclusive "Song Tracks" feature doubles the capability of the 8-track sequencer. Put your sequences together into a song, and the EPS sequencer lets you create 8 additional song-length tracks giving you 16-track recording ability.

MIDI Auto Mix makes the EPS a complete controller

The EPS can be an *automated* mixer. The sequencer has an exclusive new MIDI Auto Mix feature that remembers all the volume fades — up or down — anywhere in the song. MIDI Auto Mix can control the internal instruments or external MIDI modules.

The EPS handles all the MIDI modes with ease — especially the powerful Multi Mode that gives you simultaneous 8-channel MIDI communication. The EPS lets you instantly split, stack and transpose up to 8 separate MIDI instruments. This flexibility and the ability to save and load Sys Ex data make the EPS an ideal central controller for any studio.

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The Ensoniq ME-1A memory expander doubles the internal memory and permits installation of an optional SCSI port. Connect a SCSI hard disk for blink-of-an-eye access (256Kbytes in under a second) to hundreds of sounds. Or connect the EPS directly to a computer to unleash the power of sound development programs like Alchemy, Turbosynth and Sound Designer.

Using external mixers or signal processors to their fullest is easy with the OEX-8 output expander. It gives the EPS 10 discrete and fully-programmable outputs. The OEX lets each instrument be assigned to its own output jack, no matter how many voices it uses.

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BITS & PIECES

The result of more than two years of work by Rupert Neve, with considerable input from Master Rock's technical director, Steve Flood, has resulted in the world's first installation of a Focusrite console at that West London studio. According to Flood, "The board is in, and it's still being commissioned. Because it's such a major project, it's going to take awhile to shake the bugs out. I refuse to put the room on line with any bugs in it." (At press time it was confirmed that the room is open for business.)

Flood moved the studio's existing SSL console from the original tracking room into a newly built mix room, after which portions of the tracking room were modified to accommodate the Focusrite. The new desk has 48 channels with 32 groups and 16 aux sends. "We felt that the consoles being offered by other manufacturers didn't have the features we wanted, like more aux sends, more stereo cue sends and other bits and pieces like that," says Flood. "The test results have been outstanding."

Master Rock is primarily a music recording studio, and emphasizes acoustic recording more than most other studios. "We record real drum kits and real brass sections," comments Flood. Among their clients are Swing Out Sister, who are doing their second album for Phonogram, and Pat Moran, who was recently in mixing The New Bohemians.

Master Blaster to Build New Eurosound Mobile Unit

Master Blaster, the Dutch-based monitor and studio designer, has been hired to build and equip a second mobile studio for Eurosound. The first



mobile unit has already notched up successes with live concert broadcasts of both Sting and George Michael, as well as the Knokke Festival in Belgium.

Eurosound's new unit will feature a 32-channel console with a Studer multi-track and Genelec monitors. Peripherals will include U-matic and PCM video facilities.

JBL to Equip China's Great Hall

JBL International recently signed an agreement with the Peoples' Republic of China to install JBL speakers and electronics in the Great Hall Of The People in Beijing.

A massive triple-winged complex, the Great Hall Of The People serves as the seat of central government and the site of all official state functions, including ceremonies presented to honor visiting foreign dignitaries.

The 10,000-seat main hall is slated

The world's first installed Focusrite console at London's Master Rock Studios is the result of over two years of planning by owner Steve Flood and Rupert Neve.

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INTERNATIONAL · UPDATE

to be equipped with 2360 Series horns, 2225 low-frequency loudspeakers in 4508 and 4507 enclosures, 8216A systems for under-balcony ceiling delay sources, SLT-1 systems for near-field monitoring, 4602, 4691 and 4612 Cabaret Series for use on stage, and JBL/UREI power amps and signal processing equipment. Additional JBL equipment will be installed in the banquet hall and a 700-seat concert hall at the complex.

STUDIO SPOTLIGHT:

France's Studio Polygone

Located in scenic Blagnac in the south of France, the brand-new Tom Hidley-designed Studio Polygone (*Mix* February 1988) contains three state-of-the-art recording studios.

The control room of Studio 1 is equipped with a 48-input Neve V Series console, Kinoshita and Ya-

New Soundtracs Distributor in U.K.

British distribution of Soundtracs sound reinforcement products is now handled by Shuttlesound, according to a recent announcement by Todd Wells, managing director at Soundtracs. Larking Audio will continue to distribute Soundtracs recording and editing consoles.

The change is in response to the rapid advances experienced in the last four years in the sound reinforcement end of the audio industry. "The requirements of these two aspects of

maha NS-10 monitoring with FM Acoustics amps, and features outboard gear from Lexicon, Yamaha, AMS, UREI and Drawmer. Two Sony 3324 and two Studer A800 24-track machines are located in a separate isolated room. The studio itself is built on floating floors and is surrounded with a double partition of concrete. The room is designed to be very live, making extensive use of marble and tile. It can accommodate 50 musicians and boasts a 20

—CONTINUED ON NEXT PAGE



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what is loosely called 'professional audio' are radically different," states Wells. Shuttlesound is now implementing a major expansion program based on this new arrangement.

AUSTRALIA Sponsors Australian Music Industry Directory

With a \$10,000 grant from AUSTRALIA, music industry public relations company Immedia! PR has produced a comprehensive, 104-page, four-color directory of the Australian music industry. Of the 10,000 copies produced, 5,000 were handed out at this summer's New Music Seminar in New York, 1,000 have gone out to AUSTRALIA posts around the world for distribution to the international music industry community, and the remaining copies are being made available to the Australian market for use as a "Yellow Pages of Rock"—spotlighting artists, companies and personnel within the industry.

The listings include record companies, music publishers, artist managers, booking agents, record and tape manufacturers, recording studios, associations and unions, concert pro-

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—POLY GONE, FROM PAGE 89

ft. ceiling. "It is rather exceptional to have such a height in a studio," explains owner Jacques Bally, "but I think we're going to come back to live recording in the near future."

The control room in Studio 2 features a 48-input SSL desk, and the recording room is more absorbent than the larger Studio 1. For those projects requiring an even larger space, an adjacent concert hall with a 56 ft. ceiling and a 500 sq. ft. stage is connected to the consoles of both Studios 1 and 2. The result is the capability of recording as many as 300 musicians on 96 tracks.

The third room at Polygone features a 64-voice Synclavier as its centerpiece. A library of sampled sounds is available, as well as an array of other MIDI equipment. The room is one of the few in France to have its own Synclavier technician.

Apart from the latest multi-track equipment, each studio has a private lounge with TV, radio and private phone lines. The facility also includes a dining area and a large private terrace.

—Guillaume Schouker

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motors, concert production companies, music video producers, accountants, legal representatives, publicists and music media contacts.

Support from the music industry for the project matched that from AUSTRALIA. Of the 104 pages, 52 are advertising from all areas of the industry. Notable in their absence are the major record companies—CBS, WEA, PolyGram, EMI, BMG/RCA, Festival and Virgin—but their reticence to advertise was more than made up by the independent labels and music publishers. Says publisher Phil Tripp, "We're gratified by the response... the massive support from the industry has not only made it a success, but assures that we'll come out with another edition in early 1989."

Apogee Appoints Overseas Distributors

Apogee Electronics Corporation of Santa Monica, CA, makers of anti-aliasing, anti-imaging low-pass filters, recently appointed European distributors for their product line. Distributors include Hilton Sound in France, Selectronic in Holland, Audio Equipment in Italy, Lydrommet a.s. in Norway and Klotz Electronics in West Germany.

The company has also appointed distributors for Australia, Canada and Japan.

AMEK Moves to New Factory

Amek Systems & Controls Ltd. recently expanded to a new 13,000-square ft. factory, which was acquired as part of their recent purchase of the entire Regent Trading Estate in Salford, England. The move provides more than twice the production and test space than was previously available.

Amek's production manager Kerrill Kindleysides is enthusiastic about the facility: "The new production space has allowed an effective production line to be set up with materials in at one end, consoles out the other, and everything in between in a logical place."

Bits & Pieces

Nigel Pegrum, owner of Pace Studios in Milton Keynes, England, reports the recent acquisition of a Soundtracs in-line 36 × 32 console for his facility...

—CONTINUED ON PAGE 186



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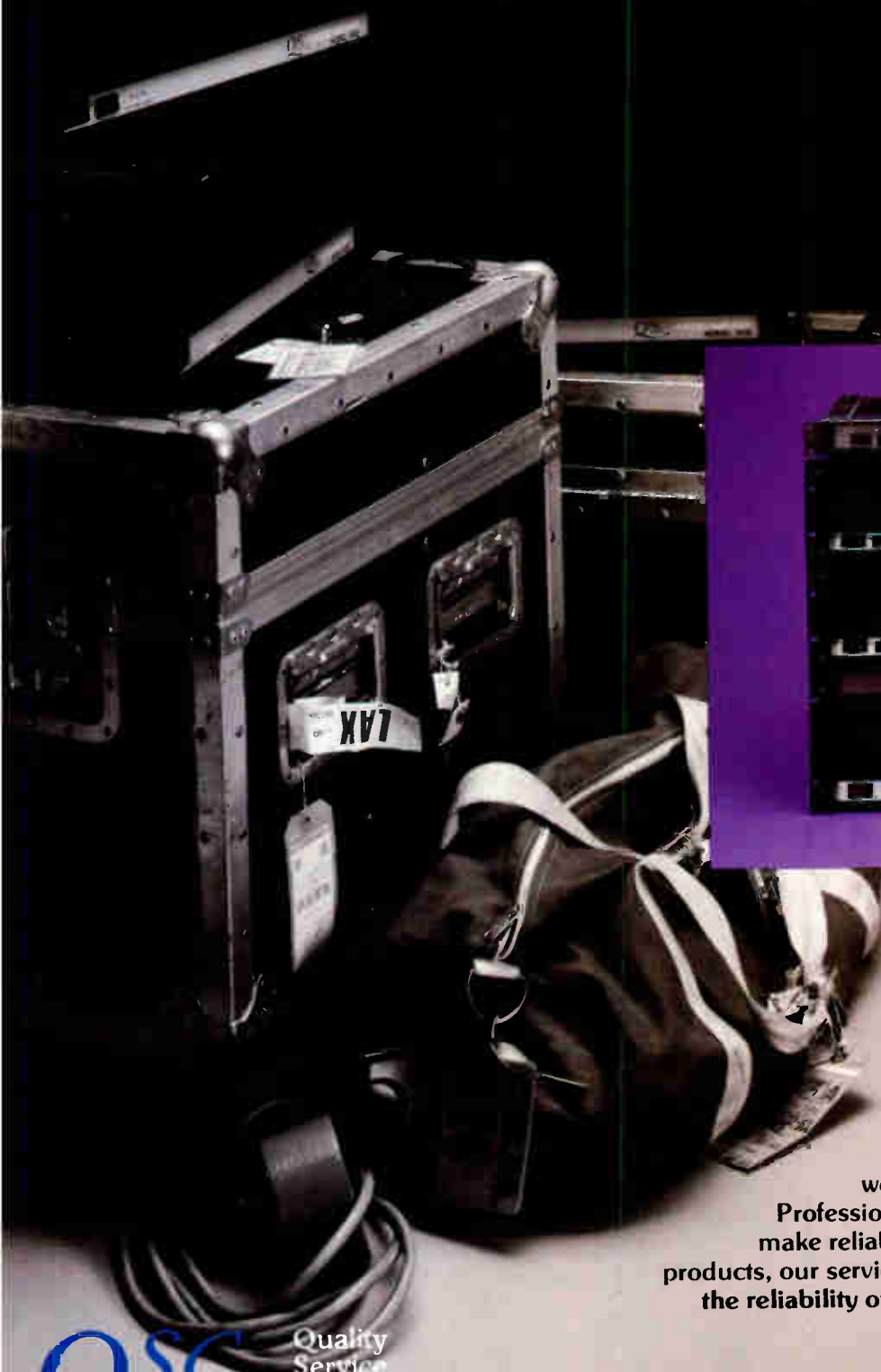
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Frank was a man who did very few takes, and the band had to be ready to do it right when the red light went on.

The first number we rehearsed was "Softly As I Leave You," a gorgeous song and a beautiful arrangement. The singers knew instinctively what Ernie wanted and how to phrase his choral accompaniments perfectly. Barney Kessel's wife B.J. (who I always called "Diamond Lil") was there with Jackie Ward, Sally Stevens, Johnny Manne, Ron Hicklin, Alan Capps—all top studio singers.

The rehearsals went well and everyone was ready to go. There was no screwing around this night. No jokes, peanut throwing or beer drinking. The guys in our Wrecking Crew of young session players even dressed up for the occasion—no Levis and torn T-shirts. The studio engineering crew, with Eddie Brackett at the controls, had everything ready. Every mic had been tested and tested again. Each line to the booth had been double-checked. Every squeaky chair had been replaced. Frank didn't stand for any incompetency or breakdown delays. The security guards, hired for the evening, were strategically stationed around the studio, inside and out. The band was tuned to perfection.

Then the big moment arrived. The back door opened and Sarge Weiss led the entourage into the studio. Third or fourth in line was Frank, wearing one of his famous hats. In front of Frank walked his latest flame, Mia Farrow. They converged in the booth and all was deathly quiet for a couple of minutes. We sat motionless waiting for the moment of truth. Frank walked casually into the studio and started greeting the familiar faces, cracking jokes and being as friendly as your best buddy. The place was absolutely lit up with a glow I had never experienced before. Those blue eyes sparkled and his broad smile warmed the whole studio.

—CONTINUED ON PAGE 186

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ETHICALLY SPEAKING

**OR—PLATO,
CHECK
YOUR MESSAGES**

by Dan Daley

The readout on the digital reverb's display is stark and sure. The numbers revealing the values of the various parameters have a certainty about them that is reassuring at first. The predelay is such and such, the room size is this, the reflection times are that, and so on.

But put some of those same numbers into another unit and the results can be vastly different. All of a sudden the digits lose their warmth and familiarity. To get to where you were before, you have to get used to another set of values.

Values are not only things that are assigned to the numbers on fuses. As technologically complicated as music production has become, it is still at its core a human enterprise, one in which decisions are often based on more than artistic or technical concerns. There is the matter of ethics.

Take the example of the digital reverb again. The numbers that describe the device's status are correctly defined as values, but the double entendre is fascinating: these values were determined by some manufac-

turer, and, by working within and sharing the meaning behind those values, you are able to get the reverb to work in harmony with your intentions.

Would but the real world be so cut and dry; it doesn't come with an owner's manual. Every one of us has our own set of values, determined by that amazing and infinitely diverse set of random sequences that form the sum total of our lives. There are some common values that each of us share: you may want to murder the drummer who shows up late for the session,

but you somehow restrain yourself.

There are plenty of ethical dilemmas that people in this business confront every day, and the most common contemporary theme is the rapid expansion of technology in our workplace. Have our values adequately evolved to meet the demands that new technology places upon them? The answer's no different than in other professions. Ask a doctor who has the capability of saving the body of an accident victim while knowing that he can't do anything for the personality trapped in the damaged cerebrum.

Ethics and technology are a *pas de deux* whose ever faster spins blur their distinctions even more. A recent government report by the Office of Technology Assessment entitled, "Criminal Justice: New Technologies and the Constitution," warns that recent developments in forensics—including computers that can identify people by their voice patterns and body chemistry—have a "dark side" and entail potential social costs and risks. "Most of this stuff is not far out in the future—it's coming into use or will shortly be available," says an author of the study. "It illustrates the fact that things can slip up on us, and we need to examine these new technologies carefully."

For Ex-Sample

I use references to such technological/ethical paradigms to emphasize the fact that our profession faces similar problems in the context of technology. Many of the digital apparatuses found in operating rooms and police department labs spring from the same digital fountainhead that equips many control rooms these days. While the decisions we make in music technology aren't those of life and death (except when confronted by an ad agency creative director armed with a Perrier bottle when the sync-to-video goes down), we get to define our own creations to a greater degree than most other professions, and in doing so we become the arbiters of the standards of our culture. A hefty responsibility.

Technology has given us tools that Mary Shelley couldn't have even dreamed of for her *manque* fictional deity. Sampling, for example, allows us to reflect the sounds of the real world as never before, and lets us literally stick our mitts into the guts of those sounds and twist their digital

DNA to fashion unique sonic creations. I've heard car horns and firecracker explosions melded together into snare drum hits.

But the more far-fetched examples detract from the ones that start to creep into the realm of everyday ethos. Let me give you an example. I was producing and engineering a record date a couple of months ago. Rick Bell, who's played sax with Lou Reed, Ruben Blades and the Fat Boys, among

The fact that samples can be edited to the point where they're unrecognizable from the original, and that they pass through so many hands, makes ethical handling all the more difficult.

others, was noodling on the other side of the glass while I set up some patches. All of a sudden, a rather wonderful and unique sound came through the speakers. Out in the studio, he was slapping the keys on the sax in such a way as to make a great percussion sound.

I immediately—and reflexively—said, "Let's sample that!" Bell's face tensed. "Let's not," he replied, almost testily. There was a momentary epiphany as his point sunk in: sample this and I don't have it anymore. It's no longer uniquely mine, with all the economic implications that that would entail.

Later I talked to Rick about it. "Sampling bugs me and it doesn't," he said. "I've heard some amazing sounding records with three sampled snare drums combined into one. But on the other hand it takes a lot of work to develop your own sound, and I want

to have some control over where and how that sound is used. I spent 23 years painstakingly working on my tone to come up with what sounds good to me, and to have someone take 23 years of work and put it in a sample and use it indiscriminately—well, I think that's wrong.

"I guess it's a Catch-22 thing. I'm not for stopping technology, but I've yet to hear a keyboardist play a sampled sax in a solo that sounded good and I don't want it to be my sax sound that's being played by a keyboard on a record or anything else. If you're going to use my sound, use me."

Keyboard pioneer Larry Fast has avoided many of the ethically shadowy areas by virtue of being more often the samplee than the sampler. "I would think that [a reluctance to use other's samples] would be driven more by the embarrassment of being recognized as an inferior producer or musician when people hear recognizable sounds of other players on supposedly original recordings," he tells me. "It's like being found out to be the Wizard on the other side of the curtain." When Fast's sounds, generated for such acts as Hall & Oates, Foreigner and Peter Gabriel, turn up on other's recordings, he is philosophical: "It's not so much that I feel ripped off as I feel, 'Gee, what a shame that that person didn't have enough creative smarts to do something on their own. They had to take the cheap way out.'"

On the other hand, Fast points out that some younger musicians see being sampled as a way to get heard. "I know that some of the more junior members of the business are more interested in getting on other records, even if they're not getting paid or getting credit," he says.

There's an important point there. Breaking in and staying in this cliquish business has always been difficult for new players, and freebies have been a time-honored method of letting people know what you can do. But the nature of the sample adds a new element to all that. If a player's sound becomes preeminent over his chops, his ability to think musically—to string notes and spaces together—may never be heard.

James Brown is not as philosophical as Fast, however; he has publicly lashed out at having several of his sonic trademarks incorporated

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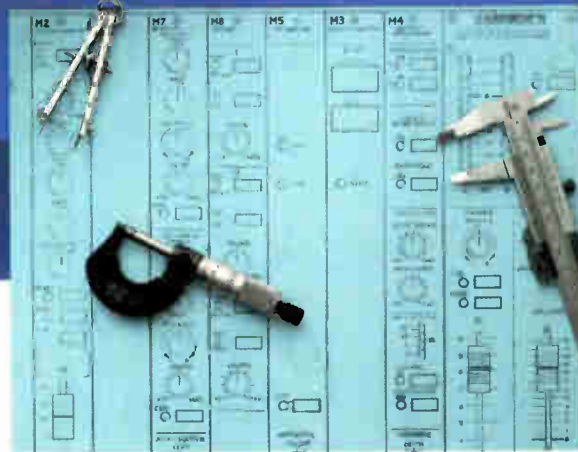


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World Radio History

into current tunes. As a matter of fact, the groove from his "Funky Drummer" has been labeled by one writer to be "[the] most sampled beat in rap." The beat from his "Cold Sweat" was sampled for Sweet Tee's "I Got The Feelin'," and a part of "Papa Don't Take No Mess" was sampled and rolled into Biz Markie's "Vapors."

A string of recent rap, flare and hip-hop records have included samples from old soul records by artists like Joe Tex and Bobby Byrd. The UK group MARRS had a big club hit with "Pump Up The Volume," which was built on samples of other records and scratching. A lawsuit is reportedly pending in England as a result.

The irony of all this is that hip-hop sampling has rejuvenated several careers, including those of Bobby Byrd and the JB's, James Brown's original band. Both artists were invited to tour England recently as a result of their "rediscovery" thanks to the samples. But some forgotten R&B and soul artists have benefited from a technology that has caused other artists to cry foul. If anything proves the subjective nature of ethics, this is it.

"Digital communism" is the phrase that David Nichtern, a consultant at New England Digital—developer of the Synclavier—uses to describe less immediately identifiable samples. "Sounds drift in and out of the digital environment and you don't know where they come from," says Nichtern, composer of the Maria Muldaur classic, "Midnight at the Oasis." The fact that samples can be edited to the point that they're unrecognizable from the original, and that they pass through so many hands, makes ethical handling all the more difficult. Nichtern says his first question before using a sample is to try to determine its source. That's not always possible, he acknowledges. His ethical bottom line is to make the effort to find out where it came from, but to not let his inability prevent its use. "The roles of musicians and composers are changing because of sampling," he says. "You have to rethink what gives a sound its value. Is it the reshaping of the sample, or is it the guy who adds EQ? Your guess is as good as mine."

Do technology manufacturers and developers have any ethical responsibilities regarding the implementation of their hardware? Nichtern finds it to be an unanswerable

question, and so do I. How can you possibly enforce something like that without causing undue economic hardship and a mess only a lawyer could love? But look at developments in other areas. Some states now mandate that bar owners and party throwers are responsible for the blood-alcohol content of their patrons and guests when they leave the premises. Tobacco companies are being sued with success for the toxicity of their prod-

not going back into the bottle. And he's right when he says that it has enhanced creativity. He also agrees that ethical considerations should be considered in using sampling. "I have to say that the benefits outweigh the possible negative effects, though," he concludes.

Dis an' DAT

At a recent SPARS luncheon yet another version of digital audio was un-

**As technologically complicated
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or technical concerns. There is the
matter of ethics.**

uct. Based on that precedent can you make Akai or NED responsible for the content of samples made on their machines by purchasers? Can you indict Manny's Music for having sold an Emulator?

I put that hypothesis to Jerry Freed, president of Akai Professional, which manufactures one of the most ubiquitous samplers around, the Akai S900. "It's the end-user's responsibility," he says firmly. "If we sold samples of other people's sounds, then there'd be a possible case, but we don't. I think sampling should be used to create new sounds, not to cannibalize existing ones. If somebody buys a car from GM and gets a speeding ticket, should GM be responsible for that ticket? I don't think so."

Freed adds that one other conclusion he's certain of is that sampling won't go away; too much of the industry has come to rely on it. This genie's

veiled (this one offering a higher sampling rate), and much of the table discussion revolved around studio owners' frustration at the dizzying array of formats the hyperthyroid electronics industry was throwing at them. The general consensus was, when you're contemplating making a major capital outlay whose lease payments would substantially add to your overhead for years to come, you want some sort of assurance that your investment won't become obsolete the week after you buy it when the Japanese equivalent of Tom Swift starts playing with his calculator some rainy afternoon.

An illustration of how complex the issue of ethics in technology as it relates to formats came out of one of my semi-regular transcontinental phone raps with *Mix* editor David Schwartz. We were discussing the matter of a major recording studio in Manhattan, which was pur-

Who owns what can be a murky question given the convoluted legal and contractual signal paths that have become the norm in musical relationships.

suing a lawsuit against a building developer on the same block. The nub of the suit was that the noise and vibration generated by construction activities made recording impossible at times and thus caused the studio to suffer major revenue losses, forcing bankruptcy.

We found ourselves facing an ethical dialectic. As a magazine that serves the recording industry we are naturally sympathetic to the studio owner's plight. At the same time, though, we both acknowledge the fact that progress is difficult—if not impossible—

to stop, and it's not always in society's larger interests to try to do so. Not that Manhattan needs more luxury housing, which is what was being built at the construction site, but the building process generates jobs and capital, and that has benefits.

The general discussion of progress led to the specific subject of DAT. This digital tape technology has been a political football for over a year now, a recording medium whose future was dependent not upon its relative merits but upon its anticipated impact on certain interested parties. DAT is good

because it offers the benefits of digital tape in an affordable and efficient form. DAT is bad because it allows a higher grade of piracy to hit the market, thus depriving some of income.

If we overlook the fact that DAT has become a *de facto* reality, making the battle for its future little more than an academic exercise, the question becomes: is it right to try to stop progress? In the summer of 1945, in Los Alamos, New Mexico, a certain technology was unleashed whose future is still debated today. Like DAT, nuclear fission is here and there's no putting it back in the bottle. As a stepping stone to the ultimate nuclear technology, fusion, it offers benefits to consumers, as does DAT. However, both technologies have a dark side. While DAT has yet to have its Chernobyl incident, I personally have earned enough in publishing and mechanical royalties to know that some of those monies can be siphoned off by people who consider international copyright agreements to be merely a minor detail. Yet as a studio owner I'd like to see a digital cassette leave my place and get played on the client's

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DAT deck at home.

The nuclear/DAT analogy is apt up to a point. But while few of us have home nuclear reactors, I suspect most people would acknowledge the benefits of home digital tape. The industry and the consumer survived the predicted format wars heralding analog cassettes in the early '70s, and now that format outsells LPs heftily. The same arguments were raised then as now about piracy, and without a doubt tape bootlegging has made itself felt. But the artists who suffer from bootlegging the most are the ones whose records are the most in demand. Those artists appear to sell sufficient quantities of software to maintain their accustomed lifestyle. Unless Julianne soaks him in divorce court, I can't see Bruce Springsteen reduced to indigency, and I'm sure that *Tunnel of Love* is high on bootlegger's lists.

I'm not saying it's right. The fact that people—especially fans of artists who are pirated in quantity—would buy bootlegs in the first place presents an ethical problem of its own. The record industry seems to agree to the

extent that they've advertised the dependability of the legitimate product and have devised holographic logos to differentiate the real thing from pirated records and tapes. In an ethically perfect world no one would knowingly purchase a bootleg to save a couple of bucks. But it's not a perfect world, it's a pragmatic one. Thus DAT's place in bootlegging becomes irrelevant. The same people who buy bootleg analog tapes will not stop buying them on DAT, and conversely, people who don't buy pirated tapes won't be likely to start just because there's no tape hiss on them. It's interesting to note that according to the RIAA's own figures, prerecorded cassette sales jumped 19%, from 344 to 410 million units last year. Assuming RIAA isn't monitoring basement operations, legitimate sales appear to be quite healthy.

The irony of it all is that like some digital Greek tragedy, DAT may be done in by its own hamartia. A few months ago Tandy Corp. announced it was releasing a recordable CD and play/record deck later this year. DAT has only just touched the market here;

CDs have established a very strong base. If you can record on a digital random-access CD player for under \$1,000, why bother investing in a sequentially loaded DAT? If Tandy can do it—and many industry watchers aren't totally convinced that they can—others will be sure to jump on the wagon. (A Tandy spokesperson told me that Sony was also working on a more expensive recording CD. Sony denied it. Keep in mind Sony has the world's largest investment in DAT. Sony also bought copy-code developer CBS Records, but it'd take Plato to sort out those potential ethical conflicts.) This leapfrogging of technologies is why studio owners get erect dorsal hairs at the mention of the word "format."

The legislative wrangle that has embroiled DAT may mean that it will never have the chance to develop here. Japan and Europe, where DAT has been in place since late last year, will probably be the battlegrounds between the two technologies.

Still, the question of ethics here goes largely unanswered, because it's a matter of perspective. What's more

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important: the loss of some hard-earned royalty income, or the ability to have a choice in format? A nice, luxury apartment, or a nice, isolated vocal track?

Tape Ownership

Who owns what can be a murky question given the convoluted legal and contractual signal paths that have become the norm in musical relationships, including not only recorded performances and publishing rights, but also marketing, image and likeness, video rights, etc. For the most part these relationships are legal ones, but I have encountered one instance of what happens before the lawyers get involved. The story functions as a parable of sorts and, although it has no clear ending as of this writing, its point lies in the telling.

In 1982, a 21-year-old engineer named Kenny Jackel began a relationship with bass guitar wizard Jaco Pastorius. According to Jackel, he was so moved by the late Pastorius' genius that he substantially helped him to amass a body of recorded work over the next five years, up until Pastorius' sudden and violent death in Fort Lauderdale last year.

Some of the material was recorded starting with basics; other tracks were begun before the relationship began. Over the five years, Jackel said he spent \$30,000 of his own money to finish the recordings in various studios in New York. The main problem began the minute the first overdub went down on one of the prerecorded tracks the bassist brought to Jackel. At that point, since Pastorius was not signed to a label himself, the issue of ownership became a bomb that went off after Pastorius' death. His estate, which consists of his four children by two wives but is represented by various family members, began to contact Jackel with mixed signals. In some cases they seemed willing to cooperate to get the tapes released; at other times they requested that Jackel surrender the tapes to them, claiming rightful ownership. The contact stopped after the family rejected his last offer of a mutual arrangement, and Jackel hired an attorney.

Both parties apparently want to see the tapes mixed and released as a record, a final testament to the Pastorius legend. According to Jackel, as many as seven record labels are waiting to

bid as soon as a consensus between him and the family is reached.

It's been a trying time for Jackel, especially in light of the fact that he could have done things differently. "If I wanted to I could have gone to Europe or Japan and sold [the tapes], taken the money and walked away from it," he says. "But I couldn't do that. Jaco was my buddy. We went through a lot together. I had to go to Bellevue [a mental hospital] to get him for some of the sessions. I went through hell for him, and I don't have the heart to just walk away. I'm hoping the family is willing to work with me."

He says his requirements for a settlement are simple: to be reimbursed out of sales for the money he laid out, and to be the engineer on the mix. "I'm the only one who worked on that music, and I know exactly how he wanted it mixed," he says. "It would be a shame to have someone new walk into the recording process at this point. I really sacrificed a part of myself to be with Jaco, because I really loved that music."

Possession is nine-tenths of the law, but in Kenny Jackel's case, there seems to be a higher guiding principle. By resisting the temptation to take the money and run, Jackel has imparted to the project an additional, though invisible, value, one that won't be computed into the list price of the eventual record.

You Say You Want A Revolution . . .

Clint Eastwood's new cinematic paean to Charlie Parker, entitled *Bird*, uses Parker's original sax solos. However, the solos have been lifted from the original recordings, and new backing tracks have been laid in. Ostensibly, the move is to make the soundtrack acceptable to moviegoers while maintaining the integrity of Parker's music. Will it work? Probably. Is it right? Tough call. It will introduce a new generation to Parker, but is it a bogus introduction without the players who surrounded Parker when he made the music?

Who owns a performance, and who decides how it will be used? When the actual recording (as opposed to a re-recording of the song) of The Beatles' "Revolution" was incorporated into a commercial for Nike running shoes last year, the use of the song

—CONTINUED ON PAGE 191

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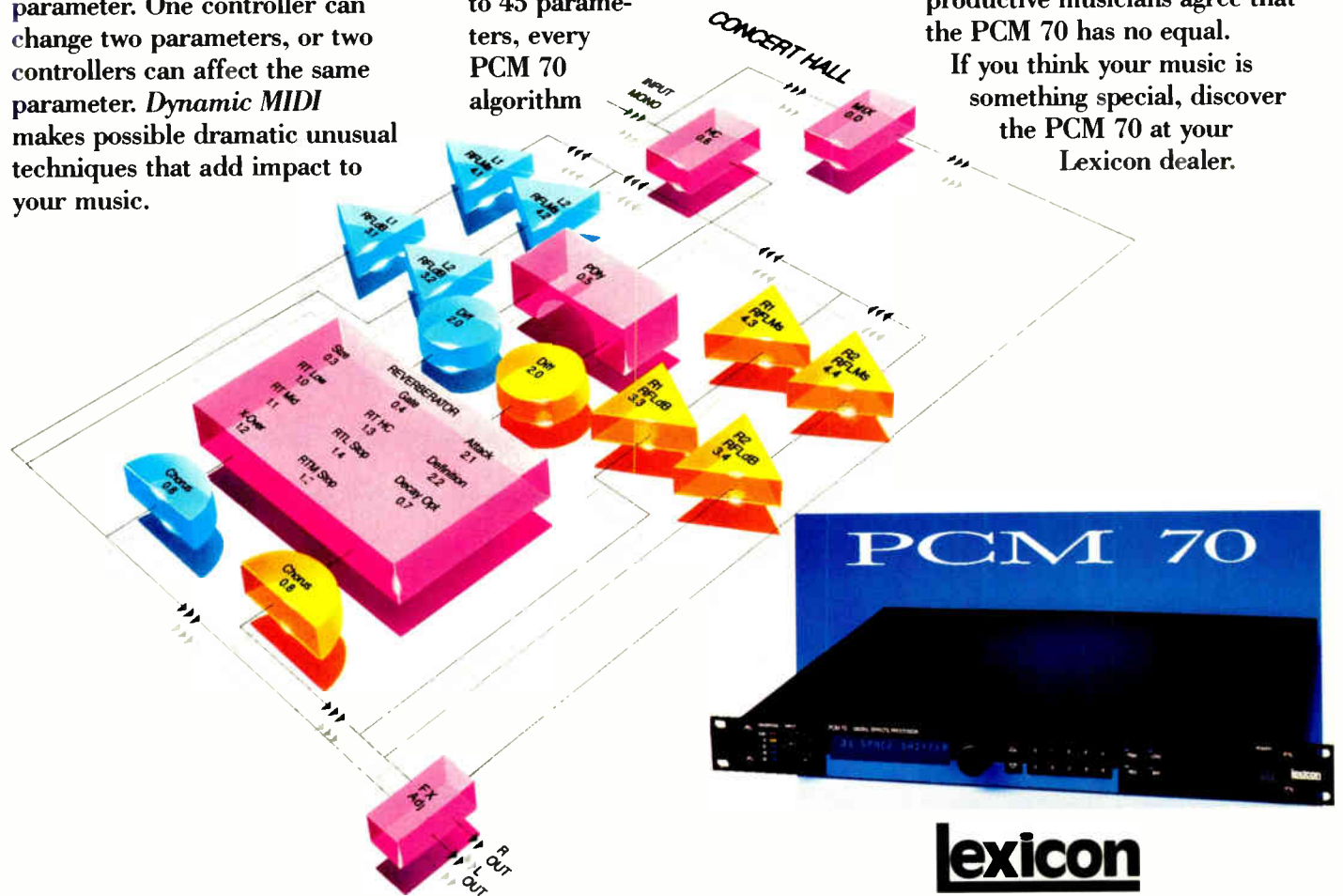
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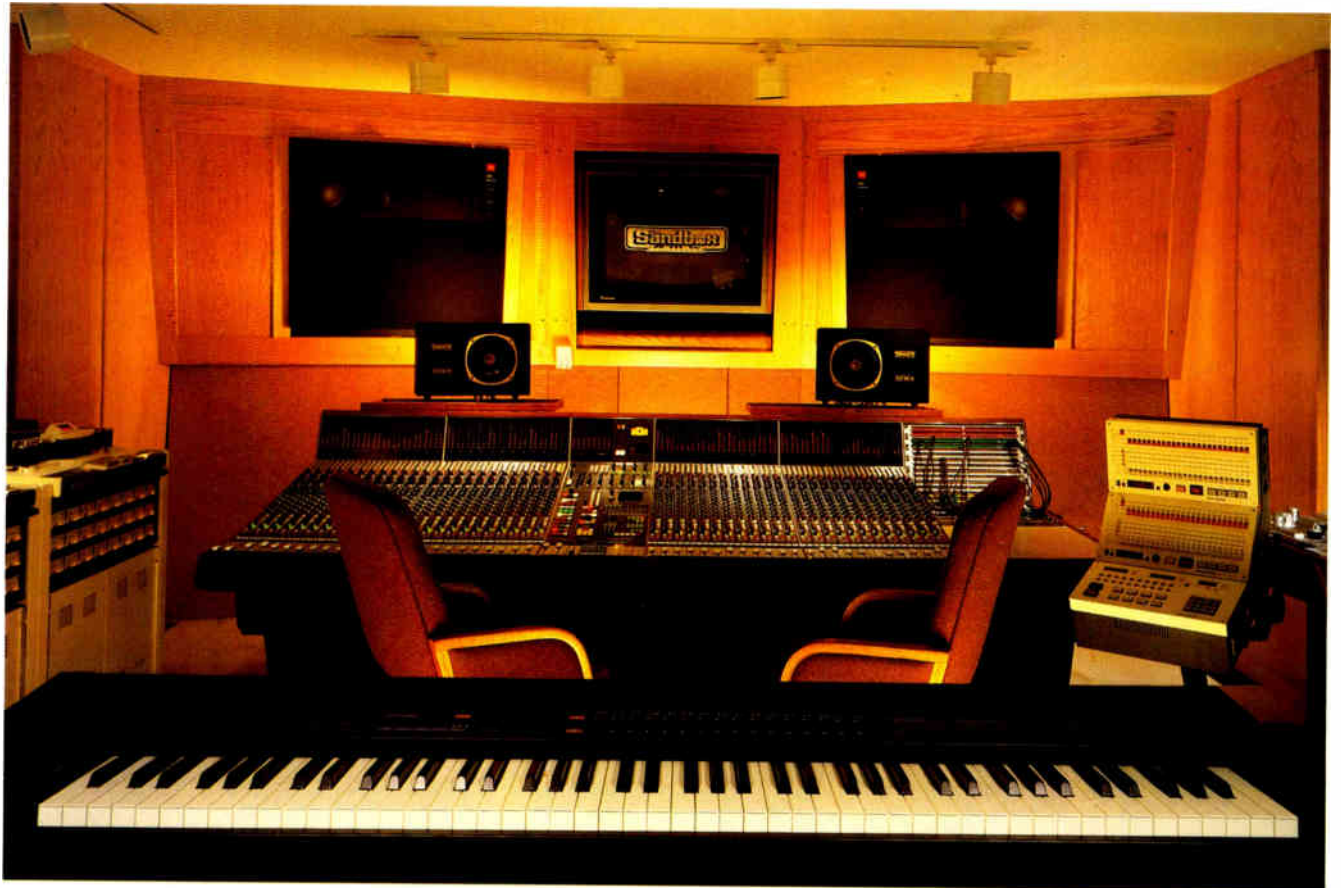
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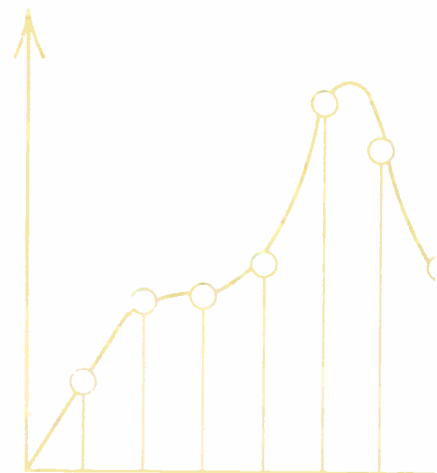
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Sandbox Equipment List

Consoles

Neve V series console w/Necam 96, 24-input keyboard submixer

Tape storage systems

(2) Otari MTR-90s, Studer A820, (2) Revox B215 cassettes, Nakamichi DMP-100/Sony SL2001 Beta VCR, Sony PCM-2500 DAT

Signal Processing

Lexicon 224 XL; Lexicon 200; Lexicon PCM70 (2); Lexicon PCM60; AMS RMX-16; Yamaha REV7; EMT 140 ST; Yamaha SPX-9011; Roland SDE-3000 (2); Roland SDE-2500; Korg SDD-3000; Lexicon Prime Time; Effectron; 1176 (2); LA-3A (2); 16C (2); Aphex Compellor; ADR Vocal Stressor; dbx 902; dbx 903 (3); dbx 904 (4); Drawmer DS-201; Eventide 910; Rockman Sustainer/Chorus; Publison 90; Panscan; Tube Tech EQ (2); Klark-Teknik DN 780 graphics

Synchronization

Adams-Smith System 2600; Lynx Time Line (2); Southworth Jam Box 4+; Garfield Time Commander; Roland SBX-80

MIDI (partial list)

2 Macintosh computers (with 4 Mbytes RAM each); Jasmine 120 Mbyte hard disk; Mass Micro 45 Mbyte removable hard disk system; Apple 20 Mbyte hard disk; Southworth Jam Box 4+; Opcode MIDI Interface; Southworth MIDI Interface; E-mu Emulator II w/Optical Media Systems CD-ROM; Yamaha: TX-816 (2); DX-7, TX-802, DX-100; Oberheim: Matrix 12, OB-8 w/MIDI, Roland: MKS-80, D-550 (2), E-mu SP-12 Turbo; Akai S-900, Kurzweil 250 Expander; Publison 90 with 20 seconds stereo/MIDI; 7' Steinway Series B w/Forte MIDI mod; Yamaha KX-88, G-10 MIDI guitar system; Roland Octapad; Simmons SDS-9; dDrums 2, Dyno-my-Piano w/custom MSC MIDI mod; Simmons MTM; JL Cooper MSB 16/20, MSB plus; Axxess Mapper. Blank Software Drum File; Opcode Systems DX/TX Ed/Lib; Matrix Lib. OB-8 Lib, MKS-80 Lib and D-550 Ed/Lib; Kurzweil QLS; Digidesign Soundesigner S900, Softsynth, Soundesigner Emulator II; Mark of the Unicorn Performer, Professional Composer; Intelligent Music Upbeat, FX Designer

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674A/672A Graphic Parametric Equalizers: Combines eight bands of "reciprocal" parametric EQ with tunable high and low-pass filters (12dB/octave). Graphic-type controls simplify set-up and operation. Can be used as a full electronic crossover cascaded with the main EQ in one cost-effective package. Ideal for room and system tuning as well as a wide range of production chores.

787A Programmable Mic Processor: Combines 3-band, "constant-Q" parametric EQ with a compressor, de-esser, and compressor/noise gate in a fully programmable package. Designed for both mic and line-level inputs, the unit can be used to store 99 commonly-used instrumental and vocal settings for instantaneous recall. MIDI, RS-232, and remote control interface options.

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Circle #031 on Reader Service Card

Following the recent series of joint press announcements in Japan and London by Sony, Studer and Tascam, regarding their continuing support of the DASH format, Sony Corporation plans to unveil its new double-density 48-track machine at this month's Audio Engineering Society Convention in Los Angeles. The new DASH-format PCM-3348 digital multi-track is upwardly and downwardly compatible with existing PCM-3324 and newer PCM-3324A machines. In other words, tapes recorded on any half-inch DASH transport can be played on any other—including future DASH-format machines bearing the Studer and Tascam logos. The extra 24 tracks available on double-density PCM-3348 decks are simply recorded in between the existing 24 digital tape tracks. As with existing transports, up to 64 minutes of record time are available with 14-inch reels at a sampling frequency of 48 kHz; at 44.1 kHz, the recording time increases to 69 minutes.

Shipments of the new PCM-3348 are scheduled to begin this month, with the first machines destined for delivery to East and West Coast music recording studios. Final pricing was not established at press time, but should be announced at the AES show.

I understand that the PCM-3348 bears more of a resemblance—at least in terms of its electronic configuration—to the PCM-3324A than to its predecessor, the 3324. As was reported in the September *Mix*, the upgraded 24-track machine features newly developed VLSI ICs that draw far less power and, through system integration, substantially reduce the chip count on both analog signal and digital control PCBs. Without a doubt, it would have been unfeasible to build a 48-track version of the original 3324 transport; the new low-power circuitry developed for the 3324A means that the new PCM-3348 can be powered from one, single-phase 15-amp outlet. In addition, the 3348 features only four cooling fans (the 3324 needed 20 of them), which should help to reduce unwanted noise and heat buildup in the control room.

Aside from the creative potential offered by simultaneous access to 48 rather than 24 digital tracks, there are



SONY UNVEILS PCM-3348 48-TRACK DIGITAL RECORDER *A Mix Exclusive Preview*

by Mel Lambert

Sony's PCM-3348 offers 48-track capability, as well as full record/playback compatibility with DASH 24-track machines.



Track Density and Channel Numbers					
Tape Width		1/4"		1/2"	
Track Density		Normal	Double	Normal	Double
Digital Tracks		8	16	24	48
Aux. Tracks		4	4	4	4
Digital Audio Channels	Fast	8	16	24	48
	Medium	TWIN DASH 2	8	—	24
	Slow	2	4	—	—

Tape Speed and Sampling Rate			
Sampling Rate	Tape Speed		
	Fast	Medium	Slow
48kHz	76.20cm/s (30 ips)	38.10cm/s (15 ips)	19.05cm/s (7.5 ips)
44.1kHz	70.01cm/s (27.56 ips)	35.00cm/s (13.78 ips)	17.05cm/s (6.89 ips)

The DASH (Digital Audio Stationary Head) format specifications provide for 2, 4, 8, 16, 24 and 48 tracks of audio recording at several tape speeds and sampling frequencies.

other interesting possibilities. Suppose that you want to mix down from 48-track, but would rather overdub to the more cost-effective 24-track DASH format. Why not track the basics to 48-track, bounce down a stereo guide mix to, let's say, tracks 23 and 24, and then continue overdubbing on a "standard" PCM-3324/3324A? Now, in the remix suite, replaying the tape on a PCM-3348 will reveal the individual basic tracks along with the overdubbed elements and lead solos.

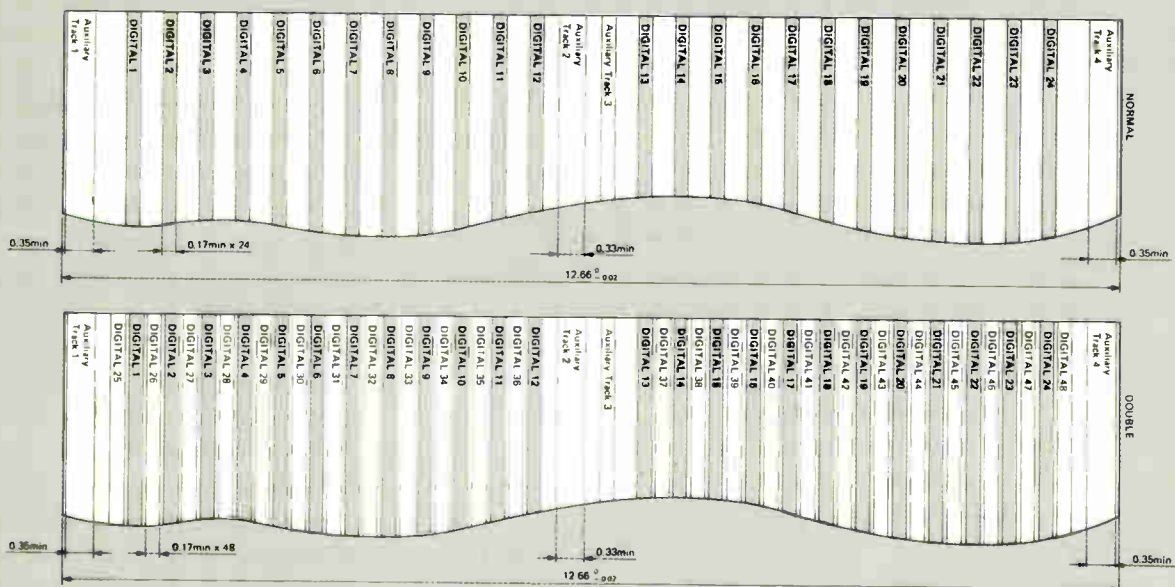
Although limited space here prevents me from describing all of the PCM 3348's new features, the following info should whet your appetite about some of its revolutionary enhancements:

- Two-times oversampling, digital FIR-type filters and upgraded DACs, and simplified analog front- and back-end electronics, said to produce a "smoother, better sounding audio response" without the group delay problems normally associated with

analog anti-aliasing filters found in other digital machines.

- A completely redesigned transport and deck casting is hinged on gas struts for easier access to the internal circuit boards and motor assemblies. The head-drive circuits and preamps have also been moved closer to the digital read/write heads, reducing unwanted noise in the digital signals. The tape lifters, motor drive and servo systems have also been upgraded to provide much faster wind speeds, and

Half-inch DASH format: normal density (top) and double-density (below).



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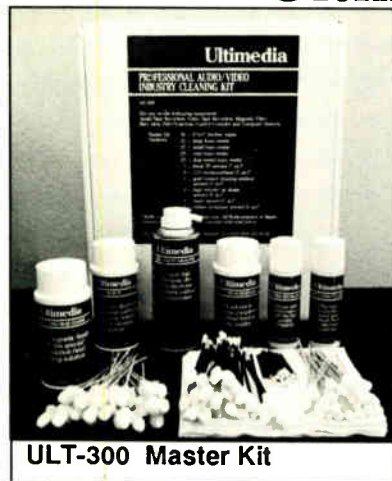
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Circle #133 on Reader Service Card

**The PCM-3348 offers
up to 69 minutes of
48-track recording
on a 14-inch reel
of tape.**

improved tape handling. The 3348 now offers full 14-inch reel capability and, despite the added tape weight, is said to accelerate tape twice as fast as the PCM-3324. The tape guides incorporate synthetic rubies that are reported to be harder and longer wearing than previous ceramic designs.

- Wider lifting handles are built into the side of the machine, with larger, heavy-duty casters for easier movement over uneven surfaces. (Despite the extra channel electronics required, the new 3348 weighs roughly the same as the first-generation 3324.)

- A new optional Remote #4 interface has been designed specifically for direct connection to the track arming (safe/ready) functions of sophisticated console automation systems. (The current Remote #1 for system synchronization and Remote #3 for Sony's companion remote control unit are also offered.)

- Multi-pin circular Cannon connectors are available for input/output of eight channels at a time to a production console or machine-room interface. (Individual XLRs could be fitted in the same panel space to match existing facility wiring.)

- Digital in/out is via multi-way connectors utilizing the familiar SDIF-2 format (PCM-1610/30 compatible), with word clock to synchronize two DASH-format multi-track or stereo machines for direct digital dubbing. In addition, AES/EBU digital inputs and outputs, as well as a pair each of SDIF-2 ports (BNC connectors), can be assigned for two-channel dubbing to external stereo machines and processors, or for connection to Sony's DAE-3000 digital audio editor. A new feature, "Word Advance," enables all 48 tracks to advance up to 256 digital words (5 ms) ahead of the analog out-

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Circle #134 on Reader Service Card

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WHAT YOU DO WITH THE M-600 MIXER IS YOUR BUSINESS.

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Installation and wiring is exceptionally easy. The M-600 is the only modular mixer that's available with all the necessary finished cables and installation hardware. And that can eliminate a lot of installation hassles and expense. At the same time, no other mixer at its price gives you multi-pin, computer-type connectors for quieter, more secure connections.

But the real pleasures of the M-600 will only be evident after it's in your studio. Up to 64 stereo or 128 mono inputs can be accessed directly from the top panel. A patch bay can be added for fast, flexible routing. That's convenience.

The M-600 has all the features you'd expect in a professional mixing console. Like balanced insert patch points on all inputs, PGM busses as well as the stereo master buss for increased signal processing capability. Plus sweep-type parametric EQ, balanced inputs and outputs, phantom power talkback/slate channel and all the audio performance you'll ever need. Without the exorbitant price you don't need.

So check out the M-600 modular mixing console. It's ready for fame when you are.

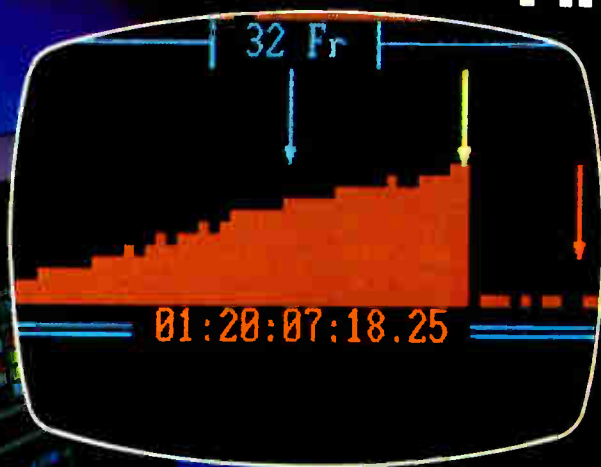


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puts, thereby cancelling the effects of inherent processing delay encountered in external digital effects processors.

- Tracks can be bounced internally with zero time delay—a feature unique to the new PCM-3348.

- An onboard memory holds 20 seconds of data from tape or external sources; the output can also be triggered manually, from a trigger jack on the remote, or via a footswitch.

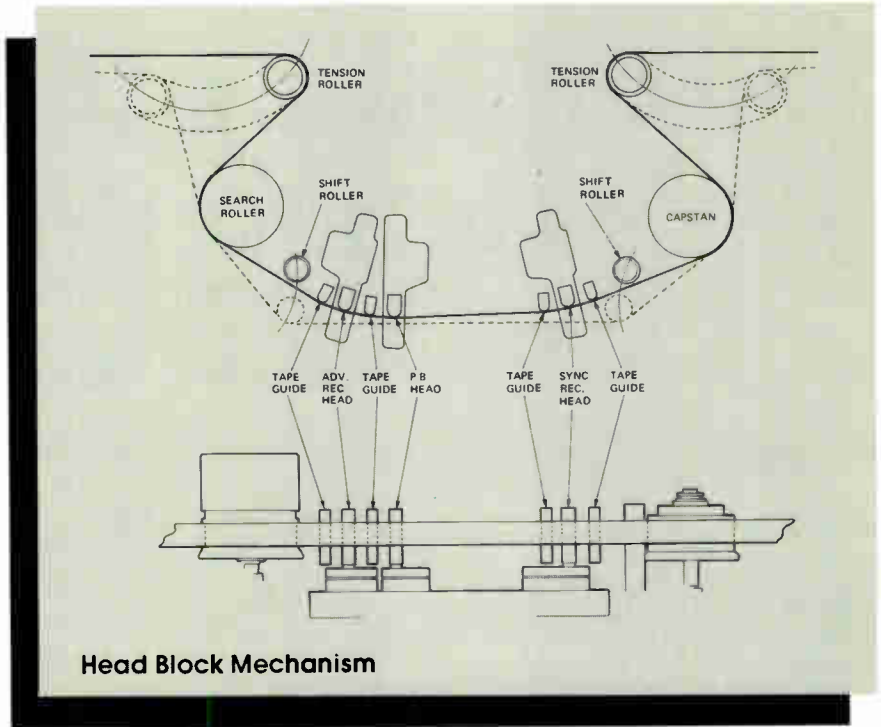
- The redesigned remote control unit now offers varispeed, control of cross-fade times during record punches/punch-outs, plus full control for all 48 digital tracks. The remote head is supplied in a tilting stand, but can also be mounted in a standard 19-inch rack or used as a table-top unit.

- Time code in/out, Sector Sync and Sector Address ports are augmented by a built-in video-clock board that ensures rock-steady synchronization to external video sources and time code.

All in all, the new Sony PCM-3348 looks set to light a fire under the competition, and offers a host of useful features and sonic enhancements. Meanwhile, the 24-track DASH format is warming up. With more than 400

PCM-3324s currently reported to be in use around the world, Studer/Revox plans to unveil its own version in the not-too-distant future, while Tascam is set to unveil the DA-900 24-track DASH machine with full-function

remote before the end of this year. Neither company, however, is prepared to set a date for subsequent introduction of a 48-track double-density machine. Keep posted for further details. ■



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Power To Perform

The M1 brings a new level of power to live performance with 2 megawords of ROM. Every one of the Programs and Combinations (up to 100 of each) is ready to play *instantly*. There's no loading time, because there's no loading. Nothing else gives you sounds this good, this fast.

The 61 note velocity and aftertouch-sensitive keyboard includes extensive parameter voicing that puts literally unlimited performance power in your hands with features like layers, splits and eight way zones across the keyboard.

Power To Produce

The heart of M1's power is 4 megabytes of 16 bit PCM ROM with multisamples of pianos, strings, brass, voices, guitars, attack transients, waveforms and much more.

M1's full-function drum machine has over 42 internal drum and percussion sounds that can be grouped into four user-defined drum kits.

Give extra dimension to your sounds with M1's 33 digital multi-effects including reverbs, stereo delays, panning chorusing, a digital exciter, distortion and more with a choice of four effects per program or combination independently routable to the four polyphonic outs.

Put an entire musical composition or arrangement together with M1's comprehensive 8-track sequencer with song position pointer, phrase and linear based recording, dynamic voice allocation, as well as single event editing.

And M1 power is designed to grow with you: RAM card memory stores extra sequences or programs. And there's an expanding sound library on ROM cards.

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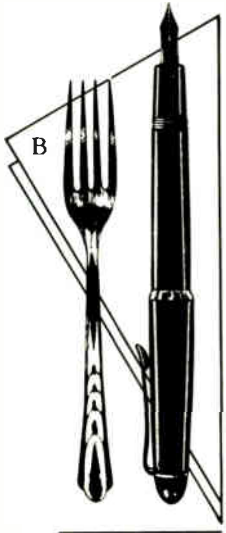
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by Mr. Bonzai

HENRY MANCINI

SCORE POINTS

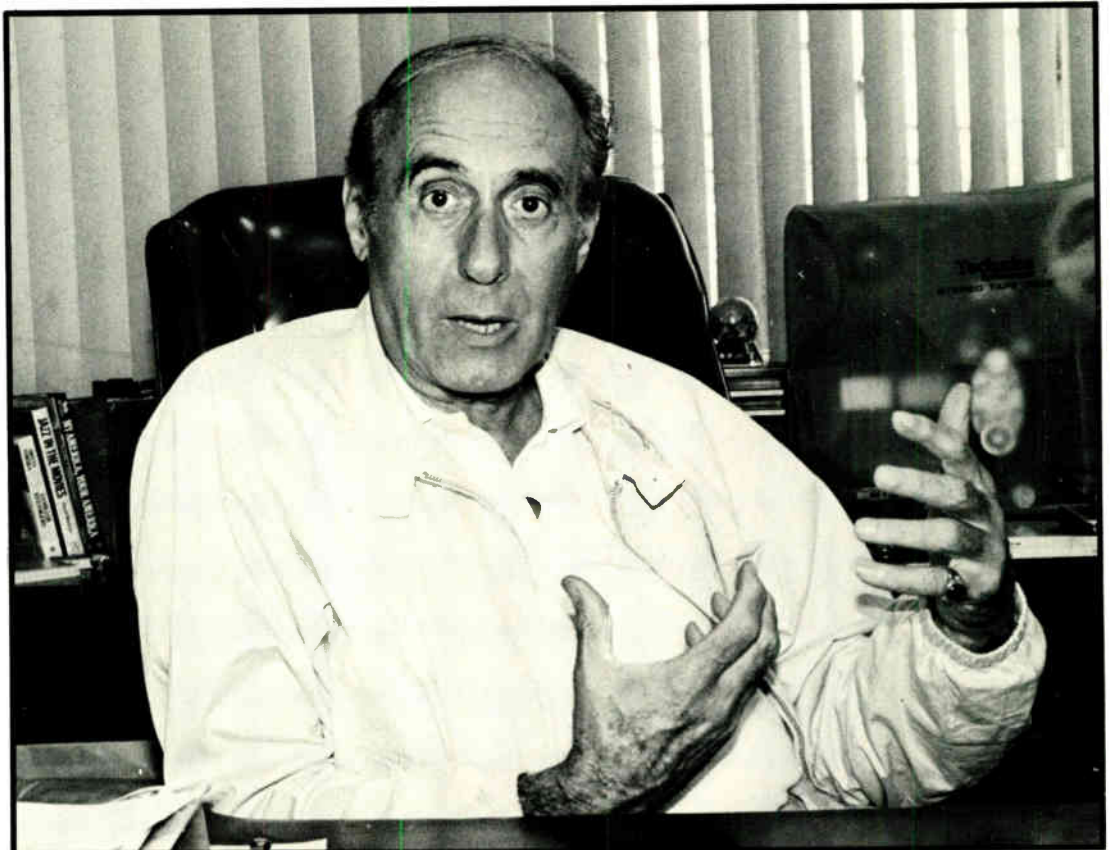


You could hum a few notes from *Peter Gunn* to a hermit in the Himalayas, and chances are he'd pull down his shades and start tapping his foot in time to the classic jazz soundtrack of the '50s. *The Pink Panther* theme is probably more widely recognized, and liked, than "The Star Spangled Banner." Croon a little "Moon River," and generations of movie romantics will get all blubbery and nostalgic.

The works of Henry Mancini have become so universally known that

people think they were penned by that famed folk composer "Anon." In fact, the publishers are in perpetual litigation. "It's not public domain yet, not for a while," the mirthful maestro reminds us.

After nearly four decades of scoring hits, Henry Mancini is still sparking film and television with his unique gift for popular jazz and classical music. His intricate scores for the *Peter Gunn* TV series brought the latest recording techniques and an entirely



new feel to television. Even as an 11-year-old pip-squeak, I suddenly felt “cool” when *Peter Gunn* came on the tube.

The stats are substantial: 17 Academy Award nominations; four Oscars, 20 Grammys, seven gold albums and a Golden Globe. Mancini has conducted the Philadelphia Symphony, the Boston Pops, the Cleveland Symphony, the Pittsburgh Symphony, the L.A. Philharmonic, the Israel Philharmonic, the London Symphony and the Royal Philharmonic Orchestra of London. Just a few of his movie scores: *Breakfast at Tiffany's*, *Days of Wine and Roses*, *Charade*, *Arabesque*, *The White*

classic Golden Age scores have been lost, or all that is left is the soundtrack performance. One of the goals of the Sundance Institute is to restore them and make them available for performance to the general public.

I like to attend, because after you've done a long string of pictures over a period of 20 or 30 years, the questions that are asked are very interesting. It brings up things that I may have forgotten about and should be paying attention to.

Bonzai: So you learn something, too.

Mancini: Yes, if I didn't learn as well it wouldn't be worth my time to go. Just disseminating all this wisdom [laughs] is not my idea of getting anywhere.

stand-up bass and drums with a microphone right in the middle, just like he had done for 30 years. I said, “Paul, wait a minute. Let's try something new.” We put a mic on each of the rhythm instruments, and it was a whole new approach. That was one of the first times that recording studio technology was applied to film work. The film guys didn't want to know anything about what was happening over at Gold Star or Radio Recorders, with the newer mics and methods.

Bonzai: Had you worked in those studios?

Mancini: Sure. That's how I knew about it. I had done recordings with bands, singers and on my own. I knew that there was something beyond the one-mic setup.

Bonzai: Those sessions for *Peter Gunn*—did that music catapult you into new fame?

Mancini: That was it, the turning point.

Bonzai: And it was by chance that you ran into Blake Edwards, the director, at the barber shop?

Mancini: Yes, a true story. He asked if I wanted to work on a new TV show. I had known Blake because he was at Universal, too. That's how I knew him professionally, and my wife [singer Ginny O'Conner] and he knew each other. She was one of the Meltones with Mel Torme. I had worked on part of *Mister Corey* and some stuff for *This Happy Feeling*, which Blake directed. He knew about me, and we had one thing in common: we were both young. I was in my 30s, which was young then, although now you'd better be starting long before that or you can forget about it. Blake and I were contemporaries, and he had ambition. Same with me, and we hit it off. Our next picture will be our 26th together.

Bonzai: Did you have any idea that the *Peter Gunn* theme would kick off like it did?

Mancini: No idea at all.

Bonzai: Did you ever have premonitions that your themes would become so universally classic?

Mancini: No. Even “Moon River”—nice song, great lyric. But no idea. In reverse, I've had some things which I felt had everything going for them, and nothing happened. You really never know.

Bonzai: Can you remember the first music you heard?

Mancini: Well, growing up in an Ital-

You are messing with their baby and you better not put the wrong clothes on it.

Dawn, Silver Streak, 10, Victor/Victoria. Television: *Newhart, Remington Steele, What's Happening, The Blue Knight, The Thornbirds.*

We met up at Mancini's Hollywood office as he was about to take off for Robert Redford's Sundance Institute to offer some tips on the scoring industry. The summer workshops are a gathering of veterans and newcomers, where talent and hard-earned wisdom combine for fresh approaches to a complicated business. Henry Mancini spoke lightheartedly of his musical life.

Bonzai: Will this be your first visit to the Sundance Institute?

Mancini: I did a concert there last year, but this is the first time as a participant in the seminars. The main idea is to give a practical outlook on how the industry really works.

In addition to the workshops, they also have a very good program under the direction of David Newman for the preservation of film scores. It's very important, because a lot of the

Bonzai: How has the scoring industry changed in these three decades you've been working?

Mancini: It's almost four decades—I started in film music in 1952 at Universal. Basically, the idea is to get the music on the film and have it make some sort of sense. The quest is always the same, but there have been several changes—in technology for the recording of the music, and also in the influences that have come along in the writing of the music. When I started, we were using as few microphones as possible. It was all right, and it worked for the time, but when they started going stereo, you couldn't do that anymore.

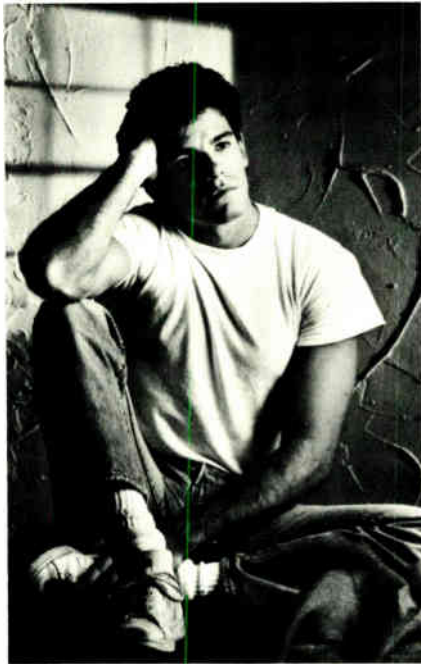
When I first did *Peter Gunn* in 1958, I went to the same studio that I had been doing my pictures in for six years. For the first session we had 11 or 12 guys, and the rhythm section was the core. We also had four guys who played every wind instrument known to man at the time—and a couple that weren't. Paul, our mixer, started to set up for the piano, guitar,

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ian household with immigrant parents, I was aware of Italian songs. But the first time I was really aware of music was when I was 10 years old and we visited some friends who had a piano. Believe it or not, I had never seen a piano. It was a player piano. I didn't realize that you could actually push the keys and make other notes play. I watched, and finally I walked over and pushed some keys, and it happened. It impressed me so much. I started picking out little things.

Bonzai: Your first instrument was flute?

Mancini: Yes, actually I started learning the classical repertoire on the flute at about age 8.

Bonzai: Some people say flute is the most difficult instrument. . .

Mancini: Still is for me. Having nothing between you and the sound, like a reed, or the bow and the string. Just blowing into the hole.

Bonzai: Your dad was a musician?

Mancini: He played flute, but I don't know how he got started. He had an old Conn flute and a piccolo. He

pulled the piccolo out of the closet one day and said, "Here, blow this." It took me a couple of weeks to get a sound out of it. At his insistence, he started teaching me, but I couldn't pay the dues with him. He kept hitting me if I played a wrong note. Finally, he felt he should get me a teacher or he'd kill me. I had all kinds of teachers, but nobody really played flute. I had flute lessons from a violin teacher, a clarinet player. They didn't know what to teach me to do. I developed on my own.

My home town was Aliquippa, which is 20 miles north of Pittsburgh. Max Adkins, conductor/arranger with the Stanley Theatre in Pittsburgh, caused another turning point in my life. I had previously heard the big bands playing on the radio, and had played with the symphony orchestra in high school. I was playing all that stuff, sitting back there wondering why the others were playing certain parts different from me. I became interested in what the orchestra was doing. Then, in about 1936-37, the big bands started coming in. That piqued my curiosity. I used to listen to the

records and the radio, and by then we had an old, beat-up upright piano.

Bonzai: Who were your favorite big bands?

Mancini: Well, I remember the Benny Goodman Band, just before his famous Carnegie Hall concert. And then the black bands, Basie and Ellington. Then Dorsey. . .

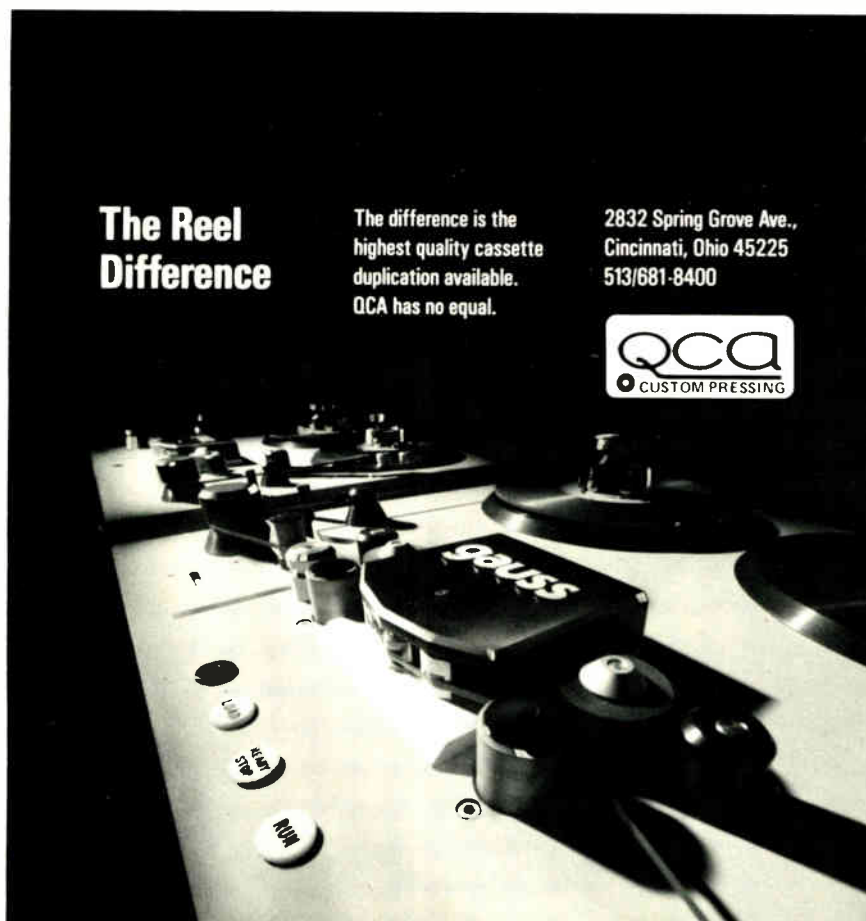
I didn't even know you could buy blank manuscript, so I used to rule my paper and try to write down what I heard. I started putting down saxophone choruses, and went through Frank Skinner's arranging book. I learned the transpositions and I started doing transposed scores. Nowadays, most of the boys when they arrange, they do it in concert style and let the copyists transpose. Still, to this day, I do my work in transposed scoring.

A transposed score refers to an E-flat saxophone in relation to the piano, which is a C instrument. They are built in different keys. The alto sax is E-flat, so when you write a concert in C, you have to write an A on the score, so that when the alto sax plays it, it'll be in C. The other way of doing it is concert scoring. By the way, all of my movie scores and sketches are done in concert form, in concert key. I learned this way. It would have been much easier to do it the other way, horns in F, trumpets in B-flat. You write a tone up, and it makes it sound a tone down.

When I started doing this, my dad saw that I was really interested and I had no place to go. There was no teacher in our town who knew what to do with me. So I was sent to Max Adkins in Pittsburgh. He was an arranger/sax player and had the pit band at the Stanley Theatre. Every theater had a pit band in those days, which played behind the various acts, and then the name band would come on. Max was the real turning point for me. He was one of the few fellas at that time who had a method of teaching arranging.

Bonzai: After that you toured with big bands?

Mancini: Right after that, I graduated from high school and went to New York to attend Juilliard. In my first year, I got drafted and served for three years. After that, I got work through people I had met in the service—like Norman Leyden, who is now associate conductor of the Oregon Symphony



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Orchestra, and was one of Glenn Miller's arrangers. He took over the musical directorship of the Tex Bennecke/Glenn Miller Orchestra after the war. My first job was playing piano with that band and doing arrangements. It was the last gasp of the real big bands.

Bonzai: How did you make the move into film scoring?

Mancini: In '46-'47, I was with the big bands. That's how I met Ginny, my wife, who was singing then. She lived out here, and I had movie music in the back of my head. So I came out to California, and we were married in 1947. That's when I started seriously meeting people, although I was hardly doing anything. I played an occasional job on piano, a few arrangements—just barely making it. Then in 1952, I started at Universal.

Bonzai: Was it difficult to get your foot in the door?

Mancini: Oh, I came in through the back door. Here again, Ginny had a great deal to do with it. I was doing arrangements for vocal groups, and

Ginny was with a group called the Mellow Larks. They went to Universal to work on one of these big-band short films with Jimmy Dorsey's orchestra. I did their arrangements, so the people at Universal heard me and needed somebody to handle the popular things. They had Frank Skinner and Hans Salter under contract for the legitimate scores. I went in on a two-week contract and stayed six years. So I had my office. After a while, they forgot why they had hired me and started giving me dramatic scores to do, Westerns and all that, and that's how I got started. I just happened to be there. Of course, if I hadn't been able to deliver the first couple of scores, I don't think I would have been there very long.

Bonzai: Any harrowing deadlines, last-minute changes in films?

Mancini: Well, changes in films happen all the time, and it's the same now as when I was beginning. But everything in the studio system was usually done in a neat, orderly fashion. We did 50 to 55 pictures a year at Universal. So we had enough people. Maybe I would share the score with

someone, usually Herman Stein. It was 9 to 5, and as long as I didn't goof off, I usually had enough time. The pressure came much later, with *Peter Gunn* and *Mr. Lucky* going at the same time. *Peter Gunn* would record on Wednesday night and *Mr. Lucky* on Thursday night. Although they were half-hour shows, they were all scored with 15 to 20 minutes of music. I would start on Friday and had to finish by Monday for the copyists. I did two shows a week and that was the most pressure I've ever had.

Bonzai: Would you say you were responsible for bringing that jazzy style to TV music?

Mancini: Well, I guess so. There had been jazz in films, but this was the first time it was done live-to-picture for TV. They had been tracking a lot of things in those days. They'd get miles of tape from Europe and just lay it in. As a result, you might see two shows on the same night with the same music, because the same library supplied the music. *Peter Gunn* had really tailored music, and jazz had not been used to a full extent in a weekly series.

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never hear a bass line in a television show in those days. Either they didn't record it well, or by the time they dubbed it, it was down and you couldn't hear it. I think it was the first time that a lot of people heard jazz like that. And, of course, the visuals were excellent. The way it was shot was classic black-and-white. Most of the stories were pretty good. The approach to the series was very classy.

Bonzai: And the music lives on with every high school marching band.

Mancini: Oh, yeah. It's an anthem. We all like to write anthems, and I've had a couple. Just take the bass figure. You've got six or seven notes there, and it never changes during the whole piece. Any kid playing guitar can pick that out. He can play and look real good if he plays bass with the band. And the melody is very simple, and there is only one chord in the whole piece. What more could you give the world?

Bonzai: And it came back recently with *The Art of Noise*.

Mancini: Yes, there are a lot of recordings. More people have tried to rip that off than anything I've ever

written. That and *The Pink Panther*. There are continual lawsuits. People think they can use it because they know it so well.

Bonzai: Like it's public domain. . .

Mancini: No, no—it's not public domain yet, not for a while. [Laughs]

Bonzai: What about your relationship as the composer with the characters in the films you've done. . . say, Peter Sellers? Did you relate to him when you were writing the music?

Mancini: No. For *The Pink Panther* theme it was one of the few times where I sat down and read the script. There was no cartoon, no *Pink Panther*, so for the theme I needed something that was stealthy, with a little humor, for David Niven's character. It was originally written for *The Phantom*, the Niven character. Then Blake came up with the cartoon idea, and the music worked. I didn't write a theme for Sellers, and he used to kid me, halfway on the level. "Hank, you wrote a theme for that damned panther. When do I get my theme for Inspector Clouseau?" I said, "When you're on the screen, I don't want to fool around and put something redun-

dant behind you and give your performance a leaden feeling."

I did do a theme for the picture with Omar Sharif. Peter had two classic scenes of getting over a moat into a castle and a bedroom scene. Long sequences with very little dialog. So I did an Inspector Clouseau theme three or four pictures into the series.

Bonzai: You did the music for Orson Welles' *Touch of Evil*—a really dark and nasty film. What was it like working with Welles?

Mancini: He wasn't around at all. In fact, he got thrown off the lot soon after he did the picture. I had one meeting with him, and he had an outline of the music, as he saw it, sent over to Joe Gersenson at the studio. He was very particular about music, and I had seen the picture. So Joe showed me what Welles wanted, and it was just about what I had planned—a picture of source music with very few dramatic sequences—cues, we call them. I hate that word. When a producer or director wants to seem very hip, he'll say, "Well, this cue should be like this. . ." It degrades the whole thing. It's a piece of music,

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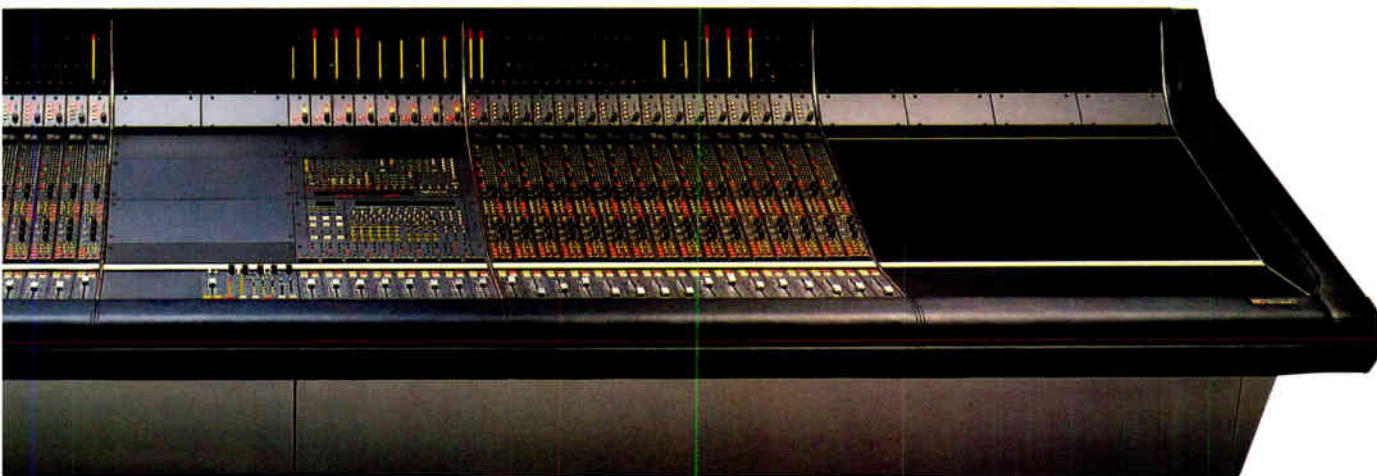
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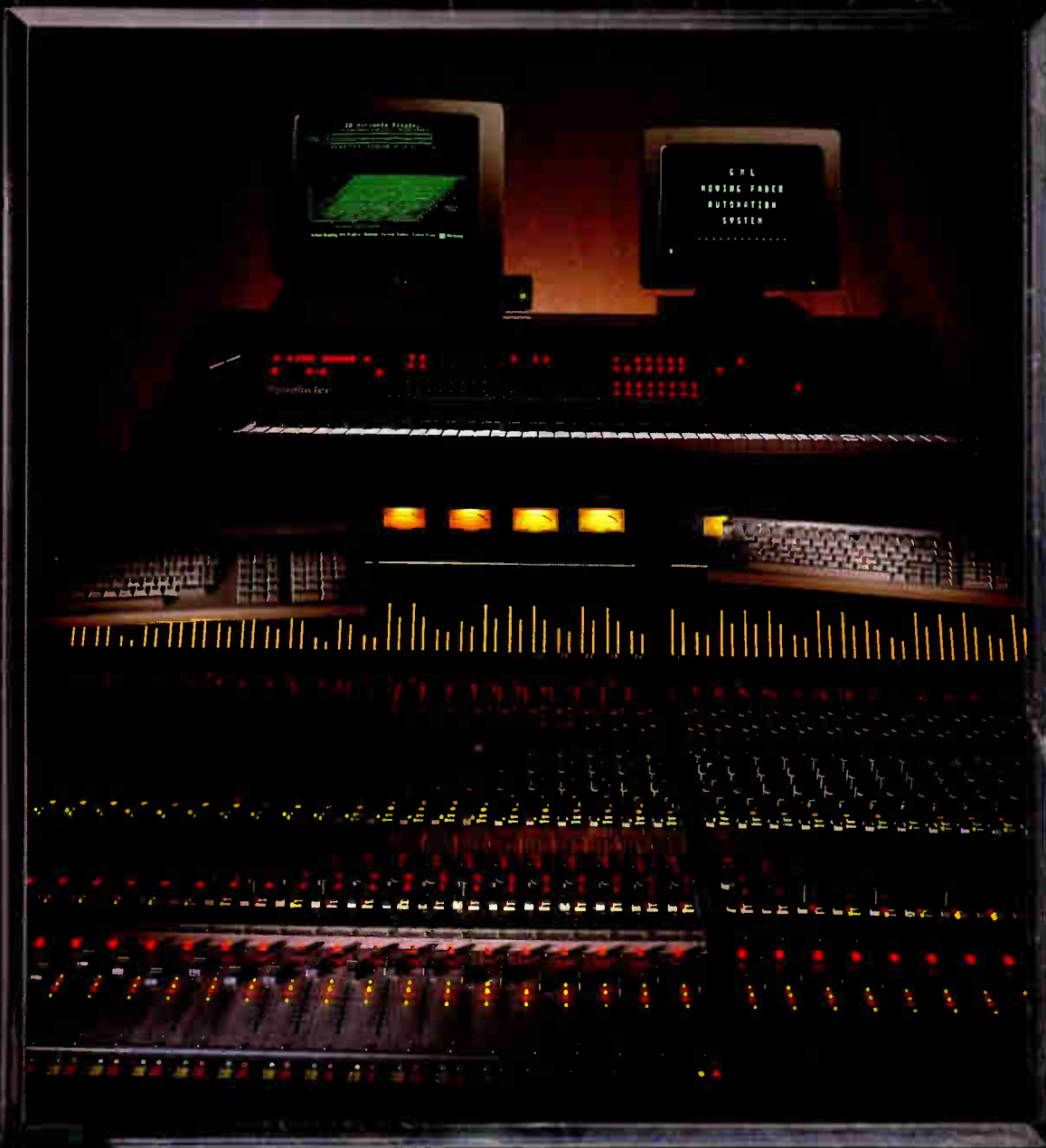
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not a cue. Anyway, so we went on that premise for *Touch of Evil*, and actually, it worked very well.

And you know, a lot of that work was further developed in *Peter Gunn*. That score was great for me, because it crystallized everything that I knew how to do well. We had a staff band at Universal, but I told Joe that they wouldn't be able to do this one. It was gonna be a big jazz- and Latin-oriented score. I needed a whole different band, and we got all the best players. Shelley Manne was on drums, Jack Castanza on bongos. It was unique. I always come back to that score. It had rock and roll in it, too. There was '50s rock with the hard tenor sax, guitars twanging and the back beat.

Bonzai: Can you single out any artists that you feel have interpreted your writing to the fullest?

Mancini: There have been quite a few. In a lot of my picture work, even if it wasn't jazz-oriented, I came to realize that the players would add a lot. If it was good, you'd get an extra 50%. Especially in jazz and Latin where you can't really write the inflections. The players gave me an improvised quality in many cases. The *Peter Gunn* band—Shelley Manne, Victor Feldman, Red Mitchell and Ray Brown played bass, Pete Condoli, Ronnie Lang, Ted Nash, Dick Nash on trombone—they were all so good. And on the classical side, I had the same concertmaster for years, Erno Neufeld. He's still my concertmaster.

Bonzai: Music producers—what makes the greats?

Mancini: I had a producer for a long time, Joe Reisman, when I was with RCA for 20 years and did about 60 albums. Joe would be in the booth, and I would pick the material and do all the arranging and orchestrating. Joe would make sure it was recorded well and then take it in and do the primary mix. Now the producers have taken on a much heavier role. I've done some albums with Pavarotti and James Galway, just did one with Johnny Mathis, and I find the role of the producer has become magnified. I don't know if I've come to terms with that yet. The producer is the one who is responsible to the record company now, and I find that when I am working with producers I sometimes have to step back and hold my comments,

because I know they are going for something that they want. I just finished two albums with the Royal Philharmonic Orchestra Pops in London, and there I had John McClure, who was a big help, but I had control all the way through. They don't do things like I do anymore. How many pop instrumental or big orchestra albums are there now?

Bonzai: How about engineers—do you tend to like working with certain engineers?

Mancini: Yes, I do. There are some marvelous engineers in this town. I've done several pictures with Dan Wallin.

When I went to England and started *Charade*, I worked with John Richards. John did most of my pictures over there. He and Eric Tomlinson. John came over here to work at Evergreen, and I've done some pictures with him over here.

Bonzai: What makes a great engineer?

Mancini: I've only mentioned a few of the good ones. What amazes me is what they hear on the first time down with the music. Rarely have I come back in the mix and asked where something was. Also, your orchestrator is usually in the booth. I've grown to trust certain people.

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Bonzai: How about the new computerized ways of composing—are you using this new technology?

Mancini: Well, I don't use computers, but I am versed in the ways of electronic music. I haven't made the step into computers yet; it's a whole different way of doing things. If I get into it, I'll have to make the jump and go all the way. I have not yet failed to come up with what is needed, but computers are definitely coming on strong.

Bonzai: Do you think that those who are getting into the business, and doing it with computers, will be lacking in some areas?

Mancini: Well, I find that it's true now. I sometimes hear the tail wagging the dog, but you don't know where the dog is anymore. [Laughs] It's an entirely different road, and it's not easier, and I don't think it's faster. Rather than writing and having it played, it's a self-contained process with all the equipment surrounding the writer.

Bonzai: Are you interested in the

new, advanced synthesizers?

Mancini: I've used most of what is available, and I work with those who are familiar with the technology, like Ralph Grierson, who is a marvelous synthesist and keyboardist. I'm not of that generation, but I think that anyone coming up is silly if they overlook computers for movie work.

Bonzai: Do you make a distinction in your work between TV and film?

Mancini: No, not at all. The distinction is made long before I get there—in the way they shoot it. It's a different mentality for a weekly series than for a movie. The directors have different priorities.

Bonzai: Do you do most of your writing at home?

Mancini: Yes.

Bonzai: Do you have a little studio?

Mancini: Yes, most of us now work with VHS cassettes.

Bonzai: What instrument do you use?

Mancini: Piano. But I find that often, because I have worked with orchestras for so long and have a clear idea of what I want, I put ideas down wherever I am. Even while I'm talking to you now, I could be building some-

thing in my head. Sometimes you can't shut it off. I've written whole pieces without even going near a piano. But most of the time I have a piano nearby.

Bonzai: Do you have any gripes with the scoring industry—anything you would like eliminated?

Mancini: Well [laughs], first you shoot most of the directors and producers. That's a sweeping statement, and there are some that are sweethearts, and then there are those that are afraid. You are messing with their baby and you better not put the wrong clothes on it.

Bonzai: Is that a crushing experience when you come up with something that you feel is lovely and perfect, and you get shot down?

Mancini: Yeah, but then there's the next case, judge. I don't take it personally, and I consider where it's coming from. Many times when you get shot down, it's the right decision. Sometimes you get shot down by your friends, too. A composer isn't the final judge of what is right for the picture. Sometimes the people who make the picture have an instinct. I always leave the door open.

Bonzai: Your scores have been the essential memorable element in some very successful films. . . .

Mancini: But you must remember that the opportunity came from the spaces, the idea of the shooting. Blake, especially during *Peter Gunn*, was notorious for shooting long scenes without dialog, just action. He'd say, "Hank'll do it; Hank will fix it." He shot them well and left room for me. He was not a talky director. And most of his comedy stuff has long stretches to work with musically.

Bonzai: I'm reminded of *The Party*, with Peter Sellers—an odd film. . . .

Mancini: That was an exercise. Blake started that picture in the beginning and shot in sequence, which is very unusual. And all the music, except for the title music, was source music, music written to be going on at the party. In many ways, that was harder to figure out because it was from the beginning to the end, and you had some band playing somewhere all the time. Do a number, and then a number to balance it. You had to be conscious of the entire pace of the picture. It was a good challenge, and there are some classic bits in that picture.

Bonzai: In the history of film music, whom do you look up to?

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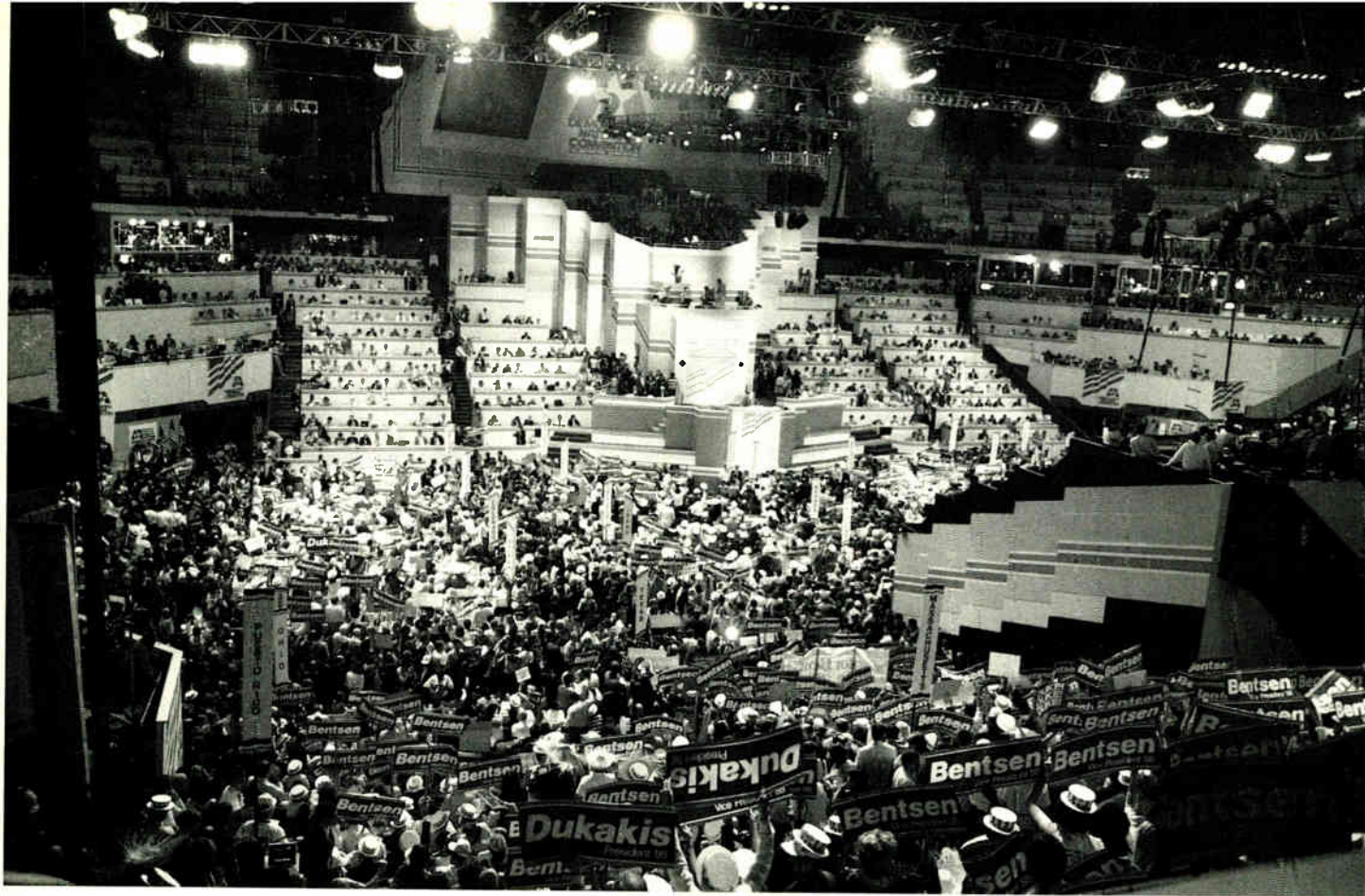
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Mancini: One of the big influences on me was Victor Young. If you did a parallel study on the two of us, you might find some similarities. He managed to get picture after picture with lovely themes, like "Stella by Starlight," "Foolish Heart," "Love Letters," "Golden Earrings." He always had a classic theme that was worked in well with the score. And when he had to do his action stuff, he did it—as many chases and fights as anyone. I always admired his melodic approach to scoring.

Bonzai: Anybody working currently that you find interesting?

Mancini: Well, one of the guys working currently has been working for the past 40 years—Alex North. Alex is a consummate composer.

Of the younger people, I like Mark Isham very much. He is a jazz trumpet player, involved with electronics. He did *Never Cry Wolf*, *Trouble in Mind*. His new picture is *The Moderns*. He has a very dark side to him, but it fits the pictures. I think he's lightened up a bit for *The Moderns*.

Bonzai: If we could invite any musicians from history to join us for

lunch...

Mancini: I'd have to go all the way back to Bach, and I'd like to get Mozart in the same room, too. I'd either shoot myself or get new inspiration.

Bonzai: There's a lot of competition to get into your field. Do you have any advice?

Mancini: Well, when I get the Sunday newspaper, I go to the movie ads. There used to be a time when I could call up the guy whose name was on the credits and know him personally. In the past three or four years I've looked and there are many that are completely unknown to me. They're new, and they are first-picture people. They'll be doing more. So a lot of younger people are coming into this business. Maybe you should ask them how they did it—I don't know. It has a lot to do with the emergence of pop music and rock and roll. A lot have come in through that doorway. I came in through the big band era.

Bonzai: I feel that if the music is perfect, it is often a subliminal experience and we overlook the composer...

Mancini: But there is no way you can overlook the opening to *Star Wars*, or *Rocky* or even *The Pink Panther*. They

demand attention, and they set up the right mood for what is to follow. That opportunity doesn't come by often. Many pictures have music that is fine and does its job, but there is no opportunity for it to step out. What I do, and what I've done, has been at the right time at the right place, the right project. It fell together.

Bonzai: So, there's a certain amount of luck...

Mancini: Well, you can have luck and fall right on your ass. When you get that break you better know what to do with it. Most of my contemporaries had that break and used it. Other guys had the break and it didn't work out. But it's a good business. I average about three or four pictures a year, and there are people who turn to me. I've been fortunate to have some people stick with me for a while. I'm looking forward to waking up tomorrow again and going on. ■

Mr. Bonzai, a 15-year veteran of the music industry, is former manager of a major Southern California studio and author of Studio Life: The Other Side of the Tracks (Mix Publications).



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by Billy Lee Myers, Jr.

AUSTIN CITY LIMITS

EDITING WITH HYPERCARD

I love it when things work. Like when different kinds of computers talk over the same network. Or when keyboard players or drummers or even guitarists swap samples over phone lines and use sounds from people hundreds of miles away. Or when you plug two machines together from different companies and through the magic of MIDI they talk to each other.

Unfortunately it's not so simple to get audio and video machines on speaking terms. Most synchronizers speak different languages and there have been no standard interfaces. Though this is changing, a few years back you could get only the simplest slave system. We did audio sweetening for years with an EECO MQS-100 (serial #0005), which was functional, but offered only minimal machine control and almost no data manipulation. Now you can buy very powerful editing systems, but since these are not high selling items, you can expect to pay dearly for this power.

You say you have some audio/video machines you'd like to synchronize, but don't have the money to buy a full-blown editing system? Yeah, me too. In what follows, you'll find that it may just be possible to roll your own.

We had been doing the audio on *Austin City Limits* at our studios in the Communications Building at the University of Texas at Austin for the past 12 years on a 16-channel/16-track manual (read: no automation) system.

Author Billy Lee Myers during a break from his *Austin City Limits* work at Studio 6B in the Communications Building of the University of Texas at Austin.



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POST · SCRIPT

So when we bought 24 tracks of Studer A820 and an automated Neve V Series console, it was an audio engineer's dream. Our bubble burst, however, when we went from recording shows to remix and sweetening. It became apparent that our old MQS-based editing system would not be compatible with our new equipment, so we began to look at alternatives.

Necam 96 uses an Adams-Smith frame with a single module (called an Intelligent Tape Peripheral, in Necam-ese) to control a single multi-track machine. It seemed like an easy leap of imagination to see that frame full of modules, each controlling a tape machine in the room. Necam 96, however, was never intended to be used for control in a multi-machine environment. In fact, Neve makes software/firmware modifications to the Adams-Smith to make it act as a dedicated intelligent tape peripheral for Necam automation.

A possible way out of our dilemma was suggested by Tom Schlum, the engineer who installed our Neve. The Adams-Smith data bus connecting the modules accepts ASCII commands from Necam via a standard RS-232 port. In fact, we had used my Macintosh Plus in this way for simple control of the Studer A820 during installation and troubleshooting. Schlum suggested we populate the Adams-Smith frame with additional modules and use a multi-pin A/B switch to decide who gets control of the Adams-Smith bus: Necam or the Macintosh. That way we could set the cue points, edit points, offsets, etc. with the Mac and then let the Necam have control back to do its automation thing.

We started with a simple communications program, running at 9,600 baud, to type commands into the Adams-Smith. For example, the string "#I\$U" would return the status of our 4-track machine, an ATR-104. Typing "#IP" would put the machine into play; "#IR" to rewind. Considering all the machine control functions, roll-backs, offsets and status queries, we wound up having to memorize lots of command strings. If I had that kind of memory, I wouldn't need a computer in the first place.

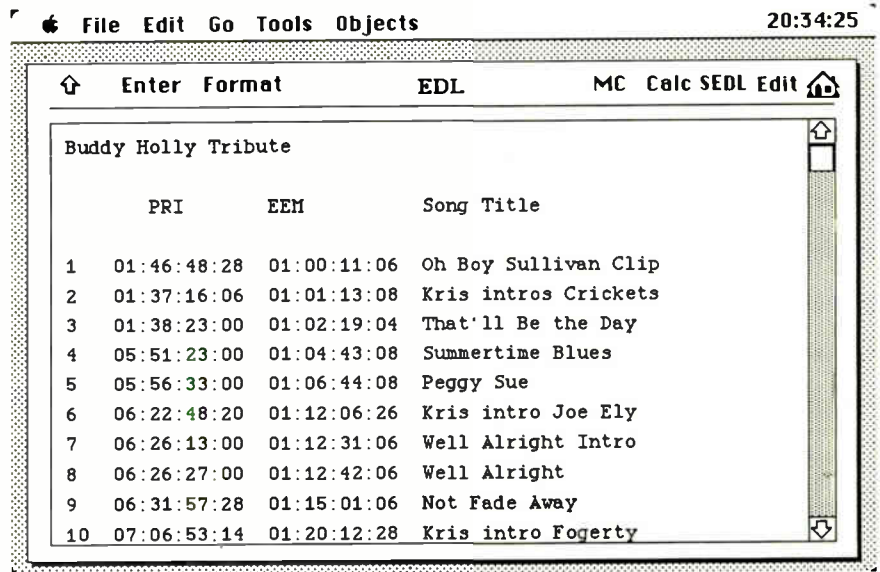
So the first improvement we made was to use a terminal program with macros to store the most commonly

used command strings. This definitely helped, but with three machines (and another on the way) there were so many command combinations possible that we soon lost track of which macro was which. Clearly, the real solution was a dedicated terminal program, but learning enough C or PASCAL to write a program that complex in the middle of our *Austin City Limits* taping season was out of the question.

Enter *HyperCard*. There have been whole articles describing what Hyper-

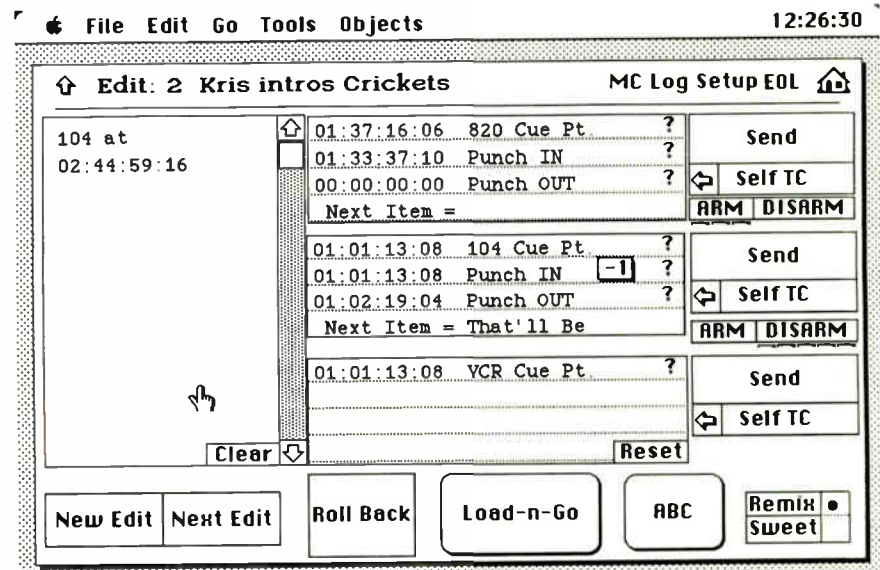
Card is, but in this instance, it proved to be "programming for the rest of us." Through *HyperCard*'s ease of use, I was able to start over and design an editing program specifically for our situation.

At the outset, the minimum system requirement was to cue and play our audio tape machines in sync with a Panasonic AG-6500 VCR. We also needed frame-accurate punch-ins on the 24- and 4-track machines. This was accomplished by writing a terminal program with our command macros con-



Top: Customized edit decision list was designed by the author for use in post-production of *Austin City Limits*.

Bottom: Edit Card, created with *HyperCard*, allows frame-accurate punch-ins on multi-track recorders from the Macintosh computer.



POST · SCRIPT

tained in on-screen buttons. Click on the button with the mouse, and the command is sent. The buttons are labeled with their function, so memorizing keystroke combinations is unnecessary.

We would have been happy with that much, but as with any new toy, it's hard not to keep playing. For example, we had been keeping track of our time code numbers from a paper (shudder) printout from the CMX video editing sessions. I created a text field in the HyperCard stack to store all the time code numbers from the show master and EE master tapes. Then I added associated buttons to perform offset, preroll and punch-in calculations. David Hough, a fellow audio and computer nerd, wrote an on-screen time code calculator (drop-and-non-drop-frame).

In fact, almost everyone who saw the software came up with a "wouldn't it be great if it could. . ." and we'd be off and programming. My imagination running wild, I even wrote a subroutine to keep track of how long each

The hardware side of the editing system was pretty straightforward.

edit session ran, and who worked on it so the people in the front office would know what we were doing. (I know, sounds dangerous to me, too.)

The hardware side of the editing system was fairly straightforward. The Adams-Smith module is sort of like a Lego set for engineers. It is very versatile; it has to be in order to interface with all the strange machines floating around. To Adams-Smith's credit, they fully document all the commands, if you can find them in their dada-esque manual. The physical interface between the tape machines and the Adams-Smith module is a 15-conduc-

tor cable with a few steering diodes. Schematics to enable construction of cables for most of the common tape machines can be found in the Adams-Smith manual.

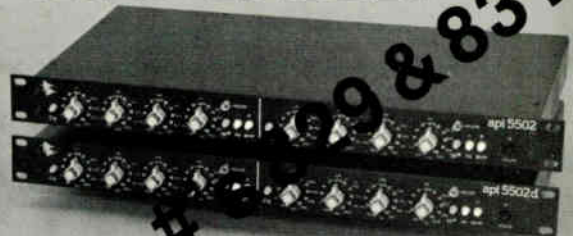
In many studios the Macintosh has become *de rigueur*. It's being used as an engine to drive MIDI devices, samplers and composing systems. Of course, it's ideally suited to administrative tasks from track sheets to invoices. And now that we've added editing to the list of tasks for our Macintosh, we seem to finally be approaching an audio workstation (Ken Pohlmann, "The Workstation Cometh," *Mix*, Feb. '88) and a peek at the future.

We started with a basic synchronizer. Due to the synergy between the power of the Adams-Smith modules and HyperCard's ability to get at that power, we wound up with much more.

I love it when things work. ■

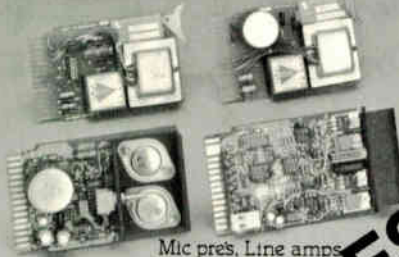
Billy Lee Myers, Jr. is an Austin-based audio engineer who thinks he knows a lot about computers. He can be reached via CompuServe 76446,2055 or GENie, B.Myers.

HEARD ANY GOOD ONES LATELY ?

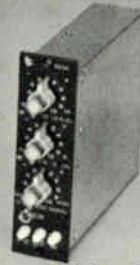


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B DONALD FAGEN

BY IAIN BLAIR

STEELY DAN & BEYOND

Between 1972 and 1980 Donald Fagen and Walter Becker, better known as Steely Dan, released a total of seven increasingly sophisticated albums, a collection that virtually defined a soundtrack for the '70s. The effect of this band, like the spreading ripples from a stone cast in water, can still be seen and heard today in the

late '80s, eight years after the group quietly disintegrated.

If Fagen and Becker are relatively unknown by name, it is because in a

business where publicity, hype and image are everything, these two musicians preferred to remain intentionally faceless. In fact, "low-profile" is a bit of an overstatement for Fagen and Becker, who retired from public performing in 1974, and thereafter merely appeared in fewer and fewer, invariably grainy, black-and-white album shots that resembled wanted posters more than glamorous portraits of rock gods.

This month, Fagen, the elusive singer (although not initially) and keyboardist for this legendary group, pulls back the curtains a little for a look behind the scenes at his early musical influences, Steely Dan's recording methods and history, the reasons for the band's demise, and the current status of his solo career.

You've always kept a very low pro-

WALTER BECKER Finds a Place in the Sun

Compared with his ex-partner Walter Becker, Donald Fagen comes across as a publicity-seeking media star. During Steely Dan's reign, Becker actively shunned any exposure other than musical, and in their few pictures looked even more remote and inaccessible than Fagen.

Since then, the guitarist virtually

disappeared underground, quitting the stress of New York City for the wilds of Hawaii amid rumors of mounting health problems and personal pressures.

So it's quite a surprise to finally track down the legendary other half of Steely Dan at The Village Recorder, where it all started, and to find him not only looking fit and healthy, but more than happy to talk about his past, present and future.

• • •

Donald suggests that you were much more the tech-head of the

—CONTINUED ON PAGE 138

—FROM PAGE 137, BECKER

group, particularly in the early days.

I think we were both eager to experiment. It's just that perhaps I had a better grasp of how machines and electronic processing devices worked, and what was around. Everyone basically has access to the same machines. It's just *how* you use them that makes the difference. I suppose I was more into electronics back then than Donald, but I think he knows his way 'round a studio much better than he lets on. **You've kept a very low profile since Steely Dan broke up.**

Yeah. For a few years I didn't do anything at all, not professionally that is. I moved to Hawaii, and I concentrated on other things, like regaining my health and restructuring my life, and generally recovering from the various excesses of my long and checkered career.

Have you moved more into the production end now?

Well, once you've been out of the scene for a while, the easiest way to get your feet wet again is to get involved in a project where someone else has already done all the hard work, like write the songs and lyrics [laughs]. So I just sit there at the board and play producer. It's a kind of cush job when you get right down to it.

So are you based in Hawaii all the time now?

Pretty much. I live on Maui, and I find it very peaceful after all the madness of New York City.

Do you have a home studio where you work out of?

It's a very rudimentary setup. People probably expect me to have this incredible setup, but basically it's just a bunch of keyboards, my guitars and a sequencer drum machine. I don't really do much recording there. It's more for playing around with ideas and working on arrangements.

What equipment do you use?

I have an Akai 12-track machine, but it's actually too big for the room so I lent it to a friend, and forgot to get it back. So now I just use some cassette recorders and the Linn machine. I mainly use the Linn for laying ideas out.

Where have you been producing

the China Crisis album you're currently working on?

Over at George Benson's studio [Lahaina Sound] in Hawaii, which is a great place to record. The reason we're also doing some stuff back here in D at The Village is that it's cheaper to come over and do overdubs than fly all the musicians we need out to the Islands.

Is there any chance that Steely Dan would ever re-form?

Steely Dan is just a faded memory at this point. I have all the old albums sitting around the house, and some day I'll pull 'em out and show 'em to my son. I think we made all the Steely Dan albums we're going to make, so whatever happens from this point on for me and Donald, whether alone or together, it'll be something new.

Donald said you did work together recently.

I was back in New York and we did write some songs together, but it remains to be seen what will happen to them. The fact that we're now geographically so far apart has made it that much harder to work together. But for my part, I really enjoyed collaborating with him again, and we had a lot of fun and some good laughs.

Why haven't you made a solo album since the breakup?

Well, the main problem is that I don't have some of the basic ingredients for a solo career. I don't sing, and I've also been very lazy about pursuing a solo career. To be honest, I've been enjoying lollygagging around Hawaii, and I find producing other people to be real rewarding, so I tend to work very intensely for a couple of months and then go back to lazing around the Islands.

Do you have fond memories of the Steely Dan days?

Yes, of the ones I *do* remember. There are some hazy areas in there, roughly 1976 till 1980, where most of the details escape me. And then I retired from all this, but I wasn't able to come up with anything that was more fun than being in recording studios and making records and being involved in the music business. And that's still the case.

—Iain Blair

By the early '60s,
when rock began
to lose its vitality,
I started getting
into jazz.

file, and in the few interviews you've done, there's been next to nothing about your childhood and formative influences.

Hmmm, well, what can I tell you? I was born in 1948 in Passaic, New Jersey, and it was your typical, middle-class, faceless suburb, where a thousand homes all look the same. I guess that's perhaps why I got into jazz at an early age. I started off listening to a lot of black rock and rollers—guys like Chuck Berry and Fats Domino and Little Richard—when I was a kid, but by the early '60s, just when rock and roll began to lose its vitality and energy, I started getting into jazz. I used to listen to a lot of radio, a lot of New York stations, and that was my escape from the monotonous suburbs to the excitement of the urban life. I also loved blues, and it was because they were so outside my experience that I think I was so drawn to them. My mother was also a big influence. She'd been a singer with a bunch of different trad jazz bands, but she quit due to stage fright. I think I inherited it.

What jazz artists did you listen to as a kid?

I think the first jazz record I ever got, probably like a lot of people, was *Dave Brubeck Live at Newport, 1958*, and I've still got it. That kind of got me into stuff like Miles Davis and Thelonious Monk and Charlie Mingus and Sonny Rollins. I guess I became a kind of jazz snob in the end—you know, black turtle-necks, lots of black coffee and cigarettes. Like I said, it was an escape, not just from the mundane world of the suburbs, but from the whole atmosphere of that era, what with the Cold War mentality and paranoia of the '50s.

How did you meet Walter Becker?

At college. He grew up in Forest Hills [near NYC] and had the same kind of childhood, I guess, feeling slightly

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outside the mainstream. He was also into jazz and blues. He worshiped B.B. King, and I heard him playing guitar one day, and we just got talking. This was at Bard College, where I was studying English literature. It turned out we both wanted to be songwriters, and we both had a few we'd written on our own, so we decided to collaborate.

Was there a game plan at this point?
Not really. We both wanted to form a group, but the trouble was neither of us really wanted to sing. I kind of hoped he would, and vice versa. When I got out of college, about '69, I

spent a year at the Berklee College of Music in Boston, and then we started doing the odd gigs, backing up people and gradually learning the ropes. I remember we backed up Jay & the Americans at one point. Pretty strange stuff.

So how did Steely Dan come about?
We moved out to California in about '72 as staff songwriters for ABC, which is where we'd met Gary Katz—he was an in-house producer for ABC out here. The trouble was, we didn't have much luck as staff writers because our material was a little peculiar, and hardly any ABC artists would cover our

songs. I think the only artists that actually recorded any of our tunes were Barbra Streisand and John Kay of Steppenwolf. But by this point we knew what we really wanted to do, which was form a band that would be a vehicle for our songs. So we called up a bunch of musicians we knew, like guitarists Denny Dias and Jeff Baxter, and singer David Palmer, and it all came together very quickly.

So for your first album, *Can't Buy a Thrill*, which came out in 1972, there really was a group with someone else doing vocals?

That's right. David Palmer was the singer, Jimmy Hodder was on drums, and Denny and Jeff were the guitarists. I think we also had Victor Feldman on percussion, and the Blackberries singing backups.

And you also toured, initially at least.

Yeah, we toured for almost two years, especially in the South and Texas, and the Northwest, and we also went to Britain on tour, and then we quit.

What happened?

Well, the band was getting pretty good toward the end, but Walter and I never really took to touring too well. It just wasn't the kind of life either of us wanted. So that's when we decided to break up the group and just work with studio musicians whenever we needed them. It made more sense for the way we wanted to work.

Did you ever miss performing live?

I did have a lot of fun performing, and once I got over my inherent stage fright, I really enjoyed it. But the traveling and rigors of the road didn't make up for it. We were writers rather than performers, so it wasn't that hard to quit.

Although you stopped performing live early on, you started singing, despite your reservations.

[Laughs] Yeah, well, David Palmer was a good singer for us at the beginning, but he didn't have the right attitude to put the songs over, and so I was almost forced into doing it myself. Ironically enough, it seems to have worked out.

Steely Dan was renowned for taking its time in the studio. Was there ever a period when you worked quickly?

I think the first two records, *Can't Buy a Thrill* and *Countdown to Ecstasy*, were done pretty quickly, mainly because we had a stable band. So we'd be rehearsing daily and adding new material, and then we'd record the



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basic tracks without much of a problem—everyone knew the songs. But gradually we began working with studio musicians who'd come in and see the music for the very first time, and in order to re-create a band sound, where it'd feel like a bunch of guys playing together as opposed to just reading their parts, we'd have to spend time rehearsing and experimenting.

Did you go into the studio with finished songs, or did you record rough ideas and grooves and then build from there?

We always had finished songs, and the basic rhythm tracks were always arranged and charted, but once we had the basic track down, then we'd start playing around with ideas and sounds, and add from there. We'd never just record a feel. We always felt that the lyrics and the music had to be written simultaneously, or that at least you'd have an idea of what the lyrics were going to be. That's because our lyrics were always set up in a certain way against the music—they played off of each other. I think we may have tried just vamping a song, but it never worked for us. And in recent years, on the last couple of Steely Dan records, like *Aja* and *Gaucho*, as well as my solo album, it came to be more and more structured. The whole of *Nightfly* was charted and worked out before we started recording.

In terms of writing, how did the collaboration work?

In the beginning, when Walter and I first started writing stuff together, it was basically a dormitory situation where we'd be hanging out in each other's rooms. But after a couple of years, the way it usually worked was that I'd develop a musical idea and some idea for lyrics, or at least a general idea, and then I'd get together with Walter and he'd help arrange the ideas and we'd work together on the lyrics and fill in the gaps.

Would you write most of the lyrics initially?

I think it varied through the years. Sometimes I'd be working by myself and come up with most of them, but there were other times when I couldn't get much at all and Walter would write most of them.

Did you make elaborate demos before going in the studio, or were they quite rough?

Because of the finished sound of our albums, people have assumed that we spent hours making really polished

demos first, but the truth is we used real primitive equipment, especially in the early days. We'd usually just have me playing piano and sometimes Walter playing bass, and both of us singing, and put it down on a cassette. It was pretty rough, technically speaking, but the important thing to us was getting the songs. I'd do the charts, or sometimes another musician would do it, and I think it was only at the end, for *Gaucho*, that we graduated to doing demos on a 4-track. And we never cut demos in the studio to see how a song would work. We always had it worked out first.

Over the years, you brought more and more players into the sessions. Did their contributions ever radically change a track, or was it more a case of interior decorating?

Most of the experimentation was done after we'd cut the basic track, so we'd have someone like Larry Carlton or Lee Ritenour come in and do overdubs, and we'd then incorporate any ideas they had. But I don't remember the basic structure or a track ever changing.

Did you record traditionally, putting down the rhythm section first, and then adding tracks?



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Right, we usually had about five guys in the room—guitar, keyboards and a regular rhythm section, and start from there. Once we got the right feel, we'd put it down and then build. At the beginning, all the basic tracks were cut live, but as time went by, we realized you could layer and layer, so it became a slower and slower process. **What about solos? Did you bring in a lot of players and let them all take a shot, or did you work with one guy and experiment that way?** We usually wanted a particular sound or feel, so, for instance, we'd get Jeff Baxter to do a bunch of different things, and then choose the best idea or take. I guess we took our time looking for guitar sounds, or keyboard textures.

Do you see yourself as a tech-head or more just a musician?

I'm not really a tech-head, that's for sure. When Walter and I were working together, he was much more involved in the technical side of recording than me, although I've become fairly proficient over the years. When we started out, I knew absolutely nothing about engineering, although Walter did. He was a hi-fi buff as a kid, and he was very quick to learn all that stuff, about the board and the studio in general.

So who took care of the technical side in a typical Steely Dan session?

For the first few albums at least, it was Walter and Roger Nichols who had their hands on the board for the most part. In fact, when Gary [Katz] or I used to touch anything, there'd always be people yelling at us to leave it all alone. For me, it was usually a matter of listening and trying to communicate in whatever way I could how I wanted a track to sound. Since then, I've learned a lot more, but I remember actually being bored by mixing in those days. You know, if they went on beyond a certain point, I'd actually just get up and leave the room. Now, of course, I understand the process, and I have a fairly decent 24-track studio at home, and although I occasionally have to call for help, if I want to do something particularly sophisticated, I generally know my way around.

Do you keep up with the latest equipment advances?

I try to, but I'm not really into getting all the latest high-tech samplers or synths or whatever. The only synths I own are a DX7 II and an old Prophet 5, and I also have a couple of drum

machines. That's it. I think it's 'cause I never really hear anything that sounds that interesting to me, and because basically I like natural sounds, or instruments that imitate natural sounds. I'm just not that much into synthesizers, and I'm not interested in sampling.

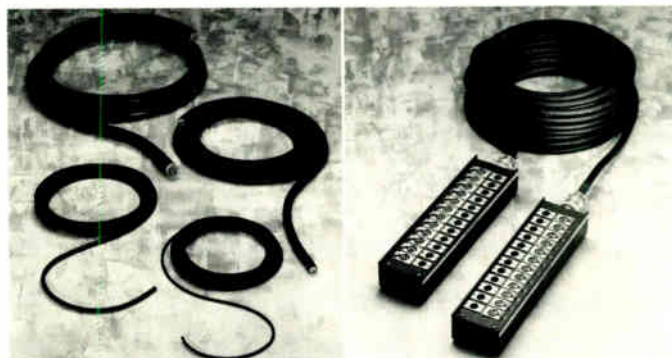
I still prefer analog echo to digital, you know. Digital echo always sounds peculiar to me, so usually I'll use EMT or a live chamber. I find that analog echo really tends to enhance digital instruments in a way that digital echo doesn't. It's a much smoother sound to me. I guess it's all a matter of taste.

How is your home studio equipped?

Well, I have the two synthesizers and my drum machines, and I also use an Akai S900 sampler and a Yamaha mini-rack. I have a Harrison board and an Otari MTR-90 machine, so I'm pretty well set up and it works well for the kind of stuff I like to do. I did a track called "Century's End" for *Bright Lights, Big City*, and most of it was just done at home.

There were a lot of problems with that picture. Was it a good experience for you?

I enjoyed writing for it, but even though they were very nice to me about my musical independence, it's

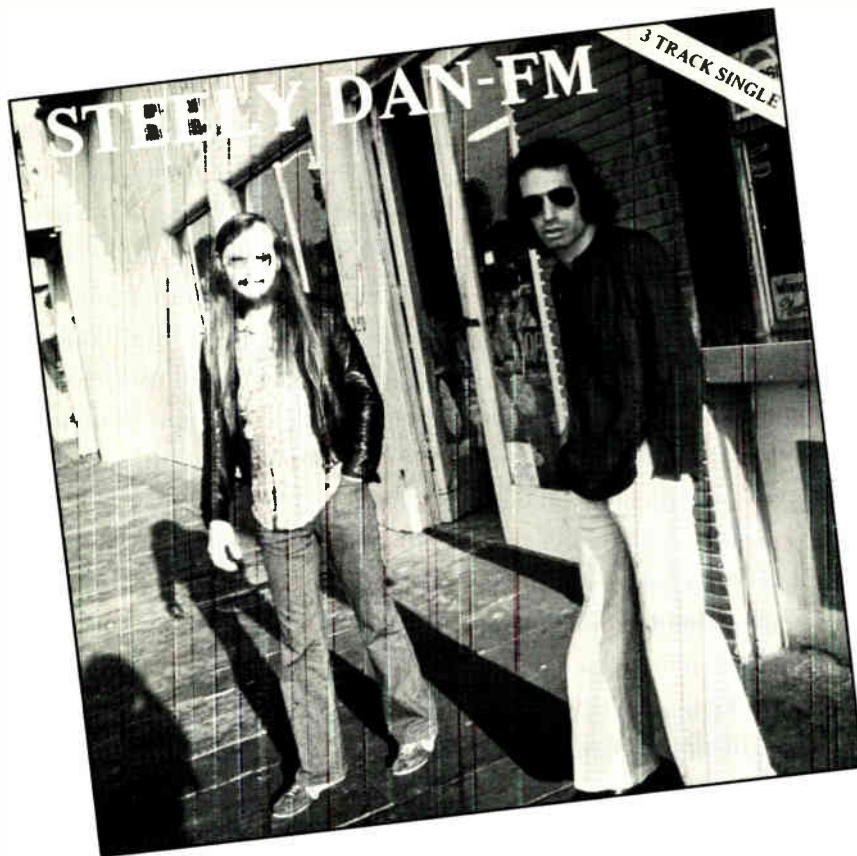


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Walter and Donald, circa 1978, on this U.K. EP release.

still a little hard for me to collaborate with other people, especially non-musical people, and I found I was spending much too much time on the phone instead of working on the actual music. But I did learn a lot.

Was *Bright Lights, Big City* your first film score?

Yes, though Walter and I had done some songs for films in the past, mainly background stuff. I'd done some music for a few independent short films, but I'd never scored a big budget production before. Like I said, it was an education.

Does that mean you won't be doing too many more film scores in the future?

I think not, unless it was a very special project in which the music played an integral part. Regular film scoring, I don't know. . . I was trying to do something a bit more interesting than normal, but I think for my ideas to really work, it'd have to be a musical project. The problem with *Bright Lights, Big City* was that it started out with a different director, who I felt understood what I wanted to do. But when they brought in Jim Bridges, they were up against all sorts of deadlines and pressures, and he quite rightly opted for a more orthodox, traditional score, which is what I did in the end. The thing with film is that you're trying to

please so many more people. It's tough.

You mentioned that you did one of the tracks at home. Your recording methods must have changed quite a bit over the years?

Yeah, home studios, along with the explosion of digital technology and MIDI, have made all sorts of new things possible. It's great fun to put down a basic rhythm track and then start overdubbing to see what you can do. And that's really a completely different way of working for me. But I still usually start out on the piano with strictly musical ideas, which I then apply to the technology rather than starting with the technology. I just figure that if an idea has some basic musical substance to it, you can't go far wrong. I'm still basically a songwriter before anything.

Given the aural sheen of all the Steely Dan albums, the advent of digital technology must have seemed like a godsend, and yet not one album was recorded digitally. Why was that?

Good question. Obviously we were all looking forward to it, because we used to have all kinds of problems with analog tape, mainly because we used to overdub so many times. We also kept safety copies, but if you're perfectionists, analog safeties aren't worth that much 'cause they're already down a generation, so you just get used to dealing with the original tape.

Anyway, by the time we got to recording *Gaucho* in the late '70s, they'd smoothed out most of the bugs in the digital machines, and we originally planned to cut the album digitally. But there were still a lot of problems over maintenance requirements, and in the end we decided not to risk it and just stick with what we knew would work. **But you recorded *The Nightfly* digitally?**

Yeah, and I was still pretty wary about the problems. There were several times when I was ready to give up on it and just go back to analog, but all the engineering guys kept talking me into it. In the end, once we got to know the machines, it worked pretty smoothly, but you have to know what you're doing. Roger Nichols had to take some course over at 3M's place to really get to grips with it.

It's been a few years since *The Nightfly*. Is there another solo album in the works?

Yes, and I've pretty much finished five or six tracks for it. They're missing some lyrics, but they're in good shape.

Are you back working with Roger Nichols?

No, we haven't worked together in a while. I'm doing a lot of it myself at home, with an engineer named Wayne Yurgulen, who also helped with some of the mixes for *Bright Lights, Big City*. He's been helping me with all sorts of things, like putting my studio together and dealing with the technical problems.

There have been various rumors recently that Steely Dan might reunite. Any comment?

They're just rumors. Steely Dan is over.

What is the status of your relationship with Walter today?

We're good friends and we've actually worked on a couple of songs for my solo album, but I'm also working with some other people, so it's not resurrecting Steely Dan. I just think the group was of its time, really, and to come back would be like getting married again after getting divorced. We've both moved on. I look back proudly at a certain body of work we did together, but that's that. You have to move on.

What actually happened between you two? Most bands or creative partnerships split after well-publicized feuding, but Steely Dan just seemed to disappear.

Without going into it too deeply, we

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MIX-Nov88

were both having a lot of personal problems and we'd gotten to a point where musically we'd grown very stale. We both needed a breather and fresh input, and it just seemed like a good time to quit. There was never a huge fight or anything like that. Eventually the record company asked for some kind of press release, so we just said we weren't writing together and that was that. Walter now lives in Hawaii, so when he was in New York for a while, we got together and worked on some stuff, but we're not partners anymore.

Do you keep up on the current mu-

sic scene? Who do you listen to at home?

I listen to very little new music. I spend most of my time with the same old records, I find—the jazz greats, a lot of blues and a lot of 20th century classical composers like Stravinsky and Sibelius—music with a lot of harmonic interest.

What music turns you off?

I hate all the stuff they're playing on the radio today, especially Top 40. I think it's a real bad time for Top 40, and I think that all the technology now available has done as much harm as good. I mean, I hate the way most

people use drum machines, because I always hear the kick drum coming down late or the snare too fast, 'cause there's no human feel and no swing, and I can't stand music that doesn't swing.

Do you keep up with who's hot as a producer, or which studios are hot?

Not really. I don't really know anything about producers any longer, and I just work in the studios I like, such as the Village, or Sound Track and Chelsea Sound in Manhattan. If I need a bigger place, I still use studios like Automated, but I'm not dictated to by what's fashionable.

You've always had a very low-key, reclusive image. How do you view yourself?

[Laughs] I don't think of myself as reclusive. I just don't perform, so no one ever sees me in that way. But I go out all the time and live a typical New Yorker's life. I go out to dinner a lot, play baseball in the park, all that kind of stuff. I used to go to a lot of movies, but they're so bad now I rarely bother. **And how do you view your musical future?**

I've never planned anything or had certain goals, although perhaps I should have. I know I'll always enjoy playing and creating music, although with all the current emphasis on visuals and video, I honestly don't know if there'll be room for someone who just likes to make records, like me. The thing I like about records is the same thing I used to like about radio—you have to use your imagination to build up a picture. But with video and TV it's all laid out for you. There's no challenge there. You can sit back and be a vegetable and let it imagine for you. I hate the idea that now you can't have a piece of music without some visual to go along with it.

You sound surprisingly traditional.

I suppose I am, although I'm going to try and meet the challenge of the '90s, whatever that is. I think my attitude has something to do with the need to create music that has substance as well as entertainment value. I always felt that Steely Dan stuff managed to combine both, and that we had a point of view, and that it depended on the collusion of the listener. You had to use your imagination. So I guess you're right—I am a traditionalist at heart. ■

Iain Blair is a Los Angeles-based writer and Mix contributing editor.



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HYPERMEDIA

THE GUIDE TO INTERACTIVE MEDIA PRODUCTION

***An Update on Recent
Products and Important
Developments***



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WORKSTATION ENVIRONMENTS

The Hypermedia Frontier

THE RETURN OF HYPERMEDIA

One of the persistent trends reinforced by new developments in media technology has been the convergence of computers in the studio and in the multimedia production process. The ability to link text, audio and video files interactively with hypertext capabilities promises to be the main event in the next generation of new media tools. Anticipating the need for a magazine to serve the needs of interactive and multimedia producers, we created *HyperMedia*™ to test the waters. Hopefully you've had the opportunity to see the premiere issue of *HyperMedia*, distributed with the May issue of *Mix* and at selected trade shows and conventions. The response has been extremely positive.

In the meantime, as we work out the details connected with the direction and frequency of possible subsequent issues, we are including this *HyperMedia Update* in *Mix*. We'll keep you posted on upcoming activities, and would appreciate any feedback, comments or criticism regarding *HyperMedia*.

HYPERACTIVITIES

Two recent major conventions—SIGGRAPH (Special Interest Group on Computer Graphics [Association for Computing Machinery]) in Atlanta, and MacWorld in Boston—provided a venue for the introduction of several mostly Apple Macintosh-related hardware and software products that qualify as hypermedia tools. The news at SIGGRAPH revolved around workstations, or more accurately, workstation environments: the software, peripherals and networks that form

After years of maturation in engineering and scientific visualization applications, the workstation has emerged as the next logical step in the convergence of multimedia technology. Digital audio and video post-production and prepress 4-color design workstations have joined CAD (computer-aided design) as the basis of dedicated systems for computer-based media production. Computer hardware and software systems are evolving into "workstation environments."

Many manufacturers, from Apple Computer and Lexicon to Sun Microsystems, recognizing the potential business opportunities in this growing market, have introduced integrated systems to address the higher levels of functionality served by workstation integration. In the last 18 months, Intel 80386-based and Motorola 68020/Macintosh II personal computers have begun to be packaged as workstations.

Apollo Computer, one of the originators of computer-based workstations, defines "workstation" as a computer that is expandable to at least 8 megabytes of memory, has its own processing chip, runs no slower than 12 MHz and costs from \$3,000 to \$100,000 or more for a fully configured, high-end system. Sun Microsystems, which recently broke the billion-dollar sales barrier, would probably add that a workstation offers integrated, high-resolution graphics and built-in networking, and provides multi-tasking.

The complexity of workstation configuration and integration has required higher level market distribution channels through VARs (value-added resellers). Macintosh II and 80386-based PC sales are continuing to expand through retailers. Industry analysts project that Sun will enter the retail channel with its

80386 UNIX-based workstation, while Apple will be moving Macintosh II A/UX-based workstations through vertical-industry VARs. The importance of VARs to workstation manufacturers is increasing, as companies recognize that the maturing VAR is better able to integrate and support more sophisticated products in a growing marketplace.

Hardware changes almost from moment to moment; new CPU chips, accelerators and other enhancements keep coming out of the labs. However, software ultimately will be the key to the hypermedia workstation's success. Many high-level software applications that are familiar to PC users, such as *AutoCAD* and *VersaCAD*, are now available on workstations. At the same time, many workstation-based software packages are being ported down to the PC platform. As fourth-generation, graphic language-based, object-oriented software becomes more pervasive, we will begin to see multi-user databases, scripting, storyboarding, budgeting, project management, edit decision listing and actual machine control from icon hypertext-based programs. Indeed, more "multiple process" software applications are being sold. Workstation manufacturers are learning how to encourage third-party software developers. Apollo, for instance, estimates that over 1,800 applications have been ported to run on its workstations.

Finally, workstations are being purchased for relatively non-traditional uses in education, financial services and other commercial applications. This is particularly true where the end user must run multiple programs or tasks simultaneously. Eventually, manufacturers such as Sun, Apollo and Apple who have the management and sales teams to target commercial customers (including securities traders, banks and elec-

"Technology marches on, over you or through you, take your pick." —Stewart Brand, *The Media Lab*

tronic publishing users) will target film, video and multimedia producers. Sun, for example, who is working with Philips to create a new media workstation (see *HyperMedia*, page 62), currently derives about 5% of its total revenue from financial service markets. The IBM PC-RT and DEC Micro Vax are also selling into the same markets, as well as to many insurance firms. The education market is another important hypermedia proving ground, with Apple, IBM, DEC, Sun and Next competing for market share in universities around the country.

Workstation products are much less likely than PCs to become commodities sold on the basis of price alone. Since workstations are designed with networking in mind, and the need for networking continues to grow, the connectivity issue related to the open architecture characteristics of different systems will become more critical.

The power of Intel's processor and

dors such as DEC, Prime, Sun, Unisys and others. With the downward migration of the cost of the traditional workstation and the emerging class of 386 computers, it is clear that new, lower-cost systems based on chips like the 386SX and Motorola's 68030 will propel the microcomputer market into the workstation arena. The development of applications using 386 and 68030-based systems under multi-user and multi-tasking operating systems will expand the kinds of tasks that can be accomplished. Soon, it will be common to run several applications at once and conduct remote sessions in which data files, such as MIDI data, scripts or graphic files, can be sent or received.

Hypertext databases with power search and retrieval engines, **intelligent agents** and user-transparent global networks will permit two-way communications, knowledge navigation and information gathering. Scientific visualization will become

cinematic visualization, flight simulation will become feature film simulation, and stand-alone, individual users will become part of networks connected to local and remote "groupware" users.

The critical productivity and communications needs of multimedia designers, producers and educators in business, government, education and entertainment are growing exponentially. The

promise of an integrated, multimedia database and design authoring system is embodied in the next plateau on the new media landscape: integrated workstation environments, the gateway to hypermedia. □

the system architecture. The accompanying article, "Workstation Environments," provides an overview.

The MacWorld Expo was held in venues spread throughout Boston. Over 40,000 attendees came to Beantown to see the latest and greatest in Macintosh technology. Apple chairman John Sculley came down from his sabbatical in Maine long enough to say that this would be the year of input devices for Apple; that the company was now in a position to enter the Fortune 500's front doors; and that he was studying photography to get a better handle on the filmmaking process. This special *HyperMedia Update* contains previews of some of the hypermedia products unveiled at this summer's events.

Lou CasaBianca
Guest Editor

Intelligent Agent: A program element that lets the user define a search and retrieval "mission" in such a way that the program carries on the search while other functions are being handled by the computer.

Some reasons for the growing demand for workstations:

- More of us prefer multiple functionality in one integrated unit.
- Prices for low-end workstations have dropped to the costs for high-end PCs.
- PCs have served to train users on the kinds of capabilities delivered by workstations.
- Although an 80386-based machine or a Macintosh II can be used in some cases, neither is powerful or evolved enough for more sophisticated kinds of media applications.
- Operating system standards have begun to emerge in workstations. Using UNIX and running DOS as a UNIX task has become popular, since DOS users can maintain their investment in DOS software and training (about half the workstations now shipping run UNIX).



Motorola's 68030 CPU chip has fostered the development of a new generation of powerful workstations.

the development of high-density storage devices have put the workstation environment in the middle of the hypermedia mainstream. New 386-based systems boast the power to perform tasks traditionally done by workstation ven-

**SCANNING THE SCENE**

As the need to manipulate graphics and incorporate artwork in desktop publishing grows, the need for gray scale and color scanners becomes a major issue. Sharp Electronics offers the JX-450 and JX-300, each for under \$7,000. Both 300-dpi

(dots per inch) units provide a cost-effective alternative to monochrome and color scanners costing up to \$50,000 or more.

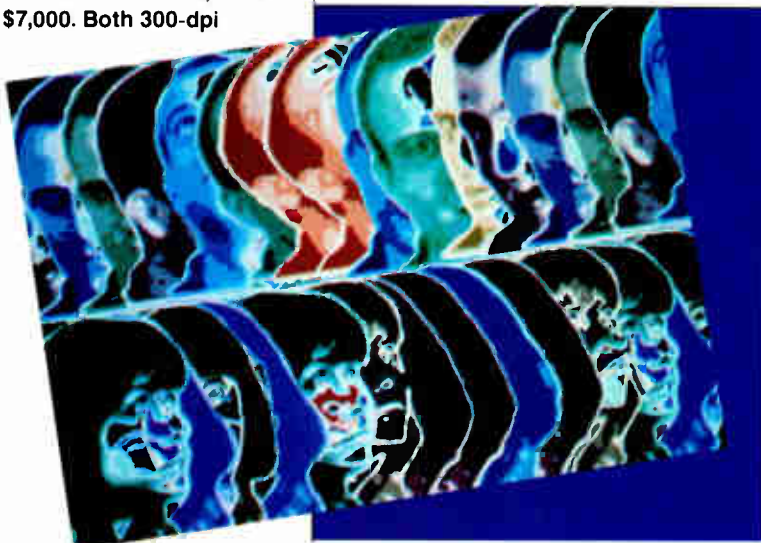
Both the JX-300 gray scale and JX-450 color scanners have a monochrome mode with a 256 gray scale, comparable to the market's best scanners. With 24 bits per pixel, they can recognize 16.8 million colors. The JX-300 has an 8.5"x11" image bed, while the JX-450 can scan an 11"x17" area and handle color transparencies and slides. Both use a GPIB IEEE-488 interface. The scanners are supported by SuperMac, Laserware, AT&T Graphics Software Labs and Time Arts, so they can scan items into any of these companies' graphics programs for image manipulation.

Both Sharp scanners support IBM PCs, the Mac II and workstations based on Sun Microsystems, Silicon Graphics or, more recently, Commodore's Amiga 2000. An IEEE hardware interface for using the JX-450 with other computers is made by National Instruments and is available through Sharp.

Sharp Electronics, Sharp Plaza, Mahwah, NJ 07430, (201) 529-9500.



COMPUTER-BASED VIDEO ANIMATICS



effects include text that shimmers, sparkles or scrolls, bullet points that fly onto the screen from left to right, animated borders and "marquees" that surround a slide, and graphs or charts containing animated data.

VideoWorks Professional works on a Macintosh Plus, SE or II and retails for \$695. Upgrades from VideoWorks II are available for \$250.

MacroMind Inc., 1028 W. Wolfram, Chicago, IL 60657, (312) 871-0987.

NEW IN DESKTOP PRESENTATION

Farallon Computing has introduced *ScreenRecorder*, allowing users to record any series of Macintosh screens onto disk, and play them back at various speeds, much like a videotape. These "tape" files can then be used for demos, presentations and training.

ScreenRecorder is like a software-based, point-and-shoot "camcorder" for Macintosh screen images. At any time a user can play back "tapes" made from a program in action, and the application in which the user created the "tape" need not be present. For example, if the user creates a tape using *HyperCard* to teach the concepts of storyboarding, he or she can distribute this tape to people who don't own *HyperCard*, and they can play it back using only *ScreenRecorder*.

ScreenRecorder is extremely flexible and easy to use. On-screen control buttons are similar to those of videotape recorders, and can be operated via mouse or keyboard. Playback speed is continuously variable, so action can be set to a pace that suits the user. Also, the user can add sound with Farallon's *MacRecorder* sound system.

ScreenRecorder works on a 512KE or later-model Macintosh. Suggested retail price is under \$200.

Farallon Computing, 2150 Kittredge Street, Berkeley, CA 94704, (415) 849-2331. □

MacroMind Inc., developers of the *VideoWorks II* graphics and animation program for the Macintosh, has unveiled *VideoWorks Professional*. This program facilitates and enhances the design of animated business presentations, training materials, storyboards and engineering diagrams. It features a powerful color paint program, pop-up menus and extensive on-line help, automated animation creation, MIDI control and 24-bit video support.

This new package offers significantly increased color graphics capabilities, providing color cycling, color paint tools such as smear and smudge, gradient fills, advanced color palette manipulation, speckled airbrush effects and more. It includes several new animation techniques, such as 'tweening along a curved path, auto-rotate and color palette animation.

The program's automatic animation lets the user create slides and animations in seconds. Automatic animation

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**VIRTUOSO MAC**

Virtuoso Pianist from U.S. College of Music is a unique tool for learning (or improving one's ability) to play a keyboard instrument. This Macintosh program lets the user adapt music of any style or difficulty to his or her own level, then master the performance.

Virtuoso Pianist displays, on treble and bass clefs, musical selections (recorded performances by established artists) chosen by the user from extensive libraries. It shows an exact comparison between the recorded and user-played versions, while merging each for audition with a MIDI synth. All adjustments may be made in real time as the music plays.

Virtuoso Pianist requires a MIDI keyboard and interface. List price is \$549 (which currently includes *Library No.1, Classical Piano*). For teachers who want to prepare easy-to-learn lessons, and advanced players who want to archive their performances for review and technical study, *Virtuoso Pianist Professional* for \$995 allows recording and editing of music from a MIDI instrument for display.

U.S. College of Music, 18 Havi-land, Boston, MA 02115, (617) 266-2886.

Audio IFF (Audio Interchange File Format) is a new industry-standard file format for digital sounds. It allows file interchange among hardware and software products.

Sound Accelerator board



SOUND ACCELERATION

Macintosh as Digital Audio Workstation

The *Sound Accelerator* from Digidesign is a signal processing card for the Macintosh SE and II that turns the Mac into a hi-fi, digital audio workstation. The card allows you to play and record 16-bit linear (CD-quality!) stereo audio directly through the Mac. This includes the ability to perform sound processing and synthesis functions in real time.

The board works with *Sound Designer II*, the latest version of Digidesign's flagship product. This permits digital signal processing (DSP) and waveform editing, as the *Sound Accelerator* handles equalization, filtering, delays and complex frequency analysis in real time. Even a "scrub" edit function is included to locate precise edit points.

The design is built around the Motorola 56001 DSP board, which provides two channels of phase-synchronous audio and a back plate with one stereo, 1/4-inch audio jack and one custom expansion port. The expansion port supports 2-channel A/D and D/A and external clock. The boards are slot-independent—multiple cards can be used simultaneously.

Digidesign, 1360 Willow Rd., Menlo Park, CA 94025, (415) 327-8811.

MACINTOSH SOUNDS

Every once in a while, a product comes along that makes you say, "Why hasn't someone done this before?" That's what we're saying about Farallon Computing's upgrade for its *MacRecorder*. The package includes software and a microphone that serves as an interface for a line input or another microphone. *MacRecorder* digitizes, records, edits and plays live or pre-recorded sounds on the Macintosh. The *MacRecorder*'s proprietary compression algorithms allow the user to optimize both sound quality and storage requirements. It functions as a multi-channel mixer, records in mono or stereo, and allows a large variety of special effects, including echo, looping and flanging.

MacRecorder 1.1 includes support for **Audio IFF** (Farallon is among the first developers to ship products that support Audio IFF), a 4:1 sound compression option for the system's *SoundEdit* application, and full compatibility with Apple's new System 6.0 and *HyperCard 1.2* software. It also has a moving play point, a feature that enhances the functionality of the *SoundEdit* software; with it, an animated cursor illustrates the portion of sound sample being played.

MacRecorder 1.1 consists of a sound digitizer with built-in microphone, a *HyperCard* application called *HyperSound* that allows users to record directly into *HyperCard*, and the aforementioned *SoundEdit*, a sophisticated editing function that allows the user to cut, paste and alter waveforms on screen, in black-and-white or color.

Upgrades for registered *MacRecorder 1.0* users are free. Version 1.1 is available for a suggested \$199 retail price.

Farallon Computing, 2150 Kittredge Street, Berkeley, CA 94704, (415) 849-2331. □



FUTURE PROJECTION

Presentation technology has become a critical issue for users seeking more efficient, effective ways to harness the Mac's power. Eastman Kodak recently showcased its latest presentation technology tools for these computers. The Datashow HR/M Projection Pad is a portable, liquid crystal display unit that displays large-screen, black-and-white, high-resolution electronic images generated by a Macintosh.

If you have tried to present materials on the Mac to a large audience, you know it requires buying or renting a multiscan video projector. The Datashow is a cost-effective alternative. Using Datashow, even video conferencing can be accomplished by linking meeting sites with two telephone lines; one line can carry voices, and the second line can be used to link Macs via modems, so visual info can be transmitted between the sites. At either end, the projection pad enlarges the images for viewing by participants. Entire "electronic slide shows" created with Microsoft *PowerPoint*, Manhattan Graphics' *ReadySetShow* and similar software can now be transmitted by modem for presentation at remote sites.

Eastman Kodak Company, 343 State Street, Rochester, NY 14650, (716) 724-3169.

NEW SP U-MATIC PLAYER

Sony has a new **SP-format** U-matic player—the cost-efficient, full-featured BVU-900, designed to enhance a variety of editing configurations in both the broadcast and corporate video environments. Compatible with the original U-matic format, this new deck is useful for the simplest two-machine edits as well as sophisticated A/B roll systems and interformat setups.

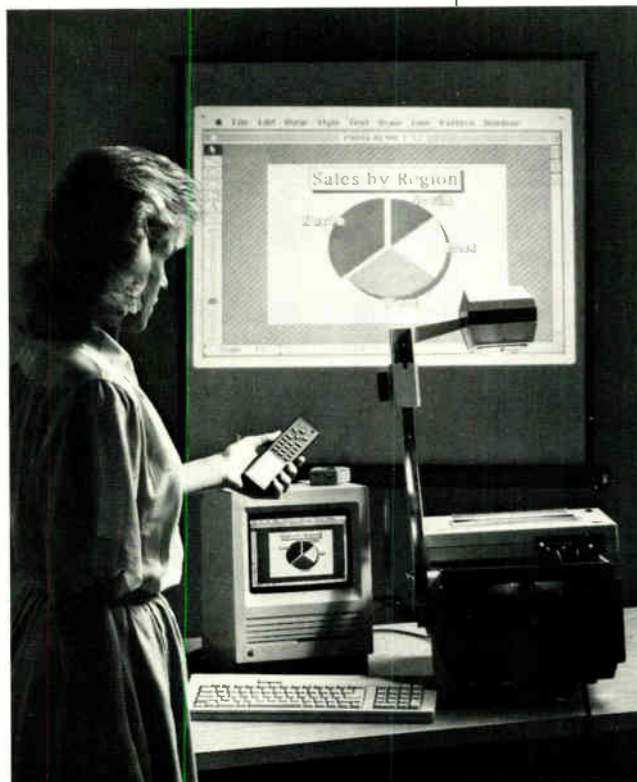
The player's built-in time code editing capabilities are enhanced by an optional time base corrector, a space-saving, plug-in board that allows the BVU-900

to become part of a complete A/B roll system with the BVE-900 edit controller, the SEC-2550A video switcher, the MXP-29 or MXP-2000 audio mixer, Betacam player, one-inch Type C and other Sony U-matic decks. Another plug-in option, a digital noise reducer, improves the S/N ratio up to 6dB and ensures a high-quality picture with clear freeze-frame capability.

The new dial operation concept facilitates access to a wide range of user information and operational presets that are displayed on the video monitor or LED time counter. The "search" dial permits high-speed picture search in the shuttle or job mode.

Sony Communications Products, 10833 Valley View St., Cypress, CA 90630, (800) 635-SONY. □

The SP ("Superior Performance") format, first developed by Sony, is actually an extension of a format rather than a format itself. It's a method of improving the overall quality of an existing VTR without sacrificing compatibility, and offers much-improved multi-generational performance (in fact, a third-generation U-matic SP tape is as good as a first-generation standard U-matic tape).



The new Datashow Presentation Remote from Kodak is a handheld presentation remote that allows presenters to interact with desktop presentation software to remotely control presentations on video projectors, large screen monitors, the Kodak HR/M projection pad and other projection devices driven by Macintosh computers.

"All media are extensions of some human faculty—psychic or physical." — McLuhan/Fiore, 1967



Genlock is a technique used to synchronize the scanning and color circuits in the various pieces of equipment that comprise a video system. A standard genlock reference signal is distributed to these pieces to sync their circuit operations.

NTSC encoding: The visual, color output of a personal computer consists of three channels of video: red, green and blue ("RGB"). A device is needed to get from the computer's RGB into the NTSC (National Television Systems Committee) format used in professional video and broadcasting. NTSC encoding converts the RGB from the computer into a form that's useful to videotape machines and switchers.

RGB (Red, Green, Blue): A computer's color display output signal and image-encoding scheme is comprised of separately controllable red, green and blue elements. RGB monitors typically offer higher resolution than do composite (TV-type) monitors, because the NTSC signal is optimized for use with the fairly low-resolution TV screen.

CMX-STYLE MAC-BASED EDITING

Horizon Software is a media design company that develops Macintosh-based technology for the video production arena. The company founder, Larry Seehorn, is an editing system design pioneer. Working with him on software design and the editor interface is Steve Michelson, founder of One Pass Video and former president of ScanLine. Their system, called *Production 3-2-1*, comprises a relational, multi-user database program, custom boards and a keyboard to deliver the functionality of a CMX-type editing system for significantly less than the cost of existing systems.

In addition to including a library manager to track stills and clips, the system allows the editor to use icon-driven, point-and-click commands to edit strings of clips into entire programs, complete with effects, and generate an edit decision list that is multi-format compatible. Using the Mac interface,

editors no longer have to be educated in the arcane symbols, mnemonics and keystrokes associated with many "industry-standard" editing systems. And mailing lists, client records, video motion and still archives can all be managed and accessed by the same software.

Using the scripting and storyboarding modules, video producers will be able to produce animatics and rough edits for video applications. Editors can increase creativity and productivity, decrease cost and provide better client services.

The Horizon system of software, boards, keyboard, Mac II, monitor and cables comes in at about one-third the price of a conventional system, and delivers a comparable level of functionality.

Horizon Software, c/o Steve Michelson Productions, One China Basin, #6300, San Francisco, CA 94107, (415) 777-9595.

GENLOCK & NTSC CONVERTERS FOR THE MAC

The **Genlock Converter** from Julian Systems lets you connect your Macintosh II to standard video devices such as VCRs or video projectors, and perform sophisticated special effects (superimposing or blending images) right from your computer.

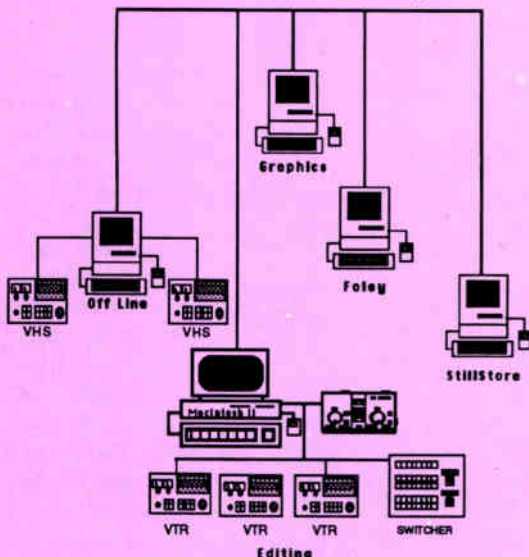
The Genlock Converter allows overlaying of computer-generated graphics onto or behind live or recorded video images, and can accept signals from auxiliary video equipment. Features include the ability to run without an external video source (a feature other cards don't provide), to use multiple display card/Genlock Converters to create multi-plane graphics and to accept an external key signal for overlaying.

Julian Systems' **NTSC Converter** also connects your Mac II to standard video devices such as VCRs or video projectors. The NTSC Converter connects to the Macintosh II and the video monitor, and runs the software provided to synchronize the Macintosh video output to standard NTSC. You can use the NTSC Converter to encode other **RGB** video sources with sync, thus allowing recording or display of those signals on a TV or VCR.

To work with the Genlock or NTSC Converter(s), the Macintosh must contain a video interface card.

Julian Systems Inc., 2280 Bates Avenue, Ste. J, Concord, CA 94520, (415) 686-4400. □

Post-Production Horizon Style



THE MUSIC (AND NOTHING BUT THE MUSIC)



When it's *your* music on the line, come to the CD manufacturer who always puts your music first—Nimbus Records.

At Nimbus we've done more than anybody to master CD manufacturing because we want your music to sound as good as it did when you recorded it. We've fine-tuned and improved every step of the CD replication process

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No pops. No clicks. No hassles. Just your music.

More industry professionals are singing the praises of Nimbus than any other custom pressing facility. So when you want your music (and nothing but your music), come to Nimbus—The Music People.



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The Emulator Three. A matter of



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Art and intelligence.

Making music is a matter of art.

Designing tools for musicians that deliver optimal sound, set new standards of technology, and offer extraordinary value is a matter of intelligence.

We designed the Emulator Three Digital Sound Production System™ to achieve the highest sound quality technologically attainable. Absolutely no compromises were made in preserving the full clarity of a true 16 bit data format. Through techniques and features like oversampling digital filters, distortion free pitch shifting, stereo sampling, and an array of advanced digital and analog processing functions, the Emulator Three offers sound quality and capabilities far in excess of systems costing ten times its price.

The Emulator Three also includes a sequencer which is, in itself, a notable achievement in intelligent design. The sequencer is both MIDI and SMPTE based for composition and performance or film and video applications. You get the power and flexibility of a computer-based sequencer (including cut/copy/paste editing), while retaining the speed and convenience of an integrated sequencer. It also incorporates sophisticated new autocorrect features to "humanize" your sequences and its intuitive interface invites creative interaction.

As the heart of an expandable modular production system, the Emulator Three is designed to serve virtually every professional application. Through its high speed SCSI data interface, your Emulator Three system may be custom configured with options such as a voice and memory expander (for 32 channels and 16 megabytes of RAM), external hard drives (including E-mu's own rack-mountable 300 megabyte drive), CD-ROM libraries, 800 megabyte WORM optical cartridges for user sound storage, and powerful Macintosh® based software including Sound Designer™, Q-Sheet A/V™, SoftSynth™, and Alchemy™.

Of course, the final test of intelligent design is affordability, and in this regard the Emulator Three is *indeed* a work of art. From the basic instrument to the full-blown system, the Emulator Three gives you extraordinary creative power at a real-world price.

See your E-mu Systems Professional Dealer today for a demonstration of intelligent design.

The Emulator Three. Because it's your art that matters.

E-mu Systems, Inc. Applied Magic for the Arts. 1600 Green Hills Road,
Scotts Valley, CA 95066. (408) 438-1921.

Macintosh is a registered trademark of Apple Computer, Inc. Sound Designer, Q-Sheet A/V and SoftSynth are trademarks of Digidesign, Inc. Alchemy is a trademark of Blank Software.





'Tweening: Short for "in-betweening," the creation of "in-between" frames; for example, in a 24 frame-per-second (film) animation, every other frame is a duplicate of the one before, because the human eye can only absorb the changes in 12 frames each second (or 15 frames in video, running at 30 fps).

"Renderman" is the inter-machine standard proposed and developed by Pixar and a consortium of other 3-D graphics hardware and software manufacturers. It is to 3-D graphics what MIDI is to music.

3DGF (3-D Graphics File) data interchange standard: Proposed by MacroMind Inc., the file format standard for interchanging 3-D graphics files between various manufacturers' 3-D graphics programs for the Macintosh.

Dither: the amount of random overlap between each shade in a gradient fill.

WORKING IN 3-D

Since the day the Mac was introduced, MacroMind Inc. has been one of its more innovative software developers (products include *MusicWorks*, *Raster Wars*, *GraphicWorks*, *VideoWorks* and *Interactive VideoWorks*). MacroMind has now released the *3DWorks* animation program, which includes a **Renderman-compatible** renderer, *RenderWorks*. Not a generator of 3-D images itself, the program works with models and shapes generated from a number of other Macintosh 3-D modeling programs via the **3DGF data interchange standard**, currently supporting *Swivel 3D*, *Pro 3D* and *Phoenix 3D*.

Once a model has been loaded into *3DWorks*, it can be manipulated and animated using a time-line notational score. *3DWorks* is entirely object-oriented—models, camera (perspective) and

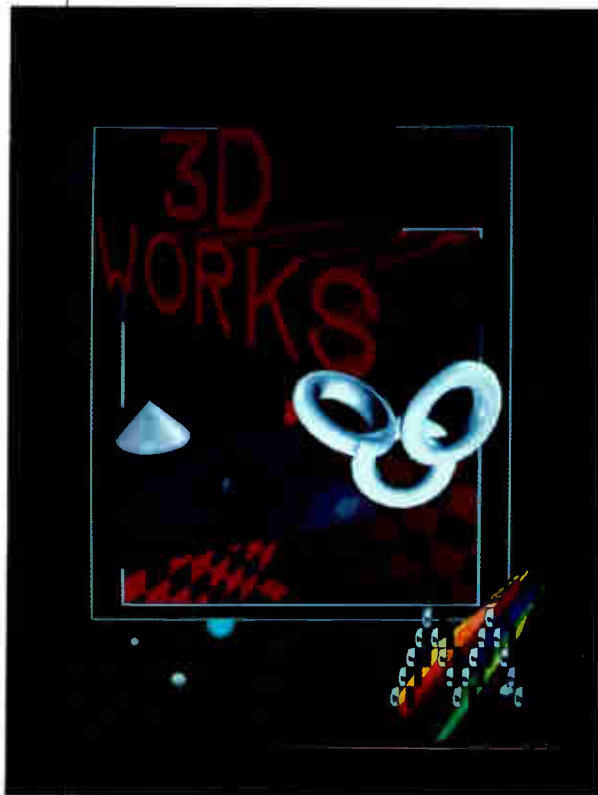
lighting all exist as programmable objects that can be attached to other objects. Any object parameter can be animated using the same method of key-event **'tweening**.

3DWorks provides a real-time, wire-frame playback facility as well as typical Macintosh user interface controls for manipulating objects in three dimensions. All 'tweening key-event parameters are defined in the score simply by moving a particular parameter to a desired position with the provided control buttons. A tape player-like control panel allows preview of the animation (as wire-frames) in real time. *3DWorks* then can output those wire-frames as *VideoWorks* documents.

Once a frame or series of frames have been arranged, the lighting and camera angles have been determined and the color, surface model, shading and textures have been defined, *3DWorks* sends the data to *RenderWorks*, which currently functions on a Raster Ops 24-bit card or the Truevision NuVista card.

Once *RenderWorks* has finished rendering the image (or series of images), it will **dither** the images to 8-bit resolution for preview on a standard Macintosh screen. These dithered images can be stored as PICT documents, then loaded into MacroMind's *VideoWorks II* program for real-time playback.

MacroMind, 1028 W. Wolfgram, Chicago, IL 60657, (312) 871-0987. □



"New technologies create new freedoms and new dependencies." —Stewart Brand, *The Media Lab*

Break the Macintosh Sound Barrier!



Introducing The Sound Accelerator™

Digital Audio Card for the Mac II and SE

Brace yourself. Because now, you can create and edit sounds on a Macintosh® in real-time. *And* hear each sound with all the clarity of your favorite CD—right from your Mac.

Digidesign's Sound Accelerator turns your Mac into a high-fidelity digital audio workstation. Simply install our card in your Mac II or SE, and explore the power to work with sound in ways never before possible on a personal computer.

Today's Exploits

The Sound Accelerator instantly enhances many existing programs. Sounds from applications such as HyperCard™ become cleaner and brighter.

Used with our Sound Designer™ waveform editing program, the card lets you preview your sounds directly from the Mac with 16-bit fidelity. There's no need to transfer sounds to a sampling keyboard to hear how your edits "really" sound.

Teamed with our Turbosynth™ modular synthesis program, the Sound Accelerator gives you real-time digital signal processing (DSP), so you can create sounds interactively. No more waiting for the computer to "crunch" your sound after each adjustment.

To help you break sound barriers immediately, we've included a real-time version of our popular Softsynth™ synthesis program, **FREE** with every Sound Accelerator!

Tomorrow's Adventures

With the release of our AD In™ analog-to-digital converter, you'll be able to record and playback CD-quality stereo directly to and from your Mac's hard disk. And that's not all. We're developing a wide range of Sound Accelerator-compatible software that will revolutionize the way you work. In addition, outside developers promise an ever-growing library of exciting applications.

Now Shipping!

See our Sound Accelerator at your Digidesign dealer. For a comprehensive review of our new card, software, and future applications, call for our free catalog: **1-800-333-2137**.

Data Format: 16-bit linear. **Sample Rate (playback only):** Variable up to 156kHz (stereo); optimized at 44.1 kHz. **Frequency Response:** 20 Hz - 20 kHz. **Signal-to-Noise Ratio:** Greater than 90 dB. **Total Harmonic Distortion (THD):** .009% max. **Installation:** Mac II: NuBus slot; Mac SE: Expansion slot. **Connections:** Stereo 1/4" jack; 15-pin D-type connector (for digital I/O).

digidesign

1360 Willow Road, Suite 101, Menlo Park, CA 94025, 415-327-8811



PHILIPS, SONY & MICROSOFT ANNOUNCE DEVELOPMENT OF CD-ROM EXTENDED ARCHITECTURE

An extended CD-ROM format—CD-ROM Extended Architecture (CD-ROM XA)—is the result of a recent agreement by Philips, Sony and Microsoft. This format incorporates audio and graphics technology from the CD-I format and serves as a bridge between CD-ROM and CD-I. The development approach includes a text/graphics screen format for personal computer displays, and ADPCM (Adaptive Differential Pulse Code Modulation) audio, which allows disks to be coded with compressed digital audio data in an interleaved fashion (as defined in the CD-I standard).

The CD-ROM format was originally designed by Philips and Sony as an open system for data storage. Subsequently, a computer industry group developed a volume and file structure that's now the international standard, ISO 9660. Strong demand now exists for the creation of ISO 9660-consistent standards for the CD-ROM format, especially in the area of multimedia applications for personal computers.

CD-I (another Philips/Sony development) features the interactive use and application of data, including audio, still-image video, animation, graphics and computer programming. A CD-I player can be easily hooked up to a stereo system or a TV, and comes with a system

—CONTINUED ON NEXT PAGE

Built into Acknowledge is a powerful and flexible high-level programming language called "TAL." It includes a syntax checker/debugger, trace or single-step program execution and split window editing. Modular code "building blocks" allow independent control of session layers; for example, modem, network, service and interface code are maintained in separate files for flexibility in constructing applications.



ACKNOWLEDGING THE MAC

Whether you need to send DTP documents to your local typesetter, work with information from a corporate mainframe or keep in touch with your office from a remote site, the way you move the information can greatly enhance—or impede—the way you work.

Acknowledge, distributed by SuperMac, allows you to create custom telecommunications systems that work "the Macintosh way." Both an application utility and **programming language**, it allows you to link virtually anyone to the data they need.

When working with *Acknowledge*, you can communicate seamlessly with anyone, anywhere, even while you sleep. This includes dialog with mainframes, PCs and Macintoshes, sending and receiving text and graphics by tel-ex, E-mail or fax—all via the familiar Macintosh interface, using the Mac's dialog boxes and graphics power. *Acknowledge* provides a platform for total communications integration, working with all the standard Macintosh LAN products (AppleShare, TOPS, etc.), so

geography no longer hinders your work group's productivity.

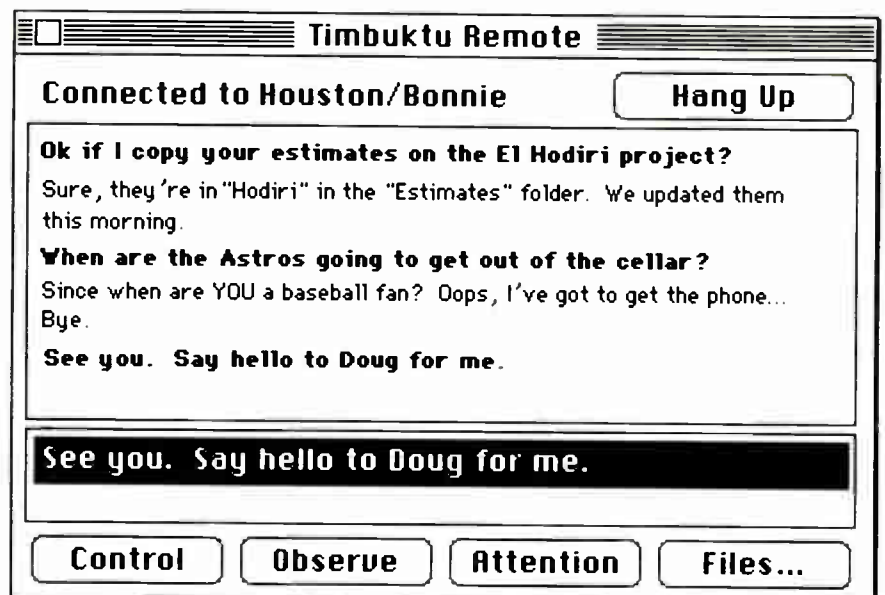
Fully MultiFinder-compatible, *Acknowledge* supports background file handling, program execution, file transfers and sound resources, and the Notification Manager makes retrieving corporate data easy. You can program *Acknowledge* to search the *Wall Street Journal* or the Library of Congress for articles on digital audio, for instance, or report daily on the closing prices of selected stocks. The information it retrieves can then be printed out at a specified time of day.

Acknowledge supports the most popular on-line information services and supports many popular modems as well as IBX and Northern Telecom PBX systems. Minimum system requirements are a Macintosh 512KE, hard disk and modem or direct connection.

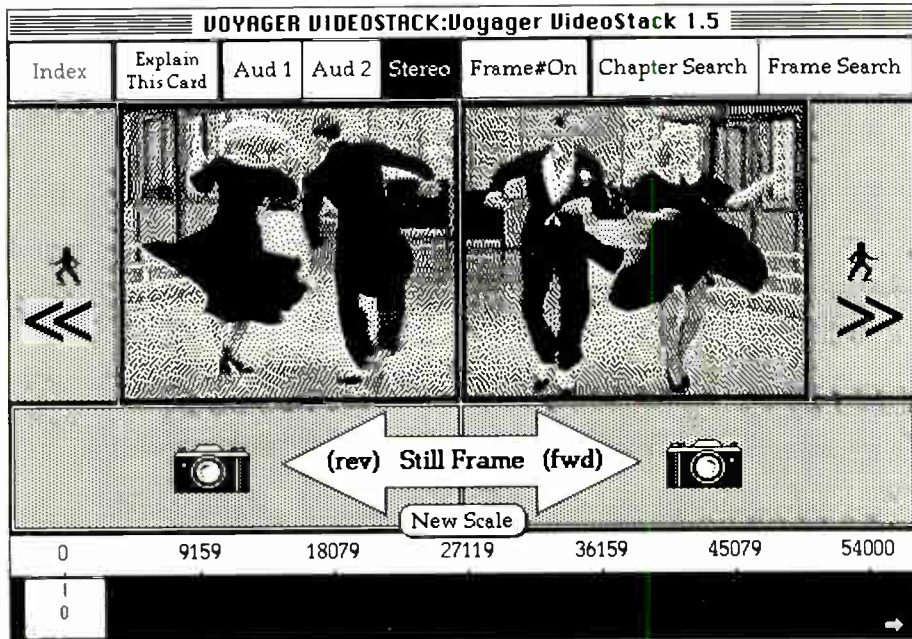
SuperMac Technology, 295 N. Bernardo Avenue, Mountain View, CA 94043, (415) 962-2492.

SCREEN SHARING

Timbuktu is a Macintosh desk accessory from Farallon Computing that al-



"Ours is a brand new world of allatonceness." — McLuhan/Fiore, 1967



lows two or more Macintosh computers to share screens, so users can view and operate each others' computers over an AppleTalk network. The program's latest version (2.01) supports Macintosh IIs with 8-bit video cards while in color mode.

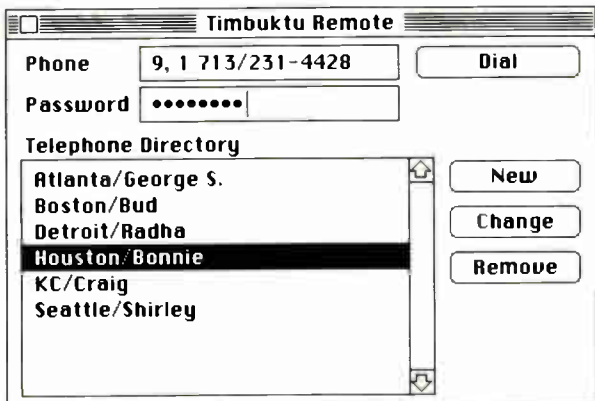
With Timbuktu, a "host" computer user can authorize two types of "guests": controllers and observers. Controllers can operate the host computer remotely, as if it were their own; observers can view, but not control, activities on the host computer. Many users can work together at the same time, or one machine can "broadcast" a session to every Timbuktu user on a network.

If a host computer has a color moni-

tor, Timbuktu 2.01 guests will see a gray scale version of the color screen. (Previously, Mac II users had to set their control panel to two colors to use Timbuktu.) This allows users to collaborate on popular color and gray scale desktop publishing programs. When connected by Timbuktu, the guest screen displays the contents of the host screen, and both are updated simultaneously.

Timbuktu includes SoftScreen, a feature that allows the user to install and operate print, file and mail server software on a Macintosh II by remote control. This saves the price of a keyboard, monitor and video card, providing a "headless" Macintosh II for about the price of an SE.

Timbuktu operates on any AppleTalk network and supports regular and large screens on 512KE or later-model Macintoshes. Suggested retail price is \$99, and upgrades to 2.01 are available free to registered users. Farallon Computing, 2150 Kittredge St., Berkeley, CA 94704, (415) 849-2331. □



controller for using interactive software.

CD-ROM XA provides functions similar to those in the CD-I format, but which are not dependent on a specific operating system and CPU. This format will allow publishers to create disks that will be playable on any suitably equipped personal computer or on any CD-I system. To mesh smoothly with the music industry, the CD digital audio format will continue to be prescribed for music applications. As a bridge linking CD-ROM with CD-I, this new format will allow Philips and Sony to promote market opportunities for CD-ROM-related business, while actively preparing for future launch of CD-I systems.

◀ VIDEO DISC CONTROL

From The Voyager Company comes the *Voyager VideoStack*, a tool kit for interactive video applications. This software package is used with a *HyperCard*-equipped Macintosh to control all the standard Pioneer and Sony videodisc players.

Designed for developers of interactive videodisc applications, *VideoStack* features automatic installation of video drivers into any *HyperCard* stack, easy customizing of more than 35 buttons controlling videodisc functions, an "Event Maker" for defining events, such as "search" and "play" from and to specific frames, and a "Slide Tray," which allows the user to load still frames, with descriptions, into a list and play them back manually or automatically.

The Voyager Company, 2139 Manning Ave., Los Angeles, CA 90025, (213) 474-0032.

MAXIMIZING PRODUCTIVITY

The new *Focal Point II* from TENpoint0 (Menlo Park, CA) is an intelligent, personal information manager for the Macintosh. It works with *HyperCard* to provide fully integrated project, task and time management tools, with full reporting capability.



Wire-frame: The term used to describe a style of 3-D images projected by vector display systems, and derived from the fact that simple line drawings give the appearance of the object being constructed from wire. Wire-frame drawings are often used in line tests to minimize the time and expense of producing hidden-line and shaded images.

VERSACAD

Strengthening its position as a leader in CAD software for the Mac, Versacad Corporation (a Prime Computer company) has debuted *VersaCAD/Macintosh Edition, Version 2.0*. It features innovative *HyperCard* stacks, 3-D visualization, vertical solution customization and PICT file support.

semblies of the design, so when changes occur, the user can visually see these effects on other aspects of the design. The database stack is an excellent tool for including descriptive information for VersaCAD/Macintosh Edition drawing geometry. By simply selecting any object of the design, a window appears to accept new data or display information already outlining that particular object. The drawing manager stack produces a visual catalog of completed designs. All stacks can be customized, allowing users to develop their own formulas and formats.

The new release also permits two-dimensional designs to be easily transferred into three dimensions. Once in 3-D, the designs can be displayed in up to four multiple viewports utilizing any mix of **wire-frame, isometric, perspective** and hidden-line views. Light-source color shading provides surface-modeled renditions, resulting in lifelike design representation.

The PICT import/export is another important feature. With it, users can transfer work to and from other Macintosh software, so VersaCAD/Macintosh Edition now covers the gambit of CAD transfer standards, including IGES, DXF and ASCII file formats.

A programming breakthrough for third-party developers allows any vertical software written in C, Pascal, Assembler or BASIC to be integrated directly with the VersaCAD/Macintosh Edition menu structure. This developer's dream provides all the VersaCAD/Macintosh Edition links, as well as access to the Macintosh Toolbox, for seamless integration. With each developer's software already compiled, source code is protected, and access speed (to and from VersaCAD/Macintosh Edition) is faster than any programming language now available within the CAD industry.

VersaCAD/Macintosh Edition is priced at \$1,995, and the Version 2.0 update is free to registered users.

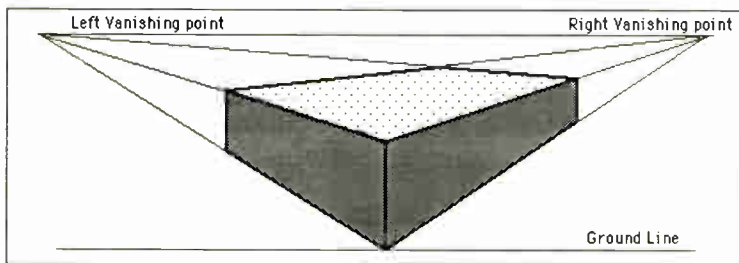
Versacad, 2124 Main St., Huntington Beach, CA 92648, (714) 960-7720. □

VIEWS

Perspective View Drawing

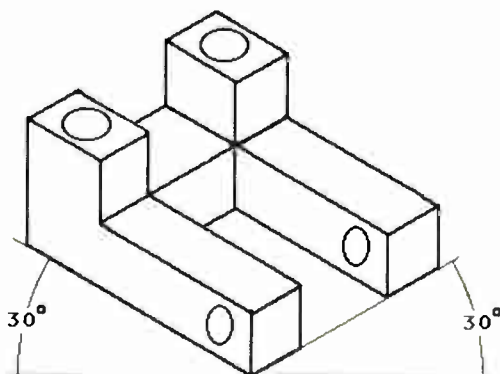
A two point or angular perspective uses two vanishing points on the horizon.

All lines converge on these points.



VIEWS

Isometric View Drawing



The CAD-specific HyperCard stacks, which represent a major advance in hypertext programming, include parametric design, database and drawing manager applications. The parametric design stack lets the user define relationships between different views and as-

NEW DYNAMIC DIMENSION.

The DC 24 Multi-Function Dynamic Controller.

Other designs give you "either/or." The DC 24 gives you "AND": Two limiters AND two compressors AND two gates AND a built-in crossover, all in one compact unit.

A NEW SERVO-LOCK LIMITER DESIGN means more transparent limiting no matter how drastically the program material changes from moment to moment. Our servo-locking circuit is smart enough to continuously maintain just the right ratio necessary to guarantee flawless control.

SEPARATE COMPRESSION CONTROLS allow you to dial in the perfect amount of dynamics you want, independently of the limiter. Extremely low-noise, low distortion VCAs guarantee a level of performance that will satisfy the most demanding recording or broadcast requirements.

THE INDEPENDENT EXPANDER/NOISE GATES can be adjusted to tighten percussion or turn off background hum and noise, without affecting any of the other dynamic control operations.

A BUILT-IN 4TH ORDER CROSSOVER transforms the DC 24 into a bi-amp crossover/processor all-in-one. You can minimize feedback, maximize speaker protection and save considerably on equipment costs. Or use the DC 24 as a band-split mono controller to obtain more consistent broadcast or recording signal strength with less "pumping" and "breathing."

Why put up with the expense and bulk of handling 3 or 4 conventional units? Get greater precision and more versatility with fewer side effects, all packed into a single compact unit. Experience a whole new dimension in dynamic control from Rane.



RANE

Rane Corporation
10802-47th Ave. W. Everett, WA 98204
(206)355-6000

by Mark Herman

SOUND REINFORCEMENT NEWS

This has been a great year for the sound reinforcement industry. Almost all the news has been good, and there don't seem to be nearly as many complaints about lack of work as in past years. In fact, quite a few companies are now happily grumbling about too much work and not enough equipment! Also, there appears to be an increasing awareness and demand for higher quality audio in the lucrative, though less glamorous, fixed installation and commercial/industrial fields. Look for more expansion in these unheralded domains. Pro audio manufacturers didn't really come forth with much in the way of spectacular, eye-catching technical breakthroughs this year. Even so, the sound equipment offered is better, more versatile and reliable. The sound reinforcement industry continues to make steady, short steps in the endless pursuit of superior and efficient sound.

Owner **Dirk Schubert** of North Hollywood's **Schubert Systems Group** reported an active summer and fall season with tour, installation and rehearsal work. **Bruce Hornsby & the Range** [see "On the Road"] went out in June and expect to tour until April of '89. . . Bad dog **George Thorogood & the Destroyers** finished touring in August and will resume sometime after the World Series. If you guessed George is a big-time baseball fan, you're right! . . . **Michael Briggs**, who engineered the house mix for Thorogood, went to Europe to mix all-girl heavy metalists **Vixen** . . . **David Sanborn** worked eight weeks on a tour that ended in late August. **Paul Mitchell** mixed house and **Kevin Korceky** handled the stage duties. . . One of my favorite bands, **Oingo Boingo**, went out on tour in early September with SSG and plan to continue until late November

. . . Cowboy **Dwight Yoakam** is also out on tour. . . Sea World's **Nautilus Amphitheater** in San Diego had SSG install 16 SSG Steradian main cabinets and eight SSG Steradian subwoofers . . . Other work included television's live **Emmy Awards** . . . SSG's **Power Plant** rehearsal studio in North Hollywood reports brisk business with many artists using the facility.

Sizzling hot **Gloria Estefan & the Miami Sound Machine** [see "On the Road"] traveled the U.S. June through September with matching Ramsa WR-S840 consoles and the new 32-cabinet flying MS10-B PA. system recently built by **Maryland Sound Industries**. Spokesman **Ronnie Smith** explained, "It's a lot like our Hi/Low MS12 system, only a smaller version. It has a TAD high end and four JBL 10-inch speakers in one box, and two 15s for the low cabinet. Power is supplied with Crest 7001 and 8001 amplifiers. The entire system is designed to be very compact to better facilitate the smaller trucks and old venues commonly encountered while touring in Europe." . . . MSI has one of the top tour client lists in the world. Note the following acts: **Whitney Houston** started her Pacific Rim tour leg in Hiroshima, Japan, September 21. The gear, which consisted of everything but stacks and racks, left in early September via boat for dates in Japan, Hong Kong, Taiwan, Australia and Hawaii. There is a former MSI MS2 P.A. system, now owned by **Hibino Professional Sound** in Hong Kong, that will be used for the mains. **Aaron Ng** handled the MSI/Hibino P.A. which matched the gear transported from the U.S. . . **Robert Palmer** stayed east of the Mississippi through August and early September. . . **Earth, Wind & Fire** finished U.S. dates in September before heading to Europe for two

months. . . **Neil Young & the Blue-Notes** "This Note's for You" tour primarily hit the Northeast in August and September. . . Top-grossing **Pink Floyd** ended their extravagant tour in late August. . . **Belinda Carlisle** went to Europe in mid-September with MSI/Britannia Row gear. . . **George Benson** will play Europe in November . . . **Anne Murray, Stevie Wonder, Frankie Valli, Patti LaBelle, Crosby, Stills & Nash, Daryl Hall & John Oates** and **Kenny G.** rounded out the MSI schedule. A tour with **Luther Vandross** and **Anita Baker** co-headlining is expected soon. . . MSI is affiliated with **Audio Facilities Industries** for commercial/industrial work. Their MS2 system, cabling and consoles are often used to augment AFI's equipment. . . **Ronnie Smith** announced that **Albert Tucker** won the MSI Engineer of the Year award at their annual company awards show. Tucker has been with MSI for 17 years and toured Europe this summer with George Benson. MSI personnel from all over the world were flown in for a three-day engineers' seminar that was combined with the awards show.

A brief rundown on **Showco's** client roster reveals that the following acts recently used the Dallas-based national sound company for tours and selected dates: **James Taylor, Linda Ronstadt, Lynyrd Skynyrd, Aerosmith, George Michael, Eric Clapton** [see "On the Road"], **Robert Palmer, Willie Nelson, Boston, the Moody Blues, and the Beach Boys.** The Aerosmith and George Michael tours featured several large stadium shows. Solo Stone **Mick Jagger's** Australian tour began in early September following rehearsals. Hot draw **Bon Jovi** finished rehearsals and just started their tour in Europe October 30th . . . On the commercial side of things,

Showco's Creative Services division was responsible for all technical production of the **WEA** (Warner, Elektra, Atlantic) **Convention** held in early September in New Orleans.

California's largest Meyer user, **Ultra Sound**, has entered into a joint venture with New York's **Audio Support** to form **Ultra Sound East**. **Sean McCormick** will run the new East

Coast division, which now consists of two Meyer P.A. and monitor rigs mixed through Gamble consoles and powered by Crest amplifiers. The two systems were just out with **Bob Dylan** and **Debbie Gibson**. The hot-drawing **Grateful Dead** [see "On the Road"] continue to tour across the U.S. with Ultra's large West Coast system, which utilizes a Gamble Series

EX 56 56-channel house console. The Gamble EX 56 now features a built-in 768-hole patch bay, complete with 144 tie lines, that is used extensively by longtime Dead house mixer **Dan Healy**. . . Asked what was new and different, Ultra's **Don Pearson** stated: "We just added two Penny & Giles quad joysticks to the Gamble EX console. All the indoor Dead shows will

ON THE ROAD

SOUND COMPANIES, EQUIPMENT, ARTISTS & PERSONNEL ON TOUR

Artist Sound Company Tour Dates & Region	House Console #1 House Console #2 Monitor Console #1 Monitor Console #2 Crossovers	Main Speakers Other Speakers Subwoofers Monitor Speakers	Main Amplifiers Other Amplifiers Sub Amplifiers Monitor Amplifiers	Engineers: (B) = band (H) = house (M) = monitor
Chicago Audio Techniques June-Nov. N. America	Yamaha PM3000 40x8x2 Soundcraft 500 24x8x2 Mod. Yamaha PM2000 32x14 Soundcraft 500 24x12 TDM CX24-4	22 ATI Mid-High ---- 30 ATI Low ATI 1121	Crest 4001, UREI 6300 ---- Crest 8001 Crest 4001, UREI 6250	Paul Dalin (B,H) Harold Blumberg (M) John Drane Mike Kline Allan Vachon
Eric Clapton Showco Sept.-Nov. N. America	Harrison HM-5 32x16x2 ---- Harrison SM-5 32x16 ---- Showco	(64) Prism (16 Columns) ---- (8) Prism Subwoofer Showco BFM 100, 400, 450	Crown PSA2, MT1200 ---- Crown MA2400 Crown MT1200	Mike Ponczek (H) Paul Sontheimer (M) Bruce Thatcher
Grateful Dead Ultra Sound August-Oct. U.S.	Gamble EX 56x16x2 ---- Gamble SC 40x16 ---- Meyer	(64) Meyer MSL-3 McCune JM12 & JM10 (18) Meyer 650R2 Meyer UM-1, UPA, MSL-3	Crest 4001 McCune/Hafner Crest 5001 Crest 3501, 4001	Dan Healy (B, H) Harry Popick (B, M) Don Pearson, Howard Danchik, Mike Brady, Bernie Granat, Chub Carrier
Bruce Hornsby & The Range Schubert Systems Group June-April '89 N. America	Gamble EX 56x16x2 ---- Gamble SC 40x16 ---- SSG	(32) SSG Steradian ---- (16) SSG Steradian SSG M112, M115	Crest 8001 ---- Crest 8001 Carver 1.5	Bobby Hickey (B,H) Al "Loon" Bonomo (M) John Ostrin Marty Naclerio
Elton John Clair Brothers Sept.-Oct. N. America	Clair Custom 32x8x6 Clair Custom 32x8x6 Harrison SM-5 32x16 ---- Clair Custom	(56) Clair S-4 ---- ---- Clair Custom	Carver 2.0 ---- ---- Carver 2.0	James Khalaf (H) Bob Bickelman (M) Tom Foehlinger Dave Powell
Miami Sound Machine Maryland Sound June-Sept. U.S.	Ramsa WR-S840 40x8x2 ---- Ramsa WR-S840 40x18 ---- MSI HS 301	(16) MS-10 (16) MS-10B ---- MS 2x12	Crest 7001 Crest 8001 ---- Crest 3501, SAE P50	John Searle (H) Jim Risglin (M) Ishai Ratz
Santana Sound On Stage August-Nov. U.S.	Gamble HC 40x16x2 Yamaha PM2000 32x8x2 Soundcraft Blueboard 32x16 ---- SOS	(18) Power Physics 543 (12) Power Physics 442 ---- SOS Custom	Phase Linear Phase Linear ---- Crest 4001, 2501	Louis Barrere (H) Mike Jordan (M) Francis Trouette



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have quad where rigging is possible. Also, Dan Healy came up with the idea of a special mount, located inside each of the drums, for the trigger that is used for the key input on our new Aphex 612 gates." . . . Recently they purchased additional Meyer MSL-3s, 650R2 subwoofers and UM-1 monitor cabinets, to fill out the two Ultra East P.A. systems . . . Ultra Sound expanded its woodshop area and has been busy making fine hardwood cases and racks for itself and others. In addition to touring and woodworking, Ultra Sound is available for custom electronic work and consultation.

Console News . . . New manufacturer **Audio Technology Inc.** plans to release the first of their **Paragon Series** universal live mixing consoles in April '89. Forty- and 32-channel configurations will be available in three different layouts with a 40-input board retailing for just under \$80,000 and the 32-input model for around \$68,500. The Paragon has something new: built-in full dynamic processing with an RMS compressor/limiter and parametric noise gate on each channel. The features include 16 submasters, 16 aux sends, eight VCA groups, stereo mix, four stereo and four mono matrix outputs, eight stereo effects returns and a priority cue system with stereo monitoring. Submasters and input channels each contain 4-band full parametric equalization. Each band may be selected for either peaking or shelving. Stereo cue monitor speakers are available for listening without headphones and are located at both ends of the meter bridge. If you want to use the Paragon as a monitor console, the aux outputs can be individually routed to the submaster bus inputs by switches located on the rear connector panels. For metering there are 23 stereo, fluorescent meters on the bridge and three LED bar graphs on each channel. All I can say at this point is that on paper it looks attractive.

Greg Hall from **Clair Brothers** reports that their fall touring season remains busy: "We're running at near capacity through the fall and into winter." Asked about trends, he notes, "Europe seems to be where the guarantees are this year." Clair's regular tours, coupled with the **Amnesty International** world tour, used almost all their available equipment and

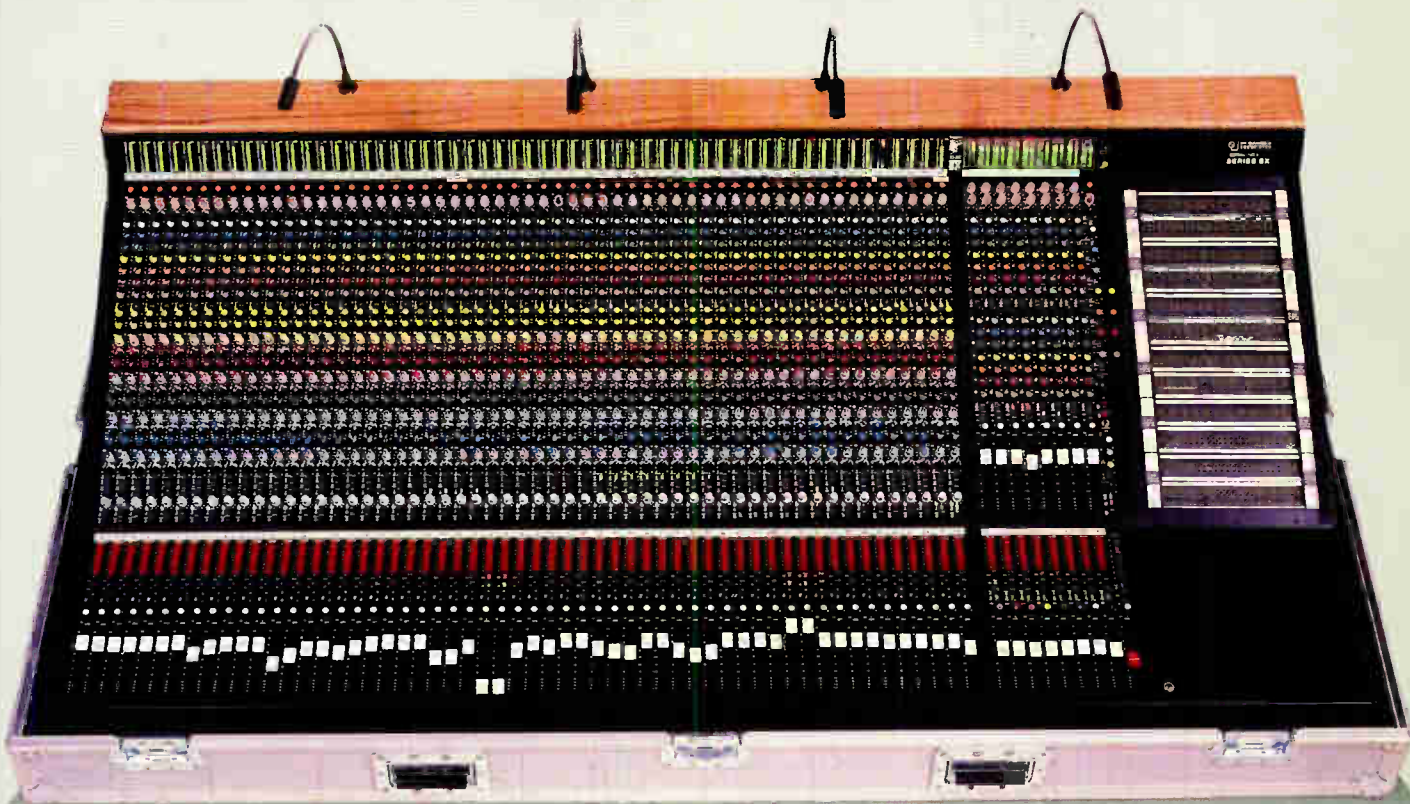
manpower. Here's a quick look at the acts: **Michael Jackson** returned from

"Europe seems to be where the guarantees are this year," says Greg Hall of Clair Brothers.

Europe with plans to finish his North American leg late this November before proceeding to Japan, where a full system will be shipped in advance via boat; **Elton John** [see "On the Road"] made a successful comeback; **Amy Grant's** tour continued with a 48-box S-4 system; the ex-Zeppelin report shows guitarist **Jimmy Page's** tour started in September with a 48-box S-4 system, while vocalist **Robert Plant** returned to America in October for a two-month trek; a technologically extensive tour in Europe with demanding Japanese artist **Kitaro** kept everyone on their toes; **Kenny Loggins** was out with a 32 S-4 cabinet rig; **Julio Iglesias** ended his tour in August; and as usual, hardworking **Kenny Rogers** continued touring . . . Clair provided sound reinforcement for a large cultural event called "The Night" in Barcelona, Spain, on October 8. Singer **Luciano Pavarotti** and others utilized over 100 S-4s on the steps of the Royal Palace . . . November will see **Sting** touring Japan and Australia . . . Equipment-wise, Clair's new AM monitor system continues to receive good reviews.

Clair Brothers provided the universal crew and console mixing equipment for the Amnesty International tour. The universal crew consisted of **Jim Devenney** (monitors), **Mike Keating** (house mixer for Springsteen), **Steve McCale** (assistant engineer on Springsteen house), **Dave Kob** (Sting house mixer), **Tom Herrmann** (Sting monitor mixer), **CJ Paterson** (patchmaster), and **Andy Sotile** and **Tom Ford**. **Clive Franks** engineered the Peter Gabriel house mix for the first half of the tour before moving on to other commitments.

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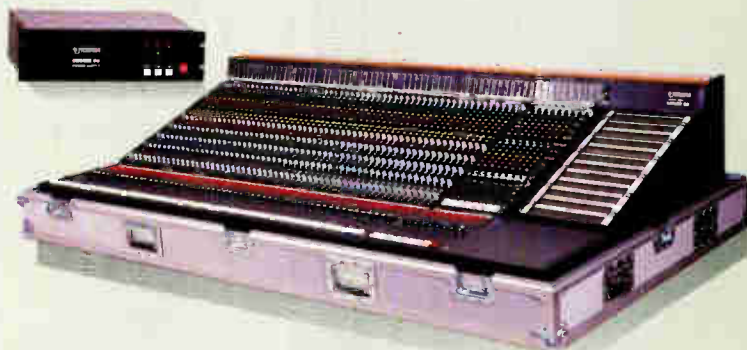
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SOUND · ON · STAGE

Dave Kob handled the remaining shows. **Robin Fox** mixed the stage for Gabriel.

Sound on Stage is a San Francisco-area sound reinforcement company whose primary business is concentrated on national touring. **Huey Lewis & the News'** "Small World" tour went out in August for two months in the U.S. before heading to Europe for the second leg, which will end in December. A Gamble Series EX 56 console and 66 Crest-powered main PA. cabinets were used on the U.S. portion of the tour. . . The "new" original **Santana** [see "On the Road"] went out in August with plans to tour until November. **Louis Barrere** is responsible for the house mix. . . **Eddie Money** has a new record and tour. . . SOS provided monitors, a Gamble SC 32 x 16 stage console and personnel for singer **Engelbert Humperdinck's** tour. **Mike Benedetti** handled the monitor mix. . . Recently, SOS moved to a larger, more convenient location. The new facility has 10,000 sq. ft. and an indoor loading dock. It is located within a mile of the old spot, in Bris-

bane, CA.

Bits and Pieces. . . Crest Audio has come out with a 2-rack space, 49-pound version of their highly successful **8001** power amplifier. The new **7001** model is rated at 550 watts/ch. at 8 ohms and 810 watts/ch. at 4 ohms. . . Illinois sound reinforcement company **dB Sound** purchased 54 Crest 8001 amplifiers. The amps are slated to be used on the current **Prince** tour. . . QSC Audio Products supplied sound reinforcement company **Sound Image** with 90 QSC power amplifiers for the main PA., the lawn seating delay system and monitor system for the 18,500-seat **Pacific Amphitheatre** in Costa Mesa, CA. . . Five TAC Scorpion consoles were sold to **Stage Rent**, Nieuwegein, Netherlands. . . Chicago-area **Gary Gand Sound** has added a 40-channel Yamaha PM3000 console, new flying grids, two more amp racks and additional custom speakers to their sound reinforcement system.

Stage Accompany, from the Netherlands, provided Blue Boxes controlled by an S.A. P3200 PC to the **Israeli Army** for a celebration honoring the 40th anniversary of the State of Israel. The **Amat Gan** stadium in

Tel Aviv was the site of a live performance of tanks, helicopters, jets, smoke and explosions that simulated past wars. The Blue Box speaker enclosures reportedly cut through the noise allowing the audience to hear the explanations about the individual demonstrations.

Linear Sound Systems, a good-sized regional sound reinforcement company, is on the verge of becoming nationally known. Located in Oakland, CA, they service many of the audio needs of California, with work ranging from regional/national one-offs, installations, several tours a year and, according to co-owner **Kent Kline**, a lot of repair work. "We have the largest independent electronic and speaker repair facility on the West Coast. Most of the music stores in the Bay Area use us, as well as many pro audio manufacturers." Lately they have started to attract considerable attention with their new M-1000 and existing M-2000 main PA. speaker systems, designed by speaker whiz **Mark Wayne**. Kline states, "We now have in excess of 100 kw of front-of-house speaker systems between the M-2000, M-1000 and M-800 cabinets." . . They also

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have 36 boxes of Turbosound TMS-3s that are currently being leased to several clients. Proprietary MOSFET amplifiers are used for power throughout the systems. For monitors, Linear is now using the new S-200, which is a low-profile, Mark Wayne-designed, double 15-inch, single 2-inch bi-amped wedge. . . . The **Concord Pavilion** (Concord, CA) recently installed a permanent JBL Concert Series main P.A. Linear services the acts that don't bring sound equipment. House consoles, signal processing and complete stage monitor systems are provided for the nearby venue. Many national acts, such as Dwight Yoakam, Buck Owens, Emmylou Harris, the Kingston Trio and the Concord Jazz Festival, used Linear in the first month following the JBL installation. Linear's **Mike Rugis** mixed house for the jazz fest . . . Other recent work included: three dates with **Joe Cocker** with a 24-box M-1000 P.A. system; **Steve Lawrence & Eydie Gorme** at the Shoreline Amphitheatre with 24 M-1000 and eight M-800 boxes; several **Budweiser Superfest** shows, including one date at the Oakland Coliseum that used 80 main P.A. cabinets; a distributed P.A. system for the **Olympic Boxing Trials** held at the Concord Hilton hotel and the Diablo Valley College gym; the **National Dance Company of China** at UC Berkeley's Zellerbach Auditorium; a series of dates with national acts at the Villa Montalvo Center for the Performing Arts in Saratoga, CA, using the M-1000 system; **Miles Davis** and others at San Francisco's War Memorial Opera House and Berkeley's Greek Theatre; several days of the **Strawberry Music Festival** near beautiful Yosemite, which featured top bluegrass acts; and San Francisco's **International Comedy Competition** at Davies Symphony Hall, with something like 100 comedians looking for laughs and \$.

Booming lawn sales! . . . Dallas' new 20,000-seat **Starplex Amphitheater** acquired 16 Turbosound TMS-3 cabinets for their lawn area. . . . The **Alpine Valley Music Theater** in East Troy, WI, now has four flown clusters of Turbosound TMS-3s for the 29,000-seat lawn area. **X Productions** handled the installation of the 14 TMS-3s. . . . **Crystal Taylor Systems** of Bensalem, PA, installed eight TMS-3,

four TSE-211 and four TSE-215 cabinets for the 10,000-seat lawn area of Philadelphia's **Mann Music Center**. . . . Moving from the lawn to church—Turbosound reports that Houston's new 8,000-seat **Lakewood Church** had **LD Systems** design and install a dual-cluster speaker system. In the center of the hall, one cluster employs 11 TMS-3 cabinets, and the other, hung over the pulpit, utilizes six TSE-212 and five TSE-118 enclosures. . . . **K Squared Associates** of Plymouth, MI, used a single Turbosound cluster with seven TMS-2 and seven TMS-1 boxes hung over the pulpit, to cover the 2,500-seat **First Assembly of God Church** in Winston-Salem, NC.

RG Sound & Communications of Celina, OH, is a full production company that handles sound reinforcement roles such as equipment support, large fairs, regional touring and communication systems. RG Sound was started by owner **Andy Goodwin's** father in the late '40s doing big band audio support and county fair-type paging systems. "We do quite a variety of sound events ranging from paging for the **National Tractor Pull** in Bowling Green, OH, several Camel Pro motorcycle races, 35 to 40 county fairs every year, backstage paging, several industrial accounts and a lot of two-way radio business where we rent, sell and service hand-held radios," explains Goodwin. "We now have 16 Meyer MSL-3s and eight 650 R2 subs powered with H&H Acoustics MOSFET amplifiers, although we are planning to switch to the new Crest 7001 amps." RG Sound & Communications also has 24 front-loaded AF1 Bag End (now Mitek) cabinets. Monitors are JBL-loaded custom boxes formerly of Michigan's **Sounds Good Audio**. Monitor consoles are Soundcraft 800B 32x10 and 400B 24x8. House consoles are Yamaha PM3000, Yamaha PM1800, Soundcraft 800B 32-channel and 400B 32-channel models. . . . Work was reported with **Marie Osmond, Janie Frickie** and the **Elkhart County 4-H Fair** (the second largest county fair in the U.S.) in Goshen, IN.

S.I.R. (Studio Instrument Rentals) in Hollywood handles sound reinforcement equipment rentals on an individual or system basis, as well as full audio and lighting production for live shows. All their equipment is available for rental. **John Tripeny** is the manager and head engineer of S.I.R.'s

pro audio section. Their main P.A. system is mainly composed of Meyer MSL-3s and 650 subs. Over the summer S.I.R. purchased a Soundcraft Series 8000 40x8x2 house console complete with matrix, and a Soundcraft 500 24x12 monitor console, to go along with their Gamble 3C 32x16 monitor console. . . . **Jeff Rasmussen** reported S.I.R. installed a new sound system, with EAW cabinets and Yamaha boards, at the Coconut Teaser nightclub in Hollywood. For live work he mentioned the **Monkees** at the Universal Sheraton, an **A&M Record Convention** at the Whisky and **Jose Feliciano** at Fred Kelly Stadium in the city of Orange, CA. They also traveled to Bogota, Colombia, for several Jose Feliciano concerts this past August. ■

Author Mark Herman owns Hi-Tech Audio, a sound reinforcement company specializing in console rentals.

If you want to make the news, call (415) 726-2428 or send press releases & photo to: Mix Publications, Sound Reinforcement News, 6400 Hollis St. #12, Emeryville, CA 94608.

—FROM PAGE 58

there is here. They're on the road so much, we agreed we'd split it up this time, half here and half there.

Mix: Bob Clearmountain is a really interesting choice of an engineer. That would seem to indicate a decisive change in direction for the group.

From: He can really take a song in any direction. People tend to associate him with Bryan Adams and Bruce Springsteen, but he also mixed "Avalon" for Roxy Music and he did some really elegant mixes on the Robbie Robertson record. He's very musical and doesn't have a stamp kind of sound.

Mix: You said you're allowed to work with whomever you want, whether they're Capitol artists or not. Do you have any pull as to who gets signed to the label?

From: Occasionally my opinions are sought out, and when they are, I'm happy to give them. I don't know if they actually sway anyone's decisions. Business is business. I can't really work with anyone I want. They have to want me, too. ■

Paula Parisi is a staff writer for The Hollywood Reporter.

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A WINNER AT BALLY'S PARK PLACE

Along with gambling, glitz and glamour, entertainment is a natural part of Bally's Park Place in Atlantic City. A sprawling complex just off the boardwalk which encompasses a hotel, convention center and casino, live performances seen at Bally's range from specially produced programs for corporate clients to stand-up comedy acts and appearances by top-name singers. Most shows are held in one of three main ballrooms, but it's not out of the question for events to be held outdoors.

One of the unique aspects about Bally's Atlantic City operation is that the technical and logistical aspects of any show can be handled in-house. Services ranging from talent acquisition to script writing and choreography are available to corporate guests, while the complex's custom-built sound and lighting systems meet wide-ranging production and acoustical needs. The sound system represents an interesting blend of technology which can adapt to diverse environments.

Bally's Park Place technical director Jim Esher recalls how the concept for the sound system evolved. "Since the venues throughout the facility vary in height, width and length, as well as in their acoustical properties, we decided the best sound system would be a portable one that could be set up to work well anywhere. We came up with an idea for a modular design which could

handle the acoustics of any room and provide reinforcement for everything from simple stand-up acts to outdoor extravaganzas featuring Bally's 30-piece orchestra. Essentially, I envisioned something so versatile that it could conform to the configurations

A grand Grand opening in brisk ocean winds before an audience of 5,000. The sound? No problem.



of what a touring sound company would use to do different shows on an individual basis."

With a plan in mind, Esher went shopping for a vendor, and wound up meeting Tom Knauss of Peirce-Phelps' Philadelphia office. The two discussed possibilities without coming to any solid conclusions. But then, Knauss remembers, "It was the first week of December, '86, and Jim told me he wanted the system ready for New Year's Eve. At first I thought the time frame might make it impossible, but I decided to give it a try."

Seeking someone who could provide the proper components and work with a tight schedule, Knauss got a positive response from John Wiggins, Community Light & Sound's VP of engineering. The two decided they would propose a design based around Community's M4 mid-range compression drivers mounted in full-range cabinets. The plan was relayed to Esher, who embraced it and contributed his own ideas. Knauss then laid out the details for the modular cabinets and had one of his contractors build them.

When the project reached its 11th hour, Esher's deadline was stretched. More pieces of the puzzle fell into place at all ends as Bally's Bob Harper completed building the racks which would house the system's signal processing devices and amplifiers. Once complete, the system utilized eight M4-based cabinets, which measured 34½ inches high by 40 inches wide by 24 inches deep. To facilitate easy arraying and cluster mounting, each cabinet was built in a trapezoidal fashion with an 11-degree flare on each side, tapering down to 32 inches at the back.

Besides the M4 compression driver, components of each cabinet include twin 15-inch JBL 2225 direct radiators and a JBL 2445 high-frequency driver. Weighing 38 pounds and equipped with a 4½-inch voice coil, the M4 is designed to operate exclusively between 200 and 2,000 Hz under widely ranging conditions requiring high SPLs, articulation and low distortion. To pack M4 power into the relatively small enclosures at Bally's Park Place,



Custom-built for Bally's, these innovative cabinets are designed around Community Light & Sound's mid-range compression drivers.

Community's SH2064M horn was coupled to the M4's 4-inch diameter throat, while Community's SH864 horn was attached to the 2-inch JBL 2445 high-frequency driver. When used in this fashion, both horns provide proper mechanical time alignment.

"We built both the SH2064M and SH864 specifically to allow the M4 to be utilized in compact enclosures," Community's John Wiggins says. "The SH2064M is a hyper-exponential flare horn that provides full driver loading down to 270 Hz, yet even with an M4 attached, is small enough to be packaged in a cabinet only 22½ inches deep. Just like the SH2064M, the SH864 is made of balsa-reinforced, hand-laminated fiberglass. As used in the system

at Bally's Park Place, each cabinet's single SH2064M can properly load the M4 for full power operation down to 275 Hz."

The elements in each Bally's Park Place cabinet are arranged horizontally—the JBL 15s reside *next* to the M4 and high-frequency driver, not under them. The reason Esher selected this design was due to height considerations.

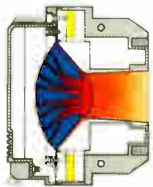
"If we could have used a vertically arranged box, we probably would have gone with the standard package Community recommends with twin high-frequency horns," Esher says. "But due to some height restrictions, we had to come up with something which was low profile, especially since the system is flown a good part of the time."

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2450J

The 2450's smaller size translates to tighter spacing of horn arc arrays, more even and precise coverage and greatly reduced requirements for delay. Plus, the 2450 nets out at a mere 4.8 kg (10.5 lb). The benefits of this dramatic weight reduction include lower shipping costs to the site or on the road and significantly less load bearing requirements for both structures and rigging. With built-in mounting points, the 2450 will take much less time to install.

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SOUND · ON · STAGE

Made from 3/4-inch birch plywood, each cabinet weighs 265 pounds and is outfitted with an internal frame made of slotted angle bracing to facilitate hanging. Rigging hardware consists of twin hangers, mounted on top of the black-carpeted enclosure, which are rated at 3,500 pounds apiece. At the back of each cabinet is a smaller rigging point which, when attached to a ratchet strap, allows the cabinet to be adjusted for varying angles.

The two amp racks constructed by Harper are each filled with 4,800 watts of Crown power. Mixing is generally handled by a 32-channel console or a 16-channel unit. Signal processing devices and effects are straightforward in keeping with the quick setup/tear-down philosophy: a Yamaha digital reverb with built-in delay features, dbx-supplied limiters and compressors, and UREI 525 crossovers which route signals to the power amplifiers. Usually run by a crew of three (even for full-scale concerts), the system's ease of operation is further enhanced by in-house snake systems permanently and unobtrusively installed in the ballrooms. Esher also built a 250-foot, 40-channel snake for outdoor shows and interior areas which aren't permanently wired. This snake has identical patch bays, and is held in a portable rack system. Also, with all the surfaces ranging from tiles to sidewalks on which the system travels on a daily basis, all components are hauled from one location to another in "floating" flight cases with heavy-duty casters.

To date, the system has performed well in countless configurations. It has even been broken down into two systems where one amp rack and four cabinets were taken to one location, and the other rack and four cabinets were taken to another.

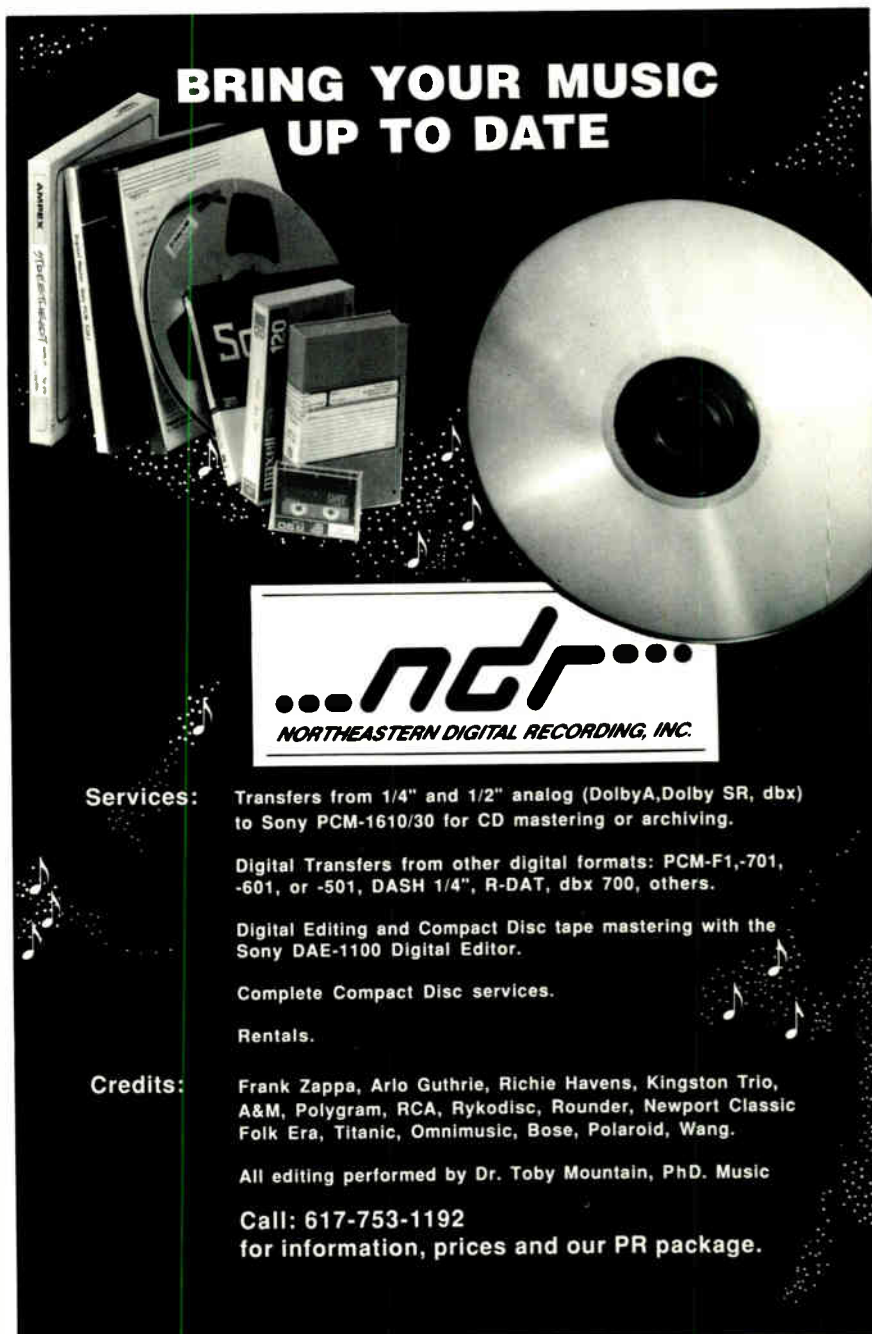
The ultimate test of its versatility occurred last fall when Bally Corporation purchased the nearby Golden Nugget and renamed it Bally's Grand Casino/Hotel. Outdoor ceremonies along the ocean to celebrate the purchase promised to attract huge crowds. Headlining performers were Frank Sinatra, Jerry Lewis and Sammy Davis Jr. On the night of the show, crowds in excess of 5,000 packed every seat and the boardwalk, then overflowed into neighboring streets. The entire sound system had been transported to the

site, and was set up and taken down each day while the 30-piece orchestra rehearsed. As show time drew close, temperatures were brisk, with winds blowing off of the ocean—certainly not the best conditions for sound reinforcement. Stacked four to a side, the entire system was readied within an hour's time.

"We knew the system was versatile from using it under widely varying circumstances at Bally's Park Place," Esher says. "But we didn't know how it would perform in this situation. Once up and running, however, we got close to 180-degree coverage on each side,

and with the M4s, we had no problem achieving the SPLs we needed to satisfy the crowd, even on that windy night. The cabinets, being full-range, yet small and modular with high power handling capabilities, were perfect for the job. When you find yourself providing sound for so many different acoustical environments, the fact that we don't need a lot of cabinets to create the sound we want is a big asset." ■

Gregory A. DeTogne is a freelance writer and publicist covering the television, film, music and recording industries.



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THE BHUNDU BOYS' DANCE OF JOY

by Blair Jackson

"Sometimes I feel like Eddie Murphy in the movie *Coming to America*," laughs Biggie Tembo of the popular Zimbabwean band the Bhundu Boys. "That movie fits some of the experiences I've had here. I have a lot to learn about your country. But then you Americans have much to learn about Zimbabwe, too."

Since most young Americans can barely find Mexico on a map, it's a safe bet they probably don't know much about Zimbabwe, which is located in southern Africa, either. Yet bands like the Bhundu ("bush") Boys and their countrymen Thomas Mapfumo & Blacks Unlimited have developed cult followings around the world with their infectious music. In Britain, which has a number of rock bands who

have incorporated African rhythms in their music for years, as well as a substantial African population, the Bhundus are quite well known. In America, however, the word is just starting to get out. Two Bhundu Boys albums that were popular in England—*Shabini* and *Tsvimbodzemoto*—had only limited distribution as English import albums in this country. But their latest, and most accessible LP, *True Jit*, is getting impressive national distribution through Island Records' Mango label. And the group just finished its second U.S. tour in six months.

The Bhundus' "jit" music is a wonderful blend of melodies and rhythms adapted from their native Shona culture and Western rock instrumentation. The group's unmistakable guitar sound, for example, derives in part from adapting some of the musical characteristics of the African m'bira (or finger piano) to the electric guitar. The interplay of the

guitars and rhythm section in the Bhundu Boys is often quite hypnotic, even trance-inducing, yet the band's bright vocal harmonies (all five members sing) give the music a cheerful buoyancy. "Our producer in Zimbabwe, Steve Roskilly, is the one who came up with the idea that we should treat our voices like instruments," Tembo says. "It is through the singing that we have been able to communicate with so many people, even outside of our country. Steve is the one who first believed that our music could go beyond our borders, and he has proven to be correct."

True Jit is likely to increase the band's international following. Recorded in England and

produced by Robin Millar (of Sade fame), the album is clearly aimed more at Western audiences. For one thing, punchy horns augment the regular Bhundu lineup, giving the record more of a sheen than their previous works. Tembo has mixed feelings about the experiment.

"I think our music is heading in the direction we took on the record," he says, "but we feel we may have overdone it on some angles, like the brass. To a certain extent it overshadows some of our music. But we must move with the modern times, try to come up with sounds that use all the technology around. It was basically a very good experience.

"But you know, the studios in Harare [Zim-

—CONTINUED ON PAGE 183

THE FAR SIDE

By GARY LARSON



CAMPER VAN BEEHOVEN: MONGREL ON THE LOOSE!

by Josef Woodard

Just before the release of their major-label debut, *Our Beloved Revolutionary Sweetheart*, on Virgin Records, Camper Van Beethoven played in Isla Vista, California, across the street from what was once the infamous Bank of America that burned to the ground in another revolutionary gesture almost 20 years ago. There was some historical poetic justice in the proximity; Camper adeptly mixes rock and semi-ethnic sounds in a way that would have pleased a late-'60s audience and is now sweeping the late-'80s college charts. But are they revolutionaries, or boys just having some fun at the expense of the status quo?

At the end of a sweaty, full-bodied set—leaping from barnstorming rockers to loping violin-oriented ditties like psychedelic klezmer music—the power went down. The show must go on, and the Campers struck up an acoustic version of “The Ambiguity Song” (“everything seems to be up in the air at this time. . .”). On an extensive three-and-a-half month tour of North America and parts of Europe, the band played at places where the power went out again (mainly in the South), and their handiness with acoustic instruments proved an asset.

But, mostly, this was a triumphant tour for a

group that seems to have finally penetrated a wider circle with their eclectic underground music. Rolling Stone's David Fricke dubbed them the year's hot band, and the Virgin record steamrolled into a lofty position on the alternative music roster, if not exactly the mainstream pop world. One has to wonder: does success tinge the band's working life?

“In some parts of the country we're doing really well, like in the Northeast,” says David Lowery back home in Santa Cruz, California, where the band was born and bred. “We're getting lots of people there consistently. Whereas in other places, like the Midwest, it's better than it was before, but we're still playing in the same clubs. I guess it shows you what college radio success really is. I can't see it as any big breakthrough, though we're selling more records than we were before, and we're playing to more people than we were before.”

Clearly, the new record—produced by Dennis Herring (Timbuk 3)—is their most finished and “mature” song set to date, which doesn't mean there aren't eccentricities and odd interludes speckling the record. In terms of songwriting and production focus, this seems to be the most careful Camper record yet.

“Yeah, careful and uncaredful,” Lowery rejoins. “Some people think that when you go into the studio and work on a song for this long, you lose all spontaneity. Actually, what happens is that weirder



PHOTO MELANIE NISSEN

things start happening. You can cut the song and then say, ‘Man, I just hate this version. Let's just start over and do this completely differently.’ And, boom, it's done in a day. You can say, ‘What if we tried getting rid of all the guitars and just using mandolin on this song?’ You have time to think about these things, so you have other kinds of bursts of spontaneity.”

During the recording process, was the band conscious of the fact that, unlike their albums up to that point, this was one of major-label consequence?

“We had to be conscious of it, because we were given more money to work with than we've ever seen, and we were recording at these nice places. But in terms of songs and production, we were going to work with Dennis whether we were on a major label or not. We had known him for a couple of years. These same songs would have been on a record for anybody, even if we were still on our own

label. In that way, nothing was different. We probably would have recorded it a

—CONTINUED ON PAGE 184

ENGINEER/ PRODUCER BOB MUSSO: UP FROM THE UNDERGROUND

by Hank Bordowitz

In these dicey days of corporate conformity and sonic similarity, when every hit spawns scads of sound-alikes, really fresh music is tough to come by. It is there, however, and a lot of it has New York-based Bob Musso's name on it. As an engineer, Musso has been involved with Tom Waits, PiL, Iggy Pop, Sly & Robbie and Herbie Hancock, among many others. As a producer, Musso has made recordings with artists including World At A Glance, Yomo Toro, Murphy's Law, the Lunar Bear Ensemble and the

—CONTINUED ON NEXT PAGE

MUSIC · NOTES

—FROM PREVIOUS PAGE, MUSSO

77s—as diverse a group of artists as you might care to listen to, but that's the point.

"I don't appreciate blatant pop music anymore," Musso says as we sip coffee in his East Village apartment, surrounded by high-line audio equipment and dozens of guitars. "I find it difficult to work on that type of music, because it's unrewarding musically. I'd much rather record an ethnic artist, or somebody who's not as popular

ly heard of Bill. I'd heard of Material before, who the gig was for. So I went in, and there was Bill and Michael Bienhorn. In three-and-a-half, four-and-a-half hours, I recorded Whitney Houston. It had to be one of the first things Whitney Houston did in the studio, and she was young and green. She sang two takes of a song called 'Memories,' which she did incredibly. I also recorded Archie Shepp, which was one of the only times I think Bill has worked with him in the studio. We worked with them, recorded and mixed that track. All in about four-

out after a certain number of hours, just like everyone else."

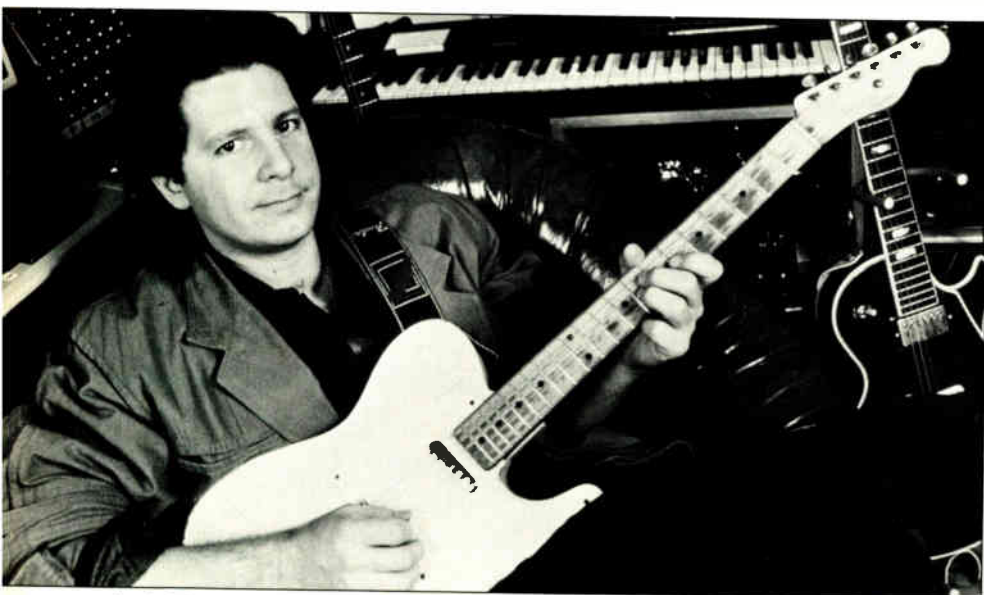
Of course, working with someone as wide and deep as Laswell has opened up musical worlds for Musso, allowing him to participate in a project by Nigerian fire-brand Fela one day and Herbie Hancock the next; doing tracks with Mick Jagger, then mixing free jazz with Sonny Sharrock. The two of them have done all this and more.

"In a way, I think I'm a little jaded," Musso admits, "but I think that's for the better because I've been turned on to a much wider variety of music, a better quality of music, and it's affected me and everything I've done since I started doing the so-called underground records with Bill. It's really shown me what *not* to do, how *not* to be corny, how *not* to make bad records."

One of the things that makes a good record is a sense of adventure. This has led to some intense craziness in the studio. Like the Sly & Robbie *Rhythm Killers* record, which has no breaks on either side, and so had 2-inch tape slopping over the rims of the reels. Or the remix they did for a 12-inch from Herbie Hancock's *Perfect Machine*.

"Normally, when people go in to do a 12-inch mix, they put up the normal mix, pump up the bass and drums a little and drop out the vocals for four or eight bars, drop out the percussion, and that's the 12-inch mix," Musso says. "Bill had the idea to really do something different. What we did was take two different songs from the album, and the idea was to use different parts of these two different songs. They were in different keys and different tempos. Luckily, they weren't too far apart. I had to take sections of the 2-inch tape and varispeed them so they were the same tempo, or close enough so you couldn't tell the difference. The pitch was critical, that it didn't sound all whacked out when I varispeeded it too much. Then I took the different pieces of the 2-inch tape, the different sections from the different songs, and edited them together to make a new song.

"The problem is that these songs were never supposed to be put together," he continues. "Tracks were all over the place. The synth tracks and the drum tracks were not on the same tracks from one multi-track



Bob Musso

PHOTO ENID FARBER

but has incredible talent, or get into a situation where I can be put into the studio to create new forms of music."

The seeds of this attitude have been with Musso for years. He cut his teeth doing live sound reinforcement for the likes of Blood Ulmer, Ron Carter and Ornette Coleman. As a staff engineer at the Hit Factory, he saw the other end of the musical spectrum, assisting and aiding projects by Stevie Wonder and Kenny Loggins, among many other artists who walked through those studio doors. But what really made his interest in music from left field bloom is his association with producer/musician/musical visionary Bill Laswell.

"I had left the Hit Factory and was working as a freelance engineer," he recalls of his first meeting with Laswell. "I got a call; they said they had an artist and they needed an engineer. They were these new, East Village, hip, underground musicians. I'd never real-

and-a-half hours. And it turned out to be a successful record, and Bill really liked my work from there."

That was the start of a long and fruitful collaboration that has seen them make records with Material, Nona Hendryx and dozens of others, including about half the acts that have recorded for Celluloid Records during the '80s. They suit each other, and the circumstances under which they do a great deal of their work. After all, they aren't working with Whitney Houston anymore, and studio time costs money.

"I think he was impressed that I could work so quickly and still come out with such a good product," Musso muses. "That's one of the main reasons he's still using me, because I really do work very quickly in the studio, and I really don't cut any corners. I just learned how to *not* do a mix in 20 hours. That's just not my style. I can do it that way, but I really find it a lot less interesting, and I usually burn

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MUSIC · NOTES

piece of tape to the next, because they were different songs. After I put together everything, and the piece was assembled, Bill wanted to overdub. Which means taking MARRS' 'Pump Up the Volume' and getting that in tune and time, and synching that up and putting that over the sections of this newly formed piece, or taking some singing, or some old Funkadelic riff and putting that on different sections also.

"When you start mixing something like this, it's a nightmare, because you

have a kick drum track that all of a sudden, from piece to piece, goes from [tracks] 2 to 4. Synth tracks turn into horn tracks. All sorts of tracks turn into all sorts of other tracks, and it's very difficult to put together. I really had to plan way ahead of time how I was going to mix it, what pieces were going to be mixed where and how it was going to fit together. That was difficult. That took a long time, or much longer for me, which is about ten to 12 hours."

Having earned a reputation for being quick and adventurous has led to some other interesting work for Mus-

so. He is credited on the screen for "Additional Scoring" for the controversial film *Colors*.

"It was a lot of fun," Musso recalls. "I actually learned a lot and did a lot that I'm not used to doing. Writing music for a soundtrack is totally different than putting together a song or an idea for an individual artist. We really had to look at the scene, see how many cuts that scene had, try to figure out the best tempo for those cuts, the right mode for the right type of music for the feeling of it. Then we actually took all the SMPTE numbers of all the cuts and put them into Que, which is a film scoring program, and the computer told us what the best tempos were and which cues got hit where, so we could figure out how to approach the cuts. I think it turned out well, and I think [director] Dennis Hopper was very happy with the work."

Musso is also cultivating a reputation as a producer in his own right, working with both mainstream rock groups and other more interesting and/or obscure musical entities. Two recent projects include recordings by the downtown New York rock band *World At A Glance*, and legendary cuatro player Yomo Toro.

"I produced and engineered the Yomo Toro record," Musso states. "It was a situation where there was not a lot of money, so I rehearsed the band, did a lot of pre-production making sure the music and the arrangements and musicians were together before the studio date, and we'd go in and record it in one day and mix it on the next. So that was literally a two-day record. I think it turned out great."

"World At A Glance was a different story, because I took over production of that album halfway through. The story with that group was [another producer] started the record, and Island was not pleased with his work."

The spirit of eclecticism has had other than musical advantages for Musso. It has taken him worldwide, working with local talent and artists who need a fresh locale, maybe a fresh point of view. He has recorded sessions in Japan, England, France, the Bahamas and Hawaii, as well as all over the U.S. His passport is well-worn.

"I've been very lucky," he states, "to be able to work in many different countries. I've learned that it's an as-

—CONTINUED ON PAGE 183

JAN HAMMER

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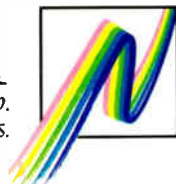
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—FROM PAGE 180, MUSSO

set to walk into any studio in the world and make it work."

One of the next things on Musso's mind is combining all this other experience with the ambition that got him into recording and sound in the first place. Musso is a musician, and as his horizons have been expanding technically, they've also been broadening musically. He plays out frequently with his electric free-jazz group, Machine Gun, and by the time you read this, they will have released a record and compact disc of their music. He is composing somewhat more conventional music for a possible solo album.

"I'm putting together more of an organized track," he concedes. "I think Bill Laswell is going to produce it. It should be in the usual spirit of those things, shall we say, of what Bill and I do. Which could mean anything, I know. Fairlight, drums, serious groove, bottom end, top references of anything from Yomo Toro to Indonesia singing."

He smiles wryly. "Anything is possible." ■

—FROM PAGE 176, BHUNDU BOYS

babwe's capital] are not as bad as you might think," he continues. "Shed Studios, where we have done most of our recording, is now 48 tracks. The earlier records you know—*Shabini* and *Tsvimbodzemoto*—were made for so little money. Those records are compilations of records we've made over the last eight years. We wanted to get more depth to our sound, because with *Shabini* it was like '1,2,3,4' and the song is finished. There was no imagination used. Now we feel we can use the studios and exploit the sound we can only get in Harare. Now that we can afford it, we can go to Harare, where we prefer to record, and spend the time we need to make the record we want."

Another departure for the Bhundus on *True Jit* is the appearance of several songs featuring some lyrics in English. "I've had some people tell me that they only want to hear us sing in our native language," Tembo says, "but I think this is a way for us to get even closer to some of our audience. In some of the songs we're singing only a few vital phrases in English, to

help get our message across."

The Bhundus' "message" is one of hope and joy primarily, a fact that surprises many familiar with Zimbabwe's troubled past. It was a British colony (Rhodesia) for many years, and its independence from Britain was followed by 15 years of white racist rule under Ian Smith. The *chimarenga*, or Zimbabwean revolution, finally succeeded in taking power in 1980, and it was that year that the Bhundu Boys began playing together, in part to celebrate the revolution.

"A lot of groups came up after the war, because it was really the first time we were free to do what we wanted," Tembo says. "That's one reason you hear so much joy. It is music that is free. We feel we're trying to capture the spirit of our country at the moment. We are no longer fighting anyone—now we're trying to join hands [a sentiment echoed in the song "Jekesa" on *True Jit*] in the spirit of reconciliation. You have to see it to believe it. The spirit is amazing in Zimbabwe. You can even see Ian Smith roaming around the suburb where he lives. This is a man who

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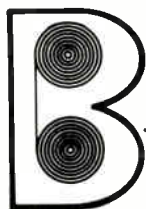
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killed so many of our people, yet we are now all trying to live together, black and white. I've noticed that so much of what I read in the Western press about Zimbabwe is negative. I think, 'Is this my country?' I think you would be very surprised by the truth of what is happening there."

This is not mainly a political band, like Thomas Mapfumo & Blacks Unlimited. Though the Bhundu Boys have a number of songs that deal with subjects like the plight of the poor and the ongoing struggles in southern

Africa, their tunes are just as likely to concern romance or incorporate old Shona morality tales. Whatever the subject, though, their music is relentlessly upbeat, particularly in live performance—they invariably get a crowd up and dancing. Biggie Tembo wouldn't have it any other way. "We're happy when we play," he says simply. "It's fun to see people dancing to our music."

Still, Tembo has a nagging frustration: "I'm a bit disappointed because I'd like to see black audiences coming to our shows. I feel we have a certain message in our music that could be a

morale booster to black people here. Maybe in time some will hear us. In America, we're just starting out now."

—FROM PAGE 177, CAMPER VAN BEETHOVEN
little faster if we'd been on our own label."

Herring's involvement was a limited partnership with the group. "I suppose some producers really get into messing with arrangements. But that was pretty much all our ballpark," says Lowery. "He had a few suggestions that we thought were pretty good. He had some bad suggestions that we wouldn't put up with. I think he did play an active role, in the sense of finishing songs.

"When you're a band and are self-producing, and you have somebody who's playing their part, they're really attached to it, and they want it to be loud in the mix [and think] that it's really an important part of the song. If you're not playing the part, you have a totally different perspective. To have an outside person for that was good. Dennis thought about the songs really well. He thought of the songs first and the parts second, which is what you'd expect from any producer."

If it seems that this is a band of happy, hippie campers who abide by a purely democratic band structure, Lowery dispels the myth. There is dissension in the ranks at times. "Whoever writes the songs usually wins an argument for that particular song," he asserts. "I spent the last eight years in this hippie mecca, trying to do things by consensus, to be democratic. It kind of works, but I just don't think a band is the place for it. Sometimes it works. It's rarely the case that I write a song where I have everybody's part written out. But to me, that's inherently anti-democratic. No one can play whatever they want, so to do everything by consensus would be a little weird. The instigator of a song usually has more of a vision of what a song should be."

It all started a mere three years ago, when UC Santa Cruz decided to set up musical camp and create something a little different. Lowery attests to the environment's influence on the group: "Just living in Santa Cruz and not in a big city where the supposedly cool music is played, right from the inception worked on our conception of what kind of music we should play. From the beginning, we had a funda-

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mentally different attitude about music and the music scene. That's why we stayed here."

If the band was vague about just what they wanted to sound like, they knew very well what they *didn't* want to be. "We were kind of a reaction to all these bands who were playing hardcore, punk rock. We were burned out on that. We wanted to do something different. We got all our friends together who played instruments. It ended up being a weird collection; my friend played violin, we had acoustic guitars played through amps and an electric bass. We were doing mellow hippie versions of these punk rock tunes. We'd play at parties where these other hardcore bands were playing. We'd get people hating us, but then they'd sing along to 'White Riot' and dance in a big circle."

Then the global influence sneaked in, although ethnomusicology was not the intent. "We started doing this fake ethnic music and surf tunes, and it started developing into a sound after a few months. We had all these great joke songs about people who were cool. People liked us to play at parties. We eventually got more serious and got more and more real songs and learned to play better. Eventually, we became this real band putting records out."

As the band's creative resolve was cemented, records came fast. *Telephone Free Landslide*, *Camper Van Beethoven II* and *III* and a self-titled LP were released in 1985 and '86 on their own Pitch-a-Tent label (distributed by Rough Trade), to generalized ecstasy in the media and cult band circles. Their approach was definitively erratic: from the ironic stuff of their early "hit," "Take the Skinheads Bowling" and "The Day That Lassie Went to the Moon," to more expansive "fake ethnic" rock constructions, ska vamps and crunchy guitar rockers. For the Campers, humor has never been very far from the surface. They satirize subtly by weaving crazy quilts of different styles, quoting familiar sources and doing twisted cover songs. Given that wacko quotient, the relative seriousness of the new album seems a bit of a departure.

"Yes," Lowery says, "but I still think there's a big difference between us and Sisters of Mercy or The Cure as far as seriousness and self-appreciation meters go. I think we're still sort of

clownish. One bad thing that's been put into music is that you have to be serious all the time, because that's supposed to be more real. It isn't more real at all. In your everyday life, walking around and hanging out with your friends, you're not earnest and sincere all the time. You joke around. You talk in metaphors. You're half-joking all the time. That's how you speak of the world.

"People ask, 'What gives here with this playing different styles of music?'" Lowery says. "I always point out the bands who have done that and it's been some of the biggest bands in

rock music, like the Kinks and The Beatles and Little Feat—well, they weren't that big—and the Mothers of Invention. And I get to Led Zeppelin, too, because Jimmy Page's whole concept was to mix soft acoustic with hard rock blues, and he ended up coming up with something else. Robert Plant was into this weird Arabic folk singing. They had some collision of styles.

"That's really what we're doing. Rock is really this mongrel, and that's how you make new sounds and keep it interesting. You bring in other things and make these little train wrecks." ■

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World Radio History

INTERNATIONAL · UPDATE

—CONTINUED FROM PAGE 92

At London's Mayfair Studios, The Bee Gees put the finishing touches on their upcoming album. Among the studio's recent purchases is a Mitsubishi X850 32-track machine... In other news out of London, The Tape Gallery announced their acquisition of two Direct-to-Disk digital multi-track recorders from New England Digital. The two recorders join The Tape Gallery's Synclavier, purchased from NED in 1986... Digital signal processing equipment manufacturer,

Applied Research & Technology of Rochester, NY, has appointed Hi-Phon as its Australian distributor... Toshiba/EMI's Terra Studio complex in Tokyo has installed FM 1000 power amplifiers from FM Acoustics for its main monitoring systems. Six of the Swiss-made FM 1000s are used in Terra's three studios... Powerplant Studio, located in Carlton, Victoria, Australia, has added a MIDI suite to its 24-track facility. The new studio includes an Atari 1040ST with Passport software, a Soundtracs PC MIDI 32 × 16 console and a range of keyboards and drum machines... Odyssey Studios in Lon-

don has become the third professional recording studio in the U.K. to purchase a UA 8000 console with The AMS Studio Computer (TASC)... AMS also reports that a Calrec M Series 36-channel desk was used for the Seoul Olympics this summer... Pete Townshend reports that he has ordered a 56/64-channel Focusrite console with Massenberg automation for December delivery to his Eel Pie Studios in Twickenham, England. The desk will be installed in a brand-new, large control suite of five adjacent interconnected rooms... London-based Eastlake Audio recently announced an agreement with Egrem, the Cuban State Music Publishing and Recording Organization, for the design and construction of a large, two-studio complex that will include two disc mastering rooms. The complex, located two miles from the center of Havana, is scheduled for completion in 1991. Other Eastlake projects in progress include Studio Syrland, a 24-track facility in Reykjavik, Iceland, and a 48-track digital room within the Sintonia studio complex in Madrid, Spain. ■

—FROM PAGE 98, THE SINATRAS

It had been five years since I had last seen Frank, and I never expected him to recognize me, but he walked right over to my drum booth and said, "Hi, Blainey." Frank owned Reprise Records and I had done the dates for Nancy as well as for many of his other artists, so he was aware of my work. Still, I was honored to get a personal greeting from the man of the hour. Then Frank said, "Let's make a record, Ernie." He sang his buns off, of course, and everyone played and sang their best ever. It was a very special night.

Every session with Frank Sinatra seemed to be a milestone in my studio career. He had a commanding presence and a magical energy that put the pressure on, but inspired like nothing else. I was called in for some of his biggest records, including his 1966 Grammy Record of the Year, "Strangers in the Night." For that date, I simply took the Phil Spector beat that had worked so well before and gave it a new twist for Frank. Bump, bump bump, bang!!

There were many more—"That's Life," "Something Stupid" (with Nancy)—but that first session was the "gasser," as Frank would say. I'll always treasure the Sinatra magic. ■

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“For me, ‘Tucker’ is a more refined version of what I did on ‘One for the Heart.’”

—FROM PAGE 79, TUCKER

cartoon effect. It's not unlike the premiere sequence [when the Tucker car is first shown to the public] where I used a comic squirt for the oil coming out of the car before it catches on fire. There's a *boink, boink, boink*. It's a ridiculous sound, nothing really sounds like that. We got it from a cartoon library.

I used a lot of those effects in *One from the Heart*. A lot of the stylistic preoccupations of *Tucker* go back to *One from the Heart*. For me, *Tucker* is a more refined version of what I

did on *One from the Heart*. The music wasn't as important [on *One from the Heart*], but in general the texture and the way the sound was treated was similar.

One from the Heart used a lot of exaggerated, on-the-edge-of-comedy, if not broad comedy, effects. A guy would sit down on an old couch and the spring would go *boinnnnnnng*. Preston Sturges did that in his comedy films in the '40s.

Eddie [in *Tucker*] is a comic character, if there's any in the movie, and to use these comic sounds in conjunc-

tion with him underscores his character and his point of view. He's the comic relief in the picture. So, in conjunction with him, I've taken the liberty of using these broader, goofball sounds, which are unnatural sounds.

Mix: Did you play off that comic relief from what you found in the script?

Beggs: I couldn't get any of that from reading the script. These things occurred to me while I was watching the picture. When I saw the first cuts I understood the style of the picture, what its antecedents were, and I realized that was a direction I could go in.

There's a slightly offbeat, quirky, American, if you will, aspect to this picture. There's a slight eccentricity to it. There's an innocence and naivete about this picture. And I approached the track from that point of view.

Mix: Did you and Francis discuss these comic elements in any detail?

Beggs: No. The one clue he gave me, and I think the only clue to what direction the track would take, occurred when he said, "It can be zany." ■

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

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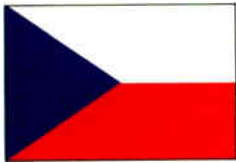
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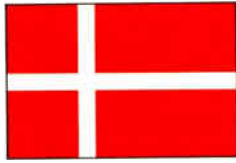
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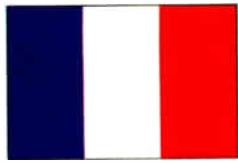
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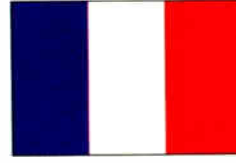
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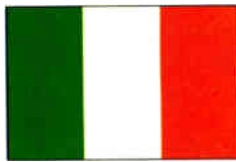
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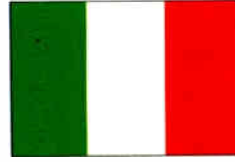
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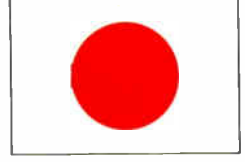
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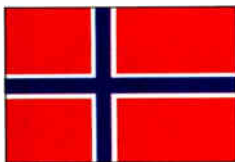
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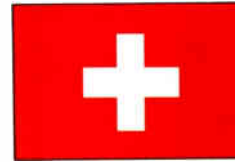
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and the subsequent legal maneuverings to stop its use raised the issue of what rights artists have when it comes to where and how their art is employed.

Classic Rock is the hottest radio format around right now, and it functions as the soundtrack for the encroaching middle age of the baby boomer generation. Yet numerous Y-persons, as Garry Trudeau has dubbed them, find it morally reprehensible that these songs also find their way into TV commercials. The same goes for a number of artists, who refuse to let their performances be used in that way.

Rosemary Rogers, along with her partner John Hill, have been pioneers at turning classics into commercials. "We Gotta Get Out of This Place" became U.S. Healthcare, "You Are the Sunshine of My Life" shilled for Minutemaid, "Groovin'" sold SoHo Sodas, "When a Man Loves a Woman" romanced Subarus, and on and on.

Rogers says that their company's success has been based on their ability to evoke the same emotions as the original recordings. But she maintains that there is no emotional ripoff involved as long as some thought goes into the pairing of song and product. A rationalization at best, but an understandable one in light of her point that if they didn't do it, someone else would. The jingle business is cutthroat, and keeping a client loyal is paramount.

She claims to have her personal boundaries. When Skoal chewing tobacco wanted to make Sam & Dave's "Soul Man" into "Skoal Man," she winced, but did it anyway. "The ethical problem for me wasn't so much bastardizing the song as it was misusing it in an improper context," she says. "If you have a strong commercial with a really good point of view and it draws on the emotions of the song, that's the right way to do it. If you try to force a song in a place where it doesn't work, and use it just because people are going to remember the song and associate it with the product, I think that's wrong." It became moot when the Skoal spot failed to reach the air.

Rogers says there are tunes that transcend commercial application. She wouldn't like to see such tunes linked to a product. John Lennon's "Imagine" and some Dylan songs come to her mind. But if a client

**When Skoal
chewing tobacco
wanted to make
Sam & Dave's "Soul
Man" into "Skoal
Man," Rosemary
Rogers winced, but
did it anyway.**

waved enough dead presidents at her? "Don't ask me that," she laughs. But in a more sober tone she adds, "I'd at least like to think that I wouldn't do it. In a perfect world I'd like to think we could say no, but you know what the real world is like. It's like the sampling issue. You have to keep monitoring yourself as you go along."

Mike Royko, the feisty columnist for the *Chicago Tribune*, noted in a recent column that there really isn't anything new about music that represents the epitome of a given time period being used in advertising. He pointed out that Beethoven, Mozart and Strauss have all been used to sell everything from car wax to cough medicine.

Artists rarely control their own fortunes to the extent that they can determine where their material winds up. Between publishers who own copyrights (and generally control administration), record labels and production companies that own the legal rights to masters, managers who include image and likeness and marketing clauses in contracts, and numerous other entities who have a piece of the pie, what really is left for the artists to control? In cases of older artists, primitive recordings from two or three decades ago can be cleaned up electronically and converted to digital formats and

sound better shilling for light beer on television than they did originally on the radio. Thus, thanks to technology, the pool of material available for this sort of use (or misuse) is tremendous.

Of course, artists have to make questionable deals in the beginning in order to get started on their careers. Deals can change as artists acquire more power and build their careers. But for the most part, any personal, ethical decision an artist makes can be hollowed out by the fact that implementing it is virtually impossible without the status of a Paul Simon or a Michael Jackson (who, ironically enough, owns the Beatles catalog that contains "Revolution").

In the end there is no final, ultimate answer to the shadowy and still evolving areas of ethics in music technology, I suppose. In both his "Discourse on the Inequalities of Men" and "Social Contract," Jean Rousseau maintained that the innately good nature of man was corrupted by, among other things, science. In spite of his paranoid persecution complex, Rousseau was fairly right-on about a lot of things. So if technology corrupts, what's the answer?

We're at the stage in music technology where the people who invent it and use it have some power to determine how it will be used. And given the speed with which it develops, and the fact that more powerful technology allows individuals working alone to produce more than ever before, I think that ethics will be an increasingly personal, individual choice, beyond the influence of guilds and professional organizations except to stamp with a semi-impotent imprimatur in retrospect. As your sequencer plays your keyboards, your computer plays your drums, your sampler provides you with sounds and your effects bring digital gymnasiums into your living room, the individual has more power and thus faces more choices than ever before. Think about that before you hit the "record" button next time. ■

Contributing editor Dan Daley is, ethically and morally speaking, reasonably well-adjusted, aside from an isolated and momentary lapse in judgment involving a tank of ether, a case of Rebel Yell bourbon, a German Shepherd and a girl who swore she was 18. All charges have been dropped.



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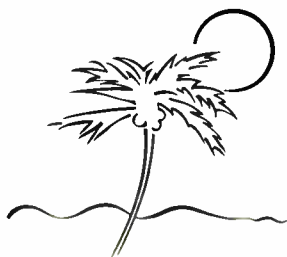
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by Philip De Lancie

AFTER THE COPY-CODE

RIAA ON DAT LIMBO

For years the Recording Industry Association of America (RIAA) has waged a vigorous campaign against home taping of copyrighted works. Initially the analog cassette was the RIAA's target culprit, and the group lobbied Congress for the imposition of levies on cassette recorders and blank cassettes to generate funds from which copyright holders would be "reimbursed" for revenues lost through unauthorized copying of their works. As news began to emerge of the development of consumer digital recording in the form of DAT, the RIAA shifted its attention to this new format, hoping that a "copy-code scanner" could be fitted on all DAT decks, which would disturb record functions when it sensed that the material it was recording was copy-coded.

Unfortunately, the copy-coding process, developed by CBS Laboratories and opposed by DAT machine manu-

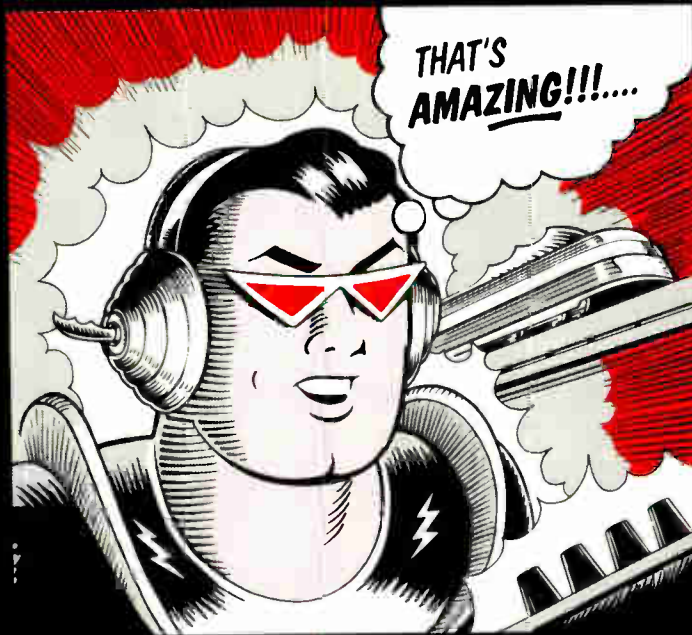


facturers (among others), involved the removal from the program of a narrow notch of mid-range frequencies. The RIAA asked Congress to mandate the inclusion of the scanner on all DAT recorders sold in the U.S., but controversy over the idea led Congress to direct the National Bureau of Standards to study the audibility and efficacy of the proposed system.

The NBS study, released in March, proved to be a crippling blow to the copy-code system, finding it flawed in several important respects (see "After-

RIAA VPs Hilary B. Rosen, government relations (top), Trish Heimers, public relations.

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Mix," June 1988). RIAA hopes for legislative action were crushed, and the organization seemed to be stripped of leverage to exert against DAT hardware manufacturers. Nevertheless, rumors floated for a time after the release of the report that some kind of mutually agreeable solution was in the offing, with hardware and label representatives likely to meet to iron out their differences. Months later, consumer DAT machines have yet to be officially imported (though some "gray market" units are available), but no talks have been held, and no dramatic announcements have been made. For the moment, competing interests are at an impasse, but it is clear that the situation cannot remain unresolved forever. To see what might be in store beyond this lull in the storm, I contacted the RIAA's Washington, DC, headquarters, and spoke with Patricia Heimers, vice president for public relations, and Hilary Rosen, vice president for governmental relations, who runs the organization's en-

gineering committee.

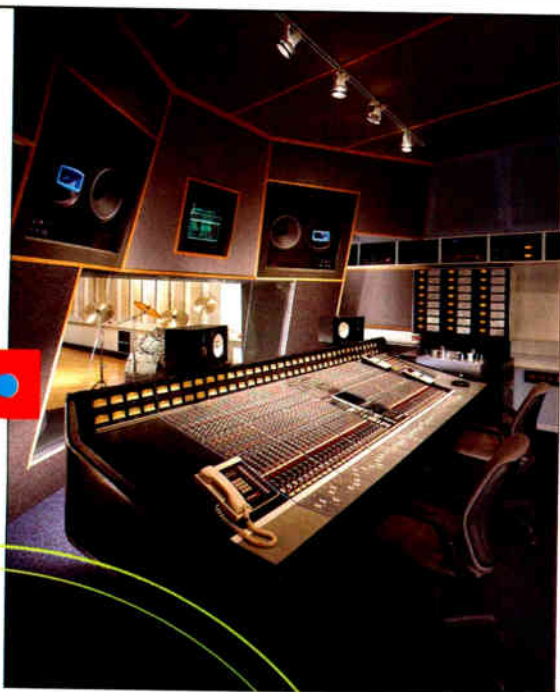
Mix: Just for the record, whose interests does the RIAA represent, and how is it organized?

Patricia Heimers: The RIAA is a trade association for U.S. record companies. At this time we have 45 member companies, which produce, market and distribute about 90% of the music that is sold in the U.S. These member companies pay dues to be in the organization, and we are governed by a board of directors that is made up of key executives from the membership. That board of directors determines our annual agenda—budget, projects, issues and problems that we are going to address. We address that agenda through a system of standing committees on aspects of the industry such as engineering, law, marketing, etc. The committees are made up of executives from those respective areas within the member companies. We also have nine anti-piracy investigators located throughout the country, and in our Washington headquarters we have about 25 people, the majority of

whom are support staff.

Mix: The DAT controversy is just one battle in an ongoing war by the RIAA and its allies against home taping of copyrighted recordings. How would you summarize the reasoning behind the RIAA's opposition to home taping?

Heimers: Home taping has been a problem for the industry since the introduction of analog cassette decks. Nobody anticipated that, and for many years it was not recognized as a problem, much less a threat to the industry. In 1983, the RIAA hired Alan Greenspan [now chairman of the Federal Reserve Board] to do a study on the effects of home taping on the legitimate recording industry. That study estimated that \$1.5 billion was lost annually to the practice of home taping, based on the assumption that one out of every three home-taped records would otherwise have been bought. This same study and further studies have found that the majority of home taping is not done by people who want a tape for their car or a party tape of something that they have already purchased. Rather, it is done by



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people who hear a record at a friend's house and borrow it to tape it. So, the problem is more that people are making tapes of music that they have not purchased.

This problem is more pervasive than just the loss of profits to the record companies. When music is taken out of the "royalty stream," everyone involved in the creative process loses. If you buy a record, all the artists, songwriters and musicians have made money. But if you loan me the record to make a copy, nobody makes any money off of that transaction except the people who make the blank tape. That is the problem that we are dealing with, and that is the basis for our crying "copyright infringement" every time someone makes a tape for their car.

This is a hard thing for the average consumer to understand. In today's society we have music everywhere: on hold, in restaurants, in supermarkets, elevators and dentist's offices. I think people have forgotten that there are people who make a living making that music, and those people deserve to get paid for their work. All they see are the Grammys and limousines and all the recording artists' quirky ways. Why should they care that a Bruce Springsteen is losing X amount of dollars every year because people are making copies of his music? But they have to realize that the average songwriter only makes about \$9,000 a year.

In addition, 85% of the records that are manufactured never make back the money that it cost to produce them. So it is Bruce Springsteen and Michael Jackson and Barbra Streisand (who are, by the way, most taped because they are the most popular) that are supporting the industry. It is the 15% of superstars that enable the record companies to invest in the new artists and alternative types of music. If, because of home taping, there is less revenue coming in from this small group of real money-makers, there is less money to invest in taking a chance on something new.

Mix: The negative NBS report on the CBS copy-code scanner was a big blow to the RIAA's anti-home-taping initiative. Does the RIAA accept the NBS conclusions? Is it safe to assume that the CBS approach is completely dead as far as the RIAA is concerned?

Heimers: We said before and during the NBS test that we would stand by whatever their decision was. We are doing that. The copy-code scanner is dead.

Mix: A lot of prominent artists and producers put their reputations on the line by endorsing the statements in favor of copy-code that were prepared and circulated by the RIAA. What kind of reaction have you gotten from those people since the NBS report? Is it likely to be more difficult in the future to round up celebrity support for RIAA efforts on this issue?

Heimers: We have gotten no negative reaction from anyone in the industry that supported us on our copy-code campaign, because we did what we did in good faith. All those who signed on to our work with the copy-code scanner believe in our campaign to protect intellectual property, to protect copyrights. That is the crux of the matter. I try to avoid speaking for others, but I feel that they believe we are working toward their protection. We all have the same goal in this: that our copyright laws must keep pace with our technology, or copyrights will mean nothing.

I think everyone would agree it is unfortunate that the NBS found copy-code to be inadequate, because we really believed that we had found a solution. I certainly hope that artists will not be reluctant to get involved in the future. I think that artists, songwriters, record companies and publishers—all those who view the industry from our angle and can see the necessity of compensation for intellectual property—realize that we are trying to work for the protection of copyrights. I feel they will be supportive if and when we come out with a "plan B."

Mix: As far as technically based solutions, what are the alternatives to the CBS system, how would they work and in what stage of development are they?

Hilary Rosen: As far as we are concerned, there are no specific alternatives to the copy-code system. What we have been doing all along, even while copy-code was being tested, is following up on leads and ideas, both within our companies and with the help of outside engineers, in a more theoretical way rather than in a technical development way. This includes alternative mechanisms for implementing a similar concept to copy-



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code. One of the gravest problems that we face is the difficulty of developing a unilateral system, one that does not depend on the cooperation of the hardware manufacturers. Since well before copy-code we have tried to encourage them to work with us to develop some sort of a system that would recognize the rights of the intellectual property owners. The manufacturers have consistently refused to participate in this process. And when you are up against the kind of rhetoric that has been generated around this issue, as well as the money that they have put behind their position, you are considerably hampered in your ability to develop alternatives in a standard, professional way.

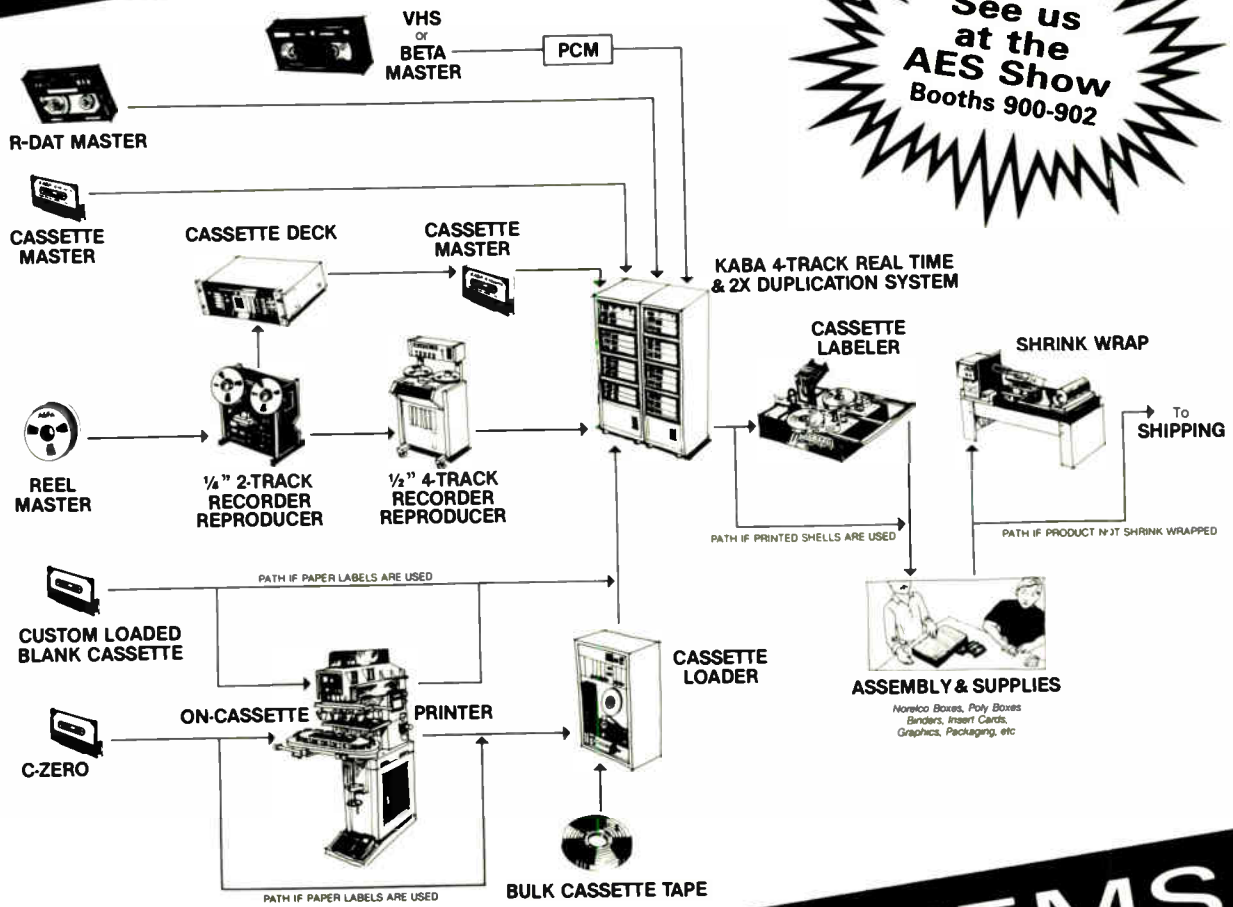
There is a system that was developed by Philips and offered to a couple of the hardware manufacturers that would not actually prevent copying but rather would limit it. It is called "solo copy." It doesn't stop taping of CDs. You could make unlimited numbers of first-generation copies from the original. However, it would prevent subsequent tape-to-tape copies. When the original copy is made, the DAT recorder would read a copyright flag on the CD, which most CDs have in their subcode already. The read mechanism in the recorder recognizes that flag and inserts its own flag onto the copy when the copy is made. When you go to record another copy from a first-generation copy, the recorder recognizes that flag and will not copy. Obviously, we have some major concerns about this solution. The first is that you can make unlimited first-generation copies. The second is that you can circumvent the solution easily by recording from the analog rather than the digital outputs. Nonetheless, it is one proposal that is out there.

We have considered lots of other solutions. There is the idea of two kinds of blank tape, one configured for recording copyrighted music and one for professional or non-infringing uses, with machines being able to record on only one kind of tape. We have considered a debit card system, where consumers could use a slot in the back of the machine to pay per copy recorded. We have considered putting personal identification numbers on the machines so that you

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could make copies only for your own machine from your own machine. The problem is that it is a waste of everyone's time and money to spend millions of dollars that the industry normally spends on producing music to come up with another system that they will simply shoot down because they don't want any solution. We need to see a strong enough signal of a willingness on the part of the manufacturers to consider the development of these various systems. They know and we know that unless their engineers are a part of the technical solution, they will never retool their machines to incorporate that solution. So there is really no purpose served by us trying to do it again by ourselves.

Mix: The idea of getting in on the ground floor of a new technology seems to have thrust the copy-code for DAT issue to the head of the RIAA priority list. But for years before DAT came along, the organization had been trying to get Congress to enact some kind of levy on the sale of cassette recorders and blank cassettes. With copy-code out of the picture, will the push for levy legislation be revived?

Rosen: We would not rule out a levy. The reason that the levy approach was defeated was not that people didn't think that it was the best solution. Many did. But the hardware manufacturers decided to spend millions of dollars to influence Congress against it, by saying that this was an additional tax on consumers. So, again, until there is some recognition of the problem, it is really futile for us to keep putting it out there. But we have continually said that we are open to considering a levy system as a compensation for limited copying. That is something that many other countries have implemented. We simply cannot fight Congress on our own, when we have not only the multibillion-dollar hardware industry financing an essentially unlimited campaign against us, but also a professional recording community that is unwilling to participate in a responsible solution. So we have no specific levy proposal on our legislative agenda right now.

Mix: If the climate for some kind of levy were to improve, how would the collection and distribution of funds work under RIAA proposals?

Rosen: There would probably be a fixed amount assessed per minute of tape, as well as a percentage of the wholesale cost of the equipment of the hardware itself. It would be fixed at the importers' level, not the retail level, so retailers and wholesalers would retain the flexibility to engage in price competition, rather than having a fixed amount put on the top of the retail sale. The funds would go into a central pool. There would be an agreement within the community of copyright holders to distribute a percentage to the musicians, the artists, the songwriters, the publishers and the record companies. Distribution would be based on a formula involving a combination of sales and airplay to determine as best as possible what is being played and bought so we will know what is being copied.

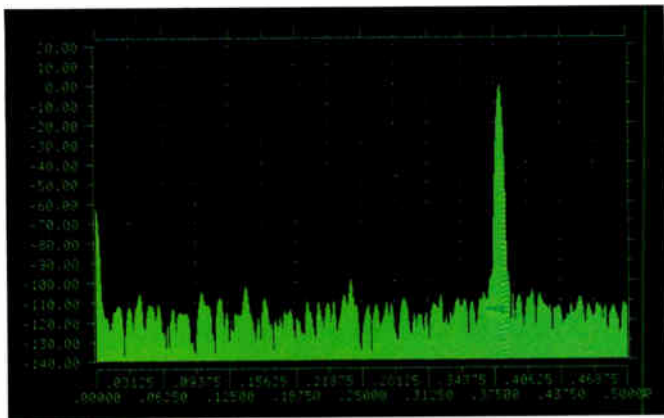
There was a formula agreed to at the time of the pending legislation four years ago that seemed to make everybody happy. That included 2% set aside to go into a fund for aspiring artists and writers, probably through the National Endowment for the Arts. We also had a percentage that would have been distributed in inverse proportion to sales and airplay so that new things on the charts and in the market would also have the opportunity to see some return. We also addressed concerns about imposition of a levy on those who use cassettes and recorders for non-infringing purposes. The royalty would only have applied to high-quality cassettes, those suitable for recording music, and the Copyright Office would have had the authority to make that determination. And there would have been a professional-use exemption, not only for musicians, but for libraries, for the blind and for lecturers. This was all factored into the legislation.

Mix: RIAA president Jay Berman was recently characterized in *Billboard* as being disappointed that the hardware manufacturers of the Electronics Industry Association of Japan (EIAJ) had not responded to efforts to reopen a dialog on the DAT issue. If EIAJ representatives were ready to sit down and listen to Mr. Berman today, what would he be proposing in this post-copy-code era that hasn't previously been presented?

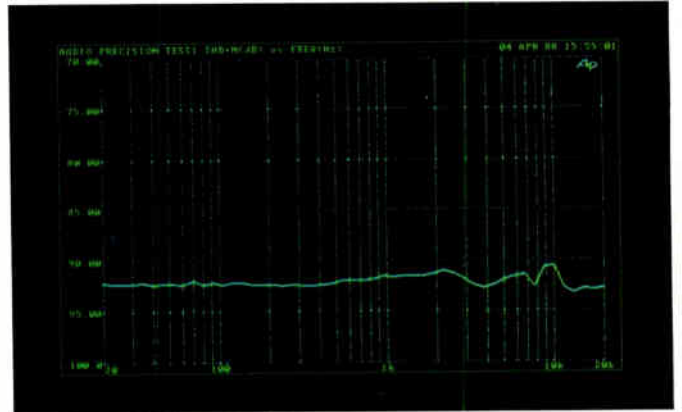
Rosen: The new element is that it would be the first time in almost nine

—CONTINUED ON PAGE 274

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—FROM PAGE 44, CONNECTIVITY

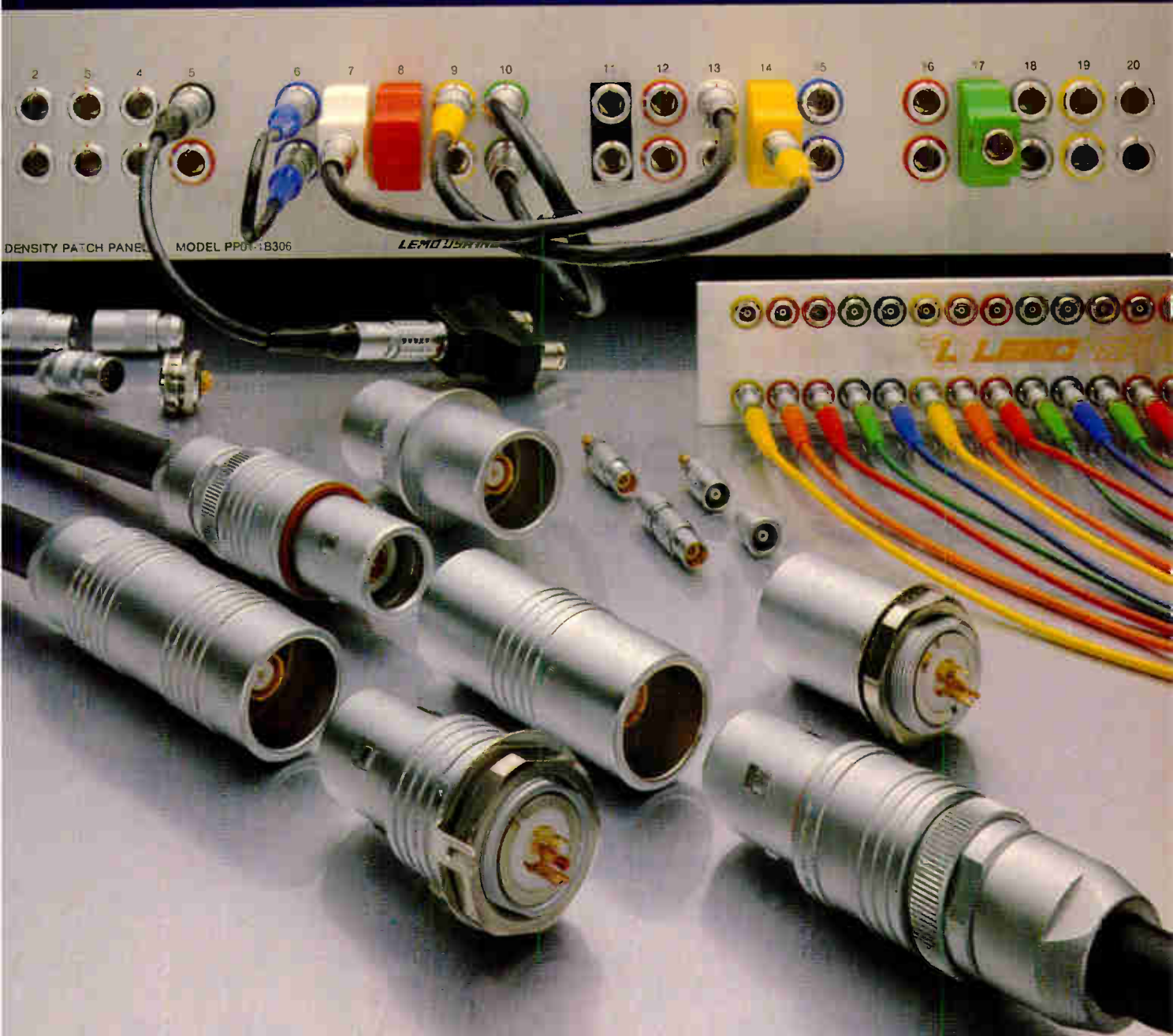
hind the mixer, because the outside engineer doesn't feel comfortable not personally handling the machine. This is easily accomplished by plugging the machine interface into the old outboard rack's pod location, and moving the central panel jumpers from the old machine location to this new one. In this manner the audio and transport remotes and synchronizer lines are transferred to this new location, and the outboard rack that was in the old location can be assigned to any other unused pod location. So, it is possible to relocate outboard, sampling keyboards or tape recorders to the ergonomic location that's best for the type of session coming in, with a minimum of fuss or downtime, be it a tracking date, overdub session or mixdown.

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Alesis Corporation • 3630 Holdrege
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LONDON:
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Letchworth, Hertfordshire SG62HR

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All new product information in the following directory was provided by manufacturers responding to our requests during earlier this year. Specifications and prices may change, so verify critical information with the companies directly. We do not take responsibility for the accuracy of the information supplied to us by these manufacturers.

Upgrading Directory Available

Subscription Guide, November 1988

Independent Single-Product, December 12, 1988

International Directory '88 and International Directory December 15, 1988

Music Production New Products January 15, 1989

TURN UP THE QUIET.



Tune out the noise. The professional HUSH 2000™ stereo, single-ended noise reduction unit is unlike anything you have heard before. The HUSH 2000 utilizes two dynamically controlled filters that allow only the desired signals to pass by, while the system's unique expander even clamps down on low-level noise like tape hiss. Variable control over cut-off frequency and filter release time ensure the integrity of the original signal. Simply, the HUSH 2000 has no competitors. Take H&SR magazine's word for it: "RSP Technologies has come up with

a winner in the HUSH 2000. This is high quality pro audio equipment with the flexibility to remedy a long list of noise problems." The HUSH 2000 is perfect for any instrument or effect, or for various tasks like cleaning up musical tracks and polishing motion picture sound. Transform your studio into a sea of tranquility—turn up the HUSH 2000.

RSP
Technologies

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ACOUSTICAL MATERIALS

1989

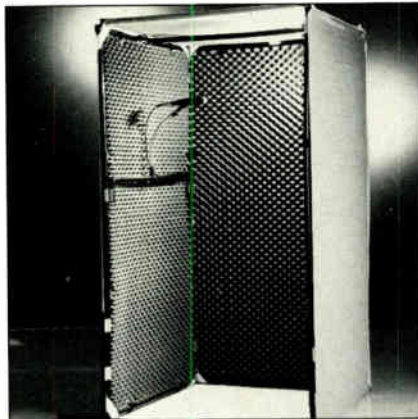
ALPHA AUDIO ACOUSTICS; 2049 W. Broad St.; Richmond, VA 23220; (804) 58-3852. Product Name: Sonex 1 Ceiling Tiles. Contact: Kathy Fitzgerald. Date Product Introduced: April 1988 Product Description & Applications: Sonex 1 Ceiling Tiles come in 2' x 2' panels. Made of an acoustical melamine material, it will come in three colors: charcoal, tan and white. It will also be available in five patterns. Will fit in a standard 2' x 2' ceiling grid. **Basic Specifications & Suggested List Price:** 2' x 2' tiles come 18 to a box. Coverage: 72 sq. ft. Available in three colors and five patterns. 1-5 boxes \$435 ea. 6-19 boxes \$395 ea. 19+ boxes \$358 ea. Material is UPS shippable.

ASC TUBE TRAPS; PO Box 1189; Eugene, OR 97440; (503) 343-9727; (800) ASC-TUBE; FAX: (503) 343-9245. Product Name: QSF™ Quick Sound Field. Contact: Art Noxon, president. Date Product Introduced: January 1988 Product Description & Applications: QSF acoustics capture the presence. Solo tracks spring to life in mixdown, grow immense when double-tracked and stay clean through time delay or reverb. QSF acoustic space is wide, even, dry and bright. Mic is intimate, usable off axis or omni. Two-mic stereo pan is smooth and clear. QSF, coherent diffusion with rapid decay, retrofits any room for recording, broadcast, voice-over, Foley or digital sampling. **Basic Specifications & Suggested List Price:** Acoustic sequence surface, broad-band absorption alternates specular reflection. 3' x 4' studio gobo \$375, voice booth kit at \$1,080 and sampling room retrofit at \$3,000. QSF sampling room specs decay rate: RT60 = 0.08 sec.; diffusion rate: 6dB spikes at 1,000 sec. coherent; dir/refl ratio: -6dB to +19dB; wall isolation: 40% open visual, STC -32dB acoustic.

ASC TUBE TRAPS; PO Box 1189; Eugene, OR 97440; (503) 343-9727; (800) ASC-TUBE; FAX: (503) 343-9245. Product Name: Musical Articulation Test Tape—MATT™. Contact: Art Noxon, president. Date Product Introduced: July 1988 Product Description & Applications: New cassette checks low-frequency and mid-range audio quality. Test the fast-tracking sound system between 20 and 800Hz. Excess sustain is instantly audible. It's a quick "ring-out" method for any system. Use with sound meter and chart recorder to get both the articulation level and the sound level frequency-response curves. Data converts directly into narrow band RT-60 curves. Invaluable voicing tool for recording, live or playback sound systems. **Basic Specifications & Suggested List Price:** MTF (modulated transfer function) class audio test, 8Hz burst rate overlaid on linear, slow sine sweep ramp from 20 to 800Hz peak and down again to 20Hz. The 20-minute tape has six test sequences one side, instructions on reverse side. Suggested retail \$29.95. Available at dealers.

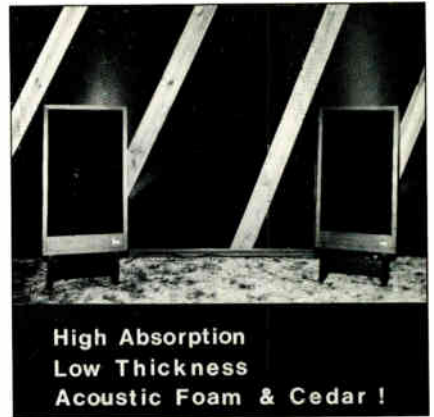
Applications: RPG Diffusor Systems announces a major advance in broad-bandwidth sound diffusion—the RPG Full-Spectrum Diffusor RPG has developed a design that combines low-frequency and mid/high-frequency components into a single structure. Mid-high diffusors are mounted into the low-frequency wells, which introduce quadratic phase perturbations that provide low-frequency diffusion while maintaining the mid-high polar response. Two recent installations are at Peter Gabriel's Real World Studios, Bath, UK, and INXS's Rhinoceros Studios, Sydney, Australia. **Basic Specifications & Suggested List Price:** The Full-Spectrum Diffusor is effective over a very wide bandwidth that depends on the depth available. RPG offers custom designs for each installation. The low-frequency diffusor is built on site by the client from custom plans, and the mid-high diffusors are manufactured at the factory. Pricing includes a \$2,000 design/license fee plus the cost of the mid-high frequency diffusors. As there are many choices, please call for quote.

SOUND ABSORBENT MATERIALS CO. INC.; PO Box 837; Westwood, NJ 07675; (201) 742-7078. Product Name: Wedge Tiles. Contact: John Lugano, VP sales. Date Product Introduced: January 6, 1988 Product Description & Applications: Wedge Tiles are high-performance, acoustical-treatment foam panels that are used in A/V studios, broadcast facilities, arenas, auditoriums or any environment where excess noise must be controlled. **Basic Specifications & Suggested List Price:** Wedge Tiles are 16" x 16" square; available in 2", 3" or 4" thicknesses; made of flame-retardant polyester foam (passes UL94 HF-1 test). Colors are charcoal, blue and beige; larger panels and custom colors upon request. NRC 2" \$.90 aver., NRC 3" \$1.00 aver., NRC 4" \$1.10 aver.



SOUNDFORMS - SOUND CONTROL SYSTEMS

SOUNDFORMS; 1128 Oceanic Dr.; Encinitas, CA 92024; (619) 753-4634. Product Name: Soundforms - Sound Control Systems. Contact: Lee Benelli, mktg. mgr. Date Product Introduced: January 1, 1988 Product Description & Applications: Lightweight, portable acoustic panels that set up in less than 90 seconds without needing tools. Each panel consists of a frame, 2" acoustic foam, color cover and travel bag. Modular design allows assembly of panels into free-standing sound booths, sound rooms or sound walls of any size or shape. Excellent for on-location or in-studio. Presently being used as vocal booths, sound isolation (gobos) and acoustic treatment for rooms in the music, film, video and broadcast industries. **Basic Specifications & Suggested List Price:** Four packages. Sound Wall \$359.95, Sound Booth \$449.95, Double Sound Booth \$719.95, Sound Room \$1,249.95. Individual panels can be purchased separately. Various accessory items are also available.



PRO-ACOUSTIC KIT

UNIVERSAL LOGIC RESEARCH; 70 Labrie; Laval, Quebec, H7N 3E8 Canada; (514) 687-7424. Product Name: Pro-Acoustic Kit. Contact: Sylvain Provost, plant mgr. Date Product Introduced: November 1988 AE; Product Description & Applications: Universal Logic Laboratories, after a few years of research, finally introduces the "Pro-Acoustic Kit" made of our specially formulated acoustic foam and natural cedar, to answer the request of broadcasting and recording industries for low thickness. It can fit anywhere. High absorption on the high frequencies, and a natural sound absorption curve that will not destroy an already professional acoustic room design, but just make a positive amelioration. It has a classic and neat look. Well, now you have it! Application: studios, conference rooms, offices, audiophile's show rooms, home listening rooms. **Basic Specifications & Suggested List Price:** Takes only a few minutes to install. Easy to fix with the back panel auto-adhesive tape included. Easy to cut with a simple pair of scissors. Available in five beautiful colors: blue, gray dark blue-purple yellow, brown. Pro-Acoustic Kit(A)—one panel of 6' x 8' \$45 U.S., Pro-Acoustic (B)—one panel of 6' x 8' plus three decorative boards 8' long \$58 U.S. Free transportation in USA and Canada, where UPS goes. (Hawaii, Alaska, Northwest Territory subject to extra charge.)



OZS, OPTIMUM ZONE SYSTEM

UNIVERSAL LOGIC RESEARCH; 70 Labrie; Laval, Quebec, H7N 3E8 Canada; (514) 687-7424. Product Name: OZS, Optimum Zone System. Contact: Sylvain Provost, plant mgr. Date Product Introduced: November 1988 AES Product Description & Applications: Universal Logic Research Laboratories is pleased to present to you the best way to record vocals and acoustic instruments. Optimum Zone System is an acoustic processor that is lightweight, affordable, easy to install and has a great look. OZS gives you the perfect zone of reverberation times, noise absorption, and diffraction of soundwaves and it eliminates slap echoes, harsh resonances and early reflections. The octagonal wall is made with 100 sq. ft. of specially formulated acoustic foam. With OZS you pick up the real soundwaves and you may discover your signal processing devices again! OZS is a professional instrument at the service of professionals! **Basic Specifications & Suggested List Price:** Optimum Zone System is 6' 7" in height and can be installed in two minutes. It is also very easy to store and requires only 29" x 29" x 5' of storage space. Price: under the price of your microphone, \$695 U.S. Free transportation in USA and Canada, where UPS goes. (Hawaii, Alaska, Northwest Territory subject to extra charge.) OZS is manufactured by ULR Laboratories and distributed exclusively to the recording industry by ULR.



RPG FULL-SPECTRUM DIFFUSOR™

RPG DIFFUSOR SYSTEMS; 12003 Wimbledon St.; Largo, MD 20772; (301) 249-5647. Product Name: RPG Full-Spectrum Diffusor™. Contact: Dr. Peter D'Antonio, president. Date Product Introduced: May 15, 1988 Product Description &

AMPLIFIERS

1989

ADA SIGNAL PROCESSORS, INC.; 7303D Edgewater Dr.; Oakland, CA 94621; (415) 632-1323. **Product Name: B200S Bipolar Stereo Power Amplifier.** **Date Product Introduced:** August 1, 1988 **Product Description & Applications:** Rack-mountable stereo power amplifier using bipolar transistor design, the B200S is the perfect complement to the MP-1 MIDI tube preamp. The bipolar transistor design requires no cooling fans and is a reliable power source for all applications. The B200S preserves the fidelity of the MP-1 MIDI tube preamp and sends all the harmonics, compression and distortion generated by the preamp to the speakers without affecting the phase of the signal. **Basic Specifications & Suggested List Price:** The B200S generates 200 watts of power (100 watts per channel into 8 ohms) or 340 watts into 4 ohms. The B200S is covered by a one-year parts and labor warranty.

BGW SYSTEMS, INC.; 13130 S. Yukon Ave.; Hawthorne, CA 90251-5042; (213) 973-8090. **Product Name: 750F & G.** **Contact:** Brian Wachner, president. **Date Product Introduced:** July 1988 **Product Description & Applications:** The BGW Models 750F and G represent the latest refinements in BGW's premium series. New features include high-performance, active balanced inputs with switchable subsonic filters and looping XLR connectors for each channel. Power output has been increased to 280 watts per channel into 8-ohm loads. The 750F and G are our most conservative amplifiers and are capable of operation into 2-ohm loads in stereo mode. The new 750s are suitable for quiet control rooms, live sound reinforcement and wherever continuous high-power operation is required.

BGW SYSTEMS, INC.; 13130 S. Yukon Ave.; Hawthorne, CA 90251-5042; (213) 973-8090. **Product Name: 7500T.** **Contact:** Brian Wachner, president. **Product Description & Applications:** The BGW Model 7500T is a cost-effective version of our popular 7500, for the price-sensitive buyer. The new 7500T delivers exactly the same performance as our legendary model for 30% less. The 7500T delivers 200 watts per channel into 8-ohm loads and is designed to accept a BGW XOVER 1 crossover card, which turns the 7500T into a cost-effective bi-amplifier. BGW's copper header output devices don't require bias current and are mounted directly to the massive extruded heat sinks. No fans are needed, making the 7500T ideal for quiet control rooms. **Basic Specifications & Suggested List Price:** THD: less than 0.1%, IMD: less than 0.05%, input sensitivity: 1.22 volts for rated output; damping factor: greater than 300:1; dimensions: 5 1/2" x 19" x 10 1/2" deep; weight: 36 lbs. net; small signal freq. response +0, -3dB, 3Hz-100kHz; power output: 200 watts per channel into 8 ohms, 250 watts per channel into 4 ohms.

BOULDER AMPLIFIERS, INC.; 4850 Sterling Dr.; Boulder, CO 80301; (303) 449-8220. **Product Name: Boulder 250/AE Power Amplifier.** **Contact:** Randy Gill, director of marketing. **Date Product Introduced:** December 1988 **Product Description & Applications:** The Boulder 250/AE offers the same sonic clarity as our 500 series power amplifiers, but with half the power output. Two stages of Deane Jensen discrete 990 amplifier circuits are used to yield extremely low harmonic distortion without transient distortion. Again, high output currents are possible, while our proven protection circuitry guarantees reliable professional duty. Precision balanced inputs are standard, along with a front panel LED that indicates voltage or current clipping. **Basic Specifications & Suggested List Price:** The Boulder 250/AE delivers continuous power of 250 watts mono or 75 watts stereo into 8 ohms, or 125 watts stereo into 4 ohms with THD of 0.015% up to 2kHz and 0.05% at 20kHz. Unweighted S/N of 115dB, 100kHz power bandwidth and greater than 20A peak currents are featured. Price \$1,795.

BOULDER AMPLIFIERS, INC.; 4850 Sterling Dr.; Boulder, CO 80301; (303) 449-8220. **Product Name: Boulder 500/AE Power Amplifier.** **Contact:** Randy Gill, director of marketing. **Date Product Introduced:** October 1988 **Product Description**

Boulder AMPLIFIERS USING JENSEN 990 TECHNOLOGY

BOULDER POWER AMPLIFIER

& Applications: The Boulder 500/AE offers the same sonic clarity as our Model 500 without the features of the front panel indicators and gain controls. This amplifier utilizes Deane Jensen discrete 990 amplifier circuits for extremely low harmonic distortion without transient distortion. Extremely high output currents are possible, while foolproof protection circuitry guarantees reliable professional duty. Precision balanced inputs are standard for high common mode rejection. Front panel LED indicates voltage or current clipping. **Basic Specifications & Suggested List Price:** The Boulder 500/AE delivers continuous power of 500 watts mono or 150 watts stereo into 8 ohms, or 250 watts stereo into 4 ohms with THD of 0.015% up to 2kHz and 0.05% at 20kHz. Unweighted S/N of 115dB, 100kHz power bandwidth and greater than 50A peak currents are featured. Price: \$2,795.

CARVIN CORP.; 1155 Industrial Ave.; Escondido, CA 92025; (619) 747-1710. **Product Name: FET 400/900.** **Contact:** Neal Taylor, sales mgr. **Product Description & Applications:** Both are rack-mountable MOSFET power amps with 400- and 900-watt power ratings. Ideal for hard-duty sound reinforcement applications with specifications compatible with critical hi-fi standards. **Basic Specifications & Suggested List Price:** Direct price on FET 400—\$449. Direct price on FET 900—\$599.

CELLO, LTD.; 315 Peck St., Bldg. 23; New Haven, CT 06513; (203) 865-1237. **Product Name: Encore Preamplifier.** **Contact:** J.B. Smith, customer service. **Date Product Introduced:** Summer 1988 **Product Description & Applications:** The Encore Preamplifier offers sonic performance and quality of construction equivalent to the premium audio suite. A 3.5" x 19" front plate features six traditional Cello knobs for input select, tape monitor, balance, phase and output level. External choke input power supply. The option package consists of six user-installable circuit boards: one pair provide balanced line inputs, one pair for balanced line output and another pair for buffered record output. **Basic Specifications & Suggested List Price:** Switchable phono section (MM, MC low gain, MC high gain); impedance settings: 47k ohms, 10k, 1k; 8 RCA line inputs; 2 RCA record outputs; 2 main outputs. Fischer 3-pin connectors are provided for the balanced line input and output option packages. Basic price: \$5,000; w/option package: \$5,700.

COMUTRONIX, INC.; 18627 Brookhurst, #305; Fountain Valley, CA 92708; (714) 963-7454. **Product Name: Powertronix FP-250.** **Contact:** Robert Gehlke, director of marketing. **Date Product Introduced:** April 1, 1988 **Product Description & Applications:** 250-watt, high reliability, 24VDC battery backup capability. Natural convection cooling (no fans). Features "cur-

rentclamp"; unit continues to operate, even with 1,000% overload of output circuit. **Basic Specifications & Suggested List Price:** Constructed in black, anodized aluminum chassis with stainless steel mounting hardware. 19" rack-mount or free-standing versions available. Suggested list price \$1,095.

ELECTRO FORCE CORP.; 727 Oakstone Way; Anaheim, CA 92806; (714) 774-3666. **Product Name: Electro Force, Portable Digital 450-SR-8 Power Amp.** **Contact:** Phillip Lindberg, president. **Date Product Introduced:** January 1988 **Product Description & Applications:** Our portable digital power amp model 450-SR-8 delivers 450 watts RMS in a very light and compact package, taking as much as 37 pounds out of a rack of equipment. This makes it ideal for DJs and musicians on tour. True pulse width modulated (PWM) MOSFET output stages allow for an operating efficiency of 90% compared to 30% to 50% for conventional amps. Cool operation and low power consumption are assured without noisy fans. **Basic Specifications & Suggested List Price:** Power output: 225 watts RMS/ch at 8 ohms; frequency response: 20Hz to 20kHz; distortion: 0.2% typical; noise level: 90dB below rated output; input impedance: 10k ohms balanced; input sensitivity: 1.0V RMS for full output; chassis size: 3.5"H x 19"W x 7.5"D; weight: 13 pounds; list price \$579.

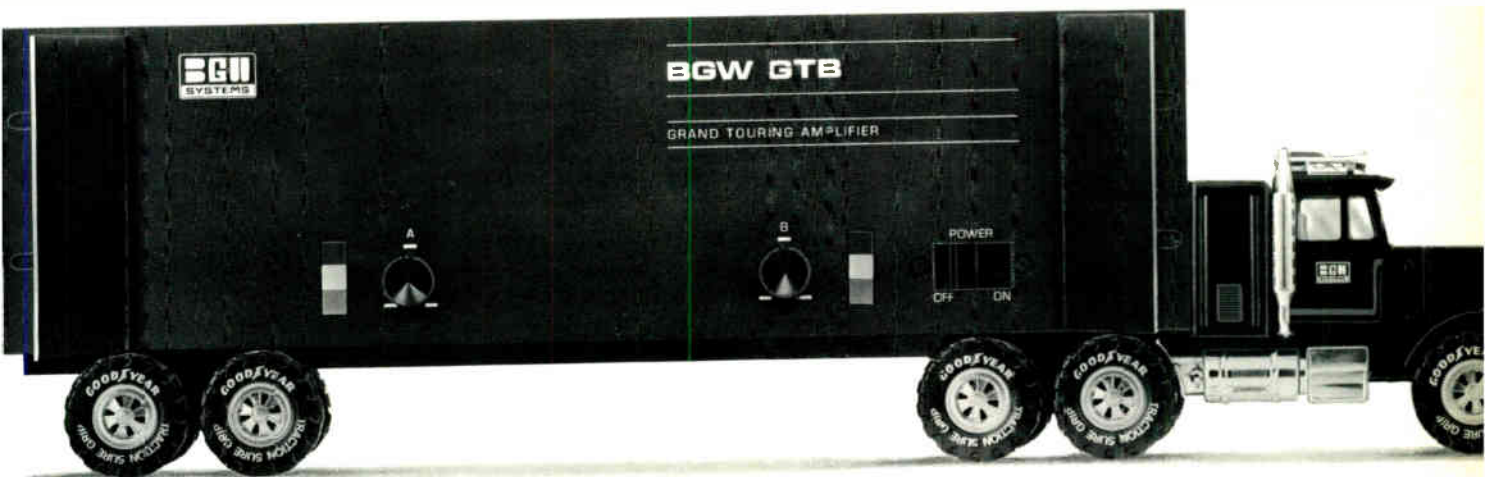
FURMAN SOUND, INC.; 30 Rich St.; Greenbrae, CA 94904; (415) 927-1225. **Product Name: HA-6 Headphone/Monitor Amplifier.** **Contact:** Joe Desmond, nat'l sales mgr. **Date Product Introduced:** June 1988 **Product Description & Applications:** The Furman HA-6 is an economical, versatile, 20-watt/channel stereo power amp ideal for applications like overdubbing, rehearsal, equipment demonstration, etc. In its headphone mode, it powers up to six pairs of headphones of any impedance, each with its own volume control. In monitor amp mode, it can power either or both of two sets of small monitor speakers, serving the purpose of both a headphone amp and a power amp at the cost of just one. Headphone Remote Stations (Model HR-2) are available as accessories. They clip onto any mic stand or bell, placing volume controls for 2 sets of headphones within easy reach. HR-2s may be daisy-chained together. **Basic Specifications & Suggested List Price:** Distortion: 0.01% THD at full rated power, 1kHz. Signal-to-noise: greater than 99dB below full rated power. Frequency response: +0, -1dB, 20Hz to 20kHz, 1 watt output. Power output: 20 watts per channel, either 4 or 8 ohms, stereo. **Suggested list price:** HA-6, \$399; HA-6B (XLR balanced inputs), \$419; HR-2, \$59.

GAINES AUDIO; 1237 E. Main St.; Rochester, NY 14609; (716) 266-0780. **Product Name: MP-2 Stereo Microphone Preamplifier.** **Contact:** Jon Gaines, owner. **Date Product Introduced:** June 1988 **Product Description & Applications:** Two-channel (stereo) microphone preamplifier featuring Jensen input transformers, 48V phantom power, phase reverse, mute switches, stereo LED bar-graph meters and a headphone amplifier, all in a standard single rackspace package. Applications include sampling, location recording and critical studio recording. **Basic Specifications & Suggested List Price:** Up to 70dB gain available per channel. Equivalent input noise: -129dBV. Maximum output level: +26dBV. Optional Jensen output transformers. List price: \$599.

LAKE PEOPLE; Rosgartenstr. 13; D 7750 Konstanz, West Germany; (D) 07531-24428. **Product Name: Phone Amp V6/HP.** **Contact:** Fried Reim, director. **Date Product Introduced:** April 1988 **Product Description & Applications:** The Phone Amp V6/HP is an extremely compact headphone amplifier. Thanks to the high internal voltage of 70VDC, it delivers more than 20 volts into loads greater than 200 ohms, so it can substitute for a stereo 100W amplifier. Up to 6 headphones may be connected and manipulated in five different ways. Clipping is indicated by an active driven LED. Electrical security is provided by a temperature controlled mains transformer. The amplifiers are short-circuit proof. Because of the built-in 3/4" thread, it may be easily mounted to a microphone stand. **Basic Specifications & Suggested List Price:** Input impedance: 10k unbal. Max gain: 28dB. Max output level: +28dB. Frequency response: 40Hz-30kHz. Distortion: below 0.25%. S/N: above 110dB. Size: 154W x 98H x 104D (mm). Mains: 115/220 VAC, 8W. Price: \$420.

MEYER SOUND LABORATORIES; 2832 San Pablo Ave.; Berkeley, CA 94702; (415) 486-1166. **Contact:** Mark Johnson, technical sales support mgr. **Date Product Introduced:** November 1988 **Product Description & Applications:** Meyer Sound Labs Inc. will display two new amplifiers, one 2-rackspace and one 3-rackspace. Each amplifier will accept Meyer processor boards for control of Meyer Sound Labs loudspeakers, or can be used as a stand-alone amplifier with standard Meyer processors. Each amp features output short indicators, Iso Inputs™, over-voltage indicators, voltage and current sense on each channel and a 4-range AC selector (100, 110, 220 and 240 volts). **Basic Specifications & Suggested List Price:** The 2-space amplifier is 300 watts/channel continuous (600 watts peak) into 4 ohms and the 3-rackspace is 600 watts/channel into 2 or 4 ohms, 500 watts/channel into 8 ohms.

No One Takes The Rigors Of The Road As Seriously As BGW.



It's true. Next to BGW Grand Touring Amplifiers, other so-called touring amps are just "tourists." Our Grand Touring Amps deliver the power, performance and features you need on the road. And they're built to keep on doing the job under conditions that send other amps packing.

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- Modular construction means fast, easy field service.
- 100% discrete circuitry (no IC's) with low feedback delivers superb sonic performance.

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- Crossover capability — two BGW cross-over cards can be mounted in our touring amps, safe from abuse.
- Large LED indicators maintain readability across the stage.

A touring amp with all these essentials, plus legendary BGW reliability and sonic integrity, will make our competition nervous — especially since the **GTB** costs no more than their "comparable" amps. Too bad for them. But peace of mind for you, when you go with BGW Grand Touring Amplifiers.

You know a professional tour is no place for "tourists." (And neither is a fixed-location amp rack, right?) So call BGW Systems toll free at **1-800-468-AMPS** (in USA and Canada) to arrange a demo of our new "workhorse" model **GTB** or the "2.4 Horsepower" model **GTA**.



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Capture the presence. Solo track springs to life in mixdown, they grow immense if double tracked and stay clean through time delay and reverb. QSF blends coherent diffusion with rapid decay. Acoustic space is wide and even, dry yet bright. The two mike stereo pan stays smooth and clear, even off axis and omni. Mike is intimate and usable. QSF systems for any room. TUBETRAP™ retrofit recording, broadcast and digital sampling rooms.

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NEW PRODUCTS

AMPLIFIERS

—CONTINUED FROM PREVIOUS PAGE

NIH LABS (DISTRIBUTED BY INDUSTRIAL STRENGTH INDUSTRIES); 13042 E. Moore St.; Cerritos, CA 90701; (213) 921-2341. **Product Name: P700.** Contact: Bill Teipe. Date Product Introduced: October 1988 **Product Description & Applications:** Stereo 400-watt/channel power amp (4 ohms); 225-watt/channel at 8 ohms, fan cooled; XLR +4 balanced inputs, mono bridging; built-in, 2-way 18dB per octave crossover. **Basic Specifications & Suggested List Price:** \$699 factory-direct (\$1,300 list)

ORTOFON; 122 Dupont St.; Plainview, NY 11803; (516) 349-9180. **Product Name: Ortofon PPA600 Power Amplifier.** Contact: Steve Portocarrero, sales mgr. Date Product Introduced: June 1988 **Product Description & Applications:** Rugged, high-current, bridgeable power amplifier suitable for any demanding professional application, either in a studio or on the road. Variable-speed, high-volume whisper fan ensures proper cooling with low noise levels. Has balanced inputs and outputs, variable input attenuators and three parallel-wired input connectors for each channel (one XLR, two phone jack), making it easy to jumper one amplifier to another. **Basic Specifications & Suggested List Price:** Rated output: 225 watts per channel stereo/650 watts bridged mono into 8 ohms, 20 to 20,000Hz, less than 0.1% THD. Mono 4 ohms: 950 watts. Stereo 2 ohms: 600 watts/channel. Peak current: 40 amps. Freq. resp. +0, -3dB, 10 to 100,000Hz. Damping factor: greater than 250. Hum and noise below rated output: greater than 100dB. Dimensions: 19 x 13 x 4 1/4". Weight: 48 lbs. Price: \$2,000

QSC AUDIO PRODUCTS, INC.; 1926 Placentia Ave.; Costa Mesa, CA 92627; (714) 645-2540. **Product Name: Model 1100.** Contact: Greg McVeigh, director of mktg. Date Product Introduced: September 1988 **Product Description & Applications:** The Model 1100 is a single-space stereo amplifier. It features two headphone jacks on the front panel. Back panel input connectors are 1/4", barrier strip and XLR. Can be used for video post-production, home studio or reference monitor powering. **Basic Specifications & Suggested List Price:** 50 watts/side at 8 ohms; 65 watts/side at 4 ohms. Price: TBA.

SCHOEPS/POSTHORN RECORDINGS; 142 W. 26th St.; New York, NY 10001; (212) 242-3737. **Product Name: Microphone Preamp/In-M-S Matrix.** Contact: Jerry Bruck, president. Date Product Introduced: October 1988 **Product Description & Applications:** A portable, battery- or AC-operated 2-channel microphone preamplifier with 48V phantom powering for professional condenser microphones and a built-in Mid-Side matrix for use in either location recording or post-production signal processing. Switchable gain and filtering. Size is 2" x 4" x 5". Microphone inputs are RF filtered and use standard XLR connectors. Outputs are BNC connectors, easily adapted to RCA jacks. Overload and battery condition indicators are included. **Basic Specifications & Suggested List Price:** \$1,488 professional net. Microphone inputs have 48V phantom power, RF filters; XLR connectors (2). Line inputs (to M-S matrix) via BNC connectors (2). Line outputs from mic preamps or M-S matrix via BNC connectors (2). Microphone gain switchable 20/40dB, switchable filter at 125Hz, 6dB/oct., fixed filter at 25Hz, 18dB/oct., overload indicator, battery meter.

SHERWOOD SAX DESIGN; c/o The Mastering Lab; 6033 Hollywood Blvd.; Hollywood, CA 90028; (213) 466-8589. **Product Name: Thermionic 200.** Contact: Doug Sax. Date Product Introduced: June 1988 **Product Description & Applications:** Monaural all-tube monitor amplifier/200 watts RMS into 4/8/16 ohms. Ultra-reliable, high-resolution, low-fatigue amplification for critical studio monitoring applications. **Basic Specifications & Suggested List Price:** \$2,500 each (professional net price).

SOUNDCRAFTSMEN; 2200 S. Ritzley St.; Santa Ana, CA 92705; (714) 556-6191. **Product Name: 300X4 MOSFET Power Amplifier.** Contact: Roger Hagemeyer, sales mgr. Date Product Introduced: September 1, 1988 **Product Description & Applications:** Multi-channel, bridgeable power amp

allowing 2-, 3- or 4-channel operation. 2-channel operation for those applications where high power is required. Three channels for subwoofer/satellite loudspeaker systems and 4-channel loudspeaker systems allowing bi-amping. Also, many applications where more than one stereo amplifier is required. Features two multi-speed cooling fans and two completely independent power supplies and power transformers. Three-rackspace front panel. **Basic Specifications & Suggested List Price:** 210 watts per channel x 4 at 8 ohms, 20Hz-20kHz at less than 0.05% THD, 600 watts per channel x 2 at 8 ohms, 900 watts per channel at 4 ohms.

SOUNDTECH; 230 Lexington Dr.; Buffalo Grove, IL 60089; (312) 541-3520. **Product Name: "A" Series Power Amplifiers.** Contact: Bill Robinson, export sales mgr. Date Product Introduced: October 1988 **Product Description & Applications:** Series of three power amps: A300, A600 and A1000 delivering 150, 300 and 500 watts per side into 4 ohms respectively. Front panel features channel attenuators, power, normal and protect LED indicators plus stereo level LED ladder displays. Rear panels have stereo/mono bridge switch, ground lift, balanced XLR and unbalanced 1/4" phone jack inputs, banana/bare wire speaker outputs. **Basic Specifications & Suggested List Price:** A300: 150 watts per side into 4 ohms, 2 rackspaces. A600: 300 watts per side into 4 ohms, 3 rackspaces. A1000: 500 watts per side into 4 ohms, 3 rackspaces. All offer less than 0.01% THD. All models are available wired for export voltage applications.

SUNN; 1130 Columbia St.; Brea, CA 92621; (714) 990-0909. **Product Name: SPL 7250 Power Amp.** **Product Description & Applications:** 250 watts at 4 ohms, extremely reliable addition to the SPL 7000 larger amplifier. Used in portable and fixed applications. **Basic Specifications & Suggested List Price:** \$599

TANNOY NORTH AMERICA INC.; 300 Gage Ave., Unit #1; Kitchener, Ontario, N2M 2C8 Canada; (519) 745-1158; FAX: (519) 745-2364. **Product Name: Tannoy SR140.** Contact: Bill Calma. Date Product Introduced: AES/88 **Product Description & Applications:** With many amplifiers, top-rated sonic performance and power is unobtainable due to budget constraints. Now, with the SR140, you can take things one step at a time. The SR140 is a sophisticated high-current MOSFET amplifier with medium power, 150 watts RMS (8 ohms) and maximum sonic integrity. If your power considerations change and more is required, no problem. Buy one more SR140 and bridge them into mono, 500 watts/8 ohms, for the absolute best of both worlds. **Basic Specifications & Suggested List Price:** Price \$899 each. Power output 150 watts per channel at 8 ohms. Mono 500 watts at 8 ohms.

YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave.; Buena Park, CA 90622; (714) 522-9011. **Product Name: PC-Series Amplifiers.** Contact: Professional Audio Division. Date Product Introduced: June 1988 **Product Description & Applications:** The PC-Series power amplifiers from Yamaha are designed for demanding sound reinforcement and studio applications, yet deliver "audiophile"-quality performance. The amplifiers feature massive heat-sinks with sufficient capacity to allow convection cooling in most recording studio applications. Each PC-Series amplifier also features a thermostatically controlled cooling fan with front-panel operation indicator. The PC-Series also features dB-calibrated, detented, specially selected potentiometers for predictable and repeatable attenuator settings. Each amplifier is provided with knob security covers to prevent accidental changes of critical settings. All three amplifiers include a clip indicator that lights when output distortion on the corresponding channel exceeds 1%. **Basic Specifications & Suggested List Price:** The PC2602M (LCD metering version) and PC2602 feature 400 watts per channel into 4 ohms, or 260 watts per channel into 8 ohms and 800 watts in BTL-monaural configuration. The PC1602 features 240 watts per channel into 4 ohms, or 160 watts per channel into 8 ohms and 480 watts in BTL-monaural configuration. The PC-Series amplifiers have a frequency response of 10Hz to 50kHz, 1/1dB. The PC2602M/PC2602 have less than 0.007% THD, and the PC1602 has less than 0.005% THD. All are Underwriters Laboratories approved.

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AUTOMATION AND CONTROL SYSTEMS

1989



ZETA-REMOTE

ADAMS-SMITH; 34 Tower St.; Hudson, MA 01749; (508) 562-3801. Product Name: Zeta-Remote Autolocator/Controller. Contact: Harry E. Adams, vice president. Date Product Introduced: July 1988 Product Description & Applications: Zeta-Remote is a multi-transport autolocator/controller for the Zeta-Three audio-video-MIDI synchronizer. Used during sound editing, composing, track-building, scoring and mixing to control multiple tape transports plus MIDI devices. Important features: full control of four Zeta-Three synchronizers, 100-point autolocator using time code or bars/beats, enhanced operation of Zeta-Three, independent memory for storing 100 edits, powerful user-programmable function keys, touch-only autolocation, tempo map beeper, time code calculator, UNDO key. **Basic Specifications & Suggested List Price:** Zeta-Remote has two 20-character alphanumeric displays, keypad, display pointer keys, full transport controls. Small size, lightweight, full footprint rubber pad permits Zeta-Remote to be hand-held or set down on studio equipment. 30-foot super flexible cable connection to Zeta-Three can be extended to 120 feet.



MODEL 2600 A/V AUDIO-FOR-VIDEO EDITOR

ADAMS-SMITH; 34 Tower St.; Hudson, MA 01749; (508) 562-3801. Product Name: Model 2600 A/V Audio-for-Video Editor. Contact: Walter Hickman, product mgr. Date Product Introduced: Enhanced product, Fall 1988 Product Description & Applications: The 2600 A/V is a centralized audio workstation designed to provide precision audio editing capability in either the analog or digital domain. A number

of new and significant features have been added providing capabilities not available on any other system. The 2600 A/V now has the ability to select tracks automatically during a session and print out a track sheet, including full annotation of the edit. If auto track select is not desired, the system is designed to read the track selected, using the traditional transport remote. MIDI and triggered devices can now be controlled through the 2600 A/V, allowing easy integration into the edit session. **Basic Specifications & Suggested List Price:** 10-machine controller using synchronizers; waveform editing using C-Sound; extensive edit list capabilities using multiple lists; ultra-high-resolution color monitor display; powerful and easy-to-use function keys; sub-frame editing capability using analog transports; floppy and hard disk storage; operates in feet and frame standard for film use; easy to learn and use.

ALPHA AUDIO; 2049 W. Broad St.; Richmond, VA 23220; (804) 358-3852. Product Name: The Boss II Automated Audio Editor. Contact: Eric W. Johnson. Date Product Introduced: October 15, 1988 Product Description & Applications: Boss II is an automated audio editing system featuring simultaneous multiple protocol communication, edit point determination by internal audio sample/playback, multi-channel MIDI capabilities, internal hard disk, expanded GPI and track select capabilities. **Basic Specifications & Suggested List Price:** The specifications vary upon configuration.

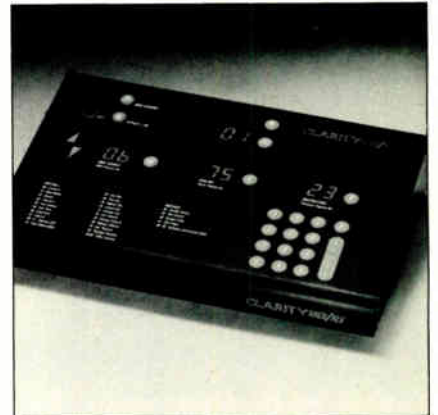
AMEK SYSTEMS AND CONTROLS LTD.; Amek/TAC US Operations; 10815 Burbank Blvd.; North Hollywood, CA 91601; (818) 508-9788. Product Name: Amek ESM32 Serial Interface. Contact: Sue Jones. Date Product Introduced: June 1988 Product Description & Applications: This new product from Amek is designed to work in conjunction with the BCII mixing console system for broadcast and post-production applications. It allows control interfacing from all major edit control systems via the ESAM I and ESAM II protocols. On its own, the BCII can provide parallel control interfaces to many systems, including Sony, ISC and CMX CASS 1. By adding the ESM32, the BCII will follow serial commands from Ampex, Paltex, CMX and other systems using ESAM I. Versions to operate with FOR-A and Grass Valley systems are now being developed. **Basic Specifications & Suggested List Price:** Price from \$4,000.

AUDIO KINETICS LTD; Kinetic Centre, Theobald St.; Borehamwood; Hertfordshire, WD6 4PJ U.K.; (01) 953-8118. Product Name: ES 1.11. Contact: Naomi Farrington, sales/mktg. administrator. Date Product Introduced: March 1988 Product Description & Applications: The ES 1.11 is a 1U rack-mounting synchronizer/generator/emulator that can be busied to form an EBus local area network of up to 256 machines. The EBus controller's capabilities define the number of controlled machines that can be accessed within a system. Two switchable EBus network ports are provided on each ES 1.11 supporting separate controller sites or allowing different configurations without re-cabling. The AK EBus single cable network also provides patch-free video reference and time code distribution over a total maximum local area network distance of up to 1.2km. **Basic Specifications & Suggested List Price:** Each ES 1.11 can work as a chase synchronizer, controlled synchronizer or emulator with VTRs, ATRs or film machines. Machine interface selection is automatic on plugging the appropriate cable (\$3,950 each). ES Eclipse is a 16-machine programmable edit controller with off-line facility (\$7,995). ES Penta is a 5-machine overdub controller optimized for audio studio work (\$3,200).

AUDIO KINETICS LTD; Kinetic Centre, Theobald St.; Borehamwood; Hertfordshire, WD6 4PJ U.K.; (01) 953-8118. Product Name: Reflex. Contact: Naomi Farrington, sales/mktg. administrator. Date Product Introduced: March 1988 Product Description & Applications: A centrally controlled fader, muting and auxiliary switching automation system retrofittable to audio mixing consoles without any mechanical modification. It can be fitted to any console yet provides flexible and comprehensive facilities. Up to 64 channels of automation with a high-resolution color graphics display. The system provides

level and mute automation, 3.5" MS-DOS format storage. Console snapshots may be stored for instant recall of console settings. Autolade, unlimited grouping MIDI facilities and up to 32 switch inputs and outputs per channel are available. **Basic Specifications & Suggested List Price:** Fader resolution is 1,024 steps and the system may be fitted to any audio or VCA taper faders. 64 fader movements may occur simultaneously with no delay. 0.5MB of RAM is used for mixing. Dedicated computer hardware optimizes reliability and speed for a fully professional system at low cost (\$12,200 up to 32 channels/\$13,195 up to 64 channels).

CIPHER DIGITAL; PO Box 170; Frederick, MD 21701, (301) 695-0200; (800) 331-9066. Product Name: Softouch-PC. Contact: Anthony R. Mattia. Date Product Introduced: Spring 1987 Product Description & Applications: Softouch-PC audio editing system is designed to use the power of the PC-type computer in audio editing applications. The Softouch-PC will control three Shadow II transport synchronizers to make a four-transport post-production editing system. **Basic Specifications & Suggested List Price:** The Softouch-PC system consists of a keyboard that can be used in-line with the computer keyboard and a printed circuit board that plugs into the computer. The Softouch-PC is covered by a 3-year warranty, list price \$2,195.



XLV

CLARITY; Nelson Lane; Garrison, NY 10524; (914) 424-4071. Product Name: XLV. Contact: Terry Tegarden, mktg. mgr. Date Product Introduced: Updated October 1988 Product Description & Applications: The Clarity XLV is the industry-standard effects automation interface. Using MIDI as the automation protocol, it allows control of all parameters of the Lexicon 224XL and 480L, AMS RMX 16 and Quantec QRS. With eight channels of MIDI to control voltage conversion, it allows automation of digital delay lines, VCA-based processors, analog synths and other devices. New software shown at AES will include, for the first time, MIDI control of the Quantec QRS. Also, Lexicon automation is now complete, with LARC faders and switches implemented. The AMS RMX 16 implementation has also been enhanced. **Basic Specifications & Suggested List Price:** MIDI inputs and outputs, RS-422 in and out for the Lexicon, and RS-232 outputs for the AMS and Quantec units. Eight control voltage outputs, 0 to +10 volts. Very complete MIDI implementation. Ability to scale MIDI data and send to any parameters of the processors. Scaling factors include full and inverse by percentage, keyboard rescale, trigger, log, antilog and others. LARC fader movements and switch depressions translated to MIDI for/from the LARC automation. Price: \$1,295.

CMX CORPORATION; 2230 Martin Ave., PO Box 58073; Santa Clara, CA 95052-8073; (408) 988-2000. Product Name: CASS-I new features. Contact: Dick Sirinsky, VP mktg., sales. Date Product Introduced: March 1988 Product Description & Applications: CMX Gismo control available from CASS-I. Also track select, arm up to 48 tracks on the record machine through software. New: control of the CMX P allows a broader range of video machine types to be controlled as the master from CASS.

J.L. COOPER ELECTRONICS; 1931 Pontius Ave.; West Los Angeles, CA 90025; (213) 473-8771. Product Name: MixMate. Contact: Bob Bentrup, sales mgr. Date Product Introduced: January 20, 1988 Product Description & Applications: J.L. Cooper has created the world's first reasonably priced, self-contained automated mixdown system for the 8-track studio or post-production facility. MixMate has eight faders and mutes, dbx™ VCAs, and can read and write all formats of SMPTE. MixMate can chase-lock a sequencer to tape while controlling a mix at the same time. It can also be set to slave to software packages such as Digidesign's Q Sheet. The Plus option allows an Atari ST or Macintosh to provide graphic

—CONTINUED ON NEXT PAGE

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display, expanded memory and disk storage. Basic Specifications & Suggested List Price: Fader and mute controls, reads and writes all formats of SMPTE. FSK and MIDI synchronization. Battery-backed internal memory. Eight high-quality 2155A dbx™ VCAs, VCA S/N: -86dB, THD+N: 0.022%; input impedance: 10k ohms; operating level: -10dBm; channel crosstalk: -90dB; attenuation: -81dB. Suggested retail price \$995, with Plus option an additional \$245.

J.L. COOPER ELECTRONICS; 1931 Pontius Ave.; West Los Angeles, CA 90025; (213) 473-8771. **Product Name: PPS-100.** Contact: Bob Bentrup, sales mgr. **Date Product Introduced:** October 15, 1988 **Product Description & Applications:** The PPS-100 is an inexpensive SMPTE event generator and SMPTE/MIDI synchronizer. The PPS-100 converts SMPTE to MIDI sync with song position pointer, with any number of tempo changes. The PPS-100 generates MTC (MIDI time code), DIN sync, and PPQN sync. Event generator applications include automated SFX drop-in and automated punch-in. Events may be programmed in real time or from the front panel. Optional software for the ST and Mac allows cue sheet entry of events. **Basic Specifications & Suggested List Price:** Time code input (all formats), time code output (all formats), two MIDI inputs, two MIDI outputs, two SMPTE-programmable isolated relay contact closures, two +5V pulse outputs with programmable on and off SMPTE times, DIN sync output, PPQN output, lithium battery-backed memory, single-height rack-mount. Suggested list \$595.

DIGITAL CREATIONS CORPORATION; 50 Werman Ct.; Plainview, NY 11803; (516) 756-9620. **Product Name: Diskmix moving faders upgrade.** Contact: Lee Pomerantz, sales mgr. **Date Product Introduced:** October 1988 **Product Description & Applications:** Digital Creations Corp. will exhibit an upgrade to Diskmix moving faders, its second-generation console automation system, at the November AES Show in Los Angeles. Faster system speed, higher data storage resolution and quicker user control are all a result of the new hardware upgrade to a 68000-based system processor and the just-released Diskmix 3.0 software. **Basic Specifications & Suggested List Price:** Moving faders may be installed into any console that has separate fader panels. No active components are used in the audio chain. The system is time code-driven and will store an unlimited number of mixes on hard disk. Touch-sensitive faders coupled with a menu-driven operating system provide quick and easy control. Complete off-line editing facilities including splice, merge, copy and level trim functions are provided. Please contact the factory for system pricing.

FOSTEX CORP. OF AMERICA; 15431 Blackburn Ave.; Norwalk, CA 90650; (213) 921-1112. **Product Name: 4012.** Contact: Mark Cohen. **Date Product Introduced:** October 1988 **Product Description & Applications:** Event controller with 999-event capability. Eight sets of relay contacts. A name can be assigned to each event. MIDI controllable. Serial port. **Basic Specifications & Suggested List Price:** TBA



DYAXIS MIDI INTERFACE

INTEGRATED MEDIA SYSTEMS; 1552 Laurel St.; San Carlos, CA 94070; (415) 592-8055. **Product Name: Dyaxis MIDI Interface.** Contact: Gerry Kearby, VP mktg. **Date Product**

Introduced: September 1, 1988 **Product Description & Applications:** The MIDI interface acts as a SMPTE-to-MIDI time code converter for the Dyaxis system's dedicated Apple Macintosh™ computer. SMPTE time code is converted into MIDI time code and fed to the Mac, which then reads MTC and controls the Dyaxis system for triggering time code edit decision-related events. Time code can also be generated by the MIDI interface and sent to a recorder for laying down a SMPTE track. Jam Sync mode locks SMPTE-out with SMPTE-in, allowing the user to clean up time code or convert field-generated sound to studio equipment. Two MIDI output ports are provided for increased system flexibility with synthesizers or MIDI-controlled effects and mixers. A switchable MIDI input allows MIDI instrument recording even when Dyaxis is not in use.

M&M RECORDING, INC. R&D; 54 W. Illiana St.; Orlando, FL 32806; (407) 422-6908. **Product Name: Fadermatron.** Contact: Martin Stafford, vice president. **Date Product Introduced:** July 1, 1988 **Product Description & Applications:** Automated mixing system consisting of custom-programmable fader arrays. All mixes can be saved to disk and the entire console (e.g., aux sends, etc.) can be stored for later recall. Fadermatron requires no tracks from your tape machine nor is any sequencer necessary to control it, so no MIDI headaches! At 140dB S/N ratio, the Fadermatron system is "sonar-quiet" (actually 40dB quieter than digital). Rack-mountable. Very user-friendly. **Basic Specifications & Suggested List Price:** Fader arrays available in banks of 10. 140dB S/N ratio with 72dB resolution. Infinitely cascaded faders. Up to 750 scenes are available with a 40-channel system. Patch bay can be custom fitted with either TT or 1/4" connectors. Rack-mountable. Very user-friendly. Reasonably priced.

PEAK AUDIO INCORPORATED; 3107 Bedlington Pl.; Holland, PA 18966; (215) 860-0303. **Product Name: DAT Controller.** Contact: Michael Sirkis. **Date Product Introduced:** Fall 1988 **Product Description & Applications:** Provides full remote control (manual and computer) and two status indicators for the Sony DTC-1000ES.

SOUNDMASTER INTERNATIONAL INC.; 59 St. Regis Crescent N.; Toronto, Ontario, M3J 1Y9 Canada; (416) 633-6288. **Product Name: Soundmaster Integrated Editing System Version 5.** Contact: Curt Smith, vice president. **Date Product Introduced:** April 1988 **Product Description & Applications:** Version 5 of the Soundmaster Integrated Audio Editing System incorporates Synco™, an exclusive programmable machine controller, and Smart Sync™, a patent-pending varispeed with constant offset capability. New features include SHUTL™, a programmable keyboard and shuttle control, disk-based user-programmable sequence keys, shuttle GOTOs on capable machines, ESBUS interfaces, video EDL download, time code synthesis, feet/frame data entry and conversion, up to eight machines on one screen, edit list comments and powerful set-up screen enhancements.

SOUNDTRACS PLC; 91 Ewell Rd.; Surbiton Surrey, KT6 6AH England; (01) 399-3392. **Product Name: Tracmix.** Contact: John Carroll. **Date Product Introduced:** July 1988. **Product Description & Applications:** Fader level automation for up to either 32 or 64 faders using VCA control. Tracmix is a stand-alone system operated from a handheld remote control. High-definition graphic displays are provided on a color monitor, and mix information is stored on 3.5" hard disk. Retrofittable to any Soundtracs mixing console with only minor modifications. **Basic Specifications & Suggested List Price:** Tracmix operates against SMPTE time code with 1/3 RD frame accuracy. 8-bit VCA circuitry with 0.4dB definition. Provides levels, mutes, grouping, master group

STEINBERG/JONES; 17700 Raymer St., Ste. 1002; Northridge, CA 91325; (818) 993-4091. **Product Name: Desktop Mixing DMP-7 (for Atari ST/Apple Macintosh).** Contact: Geoff Rylie, product specialist. **Date Product Introduced:** January 1988 **Product Description & Applications:** Desktop Mixing DMP-7 is real-time mixing automation software that allows the user to record mix changes and various types of parameter changes while synchronizing to SMPTE or MIDI time code. The program can control up to four DMP-7 mixing consoles simultaneously, offering 32 channels of true automation. Parameters may be grouped together in any number and moved simultaneously either positively or negatively. Therefore, by moving one fader you could fade-in one channel while fading out another. The program also includes a "Cue List" where the user can program patch changes, sound EFX cues, etc. **Basic Specifications & Suggested List Price:** Requires Atari ST w/min. 1MB in RAM and TOS in ROM; at least one Yamaha DMP-7 (up to four may be used); hard disk recommended but not required. Also available for Macintosh computers (MIDI interface required). Suggested retail price \$590 U.S.

TASCAM; 7733 Telegraph Rd.; Montebello, CA 90640; (213) 726-0303. **Product Name: MIDIZER.** Contact: Ken Hirata, mktg. comm. mgr. **Date Product Introduced:** June 1988 **NAMM Product Description & Applications:** Time code-based synchronizer, allows tape transport synchronization along with MIDI-to-time code synchronization capability (virtual tracks). Auto rehearse auto punch-in/out MIDI dump, tempo mapping; auto calibration used for control and synchronization in

virtually any music production application. Basic Specifications & Suggested List Price: \$1995. All standard time code formats 24, 25, 30 and DF FPS; wide band T.C. readers 1/2 to 100 times, 1 MIDI in, 3 MIDI out



LYNX KEYBOARD CONTROL UNIT

TIMELINE INC., 270 Lafayette St., New York, NY 10012; (212) 431-0330; FAX: (212) 966-7824. **Product Name: Lynx Keyboard Control Unit.** Contact: Fred Ridder, product mgr. Date Product Introduced: November 1987. **Product Description & Applications:** The Lynx Keyboard Control Unit is a compact, multi-machine editing controller tailored for audio post-production. Originally designed for use with the Lynx System Supervisor and Lynx Time Code Modules in a full Lynx post-production system, a new stand-alone version of the KCU provides direct control of up to six tape machines or film chains via Lynx modules. All controls are functionally grouped and intelligently programmed for convenience and ease of operation, while the fluorescent alphanumeric display provides a maximum of useful information. **Basic Specifications & Suggested List Price:** Jog/Shuttle wheel for precise transport positioning. Time codes may be captured, calculated or manually entered for flexibility. Convenient trimming of all numeric data. Automatic transport offset calculation via Sync-Points. User-programmable Function Macros. 2-row by 40-character fluorescent alphanumeric display. Two built-in GPI closures, one useable in ADR mode.

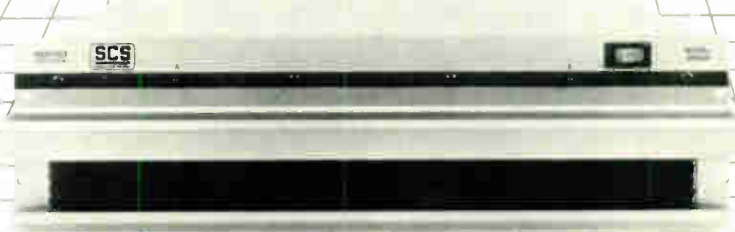
TIMELINE INC., 270 Lafayette St., New York, NY 10012; (212) 431-0330; FAX: (212) 966-7824. **Product Name: Lynx Post Production System.** Contact: Fred Ridder, product mgr. Date Product Introduced: October 1988. **Product Description & Applications:** The Lynx Post Production System is a modular system for integrated control of a wide variety of tape machines and other devices used in audio post-production. Uses Lynx Keyboard Control Unit as operator interface and Lynx System Supervisor to handle communications and system-level functions. Operates serial- or parallel-control ATRs and VTRs through Lynx Time Code Modules and sprocketed film transports through Lynx Film Modules. Provides time code generators to control code-driven devices and GPI closures for event triggering (starting cart machines, turntables, etc.) and dialog beep functions. MIDI interface will be available as an option. **Basic Specifications & Suggested List Price:** System operation from one or two control panels. Four device-control serial ports, each can be configured for direct serial transport control or control of up to eight Lynx modules. Three independent time code generators to control code-driven devices and systems. Eight GPI closures for event triggering. Multiple system timing references available, including variable speed. Comprehensive serial system diagnostics.

TIMELINE INC., 270 Lafayette St., New York, NY 10012; (212) 431-0330; FAX: (212) 966-7824. **Product Name: Lynx System Supervisor.** Contact: Fred Ridder, product mgr. Date Product Introduced: October 1988. **Product Description & Applications:** The Lynx System Supervisor was designed to be the central communications unit in the Lynx Post Production System, but is actually an extremely flexible control and communications framework that provides a unified means of controlling tape machines and other devices used in the audio post-production environment. The use of a single, generalized serial protocol based on ESBUS; simplifies the control of diverse devices. System developers can use the System Supervisor to handle many of the real-time details of multi-machine control, and avoid device-specific command and control protocols. **Basic Specifications & Suggested List Price:** Two serial controller ports allow control from one or two operator control devices. Four device-control serial ports; each can be configured for direct serial transport control or control of up to eight Lynx Time Code Modules or Lynx Film Modules. Three independent time code generators to control code-driven devices and systems. Eight GPI closures for event triggering. Multiple system timing references available. Extensive serial system diagnostics. Hardware expansion slots for future system development.



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NEW PRODUCTS

COMPUTER HARDWARE AND SOFTWARE

1989

AD LIB INC.; 50 Staniford St., Ste. 800; Boston, MA 02114; (800) 463-2686. **Product Name: Visual Composer/MIDI Supplement.** Contact: Louis Moreau, sales/mktg. dir. **Date Product Introduced:** July 1988. **Product Description & Applications:** With this software you can combine the flexibility of the Ad Lib Visual Composer with the convenience and power of the industry standard, MIDI. The Visual Composer/MIDI supplement offers extensive sequencing and editing capabilities. Record and play back your polyphonic improvisations on 16 channels using the following features: split keyboard, looping, quantizing, pitch bend, velocity and program changes. **Basic Specifications & Suggested List Price:** Suggested list price \$49.95.

AD LIB INC.; 50 Staniford St., Ste. 800; Boston, MA 02114; (800) 463-2686. **Product Name: Ad Lib Personal Computer Music System.** Contact: Louis Moreau, sales/mktg. dir. **Date Product Introduced:** Updated July 1988. **Product Description & Applications:** The Ad Lib Personal Computer consists of an add-on synthesizer card and two software programs for IBM PCs and compatibles. Using FM synthesis it can simultaneously generate sounds of up to 11 instruments such as drums, pianos, strings and horns. Software titles include Juke Box, a songs selection program, and Visual Composer, a program that enables users with no prior musical knowledge to compose, play back and modify music compositions. **Basic Specifications & Suggested List Price:** Suggested list price \$245.

AMTEL SYSTEMS, INC.; 33 Main St., Ste. 303; Nashua, NH 03060; (603) 880-9011. **Product Name: TRANSform-1 Post-Production Management System.** Contact: Mark Wronski, gen. mgr. **Product Description & Applications:** List cleaning, list tracing, auto-assembly list optimization, audio ping pong, production logging, production directory, transfer reel log, stock footage library, electronic storyboard, EDL management, EDL format conversion, film videotape and audio edit list conforming, multi-user/multi-tasking. The main system features of TRANSform-1 enable you to use inexpensive editing controllers to produce on-line ready edit decision lists. **Basic Specifications & Suggested List Price:** Main computer 4MB. Operation environment: Xenix system V. Storage media: 5 1/4", 1.2MB, floppy disk drive; 5 1/4", 60MB Winchester disk drive. Physical: 19" W x 11" H x 16" D. Power: 110/120VAC, 60/50Hz, 1.0 amp. Expansion drive chassis: 8" CMX-compatible, 1.2MB floppy disk drive. Suggested list price \$16,995.

AMTEL SYSTEMS, INC.; 33 Main St., Ste. 303; Nashua, NH 03060; (603) 880-9011. **Product Name: TRANSform-LM List Management System.** Contact: Mark Wronski, gen. mgr. **Product Description & Applications:** List cleaning, list tracing, list merging, auto-assembly list optimization, list format conversion, film conform, built-in time code reader. The list manager adds sophisticated list management power to virtually any video editing controller. Users can generate compatible, on-line ready edit decision lists, regardless of the editing controller they may presently own. **Basic Specifications & Suggested List Price:** MS-DOS-based, single-user, single-tasking 8" floppy disk drive with 1.2MB capacity, 2-3 1/2" floppy disk drives with 720K capacity. Serial IF ports: 25-pin D connector. Monochrome composite video display output. Physical: 19" W x 5.25" H x 16" D. Power: 110/220VAC, 60/50Hz, 2.0 amp. Suggested list \$4,995.

BLANK SOFTWARE; 1477 Folsom St., San Francisco, CA 94103; (415) 863-9224. **Product Name: Alchemy.** Contact: Donny Blank, pres. **Date Product Introduced:** January 1988. **Product Description & Applications:** Alchemy is a universal 16-bit, stereo sample editing network for the Macintosh and supported sampling instruments. Based around an elegant and sophisticated waveform editor, Alchemy lets a user retrieve and edit mono and stereo sounds and store them in a universal library format. Alchemy also offers FFT analysis and resynthesis and a host of other digital signal processing func-



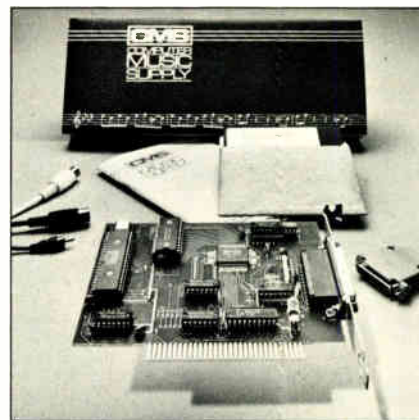
ALCHEMY

tions. Alchemy turns your Macintosh into a digital audio workstation that can control a full studio of sampling instruments. **Basic Specifications & Suggested List Price:** Multi-sampler networking capabilities, remote keyboard mapping, edit and create stereo samples, harmonic analysis and resynthesis, eight display memories, zoom options, multiple sample display, level scaling, stereo pan, loop display and editing, digital EQ, sample-rate conversion and more. Price \$495.

CMIDI; PO Box 4903; East Lansing, MI 48823; (517) 337-2569. **Product Name: CMIDI Function Library.** Contact: Greg Sopesi, electrical engineer. **Date Product Introduced:** August 1988. **Product Description & Applications:** The CMIDI Function Library is a set of over 50 functions designed for use in MIDI applications written in the C programming language. The library can manage up to 255 track pointers that, if desired, can each point to a different track of MIDI data. The library can also read and write MIDI data in several formats, including the standard MIDI file format. **Basic Specifications & Suggested List Price:** The CMIDI Function Library requires an IBM PC/XT/AT (or compatible), with a Roland MPU-401 (or compatible) interface and the Microsoft C or Quick C compiler. The library (118-page manual and three 5 1/4" disks) has a list price of \$99 and comes with a 30-day satisfaction guarantee. Source code and demonstration disk available.

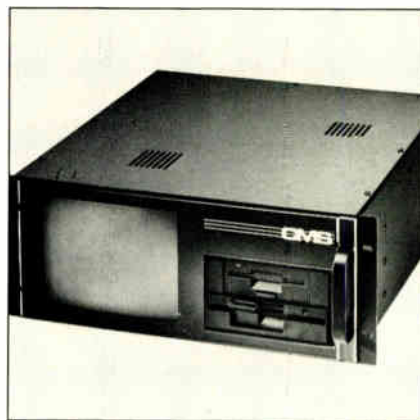
CODA MUSIC SOFTWARE; 1401 E. 79th St.; Bloomington, MN 55425; (612) 854-9554. **Product Name: Finale.** Contact: Customer Support. **Date Product Introduced:** September 15, 1988. **Product Description & Applications:** A music publishing environment for the Mac Plus, SE or II. Features note entry and playback, page layout and a transcription tool for entering notes via any MIDI-compatible instrument in real time. **Basic Specifications & Suggested List Price:** Any 1MB Macintosh, MIDI instrument, and any ImageWriter, LaserWriter or PostScript printer.

COMPUTER MUSIC SUPPLY; 382 N. Lemon Ave.; Walnut, CA 91789; (714) 594-5051. **Product Name: CMS-401 Interface Card w/Cakewalk 2.0 Sequencing Software.** Contact: Portus Barlow. **Date Product Introduced:** November 1987. **Product Description & Applications:** The CMS-401 provides an intelligent interface between IBM XT/ATs and MIDI devices with 100% industry-standard Roland MPU-401 compatibility. It handles all the timing, sorting and buffering of MIDI data, allowing the PC to run at maximum efficiency. Cakewalk is a powerful MIDI sequencing software for IBMs. It provides 256 tracks plus editing capabilities with ease of use. Cakewalk has



CMS-401 INTERFACE CARD W/CAKEWALK 2.0 SEQUENCING SOFTWARE

the best price-to-performance ratio in the industry. **Basic Specifications & Suggested List Price:** Package includes the CMS-401 interface card, Cakewalk sequencing software Version 2.0 and MIDI cables; one in, one out and metronome out. Suggested retail price is \$299.



CMS-USSIM

COMPUTER MUSIC SUPPLY; 382 N. Lemon Ave.; Walnut, CA 91789; (714) 594-5051. **Product Name: CMS-USSIM.** Contact: Portus Barlow. **Date Product Introduced:** November 1987. **Product Description & Applications:** The CMS-USSIM Systems include a line of PC-based computer systems with MIDI hardware and software housed in a 4-rack-space (7") enclosure meeting EIA standards. The CMS-USSIM (internal monitor) rack enclosure includes a 10MB XT M/B, one 3 1/2" and one 5 1/4" floppy drive, the CMS-401 MIDI interface board, Cakewalk sequencing software, high-resolution TTL video (9" screen), four additional slots for expansion and standard 84-key keyboard. The system is designed as a roadworthy industrial rack computer. **Basic Specifications & Suggested List Price:** The system also includes 640K high-speed RAM, printer and serial port, MIDI ports, floppy controller and high-resolution monochrome video controllers enclosed in an industry-standard, 19" rack. The suggested retail is \$1,399. All systems can be specially configured to your specifications.

CURRENT MUSIC TECHNOLOGY; 146 Paoli Pike; Malvern, PA 19355; (215) 647-9426. **Product Name: Mac 'N Rack Plus, Mac 'N Rack SE, Mac 'N Rack II.** Contact: Christopher Wurts. **Date Product Introduced:** June 1988. **NAMM Product Description & Applications:** The Mac 'N Rack computers are Apple Macintosh computers with internal hard disks, Opcode MIDI interfaces, Opcode SMPTE time code machines (optional), and other custom options in rack-mountable packages. They require no modification to their Apple components and are offered as new or retrofit. The are designed for the studio or performer who finds the Macintosh unfriendly in rack-mount environments. The Mac 'N Rack may be purchased with a variety of user-requested software and accessories. **Basic Specifications & Suggested List Price:** Apple Macintosh Plus, SE and II computers, Opcode MIDI and SMPTE hardware, user-specified software in a 19" rack-mountable package. Internal and external hard disks are offered as standard or as specified by the end user. Please call or write for specific information, or see Chris Wurts at the ARSonic Tonstudio Elektronik booth at AES.

DIGIDESIGN; 1360 Willow Rd., Ste. 101; Menlo Park, CA 94025; (415) 327-8811. Product Name: Creator™. Contact: John Atcheson, dir. sales/mktg. **Product Description & Applications:** Creator is an advanced sequencer for the Atari with much emphasis given to ease of use, power and flexibility. Features include multi-tasking, which, among other things, lets you load a sequence while another is playing; "Pseudo Events" recording, which allows you to record on-screen operations like tempo changes and mutes right along with your music; all quantizing is performed in real time, leaving your original data unaltered; an undo command; recording on over 1,000 tracks; simultaneous playback of up to 64 tracks; looping with up to 16 overdubs; and many more valuable features. Creator was developed by C-Lab Software of West Germany and is distributed in the U.S. and Canada by Digidesign. **Basic Specifications & Suggested List Price:** Suggested retail \$349. Runs on an Atari 520, 1040, or Mega ST; monochrome or color monitor.

DIGIDESIGN; 1360 Willow Rd., Ste. 101; Menlo Park, CA 94025; (415) 327-8811. Product Name: Notator™. Contact: John Atcheson, dir. sales/mktg. **Date Product Introduced:** July 1988. **Product Description & Applications:** Notator is fully integrated sequencing/notation software developed by C-Lab of West Germany and distributed by Digidesign in the U.S. and Canada. Notator allows the user to see the notes on the screen as they are being played. Features include: display of single tracks or whole 32-staff scores; allows the simultaneous display of all note values ranging from 1/1 to 1/64, including every type of triplet; complete flexibility in setting time signatures, key signatures, clefs and transpositions; prints out score in background while you continue to work with program; and many more valuable features. **Basic Specifications & Suggested List Price:** Suggested retail \$595. Runs on an Atari 520, 1040, or Mega ST; monochrome monitor required.

DIGIDESIGN; 1360 Willow Rd., Ste. 101; Menlo Park, CA 94025; (415) 327-8811. Product Name: Q-Sheet A/V™—SMPT/MIDI Automation Software for the Macintosh. Contact: John Atcheson, dir. sales/mktg. **Date Product Introduced:** June 1988. **Product Description & Applications:** Q-Sheet A/V is an enhanced version of the original Q-Sheet SMPT/MIDI automation software for the Macintosh computer. New features include the ability to import CMX format edit decision lists; track sheet (as well as cue list) printing; enhanced creation, capture and editing of cue list events; the ability to repeat events within fixed start and stop times; an Align Events function that allows start and stop alignment of multiple events; the ability to create cue lists without using a MIDI keyboard. Q-Sheet A/V also includes all of the features of the current Q-Sheet software. **Basic Specifications & Suggested List Price:** Requires a Macintosh with minimum 512K, 800K of disk space, a SMPT/MIDI time code converter and a MIDI interface. Suggested retail price \$995.

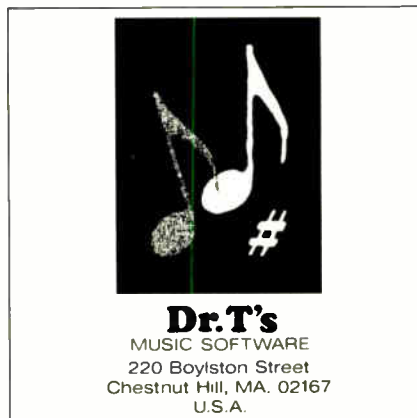
DIGIDESIGN; 1360 Willow Rd., Ste. 101; Menlo Park, CA 94025; (415) 327-8811. Product Name: Sound Accelerator™—Digital Signal Processing Card for the Mac. Contact: John Atcheson, dir. sales/mktg. **Date Product Introduced:** Fall 1988. **Product Description & Applications:** Available for the Mac II and Mac SE, the Sound Accelerator is intended to significantly enhance the Macintosh as a sound editing and synthesis workstation. The Sound Accelerator provides CD-quality (high sample rate, 16-bit linear) playback of individual sounds directly from the Macintosh, and performs virtually any DSP application in real time. Currently capable of working in conjunction with Digidesign's Sound Designer™ and Soft-synth™ software, the Sound Accelerator provides the basis for a variety of future programs—from other developers as well as from Digidesign—requiring high-quality sound playback and other high-speed digital signal processing capabilities. **Basic Specifications & Suggested List Price:** Works with Macintosh II and SE. Requires appropriate software. Suggested retail \$1,295.

DIGIDESIGN; 1360 Willow Rd., Ste. 101; Menlo Park, CA 94025; (415) 327-8811. Product Name: Sound Designer Universal™—Waveform Editing/Digital Signal Processing. Contact: John Atcheson, dir. sales/mktg. **Date Product Introduced:** July 1988. **Product Description & Applications:** Digidesign has combined their popular Sound Designer Universal sample editing software into one package now supporting over 30 samplers. Features include: crossfade looping; FFT-based frequency analysis; editing accuracy up to 1/50,000th of a second; a "digital mixer" which allows sounds to be mixed in any proportion, or merged to create hybrid sounds that crossfade into one another; a pencil tool that can be used to draw waveforms or repair flaws in sampled sounds. **Basic Specifications & Suggested List Price:** Works with Macintosh Plus, SE, II or Atari ST. Suggested retail: Macintosh version \$395, Atari ST version \$349.

DIGIDESIGN; 1360 Willow Rd., Ste. 101; Menlo Park, CA 94025; (415) 327-8811. Product Name: Turbosynth™—Modular Synthesis/Sample Processing Software. Con-

tact: John Atcheson, dir. sales/mktg. **Date Product Introduced:** June 1988. **Product Description & Applications:** Turbosynth is a graphically oriented modular synthesis and sample processing program that allows the user to create interesting sounds quickly and easily using icons on the Macintosh screen. Any number of either sampled or synthesized waveforms can be created, then either mixed or modulated to create complex sounds. In addition, a selection of ten different sound processing modules is provided for the user to add effects such as delay and waveshaping. Sounds created with Turbosynth can be transferred to any sampling keyboard for performance, and the program is compatible with Digidesign's Sound Accelerator card for the Mac II and Mac SE. **Basic Specifications & Suggested List Price:** Works with Macintosh Plus, SE, II. Requires a MIDI interface. Suggested retail \$349.

DISSIDENTS; 730 Dawes Ave.; Utica, NY 13502; (315) 797-0343. Product Name: SpeakerSim. Contact: Jim Fiore. **Date Product Introduced:** April 1988. **Product Description & Applications:** SpeakerSim is a loudspeaker system design tool. It analyzes driver/enclosure combinations in accordance with the popular Thiele-Small models, and may be used to help design new systems or to optimize existing systems. Plot small signal, maximum acoustic output, thermal limit or excursion limit. 3D-type graphs with parameter variation. Unlimited graph overlay. Save graphs in IFF format or dump to printers. Full color, mouse-driven and multi-tasking. Data files included. **Basic Specifications & Suggested List Price:** Runs on the Commodore Amiga 500/1000/2000 with at least 512K and one drive, Amiga DOS 1.2 or higher required. Color monitor preferred. U.S. retail \$112. Full-function demo available for \$15 (credited towards purchase).



Dr. T's

DR. T'S MUSIC SOFTWARE; 220 Boylston St., Ste. 206; Chestnut Hill, MA 02167; (617) 244-6954. Product Name: Level II. Contact: Oz Barron. **Date Product Introduced:** February 1, 1988. **Product Description & Applications:** A complete, full-featured sequencer with three modes of operation. Track mode is a powerful, easy-to-use, 48-track automated tape recorder. Song mode allows the user to chain sequences into songs. Sequences can be transposed, repeated, etc. Open mode allows the user complete control over all 126 sequences. Complete real-time and step-time editing of all MIDI data is supported. Also includes PVG and master editor, 16 additional screens of algorithmic and global editing commands. **Basic Specifications & Suggested List Price:** 48 tracks, 126 sequences, 16 songs, real-time Sys Ex record and play. Variable clock resolution up to 384 PPQ. Real-time display—minutes, seconds, 1/10. Song pointer send and receive. Multi-Finder compatible for Mac II, Plus and SE. Also available for Atari ST, Amiga and IBM (IBM in fall 1988).

DR. T'S MUSIC SOFTWARE; 220 Boylston St., Ste. 206; Chestnut Hill, MA 02167; (617) 244-6954. Product Name: The Phantom. Contact: Oz Barron. **Date Product Introduced:** July 18, 1988. **Product Description & Applications:** A SMPT reader/write program that runs as a module under Multi Program Environment (MPE) on the Atari ST. The Phantom reads and writes all four versions of true SMPT, as well as FSK and drum sync. In addition, The Phantom gives you an assignable MIDI output. No SMPT "box" is necessary, just the cable supplied with the program. The Phantom will soon be available on other computers. **Basic Specifications & Suggested List Price:** Reads and writes 24, 25, 30df; FSK; drum sync. Assignable MIDI out. Available on Atari ST. Price \$249, including cable.

DRUMWARE, INC.; 12077 Wilshire Blvd.; Los Angeles, CA 90025; (213) 478-3956. Product Name: Genwave. Date Product Introduced: April 1988. **Product Description & Applications:** Genwave is a generic waveform editor for Atari

1040ST and Mega computers. Features include high-resolution waveform display, drawing, visual looping and digital signal processing. DSP functions include digital enveloping with mouse, digital EQ, FFT analysis and "cut and paste" editing. **Basic Specifications & Suggested List Price:** Genwave supports Akai S900, E-mu Emax and SP-1200. SCI Prophet-2000/2002, Yamaha TX16W, Korg DSS/DSM, Roland S-550/330, Casio FZ-1, MIDI sample dump standard \$299.

EDUCATION SOFTWARE CONSULTANTS; 934 Forest Ave.; Oak Park, IL 60302; (312) 848-6677. Product Name: Basic Composer™. Contact: Dr. Leslie M. Golden, dir. of product distribution. **Date Product Introduced:** August 1988. **Product Description & Applications:** Extremely user-friendly way to compose music/musical exercises. For musicians, composers and students at all levels. Compose, play back, print out, transpose, write lyrics, edit, save and retrieve. Enter musical notation in any key signature, time signature, tempo and all five clefs. Slurs, simple/complex beams, repeats, playback with scrolling, cut/copy, reformat, write chords automatically, guitar fingerings, many other features. Complete insert, delete and replace capability. Crisp manuscript-quality printout. Endorsed by nationally known jazz, symphonic and education figures. **Basic Specifications & Suggested List Price:** IBM PC or compatible computer with 128K RAM, one or two floppy disk drives or hard disk drive. IBM or compatible or Hercules graphics adaptor. Dot matrix printer. \$59.95. Educator discount.

EDUDISC; 1400 Tyne Blvd.; Nashville, TN 37215; (615) 373-2506. Product Name: Mentor/MacVideo™. Contact: Lynda J. Moore, founder. **Date Product Introduced:** April 1988. **Product Description & Applications:** Videodisc training for Macintosh only. Mentor is used to name a topic; the course author then adds formats to present his/her material. MacVideo is used to name clips edited on videodisc (audio only, stills or motion). These edited clips are then added to Mentor to complete an interactive videodisc courseware display. **Basic Specifications & Suggested List Price:** Macintosh Plus SE or Mac II. Hard disk, monitor, videodisc player or records (14 models). Single copy \$595; site license depends whether K-12, higher ed. or corporate.



FEEL FACTORY

FILMSONIX/FUTURE LABS; 1032 N. Sycamore; Hollywood, CA 90038; (213) 653-0240. Product Name: Feel Factory. Contact: Kevin Kent, pres., Filmsonix. **Date Product Introduced:** June 1988. **Product Description & Applications:** The Feel Factory is the first MIDI "feel" composer. It superimposes a "human feel factor" into existing MIDI sequences or drum tracks. The hardware incorporates a Macintosh-to-MIDI converter as well as a SMPT reader/generator. For professionals and amateurs. The Feel Factory uses eight hardware sliders that are assigned to independent MIDI channels or notes. These allow you to manipulate MIDI timing information in real time using exclusive "feel factor" algorithms. You may program and save your algorithms too, giving you optimum ease of use and flexibility. **Basic Specifications & Suggested List Price:** Full MIDI compatibility for Macintosh/MIDI device. Use existing sequences. SMPT reader/generator: 24/25/30 and drop frame. Eight-fader design allows layering of algorithms, etc. 32-character LCD display. Preset algorithms allow for quick access to the most important feels. Eight user-programmable. Controls placement, frequency and randomization. List price \$695.

HYBRID ARTS INC.; 11920 W. Olympic Blvd.; Los Angeles, CA 90064; (213) 826-3777. Product Name: ADAP II (Direct to Hard Disk). Contact: Rainer Poertner, CEO. **Date Product Introduced:** October 1, 1988. **Product Description & Applications:** 16-bit direct-to-hard-disk digital recording and editing

COMPUTER HARDWARE AND SOFTWARE

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system. Overdubs up to 4 tracks on appropriate hard disks. Real-time 4 x 2 mixing and panning. Graphic non-destructive editing in multiple edit windows. Independent editing and time slipping of individual tracks. CD-ROM interface. Requires an Atari ST computer. **Basic Specifications & Suggested List Price:** AES/EBU digital interface, SMPTE sync box (master and slave), CD-ROM player, 4-channel I/O hardware. Price \$3,500.

INTELLIGENT MUSIC; 116 N. Lake Ave., Albany, NY 12206; (518) 434-4110. Product Name: Cartographer for the Atari ST. Contact: Laurie Anderson Bishop, mktg. Date Product Introduced: TBA September 1988. **Product Description & Applications:** Cartographer for the Atari ST offers easy-to-use graphic editing for The Mapper by Axxess, a MIDI system integrator which lets the user control an entire MIDI setup as if it were one instrument. Cartographer 1.0 is intended for Mapper users who already own Ataris. Cartographer 2.0, scheduled for release in November 1988, is a Mapper emulator. **Basic Specifications & Suggested List Price:** Requires an Atari 520ST, 1040ST or Mega ST and The Mapper by Axxess. Suggested list price \$100.

INTELLIGENT MUSIC; 116 N. Lake Ave., Albany, NY 12206; (518) 434-4110. Product Name: Jam Factory for the Macintosh. Contact: Laurie Anderson Bishop, mktg. Date Product Introduced: June 1988 (Version 1.32). **Product Description & Applications:** Jam Factory is a real-time, interactive composing and performing program. Four players "learn" from material you play on a MIDI keyboard and then improvise likely, intelligent variations on your material while responding to your controls. With Jam Factory, you can improvise, perform and compose while enhancing and introducing variation into your compositions. Jam Factory's features include MIDI file compatibility with other Macintosh music software. **Basic Specifications & Suggested List Price:** Requires a Macintosh 512K,

512KE, Plus, SE or II; MIDI keyboard and synthesizer. Suggested list price \$200.

INTELLIGENT MUSIC; 116 N. Lake Ave., Albany, NY 12206; (518) 434-4110. Product Name: M for the Atari ST. Contact: Laurie Anderson Bishop, mktg. Date Product Introduced: November 1987. **Product Description & Applications:** M is a real-time, interactive composing and performing program. M's graphic screen controls allow you to shape or change any aspect of your composition while hearing it. First, specify

notes and chords. Then determine how those notes will be transformed through rhythms, articulation, orchestration and other variables. Finally, perform your music, either by manipulating screen controls, playing control keys on a MIDI keyboard, moving the mouse in a conducting grid, or creating automatic performance processes. **Basic Specifications & Suggested List Price:** Requires either an Atari 520ST, 1040ST or Mega ST, and a MIDI synthesizer. \$200.

INTELLIGENT MUSIC; 116 N. Lake Ave., Albany, NY 12206; (518) 434-4110. Product Name: M for the Macintosh. Contact: Laurie Anderson Bishop, mktg. Date Product Introduced: June 1988 (Version 2.0). **Product Description & Applications:** M is a real-time, interactive composing and performing program. M's graphic screen controls allow you to shape or change any aspect of your composition while hearing it. First, specify notes and chords. Then determine how those notes will be transformed through rhythms, articulation, orchestration and other variables. Finally, perform your music, either by manipulating screen controls, playing control keys on a MIDI keyboard, moving the mouse in a conducting grid, or creating automatic performance processes. **Basic Specifications & Suggested List Price:** Requires either a Macintosh 512K, 512KE, Plus, SE or II, MIDI interface and MIDI synthesizers \$250.

INTELLIGENT MUSIC; 116 N. Lake Ave., Albany, NY 12206; (518) 434-4110. Product Name: MIDIDraw for the Atari ST. Contact: Laurie Anderson Bishop, mktg. Date Product Introduced: August 1988. **Product Description & Applications:** MIDIDraw for the Atari ST is a new program that lets you compose and perform music by drawing on the Atari screen. It is extremely easy to use and offers powerful features at the same time. Essentially, you draw in the screen and control the dynamics of the notes on one axis and the pitch on the other axis. A delay function allows you to create vibrant washes of sound while the recorder records what's been drawn for future playback. An interpreter function automatically creates

music by interpreting your drawing. **Basic Specifications & Suggested List Price:** Requires an Atari 520ST, 1040ST or Mega ST; MIDI synthesizer. Suggested list price \$95.

INTELLIGENT MUSIC; 116 N. Lake Ave., Albany, NY 12206; (518) 434-4110. Product Name: OvalTune for the Macintosh. Contact: Laurie Anderson Bishop, mktg. Date Product Introduced: October 1988. **Product Description & Applications:** OvalTune allows you to create audio-visual performances with your Macintosh by associating a wide variety of kaleidoscopic graphics with musical events. OvalTune's graphic capabilities allow you to take graphics from any Macintosh graphics program and transform them in synchronization with your music. OvalTune plays MIDI synthesizers and/or sampled sounds through the Macintosh speaker. OvalTune creates vibrant color graphics with a Mac II and can capture and replay music and graphics performances. **Basic Specifications & Suggested List Price:** Requires a Macintosh Plus, SE or II. MIDI interface and synthesizer are optional. Suggested list price \$145.

INTELLIGENT MUSIC; 116 N. Lake Ave., Albany, NY 12206; (518) 434-4110. Product Name: RealTime for the Atari ST. Contact: Laurie Anderson Bishop, mktg. Date Product Introduced: November 1988. **Product Description & Applications:** RealTime is a full-featured, interactive sequencer based on the rhythmic design principles of Intelligent Music's UpBeat. Sections of music, called "patterns," can be recorded over MIDI or painted using the mouse. Flexible graphic tools allow you to manipulate your patterns and generate automatic variations on your music. You can then link together your patterns into songs in whatever order you like. **Basic Specifications & Suggested List Price:** Requires an Atari 520ST, 1040ST, or Mega ST; MIDI synthesizer. Suggested list price TBA.

INTELLIGENT MUSIC; 116 N. Lake Ave., Albany, NY 12206; (518) 434-4110. Product Name: MidiDraw for the Atari ST. Contact: Laurie Anderson Bishop, mktg. Date Product Introduced: August 1988. **Product Description & Applications:** MidiDraw for the Atari ST is a new program that lets you compose and perform music by drawing on the Atari screen. It is extremely easy to use and offers powerful features at the same time. Essentially, you draw in the screen and control the dynamics of the notes on one axis and the pitch on the other axis. A delay function allows you to create vibrant washes of sound while the recorder records what's been drawn for future playback. An interpreter function automatically creates music by interpreting your drawing. **Basic Specifications & Suggested List Price:** Requires an Atari 520ST, 1040ST or Mega ST; MIDI synthesizer. Suggested list price \$95.

INTERNATIONAL AUDIO, INC.; 2934 Malmo; Arlington Heights, IL 60005; (312) 956-6030; (800) 448-8273. **Product Name: Preformatted Disks.** Contact: Bob Wozniak, mgr. software svcs. Date Product Introduced: February 1988. **Product Description & Applications:** Floppy and micro disks, preformatted and ready for use. Various formats available including IBM, Apple and Atari. Excellent for MIDI applications. **Basic Specifications & Suggested List Price:** Prices vary with formats and quantities. Please call for quotation.

LEONARDO SOFTWARE; 10378 Holman Ave.; Los Angeles, CA 90024; (213) 277-5161. **Product Name: Professional Librarian V2.91.** Contact: Dale Strumpell, president. Date Product Introduced: June 1988. **Product Description & Applications:** An IBM PC and compatible software program for computerized search and playback of CD sound effects and production libraries. A custom interface controls the Sony CDK-006 multiple CD player. A companion Sound Supervisor module provides simplified sound effects spotting and editing, cue printer for printing cue sheets; spot maker for organizing ADR sessions. **Basic Specifications & Suggested List Price:** Professional Librarian \$850, CDK-006 Interface \$500, Sound Supervisor \$500, Cataloging Print Module \$250, Presorted CD Library data \$100.

MARK OF THE UNICORN, INC.; 222 Third St.; Cambridge, MA 02142; (617) 576-2760. **Product Name: Performer Version 2.31.** Contact: John Mavraides. Date Product Introduced: May 1988. **Product Description & Applications:** Performer is an award-winning MIDI sequencer, editor and performance tool for Apple Macintosh computers. This software package provides multi-track recording, precise editing of all musical events and total control of your MIDI keyboards. Performer supports SMPTE synchronization, frame-time display and a markers feature that functions as a cue sheet for film and video production. Advanced features include "drum-machine style" record while looping, multiple meters within a sequence and programmable tempo changes. Music can be printed using Mark of the Unicorn's Professional Composer notation program. **Basic Specifications & Suggested List Price:** Suggested retail price for Performer is \$395.

MARK OF THE UNICORN, INC.; 222 Third St.; Cambridge, MA 02142; (617) 576-2760. **Product Name: Professional Composer 2.2.** Contact: John Mavraides. Date Product Introduced: January 1988. **Product Description & Applications:** Professional Composer is a music notation program for Apple Macintosh computers. Professional Composer lets you create scores up to 40 staves, enter and delete over 100 musical symbols, and group notes and phrases with beams, slurs, ties, measure lines and so on. Advanced features let you validate instrument ranges, transpose and extract parts, insert lyrics,

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- SONY 3324 Digital 24T, latest software \$60,000
- SPECIAL * MCI JH-556C, 48 channel, Plasma, JH50 Auto ... \$50,000

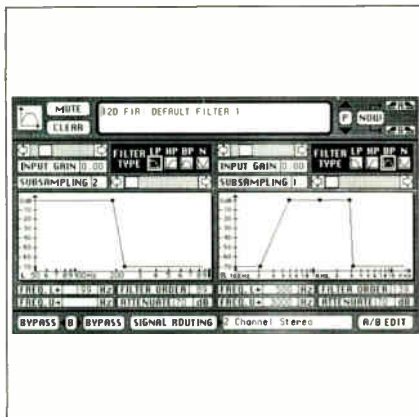


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change rhythm and merge voices. Professional Composer is compatible with Mark of the Unicorn's MIDI sequencer Performer. **Basic Specifications & Suggested List Price:** Suggested retail price for Professional Composer is \$495.



XLC

MARSHALL ELECTRONIC; PO Box 438; Brooklandville, MD 21022; (301) 484-2220. **Product Name:** XLC. Contact: Pirko Polso, PR. Date Product Introduced: August 8, 1988. **Product Description & Applications:** Marshall will be showing their new XLC Macintosh controller/librarian/compiler for the Quantec 32-bit XL digital signal processor, which completely changes the function of the XL, adding several new features and effects. All editing is done graphically on the Macintosh, with up to 30 effects simultaneously on screen. Libraries of past sessions can be automatically reloaded. Cut, copy and paste allow building of special libraries. All graphic control screens and libraries may be printed. **Basic Specifications & Suggested List Price:** Effects include reverb and room simulation with such features as air density, equalization of over 3200dB/octave(!!) with zero group delay error, special effects, graphic EQ, etc. 2X oversampled in, 4X oversampled out, 32-bit engine. Introductory price reduction for XL with hardware mods and XLC controller from \$13,000 to \$9,995 for AES.

MICRO TECHNOLOGY UNLIMITED; 156 Windchime Ct.; Raleigh, NC 27615; (919) 870-0344. **Product Name:** DS16/Mac II Interface. Contact: David Cox, pres. Date Product Introduced: August 31, 1988. **Product Description & Applications:** Interfaces Digisound-16 to Mac II computer for digitizing and playback to/from disk of sound files. Any sample rate up to 50,000 samples/second provided. Full 16-bit data used. All operations controlled from graphic/menu software supplied. Used for audio recording/playback, CD-I and CD-ROM mastering, speech and hearing research, psychoacoustic research. **Basic Specifications & Suggested List Price:** Complete interface for Digisound-16. A/D and D/A, 16-bit 4K to 50K samples/second programmable. Sustain to disk up to available disk space in real time. Price \$800.

MIDISOFT; PO Box 1000; Bellevue, WA 98009; (206) 827-0750. **Product Name:** MIDISOFT® Studio Advanced Edition. Contact: Marsha Murry, VP mktg. Date Product Introduced: June 1988. **Product Description & Applications:** MIDISOFT Studio turns pro with the powerful, professional-level advanced edition. It retains all the features, ease of use and affordability of the standard edition and adds: 64 tracks, MIDI event editing, support for MIDI files, velocity scaling, automatic quantization, programmable tempo changes, MIDI Thru controls on main screen, system exclusive record/play. Also real-time volume, transpose and instrument changes for each track; individual track loading from song files, equivalent key-stroke commands, song multi-tasking. Now compatible with EZ Score for printing. **Basic Specifications & Suggested List Price:** Atari (540ST or 1040ST). IBM PC, XT or compatible with 640K RAM; IBM Music Feature card or Roland MPU or compatible; MS mouse or compatible (strongly suggested), and musical instrument with MIDI. Retail price \$149 (Atari), \$199 (IBM PC).

MUSIC SERVICE SOFTWARE; 801 Wheeler Rd.; Madison, WI 53704; (608) 241-5615. **Product Name:** S700/X7000 Librarian. Contact: Dean Richard, owner. Date Product Introduced: July 4, 1988. **Product Description & Applications:** The S700/X7000 Librarian is a software product for the Atari ST computer and the Akai S700 and X7000 samplers. It allows the user to store samples from the Akai on 3.5" disks by transferring them to the ST via MIDI, saving the user from having to buy more expensive quikdisks. It allows visual display of sample loop points and crossfading. **Basic Specifications & Suggested List Price:** The S700/X7000 Librarian (for Atari ST) retails for \$79.95. It is not copy protected.

NORTHSTAR PRODUCTIONS; 13716 SE Ramona; Portland, OR 97236; (503) 760-7777. **Product Name:** Sound Sample Disks for EII, Emax, EPS, Mirage, S900, S-50, EIII, DPX-1. Contact: Scott James Hybl. Date Product Introduced: Septem-

ber 1988. **Product Description & Applications:** New library for Emulator III and Ensoniq EPS samplers. Northstar's extensive library is now being transferred to a variety of samplers. Well-known for their ethnic and orchestral samples, Northstar also offers one of the widest collections of synthesizers. **Basic Specifications & Suggested List Price:** \$20 per disk for EII, Emax, EPS, Mirage, S900, S-50, DPX-1. \$100 per disk for EIII samples.

PARADIGM SOFTWARE PRODUCTS; 1369 Concord Pl., Ste. 3-B; Kalamazoo, MI 49008; (616) 372-5972. **Product Name:** Omni-Banker ST. Contact: Mark O'Bryan, pres. Date Product Introduced: December 1987. **Product Description & Applications:** "Universal" MIDI librarian, usable as a convenient desk accessory (or normal program) in concert with sequencer programs. Displays two banks of 32 named patches and zooms for full 128. Build custom banks by simply dragging patches within or between banks with the mouse. Full GEM interface with scrolling windows, buttons and icons. Rename or audition single patches. Load, save, transmit, receive or print full banks. Move, copy, swap or delete multiple patches or entire banks. **Basic Specifications & Suggested List Price:** Manages dozens of different synthesizers and organizes thousands of patches on a single disk. Currently supports over 84 instruments and 15 data types from 16

different manufacturers. Available for Atari 520/1040/Mega ST, monochrome or color monitors. \$95, not copy protected, 30-day money-back guarantee. Fully expandable and updated quarterly.

RESONATE, INC.; 1263 El Camino Real, Ste. C; PO Box 996; Menlo Park, CA 94026; (415) 323-5022. **Product Name:** Listen 2.0 (Version 2.1). Contact: Jim Wake, Susan Alvaro. Date Product Introduced: October 1987. **Product Description & Applications:** Listen 2.0 is a flexible, full-featured interactive ear-training program for the Apple Macintosh. Listen includes a variety of matching melodic and harmonic exercises (intervals, triads, seventh, ninth, 11th and 13th chords) as well as multiple-choice chord and interval-naming exercises. Other features include on-screen piano and guitar, more than 20 internal sounds, user-adjustable degree of difficulty and full Mac and MIDI compatibility. **Basic Specifications & Suggested List Price:** Runs on all Macintosh computers. MIDI compatible. Suitable for all musicians from beginners to professionals. \$99.

RPMICRO, INC.; 400 Main St.; Hickory, PA 15340; (412) 356-4000. **Product Name:** Bandwagon (LCD Portable Music Computer). Contact: Gregg E. Cowden, pres.; Ken Coey, computer MIDI specialist. **Product Description & Applications:**

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The Bandwagon is a portable LCD PC-compatible computer system designed with the musician and the studio in mind. Its strong points are that it is fully self-contained, expandable, upgradable and extremely portable. Applications include music production (i.e., sequencing, scoring, video, effects processing, instrument management, etc.) as well as business management. RPiMicro also markets and stocks almost all major software lines as well as accessories, i.e., disks, printers, etc. **Basic Specifications & Suggested List Price:** Standard high-quality PC components, 100% PC compatible, XT, AT, 386 configurations available with an array of options. Dimensions are 8" x 9.5" x 15.75"; weight is 22 lbs. with hard disk. All

models come standard with 640K memory, parallel, serial and game ports, and clock/calendar. Retail prices start at \$1,649.

SNAP SOFTWARE; 1116 Janey Way; Sacramento, CA 95819; (916) 451-9914. Product Name: GP8 Companion. Contact: Bill Appledorf. Date Product Introduced: July 1988. **Product Description & Applications:** Real-time patch editor for the Roland GP-8 guitar effects processor. Features extensive librarian functions, including swap and copy of any number of disjointed or contiguous patches to and from disk and within the GP-8. Convenient on-screen editing of all GP-8 parameters. **Basic Specifications & Suggested List Price:** For IBM PC/XT/AT and compatible machines \$100.

SNAP SOFTWARE; 1116 Janey Way; Sacramento, CA 95819; (916) 451-9914. Product Name: MEP4 Companion. Contact: Bill Appledorf. Date Product Introduced: August 1988. **Product Description & Applications:** Patch editor and librarian for Yamaha MEP4 MIDI effects processor. Remote access to all parameters in the MEP4. Editor features "smart cursoring," which allows data entry without cursoring to the field you wish to edit. Complete librarian functions, as de-

scribed under GP-8 Companion. Editor also features within-patch copying of parameters from one processor to another. **Basic Specifications & Suggested List Price:** For IBM PC/XT/AT and compatible machines \$100.



SNAP SOFTWARE

SNAP SOFTWARE; 1116 Janey Way; Sacramento, CA 95819; (916) 451-9914. Product Name: GM70 Companion. Contact: Bill Appledorf. Date Product Introduced: June 1988. **Product Description & Applications:** Patch editor and librarian for the Roland GM-70 guitar-to-MIDI converter. Craig Anderson says: "If you own a GM-70 and a Mac (or IBM PC/XT/AT or clone) you need this program." (EM, June 1988). **Basic Specifications & Suggested List Price:** For IBM PC/XT/AT compatibles \$100. For Macintosh \$125.

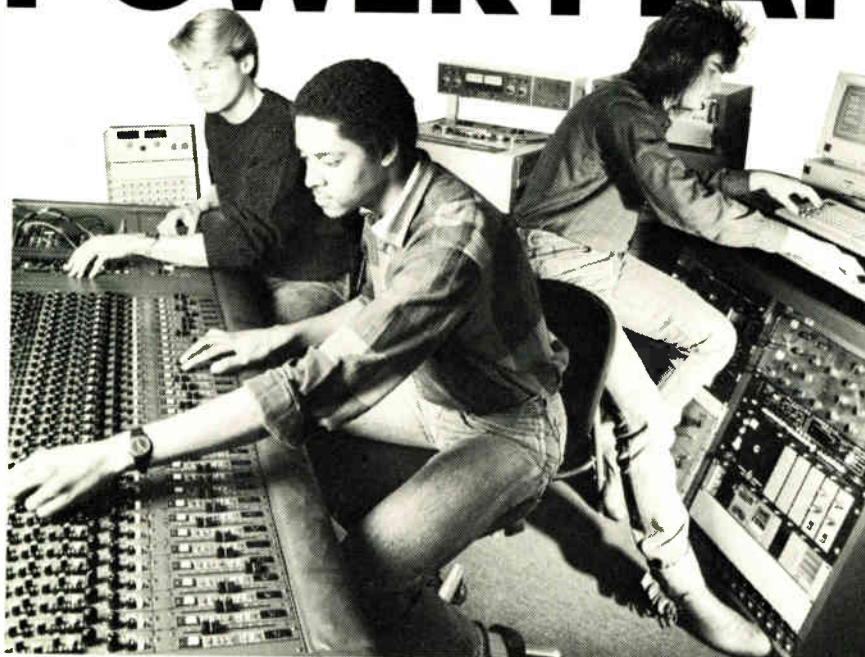
SNAP SOFTWARE; 1116 Janey Way; Sacramento, CA 95819; (916) 451-9914. Product Name: PCM70 Companion. Contact: Bill Appledorf. Date Product Introduced: September 1988. **Product Description & Applications:** Patch editor and librarian for the Lexicon PCM70. Real-time editing of all patch parameters in the PCM70. Shipped with Version 2.0 and Version 3.0 presets for reference. All parameters for a given patch are displayed and modified in a single screen. Librarian includes all the familiar Snap Software features. **Basic Specifications & Suggested List Price:** For IBM PC/XT/AT and compatibles. Text version sells for \$115. Graphic version, available January 1989, will require graphics hardware and will sell for \$225.

SPECTRUM SIGNAL PROCESSING, INC.; 460 Totten Pond Rd.; Waltham, MA 02154; (617) 890-3400; FAX: (617) 890-0976. Product Name: DSP56001 System Board. Contact: Bruce Schulman, sr. sys. consultant. Date Product Introduced: April 1988. **Product Description & Applications:** IBM PC plug-in board featuring the Motorola DSP56001 digital signal processor chip. The extremely high processing speed, coupled with a complete 16-bit stereo analog I/O channel and general purpose, high-speed, digital port, are ideal for systems that process both analog and digital audio. The board can be coupled with a separate pro audio board to add AES/EBU, Sony PCM and MIDI interfaces. **Basic Specifications & Suggested List Price:** \$3,495 ea., \$3,995 with assembler and simulator DSP56001 C compiler is \$709. Board without analog I/O is \$1,995. 10MIPS DSP56001 with up to 192K x 24 memory. Two 16-bit A/Ds and D/A's with sample/hold and low-pass filters (176kHz throughput on each A/D). Fits IBM PC/XT/AT and Sun 3861. Board-support software and example code included.

SPECTRUM SIGNAL PROCESSING, INC.; 460 Totten Pond Rd.; Waltham, MA 02154; (617) 890-3400; FAX: (617) 890-0976. Product Name: Pro-Audio Interface Board. Contact: Bruce Schulman, sr. sys. consultant. Date Product Introduced: August 1, 1988. **Product Description & Applications:** Direct interface between digital audio systems and Spectrum's IBM PC-based digital signal processor boards (via the DSP LINK™ expansion bus). The board, coupled with Spectrum's DSP-56001 System Board, is perfect for building mixers, special effects, editing and analyzer systems. By adding separately available software, the system becomes a versatile digital audio signal analyzer. **Basic Specifications & Suggested List Price:** Full board \$1,850. AES/EBU only \$1,250. Supports 24-bit stereo AES/EMU (ANSI 4.40), Sony 16-bit stereo PCM and MIDI interfaces. Each board handles one stereo channel; can be cascaded for multi-channel use. Programmable to 32kHz for digital broadcast, 44.1kHz for CD and DAT, and 48kHz for professional digital studios.

STEINBERG/JONES; 17700 Rayer St., Ste. 1002; Northridge, CA 91325; (818) 993-4091. Product Name: Pro-24 III. Contact: Geoff Ryle, product specialist. Date Product Intro-

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duced: May 1988. **Product Description & Applications:** 24-track sequencing software for the Atari ST line of computers. Includes real-time editing, simultaneous recording on up to 4 tracks, auto-quantize while recording, erase notes "on-the-fly," three different modes of cycle recording. Three different visual editing screens: grid edit, where notes are displayed as blocks whereby the position and duration can be edited via the Atari mouse; score edit, which displays MIDI data in the form of music notation that may be printed out; and the drum edit page, which displays events as a rhythm chart. Linear and song mode sequencing available simultaneously. **Basic Specifications & Suggested List Price:** 24 tracks and 96 monophonic tracks (via the drum edit page); real-time editing available while sequencer is in play or record, including transpose, quantize, delay advance, punch-in/out, etc. Dump utility allows bulk data transfer for storing synthesizer sound banks. Suggested retail price \$295 U.S. User base over 25,000 worldwide.

TDK ELECTRONICS CORP., 12 Harbor Park Dr., Port Washington, NY 11050, (516) 625-0100. **Product Name: MF-2HD.** Contact: Denis Pringle/DBA Public Relations (212) 807-1400. **Product Description & Applications:** TDK offers a variety of 3.5" micro floppy disks, including the MF-2HD with 2-megabyte data storage capacity. The MF-2HD features TDK's exclusive Electron Beam Curing technique and Electron Cured Binder System, which produces a uniformly thin, yet highly durable molecular bond between the magnetic formulation and the disk substrate. The MF-2HD, which will easily withstand more than 20 million passes per track, utilizes TDK's Super Avilyn formulation for increased recording density, stable output and high resolution. **Basic Specifications & Suggested List Price:** \$97.75 (10-disk box).

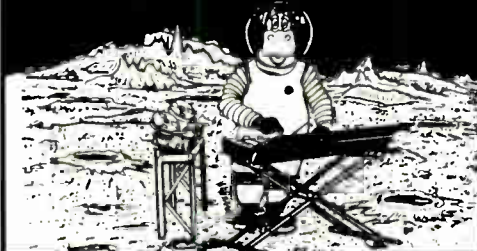
TWELVE TONE SYSTEMS; PO Box 226; Watertown, MA 02272; (617) 924-7937. **Product Name: Cakewalk 2.0.** Date Product Introduced: June 1, 1988. **Product Description & Applications:** A professional MIDI sequencer for IBM and compatible PCs. Cakewalk provides 256 tracks, external sync chase mode, SMPTE time displays, track sliding, sys ex librarian, full global editing with event filters, interactive editing in event list and piano-roll formats, and many more powerful features. **Basic Specifications & Suggested List Price:** Requires 384K, MPU-401 compatible interface. Optional mouse is supported. \$150.

VOYETRA TECHNOLOGIES; 333 Fifth Ave.; Pelham, NY 10803; (914) 738-4500; FAX: (914) 738-6946. **Product Name: Patch Master Plus, Version 1.1.** Contact: Doug Fisher. Date Product Introduced: July 1988. **Product Description & Applications:** As a network organizer and universal librarian, PM+ lets you transfer patches between any of the over 70 supported MIDI instruments and your PC. Rearrange them in any order. Send them back to your instruments or send them to disk for future use and archiving. With PM+, you can effectively create a "snapshot" of your MIDI setup which is later used to instantly load all your instruments with their required sounds at the press of a key! PM+'s MIDI terminal utility lets you use your PC to view and decipher MIDI data. **Basic Specifications & Suggested List Price:** Besides the convenience it provides, PM+ saves money by replacing individual librarian programs, RAM cartridges and patch cassettes. With PM+, you can spend your time making music, not sweating the small details. List \$195.

VOYETRA TECHNOLOGIES; 333 Fifth Ave., Pelham, NY 10803; (914) 738-4500; FAX: (914) 738-6946. **Product Name: Sequencer Plus Mk I, II and III, Version 2.** Contact: Doug Fisher. Date Product Introduced: July 1988. **Product Description & Applications:** Sequencer Plus Mark I, II and III (SP1, SP2 and SP3) comprise a series of MIDI editing/recording/arranging software that turns your PC into a powerful musical tool for controlling an orchestra of MIDI instruments. Each version differs in the number of features offered, so you can choose the level that suits your present needs, knowing that the next level is there when you're ready. The Sequencer Plus Series offers a system that will grow with you instead of being outgrown. **Basic Specifications & Suggested List Price:** SP1/2/3 have independent "tracks" (64 for SP3, 32 for SP2 and 16 for SP1) for recording MIDI data from instruments connected to your PC's MIDI interface, allowing you to build up complex songs one part at a time. After recording a track, you can display, move, delete, change or insert individual MIDI events. SP1/2/3 use a unique bar-graph method for displaying MIDI data in a detailed way. You can also use Teach Note's finer attributes such as start time, pitch and velocity. SP1 \$129, SP2 \$295, SP3 \$495.

WORDS AND DEEDS, INC.; 4480 Sunnycrest Dr.; Los Angeles, CA 90065; (213) 255-2887. **Product Name: Archie™—Studio Management for the Macintosh®.** Contact: John Alcock, product mgr. Date Product Introduced: June 1988. **Product Description & Applications:** A complete information management system for use with the Apple Macintosh computer. Creates track sheets, time sheets, invoices, mailing lists, Rolodex cards. Reports studio inventory, master tape library, studio activities. Prints checks, all forms needed, maintains bank statements. Full documentation and tutorial makes Archie easy to learn and use. **Basic Specifications & Suggested List Price:** Will run on any Macintosh with at least 1 megabyte of memory and hard disk. Single-user version \$795. Multi-user, two to four workstations, \$1,095. Telephone technical support line and 24-hour modem support included.

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MICROPHONES AND PICKUPS

1989

AUDIO-TECHNICA U.S., INC.; 1221 Commerce Dr.; Stow, OH 44224; (216) 686-2600. **Product Name:** AT4053. **Contact:** Greg Silsby, mktg. mgr., professional products. **Date Product Introduced:** 1988. **Product Description & Applications:** The AT4053 transformerless, externally polarized hypercardioid capacitor microphone features smooth, extended response, uniform polars, fast transient response, high SPL handling and low self-noise. The AT4053 is especially well-suited for use in Foley and other critical recording and production applications. The 48V phantom-powered AT4053 has a switchable 80Hz hi-pass filter. Interchangeable omnidirectional and cardioid elements are options. The rugged, turned brass case is finished in black chrome. **Basic Specifications & Suggested List Price:** Element: DC bias capacitor, polar; hypercardioid; freq. response: 20-20,000Hz; sensitivity: -35dBm (0dB = 1mW/1.0 Pa); noise (A-weighted): 17dB SPL; impedance: 250 ohms balanced, transformerless; max SPL: 143dB (1% THD); power requirement: 48VDC phantom (12 volt).

AUDIO-TECHNICA U.S., INC.; 1221 Commerce Dr.; Stow, OH 44224; (216) 686-2600. **Product Name:** AT4051. **Contact:** Greg Silsby, mktg. mgr., professional products. **Date Product Introduced:** 1988. **Product Description & Applications:** The AT4051 transformerless, externally polarized cardioid capacitor microphone features smooth, extended response, uniform polars, fast transient response, high SPL handling and low self-noise. The AT4051 is designed for the most critical recording and broadcast applications. The 48-volt, phantom-powered AT4051 has a switchable 80Hz hi-pass filter. Interchangeable omnidirectional and hypercardioid elements are options. The rugged, turned brass case is finished in black chrome. **Basic Specifications & Suggested List Price:** Element: DC bias capacitor, polar, cardioid; freq. response: 20-20,000Hz; sensitivity: -35dBm (0dB = 1mW/1.0 Pa); noise (A-weighted): 17dB SPL; impedance: 250 ohms balanced, transformerless; max SPL: 143dB (1% THD); power requirement: 48VDC phantom (12 volt).

AUDIX; 5635 W. Las Positas; Pleasanton, CA 94566; (415) 463-1112. **Product Name:** C-1. **Contact:** Cliff Castle, VP sales. **Date Product Introduced:** August 1988. **Product Description & Applications:** The C-1 is a pre-polarized condenser with capabilities of being operated with internal battery or phantom power (9 to 48 volt), allowing for studio and sampling applications as well as remote and location recording. The C-1 produces a cardioid pickup pattern with a uniform response between 40-20k, with a sound pressure level of 130dB making it ideally suited for a wide variety of instrument applications. Standard accessories include an acoustical windscreen and stand adapter. Optional accessories include a shock-mount assembly. **Basic Specifications & Suggested List Price:** Type: pre-polarized condenser. Freq response: 40-20k; polar pattern: cardioid; sensitivity: -64dB; SPL: 130dB; battery: 1.5 volt AA. Three-position switch for battery, off or phantom power. List price \$199.

BEYER DYNAMIC INC.; 5-05 Burns Ave.; Hicksville, NY 11801; (516) 935-8000; FAX: (516) 935-8018. **Product Name:** MCE 86. **Contact:** Mike Solomon, mktg. mgr. **Date Product Introduced:** November 1, 1988. **Product Description & Applications:** The MCE 86 is a high-quality broadcast instrument designed for studio and on-location applications. A shotgun condenser, the MCE 86 can be mounted onto cameras, fish poles, booms or be used hand-held. Weighing only 96 grams, the MCE 86 is ideal for location video and film production. **Basic Specifications & Suggested List Price:** MCE 86 PV shotgun condenser, 8-52 volt phantom powerable \$495. MCE 86 S shotgun condenser, battery and/or phantom powerable \$495.

BEYER DYNAMIC INC.; 5-05 Burns Ave.; Hicksville, NY 11801, (516) 935-8000, FAX: (516) 935-8018. **Product Name:** Tourgroup. **Contact:** Mike Solomon, mktg. mgr. **Date Product Introduced:** October 1, 1988. **Product Description & Applications:** Tourgroup vocal and instrument microphones are specifically designed to meet the rigors of live concert touring. The vocal microphones provide excellent gain-before-feedback, low handling noise, rugged grilles and non-glare finish. The instrument microphones provide accurate sonic repro-

duction of the stereo being miked, high SPL capability without overload and a low-profile appearance. **Basic Specifications & Suggested List Price:** M300TG cardioid dynamic vocal microphone \$179. M500TG cardioid ribbon vocal microphone \$299. M69TG supercardioid dynamic microphone \$209. M88TG supercardioid vocal and instrument microphone \$385. M380TG bidirectional instrument dynamic mic \$280.

COUNTRYMAN ASSOCIATES INC.; 417 Stanford Ave.; Redwood City, CA 94063; (415) 364-9988. **Product Name:** Iso-max TVH for wireless. **Contact:** Carl Countryman, chief eng. **Date Product Introduced:** April 1988. **Product Description & Applications:** The Iso-max Model TVH hypercardioid lavalier microphone is now available in a new version especially designed for compatibility with wireless microphone transmitters. The TVH features unsurpassed rejection of unwanted sounds and feedback together with electronic active vibration isolation for extremely low handling noise. **Basic Specifications & Suggested List Price:** The TVH has response from 70Hz to 15kHz and is available in versions for wireless as well as hard-wired phantom power operation. The professional net price is \$319.

COUNTRYMAN ASSOCIATES INC.; 417 Stanford Ave.; Redwood City, CA 94063; (415) 364-9988. **Product Name:** Iso-max Headset Microphone. **Contact:** Carl Countryman, chief eng. **Date Product Introduced:** June 1988. **Product Description & Applications:** A lightweight head-worn vocal microphone that combines superb audio quality with a unique headband design that goes behind the head and is easily hidden in the hair. Its specially contoured frequency response allows it to be attractively positioned at the side of the mouth without loss of presence or requiring a bulky windscreen. **Basic Specifications & Suggested List Price:** The Iso-max headset microphone has 50Hz to 20kHz response and overloads at over 150dB sound pressure level. Models are available for wireless or hard-wired phantom power operation. The professional net price is \$235.



LM-200 LECTERN MICROPHONE

CROWN INTERNATIONAL; 1718 W. Mishawaka Rd.; Elkhart, IN 46517; (219) 294-8000. **Product Name:** LM-200 Lectern Microphone. **Product Description & Applications:** The Crown LM-200 is a professional-quality microphone designed for use on lecterns, pulpits and similar applications. There is no squeaky goose neck to contend with: a ball-and-socket joint mounts the mic for long-term, quiet operation. Rejects background noise and improves gain-before-feedback. Low frequencies are filtered out to reduce pickup of lectern thumps, etc. The wire-screen grille with two-stage pop filter reduces pickup of explosive breath sounds; a foam windscreen is included for outdoor use. **Basic Specifications & Suggested List Price:** Type: Supercardioid electret condenser; frequency

response: 80Hz to 15kHz; impedance: 150 ohms, balanced; sensitivity: -71dB re 1v/microbar; S/N ratio: 64.5dB at 94dB SPL; simplex phantom power: 12-48VDC (or optional 12VDC); weight: 18.2 ounces; suggested retail: \$289.

C-T AUDIO MARKETING, INC.; 3050 SW 14th Pl. #3; Boynton Beach, FL 33426; (407) 738-0622. **Product Name:** Lost Cord. **Contact:** Andre Walton, president. **Date Product Introduced:** June 24, 1988. **Product Description & Applications:** World's first under-the-saddle condenser pickup. The Lost Cord provides studio-quality sound comparable with top-quality conventional microphones. Essentially one continuous capacitor mounted under the bridge, it captures the sound of each guitar string equally, with a flat frequency response that reflects the natural tonal quality of the guitar. Particularly easy to fit, it can also be tried out on a guitar before any drilling is necessary. **Basic Specifications & Suggested List Price:** Available in three configurations: LCR, with unbalanced output and preset controls, \$129; LCT, with unbalanced output and treble, bass and volume controls, \$139; LCP, with 600-ohm balanced output, \$189. Unbalanced versions powered by one 9-volt battery; balanced version powered either by 9-volt battery or from phantom.

C-T AUDIO MARKETING, INC.; 3050 SW 14th Pl. #3; Boynton Beach, FL 33426; (407) 738-0622. **Product Name:** Drum Wizard. **Contact:** Andre Walton, president. **Date Product Introduced:** June 24, 1988. **Product Description & Applications:** Drum microphones/triggers/MIDI. Based on the respected C-ducer studio-quality contact microphones, the Drum Wizard combines audio mixing of a drum kit with triggering for pre-MIDI drum brains, an 8-in-to-2 mixer and 100 MIDI programs. Using sophisticated software developed by a lecturer at England's Cambridge University, the Drum Wizard provides true MIDI cascade input, full MIDI velocity information and a continuous program of software updates. **Basic Specifications & Suggested List Price:** Eight balanced 600-ohm outputs from the mics and a stereo mix with pan controls on the front panel for each mic. The stereo output can be used either balanced or unbalanced. 100 MIDI programs. \$1,495.

HM ELECTRONICS, INC.; 6675 Mesa Ridge Rd.; San Diego, CA 92121; (619) 535-6060. **Product Name:** DN100 Antenna Distribution System. **Contact:** Matt Riches. **Date Product Introduced:** January 1988. **Product Description & Applications:** The DN100 Antenna Distribution System allows you to operate up to four of HME's RX520 switching diversity receivers in a rack configuration with only two antennas. The antennas are provided with the receiver. By using the RP520 rack-mounting kit, the DN100 can be conveniently mounted side by side with the RX520 receiver and takes up only one 19" rackspace. A specially designed circuit guarantees there will be no signal loss due to antenna splitting. **Basic Specifications & Suggested List Price:** \$550. Impedance: 50 ohms; RF gain: 0dB ±3dB, per output port; bandwidth: 170MHz to 230MHz ±2dB; power input: 13 to 20VDC, negative ground to center pin, reverse polarity protection, current drain: 170mA maximum at 15VDC; output port to port isolation: 18dB minimum; system configuration: 4 outputs for each of 2 inputs; front panel: power switch on/off push-button; rear panel: 8 ea. BNC antenna outputs, 1 ea. coaxial power connector, 2 ea. BNC antenna inputs; indicators: power-on LED; dimensions: 8.25" L x 5.75" D x 1.5" H (20.96cm x 14.61cm x 3.81cm); weight: 1.8 lbs., (.82 kg).



SYSTEM 525

HM ELECTRONICS, INC.; 6675 Mesa Ridge Rd.; San Diego, CA 92121; (619) 535-6060. **Product Name:** System 515/525. **Contact:** Matt Riches. **Date Product Introduced:** June 1988. **Product Description & Applications:** The System 515 Body-Pac and System 525 Handheld are wireless microphone systems intended for cost-effective professional applications. They were designed for either portable or fixed installations where cost, size and weight are major concerns. Up to

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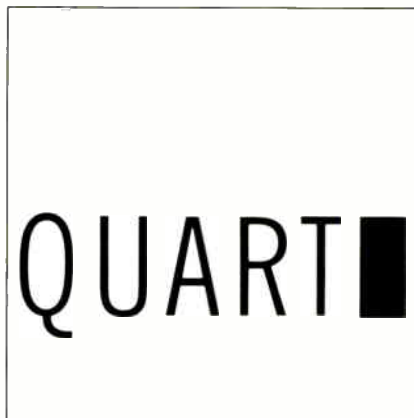
MICROPHONES AND PICKUPS

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three receivers are rack-mountable for fixed installations. HME designed these systems for live entertainment, churches and presentations where low-cost and high-quality sound reproduction are essential. **Basic Specifications & Suggested List Price:** System 515 \$770, System 525 \$785. Pocket-sized receiver, low-cost, lightweight, new NRX-II™ noise reduction circuitry, AC or DC powerable receiver, optional rack-mount kit, mic-mute switch in transmitter, low battery LED indicator. Modulation: FM; frequency response: 50Hz-15kHz ±3dB; RF carrier frequency: 169-216MHz; frequency stability: ±0.05%; distortion: less than 1% THD; dynamic range: greater than 100dB ("A" weighted); operation range: 100 ft. under adverse conditions, 1,000 ft. line of sight; operating temperature: 0 to 40° C.

JOSEPHSON ENGINEERING; 3729 Cokerhill Way; San Jose, CA 95121; (408) 238-6062. Product Name: C-602 Studio Condenser Microphone. Contact: D. Josephson, USA distributor. Date Product Introduced: July 1988. Product Description & Applications: The closest thing to a universal microphone, the MB Quart C-602 provides highest quality pickup for the most demanding applications with switchable omnidirectional or cardioid directional characteristics. Flat response or a gradual, low frequency rolloff may be selected for use in near- and far-field techniques. The C-602 is also available in a battery powered version as the C-600. **Basic Specifications & Suggested List Price:** Omnidirectional pickup, flat response from 20-18,000Hz with a 4dB rise at 8kHz. Noise floor 14dBa, 8 mV/Pa output at 200 ohms. Cardioid pickup as above except HF rise centered at 10kHz, 15dBa noise floor. Power requirements (C-602) 48V phantom 1.4mA. Also available as C-600 using internal 5.6V mercury battery. Suggested list price, either version, \$400.

JOSEPHSON ENGINEERING; 3729 Cokerhill Way; San Jose, CA 95121; (408) 238-6062. Product Name: d-603 Studio Condenser Microphone. Contact: D. Josephson, USA distributor. Date Product Introduced: July 1988. Product Description & Applications: MB Quart introduces the top of their new line of studio condenser microphones. The C-603 is



JOSEPHSON/QUART MICROPHONES

a transformerless, low noise (12 to 16dBa) unit available in five different pickup characteristics—two omnidirectional, two cardioid and one hypercardioid. The C-603 is suitable for a wide range of near- and far-field applications, and a complete series of accessories is available. Capsules for different directional characteristics may be interchanged on the same amplifier. **Basic Specifications & Suggested List Price:** C-603K, omnidirectional with flat response 20-20,000Hz, 16dBa noise floor, 200 ohms. C-603KD, omnidirectional, flat 20-20,000Hz with 4dB rise at 8kHz for linear pickup in diffuse sound field, 15dBa noise floor, 200 ohms. C-603N, cardioid, 40-20,000Hz, 12dBa noise floor, 200 ohms. C-603SN, cardioid, 40-20,000-Hz with rolloff below 200Hz for near-field applications, 14dBa noise floor, 200 ohms. C-603H, hypercardioid, flat response 40-20,000Hz on axis and 180 degrees, 12dBa noise floor, 200 ohms. Power requirements: 48V phantom. Suggested list price including case and clamp, \$490.

MILAB; 30B Banfi Plaza N.; Farmingdale, NY 11735; (516) 249-3660. Product Name: Milab VIP-50 Studio Condenser Microphone. Contact: Sam Spennacchio, nat'l sales mgr. Date Product Introduced: August 1988. Product Description & Applications: Rectangular, large diaphragm, dual-membrane studio condenser microphone. Five-position variable polar pattern switch, switchable 200Hz/500Hz HP filter. Switchable -10dB/-20dB pad. Transformerless. 40V phantom powered. **Basic Specifications & Suggested List Price:** Freq. response 40Hz-20kHz. Sensitivity at 1kHz and 1K ohm load 14mV/Pa ±1dB. Output impedance 180 ohms. Price \$1,395.



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650 WIRELESS SYSTEM

NADY SYSTEMS, INC.; 1145 65th St.; Oakland, CA 94601; (415) 652-2411. Product Name: 650 Wireless System. Contact: Royce Krilanovich, sales mgr. Date Product Introduced: June 1988. Product Description & Applications: The Nady 650 VHF wireless system is rack-mountable and in the middle price range. It has true diversity for dropout-free performance and is available in instrument, hand-held and lavalier styles. In addition, it operates on VHF high-band frequencies and up to 10 channels can be used together. **Basic Specifications & Suggested List Price:** Lists for \$599 instrument, \$639 lavalier and \$659 hand-held.

OMNI MUSIC PRODUCTS—DIVISION OF ST. LOUIS MUSIC; 1400 Ferguson Ave.; St. Louis, MO 63133; (314) 727-4512. Product Name: Omniflex Microphones. Contact: Lynette Guignard, product mgr. Date Product Introduced: February 1988. Product Description & Applications: A full line of professional microphones made for Omniflex by the best manufacturers available in the USA and abroad. Designed to

meet stringent specifications at outstanding low prices. Omnidirectional microphones cover a wide spectrum of specifications to meet the demands of today's most demanding performers. The line includes two models made for Omnidirectional by Electro-Voice, a dual-impedance microphone, bass drum mic and tie clasp mic. Omnidirectional... a line designed to meet your microphone needs! **Basic Specifications & Suggested List Price:** OM938 vocal mic, list \$170; OM924 bass drum mic, list \$165; OM935 vocal/instrumental mic, list \$160; OM928 instrumental mic, list \$145; OM858 vocal mic, list \$95; OM758BK and OM758BS vocal mic, list \$90; OM658 vocal mic, list \$65; OM100 dual-impedance condenser mic, list \$65 (low impedance listed). High impedance \$25-\$65.



STEPHEN PAUL AUDIO

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FOR PROFESSIONAL CONDENSER MICROPHONES*

STEPHEN PAUL AUDIO; 3750 Vineland Ave.; Studio City, CA 91604; (818) 508-7720. **Product Name: Custom Capsules for Professional Condenser Microphones.** Contact: Tony Merrill, product specialist. **Product Description & Applications:** Customized capsule and electronic modifications to professional condenser microphones, both vintage and of recent manufacture. We are also the first officially authorized independent Neumann service center in the USA. Over 700

currently in use and acclaimed by the professional recording industry. **Basic Specifications & Suggested List Price:** Capsules are currently available which greatly exceed factory performance. Detailed literature available by mail.

PEAVEY ELECTRONICS; 711 A St.; Meridian, MS 39301; (601) 483-5365. **Product Name: PVM 380TN, NeoDynamic Microphone.** Contact: Ken Valentine, product development mgr. **Date Product Introduced:** January 1988. **Product Description & Applications:** Titanium-laminated diaphragm for accuracy and durability. High-energy neodymium magnetics giving condenser output levels in a dynamic design. Unsurpassed vocal clarity for stage or studio. Ideal balance for hand-held applications. Small size and slim-line design. Improved vibration isolation characteristics. **Basic Specifications & Suggested List Price:** Impedance: 300 ohms; frequency response: 50Hz to 16kHz; sensitivity: -52dB (0dB = 1 w/10 microbar). Brazed steel windscreen. Internal pop filter. 3-pin XLR connector.

SAMSON TECHNOLOGIES CORP.; 485-19 S. Broadway, Hicksville, NY 11801; (516) 932-3810. **Product Name: Samson Stage II Series Wireless System.** Contact: Kevin Moran, office mgr. **Date Product Introduced:** January 1988. **NAMM Product Description & Applications:** A most cost-effective wireless system that features dbx noise reduction for optimum audio quality. High-band VHF frequencies are available in 10 channels for simultaneous use. Name brand microphone cartridges and lavaliers are utilized, and the addition of the Stage 22 True Diversity receiver ensures no-dropout performance. **Basic Specifications & Suggested List Price:** The frequency response is 30Hz to 16kHz \pm 3dB. Operating range is a minimum of 250 feet under adverse conditions, and the signal-to-noise ratio is A-weighted better than 100dB. Lavalier system starts at \$375 USD and hand-held at \$425.

SAMSON TECHNOLOGIES CORP.; 485-19 S. Broadway, Hicksville, NY 11801; (516) 932-3810. **Product Name: Stage 22 True Diversity Wireless System.** Contact: Scott Goodman, VP mktg./sales. **Date Product Introduced:** June 16, 1988. **Product Description & Applications:** Stage 22 is a true diversity wireless system featuring cbx noise reduction. The system is comprised of the SR-22 receiver and a multitude of belt-pack and hand-held microphone configurations. **Basic Specifications & Suggested List Price:** The Stage 22 guitar system has a suggested list of \$399. Lavalier systems start at \$485, and hand-held systems with an Audio-Technica Pro 4 mic cartridge start at \$535.

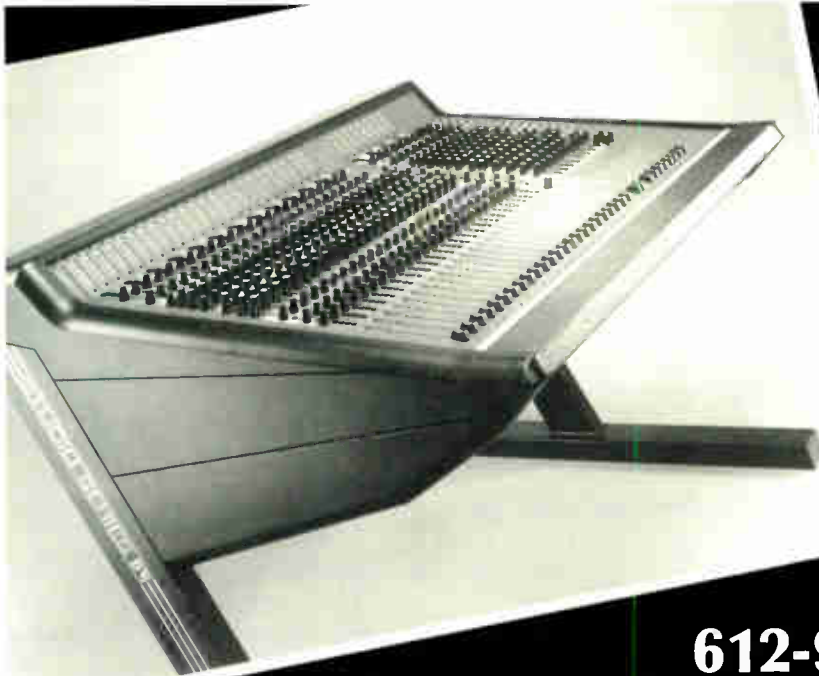


SANKEN CMS-9 M-S

SANKEN; c/o Audio Intervisual Design; 1032 N. Sycamore; Los Angeles, CA 90038; (213) 469-4773. **Product Name: Sanken CMS-9 M-S.** Contact: Jim Pace, Jeff Evans. **Date Product Introduced:** October 1988. **Product Description & Applications:** Announcing new version of the CMS-9 M-S stereo field microphone, now with M-S output (previous version provides L-R output). Ideal for Nagra or DAT field recording. Titanium diaphragm is resistant to humidity and corrosion, and standard 19mm diameter allows use of all standard pistol grips and accessories. **Basic Specifications & Suggested List Price:** Self-noise of less than 19dB, dynamic range over 108dB.

SANKEN; c/o Audio Intervisual Design; 1032 N. Sycamore; Los Angeles, CA 90038; (213) 469-4773. **Product Name: Sanken CU-44X.** Contact: Jim Pace, Jeff Evans. **Date Product Introduced:** October 1988. **Product Description & Applications:** New dual-capsule, transformerless microphone with exceptionally smooth off-axis response. Power supply (provided) is 100 volts, for better headroom and noise performance. Shock-mount included. **Basic Specifications & Suggested**

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NEW PRODUCTS

MICROPHONES AND PICKUPS

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SANKEN CU-44X

List Price: Self-noise of less than 18dB, over 122dB dynamic range, frequency response DC to light.

SENNHEISER ELECTRONIC CORP., 6 Vista Dr., PO Box 987, Old Lyme, CT 06357; (203) 434-9190. Product Name: MKE 4032. Contact: Joe Ciaudelli, application engineering. Date Product Introduced: February 1988. Product Description & Applications: MKE 4032: hand-held stage condenser microphone, lightweight yet rugged. Supercardioid pickup pattern. All black finish. Low handling noise. Roll-off filter. Basic Specifications & Suggested List Price: MKE 4032-Frequency response: 70-20,000Hz; sensitivity: 5mV/Pa; powering: (1) 'AA' or (2) 48V phantom.

SENNHEISER ELECTRONIC CORP., 6 Vista Dr., PO Box 987, Old Lyme, CT 06357; (203) 434-9190. Product Name: MD518. Contact: Joe Ciaudelli, application engineering. Date Product Introduced: September 1988. Product Description & Applications: Hand-held dynamic microphone; cardioid pickup; black finish. Excellent for percussion, brass, wind instruments and vocals. Basic Specifications & Suggested List Price: Frequency response: 50-15,000Hz; sensitivity: 1.3mV/Pa.

SHADOW OF AMERICA ELECTRONICS INC.; 1248 Route 22 W., PO Box 1083; Mountainside, NJ 07092; (201) 654-7516; Telex: 667 944 Shad JW. Product Name: Shadow SH 075 Quick Mount Guitar MIDI System. Contact: Herb Hagel, president. Date Product Introduced: June 1988. Product Description & Applications: Smallest onboard GTM converter available. Perfect tracking. Simple logic controls. Easy installation. On your own guitar. Triggers any MIDI synthesizer. Poly or mono mode with trigger or pitch (string) bend mode. Can transpose three octaves up or down and change sounds at a touch of a button. Built-in guitar tuner. Your own guitar sound totally unaffected. Basic Specifications & Suggested List Price: Adjustable individual string sensitivity. Built-in volume control for synth. Voltage converter included. Pickup included. Fits in most guitar cases. Suggested list \$85!

SHURE BROTHERS INC.; 222 Hartrey Ave.; Evanston, IL 60202-3696; (312) 866-2553. Product Name: SM99 Miniature Gooseneck Microphone. Contact: Chris Lyons, mktg coordinator. Date Product Introduced: May 1988. Product Description & Applications: Supercardioid condenser microphone with integrated low-noise preamplifier and full RFI protection. Designed for speech and vocal pickup. Smooth, extended response is also excellent for acoustic music, especially strings and woodwinds. Permanently attached, internally reinforced gooseneck (approx. 12" long) retains smooth, unobtrusive profile after repeated adjustments. Tight pattern provides excellent source isolation and high gain-before-feedback. May be surface-mounted (via XLR jack), recess-mounted (locking flange supplied) or stand-mounted. Matte black finish, low profile appearance. Ideal for broadcast studio (e.g., podium, roundtable and live music formats) and multi-room sound reinforcement (e.g., churches, courtrooms and boardrooms). Windscreen/pop filter supplied. Basic Specifications & Suggested List Price: Frequency response: 80-20,000Hz with 12dB/octave rolloff below 100Hz to control proximity effect and minimize unwanted noise pickup. 150-ohm impedance. 130dB maximum SPL, 102dB dynamic range. Precision 1cm electret condenser element housed in

7/16" diameter mic head. Open circuit voltage: -73.0dB Low noise preamp (66dB S/N re 94dB SPL) accepts 5-52VDC phantom power. Net weight: 165 grams (5.8 oz.); U.S. recommended resale price: \$240.

SWINTEK ENTERPRISES, INC.; 587 Division St.; Campbell, CA 95008; (408) 378-8091. Product Name: Mark 11-SM58. Contact: William Peterson, sales mgr. Product Description & Applications: Complete pro vocal system featuring high-band diversity receiver, nicad batteries with charger and carrying case. Basic Specifications & Suggested List Price: \$2,588.

TELEX COMMUNICATIONS, INC.; 9600 Aldrich Ave. S.; Minneapolis, MN 55420; (612) 884-4051. Product Name: FMR-25TD. Contact: Ron Taylor, dir. of advertising. Date Product Introduced: July 1988. Product Description & Applications: Telex FMR-25TD true diversity wireless receiver. Low cost, compact receiver includes two removable antennas to allow rack-mounting of up to four across in a standard 90" rack. RF frequency range 165 to 185. Systems available including hand-held mic/transmitter and lapel-type mic with belt-pack transmitter. Basic Specifications & Suggested List Price: Systems have an AF frequency range of 85 to 15,000Hz with distortion of less than 1% THD at 1kHz AF and a signal-to-noise ratio of 90dB. Suggested pro net price for the true diversity hand-held mic system is \$750, and the lapel mic system \$650.

YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave.; Buena Park, CA 90622; (714) 522-9011. Product Name: MZ-Series Percussion Microphones. Contact: Professional Audio Division. Date Product Introduced: June 1988. Product Description & Applications: The MZ205Be and MZ204 Percussion Microphones' ability to handle high sound pressure levels while delivering a wide and smooth response make them ideally suited to a wide variety of professional applications, including vocal and instruments. The MZ Percussion Microphones feature a unique, compact design and come with a special multi-axis stand mount, which allows these microphones to be placed within tight constraints. Special right-angle XLR connectors reduce the overall length and route cables so they will not interfere with microphone placement. Basic Specifications & Suggested List Price: The MZ205Be is equipped with an ultra-rigid beryllium diaphragm for unprecedented transient response. The wide band and tight response of the MZ205Be has been specifically optimized for pickup of higher pitch instruments like snares and tom-toms smaller than 14". The MZ204 has a two-layer laminated polyester diaphragm, which yields a smooth, deep and powerful response. The MZ204 is valued for pickup of rich low-frequency sources. The MZ205Be has a frequency response range of 40Hz to 18kHz, and the MZ204 has a range of 20Hz to 18kHz. Both have a nominal impedance of 250 ohms and an output level of -77dB/uBar at 1kHz. Both mics are priced at \$295.



ZILDJIAN ZMC-1 CYMBAL MICROPHONE SYSTEM

AVEDIS ZILDJIAN COMPANY; 22 Longwater Dr.; Norwell, MA 02061; (617) 871-2200. Product Name: Zildjian ZMC-1 Cymbal Microphone System. Contact: Colin Scholfield, mktg. mgr. Date Product Introduced: October 1987. Product Description & Applications: The ZMC-1 is the first miking system to be created and designed specifically for cymbals. The result of extensive research by the Zildjian Sound Lab and by Barcus-Berry Electronics, the system provides the ultimate in acoustic cymbal sound and also complete control over a cymbal setup by isolating and amplifying each cymbal individually. The system includes the ZMC-1 mixer unit, a 6-channel submixer for cymbals and the ZMC-1 microphones, which feature a totally new patented design for optimum cymbal miking. Basic Specifications & Suggested List Price: Complete system includes ZMC-1 mixer unit, five ZMC-1 cymbal microphones and one ZMC-1 hi-hat microphone, list price \$995. Individual ZMC-1 microphones \$105. ZMC-1 mixer unit: user-switchable power supply for 110 or 220 volts, input connections 1/4" only, output connections 1/4" or XLR type, fits single standard EIA rackspace. ZMC-1 microphones: frequency response range is 20-20,000Hz.

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MIXING CONSOLES

1989

ALLEN & HEATH; Five Connair Rd., Orange, CT 06477; (203) 795-3594. **Product Name: Saber Series Mixer.** Contact: Chuck Augustowski, sales mgr. **Date Product Introduced:** Fall 1988. **Product Description & Applications:** Full series of 16 bus consoles designed for recording, with special versions for sound reinforcement applications. MIDI mute standard on all inputs. 36-, 44- and 52-position mainframes with choice of VU, bar graph or special sound reinforcement metering. 4-band EQ with switchable high and low frequency, two bands mid sweep EQ plus high-pass filter. 6 knob aux sends, PFL and solo in place. **Basic Specifications & Suggested List Price:** Live sound: 16 x 8, \$11,000; 24 x 8, \$13,320; 32 x 8, \$16,540; 40 x 8, \$20,260. All live sound Sabers include 12 effects return sections. Recording: 16 x 8, \$11,800; 24 x 8, \$14,120; 32 x 8, \$17,340; 40 x 8, \$21,060; 16 x 16, \$13,000; 24 x 16, \$15,320; 32 x 16, \$18,540; 40 x 16, \$22,260. Patch bay versions also available.

ALLEN & HEATH; Five Connair Rd., Orange, CT 06477; (203) 795-3594. **Product Name: Scepter Rack Mixer.** Contact: Chuck Augustowski, sales mgr. **Date Product Introduced:** Fall 1988. **Product Description & Applications:** 12-channel/20-input rack-mount mixer designed for professional audio and sound contractor applications, with features that fit the needs of keyboard applications. Each input includes 4 aux sends, 3-band EQ with mid sweep and switchable low frequency. A 12dB, 80Hz filter is also included on each input channel. The master section includes four mono effects returns as well as two stereo returns. **Basic Specifications & Suggested List Price:** Scepter takes up 10 rack positions and is supplied with a rack-mount power supply. Scepter is the first Allen & Heath mixer manufactured within the U.S. Introductory list price is \$2,400.

AMEK SYSTEMS AND CONTROLS LTD.; Amek/TAC U.S. Operations: 10815 Burbank Blvd.; North Hollywood, CA 91601; (818) 508-9788. **Product Name: Mozart.** Contact: Sue Jones. **Date Product Introduced:** October 1988. **Product Description & Applications:** Mozart is the first in a new generation of Amek audio production consoles derived from the APC1000, using the "all-input" approach. The console dispenses with the in-line and split monitoring concepts in favor of identical, multi-purpose input channels. An extremely sophisticated, Atari-based automation system has been developed in collaboration with Steinberg that allows control not only of faders, but of 15 other switches per input, including the channel mute. The system allows SMPTE and MIDI interfacing. Other automation can be fitted (including GML). **Basic Specifications & Suggested List Price:** Features include 32 buses, 12 auxiliary returns and 16 auxiliary send paths. Each input has an LED meter. Initially a 56-input frame size is available, with different sizes to follow. Standard on-board equipment includes a grouping computer, allowing the user to select channel switches to masters. The resultant configurations can be saved to memory "pages." Price in U.S. from \$95,000.

AMS/CALREC (AMS INDUSTRIES INC.); 3827 Stone Way N.; PO Box 31864; Seattle, WA 98103; (206) 533-1956. **Product Name: Logic 1 Digital Mixer.** Contact: Nigel Branwell. **Date Product Introduced:** Fall 1988. **Product Description & Applications:** Up to a theoretical limit of 256 stereo channels, stands alone or integrates with AudioFile. 32-bit, floating point internal architecture incorporates transputer control. Internal dynamic range in excess of 1,500dB (1,500 guaranteed). AI functions under computer monitoring and real-time updating (not just snapshot memory) available for any control adjustment via patented, linear, motorized faders (one moving part, a rare earth magnet on steel bar) and the patented touch-sensitive "Logicator" controls displaying a variety of easy-to-read dynamic automation information. **Basic Specifications & Suggested List Price:** Not as much as one might think! Price on application.

ARIES AMERICA; 2720 Monterey St., Ste. 403; Torrance, CA 90403; (213) 533-5112. **Product Name: Aries Line of Mixing Consoles.** Contact: Ed Bigger, nat'l sales mgr. **Date Product Introduced:** February 1, 1988. **Product Description & Applications:** Aries 10/4/8/Mixrack (modular) 10-input/4-output bus console with 8 monitor returns. Allows the user to mix 18 channels on mixdown, 14 of them with EQ. A 14-channel expander is available, offering up to a total of 32 channels on mixdown. This unit is a superb mixer for live PA and monitoring applications, as well as keyboard mixing either live or in the studio, performing a wide variety of recording functions, including 8-track recording, video and post-production, and MIDI studios. **Basic Specifications & Suggested List Price:** Aries Apollo 24/8/2 console, another in the growing line of Aries products designed to meet the requirements of fixed and touring sound and recording applications. Available in both 24- and 32-input frame sizes, these consoles are now modular in construction. Featuring two bands of sweep EQ and eight aux sends per input. These consoles offer the ultimate in affordable mixing technology, featuring facilities found only on consoles costing a multiple of their price.

AUDITRONICS, INC.; 3750 Old Getwell Rd.; Memphis, TN 38118; (901) 362-1350. **Product Name: 310 Series Audio Production Console.** Contact: Murray A. Shields, nat'l sales mgr. **Product Description & Applications:** The 310 Series audio production console has been developed to satisfy the demanding requirements of today's broadcast and video production facility. There are six mainframe sizes with four or eight submasters. It is configured for both stereo and mono operation. Features include full equalization, four auxiliary sends, stereo in-place solo, cue, VCA faders, VCA input grouping and monitor mixing. The 310 is also automation-capable. **Basic Specifications & Suggested List Price:** Freq. response: +0, -0.5dB, 20Hz to 20kHz. Signal-to-noise ratio: greater than 84dB, ref. +4dBv. Distortion: less than 0.5% THD, 20Hz to 20kHz at maximum output. Crosstalk: less than -65dB, 20Hz to 20kHz, ref. +18dBv.

AUDITRONICS, INC.; 3750 Old Getwell Rd.; Memphis, TN 38118; (901) 362-1350. **Product Name: 400 Series Audio Production Console.** Contact: Murray A. Shields, nat'l sales mgr. **Product Description & Applications:** The 400 Series console is designed for 8- and 16-track audio teleproduction. There are four mainframe sizes with 18- or 24-input module capability. Features include mono or stereo input modules with optional equalization, stereo solo, all VCA-controlled faders, direct-to-master assignment, dual foldback buses and extensive monitoring capabilities. **Basic Specifications & Suggested List Price:** Freq. response: +0, -0.5dB, 20Hz to 20kHz. Signal-to-noise ratio: greater than 84dB, ref. +4dBv. Distortion: less than 0.5% THD, 20Hz to 20kHz at maximum output. Crosstalk: less than -65dB, 20Hz to 20kHz, ref. +18dBv.

AVALON AUDIO; PO Box 948; Neutral Bay Junction; N.S.W. 2089, Australia; (818) 907-8355 temp office; FAX: 61-2-221-4348. **Product Name: Avalon System VI.** Contact: Wynton R. Morro, pres. **Date Product Introduced:** June 1988. **Product Description & Applications:** The Avalon System VI is a modular in-line mixing console designed for professional music recording and post-production studios. Features include advanced complementary symmetry, pure class "A" topologies for ultimate sonic integrity, with a powerful and intelligent optoMOS-based logic system. All sections are automation-

ready with multiple options available. Quad-state, high resolution, pure class "A" equalizers, 32 balanced mixing buses with two stereo mix buses.

BIAMP SYSTEMS; 14270 NW Science Park Dr.; Portland, OR 97229; (503) 641-7287. **Product Name: Advantage™ AM.** Contact: Ron Camden, sales mgr. **Date Product Introduced:** May 1, 1988. **Product Description & Applications:** The Advantage AM is an 8-channel, 3-send auxiliary mixer in a dual-rack module. It may be used to provide separate zone mixes or monitor mixes, or to send signals to outboard effects devices. **Basic Specifications & Suggested List Price:** Three send level controls per channel and three master send level controls. List price of \$599.

BOGEN COMMUNICATIONS, INC.; PO Box 575, 50 Spring St.; Ramsey, NJ 07446; (201) 934-8500. **Product Name: D-Series Modular Mixer Amplifier—Model DMA20.** Contact: D. Pear, dir. of communications. **Date Product Introduced:** May 1988. **Product Description & Applications:** Modular 20-watt mixer amplifier provides 5 input channels, one a fixed program (music) input with variable mute and 4 input ports for any combination of Bogen's wide range of input and control plug-in modules. Available modules include FM tuner, 4-tone signal generator, three types of microphone inputs, telephone paging, compressor/remote volume control, balanced 600-ohm line matching/10,000-ohm bridging, 600-ohm line output/music-on-hold. Power MOSFET output stages. Choice of three priority levels. Bridging in/out and preamp out/power amp in jacks. **Basic Specifications & Suggested List Price:** Rated output: 20 watts. Frequency response: 0 to -2dB, 20Hz-20kHz (direct output); 0 to -3dB (transformer coupled outputs). Distortion: 0.3% (max.), 20Hz-20kHz (direct), 65Hz-20kHz (transformer). S/N ratio: 75dB or better. Variable mute range: 60dB (min.). Outputs: (direct) 8 ohms; (transformer coupled) 4 ohms, 25V, 70V. Suggested list \$320.

BOGEN COMMUNICATIONS, INC.; PO Box 575, 50 Spring St.; Ramsey, NJ 07446; (201) 934-8500. **Product Name: D-Series Modular Mixer Amplifiers—DMA-40, DMA-80, DMA-160.** Contact: D. Pear, dir. of communications. **Date Product Introduced:** May 1988. **Product Description & Applications:** Modular 40-, 80- and 160-watt mixer amplifiers provide 7 input channels, one a fixed program (music) input with variable mute and 6 input ports for any combination of Bogen's wide range of input and control plug-in modules. Available modules include FM tuner, 4-tone signal generator, three types of microphone inputs, telephone paging, compressor/remote volume control, balanced 600-ohm line matching/10,000-ohm bridging, 600-ohm line output/music-on-hold. Power MOSFET output stages. Choice of three priority levels. Bridging in/out and preamp out/power amp in jacks. **Basic Specifications & Suggested List Price:** Rated output: 40, 80 or 160 watts. Frequency response: 0 to -2dB, 20Hz-20kHz (direct output); 0 to -3dB (transformer coupled outputs). Distortion: 0.3% (max.), 20Hz-20kHz (direct), 65Hz-20kHz (transformer). S/N ratio: 75dB or better. Variable mute range: 60 dB (min.). Outputs: 4 and 8 ohms, 25V and 70V (direct, DMA-40, 8 ohms; DMA-80, DMA-160, 4 ohms). Suggested list: DMA-40, \$550; DMA-80, \$600; DMA-160, \$700.



DAYNER STUDIO SERIES

D&R ELECTRONICS USA; 1720 Chip N Dale Dr.; Arlington, TX 76012; (817) 548-1677. **Product Name: Dayner Studio Series.** Contact: Paul Westbrook, president. **Date Product Introduced:** NAIM 1988. **Product Description & Applications:** The Dayner Series merges compactness, modularity and flexibility with D&R's proven technical excellence and sleek European styling to produce the Dayner Studio Series. Frames to hold up to 56-input modules, the Dayner Series allows you to custom configure your chassis with the four different modules: in-line, split/subgroup, effects return and patch bay modules. **Basic Specifications & Suggested List Price:** \$9,000-\$25,000. Signal-to-noise ratio: -129dB. Pad: -20dB (inputs). Harmonic distortion: less than 0.039% at all levels. Crosstalk: channel-to-channel 84dB at 1kHz. Headroom: +22dB above nominal level. Frequency response: 20Hz to 20,000Hz ±0.025dB.



LOGIC 1 DIGITAL MIXER

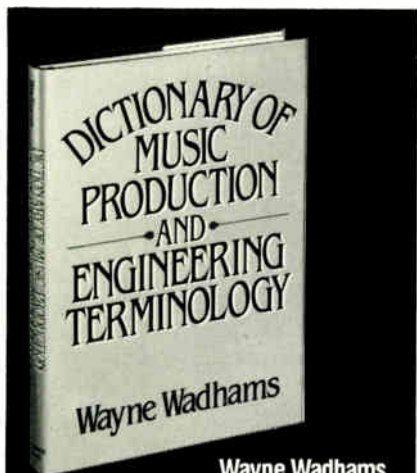
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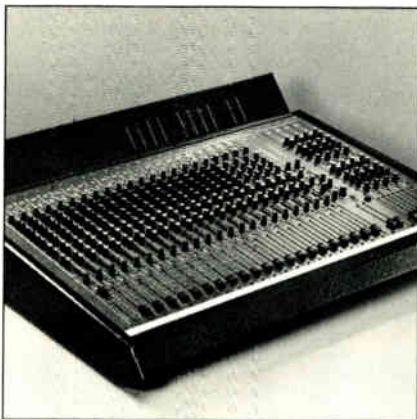
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NEW PRODUCTS

MIXING CONSOLES

—CONTINUED FROM PREVIOUS PAGE



STYLIX SERIES

D&R ELECTRONICS USA; 1720 Chip N Dale Dr.; Arlington, TX 76012; (817) 548-1677. **Product Name: Stylix Series.** Contact: Paul Westbrook, president. **Date Product Introduced:** NAMM 1988. **Product Description & Applications:** D&R has expanded their technology to encompass the split format in consoles with the Stylix Series. The Stylix sets itself apart from other designs by including not only all the usual functions and features, but a few new functions and features that will allow you to do a step-by-step building up of a comprehensive console customized to your needs. **Basic Specifications & Suggested List Price:** \$5,000-\$74,000. Signal-to-noise ratio: -129.8dB. Pad: +20dB. Crosstalk: channel-to-channel -84dB at 1kHz. Harmonic distortion: less than 0.015% at all levels. Headroom: +22dBu above nominal level. Line inputs and outputs: balanced +40dBu.

CREATIVE AUDIO DESIGN & DEVELOPMENT; 1875-D Panama; Brossard, Quebec, J4W 2S8 Canada; (514) 466-1691. **Product Name: SM 1H/SM 1M.** Contact: Shane Morris. **Date Product Introduced:** November 1988. **Product Description & Applications:** Front of house console, 40 mic inputs, 8 stereo and 8 mono inputs, 4 stereo and 8 mono aux outputs, aux and matrix injects, 8 stereo subgroups, 2 stereo mixing buses, 3 main stereo outputs, 8 matrix outputs, 4 mute buses. Solo in place. Monitor console, 40 mic inputs, 4 sub inputs, 16 group outputs, 4 aux outputs, aux remix and injects, 5-band parametric output EQ. Group/channel override cue. Comprehensive cue system metal jack patch bay. **Basic Specifications & Suggested List Price:** Internal working level -2dB, -2dB outputs drive +24dB into 600 ohms. Mic inputs CMRR 120dB. Freq. resp +3dB to -5dB (20Hz to 20kHz). Hum and noise at any output -80dB. **Suggested list price \$65,000 U.S.**

DAX AUDIO GROUP, INC.; 1231 SE Gideon; Portland, OR 97202; (503) 232-4445. **Product Name: DAX.** Contact: Rich Stevenson, president. **Date Product Introduced:** May 1988. **Product Description & Applications:** Live-performance boards designed with the church market in mind. Quality components and construction at reasonable price points. **Basic Specifications & Suggested List Price:** Rack-mount 8 x 2 x 1 \$1,099, rack-mount 12 x 2 x 1 \$1,449; stereo consoles 12 and 16 x 2 x 1, \$1,449 and \$1,749, multiple out consoles 24 x 4 x 2 x 1 \$4,399; 32 x 8 x 2 x 1 \$6,799.

DDA; 30B Banfi Plaza N.; Farmingdale, NY 11735; (516) 249-3660. **Product Name: DDA Q-Series Console.** Contact: Sam Spennack, nat'l sales mgr. **Date Product Introduced:** May 1988. **Product Description & Applications:** Although designed primarily as a sound reinforcement console, the Q-Series console can also be configured for multi-track use. The Q-Series is an 8-bus console with each input module having 8 individual bus assign switches, a direct output with level control, two pairs of auxes and 4 foldback sends. The matrix version includes an 8 x 4 matrix, with each matrix output having an aux return with 3-band EQ providing 8 aux/effects returns as standard. All standard options available. **Basic Specifications & Suggested List Price:** Sizes available to 40/8. Available in PA, or matrix versions. System headroom typically 22dB at all points. All Q-Series consoles are 29.5" deep x 10.5" in overall height. Crosstalk: adjacent channels 1kHz, -90dB, group to mix 1kHz -80dB, 16 inputs. Distortion less than 0.05%. Call for prices.

EUPHONIX, INC.; 441 Page Mill Rd.; Palo Alto, CA 94306; (415) 325-5003. **Product Name: Crescendo.** Contact: Scott Silfvast. **Date Product Introduced:** November 1988. **AES.** **Product Description & Applications:** The Crescendo features powerful automation made possible by its high-speed parallel processing microcomputer system. High-capacity internal RAM stores all console dynamics including fades, mutes, EQs, effect sends and preamp gains. A standard serial interface to a Macintosh, IBM PC/AT or Atari personal computer allows viewing, on-screen editing and disk storage of mix files. An expandable frame accommodates 8 to 64 inputs accepting mono or stereo sources without the need for separate modules. The Crescendo reads and writes SMPTE time code. **Basic Specifications & Suggested List Price:** Prices range from \$20,000 to \$60,000.

GAINES AUDIO; 1237 E. Main St.; Rochester, NY 14609; (716) 266-0780. **Product Name: LMB/S Stereo Rack Mount Mixer.** Contact: Jon Gaines, owner. **Date Product Introduced:** June 1988. **Product Description & Applications:** 8-channel stereo mixer in a single rackspace. Accommodates input levels from -30 to +26dBV, allowing it to be used as a submixer for anything from instrument levels to full pro level, i.e., keyboard mixer, drum submixer, monitor mixer, broadcast and PA mixer. Level, pan and signal present LED per channel, master level, headphone amp. **Basic Specifications & Suggested List Price:** Eight active balanced inputs, 2 balanced outputs on XLR, maximum in/out levels +26dBV, aux inputs allow "stacking" multiple units. List price \$449.

GENTNER ELECTRONICS CORPORATION; PO Box 27647; Salt Lake City, UT 84127; (801) 975-7200. **Product Name: Combination Remote Mixer.** Contact: Elaine Jones, dir. mktg./sales. **Date Product Introduced:** April 1988. **Product Description & Applications:** The Combination Remote Mixer (CRM) is a portable, 4-channel mic/line mixer combined with a 4-channel headset amplifier. Each input channel can be selected for mic or line input and has its own built-in limiter. Each headset can be fed directly or from master input, or a combination. All controls are easily accessible; phantom power is provided for condenser mics. **Basic Specifications & Suggested List Price:** Size: 17" W x 3.5" H x 10" D (rack-mount ears provided); weight: 10 lbs. Mic connectors: XLR. Headset connectors: 1/4" phone, 8 ohms, 500mW. Actively balanced and transformer balanced outputs. **Suggested pro user net: \$995.**

GRASS VALLEY GROUP; PO Box 1114; Grass Valley, CA 95945; (916) 478-3000. **Product Name: AMX-170S Automated Audio Mixer.** Contact: GVG Sales (916) 478-3160. **Date Product Introduced:** April 1988 (NAB convention). **Product Description & Applications:** Integrates with computerized video post-production systems. Eight VCA inputs simultaneously route to four PGM channels, interfacing w/latest generation VTRs. 4-band equalization and level trim on each of the mix inputs, with control of EQ trim and filters allowed for any mix input. It features E-MEM® Audio Memory System with 20 registers: complete storage and recall of settings available manually or through the edit controller during an event. Automatic transitions between E-MEM system-stored sequences reduce the number of edit passes required. **Basic Specifications & Suggested List Price:** \$17,900 U.S. domestic. Includes control panel, rack-mount chassis, 16m interconnect cable, manuals.

HARRIS BROADCAST DIVISION; PO Box 4290; Quincy, IL 62305; (217) 222-8200. **Product Name: Medalist Console.** Contact: Daryl Beuchting, specialist. **Date Product Introduced:** 1987. **Product Description & Applications:** Dual-channel stereo consoles for easy use with color-coded switching, wide attenuator spacing and choice of rotary or linear faders. For studio recording and broadcast stations. **Basic Specifications & Suggested List Price:** 8, 10 or 12 channels, stereo program and audition outputs, THD and IMD of 0.1% max. 20Hz to 20kHz.

HARRISON SYSTEMS, INC.; PO Box 290157; Nashville, TN 37229; (615) 834-1184. **Product Name: 790 Series.** Contact: Martin Burns, broadcast products mgr. **Date Product Introduced:** January 1988. **Product Description & Applications:** AIR-790 on-air radio broadcast stereo console. Three mainframes accommodating 12- to 28-input modules. Comprehensive logic system follows input selection for both machine control and monitor muling. PRO-790 broadcast production and video edit suite mixing console. Eight to 28 inputs. ESAM-II video edit interface and multi-track outputs available. **Basic Specifications & Suggested List Price:** AIR-790 \$15,000 to \$35,000. PRO-790 \$18,000 to \$42,000.

HILL AUDIO; 5002-B.N. Royal Atlanta Dr.; Tucker, GA 30084; (404) 934-1851. **Product Name: Remix.** Contact: Bob Allen, sales mgr. **Date Product Introduced:** January 1, 1988. **Product Description & Applications:** The Remix is a semi-modular, 24-input, 8-bus recording console with 16-track monitoring. Features include: 6 auxiliary sends, auto PFL, peak LEDs, 16 monitors with EQ and 2 auxiliary sends, alps faders, 8 effects returns, send/return and direct outputs on all channels, mute status LEDs, meter bridge, tone oscillator, 4-band EQ with two mids (sweepable). **Basic Specifications & Suggested List Price:** 30" deep (front to back), 40" wide (24 inputs with 8 subgroups/16 returns), and 10.5" at the highest point of the meter bridge.



REMIX

KMD: PO Box 507, 1330 Blue Hills Ave., Bloomfield, CT 06002; (203) 243-7888. **Product Name: MC Series Mixers.** Contact: Bill Hudak, electronics specialist. Date Product Introduced: January 1988. **Product Description & Applications:** Primarily intended for PA applications, these mixers deliver performance comparable to units costing much more. These flexible mixers are loaded with professional features like phantom-powered, XLR mic inputs, three-section EQs and large, easy-to-read metering. Smooth 60mm slide faders make level adjustment positive and accurate. Housed in a sleek and sturdy case, they're the perfect mix of price and performance. **Basic Specifications & Suggested List Price:** Available in 8-, 12- and 16-channel configurations, these mixers feature 48V phantom powering, stacking monitor and effects buses. Frequency response: 20Hz-20kHz, THD less than 0.2%, EIN: -115dB; CMRR: more than 60dB; list prices: 8-channel \$799.50, 12-channel \$949.50, 16-channel \$1,099.50.

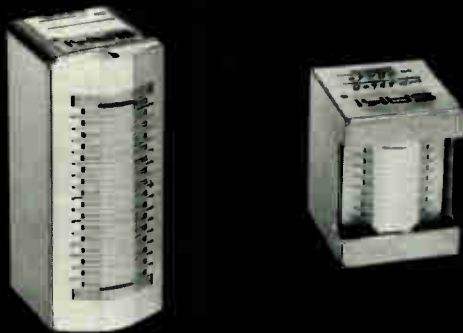


ESSENCE

NEOTEK CORPORATION; 1154 W. Belmont Ave.; Chicago, IL 60657; (312) 929-6699. **Product Name: Essence.** Contact: Laura Chase, sales dir. Date Product Introduced: March 1988. **Product Description & Applications:** Essence consoles were designed specifically for the needs of ADR, Foley and effects layout onto multi-track. They provide 24 or 32 monitoring inputs, four or eight very high-quality mic/line inputs with powerful equalizers and filters, machine logic interface designed specifically for these applications, an integral patch bay, and desk area for synchronizer and cue sheets. Essence is equally suited to synthesizer sampling assembly and to smaller voice-over rooms associated with multi-track studios. **Basic Specifications & Suggested List Price:** Specifications are comparable to Neotek's Elite recording console: crosstalk and leakage below 90dB, distortion below .01% and bandwidth within ± 2 dB from 10Hz to 25kHz. 24 monitors/4 input modules, \$21,690. 24 monitors/8 input modules, \$25,450. 32 monitors/8 input modules, \$33,450.

NEVE; Berkshire Industrial Park; Bethel, CT 06801; (203) 744-6230. **Product Name: The Neve Prism Series.** Contact: Lisa Vogel, ad and PR mgr. Date Product Introduced: November 1987. **Product Description & Applications:** The Neve Prism Series, a range of rack-mount units derived from the new V Series console, incorporates a 4-band parametric equalizer, comprehensive dynamics and microphone preamp. It is comprised of a 4-unit, 19" rack with a capacity for ten modules and its 2-unit, rack-mounted separate power supply. Both of the two modules, the parametric Formant Spectrum Equalizer and the mic amp/dynamics unit, comprised of limiter/compressor/gate/expander, have electronically balanced, line-level inputs and outputs. The mic amp/dynamics modules

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MIXING CONSOLES

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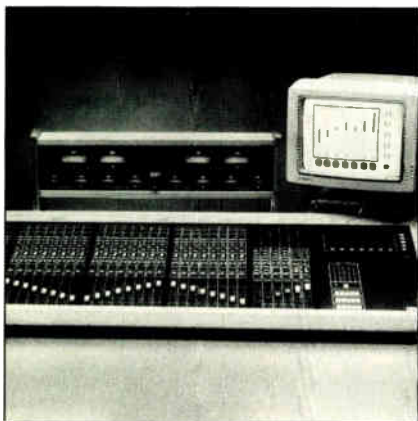


THE NEVE PRISM SERIES

also have a transformer-balanced mic input and variable high- and low-pass filters in the audio chain. Basic Specifications & Suggested List Price: For pricing details, contact Neve.

NIH LABS (DISTRIBUTED BY INDUSTRIAL STRENGTH INDUSTRIES); 13042 E. Moore St.; Cerritos, CA 90701; (213) 921-2341. **Product Name: PM800.** Contact: Bill Teipe. Date Product Introduced: October 1988. **Product Description & Applications:** PA mixer with built-in 225-watt/channel stereo amp and digital reverb/effects unit w/99 presets, 8 channels. **Basic Specifications & Suggested List Price:** \$995 factory direct (\$2,000 list).

NIH LABS (DISTRIBUTED BY INDUSTRIAL STRENGTH INDUSTRIES); 13042 E. Moore St.; Cerritos, CA 90701; (213) 921-2341. **Product Name: PM1600.** Contact: Bill Teipe. Date Product Introduced: October 1988. **Product Description & Applications:** 16-input PA mixer with one 400-watt/channel stereo amp and one 250-watt/channel stereo amp. Also includes digital reverb/effects unit with 99 presets and 2-way, 18dB/octave electronic crossover. **Basic Specifications & Suggested List Price:** \$2,200 factory direct price (\$3,800 list price).

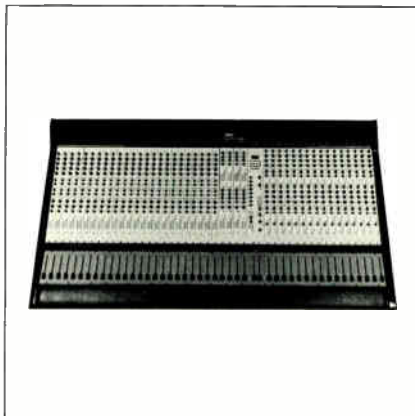


NEWSMAKER™-32
WITH RGB MONITOR AND METER BRIDGE

ORION RESEARCH, INC.; 4650 W. 160th St.; Cleveland, OH 44135; (216) 267-7700. **Product Name: NewsMaker™-32 with RGB Monitor and Meter Bridge.** Contact: Charles Polomsky. Date Product Introduced: April 1988. **Product Description & Applications:** The NewsMaker is a software-based audio mixing system designed for television broadcast, production and video post. The system employs video-style architecture that separates an all-digital control head from analog rack-mount electronics by a fiber optic cable. Completely updated ReMem™ software enables storage, recall and immediate reset of up to 32 setup files that include all parameters. An ESAM plug-in video editor interface is also available. **Basic Specifications & Suggested List Price:** Up to 32 inputs, each

of which accepts a stereo line source and a microphone. Four stereo outputs, up to four stereo or eight mono aux sends, direct outs, patch points, cue, stereo solo, up to four stereo monitor sends and more are available.

PEAVEY, AUDIO MEDIA RESEARCH DIVISION; 711 A St.; Meridian, MS 39301; (601) 483-5376. **Product Name: LM8 Eight-channel Line Mixer.** Contact: Ken Valentine, product development mgr. Date Product Introduced: June 1988. **Product Description & Applications:** Eight line-level inputs. Mute, level, pan and two aux sends for each input. Two aux returns with own level and pan controls. Master left and right outputs with individual level controls. Headphone amplifier with independent volume control. Stereo input jack for direct left and right bus signal feed. **Basic Specifications & Suggested List Price:** 2U x 19" steel EIA rack-mount package; +18dBu maximum output, line-level 10k input impedance. U.S. targeted price \$249.



PRODUCTION SERIES 1600/2400
RECORDING CONSOLES

PEAVEY, AUDIO MEDIA RESEARCH DIVISION; 711 A St.; Meridian, MS 39301; (601) 483-5376. **Product Name: Production Series 1600/2400 Recording Consoles.** Contact: Ken Valentine, product development mgr. Date Product Introduced: June 1988. **Product Description & Applications:** Totally modular. Ultra-low noise design. Differential bus signals. Monocoque chassis design. Highest integrity gold-plated signal contacts. Future channel options are unlimited but initially the console will be available in 24- and 36-input versions. **Basic Specifications & Suggested List Price:** Rack-mounted power supply; new electronically balanced input circuitry; 8, 16 or 24 submasters; mic preamp. 1dB NF at 150 ohms; +24dBu on bus outputs; 4-band sweepable EQ on each input; VU meter option available; console will accept after-market fader automation.

PEAVEY ELECTRONICS; 711 A St.; Meridian, MS 39301; (601) 483-5365. **Product Name: LineMix 8.** Contact: Ken Valentine, product development mgr. Date Product Introduced: June 1988. **Product Description & Applications:** This useful, high-quality line mixer features eight line-level inputs, each having its own mute button, level and pan control and two aux sends in a dual concentric format. A discrete transistor headphone amplifier with its own independent volume control and a stereo input jack for feeding signals direct to left and right bus. All this in two rackspaces! **Basic Specifications & Suggested List Price:** Eight line-level inputs; mute button, level and pan control and two aux sends for each input, two aux returns; master left and right outputs with individual level controls; headphone amplifier with independent volume control; U.S. targeted price: \$249.99.

PEAVEY ELECTRONICS; 711 A St.; Meridian, MS 39301; (601) 483-5365. **Product Name: Mark 8 Sound Reinforcement Console.** Contact: Ken Valentine, product development mgr. Date Product Introduced: June 1988. **Product Description & Applications:** Totally modular; ultra-low noise design; differential bus signals; monocoque chassis construction; highest integrity gold-plated signal contacts; rugged rack-mountable external power supply; eight submasters; eight aux sends and returns; 4-band sweepable EQ per channel; mute and PFL on all channels, aux returns and submasters, dual matrix mix capability—expandable with additional modules. **Basic Specifications & Suggested List Price:** New electronically balanced input circuitry; to be available in 24- and 36-channel versions; additional channel expansion capability; mic preamp 1dB NF at 150 ohms; +24dBu output.

PRECISION DESIGN; 27106 46th Ave. S.; Kent, WA 98032-7147; (206) 852-5070. **Product Name: ROAM 8.** Contact: Brian Hayashi. Date Product Introduced: 1987. **Product Description & Applications:** A portable 8-channel mixer that may be battery operated via an internal power pack and directly plugged into a telephone line where there is no studio line

feed available. Designed for remote applications where operating conditions may be unknown. Unit is housed in a sturdy poly case. Each channel has 3-band EQ and is mic or line-level selectable. **Basic Specifications & Suggested List Price:** ROAM 8 represents a state-of-the-art 8-channel portable mixer. Designed for remote use, the mixer is powered from AC or DC and may send via line out or by directly plugging into a telephone line. 3-band EQ, limiter, pink noise send, LCD VU, mic or line inputs.

RAMSA PANASONIC; 6550 Katella Ave.; Cypress, CA 90630; (714) 895-7277. **Product Name: WR-T820B Recording Studio Mixing Console.** Contact: Joe Crocco, mktg. mgr. Date Product Introduced: October 1987. **Product Description & Applications:** An update of Ramsa's successful WR-T820, the new WR-T820B includes Ramsa's own "MRP" conductive plastic faders, improved circuit design, new styling and the ability to mix the input channel mic/line input separately from the tape inputs. This feature, and other inputs, allows up to 48 separately mixable inputs for mixdown. **Basic Specifications & Suggested List Price:** Frequency response: 20Hz to 20kHz +0.5, -0.8dB; THD: 0.08%, 20Hz to 20kHz; EIN: -128dB max. A-WTD; crosstalk: 60dB, 1kHz; input equalizer: high—4kHz to 16kHz peaking, mid—400Hz to 6.3kHz peaking, low—40Hz to 600Hz shelving; 20 input channels, 8 groups, stereo send, 2 effects; suggested retail \$8,500 including full meter bridge.

RICHMOND SOUND DESIGN LTD.; 1234 W. Sixth Ave.; Vancouver, BC, V6H 1A5 Canada; (604) 734-1217. **Product Name: Command/Cue.** Contact: Damon Wootton, sales mgr. **Product Description & Applications:** Manufacturer of software-based audio mixing and control systems for the performing arts. Standard and custom hardware. Standard and custom software. **Basic Specifications & Suggested List Price:** Frequency response 20Hz-20kHz ±1dB; S/N ratio 104dB; THD less than .003% at +4dB; bus: 32-bit parallel; crosstalk greater than 60dB at 10kHz. Standard systems \$14,000-\$75,000. Custom systems start at \$25,000.

SOLID STATE LOGIC; Begbroke, Oxford, OX5 1RU England; 44 (08675) 4353. **Product Name: 01 Digital Production Centre.** Contact: Noel Bell, publicity mgr. Date Product Introduced: March 1988. **Product Description & Applications:** An integrated digital audio recording, processing and editing system. The 01 can serve as a digital master or multi-part recorder, support complex multi-track recording and mixdown sessions, and can be used for stereo program mastering, production and post-production. **Basic Specifications & Suggested List Price:** The 01 encompasses an edit suite, 8-channel mixer, extensive signal processing including comprehensive digital filtering, equalization and dynamics control. Hard disk storage of one hour of stereo audio, expandable to two hours (configured as a master and two stereo playback machines). Price to be advised.

SOLID STATE LOGIC; Begbroke, Oxford, OX5 1RU England; 44 (08675) 4353. **Product Name: Harrysound.** Contact: Noel Bell, publicity mgr. Date Product Introduced: April 1988. **Product Description & Applications:** Digital audio editing system for video post-production. Harrysound has been specially developed by SSL to extend the power of Harry, the video editing system manufactured by Quantel, sister company of SSL within the UEI group. It is also available as a stand-alone product. **Basic Specifications & Suggested List Price:** Harrysound uses a VDU, tablet and light pen to edit and mix up to six digital audio channels with comprehensive splicing, cross-fading, time offsetting and programmable gain profiling. Price to be advised.

SOUND WORKSHOP PROFESSIONAL AUDIO PRODUCTS, INC.; 50 Werman Ct.; Plainview, NY 11803; (516) 756-0140. **Product Name: Custom Consoles.** Contact: Lee Pomerantz, sales mgr. Date Product Introduced: October 1988. **Product Description & Applications:** Sound Workshop will exhibit at the November AES in Los Angeles several new film and video post-production consoles created by its new custom console division. By working closely with studio owners and engineers, this division is able to design and manufacture custom console systems that meet the specialized needs of the film and video production markets. **Basic Specifications & Suggested List Price:** These new consoles are based on a series of internally modular designs that allow for the integration of custom computer packages for ease of console operation. Custom equalizers featuring graphic or high-/low-pass filter sections with local or remote control may be fitted to the console as needed. Diskmix moving fader and VCA-based automation systems from Digital Creations are available. Please contact the factory for system pricing.

SOUND WORKSHOP PROFESSIONAL AUDIO PRODUCTS, INC.; 50 Werman Ct.; Plainview, NY 11803; (516) 756-0140. **Product Name: Series 34C Dual Mix Path Module.** Contact: Lee Pomerantz, sales mgr. Date Product Introduced: October 1988. **Product Description & Applications:** Also shown will be the Sound Workshop Series 34C record/mix console, which is now available with the new 34C Dual Mix Path input module. This module features two line inputs in addition to the microphone input, any pair of which may be brought onto the mix bus at the same time with fully independent level and panning control. This doubles the number of available returns in any given frame size addressing the needs

of those studios who find themselves with too many line returns to the console and not enough inputs. Diskmix moving fader and VCA-based automation system from Digital Creations are also now available on the Sound Workshop Series 34C Basic Specifications & Suggested List Price: Please contact the factory for pricing.

SOUNDCRAFT, 8500 Balboa Blvd., Northridge, CA 91329; (818) 893-4351. **Product Name: Model 6000 Multi-Track Recording Console.** Contact: David Kimm, nat'l sales mgr. **Product Description & Applications:** The 6000 is capable of up to 24 buses and can be expanded up to 32-track monitoring. It also features a 4-band, semi-parametric EQ and a phase-reverse switch to reverse polarity on individual input modules. Each of the six discrete auxiliary sends is selectable pre- or post-fader with additional pre- or post-EQ settings. A separate MIDI-based automation package is offered that provides the home studio enthusiast with the flexibility and "extra hand" that is always needed.

SOUNDTRACS PLC; 91 Ewell Rd., Surbiton Surrey, KT6 6AH England; (01) 399-3392. **Product Name: IL3632 & IL-4832.** Contact: John Carroll. **Date Product Introduced:** June 1988. **Product Description & Applications:** In-line series of consoles providing up to 80 or 104 inputs respectively. Both formats are 32 bus with full metering, including correlation. Comprehensive patch bay is standard. Unique features include dual line inputs and EQ. Split on the 5-band parametric EQ. Eight auxiliary buses, master mute groups. **Basic Specifications & Suggested List Price:** Frequency response: 20Hz-20kHz, +0dB to -0.1dB; distortion 1kHz 0.008%; crosstalk between groups: 1kHz, -82dB; crosstalk mix/line: 1kHz, -85dB, crosstalk monitors: 1kHz, -88dB, crosstalk line inputs: 1kHz, -88dB

STUDIOMASTER INC.; 1340-G Dynamics St.; Anaheim, CA 92806; (714) 524-2227. **Product Name: Mixdown.** Contact: Jim Giordano, nat'l sales mgr. **Date Product Introduced:** June 1988. **Product Description & Applications:** Available as a 16 x 4 x 8 x 2 and 16 x 8 x 16 x 2. The 16 x 4 x 8 x 2 provides 26 inputs on mixdown and the 16 x 8 x 16 x 2 offers 34 inputs on mixdown. Features include 6 aux sends per channel, 3-band EQ with sweep mid and bass, channel mute, 48V phantom per channel, direct outputs on channels, EQ defeat on each channel, etc. Mixdown consoles are expandable via 4-channel input expanders up to 32 inputs, which would afford 50 inputs on mixdown with a 32 x 8 x 16 x 2. **Basic Specifications & Suggested List Price:** Frequency response: 30Hz to 20kHz; THD less than 0.05%, signal-to-noise better than 87dB; total equivalent input noise (150-ohm source mic input): -129; list price: 16 x 4 x 8 x 2 is \$4,125; 16 x 4 4-channel expander is \$795; 16 x 8 x 16 x 2 is \$4,985; 16 x 8 4-channel is \$835.

SUNN, 1130 Columbia St., Brea, CA 92621; (714) 990-0909. **Product Name: MX 4100 Series.** **Date Product Introduced:** January 1989. **Product Description & Applications:** Stereo, preamp mixers with 3-band channel EQ, 2 aux sends, reverb. Available in 8, 12 and 16 channels. **Basic Specifications & Suggested List Price:** MX 4108 \$749, MX 4112 \$949, MX 4116 \$1,119

SUNN, 1130 Columbia St., Brea, CA 92621; (714) 990-0909. **Product Name: MX 4200 Series.** **Product Description & Applications:** Stereo preamp mixers with 3-band channel EQ, 3 aux sends, cue bus, reverb, extensive patching capabilities. Available in 8-, 12- and 16-channel versions. **Basic Specifications & Suggested List Price:** MX 4208: \$1,099, MX 4212: \$1,299, MX 4216: \$1,599.

SUNN, 1130 Columbia St., Brea, CA 92621; (714) 990-0909. **Product Name: PX 2100 Series.** Contact: Joe Green, dir. of mktg. **Date Product Introduced:** November 1988. **Product Description & Applications:** 250-watt powered mixer featuring dual 10-band graphic EQ, 3-band channel EQ, phantom power, reverb, extensive patching, 3 or 4 aux sends (depending on model). Available with 8, 12 and 16 channels. **Basic Specifications & Suggested List Price:** PX 2108: 8-channel, 250-watt powered mixer \$1,549 PX 2112: 12-channel, 250-watt powered mixer \$1,749 PX 2116: 16-channel, 250-watt powered mixer \$1,999.

TLM ELECTRONICS INC.; 343 Manville Rd. #6B; Pleasantville, NY 10570; (914) 769-6423. **Product Name: 400DU.** Contact: Tony Marra. **Date Product Introduced:** November 1987. **Product Description & Applications:** The 400DU ensures flat frequency response (20Hz-20kHz \pm 3.75dB) in any position of the input attenuator. In early Soundcraft mixing consoles (all models) there is a low- and hi-frequency rolloff at both extremes of the input attenuator. This has been measured as much as -3dB @ 20Hz on some models. Also, the 400DU can reduce THD+N by as much as 6dB on some models. If you own a Soundcraft console and record to digital, you need the 400DU. **Basic Specifications & Suggested List Price:** Frequency response: 20Hz-20kHz \pm 3.75dB, 10Hz-100kHz \pm 1.5dB, noise: less than -95dB A-weighted. Price dependent upon model and year

TLM ELECTRONICS INC.; 343 Manville Rd. #6B; Pleasantville, NY 10570; (914) 769-6423. **Product Name: PR 40 1.1.** Contact: Tony Marra. **Date Product Introduced:** October 1988. **Product Description & Applications:** The PR 40 1.1 is for Midas PR 40 mixing consoles. The PR 40 1.1 is a modification to reduce the hum inherent in Midas PR 40 consoles by 3 to 6dB. The PR 40 1.1 will virtually bulletproof the console from external ground loops and buzzes encountered in concert situations. **Basic Specifications & Suggested List Price:** Price dependent upon console

TOA ELECTRONICS, INC.; 601 Gateway Blvd.; South San Francisco, CA 94080; (415) 588-2538. **Product Name: MX-601.** Contact: Rick Kamlet, sales mgr., PM&E division. **Date Product Introduced:** September 1988. **Product Description & Applications:** 6-channel powered mixer, 300 watts/2 ohms 4-band EQ each channel, input trim with pre-peak LED, Auto-Comp, balanced/unbalanced inputs, phantom power, bus link and patch bay, 10-band master EQ. **Basic Specifications & Suggested List Price:** 300 watts/2 ohms, 200 watts/4 ohms. Mixer: 0.05% THD, -130dB equivalent input noise; power amp: 0.05% THD, 26dB compression range, 113dB S/N, damping greater than 200:1. Suggested retail \$875.

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MIXING CONSOLES



TRIDENT

TRIDENT AUDIO USA; 2720 Monterey St., Ste. 403; Torrance CA 90503; (213) 533-8900. **Product Name:** Trident. **Contact:** Wayne D. Freeman, dir. **Product Description & Applications:** Trident Audio USA has introduced a new patch bay version of their popular Trident Series 24 console. A 364-point TT patch bay is available on the 28-input mainframe, and a 468-point TT patch bay is available on the 36-input mainframe. Both feature Mosses and Mitchell all-metal patch bays. **Basic Specifications & Suggested List Price:** The Series 24 is a full-feature console with 4-band hi and low mid-sweepable

EQ with variable hi-pass filter, balanced mic and line inputs with separate gain controls and phase reverse, 8 auxiliary sends with pre/post switching in pairs, 24 sub-groups with direct mix assignment, 24 monitor/FX returns with 2-band EQ and fader reverse, 4 echo returns, stereo in place solo, auto muting bus, 48-volt phantom power, talkback facilities, balanced outputs and 24-track metering.

YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave.; Buena Park, CA 90622; (714) 522-9011. **Product Name:** DMP7D Digital Mixing Processor. **Contact:** Professional Audio Division. **Date Product Introduced:** June 1988. **Product Description & Applications:** The DMP7D is an 8-input (multiple inputs may be achieved by cascading with other DMP7 Series units), 2-output, all-digital mixing processor. The DMP7D is designed for applications requiring the highest quality audio processing. The DMP7D supports all popular digital audio formats and recorders, such as the Sony 3324, Mitsubishi X800 Series, AES/EBU, R-DAT, Sony 1610/30, as well as the new AD808 analog-to-digital and DA202 digital-to-analog converters from Yamaha. **Basic Specifications & Suggested List Price:** The DMP7D has a dynamic range of 92dB and THD of less than 0.01%. The DMP7D is a 16-bit linear system, sampling at 44.1kHz or 48kHz (internal ROM selectable). Each input features a digital pad, phase select, 3-stage digital equalization, mute select, 3 sends, pre/post and digital panner. The DMP7D includes moving-fader automation, three built-in digital signal processors and two sends per input channel. The DMP7D has over 208 parameters per input channel, all of which can be stored in internal RAM or on the removable RAM4 cartridge. Every control and parameter is stored and can be individually addressed and easily automated with MIDI equipment or locked to SMPTE time code sources. \$5,995.

YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave.; Buena Park, CA 90622; (714) 522-9011. **Product Name:** DMP11 Digital Mixing Processor. **Contact:** Professional Audio Division. **Date Product Introduced:** June 1988. **Product Description & Applications:** The DMP11 is an 8-input (multiple inputs may be achieved by cascading with other DMP7 Series units), 2-output, mixing processor in a compact 6 7/8"-high rack-mount package. The DMP11 maintains the operational format popularized by the DMP7 and is designed for applications requiring high-quality audio processing and control at an affordable price. With a dynamic range of 88dB and THD of less than 0.03%, the DMP11 maintains the performance standards of the DMP7, utilizing 16-bit linear sampling at 44.1kHz. **Basic Specifications & Suggested List Price:**

Each input features input gain trim (-20dB to +4dB), polarity select, a 2-stage digital equalizer, mute select, 2 sends with pre/post selection, and digital panner. Like the DMP7, the DMP11 includes built-in digital signal processors (special effects), 2 sends per input channel, and 8 digital input equalizers. Each and every control and parameter is stored and can be individually addressed from the front panel or via the MIDI connector on the back panel. All of the functions can be easily automated with MIDI equipment or locked to SMPTE time code sources via an off-the-shelf MIDI/SMPTE converter or computer. \$2,395.

YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave.; Buena Park, CA 90622; (714) 522-9011. **Product Name:** EM Series Consoles. **Contact:** Professional Audio Division. **Date Product Introduced:** April 1988. **Product Description & Applications:** The EM Series Monaural Power Amplifier consoles consist of the EM1400 4-input console, the EM1600 6-input console and the EM1800 8-input console. Each of the EM Series features a built-in 150-watt (into 4 ohms) mono power amplifier, a graphic equalizer and a built-in reverbation unit. Each console features 2 auxiliary sends per channel, 3-band \pm 15dB EQ, balanced XLR and unbalanced phone jack inputs, and a 20dB pad followed by a variable input gain control with a peak overload LED indicator on each input channel. The EM Series consoles also feature a built-in reverb on aux 2 and a 1-octave/band graphic equalizer, each with bypass and insert/output jacks. **Basic Specifications & Suggested List Price:** The built-in power amplifier will deliver 150 watts into a 4-ohm load and 100 watts into an 8-ohm load. There are two output jacks and a separate headphone jack. The power amplifier features a massive heatsink for cool and reliable operation. EM1400 is priced at \$595, the EM1600 at \$795 and the EM1800 at \$975.

YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave.; Buena Park, CA 90622; (714) 522-9011. **Product Name:** MC Series Consoles. **Contact:** Professional Audio Division. **Date Product Introduced:** April 1988. **Product Description & Applications:** The MC Series consists of the MC802 8 x 2 console, MC1202 12 x 2 console and the MC1602 16 x 2 console. The three MC Series consoles differ only in the number of input channels. Each console features 3 auxiliary sends per channel, 2 stereo auxiliary returns, 3-band EQ with a sweepable mid-band, balanced XLR and unbalanced phone jack inputs, insert send/return jacks, a 20dB pad followed by a variable input gain control with an LED overload indicator, L/R panning and a separate cue send. The MC Series consoles also feature a master headphone cue system and a talkback microphone XLR input that is assignable to all outputs. The consoles include switchable phantom power and three illuminated VU meters. **Basic Specifications & Suggested List Price:** The MC802 is priced at \$845, the MC1202 at \$1,145 and the MC1602 at \$1,345.

YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave.; Buena Park, CA 90622; (714) 522-9011. **Product Name:** MJ100 Multi-source Mixer. **Contact:** Professional Audio Division. **Date Product Introduced:** June 1988. **Product Description & Applications:** The MJ100 Multi-source Mixer allows simple selection of a variety of sources, while offering the user the flexibility of a much more complex system. The MJ100 is the ideal system for musicians, clubs, restaurants, meeting facilities, churches, sound or video DJs, radio and TV field production, as well as a variety of other applications. **Basic Specifications & Suggested List Price:** The MJ100 features a built-in microphone (an external microphone jack is provided) with its own fader, pan pot and effects send, one -20dB line input (ideal for instruments), an independent monitor select and level for headphone monitoring, an effects send control, a built-in delay/reverbator unit, a 5-band graphic equalizer and a unique line input section. Source Group 1 is selectable between inputs labeled TAPE, CD, AUX 1 and PHONO 1; Source Group 2 inputs are labeled TAPE, CD, AUX 2 and PHONO 2. Each Source Group has its own level control and a master level control, with two level meters for accurate control. In addition, there are master effects send and return controls for simple control of outboard processing equipment. \$345.

YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave.; Buena Park, CA 90622; (714) 522-9011. **Product Name:** MV422 Multi-source Mixer. **Contact:** Professional Audio Division. **Date Product Introduced:** January 1988. **Product Description & Applications:** The MV422 Multi-source Mixer allows simple selection and mixing of a variety of sources, while offering the user the flexibility of a much more complex system. The MV422 is the ideal system for clubs, restaurants, meeting facilities, churches, sound or video DJs, radio and TV field production, as well as a variety of other applications. **Basic Specifications & Suggested List Price:** The MV422 has 4 microphone inputs, each with EQ, pan switch and aux send. There are built-in BBD delay and return/send controls. The line input section has two groups of four sources with cross-over fader between the two source groups. Auto Mute (mic ducking) allows hands-free operation. Comprehensive output control makes the MV422 extremely suitable for a wide range of applications. \$845.

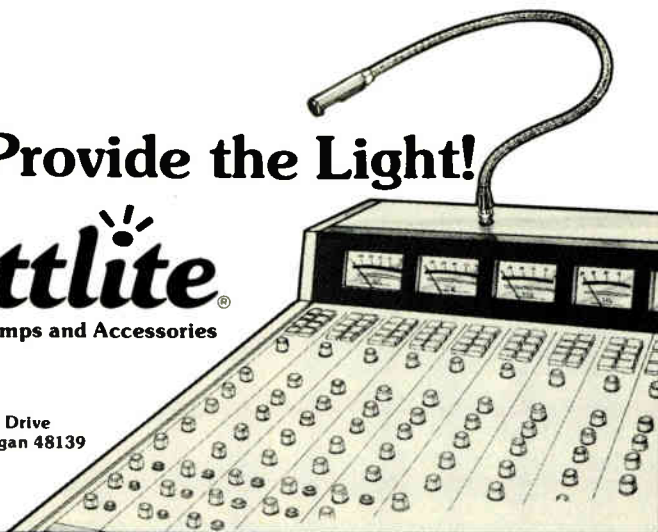
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MUSIC PRODUCTS

1989

ADA SIGNAL PROCESSORS, INC.: 7303D Edgewater Dr.; Oakland, CA 94621; (415) 632-1323. **Product Name: MP-1 MIDI Programmable Tube Preamp.** Date Product Introduced: January 15, 1988. **Product Description & Applications:** Programmable MIDI Tube Preamp with 128 different programs. Tri-state voicing selection between Tube-Clean, Distorted-Tube and Solid State. Each voicing mode has three programmable gain levels: overdrive 1, overdrive 2 and Master Gain. Digitally controlled 4-band EQ, programmable chorus with depth and rate and programmable effects loop with level control. MIDI In, Out and Thru. **Basic Specifications & Suggested List Price:** The MP-1 comes with two 12AX7A low-noise tubes for four stages of gain. Solid State section has two gain stages and a programmable compressor. The MP-1 comes with a one-year parts and labor warranty. Optional three-year extended warranty. List price \$799.95.

THE AIRCRAFT DIGITAL PRODUCTION MUSIC LIBRARY: 77 N. Washington St.; Boston, MA 02114; (800) 343-2514; (617) 367-4962. **Product Name: The AirCraft Music Library.** Contact: Mark Cuddy, exec. producer. Date Product Introduced: January 1988. **Product Description & Applications:** The AirCraft Music Library is a contemporary production music library on 25 digital compact discs, featuring many music styles, full length mixes, A/V mixes, a complete broadcast edit package, shotguns, bumpers, stingers, "SpeedSearch Music Review," cross reference catalog and cost-free compact disc updates. For a production music library that's new, different, superior in quality and as fresh as your next production, this is the one! **Basic Specifications & Suggested List Price:** Available on an annual subscription. License fees are tailored to customer's specific needs according to geographical distribution and amount of usage. Yearly, quarterly or monthly plans available.

AKAI PROFESSIONAL: 1316 East Lancaster; Fort Worth, TX 76113; (817) 336-5114. **Product Name: S1000.** Contact: Mike McRoberts. Date Product Introduced: June 1988. **Product Description & Applications:** 16-bit, stereo digital sampler. Large 8-line by 40-character LCD display allows easy editing of sounds, including waveform editing. Stereo outputs, and eight programmable outputs, are provided for complete mixing flexibility. A unique "Time-Stretch" feature allows the playback time of samples to be changed without affecting pitch. The S1000 will be compatible with S900 disks and samples, allowing S900 owners to keep their library. **Basic Specifications & Suggested List Price:** 16-bit linear sampling resolution; 2MB memory standard; 23 seconds sampling time; mono 44.1kHz; 11.5 seconds stereo 44.0kHz. 128 samples; 16-voice polyphony, eight loop points; up to four samples per key may be switched or crossfaded with velocity; programmable panning.

AMPLIFIED MUSIC PRODUCTS CORP.: 9829 Independence Ave.; Chatsworth, CA 91311; (818) 709-0518. **Product Name: AMP Model 312.** Contact: Roger F. Smith, VP Date Product Introduced: January 1988. **Product Description & Applications:** Self-contained lead guitar amplifier with 12" speaker, gain, foot-switchable overdrive, bass, mid-range and treble controls, foot-switchable reverb, master volume and headphone jack. **Basic Specifications & Suggested List Price:** 30 watts. Suggested list price \$299.

AMPLIFIED MUSIC PRODUCTS CORP.: 9829 Independence Ave.; Chatsworth, CA 91311; (818) 709-0518. **Product Name: AMP Model 4 X 4 Plus.** Contact: Roger F. Smith, VP. Date Product Introduced: January 1988. **Product Description & Applications:** Lead guitar amplifier head with two gain/limiters, two noise gates, four foot-switchable channels (two "clean" channels with bass, mid, treble and volume controls and two "dirty" channels with gain/drive, bass, mid, treble and volume controls), two groups of effects with channel assign buttons, master stage volume and channel select buttons. Footswitch included. **Basic Specifications & Suggested List Price:** 250 watts at 4 ohms, 160 watts at 8 ohms. Back panel includes 2 speaker output jacks, headphone jack, three effects loops, alternate channel jack and balanced recording output with level adjust and direct instrument out. Suggested list price \$1,495.

ASSOCIATED PRODUCTION MUSIC: 6255 Sunset Blvd., #820; Hollywood, CA 90028; (213) 461-3211. **Product Name: Bruton Gold Classics.** Contact: Jerry Burnham, E. Coast sales mgr. Date Product Introduced: Spring 1988. **Product Description & Applications:** Bruton Gold Classics is a collection of seven CDs containing over 150 of the most popular passages from the classical repertoire. Everything from Bach's *Brandenburg Concerti* to Rimsky-Korsakov's *Flight of the Bumblebee*. All music was recorded by famous European orchestras. **Basic Specifications & Suggested List Price:** Seven CDs for \$100. Annual blanket for \$750.

ASSOCIATED PRODUCTION MUSIC: 6255 Sunset Blvd., #820; Hollywood, CA 90028; (213) 461-3211. **Product Name: Coombe Music International Re-recorded Hits.** Contact: Jerry Burnham, E. Coast sales mgr. Date Product Introduced: Spring 1988. **Product Description & Applications:** The Coombe library contains over 15,000 sound-alike versions of hit songs, TV and movie themes, children's and classical selections. Coombe is currently recording over ten new chart hits every month. And if we don't have the selection you want, we'll record it for you. Coombe represents only the master rights to these recordings. Synchronization rights must be obtained from the publisher, or copyrights must be obtained from the publisher or copyright holder. **Basic Specifications & Suggested List Price:** Prices vary according to clearance category: non-broadcast—\$500, broadcast—\$1,000, for sale—\$1,500, theatrical—\$3,000.

ASSOCIATED PRODUCTION MUSIC: 6255 Sunset Blvd., #820; Hollywood, CA 90028; (213) 461-3211. **Product Name: Sonoton Recorded Music Library.** Contact: Jerry Burnham, E. Coast sales mgr. Date Product Introduced: July 1988. **Product Description & Applications:** The Sonoton music library contains over 200 albums of music ranging in style from classical to industrial and a wide range of ethnic music. To date there are 23 CDs, seven of which were recorded in UHJ Ambisonic Surround Sound. APM is proud to add Sonoton to our growing roster of music libraries: KPM, Bruton, Conroy and Themes. **Basic Specifications & Suggested List Price:** Records are \$10, CDs are \$15.



AUDIO ACTION PRODUCTION MUSIC LIBRARY

AUDIO ACTION: 10746 1/2 Magnolia Blvd.; North Hollywood, CA 91601; (800) 533-1293; (818) 505-9537. **Product Name: Audio Action Production Music Library.** Contact: Rhona Nici, exec. VP. Date Product Introduced: April 1988. **Product Description & Applications:** New production music on compact disc produced by Josef Weinberger. Soundstage, Amphonic, KOKA Media (formerly RCA Media) and Primrose libraries. Selections range from classical to industrial and new age musical styles. New material is continuously being added. **Basic Specifications & Suggested List Price:** All compact discs are priced at \$20 each. The music may be licensed on a needle-drop, per-production or annual basis and is available

for synchronization in all media. Needle-drop rates are based upon type of production. Annual blankets range from \$750 to \$3,000.

CESIUM SOUND: 1640 Walnut St., Ste. C; Berkeley, CA 94709; (415) 548-6193. **Product Name: The Definitive SQ-80 Library.** Contact: Nick Longo, proprietor. Date Product Introduced: April 1988. **Product Description & Applications:** 320 sounds for the Ensoniq SQ-80, arranged in categories of 40 sounds each, available on disk. Categories are: 1) keyboards; 2) guitars, basses and drums; 3) synths and techno; 4) new age; 5) pitched percussion; 6) bells and harps; 7) voices and strings; 8) brass and woodwinds. **Basic Specifications & Suggested List Price:** Prices are \$12.50 per volume, \$20 for two volumes, \$30 for four, \$50 for all eight.

CESIUM SOUND: 1640 Walnut St., Ste. C; Berkeley, CA 94709; (415) 548-6193. **Product Name: The Professional D-50 Library.** Contact: Nick Longo, proprietor. Date Product Introduced: April 1988. **Product Description & Applications:** 256 sounds for the Roland D-50, arranged in four volumes of 64 sounds each, available on RAM or ROM cards; also, various librarian formats. Categories are: 1) Top 40; 2) analog; 3) new age; 4) orchestral. **Basic Specifications & Suggested List Price:** RAM cards \$80 each. ROMs \$50, two for \$90, four for \$160. All four volumes on librarian disk \$80.

CHOCOLATE PASTA PRODUCTIONS: 21 Orleans Green; Coram, NY 11727; (516) 928-4284. **Product Name: Lounge Lizard Sound Disks for the Emax.** Contact: Gene DeLibero. Date Product Introduced: July 1988. **Product Description & Applications:** The ultimate sound disks for the Emax sampling keyboard. Perfect for the gig or studio. Crossfades, splits, layers and more. Call or write for more information. **Basic Specifications & Suggested List Price:** \$29.95 each.

J.L. COOPER ELECTRONICS: 1931 Pontius Ave.; West Los Angeles, CA 90025; (213) 473-8771. **Product Name: MSB Plus Rev. 2.** Contact: Bob Bentrup, sales mgr. Date Product Introduced: July 15, 1988. **Product Description & Applications:** J.L. Cooper's most popular switch box has been improved. The MSB Plus Rev. 2 is an 8-input and 8-output MIDI switching system that now features program change mapping. Program advance may be actuated by a footswitch. Applications include instant setup of all your MIDI-controlled reverb units and other effects. The MSB Plus Rev. 2 stores 64 routing setups in battery-backed memory and also features two programmable MIDI processors, a merger and the Panic Button™. **Basic Specifications & Suggested List Price:** 8-in/8-out; large, easy-to-read LED display; two MIDI processors; MIDI merger; 64 programs, lithium battery-backed memory; footswitch jack; 512 program change command storage; one rackspace; Panic Button. New lower suggested retail price of \$449.

DAUZ DESIGNS LTD.: 1706 N. Vine St., Ste. 333; Hollywood, CA 90028; (213) 281-4779. **Product Name: Daz Drum Pad.** Contact: Dan Daz. Date Product Introduced: December 1987. **Product Description & Applications:** Six-inch, velocity-sensitive trigger pads. Features include: shock-mounted rubber playing surface; crosstalk eliminator caskets; adjustable dome-top clamp with tension rod fastening; standard 1/4" input jack. Used in conjunction with MIDI sound sources, trigger converters and drum brain units. **Basic Specifications & Suggested List Price:** \$89.95 list.

DDRUM, INC.: 25 Lindeman Dr.; Trumbull, CT 06611; (203) 374-0020. **Product Name: ddrum².** Contact: Agneta Elmsred. Date Product Introduced: 1988. **Product Description & Applications:** Digital precision for live and studio applications. Fully programmable and MIDI implemented. Poor acoustic sound to gadget electronic sounds. Playable pads with real heads and hoops for complete natural drum feel. No need to sacrifice technique with ddrum. **Basic Specifications & Suggested List Price:** Complete drum kits from suggested retail \$3,250.

DEWOLFE MUSIC LIBRARY: 25 W. 45th St.; New York, NY 10036; (212) 382-0220. **Product Name: DeWolfe Music Library.** Contact: Mitchel J. Greenspan, VP. Date Product Introduced: Constantly updated. **Product Description & Applications:** Production music library and music service. Our 1,000 LP discs of variety. More than 50 new LPs produced each year. DeWolfe Music Library now has over 35 compact discs, with more being produced regularly. SFX are available too. **Basic Specifications & Suggested List Price:** Music may be used on a needle basis or an annual blanket license for unlimited music use for one year.

DIGITAL MUSIC CORP.: 5312-J Derry Ave.; Agoura Hills, CA 91301; (818) 991-3881; FAX: (818) 991-4185. **Product Name: MX-8 MIDI Patchbay/Processor.** Contact: Gene Barkin, VP. Date Product Introduced: Fall 1987. **Product Description & Applications:** The MX-8 MIDI Patchbay/Processor routes 6 inputs to 8 outputs and stores 50 configurations. Numerous features include: merging, MIDI delay, filters, velocity cross switch, keyboard mapping, patch-chaining and channel reassignment. Optional software allows control from most computers, including IBM, Macintosh and Atari. **Basic Specifications & Suggested List Price:** Retail \$395.

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NEW PRODUCTS

MUSIC PRODUCTS

DIGITECH; 5639 S. Riley Ln.; Salt Lake City, UT 84107; (801) 268-8400. **Product Name: GPO-16 Guitar Signal Processor.** Contact: Dean Stubbs, comm. dir. Date Product Introduced: September 1988. **Product Description & Applications:** The new guitar processor. GPO-16 is a digital multi-effects signal processor able to perform up to six different effects and/or signal processes at a time. The unit offers such effects as: three different kinds of distortion; reverberation, reverse reverb and gated reverb; delays and multi-tap delays; chorusing; flanging; parametric equalization; compression. The new GPO-16 is fully programmable, MIDI controllable and MIDI dynamic, offering 128 user-definable presets. **Basic Specifications & Suggested List Price:** Suggested U.S. list price \$899.95.

DOD ELECTRONICS CORPORATION; 5639 S. Riley Ln.; Salt Lake City, UT 84107; (801) 268-8400. **Product Name: FX-87 The EDGE.** Contact: Dean Stubbs, comm. dir. Date Product Introduced: July 1988. **Product Description & Applications:** The EDGE pedal gives the sound new presence, clarity and transparency using a unique signal conditioning process that has been engineered to fit into DOD's compact FX products chassis. The FX-87 adds a slight "edge" to the sound after other signal processing may have dulled it. **Basic Specifications & Suggested List Price:** Bandwidth: 40Hz to 16kHz; signal-to-noise ratio: 90dB at unity gain. Suggested U.S. list price \$79.95.

DOD ELECTRONICS CORPORATION; 5639 S. Riley Ln.; Salt Lake City, UT 84107; (801) 268-8400. **Product Name: FX-27 Silencer.** Contact: Dean Stubbs, comm. dir. Date Product Introduced: July 1988. **Product Description & Applications:** DOD's new Silencer pedal reduces noise from your guitar without the hard clipping of a noise gate. This is the answer to noisy effects going into your amplifier. The Silencer's operation is so subtle that when properly set, its effect on the signal is inaudible—but for the removal of unwanted noise. This unit is a welcome addition to any effects setup. **Basic Specifications & Suggested List Price:** Suggested U.S. list price \$79.95.

DYNACORD; 2697 Lavery Ct., Unit 16; Newbury Park, CA 91320; (805) 499-6863. **Product Name: ADS.** Contact: Robby Frank, sales & mktg. mgr. Date Product Introduced: October 1988. **Product Description & Applications:** The ADS is a 16-bit, 16-voice, phase-locked stereo sampler. This two-space rack-mount unit has a capacity of 8 megabytes of RAM, for almost 100 seconds of full-bandwidth sampling. Its innovative and efficient design creates unsurpassed sampling quality at a very reasonable price. **Basic Specifications & Suggested List Price:** 16-bit, phase-locked stereo sampling, 16-voice polyphony with dynamic sound allocation, 20kHz frequency response, 44.1kHz sampling rate, 8 programmable polyphonic outputs, double oversampled digital filters, complex modulation matrix, three ADSRs and two LFOs per voice, two loops per sample, loop smoothing, SCSI interface. Suggested list \$4,895.



POP-ROCK DRUM SAMPLES ON CD

EAST-WEST COMMUNICATIONS INC.; 8515 Hollywood Blvd.; Los Angeles, CA 90069; (213) 650-8972; FAX: (213) 654-4539. **Product Name: Pop-Rock Drum Samples on CD.** Contact: Rhys Moody, VP sales. Date Product Introduced: June 1988. **Product Description & Applications:** Over 700 drum and percussion samples on one compact disc. All sounds are professionally recorded digitally and are of the

highest fidelity. Special emphasis has been placed on including sounds more suitable for pop, rock and dance music production, with a wide enough variety of sounds for the most abstract ideas. **Basic Specifications & Suggested List Price:** 44K, 16-bit compact disc. Retail for \$99.

E-MU SYSTEMS; 1600 Green Hills Rd.; Scotts Valley, CA 95066; (408) 438-1921. **Product Name: Emulator III Digital Sound Production System.** Contact: Suz Howells, advertising mgr. Date Product Introduced: December 1987. **Product Description & Applications:** Features stereo sampling, 16 voices, 16-bit linear data format (30kHz and 44.1kHz sample rates), variable sample rate pitch shifting with 2x oversampling (for virtually distortion-free transposition), up to 8MB internal RAM, up to 135 seconds sampling time. A 40MB internal hard disk drive is standard. Three envelope generators and one multi-rate LFO per channel, advanced 16-track sequencer with cut-and-paste, SMPTE cue list sequencing and parametric quantization for a very human feel. SCSI, MIDI and RS-422 interfaces. Keyboard and rack-mount versions available. **Basic Specifications & Suggested List Price:** Price: \$12,995 (keyboard).

ENSONIQ CORP.; 155 Great Valley Pkwy.; Malvern, PA 19355; (215) 647-3930. **Product Name: EPS Performance Sampler.** Contact: Jeff Hasselberger, (609) 386-7007. Date Product Introduced: January 1988. **Product Description & Applications:** An all-in-one workstation, the EPS features an expressive MIDI keyboard, 8-track sequencer, complete sampling and editing section as well as an onboard disk drive for sound, sequence and MIDI system storage. Its features include 20 dynamically assigned voices, Poly-key™ polyphonic aftertouch, the ability to load sounds while the instrument continues to play and expandable memory. **Basic Specifications & Suggested List Price:** MSRP \$1,995. The EPS sampling workstation features 20 dynamically assigned voices, sample rates from 6.25kHz to 52.1kHz, weighted, velocity-sensitive keyboard with Poly-key polyphonic pressure, 96dB dynamic range.

FIRSTCOM/MUSIC HOUSE; 13747 Montfort Dr., Ste. 220; Dallas, TX 75240; (214) 934-2222; (800) 858-8880. **Product Name: FirstCom/Music House Library.** Contact: Cecelia Garr, exec vice president. Date Product Introduced: 1987, continually updated. **Product Description & Applications:** Over 50 hours of all-new music on CD. Brand new, continually updated music to fill all of your broadcast and AV needs. Tremendous variety of fresh new sounds from 45 superstar writers. Impeccably produced and recorded. Now you can afford the world's finest music libraries. **Basic Specifications & Suggested List Price:** Available on one- or two-year blanket agreements or flexible pay-per-use basis.

FORTE MUSIC, INC.; PO Box 6322; San Jose, CA 95150; (415) 965-8880. **Product Name: Mentor MIDI Master Controller.** Contact: Steve Salani. Date Product Introduced: February 1988. **Product Description & Applications:** The Mentor is an advanced MIDI processor that provides the musician with unprecedented control and creative options, without requiring knowledge of MIDI hex codes or other technical details. The Mentor is placed between the keyboard (or other MIDI instrument) and the MIDI sound generators, each of which may be independently programmed for many parameters. The entire MIDI system becomes an integrated, manageable and fully programmable unit. **Basic Specifications & Suggested List Price:** 2 MIDI inputs, 4 MIDI outputs. Programmable switch and voltage inputs. 64 presets, 128 with memory card. Eight internal MIDI data processors, independently programmed. Functions include program, volume, transpose, key-mapping, delay, velocity translation, chord, controller mapping, event mapping and more. 1U rack plus remote control. List \$1,450.

FOUR DESIGNS CO.; 6531 Gross Ave.; Canoga Park, CA 91307; (818) 716-8540. **Product Name: Tuner Helper™.** Contact: Dave Riddle. Date Product Introduced: January 1988. **Product Description & Applications:** Tuner Helper is a mic stand accessory designed to hold tuners, MIDI controllers, drum machines, etc. **Basic Specifications & Suggested List Price:** \$12.95.

GALLIEN-KRUEGER; 1355 Dell Ave.; Campbell, CA 95008; (408) 379-3344. **Product Name: Amplifiers—2100CEL Stereo Guitar Combo.** Contact: John Griesel, Marcom mgr. Date Product Introduced: June 1988. **Product Description & Applications:** The 2100CEL has a digital power amp and supply. Features include two sets of 4-band EQ, channel switching, stereo chorus, stereo reverb, built-in variable noise reduction, compression and variable gain. The unit also has stereo balanced outs for recording or PA interface as well as a stereo aux in for hookup to stereo effects. The package has 2 x 8" speakers and weighs a mere 38 lbs. **Basic Specifications & Suggested List Price:** 200 watts (100 watts per side stereo); 2 x 8" speakers; built-in stereo effects, five-function footswitching available; suggested retail price \$1,499.

GET ORGANIZED; 55 Azalea Ln.; Bonny Doon, CA 95060; (408) 425-7269. **Product Name: Cord Control Kit™.** Contact: Robby Frank, owner. Date Product Introduced: June 1988. **Product Description & Applications:** The Cord Control Kit is an organizing system for bundling, labeling and securing cords of all sizes, in live and in studio environments. It creates

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GIBSON STRINGS & ACCESSORIES; 1725 Fleetwood Dr; Elgin, IL 60123; (312) 741-7315. Product Name: Epiphone G.A.S. Digital Delay. Contact: Todd S. Mauer, dir. of mktg. & sales. Date Product Introduced: June 1988. Product Description & Applications: EP-DD-90 is equipped with four controls—delay level, feedback, time and range—and features 20-400 ms of delay time, a very sturdy and compact A.B.S. "casing" including a steel base plate, an LED status indicator signifying when the effect is on as well as alerting you when the battery needs to be replaced, and stereo output jacks allowing you to connect your EP-DD-90 to two amplifiers, producing a stereo sound. Basic Specifications & Suggested List Price: Input impedance: 470k ohms; output impedance: 200 ohms; maximum input level: +5dB (normal), +2dB (effect); maximum output level: +8dB (effect); S/N ratio: -90dB; delay time: (short) 20-60ms, (medium) 40-130ms, (long) 130-400ms; power requirement: 9-volt battery or 6.5mA. Suggested list price \$146.95.

GIBSON STRINGS & ACCESSORIES; 1725 Fleetwood Dr; Elgin, IL 60123; (312) 741-7315. Product Name: Sonic Plus Electronic Guitar Strings. Contact: Todd S. Mauer, dir. of mktg. & sales. Date Product Introduced: June 1988. Product Description & Applications: Sonic Plus Electric Guitar (G-800) Strings are designed for guitarists who desire the ultimate in sustain and durability as well as a truly brilliant sound. Sonic Plus strings are made of high-quality stainless steel and are manufactured to perform consistently under today's most demanding playing conditions. With our revolutionary ball end wrap system, sheer harmonic brilliance and unmatched quality assurance program, Gibson Strings & Accessories Sonic Plus Strings are the choice of today's pros. Basic Specifications & Suggested List Price: String sets available in Sonic Plus (G-800) Series: G-800SUL (.008-.038 gauge) \$7.95/set; G-800UL (.009-.042 gauge) \$7.95/set; G-800ULC (.009-.046 custom gauge) \$9.45/set; G-800L (.010-.046 gauge) \$7.95/set; G-800LC (.010-.039 custom gauge) \$9.45/set; and G-800LMC (.011-.043 gauge) \$9.45/set.

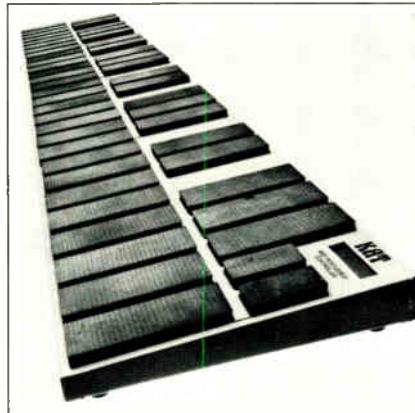
GOTCHA COVERED; 22N159 Pepper Rd.; Barrington, IL 60010; (800) 822-1899. Product Name: Gotcha Covered™, The Dust Cover Company. Contact: Gary Winder, VP. Date Product Introduced: January 1988. Product Description & Applications: Full line of dust covers for keyboards, mixers, drum machines and computers. Made from heavy-duty, tear-resistant Intex™ fabric, and anti-static treated. Completely dust-proof and waterproof. Features high-tech color designs to enrich appearance. Custom cover facility also available. Basic Specifications & Suggested List Price: Prices range from as low as \$24.50 to \$50.50. Custom covers charged on individual quotation, depending on size.

INDUSTRIAL STRENGTH INDUSTRIES; 13042 E. Moore St.; Cerritos, CA 90701; (213) 921-2341. Product Name: Sideman. Contact: Bill Teipe. Date Product Introduced: October 1988. Product Description & Applications: The Sideman is a compact, battery-powered mixer/effect unit that allows you to plug the headphone output of a Walkman® into it and mix in a guitar and vocal for rehearsal purposes. The Sideman includes overdrive/distortion effects and chorus or flanging. Output of Sideman can be used as a guitar preamp/effects unit to plug into a mixer or recorder. Basic Specifications & Suggested List Price: \$60 factory direct (\$120 list).

INTERNATIONAL MIDI ASSOCIATION; 5316 W. 57th St.; Los Angeles, CA 90056; (213) 649-6434. Product Name: MIDI 1.0 Detailed Specification. Contact: Lachlan Westfall, president. Product Description & Applications: The MIDI 1.0 Detailed Specification, document Version 4.0, has been completely rewritten and includes all the latest addenda to the MIDI specification including the sample dump standard and MIDI time code. Basic Specifications & Suggested List Price: Price on the Specification is \$35.

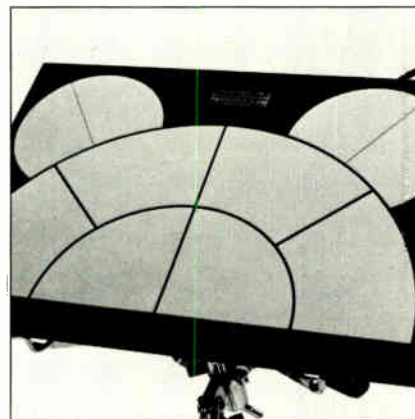
INVISIBLE PRODUCTS CORP.; 159 Commercial St.; Lynn, MA 01905; (617) 592-5992. Product Name: MS3000 MIDI Studio Workstation. Contact: Don Lang, president. Date Product Introduced: January 28, 1988; improved version Nov. 1, 1988. Product Description & Applications: Three-tier, height-adjustable workstation for all home "tapeless" or cassette applications, plus setups in commercial control rooms where large MIDI systems are to be wired into the board. Sets up in seconds; comes complete with two shelves and computer keypad extension. Optional third shelf available when keyboard is not used on front tier. Five-year warranty. Basic Specifications & Suggested List Price: New tensioner design, three-tier, 2 shelves (each 13.5" x 42" x 3/4"), plus computer keypad extension. Height adjustable at 1 3/4" increments from 27 1/2" to 50". Suggested weight capacity 250 lbs. Suggested retail \$199.50 complete. Optional third shelf \$28

J.T. ENTERPRISES; 6924 W. Arrowhead; Kennewick, WA 99336; (509) 735-7430. Product Name: DT-1 Drumbug™ Trigger. Contact: Steve Hickman. Date Product Introduced: March 1988. Product Description & Applications: Durable piezo transducer in aluminum housing made to withstand at-use. Has a phono plug on top so the cable can be detached. If any part happens to break, replace either the sensor head or the cable. Used for triggering drum synth controllers off acoustic set of drums. High-voltage output and sensitivity. Cable consists of 90-degree switchpad, and phono plug keeps cable off pin so it won't false-trigger. Basic Specifications & Suggested List Price: One inch in diameter, 1/2"-high phono plug on top for replaceable cable. Comes with cable: 90-degree Switchcraft® phono plug, 7' of durable cable, 1/4" female with mounting clip and two adhesive tape pads. Retail \$39.95.



KAT

KAT; 515 Washington Ave.; West Hempstead, NY 11552; (516) 481-3004. Product Name: KAT. Contact: Mario DeCintiis, sales dir. Date Product Introduced: New version late 1987. Product Description & Applications: The KAT MIDI Percussion Controller is velocity-sensitive, fully polyphonic and has a vibe-like layout. It provides a powerful, flexible means for drummers/percussionists to play in the world of MIDI. It's modular, from 1 to 4 octaves, and has rubber playing pads with a practice pad feel for player comfort and to limit the impact noise. The KAT makes no sound itself; it provides a natural means to control any other MIDI instrument. Basic Specifications & Suggested List Price: 256 independent MIDI setups with multiple splits and up to three notes per pad. Each setup has settings for: MIDI channels, pitch ranges, minimum and maximum velocity, velocity curves, hold times, pre-let changes, effects device controls, footswitch assignments and MIDI note reassignment. Backlit master octave \$1,170, expander octaves \$595 list.



DRUMKAT

KAT; 515 Washington Ave.; West Hempstead, NY 11552; (516) 481-3004. Product Name: drumKAT. Contact: Mario DeCintiis, sales dir. Date Product Introduced: June 1988. Product Description & Applications: The drumKAT is a velocity-sensitive MIDI controller for drummers with 10 zoneable playing pads. The playing surface has an incredibly responsive feel and responds to a wide dynamic range. Its 16-character by 4-line backlit display makes entering information easy. It has 9 trigger inputs, 2 MIDI ins, 2 prs. of MIDI Outs, and built-in surge protection. It's compact! It can be mounted on a snare drum stand or on a tom stand. Basic Specifications & Suggested List Price: 32 kits. Settings include: MIDI channel, note

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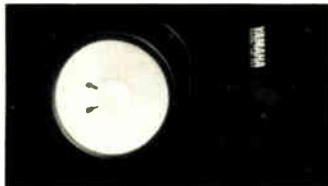
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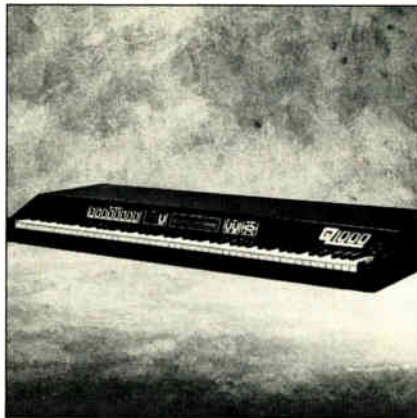
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—CONTINUED FROM PREVIOUS PAGE

value, minimum and maximum velocities, velocity curves and gate times. Three independent notes per zone with individual delay times. Dynamics can control velocity, gate time or pitch. Has a built-in sequencer, a "controlled clock," powerful MIDI mapping and 32-channel MIDI. \$995 list.



GZ-1000

KEYBOARD TECHNOLOGIES INC.: 16137 Sherman Way, Ste. 169; Van Nuys, CA 91406; (818) 891-6999. **Product Name: GZ-1000.** Contact: Keith Alexander, sales mgr. Date Product Introduced: June 24-26, 1988 Atlanta NAMM. **Product Description & Applications:** The 88-note GZ-1000 performance keyboard with wooden keys features the world's first adjustable, true piano-hammer action in an electronic keyboard. The innovative percussive key sensors and powerful MIDI operator system allow multiple synthesizer and module control. Up to eight easily designatable velocity and aftertouch scales with high/low limits, custom user scales including reverse scales, multiple MIDI messages, all simultaneously transmitted over MIDI. An onboard disk drive saves and loads GZ setups and system exclusive patch data. Studio ideal. **Basic Specifications & Suggested List Price:** Four mappable UARTS, eight software-controlled MIDI Out/Thrus and two MIDI Ins with specialized merge and filtering. The GZ-1000 also features three footswitches, four footpedals and two controller wheels, all programmable. In edit, designated keys are used for cursor movement, jumping between edit pages and alphanumeric entry. \$3,995.

KITTY HAWK: 160 Belmont Ave.; Garfield, NJ 07026; (201) 478-6903. **Product Name: Kitty Hawk M1 Guitar Amplifiers.** Contact: Josh Radin, product specialist. Date Product Introduced: January 1988. **Product Description & Applications:** The Kitty Hawk M1 guitar amplifiers are all-tube, professional-quality combos and heads. Features include: four-mode channel switching; class A/B power amp operation; switchable bias for 616GC or EL34 power tubes; separate equalization controls for clean and overdriven modes. **Basic Specifications & Suggested List Price:** KH 100H-M1: 100-watt head, suggested retail \$1,379; KH 60H-M1: 60-watt head, suggested retail \$1,219; KH 100C-M1: 100-watt combo w/Celestion speaker, suggested retail \$1,559; KH 60C-M1: 60-watt combo w/Celestion speaker, suggested retail \$1,399.

KITTY HAWK: 160 Belmont Ave.; Garfield, NJ 07026; (201) 478-6903. **Product Name: Kitty Hawk Rack System.** Contact: Josh Radin, product specialist. Date Product Introduced: June 1988. **Product Description & Applications:** The Kitty Hawk Rack System is made of five components. The KHPRE-1 is an all-tube, four-mode guitar preamplifier. The KHPWR-1 is a 60-watt per channel, all-tube stereo amplifier. The KHFX-1 is an effects mixer that routes one input signal to six effects sends and six stereo returns. The KHPB-1 is an effects switching system that responds to MIDI. The KHPCC-1 is a foot controller that sends MIDI program change commands. **Basic Specifications & Suggested List Price:** KHPRE-1 4-mode tube preamp, sugg. retail \$699.95; KHPWR-1 120-watt stereo power amp, sugg. retail \$999.95; KHFX-1 6-channel effects mixer, sugg. retail \$549.95; KHPB-1 MIDI patch bay, sugg. retail \$695.95; KHPCC-1 MIDI foot controller, sugg. retail \$529.95.

KORG U.S.A. INC.: 89 Frost St.; Westbury, NY 11590; (516) 333-9100. **Product Name: S1 Production Workstation.** Contact: Michael Kovins, sr VP. Date Product Introduced:

November 1988. **Product Description & Applications:** The S1 Production Workstation is a 12-voice, 16-bit sampler/drum machine and 16-track MIDI/SMPTÉ sequencer in a comprehensive user-friendly package. The S1's variable sampling rate of up to 44.1kHz, and two sampling inputs, enable users to record 16-bit, CD-quality samples in true stereo. The S1 contains 1MB of 16-bit ROM-based sounds and 512K of user-definable RAM (optionally expandable to 2MB). The S1's sequencer is capable of reading and writing SMPTÉ time code in six frame rates (including drop frame), MIDI time code and song position pointer. The S1 will be available with an optional SCSI hard disk interface, CRT and ASCII keyboard interface, AES/EBU digital I/O and four additional audio outputs. **Basic Specifications & Suggested List Price:** 16-bit sampler/drum computer, 16-track/16-channel MIDI/SMPTÉ multi-track sequencer, 120,000+ note sequencer, built-in 3.5"; 2HD floppy disk drive, sampling rate 44.1kHz - 2.1kHz selectable, 512KB user memory with 1.5 megabytes optional memory expansion.

KORG U.S.A. INC.: 89 Frost St.; Westbury, NY 11590; (516) 333-9100. **Product Name: M1 Music Workstation.** Contact: Michael Kovins, sr VP. Date Product Introduced: June 1988. **Product Description & Applications:** Korg's M1 Music Workstation is a multi-timbral, 61-note digital synthesizer using all-digital processing with high-resolution sampled sounds, which enables it to combine sampling and synthesis technologies. The M1 features two MegaWords (four megabytes) of multi-sampled 16-bit PCM, ROM-based sounds. With instant access to 100 programs and 100 combinations, users are no longer hampered by limited preset sounds or time consuming disk load functions. The M1's sounds can be processed with the two independent, programmable, stereo digital effects, which can be used in series or parallel. Up to four different digital effects can be programmed for each program combination and sequence. **Basic Specifications & Suggested List Price:** 61 keys with velocity and aftertouch, 16 voices, 16 oscillators, 2 MegaWords (4 megabytes) 16-bit ROM memory, 100 programs, 100 combinations, 33 effects, 44 drum sounds, MIDI In/Out/Thru. Internal sequencer 10 songs, 100 patterns, 8 tracks, 7,700 notes.

KURZWEIL MUSIC SYSTEMS: 411 Waverley Oaks Rd.; Waltham, MA 02154; (617) 893-5900. **Product Name: K250 RAM Cartridge.** Contact: Mark Bird, commercial products. Date Product Introduced: June 1988. **Product Description & Applications:** Kurzweil introduces an intelligent memory cartridge for the K250. The 250 RAM cartridge contains ¼ megasample of RAM for up to 5 seconds of user sample (at 50K sampling rate), or for an additional 30,000 notes of storage capability for sequencing. The 250 RAM Cartridge operates in conjunction with Kurzweil's new Version 6.0 software for the K250 and the 250RMX, which also provides front panel remote control of Kurzweil 1000 Series modules. **Basic Specifications & Suggested List Price:** Storage capacity: ¼ megasample or 0.5 megabyte RAM; sampling memory capacity: 10 seconds at 25K, 5 seconds at 50K; sequencing capacity: up to 30,000 notes; system requirements: cartridge adapter option, Version 6.0 software. List prices: RAM cartridge \$795, cartridge adapter \$60, V6.0 \$395.

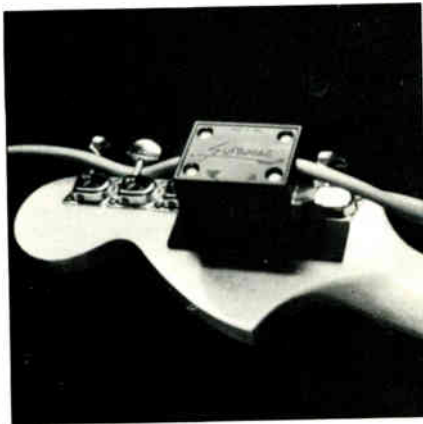
KURZWEIL MUSIC SYSTEMS: 411 Waverley Oaks Rd.; Waltham, MA 02154; (617) 893-5900. **Product Name: PXA/UXA Sound Blocks.** Contact: Mike Malozola, M.I. Products. Date Product Introduced: June 1988. **Product Description & Applications:** PXA and KXA are the first in a series of ROM-based sound blocks for expansion of the 1000 series products. PXA (for the 1000 PX expander) and KXA (for the K1000 keyboard) add flutes, basses, drum kits, Latin percussion, electric pianos and numerous synth wave tables to the existing complement of real instrument samples. Approximately 100 factory keyboard setups, plus the ability to program and store your own with Objectmove™, are supplied with PXA and KXA. **Basic Specifications & Suggested List Price:** Configuration: ROM chip set; installation: by authorized Kurzweil service center; samples: approximately 30 real instruments plus 40 wave-tables; list price: \$495.

LAKE BUTLER SOUND CO., INC.: 5331 W. Lk. Butler Rd.; Windermere, FL 32786; (407) 656-5515. **Product Name: MIDI Mitigator CFC Series.** Contact: Emmett Bradford, president. Date Product Introduced: September 1988. **Product Description & Applications:** The MIDI Mitigator CFC Series are MIDI continuous foot controllers. They allow the user to custom design the function of each pedal by defining the MIDI data sent when the pedal is moved. Among the many real-time applications are control of system exclusive parameters, simultaneous control of multiple MIDI controllers, and cross-fades between synthesizers. They are available in configurations of 1, 2 and 4 pedals per unit. **Basic Specifications & Suggested List Price:** Dimensions: CFC-4 is 18"W x 10"D x 3"H.

LAKE BUTLER SOUND CO., INC.: 5331 W. Lk. Butler Rd.; Windermere, FL 32786; (407) 656-5515. **Product Name: MIDI Mitigator RFC-1.** Contact: Emmett Bradford, president. Date Product Introduced: January 1988. **Product Description & Applications:** The MIDI Mitigator RFC-1 features individual, simultaneous control over all 16 channels, generation and storage of any MIDI command string (up to 255 bytes each) allowed by MIDI spec. 640 "logical" footswitches to trigger those commands, a large 16-character display for song titles,

chaining of songs into 3 sets, pedal controller input, external control and backup, data merging and much more! **Basic Specifications & Suggested List Price:** List price: \$395. Dimensions: 24 1/8" W x 2 3/4" H x 8 3/4" D. Weight: 6.5 lbs. Display: vacuum fluorescent, 16 segment x 16 character; 1/2"-high characters. Memory: 8KB standard, 32KB optional (1.2KB are dedicated to internal use; the remainder is available to the user). Pedal: 0-75K

MANHATTAN PRODUCTION MUSIC; PO Box 1268; Radio City Station; New York, NY 10101; (800) 227-1954; (212) 333-5766. **Product Name: Compact Disc Music Library.** Contact: Roy Ferrin, dir. nat'l sales. Date Product Introduced: 1988. **Product Description & Applications:** Six new compact discs: MPM 12—*Metro Pulse*—contemporary rock and roll; MPM 13—*Passing Time*—mellow ballads and light fusion/funk; MPM 14—*Sea Breeze, Too*—in the Windham Hill style; MPM 15—*A Newer Age*—blend of new age music; MPM 16—*Holiday Music*—patriotic and Christmas music; MPM 17—*Network News Themes*—station IDs and contemporary themes for local and network news shows. **Basic Specifications & Suggested List Price:** All the music has been digitally mastered and in virtually every case edited into long-play, 60-, 30-, 20- and 10-second formats. Subscriptions are available on an annual blanket for unlimited use of the complete library or on a per-production basis. Call for rates!



SUSTAINIAC™ SUSTAIN SYSTEMS

MANIAC MUSIC INC., 6052 N. Guilford Ave.; Indianapolis, IN 46220; (317) 251-0470. **Product Name: Sustainiac™ Sustain Systems.** Contact: Alan Hoover, president. Date Product Introduced: June 1988. **Product Description & Applications:** Produces infinite sustain of stringed instrument notes by controlled acoustic feedback, via a transducer attached to the instrument. A breakthrough for studio guitarists who have previously had to rely on loud amplifier volume to achieve feedback. This is the one you've been hearing about! **Basic Specifications & Suggested List Price:** 50-watt floor box controller, headstock-mounted transducer (loudspeaker). Includes controls for adjusting string vibration harmonic content plus feedback intensity. Also has two footpedals for changing string harmonics in mid note! List price \$299 complete.

THE NEW TUBE CO. INC./TNT; 71—39 66th Rd., PO Box 202; Middle Village, NY 11379; (718) 894-2131. **Product Name: TNT Tubes, Mike Christian Pickups.** Contact: Joseph Sausa, president. Date Product Introduced: January 1988 N.A.M.M. **Product Description & Applications:** TNT Tubes: quality vacuum tubes for all audio and musical amplification applications. Mike Christian pickups, piezo, electric pickup molded into the saddles of a Tuneomatic-style bridge. This pickup allows any solid-body guitar to have an acoustic sound. **Basic Specifications & Suggested List Price:** TNT Tubes, call for prices. Mike Christian Pickups list price \$129.95.

OBERHEIM—ECC; 2015 Davie Ave.; City of Commerce, CA 90040-1704; (213) 725-7870; FAX: (213) 888-2874. **Product Name: PerF/X MIDI Performance Effects.** Contact: Tom Dunn, customer service. Date Product Introduced: June 1988. **Product Description & Applications:** A line of dedicated MIDI processing units targeted at performance and control applications with an emphasis on real-time performance control. The first two products in the line are the Cyclone, a sophisticated performance arpeggiator with sequencer-like capabilities, and the Systemizer, a multi-instrument controller with capacity for up to 16 MIDI devices and the ability to remember complete setups and to create layers and floating splits. **Basic Specifications & Suggested List Price:** Four local footswitch inputs and four MIDI controls are supported for real-time editing of any parameter. Memory expansion optional. Suggested retail price \$249. MADE IN USA.

OBERHEIM—ECC; 2015 Davie Ave.; City of Commerce, CA 90040-1704; (213) 725-7870; FAX: (213) 888-2874. **Product Name: Matrix-1000.** Contact: Tom Dunn, customer service. Date Product Introduced: January 1988. **Product Description & Applications:** The Matrix-1000 is a six-voice analog synth with 1,000 professional-quality patches onboard. It is based on the same voice architecture as the Matrix-6, so any of the

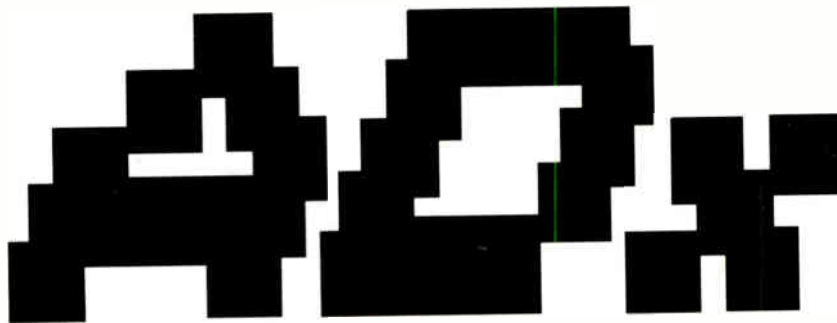
200 patches in RAM can be edited from a Matrix-6/R or a computer-based editor. Representing the combined talents of hundreds of synthesists, the Matrix-1000 makes the warmth of analog sound available in a single rackspace. **Basic Specifications & Suggested List Price:** 800 patches in ROM and 200 patches in RAM. Group mode allows the user to hook up two Matrix-1000s or a Matrix-1000 and a Matrix-6/6R for a true 12-voice instrument with rob and rotate. Transpose, fine tune, MIDI mono, unison and pitch bend select. Made in the USA, suggested retail \$595.

OFFBEAT SYSTEMS; 726 N. Citrus Ave.; Hollywood, CA 90038; (213) 936-1458. **Product Name: Clickstation.** Contact: Dick Bernstein, dir. of product development. Date Product Introduced: April 1988. **Product Description & Applications:** Clickstation is the cost-effective workstation for film or video scoring. Create and play variable click tracks working in time, time code or footage. Supports complex bar structures; slaves to SMPTE time code, optional output of MIDI clocks and song-pointer. Built-in digital metronome and clickbook. Use off-line to create files for Streamline Scoring, the industry-standard click and streamer system. Clickstation's one-slot hardware makes it ideal for such laptops as the Toshiba 3200. **Basic Specifications & Suggested List Price:** Clickstation includes Scorecard circuit board. Inputs: balanced SMPTE, TTACH and TDIR. Outputs: reshaped SMPTE, line-level clicks, click speaker out, click phone out. Back panel volume control and balance control for accented downbeats. SMPTE out level adjust. Price: \$1,895.

LEE OSKAR ENTERPRISES, INC.; PO Box 550; Blue Jay, CA 92317; (714) 337-5622. **Product Name: Lee Oskar Harmonica System.** Contact: Marc Lippert. Date Product Introduced: 1988. **Product Description & Applications:** Lee Oskar Harmonica is a 10-hole diatonic harp available in major, natural minor and harmonic minor. In conjunction with the availability of these three modes, the Lee Oskar Harmonica System offers interchangeable reed plates, combs and sturdy boxes that slide together, enabling a person to carry any number of harps at one time easily. The stainless steel design and plastic combs are excellent preventative against a comb warping or splintering. **Basic Specifications & Suggested List Price:** The suggested list price for the Lee Oskar Harmonica is \$25. The reed plates list for \$12.

PATCH/WORKS MUSIC SOFTWARE; PO Box 450; New York, NY 10024; (212) 873-2390. **Product Name: D-Spectrum™ (D-50); Q-Spectrum™ (ESQ-1/M, SQ80).** Contact: Ted Weaver, president. Date Product Introduced: D-Spectrum

—CONTINUED ON NEXT PAGE



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1988

(Sept. 1988); Q-Spectrum (Jan. 1988) Product Description & Applications: Studio-quality series of sounds for synthesizers, programmed by professionals. Contains wide assortment of useful, strong keyboards, organs, basses, strings, horns, pads, effects, percussion and analog patches. Used by Brent Taggle, Larry Coryell and other top pros. Many volumes available, each different and unique. Available on RAM and ROM cartridges. Basic Specifications & Suggested List Price: Q-Spectrum 160-voice ROM cartridge \$74.95, D-Spectrum 64-voice ROM cartridge \$59.95. Some computer disk formats available.

PENDULUM AUDIO SYSTEMS; PO Box 339; Gillette, NJ 07933; (201) 665-9333. **Product Name: Model HZ-10 Acoustic Guitar Preamp.** Contact: Greg Gualtieri, president. Date Product Introduced: October 1, 1988. Product Description & Applications: The HZ-10 is a high-impedance preamp system designed for getting studio-quality sound from acoustic guitar pickups. It features a small phantom-powered direct box with adjustable gain and balanced line output that plugs directly into the instrument's ¼" endpin jack. The 1U rack-mountable main unit contains a 4-band, fully parametric equalizer optimized for acoustic instruments and a versatile 2-channel effects mixer with footswitch that interfaces readily with all types of outboard signal processors. Basic Specifications & Suggested List Price: The HZ-10 is built to audiophile standards, using high-quality components and high-speed/low-noise circuitry throughout. Input: 1.0MΩ unbalanced, equivalent input noise less than -113dBu; frequency response ±1dB 20-20,000Hz; THD less than 0.01%; output: -10/+4 unbalanced or balanced, output noise less than -93dBu, price: \$549.99 factory direct.

SEYMOUR DUNCAN; 601 Pine Ave.; Santa Barbara, CA 93101; (805) 964-9610. **Product Name: Convertible 1200.** Contact: Ron Colantonio, mktg. mgr. Date Product Introduced: June 1988. Product Description & Applications: 60-watt tube amplifier with two preamp modules that can be removed and replaced in two minutes. Customize the amp tone. One set of active tone controls. Reverb available in combo and rack-mountable head. Basic Specifications & Suggested List Price: 60 watts tube. Combo list \$799; head list \$645; modules priced separately from \$50 to \$100.

SEYMOUR DUNCAN; 601 Pine Ave.; Santa Barbara, CA 93101; (805) 964-9610. **Product Name: Convertible 2000.** Contact: Ron Colantonio, mktg. mgr. Date Product Introduced: June 1988. Product Description & Applications: 100-watt tube amplifier with preamp modules that can be removed and replaced in two minutes. Customize the amp tone from blues to jazz to heavy metal. Built-in reverb, separate tone controls for each of the 2 channels. Available in combo and rack-mountable head. Basic Specifications & Suggested List Price: 100 watts, all tube, variable power from 5-100 watts, variable damping control, triode/pentode operation. Combo list \$1,099; head list \$999; modules priced separately from \$50 to \$100.

SHADOW OF AMERICA ELECTRONICS INC.; 1248 Route 22 W., PO Box 1083; Mountainside, NJ 07092; (201) 654-7516; Telex: 667 944 Shad UW. **Product Name: Shadow SH22 Digital Synthesizer Pedal.** Contact: Herb Hagel, president. Date Product Introduced: June 1988. Product Description & Applications: For guitarist using guitar-to-MIDI converter. Floor-mounted in a sturdy footpedal format containing 300 sounds in three banks of 100 sounds each. Mono or poly mode. LED display. Mode indicator lamp. Sustain. preset patch change pedal. Vibrato modulation: preset patch pedal. Basic Specifications & Suggested List Price: FM MIDI synthesizer, MIDI Thru output provided, low-voltage converter included. Suggested list \$750.

SIGNATURE MUSIC LIBRARY; PO Box 26-8554; Chicago, IL 60626; (312) 348-3040. **Product Name: Signature Music Library.** Contact: Bill Mullin. Date Product Introduced: September 1988. Product Description & Applications: Compact disc volumes 3 & 4 add 34 new themes to the existing volumes. Music composed for narration in commercial and industrial applications.

SOUND GENESIS CORPORATION; 7807 Creek Ridge Center; Minneapolis, MN 55435; (612) 944-8528. **Product Name: The Master Sampler Collection™.** Contact: Ken Bateman, VP of sales & mktg. Date Product Introduced: March 1988. Product Description & Applications: The Master Sampler Collection is the purest-sounding collection of sampled instruments available today. The collection is ready to use without pre-production engineering. Each instrument includes the most useful performance techniques layered and crossfaded with all parameters and controls fully implemented on each type of sampler. Every sample has been critically tuned, mapped to the keyboard, assigned function curves, tested for consistency of tonal quality and sonic realism. All you do is load and use. Basic Specifications & Suggested List Price: The Master Sampler Collection is fully engineered in

five essential volumes: strings, percussion, winds, vocals and keyboards. It includes solos and union sections, recorded digitally at 48kHz, sampled and engineered through a proprietary signal path. Performance techniques include mezzoforte, sforzando, pizzicato and special effects. Prices range from \$1,200 to \$2,200.

SOUND GENESIS CORPORATION; 7807 Creek Ridge Center; Minneapolis, MN 55435; (612) 944-8528. **Product Name: ScoreKeeper™.** Contact: Ken Bateman, VP of sales & mktg. Date Product Introduced: March 1988. Product Description & Applications: ScoreKeeper is a database-oriented program for selecting and auditioning instruments from *The Master Sampler Collection* on a Macintosh Plus or Mac II from Apple Computer. ScoreKeeper helps select instruments to be used in the score for an audio production session or live performance. You can audition samples of each instrument in your collection from your Macintosh workstation whether it's connected to your sampler or not. ScoreKeeper can then issue file loading commands to your sampler. Basic Specifications & Suggested List Price: ScoreKeeper is supplied on standard double-sided 3.5" floppy disks. It is easy to install and natural to learn and operate. The program uses the icon-oriented Macintosh interface for easy searching, auditioning and scoring of sounds. ScoreKeeper, with user manual and interface cable, sells for \$195.



SOUND IDEAS PRODUCTION MUSIC LIBRARY

SOUND IDEAS; 86 McGill St.; Toronto, Ontario, M5B 1H2 Canada; (416) 977-0512; (800) 387-3030. **Product Name: Sound Ideas Production Music Library.** Contact: Michael Bell, sales mgr. Date Product Introduced: March 1988. Product Description & Applications: The Sound Ideas Production Music Library on compact disc. A new collection of original music themes crafted exclusively for audio-visual, broadcast, film and commercial productions. Each theme is accompanied by a 30- and 60-second bed and, when appropriate, an alternate mix or rhythm track. Everything from romance to rock, action to leisure, country to industry, as well as solo performances and new releases on a regular basis each year. The Sound Ideas Production Music Library is available through convenient yearly licensing and payment plans. Basic Specifications & Suggested List Price: Yearly license \$950 U.S. (small market and educational rates available).

STICK ENTERPRISES, INC.; 8320 Yucca Trail; Los Angeles, CA 90046; (213) 656-6878. **Product Name: The Baritone Stick.** Contact: Emmett Chapman, president. Date Product Introduced: July 1988. Product Description & Applications: This Stick has thicker and lower melody strings, adding fullness and rhythmic punch to your right-hand technique, much like the sound and dynamics of "piccolo bass." The five melody strings are tuned down ¾ of an octave from those of the regular model, and the bass strings are raised ¼ octave. Note relationships between all ten strings remain unchanged, except that the registers of the 2-string groups are now more interwoven. Basic Specifications & Suggested List Price: The Bari-Stick retails for \$1,041, the same as the regular Stick, and includes case, stereo cord and book. There is a lot of "wire" to play on this two-handed tapping instrument, seven of the ten strings being round-wound. This rectangular fingerboard has a scale length the same as a bass.

STICK ENTERPRISES, INC.; 8320 Yucca Trail; Los Angeles, CA 90046; (213) 656-6878. **Product Name: The Grid™.** Contact: Emmett Chapman, president. Date Product Introduced: January 1988. Product Description & Applications: The Stick is now a dedicated 10-string synthesizer controller, with all ten strings uniformly thin and tuned to the same pitch; you tune the rack box to whatever instrumental tuning you like. I.V.L.'s pitch-to-MIDI has been optimized on this instrument: fast and accurate, all the notes play, and none play that you don't play, with velocity sensitivity and multi-string bending. This instrument comes alive in your hands. Basic Specifications & Suggested List Price: The Grid instrument controller by Stick Enterprises retails for \$1,041 with case and lesson book. The 2-space grid interface box with pickup and preamp made for Stick Enterprises by I.V.L. Technologies in Canada sells for \$1,600. The 5-footswitch array unit retails for \$195.

STUDIO C MUSIC LIBRARY; PO Box 767, Murray Hill Station; New York, NY 10156-0602; (212) 986-2219. **Product Name: Studio C Music Library.** Contact: Phil Cibley, president. Date Product Introduced: September 1, 1988. Product Description & Applications: Production music and SFX library. Basic Specifications & Suggested List Price: \$750 annual blanket fee.

360 SYSTEMS; 18740 Oxnard St.; Tarzana, CA 91356; (818) 342-3127; FAX: (818) 342-4372. **Product Name: 16 x 16 Audio Patch Bay.** Contact: Don Bird, dir. of sales. Date Product Introduced: Fall 1988. Product Description & Applications: 360 Systems' Audio Patch Bay is a fully programmable, MIDI-controllable audio matrix switcher. It will control routing of 16 separate audio paths and send program changes to external MIDI devices. Inputs and outputs are ¼" phone jacks and any input may drive single or multiple outputs. Controllable via front panel or remote MIDI patch changes, it's ideal for automation of audio routing, control of external effects and automated muting, EQ and level changes via fader/bus reassignment in real time. Basic Specifications & Suggested List Price: Audio in/out: 32 ¼" phone jacks. 0.025% THD, 20Hz to 20kHz. Input impedance: 20k ohms, output impedance: 100 ohms. Presets: 100 user-programmable, stored in non-volatile memory. Chains: 28 (max. 32 patches each). MIDI: In/Out/Thru. MIDI receive: channels 1-16, Omni, off. MIDI program send: 0-127, channels 1-16, off. MIDI data dump (system exclusive). List \$699.

360 SYSTEMS; 18740 Oxnard St.; Tarzana, CA 91356; (818) 342-3127; FAX: (818) 342-4372. **Product Name: MIDI Patcher.** Contact: Don Bird, dir. of sales. Date Product Introduced: June 1988. Product Description & Applications: The MIDI Patcher is an 8 x 8 MIDI patching/routing matrix that provides 100 user-programmable presets in non-volatile memory and responds to MIDI patch change commands. It allows for transmission of program changes on selectable MIDI channels and interfaces with all MIDI instruments and other processors. Setups are clearly displayed on large 7-segment LEDs and may be switched via manual or remote control. Patches may be "uploaded" or "downloaded" through system exclusive dumps. Basic Specifications & Suggested List Price: MIDI inputs/outputs: 8 each, 5-pin DIN jacks; presets: 100 (user-programmable); memory: non-volatile (battery-backed RAM); MIDI receive: 1-16, Omni, off (input ports 1-8); MIDI program send: 0-127, channels 1-16, off (output ports 1-8); all-notes-off, MIDI data dump (system exclusive); mapping: on/off; list: \$329.

TRF PRODUCTION MUSIC LIBRARIES; 40 E. 49th St.; New York, NY 10017; (212) 753-3234. **Product Name: New Compact Discs.** Contact: Michael Nurko. Date Product Introduced: December 1988. Product Description & Applications: Over 70 compact discs of new production music are being added to the TRF Alpha, Bosworth, Chappell, MP 2000, Music Scene and Tele Music Production Music Libraries. The music is divided into several categories, including AV industrial, new age, electronic, sports, classical, rock, comedy, children's, period, country, dramatic, jazz and jingles. New releases are being recorded, mixed and mastered digitally and are available on both compact discs and high-quality, digitally mastered stereo records as well as first-generation digitally mastered tapes. Free sampler available. Compact discs available at \$20 per disc. Basic Specifications & Suggested List Price: Record albums are \$9 each. Either format can be received "on approval." TRF rate sheet available for per-use licensing fees. Inexpensive Special Annual Blanket Program licenses for unlimited use are also available.

ULTIMATE SUPPORT SYSTEMS; 2506 Zurich Dr.; Fort Collins, CO 80524; (303) 493-4488. **Product Name: Deltex Column.** Contact: Thomas Kellenberger, product channel mgr. (music). Date Product Introduced: June 1988. Product Description & Applications: The Deltex is an economically priced, double-tier keyboard stand designed to safely support virtually all popular synthesizers. Deltex has the same distinctive triangular support column that has become the symbol of rugged strength for stage, studio or home. It is lightweight, constructed to take the abuse of the road and backed by a lifetime warranty. Basic Specifications & Suggested List Price: Actual column length: 47"; height: 46"; angle of column: 68 degrees; butterfly tier depth: 10.5"; butterfly tier span: 24";

weight: 14 lbs., construction: black anodized aluminum; maximum capacity per tier: 50 lbs.; maximum capacity for stand: 100 lbs.

WENDEL LABS (DIST. BY INDUSTRIAL STRENGTH INDUSTRIES); 13042 Moore St., Cerritos, CA 90701; (213) 921-2341. **Product Name:** Wendel Jr. **Contact:** Bill Teipe. **Date Product Introduced:** September 1988. **Product Description & Applications:** The Wendel Jr. is a percussion replacement device that features drum sounds recorded at a 50kHz sampling rate and produced in the digital domain. All the drum sounds (stored in cartridges) have much longer samples than those used in any drum machine. For example, the ride cymbal is 8-10 seconds long! Any pulse info can trigger the Wendel Jr. **Basic Specifications & Suggested List Price:** 1.75" rack-mount; \$600 factory direct with one cartridge (list price is \$1,000).

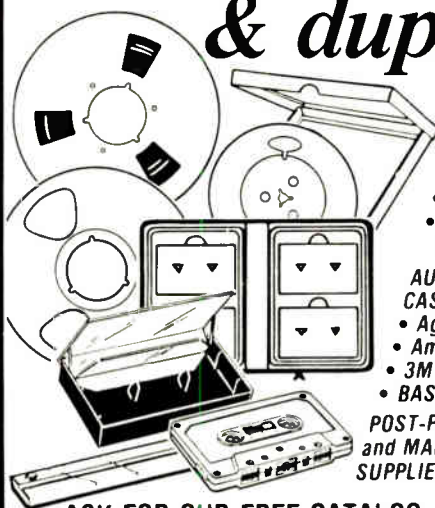
YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave., Buena Park, CA 90622; (714) 522-9011. **Product Name:** MPC1 MIDI Remote Program Changer. **Contact:** Professional Audio Division. **Date Product Introduced:** June 1988. **Product Description & Applications:** The MPC1 is a MIDI remote program changer that is compact enough to be hand held. The new MPC1 remote program changer fills the need for a simple, compact MIDI program changer to operate today's advanced signal processing units. Measuring less than 4" x 6", and only 1 3/4" thick, the MPC1 will fit conveniently into today's crowded studio environment. The MPC1 allows quick access to 99 program changes.

YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave., Buena Park, CA 90622; (714) 522-9011. **Product Name:** C1 Music Computer. **Contact:** Digital Musical Instruments Division. **Date Product Introduced:** June 24, 1988. **Product Description & Applications:** Yamaha's first fully dedicated music computer offers the musician several specific advantages unseen in the computer world, including MIDI and SMPTE connections, ROM-based music fonts, as well as full compatibility with MS-DOS-based programs for business and personal applications. The C1 is a small, portable computer with a high-resolution display and one megabyte of internal memory. There are two models available: one with two 3.5", 720K floppy disk drives and one with an onboard 20-megabyte hard drive. **Basic Specifications & Suggested List Price:** The C1 is an IBM-compatible portable computer with a built-in 630 x 400 supertwist backlit LCD display; 10MHz 80286 processor; two 720K 3.5" drives; 11 MIDI jacks (2 In, 8 Out, 1 Thru); two control sliders; two serial ports; SMPTE in/out; parallel port; expansion slot; external CRT port. Includes MS-DOS 3.3, MIDI monitor program; carrying bag included; price: \$2,995. The C1/0 is the same as the C1 but with one 20-megabyte hard disk and one 720K 3.5" drive. Price: \$3,995.

YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave., Buena Park, CA 90622; (714) 522-9011. **Product Name:** G10 MIDI Guitar System. **Contact:** Digital Musical Instruments Division. **Date Product Introduced:** June 24, 1988. **Product Description & Applications:** The Yamaha G10 Guitar MIDI controller and the G10C Guitar MIDI converter represent the refinement of MIDI guitar technology. At the heart of the G10 tracking system are three separate pickup technologies that are combined to provide the guitarist with instant access to MIDI without sacrificing individual playing style. The ultrasonic pitch sensor uses sonar to determine the pitch of a note, the electromagnetic divided pickup detects the velocity of a note, while string bending is sensed by a device incorporating optical shutter technology. **Basic Specifications & Suggested List Price:** Three-way tracking system, tremolo bar, two programmable control wheels, program change buttons, LED display, breath control input, sensitivity control. The G10C interprets G10 information, converting it to MIDI data; 64 internal, 64 cartridge memories contain voice data for TX81Z and TX802 tone generators. Programmable parameters include: velocity curves, control wheel assignments, MIDI channels assignments, tuning, mute level and more. **Suggested retail price for the G10 and the G10C:** \$2,495.

YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave., Buena Park, CA 90622; (714) 522-9011. **Product Name:** PLS1 MIDI Programmable Line Selector. **Contact:** Professional Audio Division. **Date Product Introduced:** June 1988. **Product Description & Applications:** The PLS1 MIDI Programmable Line Selector is a 32-input by 8-output line selector with a MIDI interface that enables a user to select input signal combinations quickly and easily. Up to 99 different selection patterns can be stored in the PLS1's onboard memory for instant recall. This unit allows users to quickly reconfigure the music and/or audio system in today's complex systems. Each of the patterns stored is recalled via the recall switch, and the up-arrow/down-arrow switches allow quick access to any of the 99 stored patterns. A large, 7-segment, 2-digit LED indicates which program has been selected. **Basic Specifications & Suggested List Price:** Actual signal selection is handled by electro-mechanical relays for the absolute in no-loss, no-noise operation. Input and output connection is by 1/4" jacks for system compatibility. The PLS1 measures 19" x 3.5" x 8.2" deep, and mounts in two standard EIA-rack unit spaces. \$795.

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PEM 291 D DIGITAL MASTERING TAPE

AGFA-GEVAERT, INC., 100 Challenger Rd., Ridgefield Park, NJ 07660; (201) 440-2500. **Product Name:** PEM 291 D Digital Mastering Tape. **Contact:** Joe Tibensky, nat'l mktg. mgr. **audio products.** **Date Product Introduced:** October 1987. **Product Description & Applications:** Digital mastering. Compatible with both the PD and DASH formats, PEM 291 D features superior carrier-to-noise ratio, ensuring extremely low error rate. Available in 1/4", 1/2" and 1" widths with the usual Agfa consistency, reliability and superior winding. **Basic Specifications & Suggested List Price:** Excellent carrier-to-noise ratio; provides extremely low error rate, compatibility insures excellent results in all cases with both PD and DASH formats; excellent slitting; provides smooth winding, minimizing data loss due to tape damage; heavy-duty precision reels; limits the possibility of tape damage due to warped or bent reels; longer lengths; provides additional record time for each size reel, 10.5" reel 5,000', 12.5" reel 7,500', 14" reel 10,000'.



AGFA R-DAT

AGFA-GEVAERT, INC., 100 Challenger Rd., Ridgefield Park, NJ 07660; (201) 440-2500. **Product Name:** Agfa R-DAT. **Contact:** Joe Tibensky, nat'l mktg. mgr., audio products. **Date Product Introduced:** October 1987. **Product Description & Applications:** Designed specifically for the rotary-head digital audio tape cassette format. Agfa's R-DAT cassettes feature precision coating with pure metal pigments for extraordinary performance. A special back-coating ensures perfect mechanical performance and security for the data stored. **Basic Specifications & Suggested List Price:** This system's high

demands with regard to mechanical and magnetic tape stability have been fully met by means of special fabrication methods, precision coating with pure metal particle pigments (MP) having an extraordinarily high packing density; extremely smooth base foil, layered surfaces with very slight surface roughness; a special back-coating for perfect mechanical performance and security for the stored data. The tape and cassette housing correspond in all points to the determined standards of the system. Duplicating Cassette is offered in a practical, unlabeled industrial box.

AKAI PROFESSIONAL, 1316 E. Lancaster, Fort Worth, TX 76102; (817) 336-5114. **Product Name:** DR1200/DL1200/DM1200. **Contact:** James Martin, product specialist. **Product Description & Applications:** 12-track recording system composed of deck section DR1200, locator section DL1200 and meter section DM1200. 16-bit PCM digital recording with 44.1 and 48kHz sampling frequencies using 8mm videocassette tape format. The locator is designed to synchronize three DR1200s, allowing 36 digital tracks, and permits independent track delay, auto-punch with selectable crossfade times, and accepts external time code sync. One analog track is provided for recording time code. The entire system can be rack-mounted. **Basic Specifications & Suggested List Price:** Digital tracks: 12, analog tracks: 1; sampling: 44.1kHz, 48kHz; format: 16-bit linear; error control: double-read Solomon Code; recording time: 16.5 min.; tape speed: 72.76mm/sec.; tape: 8mm video; heads: (3) rotary digital REC, (3) rotary digital PB, analog REC/PB, analog erase, full erase; digital audio in: XLR x 12, +4dBm; digital audio out: XLR x 12; frequency range: 20Hz-20kHz; dynamic range: over 90dB. List price of 12-track system \$35,000.

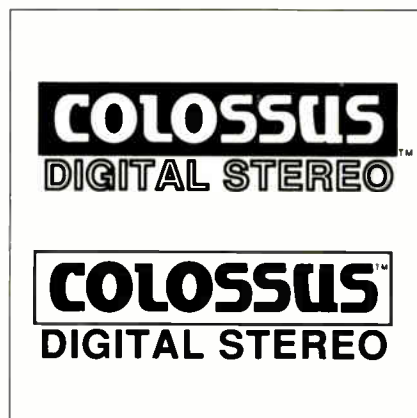


AMPEX 478 LOW PRINT MASTERING TAPE

AMPEX CORPORATION, MAGNETIC TAPE DIVISION; 401 Broadway, 22-02; Redwood City, CA 94063; (415) 367-3809. **Product Name:** AmpeX 478 Low Print Mastering Tape. **Contact:** Steve Smith, product line mgr. **Date Product Introduced:** AES Paris, March 1988. **Product Description & Applications:** AmpeX 478 Low Print Mastering Tape is designed for the radio broadcast, film and video post-production houses and recording studios where low print mixdown is desired. For radio broadcast, AmpeX 478 delivers the improved winding so necessary for flangeless use. For post-production, it minimizes print-through in special effects, Foley and ADR applications. In film production, it preserves the quality of live dialog and wild sound, and in mixdown applications, it minimizes print-through between low- and high-level passages. **Basic Specifications & Suggested List Price:** AmpeX 478 Low Print Mastering Tape comes in 1/4" and 1/2" widths, and is available in CCIR and NAB formats, as well as an expanded number of configurations to provide customers with total flexibility of choice.

AMS/CALREC (AMS INDUSTRIES INC.), 3827 Stone Way N.; PO Box 31864; Seattle, WA 98103; (206) 633-1956. **Product Name:** AudioFile Software Update. **Contact:** Nigel Branwell. **Date Product Introduced:** Fall 1988. **Product Description & Applications:** New software features include: reel rock and varispeed in edit page; automatic dialog replacement package; Ampex VPR3/VPR6 emulation software [allows AudioFile to be "transparent" to video editor]; archiving and transfer to all pro digital formats and consumer R-DAT; networking of multiple systems plus new hardware to support 8 (analog/digital) inputs. **Basic Specifications & Suggested List Price:** On application.

BASF CORPORATION INFORMATION SYSTEMS; Crosby Dr., Bedford, MA 01730; (617) 271-4000. **Product Name:** BASF Chrome Super. **Contact:** Terence O'Kelly, nat'l sales mgr. **Date Product Introduced:** April 1988. **Product Description & Applications:** BASF Chrome Super is the latest development in chrome technology for music duplication. Improved maximum output at low frequencies provides 2dB greater dynamic range at low frequencies over BASF's standard chrome and 3.5dB over competitive chrome formulations. High-frequency dynamic range is 3.5dB greater than standard chrome. At 120µs equalization, Chrome Super has recording capabilities close to Type IV metal tapes but, unlike metal, can be used for both real-time and high-speed duplication. **Basic Specifications & Suggested List Price:** Chrome Super comes in 8,200-ft. pancakes at a suggested list price of \$0.18/100 ft.



COLOSSUS

BY THE NUMBERS; PO Box 8359; Incline Village, NV 89450; (702) 831-4459; (702) 831-4461. **Product Name:** Colossus. **Contact:** Brad Miller, Gil Gibson. **Date Product Introduced:** September 1988. **Production Models Product Description & Applications:** Colossus is a discrete, 4-channel PCM, 16-bit linear digital audio processor. Production models contain 96dB of dynamic range and channel separation. System is NTSC-compatible and operates with C-format, U-Matic, S-VHS and M II, including the Philips/Pioneer videodisc. 12-volt DC powered, the processor is ideal for location work, weighing only 24 lbs. A 110 or 240/12VDC power supply is included. DC offset controls along with other professional features are included. Sampling frequency is 44.1, and EIAJ format to 1630 conversion is attainable with the Harmonia Mundi BW 102. **Basic Specifications & Suggested List Price:** Frequency response is 2Hz to 20kHz (+0, -0.4dB). Line input/outputs are -10 or +4, switchable, with distortion (THD) 0.004% at full output. Ideal for location work, live stereo recording or multitrack mixdown storage and as a superior compact disc master archival device, the Colossus has received accolades from the consumer and technical audio press during 1988. Priced at \$22,500, demand has outpaced supply. Order early! A special-order DC to 20kHz is available.

CLARITY CASSETTES; Post Office Sq., Main St.; Waterville, ME 04963; (800) 458-6405. **Product Name:** Ultimate Response Cassettes. **Contact:** Michael Pepin, vice president. **Date Product Introduced:** February 1988. **Product Description & Applications:** Pure chrome audio cassette featuring the ultimate in frequency response. Flat response to 20k is standard.

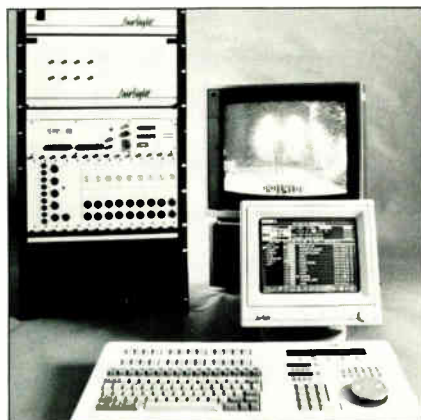
COMMANDER ELECTRONICS (DIST. BY RUSS JONES MKTG. GROUP); 17700 Raymer St., Ste. 1001; Northridge, CA 91325; (818) 993-4091. **Product Name:** Lynex. **Contact:** Geoff Ryle, product specialist. **Date Product Introduced:** June 1988. **Product Description & Applications:** Lynex is a 1U rack-mount, 16-bit stereo sampling system designed to interface with the Atari range of ST computers. True stereo 16-bit sampling at 50kHz, 8- or 16-voice polyphony with 8 separate outputs and a built-in 8-channel digital mixer. 1MB RAM expandable to 32MB. Standard software offers extensive mouse-controlled sample viewing, editing, waveform restructuring, sound creation and comprehensive MIDI parameter assignment facilities. Unique design leaves the host computer free

to run additional software simultaneously, allowing an already formidable pro-quality sampler to be used with a sequencer. **Basic Specifications & Suggested List Price:** 16-bit linear sampling resolution, 50kHz max sampling rate, stereo sampling, real-time sample monitor and sound display, multi-sampling of over 50 individual samples, digital filter, 8-note polyphony at full bandwidth, 16-note polyphony at half bandwidth (two Lynexes may be connected). The unit contains two digital signal processing computers with 32-bit resolution of calculations. Suggested retail price TBA.

DIC DIGITAL; 2 University Plaza; Hackensack, NJ 07601; (201) 487-4605. **Product Name: Digital Audio Tape (DAT).** Contact: Kevin Kennedy, nat'l mktg. mgr. Date Product Introduced: November 1987. **Product Description & Applications:** DIC Digital manufactures a complete line of DAT. Our product line includes preloaded cassettes in 15-, 30-, 46-, 60-, 90- and 120-minute lengths. Custom loads are also available, and cassettes can be supplied in packaged or bulk form. DIC also offers DAT in bulk pancake form for duplicators or users who prefer to load their own shells (R/O). Also offered are DAT accessories including splicing tape, empty R/O shells and clear library cases. **Basic Specifications & Suggested List Price:** DIC Digital's DAT is manufactured in accordance with the universal standard established by the International DAT Conference. All tolerances are strictly adhered to and guaranteed. Our block error rate is $10^{-4} \times 10^{-5}$ which is well below the industry standard of $10^{-3} \times 10^{-4}$. Different pricing structures are available for different requirements, i.e., bulk, packaged, etc.

DIGITAL AUDIO RESEARCH LTD.; 2 Silverglade Business Park; Leatherhead Rd.; Chessington, Surrey, KT9 2QL U.K.; (03727) 428 48 (U.K.). **Product Name: SoundStation II.** Contact: Jeremy Bancroft, sales mgr. Date Product Introduced: November 1987. **Product Description & Applications:** SoundStation II is a disk-based digital audio recording, editing and production center. Features include simple editing and sync to time code, and time compression/expansion without pitch change. Operation is via an easy-to-use touch screen console. SoundStation II may be configured to meet user requirements in terms of number of input/output channels and storage capacity. Applications include music and dialog editing and video and film post-production. **Basic Specifications & Suggested List Price:** A basic SoundStation II system incorporates 4 input/output channels equipped with 18-bit analog converters and AES/EBU digital interfaces and two track-hours of audio storage. An expanded system includes 8 input/output channels and 4 track-hours of storage. Pricing starts at \$79,500.

ELECTRO SOUND, INC.; 160 San Gabriel Dr.; Sunnyvale, CA 94086; (408) 245-6600. **Product Name: 80:1 Master Speed Kit; 80:1 Slave Speed Kit.** Contact: Mark Nevejas, VP sales & mktg. Date Product Introduced: November 1988. **AES Product Description & Applications:** Electro Sound, Inc. will demonstrate 80:1 Master Speed Kits and 80:1 Slave Speed Kits at the November AES convention in Los Angeles. Recent developments in high-speed audio duplication have made a 20% speed increase possible, up from present 64 times to 80 times duplication speed. Each speed kit introduces mechanical and electrical modifications to existing Electro Sound 8000 Series duplicating equipment. These kits also provide greater production and significant quality improvement for present 8000 Series users who prefer maintaining a 64:1 output. **Basic Specifications & Suggested List Price:** The 80:1 Master Speed Kit will have redesigned EQ circuits and high-output amplifiers with a slew rate many times faster than previous amplifiers. The 80:1 Slave Speed Kit will include ceramic-coated capstan sleeves, improved dancer arm assembly (to reduce high- and low-frequency perturbations), and four memory bank EQ/record boards with improved signal electronics and automatic recall of four tape types.



FAIRLIGHT SERIES III, FAIRLIGHT MFX SYSTEM

FAIRLIGHT INSTRUMENTS; 2945 Westwood Blvd.; Los Angeles, CA 90064; (213) 470-6280. **Product Name: Fairlight Series III, Fairlight MFX System.** Contact: Paul Broucek, CEO. Date Product Introduced: September 1985 and October 1987. **Product Description & Applications:** The Fairlight MFX System is based upon the Fairlight Series III hardware. It offers a dedicated console specifically designed for use in audio post-production, and with Fairlight's Cue List software, the Series III has become a powerful tool for performing post-sync sound effects and dialog. A music keyboard can be used with MFX to make all of Fairlight's music facilities available. **Basic Specifications & Suggested List Price:** Systems can be configured for up to 16 voices and 28MB RAM. 800MB WORM optical drives available. Digital/high-performance analog sampling card available.



DYNAMAX DYN-475 1/4" BACK-LUBRICATED AUDIO TAPE

FIDELIPAC CORPORATION; PO Box 808; Moorestown, NJ 08057; (609) 235-3900. **Product Name: Dynamax DYN-475 1/4" Back-Lubricated Audio Tape.** Contact: Arthur Constantine, VP mktg. Date Product Introduced: July 1, 1988. **Product Description & Applications:** Dynamax Type DYN-475 is a new formula and thickness, 1/4" back-lubricated magnetic recording tape designed for the background music industry. The 75-gauge base film provides longer recording and playback times without the attendant sacrifice in print-through or tape life. Tape is supplied on 4,200', 10" hubs. **Basic Specifications & Suggested List Price:** Nominal recording level: 160 nanoWeber per meter; width: 248 mil; thickness: 0.00075" (0.75 mil); length: 4,200' (1,280 meters); price: \$13.45 each in lots of ten; \$10.12 each in lots of 50 or more.

HARRIS BROADCAST DIVISION; PO Box 4290; Quincy, IL 62305-4290; (217) 222-8200. **Product Name: Digital Audio Tape Recorder/Playback.** Contact: Daryl Beuchting, specialist. Date Product Introduced: April 1988. **Product Description & Applications:** The Harris Digital Audio Recorder/Playback unit, Model XD-001UH, is available with wired remote control. Features high-speed search, tape scan, forward and back skip, high-speed cue and rewind. **Basic Specifications & Suggested List Price:** 60Hz, 110VAC. Sampling frequencies: 48kHz, 44.1kHz and 32kHz. 16-bit linear, S/N = 92dB, 2 channels, 2Hz to 22kHz. \$2,400.



DIGITAL DYAXIS

INTEGRATED MEDIA SYSTEMS; 1552 Laurel St.; San Carlos, CA 94070; (415) 592-8055. **Product Name: Digital Dyaxis.** Contact: Gerry Kearby, VP mktg. Date Product Intro-

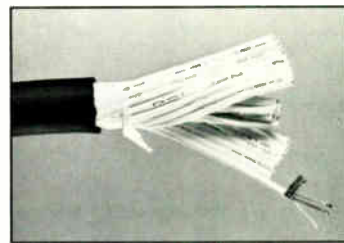
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—CONTINUED FROM PREVIOUS PAGE

duced: September 1, 1988. **Product Description & Applications:** Dyaxis provides disk-based, stereo recording, editing and processing capability from either analog or digital ports. Record directly to disk from either the analog or digital port and play back from either as well. The Dyaxis processor comes with four sets of input ports (one analog and three digital) and four sets of output ports (one analog and three digital). Input or output selection is made under program control. Digital ports conform to professional and commercial audio standards AES/EBU (ANSI 4.40-1985), 9-pin D connector; Sony SDIF-2 (1610), 15-pin D connector; S/PDIF (CD/R-DAT), 2 RCA.

MITSUBISHI PRO AUDIO GROUP (MITSUBISHI ELECTRIC CORPORATION); 225 Parkside Dr.; San Fernando, CA 91340; (818) 898-2341. **Product Name: X-880 Digital Audio Tape Recorder.** Contact: Jim Guthrie, nat'l sales mgr. Date Product Introduced: June 1988. **Product Description & Applications:** The X-880 32-channel Digital Tape Recorder builds on the achievements of the X-850 with improved features and functions, and is fully compatible with the X-800 and X-850 using the standard ProDigi multi-track format. LSI electronic technology is used for reliability and results in a smaller, lighter unit. External sync, sampling frequency and the operating mode of the playback servo system are all displayed on both the main unit and the autolocator. The layout and the functions of the autolocator have been changed for easier use. Also included will be an optional chase synchronizer with ± 20 ms accuracy for precision electronic editing and phase-coherent, 64-channel operation. **Basic Specifications & Suggested List Price:** 32 PCM audio channels; 2 analog cue channels; 1 time code channel; 2 auxiliary digital channels; 30-ips tape speed; 1" tape width; 1-hour recording time using 14" reels; 44.1/48kHz sampling frequency; 16-bit linear quantization; frequency response of 20Hz, 20kHz, ± 0.5 dB, -1.0 dB; dynamic range over 90dB (unweighted RMS); distortion less than 0.05%; crosstalk rejection 80dB at 1kHz, min. U.S. list price \$195,000.

NEW ENGLAND DIGITAL CORPORATION; PO Box 546; 49 N. Main St.; White River Jct., VT 05001; (802) 295-5800. **Product Name: PostPro/Direct-to-Disk.** Contact: Ted Pine. **Product Description & Applications:** New England Digital will be debuting the newest additions to the PostPro/Direct-to-Disk line of digital multi-track recorders, featuring the new remote controller/autolocator/editor interface and Macintosh II high-resolution graphics workstation, plus MaxTrax track expansion option, lime compression and other DSP software. New England Digital will also introduce the 96-voice, 64MB RAM Synclavier®, a powerful new generation of integrated digital audio workstation, with enhanced sampling fidelity, Direct-to-Disk® recording and a new high-resolution graphics workstation. **Basic Specifications & Suggested List Price:** The core Synclavier system consists of proprietary NED computer, graphics workstation, velocity/pressure keyboard and all interfaces including SMPTE and MIDI. Price is determined by memory, storage and output voices. 8-track PostPro Direct-to-Disk recorders start at \$99,000.

OPTICAL DISC MASTERING; 1111 Northshore Dr.; Bldg. 2, Ste. 726; Knoxville, TN 37921; (615) 558-5267. **Product Name: Model LHH 3600 CDV Recording Systems.** Contact: David Pushic, dir. of mktg. Date Product Introduced: April 1988. **Product Description & Applications:** Optical recorders for 5", 8" and 12" CDV applications. **Basic Specifications & Suggested List Price:** Per CDV standards

OTARI CORPORATION; 378 Vintage Park Dr.; Foster City, CA 94404; (415) 341-5900. **Product Name: MTR-100A.** Contact: Sally Olson Saubolle, mktg. coordinator. Date Product Introduced: April 9, 1988. **Product Description & Applications:** The MTR-100A is a microcomputer-controlled, pinch-rollerless master analog multi-track tape recorder equipped with an automatic audio record calibration system, which enables automatic alignment of level, bias, HF, MFH, record EQ and phase compensation. It is available in a 2" 24-track version. **Basic Specifications & Suggested List Price:** The MTR-100A has a 14" reel size maximum, 30/15/7.5ips, wow and flutter is less than $\pm 0.04\%$ at 30ips, $\pm 50\%$ varispeed control, signal-to-noise ratio at 30ips is 70dB. Retail price TBA.

PANASONIC; 1 Panasonic Way; Secaucus, NJ 07094; (201) 348-7000. **Product Name: SV-3500 Studio Digital Audio Tape Recorder.** Contact: Joseph Crocco, mktg. mgr. Date Product Introduced: June 1988. **Product Description & Applications:** Studio rack-mount R-DAT recorder 2ADC, 18-bit, high-resolution system, 4DAC, 18-bit, high-resolution system, 48kHz and 32kHz recorder and 44.1kHz playback sampling frequencies. Balanced XLR in/out, wired remote control unit, 30-selection random access programming, 200 x play speed high-speed search, switchable counter display, absolute time, program time, digital in/out AES/EBU input terminal for serial remote control. **Basic Specifications & Suggested List Price:** 16-bit linear; frequency response: 10Hz-22kHz (± 0.5 dB); dynamic range: greater than 90dB; S/N ratio: greater than 93dB, THD less than 0.05%; input impedance switchable 600/10k; input level +4dB; maximum input level +22dB; output level +4dBm/-10dBm (switchable); applications: studio recording, broadcast, post-production.

PANASONIC; 1 Panasonic Way; Secaucus, NJ 07094; (201) 348-7000. **Product Name: SV-250 Portable Digital Audio Tape Recorder.** Contact: Joseph Crocco, mktg. mgr. Date Product Introduced: June 1988. **Product Description & Applications:** Portable R-DAT recorder: 3.2 lbs., heavy-duty construction, XLR switchable mic/line inputs, 14dB pad and audio limiter, AC/DC operation, lead acid battery for 2.2 hrs. record time, 32-step random access programming, 60 x play speed high-speed search, digital output terminal, Mash AD converter, 64 times oversampling. For field recording, ENG, remote recording. **Basic Specifications & Suggested List Price:** 48kHz recording, 44.1/48kHz playback sampling frequencies, 16-bit linear. Frequency response: 10Hz-22kHz (± 0.5 dB-1.0dB); S/N ratio: more than 88dB (full scale level); THD less than 0.05%; no wow and flutter; dynamic range more than 87dB, switchable line input +4dBm/-10dBm; 600 balanced transformer/SS.

POLYPHONIC FX SYSTEMS; Box 29430; Hollywood, CA 90029; (213) 661-9740. **Product Name: Polyfile.** Contact: Tom Gunn. Date Product Introduced: Fall 1988. **Product Description & Applications:** Polyfile has all the editing features of the current PFX Optical Transfer Station, plus an onboard database library manager for rapid access to samples for auditioning. The new stereo sampler includes an SCSI port for nearly instant loading of samples from optical disc. Up to four samplers are supported, for a total of 400 seconds of stereo audio from 4 to 64 separate channels with 8 software-assignable outputs per rack-mount sampler. **Basic Specifications & Suggested List Price:** Polyfile features a 386-based rack-mount computer, 800MB WORM optical library manager and a new 16-bit, 44.1kHz stereo sampler with 100 seconds of RAM. Price: \$32,000.

RD SYSTEMS CORP.; 7417 River Falls Dr.; Potomac, MD 20854; (301) 365-7593. **Product Name: Soundspace™.** Con-

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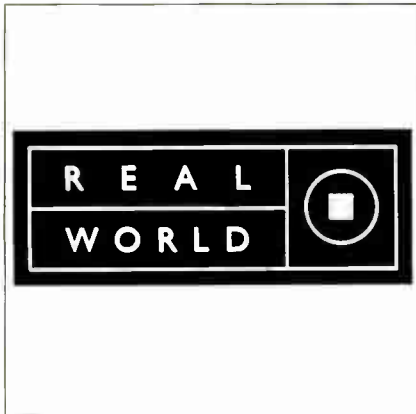
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fact: Dr. Charles Rieger, president. Date Product Introduced: September 1988. Product Description & Applications: A multi-channel, digital disk recording/editing system that connects to an IBM AT, compatible, with EGA color graphics screen. Modular, open architecture supports from 1 to 32 disks (channels), with 1-hour capacity per disk. All user controls are via the color graphics screen. Basic record/playback, auto reel-rock, instantaneous cut/paste and a variety of editing tools are supplied. Basic Specifications & Suggested List Price: User-controlled sample freq. to 50kHz, 16-bit samples; modular cabinet supports 4 channels, expandable up to 32 channels; highly visual color graphics user interface, 32-channel single-screen view, or 8-channel group view. Prices start around \$15k for 2-channel system, incrementally expandable per channel.



REAL WORLD RESEARCH

REAL WORLD RESEARCH; c/o Sycologic Syco; 20 Conduit Pl.; London W2, England; (01) 724-2451. **Product Name:** **Audio Tablet.** Contact: Stephen Paine, director. Date Product Introduced: October 1988. Product Description & Applications: RWR's Audio Tablet is a random access editor for use in a variety of music and broadcast applications including: music editing, dialog editing, editing to picture/time code. The Audio Tablet presents a familiar operating methodology that allows the user to become productive with it in the audio environment in a short space of time. **Basic Specifications & Suggested List Price:** Basic version: 2 channels analog audio I/O (expandable); digital audio I/O (AES/EBU, SDIF-2), up to six hours stereo recording capacity; 2-gigabyte tape streamer for archiving purposes; networking capability. From \$50,000 (approx.).

SHARP ELECTRONICS CORPORATION; Professional Products Division; Sharp Plaza; Mahwah, NJ 07430; (201) 529-8731. **Product Name:** **SX-D100 Professional Series R-DAT Recorder.** Contact: Bruce Pollack, mktg. mgr. Date Product Introduced: April 1988 (NAB). Product Description & Applications: High-quality, 2-channel, R-DAT audio tape recorder for professional recording, production and broadcast applications. Offers high-quality digital sound, up to two hours of continuous record/playback time, 200 x high-speed search, Auto-Program Search System (APSS®), Auto-Program Memory System (APMS®), continuous repeat, automatic/manual subcode recording, precision die-cast chassis with direct drive motors, UL listed for commercial use, 3-wire (grounded) AC cord. **Basic Specifications & Suggested List Price:** 5-22kHz frequency response, 0.005% record/playback distortion, 92dB signal-to-noise ratio, 90dB dynamic range, 90dB channel separation, wow and flutter below measurable limit. Offers both analog and digital (optical and coaxial) input/output jacks. \$2,700 suggested list.

SONY COMMUNICATION PRODUCTS COMPANY; 1600 Queen Anne Rd., Teaneck, NJ 07666; (201) 833-5200. **Product Name:** **APR-24.** Contact: Karl Kussmaul, product mgr. Date Product Introduced: November 1988 AES. Product Description & Applications: The APR-24 analog multi-track recorder/reproducer is a 24-track machine utilizing 2" tape. Amorphous heads for improved response and long head life are provided. The remote control unit for audio, transport, locator and synchronize control is included as standard equipment. Built-in chase synchronizer, video reference, resolve capability, time code generator/reader and processor-assisted alignment is provided. This machine is well-suited for audio sweetening for video/film and music recording studio use. **Basic Specifications & Suggested List Price:** Tape speed: 15 and 30ips. Maximum reel size: 14"; wow and flutter: 0.03% (din 45507 weighted) at 30ips; frequency response (at 30ips, AES): 46Hz-30kHz (+75dB, -3dB); recorded signal-to-noise ratio (at 30ips, AES) 63dB (weighted dBA) ref 250nWb/m; bias freq. 400kHz; erase frequency: 100kHz; maximum audio output level: +24dBm. List price \$45,200.

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SONY COMMUNICATIONS PRODUCTS COMPANY; 1600 Queen Anne Rd.; Teaneck, NJ 07666; (201) 833-5200. **Product Name: PCM-3348 48-Track Digital Recorder.** Contact: Mike Sekiguchi, product mgr. Date Product Introduced: November 1988. **Product Description & Applications:** DASH format, 48-channel, digital audio multi-track tape recorder. Compatible with DASH format 24-channel tape. 48 channels on 1/2" tape. 1-hour recording with 14" reel. Millisecond-accurate, built-in synchronizer for PCM-3348/3324/3324A. Built-in VCLK/console interface. SDIF-2 format and channel-assignable AES/EBU format digital I/O. Two times oversampling AD/DA with digital filter. Price TBA.

SOUND DESIGN; 33 W. Haley; Santa Barbara, CA 93101; (805) 965-3404. **Product Name: Sound Design Digital Audio Databank.** Date Product Introduced: May 1988. **Product Description & Applications:** Enhanced CompuSonics DSP-1500 disk-based recorder/editor featuring 44.1kHz sampling rate, a variety of disk storage media from 20MB Bernoulli removable, Sony I/O and the proprietary Sound Design MIDI controller. Appropriate for all phases of digital recording and editing in professional audio studios and post-production facilities. Editing is accomplished from the front panel, via an ASCII terminal, or in the advanced mode with an Apple Macintosh SE using proprietary CompuSonics software, MacSonics. **Basic Specifications & Suggested List Price:** Sound Design Digital Audio Databank pricing: rack-mount with Bernoulli storage (20MB) \$6,990.

STEINBERG DIGITAL AUDIO (DIST. BY RUSS JONES MKTG.); 17700 Raymer St., Ste. 1003; Northridge, CA 91325; (818) 993-4091. **Product Name: Computer Controlled Recorder (CCR).** Contact: Geoff Ryle, product specialist. Date Product Introduced: June 1988. **Product Description & Applications:** The Computer Controlled Recorder (CCR) is an all-digital record and playback device. At present its memory consists of 360MB hard disk, which allows for 30 minutes of stereo recording. The basic version comes with digital inputs and outputs (AES/EBU). The optional A/D D/A converter module has a 16-bit linear resolution and offers sampling rates of 32kHz, 44.1kHz and 48kHz. The D/A converters use four times oversampling technique. All editing is done from a Macintosh computer and is non-destructive, allowing for multiple versions of the same sound material without destroying the original recordings. **Basic Specifications & Suggested List Price:** The CCR is a 19" rack-mount unit with 2 independent channels for recording and playback. You can stack up to eight units for a maximum of 16 mono or 8 stereo channels. A Macintosh is used as the host computer. The user interface is graphics-oriented, meaning that all manipulation of sounds (copy, paste, insert, start, etc.) and adjusting of their parameters (volume, frequency, time correction, etc.) is done graphically. Suggested retail price TBA.

STUDER REVOX AMERICA, INC.; 1425 Elm Hill Pike; Nashville, TN 37210; (615) 254-5651. **Product Name: Studer A807 VUK Professional Recorder, 30ips and 4-track 4 1/2" versions.** Contact: David C. Bowman, dir. of professional dealer products. Date Product Introduced: April 1, 1988. **Product Description & Applications:** Studer A807 VUK HS (high-speed) 2-track professional recorder featuring three speeds (7.5, 15 and 30ips). For recording studios and general high-performance applications, specifically for console mounting with overbridge metering. Studer A807 4 1/2" VUK 4-track machine (high-speed only) for production applications with overbridge metering. **Basic Specifications & Suggested List Price:** Like all A807s, these versions feature three-speed, servo-controlled capstan motors, servo-controlled spooling motors and are designed for quick response under synchronizer control. Standard features include: MDAC-controlled audio electronics, Dolby HX Pro, tape shuttle controller and a variety of control ports, including an RS-232 serial port. Studer A807 VUK HS 2-track: \$7,995; Studer A807 4 1/2" VUK 4-track machine: \$10,495.

STUDER REVOX AMERICA, INC.; 1425 Elm Hill Pike; Nashville, TN 37210; (615) 254-5651. **Product Name: Revox C270 Series of Professional Recorders.** Contact: David C. Bowman, dir. of professional dealer products. Date Product Introduced: April 1, 1988. **Product Description & Applications:** C270 1/4", 2-channel recorder for broadcast, on-air and production applications. C274 1/4", 4-channel and C278 1/2", 8-channel recorders for multi-track and video post-production applications and special low-speed versions (speeds as low as 15/32) for low-speed and logging applications. **Basic Specifications & Suggested List Price:** Entire series of C270 recorders features as standard: Dolby HX Pro, seamless and gapless punch-in and punch-out, integral scrape-flutter filter

in head assembly, constant tape tension on both spooling motors, one-hand cueing under full servo control, fully modular audio electronics, front access to all audio electronics (even when rack-mounted), plug-in record and reproduce equalizers, three peak LED indicators: +6, +9 and +12dB (C270), adjustable mute-to-play time of audio output, built-in variable speed allowing -33% to +50% range, selectable library wind and record inhibit, optical end-of-tape sensor. Plus: fader start circuitry, RS-232 serial port allowing full control of all machine functions, rack-mount adapters, three tape speeds (3 3/4, 7 1/2 and 15ips). Revox C270 1/4", 2-channel recorder: \$3,995; Revox C274 1/4", 4-channel recorder: \$5,995; Revox C278 1/2", 8-channel recorder: \$7,995.

TAPE DUPLICATION TECHNOLOGY, INC.; 1830 Wayne Trace; Fort Wayne, IN 46803; (219) 424-1007. Contact: Leon Giannakeff, president. Date Product Introduced: January 1988. **Product Description & Applications:** Tape Duplication Technology, Inc. offers a line of custom-built, high-speed, bin-loop tape duplicators utilizing remanufactured, heavy-duty tape transports originally built by Electro-Sound, Ampex and other respected manufacturers. The machines are completely rebuilt and updated to original specifications from the deck plates up, complete with new top skins and refinished cabinets. Machines are equipped with all-new electronics, heads, control systems and intercabing and carry a 2-year warranty. **Basic Specifications & Suggested List Price:** Duplication systems are built to order for all modern tape configurations and speeds. Prices vary according to individual requirements, number of recording slaves, tape formats, etc. Contact us for a customized price quotation and production analysis.

TASCAM; 7733 Telegraph Rd.; Montebello, CA 90640; (213) 726-0303. **Product Name: DA-50.** Contact: Ken Hirata, mktg. comm. mgr. Date Product Introduced: April 1988 NAB. **Product Description & Applications:** DAT recorder/reproducer. DA-50 is sonically the finest DAT recorder available for 2-track mastering, radio/broadcast production and on-air use. **Basic Specifications & Suggested List Price:** ZD circuits on record and playback. Two times oversampling digital filters. Sampling frequencies: 48kHz, 44.1kHz, 32kHz \$3,995.

TASCAM; 7733 Telegraph Rd.; Montebello, CA 90640; (213) 726-0303. **Product Name: MSR-16 1/2" 16-track.** Contact: Ken Hirata, mktg. comm. mgr. Date Product Introduced: June 1988 NAMM. **Product Description & Applications:** 16-track recorder/reproducer. 1/2" tape; built-in dbx Type I; gapless, noiseless punch-in/out; spot erase, auto rehearse, auto punch-in/out. Designed to be used with the Tascam MIDiZER synchronizer for multiple deck lockup and video production. **Basic Specifications & Suggested List Price:** Tape format: 1/2", reel size: 10 1/2"; 15ips/7.5ips switchable speeds.

TASCAM; 7733 Telegraph Rd.; Montebello, CA 90640; (213) 726-0303. **Product Name: 238 Syncaest.** Contact: Ken Hirata, mktg. comm. mgr. Date Product Introduced: January 1988 NAMM. **Product Description & Applications:** The Tascam 238 is an 8-track cassette deck using standard audio cassettes. Designed for easy use: auto rehearse, auto punch-in/out; operates at 3.75 speed for high-quality audio reproduction. Designed to be synchronizable with the Tascam MIDiZER for multiple-deck lockup and video production. **Basic Specifications & Suggested List Price:** 8 tracks; 3.75ips tape speed; performance equal to the best 4-tracks available; track separation specs equal to or better than 1/2" 8-track recorders.



TDK ELECTRONICS CORP.

TDK ELECTRONICS CORP.; 12 Harbor Park Dr.; Port Washington, NY 11050; (516) 625-0100. **Product Name: SA-XG.** Contact: Bob Barlow/DBA Public Relations, (212) 807-1400. Date Product Introduced: January 1988. **Product Description & Applications:** TDK's SA-XG audio cassettes deliver the lowest bias noise available today from Type II cassettes. SA-XG

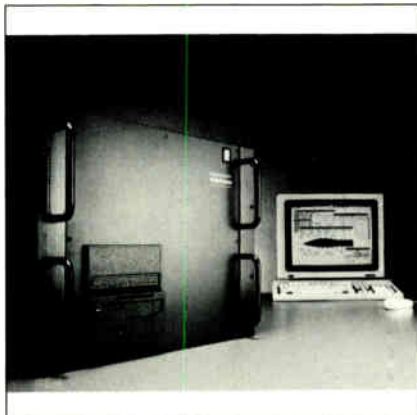
features dual Super Avilyn layers and utilizes TDK's exclusive RS-II triple-layer cassette mechanism. The RS-II mechanism enhances sound quality by greatly reducing vibration-induced modulation noise while it improves tape transportability, rigidity and reliability. Additionally, precision metal guide pins and specially designed liner sheets reduce friction and tape hub fluctuations. **Basic Specifications & Suggested List Price:** SA-XG 60 = \$7. SA-XG 90 = \$9.25.

3M MAGNETIC MEDIA DIVISION; 3M Center Bldg. 223-5N-01; Saint Paul, MN 55144-1000; (612) 736-5209; FAX: (612) 736-1246. Product Name: New 3M Precision Reels. Contact: Richard C. Collins, mkt. development mgr. **Product Description & Applications:** 3M R189 and R190 reels have been incorporated in 3M 226 and 250 and 3M 806 and 807 analog, open-reel mastering tapes. The new reels are of 6-screw, precision-type construction and will replace the older NAB and riveted-style reels on all 1/2" and 1" widths. With the incorporation of R189 and R190 reels, 3M becomes the industry's only supplier of a full line of precision-type phenolic hub reels in all widths. The benefits to the user include improved strength and durability, more precise engineering and superior winding characteristics and runnability.

3M MAGNETIC MEDIA DIVISION; 3M Center Bldg. 223-5N-01; Saint Paul, MN 55144-1000; (612) 736-5209; FAX: (612) 736-1246. Product Name: 3M SX Studio Master Audio Cassettes. Contact: Richard C. Collins, mkt. development mgr. **Product Description & Applications:** 3M SX Studio Master Audio Cassettes are high-performance, chrome bias cassettes designed for professional use. They feature a wide dynamic range based upon extremely low noise levels and a high maximum output level. **Basic Specifications & Suggested List Price:** Heat- and impact-resistant shell; hub latching mechanism to eliminate leader pull-out; guide columns to provide precision tape guidance across the heads; permanently lubricated roller guides; specially designed shims to minimize jamming and wow and flutter; 5-screw construction for durability. The SX Studio Master Cassette is the ideal choice for the most demanding studio applications.

TOA ELECTRONICS, INC.; 601 Gateway Blvd.; South San Francisco, CA 94080; (415) 588-2538. **Product Name: MR-8T 8-Track Cassette.** Contact: Rick Kamlet, sales mgr., PM&E division. **Date Product Introduced:** September 1988. **Product Description & Applications:** 8-track cassette recorder with built-in mixer. Double-speed, rack-mountable, records instruments directly. Allows for stereo mixdown, track bouncing and

overdubbing without external mixer. Effect insert points, high-output headphone amp. dbx II, 12-step VU for each track. Remote punch-in. Adjustable pitch. **Basic Specifications & Suggested List Price:** Frequency response: 20Hz-18kHz, 90dB S/N with dbx II, 50dB crosstalk, 22.5 minutes per C-60 cassette, wow and flutter less than 0.07%. **Suggested List Price:** \$2,149.



AUDIOFRAME

WAVEFRAME; 4725 Walnut St.; Boulder, CO 80301; (303) 447-1572. Product Name: AudioFrame. Contact: Sue Horwitz, mktg. communications. **Date Product Introduced:** October 1987. **Product Description & Applications:** The AudioFrame Digital Audio Workstation is a complete sound production environment integrated into a single, compact unit. The AudioFrame is at work today, performing as a MIDI studio; and dialog editor, and spotting sound effects. An array of functional modules plug into the AudioFrame, enabling the user to perform sampling, synthesis, mixing, signal processing, re-ordering and editing. Fixed sample-rate processing and integrated architecture allows any audio signal to be routed to any module. Audio professionals can produce finished soundtracks without ever leaving the digital domain. The result is superior sound quality. Modular design enables AudioFrame users to leverage the system's initial purchase and expand it at propor-

tionally lower costs. The AudioFrame adheres to industry standards like MIDI, SMPTE/LTC, VITC and AES digital output. The user interface is integrated under Microsoft Windows, a true multi-tasking environment that allows multiple applications to run simultaneously. AudioFrame resources can be shared using the IBM Token Ring Network. **Basic Specifications & Suggested List Price:** The basic system pricing begins at \$39,990 for 16 voices and 8 megabytes sampling RAM.

YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave.; Buena Park, CA 90622; (714) 522-9011. Product Name: MT 100 Mixer/Recorder. Contact: Professional Audio Division. **Date Product Introduced:** June 1988. **Product Description & Applications:** The MT 100 is a flexible 4-input mixer with a high-quality, multi-speed 4-track cassette recorder built in. The MT 100 has 4 input channels, each with an auxiliary send and L/R pan. Channels 1 and 2 are selectable microphone, line input or tape. Each input channel features a 10-segment LED meter for exact level control. **Basic Specifications & Suggested List Price:** The 4-track recorder has two speeds, a ±10% pitch control, RTZ (return to zero) cueing and selectable dbx noise reduction system. In addition to the aux send control on each input, there is a master aux return fader for level matching and level optimization. The return system features a master level control before the mix bus. The MT 100 includes a headphone monitor system that allows the user to select input from the monitor, the stereo output or a combination of the two, and has its own independent level control. A footswitch jack permits remote "hands-free" punch-in/out. The MT 100 is a compact 15"x8" and only 2.5" thick. **Price:** \$495.

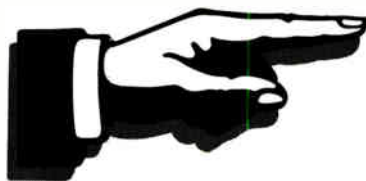
YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave.; Buena Park, CA 90622; (714) 522-9011. Product Name: MT2X Mixer/Recorder. Contact: Professional Audio Division. **Product Description & Applications:** The MT2X is a flexible, 6-input mixer with a studio-quality 4-track cassette recorder built in. Features include aux send, pan and 2-band EQ on each input; 10% pitch control; return-to-zero memory; stereo return system with master level control before the mix bus; and headphone monitor system. **Basic Specifications & Suggested List Price:** A special feature of the MT2X is the sync selector, allowing the user to assign track 4 to the optional YMC2 MIDI converter or an external MIDI converter. With this accessory, the MT2X synchronizes to any MIDI source. The MT2X has a provision for a footswitch for remote "hands-free" punch-in/out. These features allow the user to operate or perform and still maintain control of recording. The MT2X is a compact 16"x10" and only 3" thick. **Price:** \$845.

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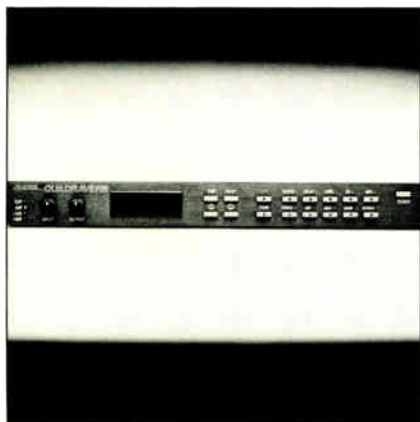
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SIGNAL PROCESSING DEVICES

1989

AKG ACOUSTICS INC.; 77 Selleck St.; Stamford, CT 06902; (203) 348-2121. **Product Name: ADR 68K.** Contact: Timothy Derwallis, tech. sales coordinator. **Product Description & Applications:** AKG's ADR 68K Version 4 software provides MIDI-controllable parameter changes of all the ADR's functions via any MIDI controller or sequencer. The ADR's parameters can also be controlled via audio input levels, or four input jacks on the remote, from any switch, relay contact, logic source, or even a passive potentiometer. Version 4 software expands the ADR 68K's sampling time to 32 seconds, while retaining both its resolution and sampling rate. Factory presets have been expanded to over 150. **Basic Specifications & Suggested List Price:** AKG's pre-programmed Master MIDI ROM cartridges make available MIDI controller presets using common MIDI commands, including mod wheel, pitch wheel, channel pressure (aftertouch), sustain and portamento pedals, footpedals, note-on velocity and many more. These presets are designed to use as is, or as starting points for designing custom applications. Version 4 software is required. The ADR 68K with Version 4 software is \$6,990. Version 4 upgrade kits cost \$1,995. The Master MIDI ROM cartridge is available for \$150.

AKG ACOUSTICS INC.; 77 Selleck St.; Stamford, CT 06902; (203) 348-2121. **Product Name: CAP 340 M Creative Audio Processor.** Contact: Timothy Derwallis, tech. sales coordinator. **Product Description & Applications:** The CAP 340 M is a digital audio signal processor. Being freely programmable, modular and entirely software-controlled, the CAP 340 M is a useful tool for recording studios, live recording as well as acoustical research and computer simulating. The CAP 340 M is made up of four basic modules: the processing unit, the host computer, the host interface and the audio interface. **Basic Specifications & Suggested List Price:** Some applications include digital mixing console with level, delay time and pan controls as well as automation and memory recall capabilities, user-definable multi-band EQ with no or minimum phase shift, angle dependent filtering (ADF) and delay time (DT), a program that compensates for the time of arrival differences between spot mics and the main mics; and room simulation, where the host computer enables any room to be simulated and acoustically treated with such things as bass traps, curtains or even an audience. Other applications for the CAP 340 M are psychoacoustical research, listening tests, sound source localization, timbre and filter design.



QUADRAVERB

ALESIS CORPORATION; 3630 Holdrege Ave.; Los Angeles, CA 90016; (213) 467-8000. **Product Name: Quadraverb.** Contact: Mark Ludmer, asst. mktg. mgr. **Date Product Introduced:** October-December 1988. **Product Description & Applications:** Quadraverb is a 16-bit simultaneous effects digital signal processor featuring reverb, delay chorus, flange, pitch shift and parametric equalization. There are 100 fully programmable memory locations with 90 factory programs provided and a 20kHz bandwidth. Special features include touch-sensitive parameter buttons that speed up as they are pressed

harder (to greatly facilitate program editing), MIDI control of program parameters, Sys Ex data storage capability, program naming capability and a program advance footswitch jack. **Basic Specifications & Suggested List Price:** Because of the Quadraverb's massive onboard memory (64K by 24 bits) the reverb programs cross over the theoretical limits of where the human ear can detect the difference between a simulation and the real thing. Quadraverb can do four of its effects at the same time. **List price:** \$449.

ALESIS CORPORATION; 3630 Holdrege Ave.; Los Angeles, CA 90016; (213) 467-8000. **Product Name: Micro EQ.** Contact: Mark Ludmer, asst. mktg. mgr. **Date Product Introduced:** Fall 1988. **Product Description & Applications:** Alesis has added two new products to the Alesis Micro series: the Micro EQ and Micro Cue Amp. The Micro EQ is a monophonic, 3-band parametric equalizer featuring continuous frequency control, boost/cut with a range of ± 15 dB and a two-position bandwidth/"Q" switchable between octave and $\frac{1}{4}$ -octave curves. Frequency range across the three bands is from 40Hz to 18kHz. **Basic Specifications & Suggested List Price:** **List price:** \$125.

APHEX SYSTEMS LTD.; 13340 Saticoy St.; North Hollywood, CA 91605; (818) 765-2212. **Product Name: Aphex Expander/Gate Model 612.** Contact: Paula Lintz, sales mgr. **Date Product Introduced:** March 1988. **Product Description & Applications:** Full-featured expander/gate. Noise suppression and gating, expand dynamic range for special effects and for overly compressed material. Useful in music studios, video and film post-production, PA, automatic mic mixing, sound effects. "Duck" feature makes it extremely useful for voice-overs. Performance allows applications that were not even thought of with prior designs. **Basic Specifications & Suggested List Price:** Balanced, RF-filtered input, double balanced electronic output, 2 μ s attack with no clicks! Dynamic range -107dB, frequency response 5Hz to 110kHz, +0, -0.2dB, distortion THD at +4dBm -0.002%, SMPTE IMD -0.006%.

API AUDIO PRODUCTS, INC.; 7951 Twist Ln.; Springfield, VA 22153; (703) 455-8188; **Telex:** (510) 600-1898; **FAX:** (703) 455-4240. **Product Name: API 525B Compressor.** Contact: Paul Wolff, Kevin Raynor. **Date Product Introduced:** AES 1988. **Product Description & Applications:** The 525B compressor and gate is similar in design to the well-liked 525 compressor series. The main difference is that the 525B uses a motorized rotary element to adjust gain. It operates in tow modes, with input and output amplifiers in the circuit or 100% passive. It is housed in the standard API EQ-pinout box. **Basic Specifications & Suggested List Price:** **Price:** \$995.

API AUDIO PRODUCTS, INC.; 7951 Twist Ln.; Springfield, VA 22153; (703) 455-8188; **Telex:** (510) 600-1898; **FAX:** (703) 455-4240. **Product Name: API 550B EQ.** Contact: Paul Wolff, Kevin Raynor. **Date Product Introduced:** AES 1988. **Product Description & Applications:** The 550B is a 4-band version of the famous 550A all-discrete equalizer. It is schematically the same as the original 550A. The 550B will offer one additional mid-band control and 13 new frequencies. Each band will have seven selectable frequencies. The 550B includes all the original 550A frequencies, as well as the peaking/shelving feature. **Basic Specifications & Suggested List Price:** 550B all-discrete equalizer with two 2,520 op amps and a clip point at +30. It covers the frequency range from 30Hz to 20kHz. The price will be \$995.

APOGEE ELECTRONICS CORP.; 1517 20th St.; Santa Monica, CA 90404; (213) 828-1930. **Product Name: A/D Mastering Box.** Contact: Betty Bennett, VP. **Date Product Introduced:** November 1988. **Product Description & Applications:** Mastering stereophonic digital recording front end. Unit accepts stereo inputs and converts to standard serial digital formats and interfaces. The purpose is to achieve the highest quality sound recording by replacing and bypassing internal analog front end of digital recording equipment. Once the sound is converted to digital format, it serves to make any low-cost digital storage (DAT, etc.) as good as any other. **Basic Specifications & Suggested List Price:** Features include: Apogee low-pass filters; highest quality sample/hold and A/D converter; two diather types; high level improves amplitude linearity of converter, low-level Nyquist band dithering extends dynamic

range of converter, differential or single-ended inputs; switchable pre-emphasis; selectable sampling frequencies: 48kHz, 44.1/44.05kHz; selectable digital output formats: AES/EBU, SDIF-1, SDIF-2, PD, Sony/Philips (DAT); compact 2U rack-mount design. **Price:** \$1,500.

APOGEE ELECTRONICS CORP.; 1517 20th St.; Santa Monica, CA 90404; (213) 828-1930. **Product Name: DAT/EIAJ Enhancement Modules.** Contact: Betty Bennett, VP. **Date Product Introduced:** November 1988. **Product Description & Applications:** Internally mounting sonic enhancement modules for Sony 1000ES and 2500 DATs and PCM-F1/701/601/501 and Nakamichi DMP-100 processors. Modules replace stock analog, anti-aliasing and analog/digital output circuitry with high-performance Apogee components, resulting in accurate stereo imaging, faithful 2kHz to 6kHz response, professional input and output levels and removal of "digital" harshness. **Basic Specifications & Suggested List Price:** Apogee Electronics' development of a cost-effective module substantially improves the performance of EIAJ processors, thus giving a new lease on life to this popular and flexible format. For a small investment, Sony 1000ES DAT owners can add accurate sonic performance plus professional input and output levels. These improvements can be made without the additional, sonically degrading input and output circuitry of the Sony pro model 2500 DAT, thereby putting it in a class by itself. **Module price:** \$495.

ARSONIC TONSTUDIO ELEKTRONIK/U.S.; 146 Paoli Pike; Malvern, PA 19355; (215) 647-9426. **Product Name: Sigma 1.2 Level Control Unit (LCU).** Contact: Roy S. Hall, VP sales. **Date Product Introduced:** June 1988. **Product Description & Applications:** The Sigma 1.2 LCU is an innovative new system that allows the sound engineer more freedom to concentrate on mixdown. It is the combination of an intelligent peak meter, a master fader and a modified Dynaflex® single-ended noise reduction system. The Sigma 1.2 balances the material between full dynamic range and saturation, eliminating the time-consuming process of level adjustment as well as the need for compression or limiting devices. Send for full catalog. **Basic Specifications & Suggested List Price:** Guaranteed to exceed: frequency response of 30Hz-16kHz ± 0 dB, 15Hz-30kHz -0.5dB; dynamic range of 116dB (CCIR 468); S/N ratio of 103dB (dBA); and stereo or single channel modes. Carefully hand-selected and assembled components assure each unit has the highest specifications, but numbers do not tell all. Hear it for yourself.

ARSONIC TONSTUDIO ELEKTRONIK/U.S.; 146 Paoli Pike; Malvern, PA 19355; (215) 647-9426. **Product Name: Sigma 3 series and Sigma 4 series.** Contact: Roy S. Hall, VP sales. **Date Product Introduced:** June 1988. **Product Description & Applications:** The Sigma 3 series offers a high-quality parametric equalizer that is absolutely stable with low noise and produces no phase-shift errors, even if one EQ section is turned off. The Sigma 4 series offers the unique combination of the same high-quality parametric equalizer and a single-ended noise reduction system. Carefully hand-selected and assembled components assure each unit is of the highest quality and completely transparent in any system. **Basic Specifications & Suggested List Price:** Exact scaling and alignment; overlapping frequency ranges; notch to full bandwidth filtering capabilities; dynamic range: better than 116dB (unweighted); S/N ratio: better than 102dB (unweighted).

ART—APPLIED RESEARCH & TECHNOLOGY, INC.; 215 Tremont St.; Rochester, NY 14608; (716) 436-2720; **FAX:** (716) 436-3942. **Product Name: MultiVerb.** Contact: Philip Bette, president. **Date Product Introduced:** June 1988. **Product Description & Applications:** ART has combined the best features of the hottest selling effects unit into a package that does it all. The MultiVerb does the full range of reverbs, flange, chorus, equalization, delay effects and pitch transposing. The user can vary any number of parameters and store custom programs in any of 200 memory locations. ART's new ultra high-performance circuitry yields sounds and bandwidth unequalled at any price. **Basic Specifications & Suggested List Price:** The ART MultiVerb can do up to four effects at a time; 20-bit digital processing; fully utilized 16-bit A-D-A conversion; 32-character LCD; fully programmable; full parameter variability; 200 memory locations; MIDI In/Out; MIDI mapping; battery backup; full stereo in/out; input/mix controls; random access keypad. **Suggested list price:** \$575.

ART—APPLIED RESEARCH & TECHNOLOGY, INC.; 215 Tremont St.; Rochester, NY 14608; (716) 436-2720; **FAX:** (716) 436-3942. **Product Name: ProVerb 200.** Contact: Philip Bette, president. **Date Product Introduced:** March 1988. **Product Description & Applications:** Two hundred of the hottest studio effects combinations ever designed. The warmest, smoothest, most natural sounding reverbs. The most brilliant chorusing and studio flanging. A full range of multiple effects. 16-bit processing, full MIDI, wide bandwidth. Possibly the finest sounding effects processor on the market today at any price. **Basic Specifications & Suggested List Price:** Over 120 reverb variations; 200 studio designed presets; 16-bit processing; rapid program access; full battery backup; wide bandwidth; line/instrument input level control; full MIDI mapping; remote footswitch jack; multiple effects combinations. **Suggested list price:** \$379.

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NEW PRODUCTS

SIGNAL PROCESSING DEVICES

AUDIO/DIGITAL, INC.; 1000 S. Bertelsen Rd. #4; Eugene, OR 97402; (503) 687-8412; (800) 423-1082. **Product Name:** PAD-300/18. **Contact:** Gary Hardesty, pres./dir. of eng. **Date Product Introduced:** May 15, 1988. **Product Description & Applications:** Audio/Digital introduces the industry's first 18-bit delay system for alignment and synchronization applications. The PAD-300/18 features a dynamic range of at least 105dB. With a high sample rate and simple analog filtering, phase and frequency are very linear and sound quality is analog-like. **Basic Specifications & Suggested List Price:** One audio input and three audio outputs; RS-422 ports follow proposed IED standard for complete remote control of gain, delay, mute bypass and page control; 8-character LED dot matrix display, rear-mounted security enable/disable, rear barrier strip for page control (up to 18 pages), pages also accessible via RS-422 ports; one rackspace. Pricing TBA.

AUDIO LOGIC; 5639 S. Riley Ln.; Salt Lake City, UT 84107; (801) 268-8400. **Product Name:** R1 D1 Single Channel Digital Room Delay. **Contact:** Dean Stubbs, comm. dir. **Date Product Introduced:** August 1988. **Product Description & Applications:** The R1 D1 digital room delay is a single-input, single-output, digital room delay capable of 0 to 320 milliseconds of delay time in 5-millisecond, DIP-switch set increments. Input and output level controls are accessible via screwdriver, adjustable, through-the-panel potentiometers. An LED level display indicates headroom. **Basic Specifications & Suggested List Price:** The unit utilizes a 50kHz sample rate with 16-bit linear PCM conversion for a dynamic range greater than 92dB and a frequency response of 20Hz to 20kHz, +0, -0.5dB. Suggested U.S. list price is \$450.

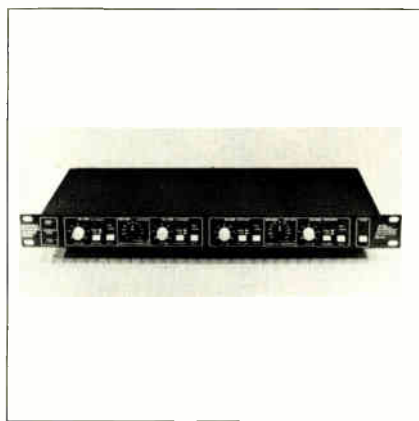
AUDIO LOGIC; 5639 S. Riley Ln.; Salt Lake City, UT 84107; (801) 268-8400. **Product Name:** SC 131—31-Band, 1/3-Octave, Cut-Only Graphic EQ. **Contact:** Dean Stubbs, comm. dir. **Date Product Introduced:** July 1988. **Product Description & Applications:** The Audio Logic SC 131 cut-only, single-channel graphic equalizer offers 31 bands of 1/3-octave, cut-only equalization of selectable -10 or -20dB of cut. The SC 131 offers accurate frequency centers, variable frequency high-pass and low-pass filters with an in/out switch, an input level control and three different types of connections: Cannon XLR-type connectors, a barrier strip and 1/4" tip-ring-sleeve phone jacks. **Basic Specifications & Suggested List Price:** Signal-to-noise ratio: greater than 90dB; dynamic range: greater than 117dB, THD: less than 0.005%. Suggested U.S. list price is \$600.



ADVANTAGE™ GAIN MANAGER

BIAMP SYSTEMS; 14270 NW Science Park Dr.; Portland, OR 97229; (503) 641-7287. **Product Name:** Advantage™ Gain Manager. **Contact:** Ron Camden, sales mgr. **Date Product Introduced:** May 1, 1988. **Product Description & Applications:** The Advantage Gain Manager provides intelligent level control through the integration of long-term average signal leveling, control of dynamic deviations of peak signals by soft-knee compression, absolute peak level limiting and a unique soft gate action providing a below-threshold gain reduction multiplier for natural, unobtrusive gate action. It is an ideal device for unattended gain and dynamic range control. **Basic Specifications & Suggested List Price:** Compression: attack time, 5-40mS; release time, 200-500mS; ratio, 1.1:1-10:1. Leveling: attack time, 0.5-0.75 sec. fast/1.0-2.5 sec. slow; release time, 1.0-5.0 sec. fast/2.5-15.0 sec. slow. Peak limiter: attack time, 250µs; release time, 15mS. Soft gate: attack time, 1mS; release time, 100mS. List price, \$599.

BSS AUDIO/EDGE DISTRIBUTION CORP.; 611 Broadway #841; New York, NY 10012; (212) 460-9940. **Product Name:** FDS-310 Crossover. **Contact:** Dave Talbot, VP of sales elec. products. **Date Product Introduced:** June 1988. **Product Description & Applications:** Based on our high-quality, 24dB-per-octave (fourth order) Linkwitz-Riley filters and continuously variable frequency points, the FDS-310 offers the quality of



FDS-310 CROSSOVER

a BSS crossover without the high cost of unnecessarily complex facilities. The FDS-310 can be used in either 2-way stereo or 3-way mono. In both modes, each frequency band has its own level control, frequency control, polarity control, mute control, signal present LED and peak signal warning LED. **Basic Specifications & Suggested List Price:** An internal jumper allows the introduction of a special constant-directivity horn equalization (HF) boost. In the stereo mode, two presettable features help make the most out of a system's bass: the first sums the two low sections to mono, creating a tighter, more stable LF speaker performance; the second reconfigures either or both channels to work as a sub-bass crossover. Frequency scalings is divided by ten, giving an effective range of 18-200Hz. (There's an adjacent "-10" warning LED for safety.) Price: \$799.

CREATIVE AUDIO DESIGN & DEVELOPMENT INC.; 1875-D Panama; Bossard, Quebec, J4W 2S8 Canada; (514) 466-1691. **Product Name:** DL-1 Digital Control System. **Contact:** Denis Lambert, engineer. **Date Product Introduced:** November 1988. **Product Description & Applications:** The Cadd DL-1 is a digitally based, audio system control unit consisting of a crossover that may be configured in a stereo 3-way or stereo 2-way mode. It also incorporates a digital compressor/limiter on each output for loudspeaker protection and a digital delay circuit for each frequency band to facilitate time correction between drivers in a loudspeaker cabinet. **Basic Specifications & Suggested List Price:** Linear phase digital filters with 60dB/octave slope. Programmable delay UPT. 5 millisecond in 20-microsec. steps. Programmable ratio and threshold, on compressors.

dbx; 71 Chapel St.; Newton, MA 02195; (617) 964-3210. **Product Name:** 563X. **Contact:** Bob Accettullo, product specialist. **Product Description & Applications:** The 563X single-ended noise reduction system reduces steady hiss from any noise source by 40dB. The 563X contains one channel of one-step (decode only) noise reduction for use with: tape playback, analog tapes being CD mastered, instrument hiss reduction, tape duplication and PA hiss elimination. Two 563Xs may be used together for stereo. **Basic Specifications & Suggested List Price:** THD: 0.6%; input 391k ohms, single ended; freq. response: 20Hz-20kHz ±1.5dB, high-level output: 22 ohms for driving 600 ohms or greater; low-level output: 900 ohms for driving 10k ohms or greater; front input gain: 0-20dB, rear input gain: 0dB; max. in/out level: +18dBV. Note: we also have the 929 modular, single-ended noise reduction system.

DIGITECH; 5639 S. Riley Ln.; Salt Lake City, UT 84107; (801) 268-8400. **Product Name:** IPS 33 Smart Shift Intelligent Pitch Shifter. **Contact:** Dean Stubbs, comm. dir. **Date Product Introduced:** July 1988. **Product Description & Applications:** Digitech's new digitally based pitch shifter, the IPS 33 Smart Shift, is capable of producing up to two amazingly crisp and clear notes other than the original input note in a true harmonic pattern. Both shifted notes may be independently set up to an octave above or below the original note. The pitch shifter, when told the key that is being played and the harmony type, can maintain a true harmony, unlike other units that can only maintain a parallel harmony. **Basic Specifications & Suggested List Price:** The Smart Shift has up to 99 user-definable presets recallable via MIDI, 41 predefined harmony tones, and may have up to 16 user-defined harmonies. Suggested U.S. list price is \$799.95.

DOLBY LABS; 100 Potrero Ave.; San Francisco, CA 94103; (415) 558-0200. **Product Name:** SDU4. **Contact:** Bill Mead, dir. of tech. mktg. **Date Product Introduced:** SMPTE 1987. **Product Description & Applications:** The Dolby SDU4 is designed for reference monitoring of Dolby Surround or Dolby Stereo program material in broadcast, audio-for-video, music recording and some film applications. The unit contains a reference 2:4 matrix decoder identical to that used in the Dolby Stereo monitoring equipment found in film production centers. **Basic Specifications & Suggested List Price:** Overall frequency response: 20Hz-20kHz +1dB (L, C and R), 100Hz-7kHz +3dB (surround output); S/N ratio: greater than 80dB (left, center, right), greater than 70dB (surround).

DRAWMER; Charlotte St. Business Centre; Charlotte St., Wakefield, West Yorks, WF1 1UH U.K.; (0924) 378669. **Product Name:** DF320 Universal Noise Filter. **Contact:** Ken Giles, M.D. **Date Product Introduced:** October 1988. **Product Description & Applications:** A sophisticated single-ended noise reduction system that combines the effects of a program-dependent noise filter with an auto-attack expander to provide dramatic noise reduction regardless of program source. Effective in combating noise from tape machines, digital synths, miked guitar amps and so on, in an easy-to-use format with the absolute minimum of side effects. The provision of +4dB (balanced XLR) and -10dB inputs and outputs makes the DF320 suitable for use in recording studios, tape copying suites, audio/visual and broadcast.

DRAWMER; Charlotte St. Business Centre; Charlotte St., Wakefield, West Yorks, WF1 1UH U.K.; (0924) 378669. **Product Name:** E101 Passive Coil Equalizer. **Contact:** Ken Giles, M.D. **Date Product Introduced:** March 1988. **Product Description & Applications:** A four-stage, single-channel passive equalizer using precision wound coils to capture the essential tonal characteristics and warmth of the classic '50s and '60s equalizers. **Basic Specifications & Suggested List Price:** Signal connections: XLR balanced/jack unbalanced for input and output; nominal signal level: +4dB; noise EQ flat: -92dB; noise EQ off: -95dB (unweighted from 22Hz to 22kHz); equalizer type: LCR passive, four section.

DRAWMER; Charlotte St. Business Centre; Charlotte St., Wakefield, West Yorks, WF1 1UH U.K.; (0924) 378669. **Product Name:** M500 Dynamics Processor. **Contact:** Ken Giles, M.D. **Date Product Introduced:** February 1988. **Product Description & Applications:** The M500 2-channel dynamics processor is probably the most comprehensive noise gate in the world. It is also capable of performing compression, expansion, de-essing, panning, filter-pan, auto-leveling and limiting simultaneously. Every parameter can be accessed, adjusted and stored in one of 50 user patches. An additional 78 patches are preprogrammed to mimic combinations of the current Drawmer range and other popular signal processors. **Basic Specifications & Suggested List Price:** Inputs (both channels): balanced line XLR (50k-ohm impedance); operating level: -10dB or +4dB software switchable; noise level: -92dB (22Hz to 22kHz) unweighted; dynamic range: 108dB.

DYNACORD; 2697 Lavery Ct., Unit 16; Newbury Park, CA 91320; (805) 499-6863. **Product Name:** DRP-20. **Contact:** Robby Frank, sales and mktg. mgr. **Date Product Introduced:** May 1988. **Product Description & Applications:** The DRP-20 is a true stereo multi-effects processor. At the heart of the DRP is a 32-bit processor that produces amazingly smooth and natural sounding reverberation. All effects can function in stereo, and can be combined or split between the two channels (i.e., L echo/plate R). The delay effects are interesting and useful. It has an intelligent, easy-to-use design with logical real-time editing. **Basic Specifications & Suggested List Price:** 128 user locations, 100 factory presets, 91dB S/N ratio, 5 reverb structures, 15 reflection clusters, 5 room types, reverse reverb, programmable gate, super chorus, flanging, doubling, multi-tap effects, echo, advanced MIDI, triggered freeze, automatic freeze. Suggested list \$2,495.

EVENTIDE, INC.; One Alsan Way; Little Ferry, NJ 07643; (201) 641-1200. **Product Name:** H3000-B Ultra-Harmonizer. **Contact:** Gil Griffith, sales mgr. **Date Product Introduced:** April 9, 1988. **Product Description & Applications:** New version of H3000-S (released Oct. 1987) includes: Auto Time-Squeeze® time compression/expansion program, which automatically controls any frequency-controllable, variable-speed tape machine. Function generator generates special sound effects, e.g., sirens, helicopters, windstorms, steam baths. Also allows for automatic panning and assignable sweeps for flanging and chorus. **Basic Specifications & Suggested List Price:** Full stereo, 5-20k bandwidth, 16-bit at 44.1kHz, 92dB dynamic range, 89 factory programs, 50 user presets, fully MIDI controllable, \$2,995.

E.A.R.; c/o Audio Consulting & Engineering; 1909 Judah St.; San Francisco, CA 94122; (415) 661-4143. **Product Name:** 822Q Program Equalizer. **Contact:** Paul Stubblebine. **Date Product Introduced:** July 1, 1988. **Product Description & Applications:** A modern reproduction of the classic Pultec equalizers, retaining the same control layout. All audio stages are vacuum tube only. Designed by Tim de Paravicini. Parts and construction are up to the highest standard. **Basic Specifications & Suggested List Price:** \$1,300.



E.A.R. 822Q & 660

E.A.R.: c/o Audio Consulting & Engineering; 1909 Judah St.; San Francisco, CA 94122; (415) 661-4143. **Product Name:** 660 Compressor/Limiter. **Contact:** Paul Stubblebine. **Date Product Introduced:** July 1, 1988. **Product Description & Applications:** A modern reproduction of the classic Fairchild 660 limiter/compressor, utilizing the same control layout. All audio stages are vacuum tube only. Designed by Tim de Paravicini. Parts and construction are to the highest standard. **Basic Specifications & Suggested List Price:** \$1,500.

FOCUSRITE US LTD: 1100 Wheaton Oaks Ct.; Wheaton, IL 60187; (312) 653-4544; FAX: (312) 665-4966. **Product Name:** ISA 130 Dynamics Processor. **Contact:** Dan Zimelman, Mal Davis. **Date Product Introduced:** August 1988. **Product Description & Applications:** The ISA 130 module has been developed to answer the need for a powerfully creative and sonically transparent dynamics processor. Built to the same exacting standard and performance that has helped to establish Focusrite as a world leader in audio design, it is intended to complement the existing ISA 110 input signal amplifier, utilizing the same racking and power supply system. In the quest to find a musical and transparent control element, we developed a new VCA (voltage-controlled amplifier) after a period of intensive research, measurement and listening. This major breakthrough in VCA design features exceptionally low distortion, accurate and thermally stable control characteristics, and the absence of modulation noise achieved through a class A circuit topology. **Basic Specifications & Suggested List Price:** Functionally, five sections comprise the ISA 130: compressor/limiter, de-esser/exciter, noise gate/expander, gain reduction and signal metering, EQ and filters.

FULL COMPASS SYSTEMS LTD.: 6729 Seybold Rd.; Madison, WI 53719-1393; (608) 271-1100. **Product Name:** DAP-320. **Contact:** Mike Konkle. **Date Product Introduced:** April 1988. **Product Description & Applications:** DAP-320 2-channel digital audio processor with front panel graphics, joystick and keypad entry, direct digital or analog in/out, up to eight stackable DSP modules (four per channel), RS-232 interface. Programming available or planned includes two-slope compression, expansion, delayed compression (no overshoot), filtering, delays, spectrum analysis and sample rate conversion. Program functions can be chained together. Licensing of development software available (PC-based). IEEE488 interface module planned for general, high-speed data transfer.

FULL COMPASS SYSTEMS LTD.: 6729 Seybold Rd.; Madison, WI 53719-1393; (608) 271-1100. **Product Name:** Studio Psychologist. **Contact:** Mike Konkle. **Date Product Introduced:** April 1988. **Product Description & Applications:** Psychologist Series remote-controlled matrix mixers. Plug-in cards (1 x 16 or 2 x 8) allow easy expansion from a 4 x 4 stereo to a 32 x 32 mono system. Miniature controllers, one per output, communicate with a master CPU via an RS-232 line. Unit can be computer-controlled. The master controller varies digital attenuators at each crosspoint. Option cards allow for all-call input and local in/out of remotes. Fan in/out boxes allow multiple remotes to be connected to one RS-232 line.

FURMAN SOUND, INC.: 30 Rich St.; Greenbrae, CA 94904; (415) 927-1225. **Product Name:** PQ-4 Parametric Equalizer. **Contact:** Joe Desmond, nat'l sales mgr. **Date Product Introduced:** May 1988. **Product Description & Applications:** Furman's new PQ-4 parametric equalizer features an unusually large equalization range, from a full 20dB boost to an infinitely deep notch. It has the more musically useful constant-Q curves, allowing a bandwidth spread from extremely narrow notches to boosts as wide as four octaves. The top and bottom bands have peak/shelf switches, allowing either the usual peaking EQ, or shelving EQ, where all frequencies above (top band) or below (bottom band) the selected frequency are boosted or cut. Though designed for studio use, the PQ-4 can also serve as an instrument preamp. It includes a foot-switch jack, isolated connectors and a ground lift switch. **Basic Specifications & Suggested List Price:** Signal/noise: 109dB bypass, 99dB with EQ in and set flat, distortion: less

than .003% THD at 0dBV, less than .01% THD at +18dBV; frequency ranges: Band 1 20-400Hz, Band 2 75-1,500Hz, Band 3 250-5,000Hz, Band 4 1.2-20kHz. **Suggested list price:** \$359. **Optional balanced XLR input/output, an additional \$20.**

GOLD SOUND: 2812 S. Bannock; Englewood, CO 80110; (303) 789-5310. **Product Name:** GS 224EQ. **Contact:** Ron Gold. **Date Product Introduced:** January 1988. **Product Description & Applications:** GS 224 is a 24dB/octave electronic crossover for stereo bi-amping, with crossover frequency infinitely adjustable from 40 to 4,200Hz. Six level controls adjust left and right input, low output and high output. Quality parts are used throughout, including metal oxide film resistors, 1% four-gang potentiometers and polystyrene capacitors. Features include a 1.75" high rack-mount, black anodized aluminum front panel and a Plexiglas security cover. EQ models include low-frequency equalization and a subsonic filter. 424 models are for stereo tri-amping or 4-channel bi-amping. **Basic Specifications & Suggested List Price:** GS 224: \$324, 34dB stereo bi-amp, 40-4,200Hz crossover frequency, .02% THD, S/N 102dB, maximum output 6V, slew rate 12V/μs, input impedance 20k ohms, output impedance 300 ohms. GS 224EQ: \$384, above with +6dB boost at 30Hz plus a 20Hz



GS 224EQ



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subsonic filter. GS 424: \$424, 24dB stereo tri-amp or 4-channel bi-amp, 40-90,000Hz. GS 424EQ: \$484, above with +6dB boost at 30Hz, plus a 20Hz subsonic filter.

JAVELIN TECH. (DIST. BY INDUSTRIAL STRENGTH INDUSTRIES); 13042 E. Moore St.; Cerritos, CA 90701; (213) 921-2341. **Product Name: R-16.** Contact: Bill Teipe. Date Product Introduced: October 1988. **Product Description & Applications:** Digital reverb/effects processor with 99 programs. 16-bit, with 32-bit numeric coprocessor. All parameters can be changed by front panel controls or through external IBM PC or Atari computer. When used with PC, the R-16 can do spectrum analysis, FFT and 3-D waveform plotting. MIDI control and sampling. 14kHz "real" bandwidth of the effect section. **Basic Specifications & Suggested List Price:** \$995 factory direct (list price is \$2,200), includes IBM and Atari software and one-year free software updates (both internal and external).

LAKE PEOPLE; Rosgartenstr. 13; D 7750 Konstanz, West Germany; (D) 07531-24428. **Product Name: Mon-Ster V8.** Contact: Fried Reim, director. Date Product Introduced: September 1988. **Product Description & Applications:** The Mon-Ster V8 is a microprocessor-controlled autopanner, autoattenuator and mono-stereo simulator. Audio signals are controlled by four VCAs and processed by the latest digital technology. Because of analog control a dynamic of more than 110dB and minimum distortion is obtained. Up to 30 parameters for panning and leveling may be edited on an alphanumeric display. Additionally, three selectable parameters can be controlled by turnpot operation. User programs and factory presets are stored in a buffered RAM. Stereo simulation is done independent of frequency and without phase shifting, i.e., mono-compatible. **Basic Specifications & Suggested List Price:** Full MIDI control of all parameters; input: elect. balanced; output: unbalanced; max in/output level: gt. 21dB; max. attenuation: gt. 90dB; dynamic: gt. 110dB; distortion: lt. 0.05%; trigger: internal or external; the unit fits into Lake People's SR 9 rack. Price is \$1,900.

LEXICON; 100 Beaver St.; Waltham, MA 02154; (617) 891-6790. **Product Name: LXP-1 Multi-Effects Processing Module.** Contact: Joel Silverman, dir. of sales. Date Product Introduced: Spring 1988. **Product Description & Applications:** The LXP-1 Multi-Effects Processing Module offers Lexicon's superb sound quality in a small, easy to use and affordable package. Combinations of the LXP-1's 16 preset sounds, along with the two parameter controls available for each program, allow the user quick access to more than 4,000 sounds. The full MIDI implementation has the ability to change presets by MIDI program changes and change parameters in real time with Lexicon Dynamic MIDI. Furthermore, through system exclusive commands or the Lexicon MRC (MIDI Remote Controller), as many as eight variable parameters per program can be accessed. The individually tailored sounds can be stored in the LXP-1's 128 user registers. Applications include live performance, studio performance, sound reinforcement engineering and studio engineering. **Basic Specifications & Suggested List Price:** 16 presets: small rooms 1 and 2, medium rooms 1 and 2, large rooms 1 and 2, dark hall, bright hall, dark plate, bright plate, inverse room, gated reverb, chorus 1 and 2, delay 1 and 2; frequency response: 20Hz to 20kHz ± 0.5 dB (dry), 20Hz to 15kHz ± 1.0 dB (wet); dynamic range: 85dB (typical); connections: L/R inputs 1/4" phone jack, L/R outputs 1/4" phone jack, defeat 1/4" phone jack, MIDI In and MIDI Thru. List price: \$499.

LEXICON; 100 Beaver St.; Waltham, MA 02154; (617) 891-6790. **Product Name: MRC MIDI Remote Controller.** Contact: Joel Silverman, dir. of sales. Date Product Introduced: Spring 1988. **Product Description & Applications:** The MRC MIDI Remote Controller is an intelligent, alphanumeric based, remote terminal that communicates with all MIDI devices in an innovative fashion, allowing the user to "remotely" program MIDI devices quickly and easily. Includes special expanded control of the Lexicon LXP-2 (Multi-Effects Processing Module), the PCM 70, a unique "macro" mode for FM synthesizers, as well as MIDI program change and standard MIDI controllers. The MRC is capable of operation on several channels at once, allowing simultaneous control of multiple units. All changes may be renamed and stored in user registers (setups), and any of the sliders or push buttons can be assigned to any standard MIDI controller. The MRC in the home or studio allows for greater control and creativity. For live performance, the MRC controls a MIDI system for quick access and expanded control. **Basic Specifications & Suggested List Price:** The MRC consists of two independent MIDI inputs and outputs; a 2-line/24-character alphanumeric LCD display, four programmable control sliders for editing LXP-1 and PCM 70 parameters, and for "analog" style control of standard 6-operator FM synthesizers; four soft-assignable push buttons for MIDI controllers, note events and sequencer control; and a numeric keypad for data entry. The four sliders, as well as two external control inputs, may be programmed for any MIDI controller, with control of scaling. The MRC list price is \$399.

MICROAUDIO, INC.; 4438 SW Hewett Blvd.; Portland, OR 97221; (503) 292-8896; (800) 445-1248. **Product Name: EQ POD 2.1.** Contact: Eugene Rimkeit, president. Date Product

NEW PRODUCTS

SIGNAL PROCESSING DEVICES

Introduced: September 1988. **Product Description & Applications:** Dual 28-band, tamper-proof, 1/3-octave EQ programmable by your IBM PC, a MicroAudio RTA or hand-held programmer. Available with remote EQ curve switching. Requires one rackspace. **Basic Specifications & Suggested List Price:** \$1,195.

MICROAUDIO, INC.; 4438 SW Hewett Blvd.; Portland, OR 97221; (503) 292-8896; (800) 445-1248. **Product Name: MIDI POD 1.1.** Contact: Eugene Rimkeit, president. Date Product Introduced: September 1988. **Product Description & Applications:** Tamper-proof, 1/3-octave, 1-rack slave equalizer programmable by your MIDI controller. Non-volatile memory with no batteries required, 50-year memory retention. Available with footswitch for recalling different EQ curves. **Basic Specifications & Suggested List Price:** \$595.

NIH LABS (DISTRIBUTED BY INDUSTRIAL STRENGTH INDUSTRIES); 13042 E. Moore St.; Cerritos, CA 90701; (213) 921-2341. **Product Name: CN40.** Contact: Bill Teipe. Date Product Introduced: October 1988. **Product Description & Applications:** Stereo 2-/3-way electronic crossover with digital frequency readout of the crossover point. 4-way mono, 24dB/octave. Completely variable crossover frequencies. XLR balanced +4 inputs/outputs. 1.75" rack-mount.

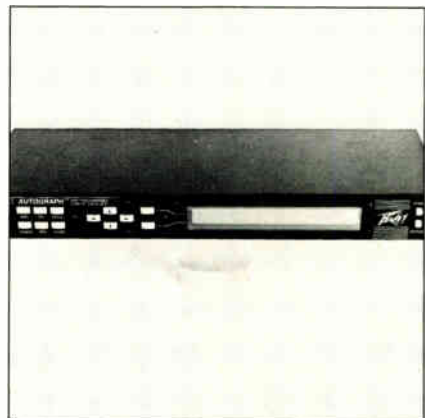
NIH LABS (DISTRIBUTED BY INDUSTRIAL STRENGTH INDUSTRIES); 13042 E. Moore St.; Cerritos, CA 90701; (213) 921-2341. **Product Name: PE30.** Contact: Bill Teipe. Date Product Introduced: October 1988. **Product Description & Applications:** 4-band, fully parametric equalizer. XLR balanced +4 inputs/outputs in addition to 1/4" phone jacks. 1.75" rack-mount. **Basic Specifications & Suggested List Price:** \$199 factory direct (\$375 list).

ORBAN ASSOCIATES INC.; 645 Bryant St.; San Francisco, CA 94107; (415) 957-1067. **Product Name: 642B Parametric Equalizer/Notch Filter.** Contact: Sid Goldstein, mktg. & sales mgr. Date Product Introduced: 1988. **Product Description & Applications:** Unit features dual 4-band/mono 8-band operation, tunable high- and low-pass filters, vernier fine-tuning on the frequency control and vastly improved specs over its popular predecessor, the 622B. Special frequency variations for sound contracting and forensic work are available. -45dB cut in each band makes unit ideal for notch filtering. **Basic Specifications & Suggested List Price:** Features overload-to-noise ratio of 110dB below clipping; absolute noise level is better than -90dBm at the output; THD: less than 0.02%, 20Hz-20kHz; output level: +19dBm into 600 ohms. List price: \$995 for 642B; modified frequency versions, 642B/SP and 642B/SPX, are \$1,045.

ORBAN ASSOCIATES INC.; 645 Bryant St.; San Francisco, CA 94107; (415) 957-1067. **Product Name: 787A Programmable Mic Processor.** Contact: Sid Goldstein, mktg. & sales mgr. Date Product Introduced: 1988. **Product Description & Applications:** A multifunction mic- or line-level signal processor that has the ability to store and recall complete parametric EQ, compression, gating and de-essing parameters. Optional MIDI and RS-232C interfaces allow access to 99 memory registers. A Jensen transformer/mic preamp with 48V phantom power and second-channel slave unit are optional. A security code locks programming controls to prevent unauthorized tampering with presets. Designed principally for multi-track recording, video post, audio-for-video and broadcast, where instantaneous access to preset processing will result in considerable saving of time. **Basic Specifications & Suggested List Price:** Non-volatile memory, RMS noise greater than 85dB below output clipping level; effects send port allows integration of external processing. List price: \$1,995; 787A/SL second-channel slave: \$995; Jensen Transformer/Mic Preamp: \$195; MIDI option: \$95; RS-232 option: \$95.

PEAVEY ELECTRONICS; 711 A St.; Meridian, MS 39301; (601) 483-5365. **Product Name: AddVerb II.** Contact: Ken Valentine, product development mgr. Date Product Introduced: June 1988. **Product Description & Applications:** The Peavey AddVerb II is a MIDI-capable, multi-effects processor with 100 preset effects, including 50 reverb sounds and a full array of delay effects (chorus, flange, echo, straight delay and special effects). Any of the 100 front-panel accessible effects may be copied to any other location. Reverbs and specials may not be modified, but can be copied to other locations. **Basic Specifications & Suggested List Price:** Full MIDI control capability including In and Thru jacks. Every preset is MIDI-remappable to 128 program numbers. True stereo reverb effects. Wide bandwidth response. 100 effects. Continuously variable controls for input level, effect mix and output level. U.S. targeted price: \$399.99.

PEAVEY ELECTRONICS AUDIO MEDIA RESEARCH DIVISION; 711 A St.; Meridian, MS 39301; (601) 483-5376. **Product Name: AEQ™ 2800 Automated Equalizer.** Contact: Ken Valentine, product development mgr. Date Product Introduced: June 1988. **Product Description & Applications:** Let's take one of the many uses for this high-tech, high-touch device. You have a drummer who wants to sound the same every time. Set up his own EQ on the AEQ 2800, record it to memory and that's it! His sound will always be the same until you change it! For recording EQ analysis purposes, there are eight settings (three user-programmable and five preset) to compensate for your particular microphone. **Basic Specifications & Suggested List Price:** Automatic EQ curve fit; 28-band EQ on 3rd octave centers; 40 x 2 character "easy read" liquid crystal display; slave capability controllable from master; MIDI-controllable sliders; ± 12 dB in 1dB steps, ± 6 dB in 0.5dB steps; will add responses to other stored responses; 128 complete EQ program memories. U.S. targeted price: \$549.99.



AUTOGRAPH™

PEAVEY ELECTRONICS; 711 A St.; Meridian, MS 39301; (601) 483-5365. **Product Name: Autograph™.** Contact: Ken Valentine, product development mgr. Date Product Introduced: June 1988. **Product Description & Applications:** Let's examine one of the many uses for this high-tech, high-touch device. You have a drummer who wants to sound the same every night. Set up his own EQ on the Autograph, record it to memory and that's it! His sound will always be the same until you change it! There are eight settings (three user-programmable and five preset) to compensate for the particular microphone you are analyzing with, too! **Basic Specifications & Suggested List Price:** Automatic EQ curve fit; 28-band EQ on 3rd octave centers; real-time analysis EQ capability; user friendly; 40 x 2 character "easy read" liquid crystal display; MIDI-controllable sliders; ± 12 dB in 1dB steps, ± 6 dB in 0.5dB steps. U.S. targeted price: \$549.99.

PEAVEY ELECTRONICS AUDIO MEDIA RESEARCH DIVISION; 711 A St.; Meridian, MS 39301; (601) 483-5376. **Product Name: DSR 1000 Digital Stereo Reverb/Multi-Effects Processor.** Contact: Ken Valentine, product development mgr. Date Product Introduced: June 1988. **Product Description & Applications:** Echo, pre-delay, early reflections, room size, tonal color, reverb time, left and right stereo channel delay, left and right stereo echo feedback, chorus rate, depth, delay time and feedback—all these crystal-clear digital sounds can be custom tailored with a simplicity that has to be experienced to be believed. It's user friendly! **Basic Specifications & Suggested List Price:** Six new powerful digital multi-effects algorithms allow user control of all parameters in a true multi-effects environment; custom tailoring of 15 digital effect parameters; refiling of all presets with only five easily mastered keystrokes—no more wasted effects space; full MIDI access; U.S. targeted price \$449.99.

PEAVEY ELECTRONICS; 711 A St.; Meridian, MS 39301; (601) 483-5365. **Product Name: Gatekeeper™.** Contact: Ken Valentine, product development mgr. Date Product Introduced: June 1988. **Product Description & Applications:** The Gatekeeper solves noise gate adjustment problems by "listening" to all the noise gates being used; when it sees that the other four gates are not being used, it automatically opens the fifth gate so that this mic channel is ready to pick up information at normal speaking levels. **Basic Specifications & Suggested List Price:** Adjustable gate threshold and release time for each channel; release time is adjustable from 10ms to 600ms; threshold is adjustable from 10dBV to constantly on; rear-panel RCA jack is provided to cascade "smart" gate functions; electronically balanced tip-ring-sleeve input; single-ended tip-sleeve output; mute indicators also indicate in the "bypass" mode so that threshold can be adjusted off-line. U.S. targeted price: \$299.99.

PEAVEY ELECTRONICS; 711 A St.; Meridian, MS 39301; (601) 483-5365. **Product Name: UltraVerb.** Contact: Ken Valentine, product development mgr. Date Product Introduced: June 1988. **Product Description & Applications:** Now you have the incredible facility to replace every effect group in the entire

NEW MIC SPLITTER

BSS Audio Applies OverDesign™ Technology



"You call that a splitter?" gloats roadie with new BSS mic splitter.

LONDON: BSS Audio Ltd. has just produced a new mic splitter using its world-famous OverDesign technology. This despite the fact that a mic splitter is a functional device that performs the mundane task of providing multiple feeds from a single mic source.

Quizzed about the company's OverDesign approach to a mic splitter, company managing director Chas Brooke dryly stated: "Yes, I know we're viewed in the audio industry as a bunch of obsessive zealots. But we have OverDesign every aspect of every product. I couldn't look my wife in the eye every morning if one of our products failed to operate at optimum level in every possible situation.

"OverDesign pays. Through superior performance in the short term. And

uncompromising reliability over the long term.

"In the case of our MSR-604 mic splitter, we had literally no design standard to compete with," says Brooke. "Other than home-made devices consisting of transformers, tape and wire. These appear to be less expensive at first, but end up costing more in the end. Because the client's time is valuable. Spare parts are expensive. And then

there's the hidden cost of replacing the device after its abbreviated lifespan."

According to company handouts, the MSR-604 is a dedicated non-interactive splitter OverDesigned to solve the problem of supplying multiple feeds to differing technologies from a single source.

It is the first of its kind to boast four fully independent channels: Two rear panel-mounted, electronically balanced and non-floating outputs for House and Monitors. It also has two identical, front panel-mounted, actively buffered, fully transformer balanced and floating outputs for TV, Radio and Mobile Recording facilities.

BSS tells us that the MSR-604 is OverDesigned to eliminate signal degradation and improve overall performance by providing proper current driving stages for long shielded cable runs.

Its seemingly endless list of attributes includes: a particularly low noise floor; special Master Gain section and Remote Gain/Headroom



"OverDesign™ is my life!" says one of Chas Brooke's BSS researchers.

control for ease of use; phantom power switch and a consistent, positive grounding system. Plus its standard racking capability allows mounting convenience and unusually quick assembly.

Why OverDesign something as functional as a mic splitter? "Because," says Brooke, "We can't bear to think of the alternatives. And neither should you."

Think Of The Alternatives



BROOKE SIREN SYSTEMS

an EdgeTech company

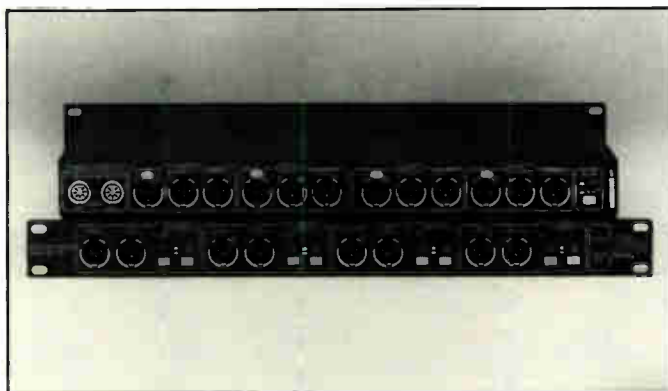
In US: Edge Distribution Corporation, RR2 Box 144C, Milewood Road, Millbrook, NY 12545

Tel: (914) 567-1400 IMC: EDC-US

In Canada: Gerr Audio Distribution Inc., 363 Adelaide Street East, Toronto, Ontario M5A 1N3

Tel: (416) 361-1667 Telex: 6524385

BSS Audio Ltd., Unit 5, Merlin Centre, Acrewood Way, St. Albans, Herts AL4 0JY England
Tel: 0727-45242 Fax: 0727-45277
Telex: 265612 BSS G IMC BSS-UK



range of 100 effects slots with your own personally customized digital effects. This is a brand-new method whereby any user can create up to 100 personal effects sounds with attributes as unique as his own personality. **Basic Specifications & Suggested List Price:** Six new, powerful, digital multi-effects algorithms allow user control of all parameters in a true multi-effects environment; custom tailoring of 15 digital effects parameters; choice of original factory presets rewrite and replace all 100 of the factory presets; user friendly; full MIDI access. U.S. targeted price: \$449.99.

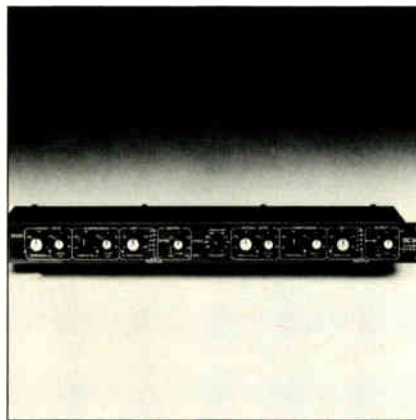
PEAVEY ELECTRONICS; 711 A St.; Meridian, MS 39301; (601) 483-5365. **Product Name: UniVerb II.** Contact: Ken Valentine, product development mgr. Date Product Introduced: June 1988. **Product Description & Applications:** 128 dramatic stereo and reverb effects from small effects to large, bright hall effects, including gated and reverb sounds. Each of the 128 reverb sounds are processed in true, totally natural sounding stereo, and the "dry" reverb ratio is easily adjustable by the effect mix control on the front panel. User-friendly operation. True stereo capability. **Basic Specifications & Suggested List Price:** 16-bit processing delivering a bandwidth of 20Hz to 12kHz. VLSI technology and RISC architecture; 128 reverb selections and remote or front-panel bypass positions; mono signals in are processed to stereo reverb; single rack-space chassis. U.S. targeted price: \$299.99.

RENKUS-HEINZ, INC.; 17191 Armstrong Ave.; Irvine, CA 92714; (714) 250-0166. **Product Name: Dyna-Gard™ RH-2/L Processor.** Contact: G.R. "Russ" Farrell. Date Product Introduced: November 1988 AES. **Product Description & Applications:** Two-channel processor providing switchable subwoofer output capability on each channel. The subwoofer electronic crossover is a third-order Butterworth design. The full-range outputs enhance and protect passively crossed over, 2-way speaker systems. Each driver has individual equalization and protection. Subwoofer has thermal and excursion protection.

RANE CORP.; 10802 47th Ave. W.; Everett, WA 98204-3400; (206) 355-6000. **Product Name: DC24 Dynamic Controller.** Contact: Terry Pennington. Date Product Introduced: January 1988. **Product Description & Applications:** The DC24 is an independent stereo compressor, limiter, expander/noise gate, each with separate threshold and ratio controls. The unit also contains a 24dB/octave crossover that allows band-split processing or bi-amp operation. **Basic Specifications & Suggested List Price:** Fully balanced 3-pin inputs/outputs; side drain access; stereo/slave switch; 75Hz-7kHz crossover range; dual metering, servo-lock limiting; crossover mode select switch (split/sum). Suggested list price \$549.

NEW PRODUCTS

SIGNAL PROCESSING DEVICES



DC24 DYNAMIC CONTROLLER

essing or bi-amp operation. **Basic Specifications & Suggested List Price:** Fully balanced 3-pin inputs/outputs; side drain access; stereo/slave switch; 75Hz-7kHz crossover range; dual metering, servo-lock limiting; crossover mode select switch (split/sum). Suggested list price \$549.

ROLANDCORP US; 7200 Dominion Circle; Los Angeles, CA 90040; (213) 685-5141. **Product Name: E-660.** Contact: Barbi Clark. Date Product Introduced: November 1987. **Product Description & Applications:** The E-660 is a digital-domain, parametric equalizer. It can operate as a 2-channel, 4-band or

as an 8-band, single-channel EQ. Sweepable range covers frequencies from 60Hz to 20kHz. Gain for each band is ±12dB. Features include a digital hum cancellation filter, envelope follower and variable delay parameters for each EQ band, making it a unique effects processor as well. Inputs and outputs are provided in both digital and audio standard interfaces. **Basic Specifications & Suggested List Price:** A/D: 16-bit linear; D/A: 18-bit linear; frequency response: 20Hz to 20kHz; S/N: over 80dB; dynamic range: over 94dB; harmonic distortion: less than 0.015%; CMRR: over 75dB; channel separation: over 85dB; digital audio interface: 20-bit optical, coaxial (CP-340 equivalent); Q (bandwidth): 0.3 to 9.9 octaves. \$1,995.

ROLANDCORP US; 7200 Dominion Circle; Los Angeles, CA 90040; (213) 685-5141. **Product Name: R-880.** Contact: Barbi Clark. Date Product Introduced: November 1987. **Product Description & Applications:** Software-configurable, professional multi-effects processor. Operates as four separate digital reverb units. Digital domain effects include: 2 reverbs (with sub-reverb), 2 early reflection/multi-tapped delay modules, 2 chorus, 2 parametric EQs, 2 compressor/limiters, 2 delays and multiple 2-in/1-out mixers. User-definable digital patching using GC-8 remote graphic controller. Coaxial and optical digital I/O connections are included, as well as balanced XLR and unbalanced phone jacks. **Basic Specifications & Suggested List Price:** A/D: 16-bit linear; D/A: 18-bit linear; frequency response: 20Hz to 20kHz; S/N: over 80dB; dynamic range: over 90dB; harmonic distortion: less than 0.015%; sampling rate: 48kHz/44.1kHz; digital audio interface: 20-bit optical, coaxial (CP-340 equivalent). \$3,995 GC-8 \$850.

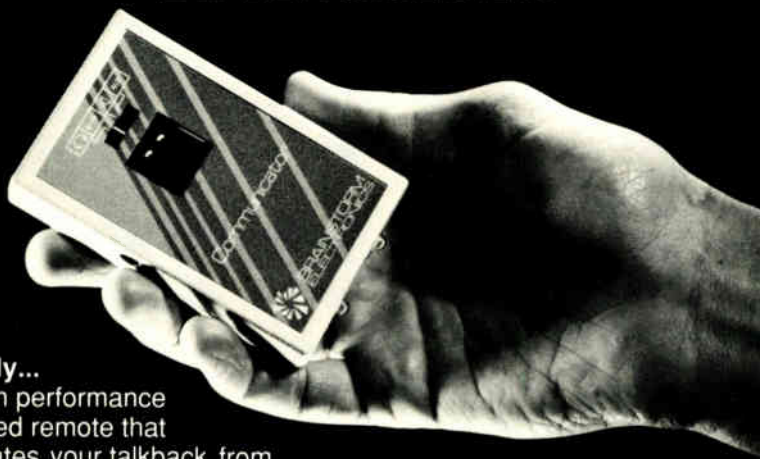


ROCKMAN MIDI OCTOPUS

SCHOLZ RESEARCH AND DEVELOPMENT, INC.; 1560 Trapelo Rd.; Waltham, MA 02154; (617) 890-5211. **Product Name: Rockman MIDI Octopus.** Contact: Sherri Cohn, advertising coordinator. Date Product Introduced: June 24, 1988. **Product Description & Applications:** The new Rockman MIDI Octopus is designed to place Rockman Rockmodules and other effects devices under programmable MIDI control. This easy-to-use, inexpensive system lets you program your entire setup of Rockmodules, older effects devices, stomp boxes and even your guitar amp for instant switching directly through MIDI or from the Octopus front panel. This half-rack, AC-powered module is capable of controlling up to eight foot-switchable functions and storing 100 user-programmable effects combinations. For added reliability, an EEPROM memory is used, requiring no battery backup and providing the safest data retention. **Basic Specifications & Suggested List Price:** One hundred user-programmable effects combinations; eight 1/4" jacks for controlling effects with switch-to-ground type remote switching capability; MIDI In, MIDI Thru provide interface with other MIDI effects processors; expandable, more than one MIDI Octopus can be slaved together to control any size setup; remote loop accessory (sold direct, \$45) allows programmable control of any effects device. Suggested retail price \$239.95.

SONIC SOLUTIONS; 6115 California St.; San Francisco, CA 94121; (415) 751-8666. **Product Name: The Sonic System.** Contact: Mary Sauer. Date Product Introduced: August 1988. **Product Description & Applications:** The Sonic System is a new Desktop Audio™ system from Sonic Solutions, developers of the NoNOISE system. The Sonic System is an all-digital system including editing, EQ, dynamics, mixing, automation and project management in a single desktop unit. **Basic Specifications & Suggested List Price:** The basic Sonic System includes: an Apple Macintosh® II computer; a Sonic Signal Processor card developed by Sonic Solutions; one Winchester disk drive storing approximately one hour of stereo audio (additional drives are optional); and Audio Desktop (applications software package, such as the CD PreMastering Desktop). The CD PreMastering Desktop software allows audio engineers to edit, mix, apply EQ and prepare finished master recordings. In addition to the CD PreMastering Desktop software, Sonic Solutions will offer a Cue Sheet editing package as well as a version of the NoNOISE software for the Sonic System. Price: \$44,100.

"Please pass the Talkback"



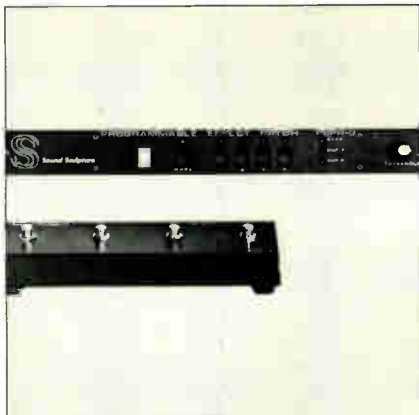
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A high performance infrared remote that activates your talkback from anywhere in the control room.

- No aiming necessary
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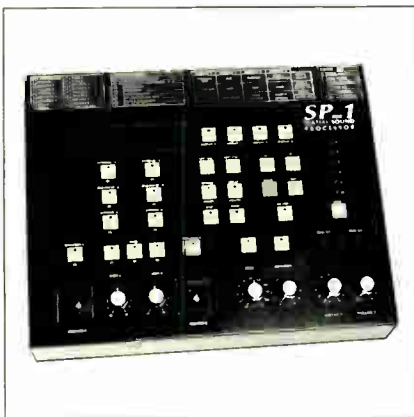


TB-4 Communicator

BRAINSTORM ELECTRONICS, INC.
(213) 475-7570
1515 Manning Ave. #4
Los Angeles, CA 90024



PROGRAMMABLE EFFECT PATCH



SP-1 SPATIAL SOUND PROCESSOR™

SOUND SCULPTURE; 2771 Lee Hill Dr.; Boulder, CO 80302; (303) 442-1954. **Product Name:** Programmable Effect Patch. **Contact:** Kenneth Czepelka, president. **Date Product Introduced:** January 1988. **Product Description & Applications:** The Programmable Effect Patch series, including floor model PEP-3 and rack-model PEPR-3, offers musicians quiet electronic patching of up to three effects in any sequence, parallel or series. Effect balancing is achieved with programmable gain on all loops and output. Eight-preset capacity instantly recalls effect selection, effect sequence, dry blending, effect gain, output selection and output drive. An integral noise gate is included, and Automatic Momentary Sensing allows brief preset selection for fast changes. **Basic Specifications & Suggested List Price:** Modes: normal, bank select, output channel programming, gain programming; patch combinations: 32 [effects only], 135 [effects and dry blend]. Output combinations: A, B, AB, off; gain: effect loops, -9dB to +12dB, output -12dB to +30dB; bandwidth: 30Hz-18kHz. One input, 2 outputs, 3 loops, 1/4" phone. Introductory price \$199. Remote footswitch and accessories extra.

SPATIAL SOUND, INC.; PO Box 1111; Mill Valley, CA 94942; (415) 457-8114. **Product Name:** SP-1 Spatial Sound Processor. **Contact:** Mahanta P. Devias. **Date Product Introduced:** May 1, 1988. **Product Description & Applications:** The SP-1

Spatial Sound Processor is a 4-input/up to 8-output device for automated panning with depth simulation through reverb and/or phase processing in stereo, as well as a surround sound processor for the simulation of moving sounds on speaker arrays; with up to eight speakers in two or three dimensions. The speaker positions are programmable. The unit is fully controllable through MIDI. Applications are: stereo and multi-channel recordings, surround sound for film, theaters, planetariums, live performances, discotheques and multimedia shows. **Basic Specifications & Suggested List Price:** 4 inputs at 20k ohms (+4dBm), 2 to 8 outputs at 150 ohms (+4dBm), frequency response: 10Hz to 20kHz ±1dB; S/N ratio: WWRM min. 80dB; dimensions: 16" x 13" x 4"; weight: 15 lbs. (7kg); power: 100/120/220/240V. Price \$2,895.

STUDIOMASTER INC.; 1340-G Dynamics St.; Anaheim, CA 92806; (714) 524-2227. **Product Name:** IDP-1. **Contact:** Jim Giordano, nat'l sales mgr. **Date Product Introduced:** January 1988. **Product Description & Applications:** The IDP-1 features two channels of MIDI or digitally controlled dynamics processing with 28 factory and 100 user programs. Each of the two channels can be configured to provide one of the following effects: compressor, expander, limiter, noise gate, ducking, MIDI controlled autopanning or MIDI-controlled amplitude. All parameters of the compressor and gate are easily accessi-

ble and can operate independently or chained together. **Basic Specifications & Suggested List Price:** MIDI: In and Thru; frequency response: 10Hz to 22kHz; THD (no compression): 0.01% at 1kHz, 20dB; compression: 0.02%; output noise: -86dBm, unity gain, input shorted; crosstalk: -70dB at 10kHz, 0dBm input level, unity gain; memories: 128 (100 user, 28 preset) side chain inserts, both channels. Retail price: \$1,330.

STUDIOMASTER INC.; 1340-G Dynamics St.; Anaheim, CA 92806; (714) 524-2227. **Product Name:** Studiolox. **Contact:** Jim Giordano, nat'l sales mgr. **Date Product Introduced:** August 1988. **Product Description & Applications:** The Studiolox System is based on a 4U high, 19" rack-mounting "mother unit" that provides housing and power for up to 11 plug-in modules. Current modules available are SF 800 stereo gate, SF 801 stereo compressor, SF 802 stereo dynamic noise filter, SF 803 parametric EQ, SF 804 fader panner, SF 805 modulation source, SF 806 stereo input, SF 807 stereo output, SF 803 enhancer, SF 809 dual delay flanger and the SF 810 de-esser. All units can be operated as independent units. **Basic Specifications & Suggested List Price:** Mother unit price: \$460, SF 800 \$210, SF 801 \$210, SF 802 \$190, SF 803 \$190, SF 804 \$290, SF 805 \$190, SF 806 \$210, SF 807 \$190, SF 808 \$190, SF 809 \$400, SF 810 \$190. Blank panels are \$23.

SYMETRIX, INC.; 4211 24th Ave. W.; Seattle, WA 98199; **Product Name:** Model 111 Adaptive Hybrid. **Contact:** Doug Schauer, mktg dir. **Date Product Introduced:** November 1988. **Product Description & Applications:** A fully automatic digital telephone interface for applications where the absolute best audio quality is required. Symetrix's proprietary adaptive hybrid technology instantly matches phone lines of any impedance. Because it uses no tones or noise bursts, the Model 111 is able to achieve and maintain the null inaudibly, even as "conferenced" lines are added and removed. It may be used as a stand-alone unit or in conjunction with virtually any telephone system. **Basic Specifications & Suggested List Price:** Typical trans-hybrid loss in excess of 35dB. Includes transmit limiter, controls for caller override, audio on hold, host level and caller level. All controls needed to seize, hold, release and originate calls included and are easily remote-controlled. Separate meters provided for transmit and receive levels. RS-232 port for expansion. \$1,695.

TDM DESIGN, INC.; Rt. 1, Box 573; Hillsboro, OR 97124; (503) 647-5957. **Product Name:** 30GE-1. **Contact:** Tim Miller, president. **Date Product Introduced:** August 1988. **Product Description & Applications:** TDM Design's 30GE-1 is a mono, 30-band graphic equalizer with three sweepable notch filters.

Proven Success



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DAC D20100

THE 1ST COMPLETE 20-BIT AUDIO D/A CONVERTER

ULTRANALOG, INC.; 47853 Warm Springs Blvd.; Fremont, CA 94539; (415) 657-2227. **Product Name: DAC D20100 *The 1st Complete 20-Bit Audio D/A Converter*.** Contact: Steve Canning, sales mgr. Date Product Introduced: November 1, 1988. **Product Description & Applications:** The UltraAnalog DAC D20100 includes two complete 20-bit D/A converters, a stable reference, serial CMOS/TTL-compatible digital interface and distortion suppressing, output deglitch amplifiers. The product features a universal serial digital interface that allows the user to choose from 16-, 18- or 20-bit resolution and several input coding formats. Applications include: upgrade of 16-bit digital audio systems, digital multichannel recorders, digital audio workstations, direct-to-disk audio recorders, oversampled audio reconstruction, synthesizers, digital audio tape. **Basic Specifications & Suggested List Price:** The UltraAnalog DAC D20100 utilizes discrete SMT components to achieve 20-bit performance in a 2" x 3" x 0.4" encapsulated mini-module. No external trimming is required to achieve the following specifications, with THD and noise at 1kHz (typical): Vout = -0.1dB, -106dB; Vout = -20dB, -92dB; Vout = -60dB, -52dB. Price: approx. \$75/channel in volume. Delivery: consult UltraAnalog.

UREI; 8500 Balboa Blvd.; Northridge, CA 91329; (818) 893-8411. **Product Name: Model 7110 Limiter/Compressor.** Contact: Mark Gander, VP mktg. **Product Description & Applications:** The 7110 offers new, smooth-sounding Smart-Slope™ compression ratios adjustable from 1.5:1 through infinity:1 and permits independent settings for limiting threshold, attack and release times, and output level. Additionally, the gain control action can be continuously varied between either peak or average detectors, giving the user a choice of either mode, or a mix of both, for versatility.

VALLEY INTERNATIONAL, INC.; PO Box 40306, 2817 Erica Place; Nashville, TN 37204; (615) 383-4737. **Product Name: DDP (Digital Dynamics Processor).** Contact: Jon Bosaw. Date Product Introduced: Fall 1988. **Product Description & Applications:** The DDP is a multi-band, true digital (not digitally controlled analog) audio signal processor operating on a 16-bit linear PCM format. Each of the unit's band processing cards is a stereo pair consisting of a digital filter and a digital dynamics processor. The dynamics section performs true compression, in that it is capable of adding gain to low-level signals and reducing gain in the presence of high-level signals. Also, in the dynamics section of each band processing card is an expander to perform noise reduction, counteracting the increase in noise floor level that occurs naturally as a result of the compression process. **Basic Specifications & Suggested**

List Price: Preliminary pricing is: DDP-3 \$10,000, DDP-5 \$13,000, DDP-8 \$18,000. Time constants are adjustable; input connections: active balanced, bridging; input level: +24dB maximum; output connection: active balance less than 50 ohms; output level: +24dB maximum, audio frequency distortion: less than .01%; signal-to-noise ratio: more than 93dB unweighted.

YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave.; Buena Park, CA 90622; (714) 522-9011. **Product Name: AD808 Analog-to-Digital Converter.** Contact: Professional Audio Division. Date Product Introduced: June 1988. **Product Description & Applications:** The AD808 is an 8 analog input/8 digital output, high-quality A/D converter allowing direct connection of line-level sources to digital audio devices and systems. The AD808 is designed to be a companion to the new DMP7D digital mixing processor, but is also ideal for all analog-to-digital conversion where the highest quality is needed. **Basic Specifications & Suggested List Price:** The AD808 has 8 channels of analog input, with each input featuring a precision detented input level control and a 12-element peak level meter. A/D conversion is achieved using 16-bit quantization and a switch-selectable sampling frequency of 44.1kHz or 48kHz. It provides 8 channels of digital output in 16-bit data format via a 25-pin D-SUB connector. It also features Emphasis (on/off) and Word Clock (Int/Ext B/Ext A) selector switches and a Word Clock BNC input terminal. \$4,995.

YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave.; Buena Park, CA 90622; (714) 522-9011. **Product Name: DA202 Digital-to-Analog Converter.** Contact: Professional Audio Division. Date Product Introduced: June 1988. **Product Description & Applications:** The DA202 is a compact, self-contained, high-quality digital-to-analog audio converter for professional applications. The DA202 has two digital inputs and 2 analog outputs. The DA202 utilizes hi-bit processing that combines an 18-bit D/A conversion system and 8-times oversampling. **Basic Specifications & Suggested List Price:** The DA202 provides two types of digital input terminals, an XLR-type connector for signals in the AES/EBU format and a TTL-level pin jack for signals in compact disc format. To support additional digital processing, the DA202 also has digital thru outputs. The sampling rate autoswitches between 44.1kHz or 48kHz, depending on the source sampling frequency. The DA202 offers more than 90dB of dynamic range at less than 0.01% THD with a bandwidth of 20Hz to 20kHz. \$1,195.

YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave.; Buena Park, CA 90622; (714) 522-9011. **Product Name: FMC1 Digital Format Converter.** Contact: Professional Audio Division. Date Product Introduced: May 1988. **Product Description & Applications:** The FMC1 digital format converter is a stereo (dual channel) digital audio format converter, converting Yamaha's proprietary format to three commonly used digital audio formats: unbalanced SDIF-2 (Sony), via three BNC connectors; CD/DAT (S/P), via RCA-type pin jack; and AES/EBU, via XLR connector. **Basic Specifications & Suggested List Price:** The Yamaha FMC1 converts the digital outputs of the Yamaha DMP7, DMP7D, DMP11 and the DEQ7, allowing these units to be utilized in existing digital recording and processing systems. The FMC1 is one rack-unit high and includes an onboard master word clock, switchable to 44.1kHz or 48kHz.

YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave.; Buena Park, CA 90622; (714) 522-9011. **Product Name: IFU Digital Interfaces.** Contact: Professional Audio Division. Date Product Introduced: June 1988. **Product Description & Applications:** The four IFU Digital Interface units conform and distribute the digital audio data signal to and from the digital recorder to the DMP7D digital mixing processor. These simple units allow a user to configure quickly the cabling and data stream between the DMP7D and a digital audio recorder, as well as between different digital recorders. **Basic Specifications & Suggested List Price:** The IFU4 interface unit is a compact unit that converts digital audio data to or from the 422 format to or from the TTL format, used to connect a Sony PCM-1610 processor directly to a DMP7D, or to interface various digital recorders to DMP7Ds via specific IFUs. The IFU1 Interface Unit is designed for direct interface to a Mitsubishi X850 recorder. The IFU2 interface unit is configured for operation with the Sony 3324 digital multi-track tape recorder. The output of the IFU2 is on three 25-pin D-SUB connectors that connect with up to three DMP7D digital mixing processors for full 24-track operation. The IFU3 Interface Unit will connect up to four Sony 1610/30 recorders via four IFU4s to a DMP7D.

YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave.; Buena Park, CA 90622; (714) 522-9011. **Product Name: R100 Digital Reverberator.** Contact: Professional Audio Division. Date Product Introduced: June 1988. **Product Description & Applications:** The R100 is a compact, programmable reverb processor that comes with 60 factory programmed effects. Four parameters of each effect program can be customized to suit individual requirements. If the user requires a longer reverb time to smooth out a passage, fewer

echo repeats for a tighter sound, or a more subtle balance between the effect and the direct sound, the parameters of each of the R100's 60 effects can be edited to achieve the exact sound effect the user is seeking. And all the effects can be recalled through the MIDI port on the back panel. **Basic Specifications & Suggested List Price:** Input and output are via phono jack connectors, one for input and two for the stereo output. There is a footswitch bypass jack and a MIDI input connector as well. The R100 utilizes high-performance 16-bit A/D and D/A conversion. And, all the effects can be recalled through the MIDI port on the back panel. The R100 features an input level control with signal present and clip overload LED indicators for precise level matching. A two-digit LED display shows the currently selected effect program number or the current value of a selected parameter. There are individual LEDs that indicate which of the four parameters is selected during program editing, and the two A/D converters operate at the sampling frequency of 31.25kHz. \$295

YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave., Buena Park, CA 90622; (714) 522-9011. **Product Name:** REV5 Professional Digital Reverberator. **Contact:** Professional Audio Division. **Date Product Introduced:** January 1988. **Product Description & Applications:** The REV5 is a third-generation digital reverberator from Yamaha, and like its predecessors sets new standards for high performance, flexibility and value. The REV5 features a special Yamaha-developed LSI circuit to create new enhanced reverb algorithms and increased bandwidth. The REV5 sampling frequency is 44.1kHz, with full 16-bit quantization. This results in a 20Hz to 20kHz bandwidth and a dynamic range greater than 84dB for a very clean, crisp sound. The REV5 includes 30 preset programs, 60 user memory locations and nine special programs that contain a series of unique effect/reverb/EQ combinations. Each of these programs parameters can be easily adjusted by users to fit their specific needs. **Basic Specifications & Suggested List Price:** The REV5 allows independent control of delay, reverb and diffusion parameters in reverb programs, separate first reflection right, left and center delay/level parameters, secondary reverb time, delay and level parameter controls allow production of a second layer of reverbation to supplement the primary reverbation, and the space modulation parameter creates periodic variation in the reverbation program to re-create actual interaction between reflections found in live acoustic environments. The REV5 includes a master, front-panel, 3-band parametric equalizer in addition to the programmable, 3-band digital parametric equalizer in each program. \$1,995

YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave., Buena Park, CA 90622; (714) 522-9011. **Product Name:** SPX50D Digital Multi-Effect Processor. **Contact:** Professional Audio Division. **Date Product Introduced:** June 1988. **Product Description & Applications:** The SPX50D is a compact, affordable unit that comes with 50 factory preset programs, in essence a complete library of digital effects, each with user-adjustable parameters and 50 user-programmable memory locations (user programs can be easily user-titled for easy recall). The SPX50D includes the digital distortion effects made popular by the REX50. This series of 10 distortion effects offers guitarists in particular the most powerful and dramatic distortion sounds available. The programmability of the SPX50D allows the user to create new and unique effects, store them and recall them as needed. **Basic Specifications & Suggested List Price:** The SPX50D is a compact, one rack-unit high, digital multi-effect signal processor with 16-bit linear quantization and a sampling frequency of 31.25kHz. It has a 1/4" jack feeding an unbalanced input, footswitch jacks for bypass and memory toggle, and unbalanced outputs with two (L&R) 1/4" phono jacks. A pair of 1/4" insert jacks allow easy addition of other external devices to the SPX50D. There are MIDI In and MIDI Thru DIN-type connectors for MIDI control interface. Price: \$695

YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave., Buena Park, CA 90622; (714) 522-9011. **Product Name:** SPX90II Digital Multi-Effect Processor. **Contact:** Professional Audio Division. **Date Product Introduced:** January 1988. **Product Description & Applications:** The SPX90II is a compact, one rack-unit high, digital multi-effect signal processor with 16-bit linear quantization. It has 1/4" jack, unbalanced inputs and outputs, with -20/+4dBm sensitivity selection and front-panel variable gain control with an LED level meter. The hallmark of the SPX90II, in addition to its reputation for high-quality effects processing, is its simplicity of operation. All programs are displayed on a large two-digit LED, and program titles and parameters are displayed on the front-panel LCD readout. Easy-to-use, pushbutton front-panel switches allow quick access to any program and parameter. Additionally, all programs can be addressed by any MIDI controller. **Basic Specifications & Suggested List Price:** User programs can be easily user-titled for easy recall. The SPX90II features expanded delay capability up to a full second for initial delay, and delays are up to two seconds. Even more impressive is the SPX90II's full two seconds of sampling in the freeze programs! As part of the commitment to support its existing user base with the latest technology, Yamaha also announced an updated modification for the SPX90. This dealer-installed update kit brings the features of the SPX90II to the SPX90 user. Price: \$895

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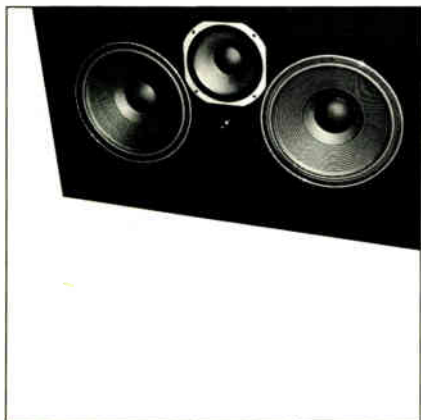
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SPEAKERS AND MONITORS

1989



CONE/DOME CONTROL ROOM MONITOR

ACOUSTICAL PHYSICS LABORATORIES; 3877 Foxford Dr.; Doraville, GA 30340; (404) 934-9217. **Product Name:** Cone/Dome Control Room Monitor. **Contact:** Bill Morrison. **Date Product Introduced:** August 1988. **Product Description & Applications:** The Acoustical Physics Laboratories control room monitor incorporates cone and dome driver technologies in a time-corrected 3-way design. This proven design approach results in the highest levels of spectral, transient and spatial imaging accuracy. Control room monitors are available in component form or as complete systems and include a choice of active or passive crossover networks. Custom control room monitor designs with on-site TEF® performance certification are available for special requirements. **Basic Specifications & Suggested List Price:** Dimensions: 48"H x 29"W x 20"D; frequency response: 28Hz to 22kHz; crossover frequencies: 150Hz and 2kHz; maximum power handling: 600 watts/channel; maximum SPL per pair at 4 meters: 125dB. Component system (dual 15" 3-way cone/dome system with electronic or passive crossover and high-density front baffles), \$3,800/pair plus freight. Complete system (dual 15" 3-way cone/dome system with electronic or passive crossover and high-density enclosures), \$4,800/pair plus freight.

ADAMSON ACOUSTIC DESIGN CORPORATION; 817 Brock Rd., Ste. 9; Pickering, Ontario, L1W 3L9 Canada; (416) 420-6279. **Product Name:** Advanced Concert Systems—Models MH 225 and B 218F. **Contact:** Jerry Placken, mktg./sales mgr. **Date Product Introduced:** November 1987. **Product Description & Applications:** The Adamson Advanced Concert System is a very high output (140dB peak) "two box" loudspeaker system in a smaller package than most. Three patent applications cover the tough new diaphragm materials and throat structure in the powerful mid-range compression driver. This system is the first to incorporate the dramatic improvement of Acoustic Waveguide Theory (presented by Dr. E.R. Geddes at the 83rd AES) with lower distortion, smoother response and more even coverage. Optimum size and fast adaptable rigging let this product work in any situation where high SPL and precise coverage are required. **Basic Specifications & Suggested List Price:** Dimensions: 28"W x 28"H x 29.5"D (22-degree trapezoid); weight: MH225—175 lbs., B 218F—155 lbs.; maximum SPL: 140dB peak; frequency range: 40Hz to 20,000Hz; coverage angles: 60 degrees horiz., 40 degrees vert.; components: (1) EV DH1A (75W RMS-113-dB/1W/1M), (1) Adamson M200 (300W-111dB/1W/1M), (2) McCauley 6256 18" (900W RMS-102dB/1W/1M).

ATLAS/SOUNDOILIER; 1859 Intertech Dr.; Fenton, MO 63026; (314) 349-3110. **Product Name:** EQ 818. **Contact:** Colleen Sullivan, mktg./comm. specialist. **Date Product Introduced:** May 1, 1988. **Product Description & Applications:** Professional-quality loudspeaker system combines a high-performance 8" loudspeaker with a ported bass reflex ceiling enclosure. Loudspeaker and enclosure were developed as an acoustically matched unit to assure optimum performance

characteristics. **Basic Specifications & Suggested List Price:** Power rating: 50 watts; frequency response: 70Hz to 20kHz; sensitivity: 93dB; impedance: 8 ohms. Series is available with three professional-quality line matching transformer options. CRS enclosure is 12" dia. x 8"D (from mounting flange). CRS baffle is 13 3/4" dia. Finished in white semi-gloss enamel.

AUDIX/DIGITAL DESIGN; 5635 W. Las Positas; Pleasanton, CA 94566; (415) 463-1112. **Product Name:** LS161. **Contact:** Cliff Castle, VP sales. **Date Product Introduced:** October 1988. **Product Description & Applications:** Model 161 is a 2-way acoustic suspension loudspeaker system featuring a 6.5" polypropylene woofer and a 1", phase-corrected, ferrofluid-cooled polymer dome tweeter. The woofer features a textured semi-hyperbolic cone, a ventilated nomex voice coil former, 4-layer high temp wire, and a closed-cell polyurethane foam surround with precise edge termination properties. The tweeter, due to its ultra-light moving mass and liquid cooling, provides excellent transient response. The tweeter and woofer are time-corrected and produce a point source for superior image localization. The 161 is also magnetically shielded for post-production applications. Made in USA. **Basic Specifications & Suggested List Price:** Frequency response: 59Hz-20kHz; sensitivity (1 watt/1 meter): 90dB; power handling (RMS): 60 watts; attenuation: switch on back for two positions, "accurate" and "mid-range boost"; crossover point: 3.5k; dimensions (inches): 13.5 x 9 x 10. List price \$359/pair.

BOSE CORPORATION; The Mountain; Framingham, MA 01701; (617) 879-7330. **Product Name:** Bose Cinema Sound System. **Contact:** Brian McCarty, cinema evangelist. **Date Product Introduced:** February 1988. **Product Description & Applications:** New technology cinema sound reproduction system using wide dispersion, direct radiation loudspeakers for more natural sound. System also features AWCS-1 Acoustic Wave Cannon® system for bass reproduction. Suitable for Dolby™ stereo mixing studios and cinemas. **Basic Specifications & Suggested List Price:** Systems custom-designed using Bose Modeler® computer program (CAD). Design of system determines installation cost.



ACOUSTIMASS® PROFESSIONAL POWERED SPEAKER SYSTEM

BOSE CORPORATION; The Mountain; Framingham, MA 01701; (617) 879-7330. **Product Name:** Acoustimass® Professional Powered Speaker System. **Contact:** Mark Mayfield, mkt. area mgr. **Date Product Introduced:** November 1987. **Product Description & Applications:** The Acoustimass Professional is a 2-way, 7-driver amplified speaker system. It incorporates two proprietary Bose technologies and several other Bose innovations to create a full-range, single enclosure weighing less than 80 lbs., capable of 122dB at one meter, using the integrated Two-State Modulation 450-watt amplifier. The Acoustimass Professional is suitable for both portable and installed sound applications. **Basic Specifications & Suggested List Price:** Frequency response: 50-18,000Hz (±3dB);

maximum output: 122dB—SPL, 1m; dispersion: horizontal 100 degrees, vertical 60 degrees; weight: 78 lbs.; size: 16"H x 22 1/4"W x 23 1/4"D.

CALIBRATION STANDARD INSTRUMENTS; PO Box 2727; Oakland, CA 94602; (415) 531-8725. **Product Name:** Elf™ Systems. **Contact:** Alison Long. **Date Product Introduced:** August 1, 1988. **Product Description & Applications:** The Elf system uses a patented technique to extend the low-frequency response of small monitors such as the MDM-4, MDM-TA2 and MDM-TA3 to 30Hz. Different versions are available. The EB-100 includes HLE-2 Elf Electronics, 275 W/CH amplifier and four Elf bass drivers in enclosures. System components are available separately. The Elf system can be used with other manufacturers' monitors as well.

CERWIN-VEGA; 555 E. Easy St.; Simi Valley, CA 93065; (805) 584-9332. **Product Name:** CVX/253. **Contact:** Richard Mandella, professional div. mgr. **Date Product Introduced:** February 2, 1988. **Product Description & Applications:** The CVX Series model 253, 3-way, dual 15" system features a built-in crossover for full-range operation. The unit is equipped with bi- and tri-amp inputs for high-level applications. The CVX line employs our most advanced compression drivers in a single module. The mid-range driver provides low-distortion, high-intensity output without multiple cone drivers. The input options and mid-range attenuator allow maximum versatility. PA, playback, motion picture, commercial and industrial applications. **Basic Specifications & Suggested List Price:** Model: CVX/253; usable frequency response: 40Hz-18kHz; power handling capacity: 600W; 1m SPL @ 1W: 103dB; 1m SPL @ rated input: 131dB, nominal impedance: 8 ohms; enclosure type: vented, direct-radiating; LF: (2) 153T, 15", 3" V.C.; MF: (1) 2" throat M-161, C.C. horn; HF: (1) 1" throat T1-1, C.C. horn.

CERWIN-VEGA; 555 E. Easy St.; Simi Valley, CA 93065; (805) 584-9332. **Product Name:** CVX/153. **Contact:** Richard Mandella, professional div. mgr. **Date Product Introduced:** February 2, 1988. **Product Description & Applications:** The CVX Series model 153, 3-way, 15" system features a built-in crossover for full-range operation. The unit is equipped with bi- and tri-amp inputs for high-level applications. The CVX line employs our most advanced compression drivers in a single module. The mid-range driver provides low-distortion, high-intensity output without multiple cone drivers. The input options and mid-range attenuator allow maximum versatility. PA, playback, motion picture, commercial and industrial applications. **Basic Specifications & Suggested List Price:** Model: CVX/153; usable frequency response: 40Hz-18kHz; power handling capacity: 300W; 1m SPL @ 1W: 100dB; 1m SPL @ rated input: 125dB, nominal impedance: 8 ohms; enclosure type: vented, direct-radiating; LF: (1) 153T, 15", 3" V.C.; MF: (1) 2" throat M-161, C.C. horn; HF: (1) 1" throat T1-1, C.C. horn.

COMMUNITY LIGHT & SOUND, INC.; 333 E. 5th St.; Chester, PA 19013; (215) 876-3400. **Product Name:** CS Series II Loudspeakers. **Contact:** John Wiggins, VP engineering. **Date Product Introduced:** January 1988. **Product Description & Applications:** The new CS Series II loudspeakers represent the culmination of extensive computer-based research and Community's ongoing commitment to value-oriented engineering. Starting with its outward appearance, each member of the line expresses the refinements made since the introduction of the product group. Transparent grille cloths expose the drivers to full view, while plywood grilles have been added for increased durability, along with steel corner protectors on some larger models. Applications range from MI to pro sound. **Basic Specifications & Suggested List Price:** Each cabinet delivers wide-angle dispersion, low distortion and impressive vocal clarity. High sensitivity and power handling characteristics also mean that exceptional output levels can be obtained even with modest amps. Prices range from \$279 to \$999.

COMMUNITY LIGHT & SOUND, INC.; 333 E. 5th St.; Chester, PA 19013; (215) 876-3400. **Product Name:** CS Series II Loudspeakers w/SG option. **Contact:** John Wiggins, VP engineering. **Date Product Introduced:** June 1988. **Product Description & Applications:** A new perforated steel grille option can now be ordered on select CS Series II loudspeakers. Available on five models, on four of the enclosures (models CS70SG, CS52SG, CS38MSG and CS35SG), the perforated steel grilles cover the low-frequency drivers only, leaving the horn assemblies exposed. On the CS60BSG subwoofer, the steel grille covers the entire cabinet face. These cabinets are ideal for touring and other heavy-use applications. **Basic Specifications & Suggested List Price:** Each perforated steel grille must be factory-installed and is not interchangeable with stock grilles due to different mounting techniques. They are provided on a "special order" basis at a price only slightly higher than their standard-featured counterparts.

DAHLQUIST, INC.; 601 Old Willets Path; Hauppauge, NY 11788; (516) 234-5757. **Product Name:** M903. **Contact:** Carl Marchisotto, vice president. **Date Product Introduced:** April 1988. **Product Description & Applications:** The M903 is a tuned-port speaker that incorporates an advanced and remarkable anti-diffraction technique which enhances accurate stereo imaging and greatly contributes to open, spacious and accurate sound reproduction. **Basic Specifications & Suggested List Price:** \$450/pair. Finish: black or oak wood-grain laminate; drivers: 6 1/2" woofer, 1" dome tweeter; 2-way front firing port; sensitivity: 90dB; power range: 20W minimum/70W maximum; impedance: 8 ohms nominal; FR: 48-24,000Hz; measurements: 17"H x 8 1/2"W x 10 3/4"D.

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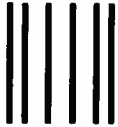
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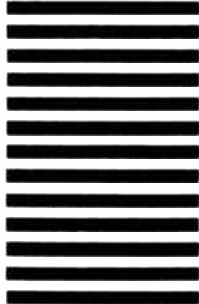
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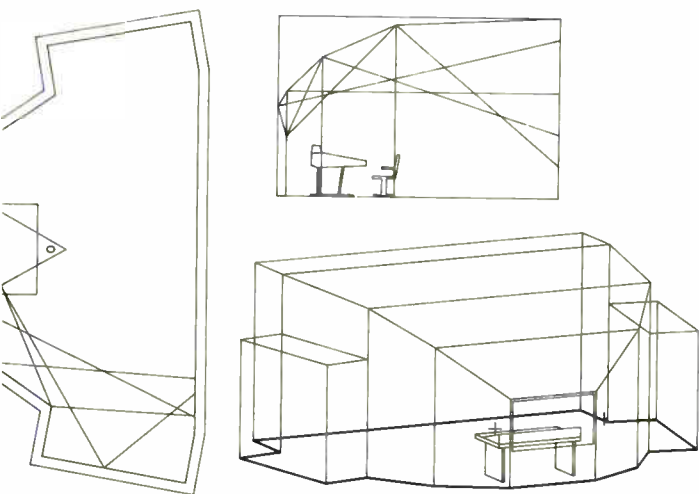
Design

by: **Acoustical Physics Laboratories**

Control Room Design

Acoustical Physics Laboratories develops accurate control room designs through the use of computer based mathematical and TEF analyzed scale models. Each design incorporates correct room/monitor geometry combined with acoustical absorption and diffusion to achieve an accurate monitoring environment.

All designs are CADD prepared and are precisely dimensioned in full size architectural E size drawings. Construction techniques and materials are detailed in a written statement of work. On site construction inspections are provided at critical construction stages when required. A final performance certification is performed to verify monitoring accuracy, room isolation, and ambient noise.



Control Room Monitor Systems

Acoustical Physics Laboratories designs high accuracy monitoring systems incorporating time corrected cone and dome drivers in active 3-way alignments. This proven design approach using cone and dome driver technology results in the highest levels of spectral, transient, and spatial imaging accuracy. Monitor loudspeaker designs are available in component form or as complete systems. Custom designs are developed for special requirements.

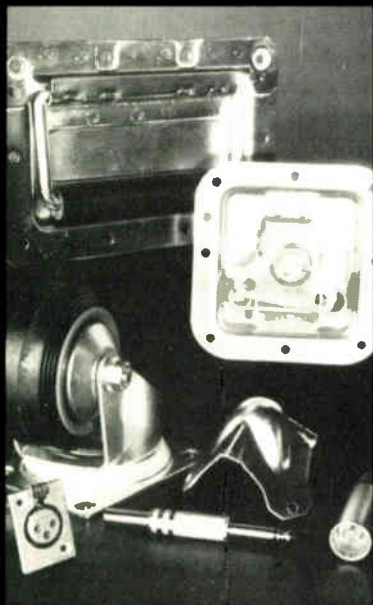


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NEW PRODUCTS

SPEAKERS AND MONITORS

—CONTINUED FROM PREVIOUS PAGE

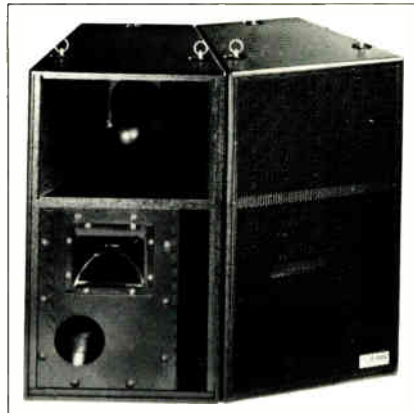
DAHLQUIST, INC., 601 Old Willets Path, Hauppauge, NY 11788; (516) 234-5757. **Product Name: M909 Floor Standing Speaker.** Contact: Carl Marchisotto, vice president. Date Product Introduced: April 1988. **Product Description & Applications:** The M909 is a floor-standing speaker whose four drivers blend together seamlessly. Moreover, the M909 resulted in a critically tuned, front-ported bass reflex system with a cylindrical loading mid-range, giving the listener superb performance and accurate sound reproduction. **Basic Specifications & Suggested List Price:** \$1,400/par. Finish: genuine walnut, oak or black; spaced grille with solid wood trim. Driver: four-driver, 3-way, dual 8", cast-frame woofers; 5" mid-range; 1" floored dome tweeter. Impedance: 8 ohms nominal. Sensitivity: 92dB. Power range: 20W minimum/25W maximum. FR: 30-24k Hz. Measurements: 39 1/4"H x 13 1/2"W x 10 1/2"D.

DESIGN DIRECT SOUND, 6850-35th NE, Ste. 1; Seattle, WA 98115; (206) 527-4371. Product Name: CFD 1-51 pro. Contact: Bob Rice. Date Product Introduced: February 1988. **Product Description & Applications:** It's the smallest DDS horn, but it may be the sweetest. The CFD 1-51 gives dual-flare horn performance in the tightest of situations. It has particularly smooth frequency response across its 60-degree near-field pattern, which makes this horn an excellent choice for critical spot monitoring. It is also well-suited for high-level foreground and dance installations as well as small to medium club PA applications. All DDS professional-line horns are constructed using biaxial stitched fiberglass cloth with end-grain balsa wood lamination. This gives maximum transparency by eliminating ring and hangover problems in critical frequencies. Our exclusive spun glass, throat/driver mounting flange achieves unmatched strength, while its extremely high density virtually eliminates resonance problems. **Basic Specifications & Suggested List Price:** Sensitivity: 106.8, frequency range: 800Hz-16kHz; frequency response: 1kHz-14kHz; mean dispersion: 56 degrees H x 51 degrees V; mean directivity: 8.2 (+4, -2.8); dimensions: 7"H x 8.5"W x 5"D; weight: 1.5 lbs.

DESKTOP LOUDSPEAKER SYSTEMS, INC., PO Box 3340; Rosedale Station; Kansas City, KS 66103; (816) 561-1878. Product Name: DLS-1a Near Field Monitor. Contact: Territorial sales rep. Date Product Introduced: 1987. **Product Description & Applications:** A wide-bandwidth, 3-piece, near-field monitor intended for use on consoles, meter bridges or microphone stands. Mirror image, mid-high frequency satellites are milled from solid blocks of wood, eliminating obnoxious cabinet noise for better imaging. Subwoofer locates under engineer's chair or at any distance that suits production needs for perceived bass loudness. DLS-1a monitors are also useful as transportable references; complete system displaces only 2/3 cubic foot of space. **Basic Specifications & Suggested List Price:** Bandwidth: 47Hz-19kHz ±3dB; sensitivity: 87dB/2.83V/1m; max avg and pk SPL capability: 102dB avg/114dB peak (60Hz-15kHz); long-term pink noise power handling: 7.5W/ch/12HRS; size: satellites 4"H, 3"D, 8"W, subwoofer 6"H, 8"D, 16"W.

EASTERN ACOUSTIC WORKS, INC.; One Main St.; Whitinsville, MA 01588; (508) 234-6158; Telex: 7103807630; FAX: (508) 234-8251. Product Name: EAW KF253. Contact: Kenneth Berger, president. Date Product Introduced: June 1988. **Product Description & Applications:** The KF253 is a high-definition, near-field, 3-way loudspeaker system incorporating a number of newly developed EAW technologies that result in a uniquely shaped enclosure with a very small footprint and enough height to be usable without the need for a stand. EAW's exclusive Bi-chamber™ technology enables the two 15" woofers to be placed in an enclosure with a maximum width of 14.75". The two poly-laminated 170mm cone mid-range drivers are mounted on a Multi-Plane-Baffle™, enabling wide coverage, minimum interaction and ideal transition to the titanium diaphragm compression high-frequency driver. **Basic Specifications & Suggested List Price:** Frequency response: 40Hz to 18kHz; maximum output: 127dB SPL @ 1m, nominal coverage angles for each modular section 100 degrees horizontal by 50 degrees vertical; dimensions: KF253—60"H x 14.75"W x 19.75"D.

EASTERN ACOUSTIC WORKS, INC.; One Main St.; Whitinsville, MA 01588; (508) 234-6158; Telex: 7103807630; FAX: (508) 234-8251. Product Name: EAW KF600/SB600. Contact: Kenneth Berger, president. Date Product Introduced: May 1988. **Product Description & Applications:** The KF600 is a high-definition, compact 3-way concert loudspeaker system, and the SB600 is its companion subwoofer system. Tightly packaged into the KF600's compact trapezoidal enclosure (measuring only 33"H x 20"W x 19.75"D) is a single, large magnet, 15" Bi-chamber™-loaded low-frequency driver,



EAW KF600/SB600

a horn-loaded, 10" mid-bass driver, and a titanium-diaphragm compression driver/HF horn. The system features EAW's exclusive Virtual Array™ technology for minimum interaction and total freedom from lobbing in arrays. **Basic Specifications & Suggested List Price:** Frequency response: 35Hz to 20kHz; maximum output: 130dB SPL @ 1m, nominal coverage angles for each modular section 60 degrees horizontal by 40 degrees vertical; dimensions: KF600—33.25"H x 20"W x 19.75"D. SB600—41"H x 20".

ELECTRO-VOICE; 600 Cecil St.; Buchanan, MI 49107; (616) 695-6831. Product Name: DeltaMax Speaker Systems. Date Product Introduced: 1988. **Product Description & Applications:** Electro-Voice is proud to announce the release of its new DeltaMax family of electronically protected speaker systems. Utilizing the highest quality components in the E-V line, DeltaMax models include the DML-1152 (trapezoid 15 1/2" x 12" x 24"), the DML-1122 (trapezoid 12 1/2" x 12" x 24") and the DML-2181 (double 18" Manifold Technology subwoofer). Aeroquipping hardware models are available. **Basic Specifications & Suggested List Price:** All models use an accompanying DMC single-channel processor/controller, which employs active VCA circuitry to guard against amplifier clipping, high power overload, speaker overexcursion and overheating. Linkwitz-Riley 24dB/octave crossover and time-space aligning circuitry are built-in. Special emphasis was given toward designing a device that protects transparently—without altering high-pass filters, sweeping crossover frequencies or changing high- and low-frequency contours. The result is the highest fidelity possible at industrial power levels.

FORMULA AUDIO, INC.; Rt. 5, Box 440-3, Hwy. 39; Zebulon, NC 27597; (919) 269-6441. Product Name: P6000. Contact: Jeffrey A. Forsburg, president. Date Product Introduced: June 1986. **Product Description & Applications:** The P6000 is a 4-way, full-range, self-powered, portable PA system. The enclosure measures 60"H x 22"W x 24"D. Built of 9-ply birch and covered in gray carpet. Casters on back for easy transport. Connection panel on the back allows easy access to the balanced input, with parallelized out. 20-amp Hubbel Twist Lock power connection, 20-amp circuit breaker with ground lift and a fan for cooling. This enclosure is perfect for portable PA system, theater application and churches with limited space. **Basic Specifications & Suggested List Price:** Max SPL of 132dB ±3dB. Frequency response 26Hz-20kHz (±3dB), 1,800-watt built-in amp, with active 3-way crossover at 24dB slope. The enclosure houses one L4E1 (18") speaker, two L250 (10") speakers, one 90-degree x 40-degree horn with a D50 (2") compression driver and two ST105 (slot) tweeters. Suggested list price \$4,700.

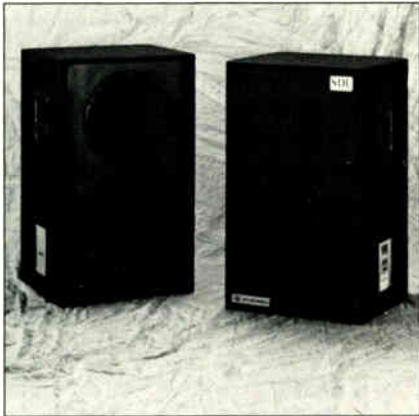
FOSTEX CORP. OF AMERICA; 15431 Blackburn Ave.; Norwalk, CA 90650; (213) 921-1112. Product Name: RM 1200. Contact: Maggie Hughes. Date Product Introduced: August 1988. **Product Description & Applications:** 12" coaxial near-field monitor with the patented Fostex "RP" ribbon tweeter. **Basic Specifications & Suggested List Price:** TBA available in November.

FRAZIER. Rte. 3, Box 319; Morrilton, AR 72110; (501) 727-5543. Product Name: Frazier CAT™ 38 Speaker Systems. Contact: James R. Truelson, vice president. Date Product Introduced: May 18, 1988. **Product Description & Applications:** The CAT 38 is designed for use as a near-field reference monitor in recording and broadcast applications. Rather than having its response tailored for the mix position only, the CAT 38 has been designed to produce uniform response over a broad angular range, creating a highly stable stereo image and consistent sound quality at any point behind the console. The CAT 38 has no crossover notch at any angle and may be used either standing or on its side. **Basic Specifications & Suggested List Price:** The CAT 38 is a 2-way system consisting of an 8" woofer in a B4 aligned, tuned enclosure and a 1" dome tweeter mounted coaxially with the woofer. Group delay parameters: of crossover and drivers are optimized to produce phase and amplitude response free of discontinuities or other anomalies. Sensitivity: 88dB/1W/1m; frequency response: 70Hz-18kHz ±3dB; power handling: 50 watts (AES); list price: \$264.

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FRAZIER; Rte. 3, Box 319; Morrilton, AR 72110; (501) 727-5543. **Product Name: Frazier CAT™ 60 Speaker Systems.** Contact: James R. Truelsen, vice president. **Product Description & Applications:** The CAT 60 is a high-output system that extends Frazier presence into applications calling for larger full-range systems. Intended applications for the CAT 60 include theaters (behind the screen), convention halls, arenas, auditoriums, larger churches, nightclubs and discos, among others. The CAT 60 will also function as an excellent studio monitor. **Basic Specifications & Suggested List Price:** This loudspeaker is a 2-way, high-output, controlled directivity system. It features two heavy-duty 12" woofers mounted opposed and horn loaded, and a centrally placed 1" format compression driver on a new proprietary Frazier 90 x 40 high-frequency horn. Transducer placement and crossover characteristics result in point source alignment. Sensitivity: 96dB/1W/1m; frequency response: 45Hz-15kHz ±3dB, power handling: 250 watts (AES); list price: \$1,482.

GALAXY AUDIO; 625 E. Pawnee; Wichita, KS 67211; (316) 263-2852. **Product Name: Hot Spot™ P.A. II.** Contact: James R. Pearce, president. **Date Product Introduced:** April 1988. **Product Description & Applications:** The Hot Spot P.A. II has 35+ watts of clean power, plus a 2-channel mixer with bass, mid-range and high tone controls. The unit is extremely versatile, accepts phono, high- or low-impedance microphones or line level signals. The Hot Spot P.A. II can be used as a high-powered monitor, a self-contained public address system or a practice amp for guitar, bass or keyboards. **Basic Specifications & Suggested List Price:** Suggested list price is \$250.



SERVODRIVE

INTERSONICS, INC.; 3453 Commercial Ave.; Northbrook, IL 60062; (312) 272-1772. **Product Name: Servodrive.** Contact: Tom Melzer. **Date Product Introduced:** June 1988. **Product Description & Applications:** The SDL-5 is a folded-w, power-cooled, Servodrive subwoofer. Most frequently found in amusement parks, clubs and concert systems, the SDL-5 has the lowest distortion and greatest output of any concert subwoofer. Able to snuff cigarette lighters at 5 feet. Easily added to existing club or concert systems. **Basic Specifications & Suggested List Price:** Flat to 32Hz; sensitivity: 105dB/1W/1m; peak musical SPL below 125Hz: 135dB; nominal impedance: 4.25 ohms; max. RMS input power: 400W; size: 45 x 45 x 22½"; weight: 280 lbs.; suggested crossover: 80Hz to 125Hz.

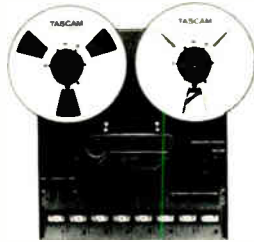
INTERSONICS, INC.; 3453 Commercial Ave.; Northbrook, IL 60062; (312) 272-1772. **Product Name: Servodrive Contra Bass Subwoofer.** Contact: Tom Melzer. **Date Product Introduced:** June 1988. **Product Description & Applications:** An extended range, low-frequency subwoofer that is flat to 16Hz. Ideal for recording studios, electronic and digital organs for theater, home, concert and church; synthesizer reproduction; home theater systems; elephant mating. Adds a "weight" to musical systems not possible with conventional voice coil systems. **Basic Specifications & Suggested List Price:** Size: 18 x 22½ x 37"; weight: 120 lbs.; max RMS input: 200W; SPL at rated continuous: 114dB at 16Hz; nominal impedance: 3 ohms, average, drive mechanism: Servodrive with 2 active 15" drivers and 2 passive 18" radiators; frequency response: 16Hz to 100Hz, ±3dB.

JBL PROFESSIONAL; 8500 Balboa Blvd.; Northridge, CA 91329; (818) 893-8411. **Product Name: Control 10™ Control Monitor.** Contact: Mark Gander, vice president, mktg. **Product Description & Applications:** New 3-way control monitor features a 12" low-frequency transducer, 5" cone mid-range and 1" titanium dome tweeter housed in a uniquely styled, molded enclosure. The Control 10 system has been designed to deliver smooth sonic performance in any number of applications; the molded polypropylene foam enclosure was engineered to accept a number of mounting accessories, thus making the Control 10 an ideal foreground music playback system for restaurants, discos, etc.

KLARK-TEKNIK; 30B Banfi Plaza N.; Farmingdale, NY 11735; (516) 249-3660. **Product Name: Jade One MkII.** Contact: Sam Spennacchio, nat'l sales mgr. **Date Product**

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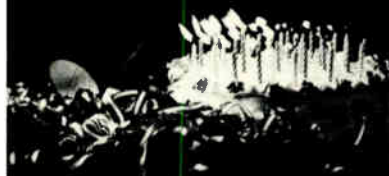
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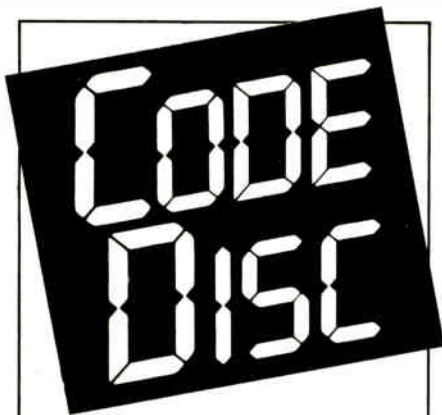


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NEW PRODUCTS

SPEAKERS AND MONITORS

—CONTINUED FROM PREVIOUS PAGE

Introduced: June 1988. **Product Description & Applications:** A joint development by Klark-Teknik and Munro Associates, Jade One MkIIs are designed for maximum phase linearity. This design, along with matched electro-mechanical components, gives you true 3-dimensional imaging that is accurate and stable. Images will not shift in the sound field due to phase differences between monitors. Integrated electronic filtering and amplification eliminates interface problems. Jade One MkIIs are perfect for all critical monitoring applications. **Basic Specifications & Suggested List Price:** 2-way bass reflex, frequency response 55Hz-17kHz ± 3 dB, output more than 100W RMS into 6 ohms, THD less than 0.05% (20Hz-20kHz), weight @ 48.5 lbs., dimensions (HxDxW) 21x16x10, S/N ratio more than 105dB below max. output, XLR line level input, input level, HF and LF controls, list price \$2,295/pair.

KLIPSCH & ASSOCIATES, INC., PO Box 688; Hope, AR 71801; (501) 777-6751. **Product Name: KP-600 Series.** Contact: P. Woody Jackson, nat'l sales mgr. **Date Product Introduced:** September 1, 1988. **Product Description & Applications:** The KP-600 series is a fully modular sound reinforcement package consisting of DP-650 high-frequency, KP-650 low-frequency and KP-680 subwoofer cabinets. The system is available with full flying hardware and is completely engineered for flying or stacking for concert sound reinforcement. The system employs removable horn modules to allow for quick and easy tailoring of polar response. The cabinets are constructed of composite materials to significantly reduce the overall weight. **Basic Specifications & Suggested List Price:** Frequency response: 43Hz to 17kHz ± 3 dB (with KP-600 EC electronic crossover); -10dB at 32Hz; average beamwidth: 60% horizontal, 50% vertical. Write Klipsch & Associates for detailed specifications!

E.M. LONG ASSOCIATES, 4107 Oakmore Rd.; Oakland, CA 94602; (415) 531-8725. **Product Name: CRM-100.** Contact: Edward M. Long, owner. **Date Product Introduced:** June 1, 1988. **Product Description & Applications:** The CRM-100 is a high-output, high-sensitivity Time Align® monitor that uses Elf™ technology to extend the response flat to 32Hz. It includes two CRM-TA1 mid-high systems, two CRM-B18 bass systems, three matched power amplifiers, Elf electronics and cables. The modular system is designed for easy placement and mounting. **Basic Specifications & Suggested List Price:** Frequency response: 32Hz to 20kHz ± 3 dB; maximum output: 120dB SPL.

E.M. LONG ASSOCIATES, 4107 Oakmore Rd.; Oakland, CA 94602; (415) 531-8725. **Product Name: CRM-200.** Contact: Edward M. Long, owner. **Date Product Introduced:** June 1, 1988. **Product Description & Applications:** The CRM-200 is a high-output, high-sensitivity Time Align® monitor that uses Elf™ technology to extend the response flat to 32 Hz. It includes four CRM-TA1 mid-high systems, four CRM-B18 bass systems, five matched power amplifiers, Elf electronics and cables. The modular system is designed for easy placement and mounting. **Basic Specifications & Suggested List Price:** Frequency response: 32Hz to 20kHz ± 3 dB; maximum output: 126dB SPL.

Introduced: July 1987. **Product Description & Applications:** The Model One is a high-fidelity loudspeaker for high-level sound reinforcement. The unit differs from other popular full-range systems in that it offers very wide horizontal coverage. Design goals were wide bandwidth without the need for sub-woofers and a size and weight appropriate for small portable systems or club installations. Applications include: main system for up to 2,000 seats, sidefill, nightclubs and churches. **Basic Specifications & Suggested List Price:** Response: 55Hz to 15kHz ± 5 dB; max SPL: 127dB; coverage: 100 x 40 degrees; max input: 500 watts; dimensions: 48" H x 17.5" W x 30" D; weight: 125 lbs., \$1,495.

MACPHERSON LOUDSPEAKERS; 3750 Wood Rd.; Lansing, MI 48906; (517) 371-4148. **Product Name: LPM One Loudspeaker.** Contact: Dave Arnold, sales mgr. **Date Product Introduced:** January 1988. **Product Description & Applications:** The LPM One is a low-profile stage monitor delivering high output from a small enclosure. Design goals were performance acceptable to discriminating professionals in a very small floor monitor. **Basic Specifications & Suggested List Price:** Response: 85Hz to 12.5kHz ± 5 dB; max SPL: 118dB; coverage: 70 x 40 degrees; max input: 400 watts; weight: 45 lbs.; \$695.

MTX LOUDSPEAKERS BY MITEK; One Mitek Plaza; Winoona, IL 61089; (815) 367-3000. **Product Name: MTX Pro 215.** Contact: Tom Amlin, customer service. **Product Description & Applications:** Extremely roadworthy, MTX Professional loudspeaker systems are covered with rugged, heavy-duty aviation carpeting, feature interlocking reinforced corners, strong inset handles, heavy-duty steel grille speaker covers and die-cast clamps. The ported cabinet features (1) bullet tweeter, (2) 5" die-cast mid-ranges, (2) 15" woofers. **Basic Specifications & Suggested List Price:** 15" 3-way; freq. resp.: 50Hz-21kHz; sens.: 99.2dB 1W/1m; power handling: 5-400 watts RMS/800 watts peak; dimensions: 46.5" H x 18.5" W x 16" D; shipping weight: 132 lbs.; suggested retail: \$799.95.

PEAVEY ELECTRONICS; 711 A St.; Meridian, MS 39301; (601) 483-5365. **Product Name: Impulse and Impulse II.** Contact: Ken Valentine, product development mgr. **Date Product Introduced:** January 1988. **Product Description & Applications:** A multi-speaker array may be easily formed simply by locking Impulse™ units together. Molded propylene enclosure. 6" speaker. Conical tweeter. Also available as Impulse™ II with two 4" speakers and one piezo tweeter for mini-monitor applications in a 16-ohm version. **Basic Specifications & Suggested List Price:** 8-ohm impedance. 22.5-degree angled enclosure. Threaded inserts for Omnimount hardware. Protected by sturdy metal grille. Impulse U.S. targeted price \$199.50 per pair. Impulse II U.S. targeted price \$249.50 per pair.

RAMSDELL AUDIO; PO Box 76186; St. Petersburg, FL 33734; (813) 823-8037. **Product Name: Ramsdell Audio SW2710 with Magnacoll™.** Contact: Richard Ramsdell, owner. **Date Product Introduced:** New version, June 1988. **Product Description & Applications:** The Ramsdell Audio SW2710 is a subwoofer unique in the industry. It has a 6.3" Magnacoll voice coil with an edge-wound copper ribbon. To date, it is the most powerful subwoofer made in the world. It easily handles 1,000 watts program power. The frequency response is 15-300Hz with flux density of 12,000 Gauss. The BL product is 32, Fs is 18.5Hz, Qts. 0.277, No 4%, Re 5.7 ohms and XMax 5-6mm. It is 27" in diameter. **Basic Specifications & Suggested List Price:** The Ramsdell Audio SW2710 was specifically designed for high-power, low-frequency response for applications for bass guitar, drums and organs. It has now been introduced into the car stereo market, and foreign markets have shown interest for roller coasters and roller rinks. The current retail cost is \$1,299.

RAMSDELL AUDIO; PO Box 76186; St. Petersburg, FL 33734; (813) 823-8037. **Product Name: Ramsdell Audio RA1801 with Magnacoll™.** Contact: Richard Ramsdell, owner. **Date Product Introduced:** 1988 Winter NAMM. **Product Description & Applications:** The Ramsdell Audio RA1801 18" woofer is the smaller brother of the SW2710 subwoofer, also made by Ramsdell Audio. It also has the 6.3" Magnacoll voice coil and easily handles 1,000 watts program power. The unique factor about this 18" woofer is that it goes into an extremely small box. It is shallow in depth and can fit into a box just big enough to house it. It is awesome in power and sound quality! **Basic Specifications & Suggested List Price:** This woofer is outstanding for use in electric drum monitors, keyboards and bass guitar. It has a tough challenge in performance against any competitor! At 8 ohms just as the SW2710, the Flux density is 12,000 Gauss, the frequency response is 30-1,000Hz, the BL is 32, Fs 27Hz, No 3%, Qts 0.25, Re 5.7 ohms and XMax is 5-6mm. Retail cost is \$799.

RENKUS-HEINZ, INC.; 17191 Armstrong Ave.; Irvine, CA 92714; (714) 250-0166. **Product Name: Coax Pack.** Contact: G. Russell Farrell, dir. mktg. **Date Product Introduced:** November 1988 AES. **Product Description & Applications:** These wide-bandwidth, very high-output, constant beamwidth horn systems use a 2.4" throat compression driver and horn with a coaxially mounted 2" throat compression driver and horn. With a crossover and time delay, the system delivers accurate coverage from a point source over a frequency range of 250Hz to 17kHz. **Basic Specifications & Suggested List Price:** Frequency range: 250Hz to 17kHz; maximum SPL: 130dB at

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MODEL ONE LOUDSPEAKER

MACPHERSON LOUDSPEAKERS; 3750 Wood Rd.; Lansing, MI 48906; (517) 371-4148. **Product Name: Model One Loudspeaker.** Contact: Dave Arnold, sales mgr. **Date Product**

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—CONTINUED FROM PREVIOUS PAGE

1 meter, coverage angles: 90 degrees H x 40 degrees V for Coax-90, 60 degrees H x 40 degrees V for Coax-60. Price TBA

STATE OF THE ART ELECTRONIK, INC.: 43-1010 Polytek St.; Ottawa, Ontario, K1J 9J3 Canada; (613) 745-2003; FAX: (613) 745-9687. **Product Name: CF-500 Acoustic-Align Studio Reference Monitor.** Contact: Dr. Claude Fortier, president. Date Product Introduced: September 10, 1988. **Product Description & Applications:** The CF-500 is a 3-way, acoustic align, all-cone monitoring system designed to provide high SPL levels at full fidelity for use in audio-for-video, post-production and medium-to-small-size control rooms. The system may be oriented vertically or horizontally by realigning the mid-high frequency driver panel. The CF-500 is a 3-way hybrid design with a 2-way passive and a 2-way active crossover, for use with the AAX2-2 electronic crossover system. **Basic Specifications & Suggested List Price:** Driver complement: three drivers, including one 12" woofer, one 6" mid-range and a 1" tweeter, power handling: 200W + 100W continuous program; acoustic listening window: ±30 degrees horizontal, ±10 degrees vertical; frequency response: 49Hz to 20kHz ±2dB on reference axis; nominal impedance: 8 ohms; dimensions: 30" x 14" x 13" deep.

SUNN; 1130 Columbia St.; Brea, CA 92621; (714) 990-0909. **Product Name: 1200 Series Speaker Systems.** **Product Description & Applications:** Ten models, available in 12" and 15" versions, with horn/driver high-frequency units. Both PA and monitors available. **Basic Specifications & Suggested List Price:** Prices range from \$199.99 to \$649.99

TANNOY NORTH AMERICA INC.: 300 Gage Ave., Unit #1; Kitchener, Ontario, N2M 2C8 Canada; (519) 745-1158; FAX: (519) 745-2364. **Product Name: Tannoy NFM-80.** Contact: Bill Calma. Date Product Introduced: 1988 AES. **Product Description & Applications:** The new Tannoy NFM-80 will replace the highly acclaimed NFM-8 near-field reference monitor released by Tannoy in 1984. The new "80" near-field takes advantage of new transducer technology, resulting in unheard of performance in clarity, imaging and detail from a compact monitor. **Basic Specifications & Suggested List Price:** Freq. resp. 53Hz-22kHz; power handling: 10-120W imp. 8 ohms; sensitivity 92dB, crossover freq.: 1.8, finish: 18% gray. Grilles included.

TMS RESEARCH; 2435 Bethel-New Richmond Rd.; Bethel, OH 45106; (513) 734-3032. **Product Name: TMS Research Loudspeaker Model 200.** Contact: Steve Lewis, president. Date Product Introduced: March 1988. **Product Description & Applications:** TMS Loudspeaker Model 200. The TMS series loudspeaker designs re-create your music in the way you've always dreamed of hearing it. Clear sound with natural balance that generates a room filled with high-quality sound. Superior performance and quality design for both residential and commercial applications. **Basic Specifications & Suggested List Price:** Enclosure dimensions: 14.5" x 25" x 12"; woofer: 12" foamsurround 40 oz ferrite magnet, 2" voice coil, mid-range: 5", 10 oz ceramic magnet, 1" voice coil; tweeter: 10 oz ceramic magnet; nominal impedance: 8 ohms; frequency response: 24 to beyond 20,000Hz; power handling: 150 watts continuous; cabinet finish: oak hardwood veneer, suggested retail: \$699.99.

WESTLAKE AUDIO, INC.: 2696 Lavery Ct., Unit 18; Newbury Park, CA 91320; (805) 499-3686; FAX: (805) 498-2571. **Product Name: BBSM-12VF.** Contact: Gregg Baumgartner, manuf. mgr. Date Product Introduced: August 1, 1988. **Product Description & Applications:** Vertically oriented version of the already popular BBSM-12. Designed as a free-standing monitor, the BBSM-12VF is available in walnut veneer with grille cover, stands 45" tall, 28" wide and 15" deep; weighs approximately 225 lbs. each. **Basic Specifications & Suggested List Price:** 3-way system using two 12" woofers, 6.5" mid-range and 1 25" dome tweeter. Frequency response: 60Hz-15kHz; list price: \$1,899 each.

YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave.; Buena Park, CA 90622; (714) 522-9011. **Product Name: "The Club Series" Speakers (Oak Finish).** Contact: Professional Audio Division. Date Product Introduced: June 1988. **Product Description & Applications:** "The Club Series" feature integral high-frequency level control and dual parallel 1/4" input jacks for cascading speaker connections. "The Club Series" loudspeakers all have a nominal impedance of 8 ohms. All speaker components are front mounted for easy access behind an attractive grille cloth. The rugged 3/4" miter-fold cabinets are finished with an oak wood-grain covering. These attractive loudspeakers look as good as they sound. There are four rectangular stage-type loudspeakers (S115MT-OAK, S115H-OAK, S112H-OAK and S110H-OAK) and two slant-front stage monitor systems (SM15H-OAK and SM10H-OAK) in "The Club Series" family. **Basic Specifications & Suggested List Price:** The S115MT-OAK (\$445) is a 3-way, all-cone system with 15" woofer and 200-watt power handling, the S115H-OAK (\$395) is a 2-way horn system with 15" woofer and 200-watt power handling, the S112H-OAK (\$345) is a 2-way horn system with 12" woofer and 200-watt power handling; the S110H-OAK is a compact 2-way horn system

with 10" woofer and 150-watt power handling. The SM15H-OAK and SM10H-OAK 2-way monitor systems are priced at \$395 and \$295, respectively.

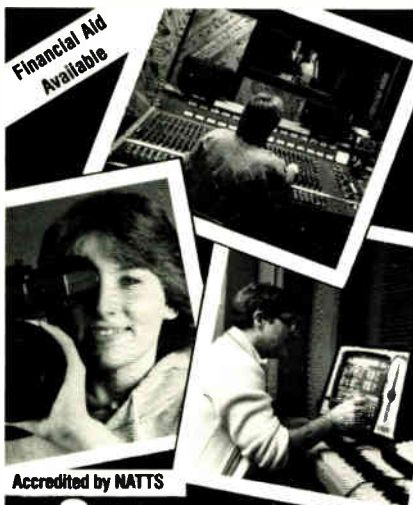
YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave.; Buena Park, CA 90622; (714) 522-9011. **Product Name: MS-Series Compact Self-Powered Speakers.** Contact: Professional Audio Division. Date Product Introduced: June 1988. **Product Description & Applications:** The MS101 and the MS202 reintroduce compact powered speakers to the Yamaha lineup. Both units have microphone and line level inputs, and include volume and tone controls. These units are ideal for monitoring in today's home recording studio environments and near-field monitoring applications, and feature a magnetic field-canceling speaker design for placement near video or computer monitors, without interference. **Basic Specifications & Suggested List Price:** The MS101 features a 4", full-range speaker in a bass-reflex cabinet, driven by a 10-watt amplifier. The MS101 has a frequency response of 30Hz to 20kHz, +1/-3dB, and the MS101 is a compact 5 3/4" by 8 3/4" by 7 3/4" inches and weighs 4.9 pounds. The Hi-Z microphone input is via a front-panel 1/4" jack, and the back-panel line input is by parallel 1/4" and phono jacks. The MS202 features dual 4" full-range speakers in a bass-reflex cabinet, driven by a 20-watt power amplifier. A special feature of the MS202 is its dual line input and separate line and microphone level control, allowing the mixing of microphone and line sources. The tone control offers +12dB boost at 100Hz to +12dB boost at 10kHz.

YAMAHA MUSIC CORPORATION, USA; 6600 Orange-thorpe Ave.; Buena Park, CA 90622; (714) 522-9011. **Product Name: NS40M Studio Monitors.** Contact: Professional Audio Division. Date Product Introduced: January 1988. **Product Description & Applications:** The NS40M Studio Monitor speaker is a larger, 3-way version of the extremely popular NS10M Studio Monitor speaker. Both systems are specifically designed for close-field studio monitoring applications, making them ideal for all broadcast applications where space is at a premium. The NS40M Studio is a 3-way acoustic-suspension bookshelf system with a frequency range of 50Hz to 20kHz, and has a rated power capacity of 100 watts of program material. Its sensitivity is 90dB SPL at 1 watt, at 1 meter, on axis. The crossover frequencies for the low-loss, low-distortion crossover are 1.2kHz (12dB/octave), 5kHz (mid: 12dB/octave and tweeter: 18dB/octave). **Basic Specifications & Suggested List Price:** The woofers are each 7" (18cm) long excursion drivers, the mid-range is a 2.4" (6cm) soft-dome driver, and the tweeter is a 1.2" (3cm) soft-dome tweeter. The NS40M Studio is in a compact, black finished, real wood cabinet and is 23.5" (598mm) by 11.5" (293mm) by 12" (306mm), and weighs 7.75 lbs. (17 kg). Connection is by heavy-duty binding post cable connectors. Price: \$465 each.

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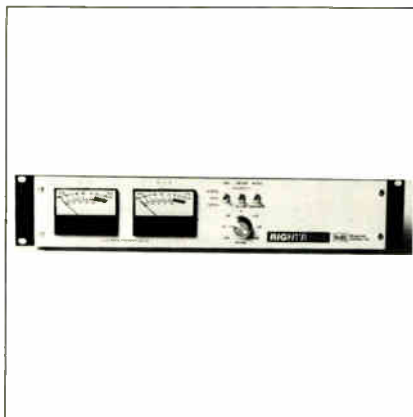
AMBER ELECTRO DESIGN INC., 3391 Griffith St., St. Laurent, Quebec, H4T 1W5 Canada; (514) 735-4105. **Product Name: Model 5100 Audio Generator, Model 5200 Audio Voltmeter, Model 5300 Analyzer Series.** Contact: Wayne Jones. Date Product Introduced: Late 1987. **Product Description & Applications:** The Amber 5100, 5200 and 5300 series of audio generation and measurement instruments extends the model 5500 family for applications requiring "Split Site" measurements or separate transmitter/receiver situations. The model 5100 Audio Generator forms the test stimulus in system while the model 5200 or 5300 Audio Voltmeter/Audio Analyzer is the measuring complement. All instruments offer state-of-the-art specifications and are programmable via the IEEE-4888 interface or RS-232 serial port. **Basic Specifications & Suggested List Price:** System performance (generator and analyzer), THD+N below 0.001% mid band; output level more than +30dBm max; noise below -120dBm. Generates sine, square wave signals, measures level in volts, watts, dBm, dBV. Measures narrow band level, weighted and unweighted noise, THD+N, IMD (SMPTE or CCIF), phase, DC volts and wow and flutter. Price: 5100 \$3,500, 5200 \$3,500, 5300 \$4,000.

AMBER ELECTRO DESIGN INC., 3391 Griffith St., St. Laurent, Quebec, H4T 1W5 Canada; (514) 735-4105. **Product Name: AudioCheck™.** Contact: Wayne Jones. Date Product Introduced: Mid-1987. **Product Description & Applications:** AudioCheck is an easy-to-use program that will run on any IBM PC/XT/AT or compatible computer and control an Amber model 5500 Programmable Audio Analyzer and other GPIB, RS-232 and MIDI instruments. The comprehensive package is quick to set up with pop-up and pull-down menus. Sophisticated test programs can be prepared to test all audio parameters, compare to pre-stored limits and produce results from simple pass/fail indication to multi-page reports incorporating text, graphs and tabular results. **Basic Specifications & Suggested List Price:** AudioCheck runs on any MS-DOS computer with CGA or EGA capability, mono or color monitor, 640K RAM. It uses the IEEE-488 bus for interface. It will control Amber audio measurement instruments and other equipment in an ATE environment. Output can be screen, dot matrix printer or HPGL pen plotter. Price U.S. \$500.

AUDIO PRECISION, INC., PO Box 2209; Beaverton, OR 97075; (800) 231-7350. **Product Name: DSP Module for System One.** Contact: Bob Metzler. Date Product Introduced: September 1988. **Product Description & Applications:** DSP module adds spectrum analysis and individual harmonic analysis to System One capabilities. Also adds digital inputs and outputs to permit digital audio device testing in any combination of domains: A/D, D/A, D/D, A/A. **Basic Specifications & Suggested List Price:** Not yet ready for release.

BASF CORPORATION INFORMATION SYSTEMS; Crosby Dr., Bedford, MA 01730; (617) 271-4000. **Product Name: BASF Calibration Mechanism.** Contact: Terence O'Kelly, nat'l sales mgr. Date Product Introduced: April 1988. **Product Description & Applications:** The BASF Calibration Mechanism is a precision alignment tool for measuring the accuracy of cassette C-zeroes or transports. The mechanism is milled from an alloy of German silver to an accuracy within 5 microns of perfect vertically to the horizontal plane of the cassette. The tool comes loaded with a 1.5kHz azimuth alignment tape, which is replaceable by removing the plastic cover on the mechanism. **Basic Specifications & Suggested List Price:** The tool comes packed in a shock-resistant wooden case shipped in a shock-proof carton. List price is \$1,000.

BROADCAST DEVICES, INC., 5 Crestview Ave., Peekskill, NY 10566; (914) 737-5032. **Product Name: THE RIGHTRACK Audio Phase Corrector.** Contact: Bob Tarsio, chief sales engineer. Date Product Introduced: January 1, 1988. **Product Description & Applications:** Device can detect and correct azimuth-error time delays in stereo or multi-track recordings. Three-frequency internal oscillator and metering allow for quick check alignments of tape recorders in the rack. Azimuth adjustment can be performed using the internal oscillator and L+R/L-R metering mode. Can also be used with PCM formats where single A/D, D/A converters cause high-frequency time



THE RIGHTRACK AUDIO PHASE CORRECTOR

delay between stereo channels. Manual phase correction allows ± 150 degrees of correction at 12.5kHz. **Basic Specifications & Suggested List Price:** Balanced bridging input, active bal. output 600 ohms; freq. resp. ± 1 dB 20Hz to 20kHz; THD less than .1% at headroom; IMD less than 0.5% at headroom; (SMPTE) oscillator, 150Hz, 1500Hz and 12.5kHz; THD less than .1% at all freq.; metering, left and right switchable to L+R and L-R. Phase corrector, ± 150 degrees at 12.5kHz. List price \$1,150.

CETEC GAUSS; 9130 Glen Oaks Blvd.; Sun Valley, CA 91352; (213) 875-1900. **Product Name: Gauss Model 1100 Tape System Analyzer System.** Contact: Jim Williams. Date Product Introduced: March 1988. **Product Description & Applications:** The 1100 series tape system analyzer system comprises a Model 1120 analyzer, 1110 composite generator and the Model 1130 high-speed test head. This system is used for both duplicating system alignment and in-process quality control testing. **Basic Specifications & Suggested List Price:** Duplication ratios: 1:1, 32:1, 64:1, 128:1; frequency range: 125Hz to 16kHz; functions: peak hold, bias set, auto bias, azimuth adj., reproduce EQ adj., record EQ adj., Dolby HXPro cal.; tests: level, frequency resp., amplitude modulation, distortion.

GOLD SOUND; 2812 S. Bannock; Englewood, CO 80110; (303) 789-5310. **Product Name: Gold Line 30B.** Contact: Ron Gold. Date Product Introduced: January 1988. **Product Description & Applications:** Gold Line 30B is an affordable, portable $\frac{1}{2}$ -octave spectrum analyzer that displays 25Hz-20kHz frequency response and SPL in real time. Features include a 12V rechargeable battery, battery condition LED, line-level input and a plug-in omni electret condenser microphone. Measurement weightings are A, C and flat, with slow, fast and hold functions. This test instrument is designed for recording engineers, sound contractors and musicians. Applications include testing tape recorders, speakers, room acoustics, equalization and finding feedback frequencies. **Basic Specifications & Suggested List Price:** Test frequencies: 25Hz-20kHz, on ISO centers; decibel range displayed on screen: 23dB; measurement range: 30-123dB; line input: unbalanced, 10k ohm impedance, -85 to +4dBm; 30 frequency bands of $\frac{1}{2}$ -octave, ANSI Class II filters. Standard model, \$599; with the following four options, cost is \$749: a canvas carrying case, battery charger/eliminator, pink noise tape (reel-to-reel or cassette) and microphone extension cable.

KENWOOD U.S.A. CORPORATION, TEST & MEASURING INSTRUMENTS; 2201 E. Dominguez St.; Long Beach, CA 90810; (213) 639-4200, ext. 251. **Product Name: CD Mastering System.** Contact: Tom Saito, dir. of mktg. Date Product Introduced: August 15, 1988. **Product Description & Applications:** The integrated CD mastering system includes the DA-

3500D Encoder, DR-3552 Decoder (CD-AD, CD-ROM, CD-I, CD-V), DT-3520 Digital I/O and DC-3510 Analog/Digital Converter. The DA-3500D CD Encoder is a CD digital signal generator, generating signals equivalent to the laser pickup output of a CD player. The DR-3552 CD Decoder is an EFM-signal reproduction unit conforming to the latest standard CD specifications. The DT-3520 Digital I/O unit serves as the interface between the DA-3500D and a PCM audio processor. **Basic Specifications & Suggested List Price:** Price: \$83,050.

KENWOOD U.S.A. CORPORATION, TEST & MEASURING INSTRUMENTS; 2201 E. Dominguez St.; Long Beach, CA 90810; (213) 639-4200, ext. 251. **Product Name: DAT Testing System.** Contact: Tom Saito, dir. of mktg. Date Product Introduced: August 15, 1988. **Product Description & Applications:** The DAT testing system includes the DA-5730 Encoder, DR-5750A Decoder and DB-5740 Jitter Analyzer. The DA-5730 R-DAT Encoder generates signals to evaluate and test demodulators in DAT hardware and ICs, of formatted standard signals. Sampling at 32kHz, 44.1kHz and 48kHz is featured. The DR-5750A R-DAT Decoder decodes formatted standard signals and displays errors and ID codes. Playback signals from the DAT deck heads and tape are all measured and evaluated. The DB-5740 R-DAT Jitter Analyzer provides near real-time measurement and display of the data bit-length reversal distance jitter for each head. It also features an azimuth adjacent-track protection system (used in video recorders) instead of a guard band. **Basic Specifications & Suggested List Price:** Price \$62,650.

PORTLAND INSTRUMENT; 1101 A Air Way; Glendale, CA 91201; (800) 621-5640. **Product Name: SCV PC80.** Contact: Jack Symphon, prod. mgr. Date Product Introduced: September 1988. **Product Description & Applications:** This is a 2nd-generation phase polarity tester allowing a pulse generator to output to a microphone or plug directly to a console. The receiver is either acoustic or direct connection. The new model allows pin 2 or pin 3 on an XLR connector to be positive. **Basic Specifications & Suggested List Price:** Bandwidth, full audio band 80Hz-20kHz; battery life: 6 mos.; phase detection: 180 degrees; repeatability: 100%.

RESEARCH TECHNOLOGY INTERNATIONAL; 4700 Chase Ave.; Lincolnwood, IL 60464; (312) 677-3000. **Product Name: TapeChek® D-11 Dropout Analyzer.** Contact: Tom Tsch, VP Sales. Date Product Introduced: 1988. **Product Description & Applications:** Helps prevent costly tape failures! Certifies that the tape you are using meets your own standards. Evaluates any tape format. **Basic Specifications & Suggested List Price:** Dual dropout counters. Connects to video or RF output of any VTR. Displays dropout data and setup criteria. Printed report shows tape condition and dropout locations. 19 x 15 x 17". Rack-mount or tabletop use. \$4,450 list price.

SOUND TECHNOLOGY, INC.; 1400 Dell Ave.; Campbell, CA 95008; (408) 378-6540. **Product Name: Model 2000A.** Contact: Kent McGuire, sales. Date Product Introduced: April 1988. **Product Description & Applications:** External computer-controlled audio test system. The ST2000A comes complete with the following industry-standard interfaces: GPIB RS-232C and Centronics parallel printer port. The ST2000A also includes IBM-compatible menu-driven software. **Basic Specifications & Suggested List Price:** Net 30 base price is \$8,750 (U.S.), too many specs to list.

TAPETALK/POSTHORN RECORDINGS; 142 W. 26th St.; New York, NY 10001; (212) 242-3737. **Product Name: TAPETALK "The Box" RSA-1 Realtime Soundstage Analyzer.** Contact: Jerry Bruck. Date Product Introduced: January 1988. **Product Description & Applications:** A diamond-shaped matrix of 100 LEDs displays level and phase coherence information, instantaneously showing channel imbalances, near-mono or out-of-phase conditions and positional information for high-level sources. "The Box" also facilitates critical alignment of recorders by showing phase lead/lag between channels. M-s matrices can be adjusted for best soundstage and cutting depth gauged in disk mastering. Individual peak holds warn of left, center and right "splash." **Basic Specifications & Suggested List Price:** Frequency response: 20Hz-20kHz ± 0.25 dB; inputs: 2 x XLR-3F, 47k ohms; display range: 38dB; sensitivity: -26dBu to +15dBu; AC supply or 15-25VDC.

TECHRON DIV. OF CROWN INTERNATIONAL; 1718 W. Mishawaka Rd.; Elkhart, IN 46517; (219) 294-8300. **Product Name: TEF® System 12 Plus Acoustic Analyzer.** Contact: Larry Shank, product specialist. Date Product Introduced: June 1, 1988. **Product Description & Applications:** A faster, easier to use, more capable version of the original TEF 10 and TEF 12 analyzers. TEF System 12 Plus is over 200% faster than previous models, stores up to three times more measurements (over 300) per disk. The TEF System Analyzers are used for recording studio/performance room design, analysis, tuning. Also used for microphone/speaker design. **Basic Specifications & Suggested List Price:** Measures frequency from DC-32kHz ± 2.5 dB; measures phase from DC-32kHz ± 5 degrees; measures time of arrival from 1 μ sec-20 secs ± 2.5 μ sec; factory direct \$10,950 plus freight.

TENTEL® CORP.; 1506 Dell Ave.; Campbell, CA 95008; (408) 379-1881; (800) 538-6894. **Product Name: Tentelometer® Tape Tension Gauge.** Contact: Wayne Graham, sales mgr. **Product Description & Applications:** For measuring critical tape tension in all audio and video tape transports. Calibration accuracy verified in the field. Universal; for all makes and models. (Certain recorders need a special gauge.) **Basic Specifications & Suggested List Price:** Audio: 0 to 20 ounces for up to 2" tape, Model T2-H20-ML \$325; Video: 0 to 7 ounces for ¾" and ½". Model T2-H7-SLC \$395.

TIMEWAVE TECHNOLOGY INC.; 2401 Pilot Knob Rd.; St. Paul, MN 55120; (612) 452-5939. **Product Name: Noise/Reference Generator—Model 3024.** Contact: Al Clark, VP. **Date Product Introduced:** April 1988. **Product Description & Applications:** The Timewave Technology 3024 noise/reference generator is a multi-function signal generator intended for general purpose laboratory and field measurements in acoustics, audio and electronics. Pink noise, white noise and 1kHz sine wave signals are synthesized from a crystal-based oscillator. The output amplitude is controlled by a 10dB step attenuator with a continuously adjustable 0-12dB attenuator for levels between the 10dB steps. **Basic Specifications & Suggested List Price:** Frequency response: white noise 1.6Hz-39kHz-3dB limits, pink noise 20Hz-20kHz ±2.5dB, reference: 1,000-kHz; power requirements: AC—12VAC at 500mA, DC—two 9-volt batteries.

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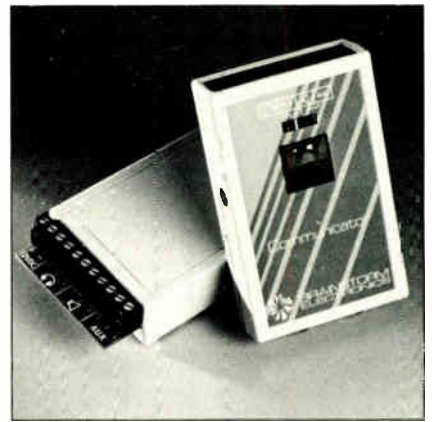
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BRAINSTORM ELECTRONICS, INC., 1515 Manning Ave. #4; Los Angeles, CA 90024; (213) 475-7570. **Product Name: JH-24 Mult Box.** Contact: L. Bernard Frings. **Date Product Introduced:** July 1987. **Product Description & Applications:** This interface for the Sony JH-24 tape machine allows its auto/locator and a synchronizer to be used simultaneously. It features two sets of "Remote, Auto Locator and Capstan" connectors identical to those found on the rear panel of the JH-24. Other features include: a lifter defeat disable switch, a VSO synchronizer capstan control select switch and protective circuitry to prevent damage to the synchronizer and the tape machine. All cables to JH-24 are included. **Basic Specifications & Suggested List Price:** List price: \$495. Enclosure: 8" x 10 1/4" x 2 1/4" metal chassis; connectors: plug and socket type, Beau/Verntron; cables (JH-24 interface): 6'.



BRAINSTORM ELECTRONICS, INC.

BRAINSTORM ELECTRONICS, INC., 1515 Manning Ave. #4; Los Angeles, CA 90024; (213) 475-7570. **Product Name: Remotable Talkback Retrofit for Trident Consoles.** Contact: L. Bernard Frings. **Date Product Introduced:** December 1988. **Product Description & Applications:** This assembly allows the talkback to be activated by a remote SPST switch. It consists of a circuit board with relays (3) and replacement switches (3). Installation is very simple and does not require cutting any existing PCB traces. Although it was primarily designed for Brainstorm's wireless-remote (TB-4 Communicator), it can also be used with a wired remote (the "umbilical cord"). It retrofits the series 65 through 80. **Basic Specifications & Suggested List Price:** List price: \$225 (\$150 if purchased with a TB-4 Communicator); release date: December 1988; relays: 4PDT; relay's life rating: 2 million operations at 1A 30VDC.

CANARE CABLE, INC., 832 N. Victory Blvd.; Burbank, CA 91502; (818) 840-0993. **Product Name: BCJ-JRU.** Contact: Barry Brenner, gen. mgr. **Date Product Introduced:** April 1988. **Product Description & Applications:** Unique design, 75-ohm BNC panel mount connector. Prevents damage from exposure on panel! Correct impedance matching allows excellent video resolution for HDTV, digital video, S-VHS, computer graphics. **Basic Specifications & Suggested List Price:** Very low VSWR (less than 1.1 up to 26Hz). A complete line of 75-ohm BNC connectors is now available from Canare.

AARMOR CASE CO., 2100 Lapo Rd.; Lake Odessa, MI 48849; (616) 374-5651. **Product Name: Rack Pod H Style.** Contact: David Hall. **Date Product Introduced:** Ongoing since February 1987. **Product Description & Applications:** The "Rack Pod" is a line of molded, heavy-duty plastic equipment rack cases. The Rack Pod is lightweight and is available in a number of sizes. The Rack Pod H Style is available with Aarmor Case's exclusive VSH (variable shock attenuation) shock-mount system. **Basic Specifications & Suggested List Price:** List prices range from \$248 to \$605, depending on model.

AARMOR CASE CO., 2100 Lapo Rd.; Lake Odessa, MI 48849; (616) 374-5651. **Product Name: Trans Pod.** Contact: David Hall. **Date Product Introduced:** February 1988. **Product Description & Applications:** Trans Pod cases are designed for heavy-duty air and common carrier shipping. The Trans Pod cases are designed to protect electronic equipment, video monitors and various accessories. The cases are best for stacking and are built to truck-pack dimensions. **Basic Specifications & Suggested List Price:** Retail prices vary from \$260 to \$450, depending on model and options.

ADC TELECOMMUNICATIONS, INC., 4900 W. 78th St.; Minneapolis, MN 55435; (612) 835-6800. **Product Name: ICON (Integrated Cable Organization Network).** Contact: Sales Administration, (612) 893-3010. **Date Product Introduced:** April 1988. **Product Description & Applications:** ICON is used as a central termination point for the cabling in an audio system. Signal routing is accomplished by cross-connecting the cable terminations at this central location using QCP, ADC's proven punch-down termination system. The ICON is available as a wall-mount or rack-mount audio cable distribution frame engineered for broadcast, production, recording and professional audio applications. **Basic Specifications & Suggested List Price:** Rack-mount ICON terminates and cross-connects 96 balanced audio circuits in 3 1/2" of rack-space. Wall-mount ICON terminates 192 balanced audio circuits in 16" of wall space.

ADC TELECOMMUNICATIONS, INC., 4900 W. 78th St.; Minneapolis, MN 55435; (612) 835-6800. **Product Name: Pro Patch Cords.** Contact: Sales Administration, (612) 893-3010. **Date Product Introduced:** April 1988. **Product Description & Applications:** Pro Patch Cords are designed specifically for use in broadcast and professional audio industries where flawless performance is critical. The corrosion-proof, nickel-plated plugs ensure quiet contact with the jacks and produce less resistance, resulting in less noise and higher signal quality. Special cordage comes in four colors to help keep circuits organized. Full strain-relieved cords defeat abuse; low capacitance ensures high performance and signal quality. **Basic Specifications & Suggested List Price:** Available in 2', 3', 4' and 6' lengths in both long frame (310) and Bantam sizes, and in single and dual configurations.

ASSOCIATED PRODUCTION MUSIC, 6255 Sunset Blvd., Ste. 820; Hollywood, CA 90028; (213) 461-3211. **Product Name: Sound FX—The Library.** Contact: Jerry Burnham, E. Coast sales mgr. **Date Product Introduced:** Spring 1988. **Product Description & Applications:** The first volume of Sound FX—The Library contains 25 digitally recorded compact discs utilizing several different mixing techniques (M-S [mid-side], ORTF and stereo sphere), allowing you the freedom to alter the foreground and background relationships of each effect. Volume Two of Sound FX—The Library is expected to be released in August 1988. **Basic Specifications & Suggested List Price:** Volume One is now available for \$1,500.

ATLAS/SOUNDOLIER, 1859 Intertech Dr.; Fenton, MO 63026; (314) 349-3110. **Product Name: Mac-1.** Contact: Colleen Sullivan, mktg./comm. specialist. **Date Product Introduced:** January 1988. **Product Description & Applications:** Atlas/Soundolier Mac-1 omni-purpose microphone adapter is specifically designed for keyboards, synthesizers, drums and percussion instruments, as well as multiple miking applications to stands with 5/8" or 3/4" diameter tubing. The versatile accessory is intended to clamp directly onto any free-standing

instrument whenever close proximity between sound sources and microphone are preferred, and can be used to add multiple microphones to individual floor and desk stands. **Basic Specifications & Suggested List Price:** Low-profile Mac-1 accepts all 5/8-27 female-threaded mic holders and standard accessories including booms, extension tubes, flexible goosenecks, twin mounts, snap-on/lock-on and shock-mount adapters. Manufactured of high-strength, extruded aluminum and finished in non-reflecting ebony epoxy. List \$25.

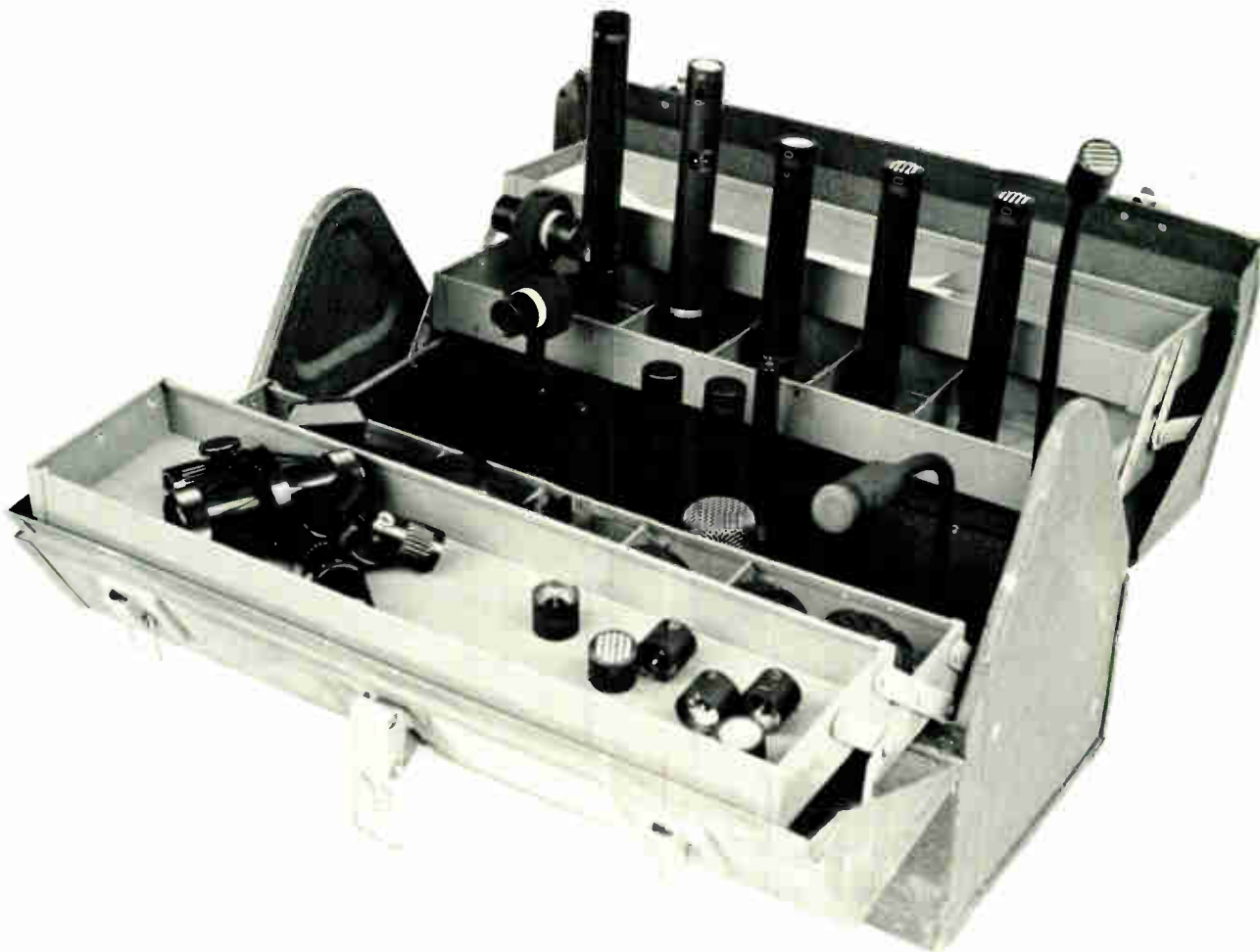
ATM AUDIO, 19122 S. Santa Fe Ave.; Rancho Dominguez, CA 90221; (213) 378-4893. **Product Name: Musician's Rack.** Contact: Andrew Martin, president. **Date Product Introduced:** August 1, 1988. **Product Description & Applications:** The Musician's Rack series is designed to give the working musician or rental sound company a professional-quality 19" rack unit with low cost and the look of touring grade cabinetry. The racks range in size from a four-rackspace unit to a 14-rackspace unit. Each of the racks is ideal for on-stage appearance and can accommodate extra deep sampling equipment and power amplifiers. **Basic Specifications & Suggested List Price:** The Musician's Rack series ranges in height from 9 1/4" to 26 3/4", with a width of 20 1/2" and a depth of 20 1/2". Each rack is covered with heavy-duty gray carpet and textured black coating. Also, each is equipped with cut-out handles, snap-on front and back covers, and 1/4" wooden skid plates.

ATM AUDIO, 19122 S. Santa Fe Ave.; Rancho Dominguez, CA 90221; (213) 378-4893. **Product Name: RS-Cable & Stand.** Contact: Andrew Martin, president. **Date Product Introduced:** August 1, 1988. **Product Description & Applications:** The RS-Cable & Stand is a case designed for the working band or the rental sound company. The case is equipped with two lift-out trays that are ideal for storing cables, microphones or a multitude of other hard-to-store items. Located beneath the lift-out trays is a compartment large enough to store over two dozen microphone stands and various other cables or accessories (i.e., microphone snakes, power cables, music stands, keyboard stands). **Basic Specifications & Suggested List Price:** The RS-Cable & Stand is 49" x 22.5" x 22.5" plus caster height (5" typical). The exterior is covered with heavy-duty gray carpet, and the interior lift-out trays and lid are protected with textured black coating. The case is manufactured with high-quality, AB-grade plywood, dado and rabbet grooved, and glued and screwed. It is also equipped with four cut-out handles for easy handling and packing.

AUDIOLAB ELECTRONICS, INC., 5831 Rosebud Ln., Bldg. C; Sacramento, CA 95841; (916) 348-0200. **Product Name: TD-5 Metal Tape Degausser.** Contact: Ron Stefan. **Product Description & Applications:** Recording over a previously recorded signal does not produce the professional results that you demand. By using the Audiolab TD-5 tape degausser before recording, you will receive the same professional results as when you use a new tape. The TD-5 is an economically priced, high-performance, professional tape degausser that can erase to -90dB. Accepting any tape format up to 16" in diameter and 2" in width and coercivities up to 1,500, the TD-5 tape degausser will be as diverse as your needs. Price \$1,080. Other models are available; call for further information.

BRAINSTORM ELECTRONICS, INC., 1515 Manning Ave. #4; Los Angeles, CA 90024; (213) 475-7570. **Product Name: TB-4 Communicator.** Contact: L. Bernard Frings. **Date Product Introduced:** October 1987. **Product Description & Applications:** This high-performance, infrared remote is designed to interface with the console's talkback system. It allows the producer to activate the talkback switches from anywhere in the control room. The system consists of a small, rechargeable transmitter and a receiver. It features four switchable talkback functions. The TB-4 uses infrared transmission and does not require direct line-of-sight between transmitter and receiver. Additional transmitters are available separately. **Basic Specifications & Suggested List Price:** List price: complete system \$395, additional transmitter \$225. System response time:

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CANARE CABLE, INC.: 832 N. Victory Blvd.; Burbank, CA 91502; (818) 840-0993. **Product Name: V-Series Component Cable.** Contact: Barry Brenner, gen mgr Date Product Introduced: April 1988. **Product Description & Applications:** 75-ohm, multi-channel video coaxial cable. Available in 3-, 4- or 5-channel versions. Easy color identification (red, green, blue, white and yellow). Makes runs neat and easily accessible. **Basic Specifications & Suggested List Price:** May be purchased in bulk or preassembled fan tails for convenience.

CELLO, LTD.: 315 Peck St., Bldg. 23; New Haven, CT 06513; (203) 865-1237. **Product Name: P603 Tape Playback Electronics.** Contact: J.B. Smith, customer service. Date Product Introduced: November 1987. **Product Description & Applications:** The Cello P603 tape module is used in conjunction with the P301 output module housed inside the audio suite mainframe, powered by an onboard master supply. These electronics are fed directly from the playback head, thereby eliminating the existing electronics from the signal path and substituting Cello Class A discrete electronics. **Basic Specifications & Suggested List Price:** Two-channel balanced input, 15 ips and 30 ips head comp. 10-turn calibrated dials for 1kHz, 10kHz and 31.5kHz. U.S. list \$5,000.

COMPTON ELECTRONICS: 160 Belmont Ave.; Garfield, NJ 07026; (201) 478-6903. **Product Name: C 1425 Impedance Matching Box.** Contact: Josh Radin, product specialist. Date Product Introduced: August 1987. **Product Description & Applications:** The C 1425 Impedance and plug-Matching Box can convert any input jack configuration (1/4" phone, XLR or RCA) to any output jack configuration (1/4", XLR or RCA). The built-in transformers can convert low to high impedance. **Basic Specifications & Suggested List Price:** Suggested retail \$95.95.

COMPTON ELECTRONICS: 160 Belmont Ave.; Garfield, NJ 07026; (201) 478-6903. **Product Name: C1401, C1402, C1403 Line Transformers.** Contact: Josh Radin, product specialist. Date Product Introduced: January 1987. **Product Description & Applications:** The C1401 converts from XLR low-impedance inputs to high-impedance 1/4" outputs. The C1402 converts from XLR low-impedance inputs to high- or low-impedance (switchable) outputs. The C1403 converts from low-impedance XLR inputs to 1/4" high-impedance outputs with a short cord included on the 1/4" plug. **Basic Specifications & Suggested List Price:** C1401 suggested retail \$20.50, C1402 \$21.95, C1403 \$23.95.

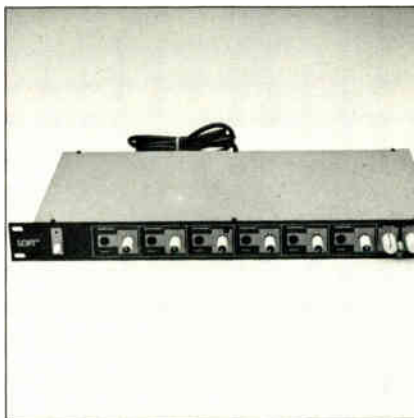
DAGO CASES: 6945 Indiana Ct. #600; Golden, CO 80403; (303) 421-7912; sales, (800) 342-3246. **Product Name: Dago La Strada Flite Case.** Contact: Nick Date Product Introduced: January 1, 1987. **Product Description & Applications:** The Dago La Strada Flite Case is built to meet specification 300, category II, of the Airline Transportation Association regulations. As with all Dago cases, each La Strada Flite Case is custom built by hand to insure that it will fit each piece of equipment exactly. This case is designed and made for heavy-duty use where common carriers (airlines, trucking, overseas shipping) are utilized.

DATAcube INC.: 4 Dearborn Rd.; Peabody, MA 01960; (508) 535-6644. **Product Name: Digicolor.** Contact: Susan Solomon. Date Product Introduced: October 1988. **Product Description & Applications:** Digicolor is a high-performance, multi-standard, digitization and display product for Datacube's MaxVideo line of image processors. **Basic Specifications & Suggested List Price:** Digicolor supports both NTSC and PAL line rates. Composite, SMPTE CAV component and S-VHS I/O are provided. An integral time base corrector allows direct use with consumer VCRs.

FIRSTCOM: 13747 Montfort Dr., Ste. 220; Dallas, TX 75240; (214) 934-2222; (800) 858-8880. **Product Name: Digifects Sound Effects Library.** Contact: Cecelia Garr, exec. VP. Date Product Introduced: Updated in 1988. **Product Description & Applications:** Digifects perfectly duplicates real sound. 23 CDs in ten categories: city, domestic, rural, transport, industry, office, leisure, sports, human and special. **Basic Specifications & Suggested List Price:** Over 2,000 digitally recorded effects. Introductory price of \$995 per set.

FOUR DESIGNS: 6531 Gross Ave.; Canoga Park, CA 91307; (818) 716-8540. **Product Name: RackDrawer™.** Contact: Dave Riddle. Date Product Introduced: January 1988. **Product Description & Applications:** RackDrawer is a low-cost, 2-space drawer that fits into any EIA 19" rack. It retails for one-third the cost of comparable accessory drawers. **Basic Specifications & Suggested List Price:** \$44.95.

GENTNER ELECTRONICS CORPORATION: PO Box 27647 (moving 9/88); Salt Lake City, UT 84127; (801) 975-7200. **Product Name: Rewired Patch Panels—Flexiblock 100.** Contact: Elaine Jones, dir. mktg./sales. Date Product Introduced: April 1988. **Product Description & Applications:** Flexiblock 100 is a new high-density termination for stranded or solid wire and combines excellent reliability with the convenience of punch-down connections. Flexiblock 100 is also available in Gentner's EasyTerm rack-mount termination and as a termination for Gentner rewired audio patch panels. **Basic Specifications & Suggested List Price:** Number of terminals: 2 x 50, two connection points per terminal, two-wire density per connection point. Accepts 22-26 gauge wire, stranded or solid, connections are gas-sealed and vibration-resistant. Flexiblock pro user net: \$22.95, mounting bracket: \$2.95, punch tool: \$56.



6-CHANNEL HEADPHONE SYSTEM WITH TALKBACK

GOLD LINE/LOFT: PO Box 115; West Redding, CT 06896; (203) 938-2588. **Product Name: 6-Channel Headphone System with Talkback.** Contact: Marlin E. Miller, president. Date Product Introduced: May 1, 1988. **Product Description & Applications:** A great sounding system with six powerful stereo headphone amps plus a mic input, allowing the control room to communicate with all channels. Features include: individual stereo level controls, electronically balanced master inputs, overall master level control. Each headphone amp has its own separate input, which independently bypasses the master stereo inputs. This allows any combination of master stereo program or separate programs for custom monitor mixing. A second model, number HPA-1, has all the same features without talkback. **Basic Specifications & Suggested List Price:** Power output: 850mW at 600 ohms per channel; output impedance: 32 ohms minimum, 200 to 600 ohms typical; input impedance: 20k unbalanced, 40k balanced; mic input: high impedance for dynamic mics. Suggested retail: HPA-1 (no talkback) \$359.95, HPA-2 (with talkback) \$489.

ALAN GORDON ENTERPRISES: 1430 Cahuenga Blvd.; Hollywood, CA 90078; (213) 466-3561. **Product Name: Sonic 307 Mic Boom.** Contact: Wayne Loucks, sales mgr. Date Product Introduced: December 1987. **Product Description & Applications:** The Sonic 307 telescopic microphone boom is a shorter (7') version of the company's 312 model. In three telescopic sections, the 307 is ideal for documentary and ENG/FFP crews. Lightweight, black anodized aluminum, universal mic mounting studs, cable strain relief and silent twist-lock collars. Foam-wrapped core surrounds the Canare "Star Quad" 4-conductor cable. The connectors are Neutrik black chrome XLR with gold plated contacts. **Basic Specifications & Suggested List Price:** Length (telescopic) from 2'9" to 7'; weighs less than 3 pounds with all cable and connectors, etc. Shipping weight w/tube is 6 lbs. Accepts any standard U.S. or European microphone. Suggested retail price is \$185. Longer model 312 (4'5" to 12') has same specs and price.

GRASS VALLEY GROUP: PO Box 1114; Grass Valley, CA 95945; (916) 478-3000. **Product Name: IPS-100 Integrated Production System.** Contact: GVG Sales (916) 478-3160. Date Product Introduced: April 1988. **Product Description & Applications:** The system is a full-function post-production system including video switcher, edit controller, audio mixer, sync and pulse generators (with test signals). It can handle four VTRs via RS-422 I/F, including 1/4", Beta, Mil and C formats. Field production and small vans are natural homes for the IPS-100; with optional carrying cases, it is portable. The edit controller stores over 1,000 edit lines in active memory. CMOS is battery-backed, allowing for instant use in the field. The JOG-PAD™ is a touch-sensitive VTR control on the keyboard. **Basic Specifications & Suggested List Price:** \$58,900. U.S. domestic. Includes audio mixer (AMX-170), IPS-100 video switcher, sync and pulse distribution systems, editor with JOG-PAD edit keyboard, Super Edit™ software, EDL-XT™ software package. Available without AMX-170 and Model 100

switcher at \$49,900. Options include a special Dubner character generator and the shock-resistant carrying cases for ENG applications.

INSTANT REPLAY: 2951 S. Bayshore Dr., Ste. 8E; Coconut Grove, FL 33133; (305) 448-7088. **Product Name: 771T5 Super-VHS.** Contact: Linda Zack. Date Product Introduced: April 1, 1988. **Product Description & Applications:** Only Super VHS VCR that will play PAL and NTSC tapes, standard and VHS Hi-Fi on most regular NTSC TVs. RF, video and "S" outputs. Records three speeds NTSC, S-VHS and VHS "Econo switch" allows recording of S-VHS signal on VHS tape with only slight increase in S/N ratio. 420-line resolution, S-VHS mode with new switching circuits for improved VHS Hi-Fi. 8-hour hi-fi audio recording with 20 to 20,000Hz frequency response, 85dB S/N ratio and 90dB dynamic range. **Basic Specifications & Suggested List Price:** Digital index and address search; on-screen, 8-event, 30-day programming with bar code reader; 183-channel direct access remote control. \$1,995.

INSTANT REPLAY: 2951 S. Bayshore Dr., Ste. 8E; Coconut Grove, FL 33133; (305) 448-7088. **Product Name: WT—World Traveler.** Contact: Linda Zack. Date Product Introduced: April 1, 1988. **Product Description & Applications:** World Traveler plays and records virtually any VHS tape in color anywhere in the world on most TVs/monitors in any system. Four heads for improved special effects, wireless remote with video switching, color level control, 4-event/14-day programming in all standards, "HC," multi-voltage. Includes built-in RGB for full color playback. \$1,995.

ITT POWER SYSTEMS/MINDSEED CORPORATION: 31348 Huntwood Ave.; Hayward, CA 94544; (415) 487-5940; FAX: (415) 487-5991. **Product Name: VIP Executive Series U.P.S. System.** Contact: Chris Ivy, sales mgr. Date Product Introduced: January 1988. **Product Description & Applications:** Designed for MIDI computer systems, stage and tour power protection of all electronics. No data loss during blackout or brownout. High-tech look with microprocessor for precise internal control. Unit is 16" wide by 15.2" deep by 1.9" high and weighs 20 lbs. Audible noise less than 46dB. 1-year warranty. **Basic Specifications & Suggested List Price:** 400VA (\$999) fits neatly under a PC's monitor. 800VA and 1250VA models sit on or beside desk. Nearly inaudible noise, clean sine waves, continuous on-line operation for line conditioning, regulation, complete blackout protection and extended brownout protection. Prices subject to change.

JENSEN TRANSFORMERS: 10735 Burbank Blvd.; North Hollywood, CA 91601; (213) 876-0059. **Product Name: JE-11-EMCF Bifilar Output XFMR.** Contact: Dave Hill. Date Product Introduced: March 1988. **Product Description & Applications:** Jensen Transformers, Inc. has added a new smaller size and lower cost output transformer to the "M" series of super low distortion (.007% THD at 20Hz), 88% nickel, output transformers. The new JE-11-EMCF handles +18dBm at 20Hz and the super low distortion advantage of the 88% nickel, bifilar output transformer works well from a wide range of source impedances, including consumer audio outputs. Even Jensen Transformers has not offered this price/performance product until now. **Basic Specifications & Suggested List Price:** .007% at 20Hz hysteresis (typical); 1.15dB loss when loaded with 600 ohms; (1% THD) maximum level at 20Hz = +18dBu; recommended for 20Hz source impedances of 0 to 1,000 ohms; width: 1 1/2"; length: 1 1/8"; height: 1 3/8"; mounting centers: 2".

JRF MAGNETIC SCIENCES: 249 Kennedy Rd.; Greendell, NJ 07839; (201) 579-5773. **Product Name: Center Track Time Code Retrofit Kit.** Contact: John R. French, president. Date Product Introduced: May 1988. **Product Description & Applications:** JRF Magnetic Sciences will be featuring its Center Track Time Code Retrofit Kits, which were developed by modifying the Otari Model TC-50 Center Track Time Code/FM processor for use with MCI/Sony JH-110 A/B, Studer A80 and Ampex ATR100 tape machines. **Basic Specifications & Suggested List Price:** Included in the kit price is the upgrading of the customer's existing head assembly with the new CTC erase and combo write/read heads, refurbishment of the audio record and playback heads, interconnect cables and time code alignment tape. Prices range from \$2,695 to \$2,995.

JRF MAGNETIC SCIENCES: 249 Kennedy Rd.; Greendell, NJ 07839; (201) 579-5773. **Product Name: PLX Series Replacement Heads.** Contact: John R. French, president. Date Product Introduced: May 1988. **Product Description & Applications:** JRF Magnetic Sciences will have on display its new line of direct replacement heads (PLX Series) for 16mm and 35mm magnetic film equipment, 1/4" reel-to-reel mastering, recording studio and broadcast equipment and audio post R/P heads for Sony 1" C-format machines. The heads feature extremely hard, abrasive-resistant material that insures long term stable peak performance and extends the service life to five times that of conventional permalloy materials. **Basic Specifications & Suggested List Price:** Extended life on the 1" C format is 10 x permalloy with direct replacement compatibility.

Film and reel-to-reel heads have five times extended life with an exclusive two-year wear warranty. Mechanical construction tolerances are within .001 and frequency response within 1dB.

KIMBER KABLE; 2675 Industrial Dr.; Ogden, UT 84401; (801) 621-5530; FAX: (801) 627-6980. **Product Name:** Kimber Kable AG Series. **Contact:** Ray Kimber, Jeff Young. **Date Product Introduced:** March 1988. **Product Description & Applications:** Interconnect and speaker cable using hyper-pure silver and dye-free Teflon jacket. Strands are variable-size array. Sonic improvement is commensurate with the cost of these products. **Basic Specifications & Suggested List Price:** KCAG line-level interconnect RCA or XLR, \$350/meter pair. 4AG 13.5 AWG speaker cable, \$100/ft. 8AG 9 AWG speaker cable, \$180/ft.



MINI-SCREEN

LIGHT WAVE SYSTEMS; 7760 Burnet Ave.; Van Nuys, CA 91405; (818) 780-3002. **Product Name:** Mini-Screen. **Contact:** Leslie Drever, owner. **Date Product Introduced:** April 9, 1988 (NAB). **Product Description & Applications:** Third-generation Mini-Screen with new rear holding section. For all areas of ENG and EFP where foam screen is inadequate. Gives 20dB-25dB wind noise attenuation. Used by all three German TV stations; worldwide availability and use. Used with our (isolating) mini-mount and on-camera rigged microphones. **Basic Specifications & Suggested List Price:** Mini-Screens is a fabric/mesh hollow screen about the size of a foam screen. 2" diameter, various lengths. List prices about \$110-\$125.

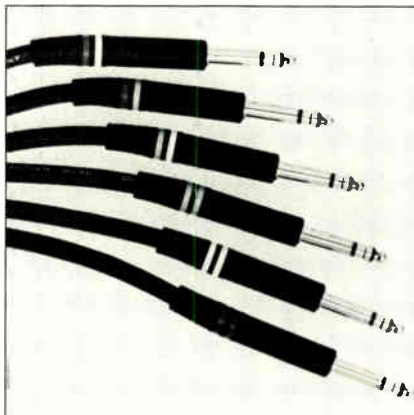


SUPER-SCREEN/SUPER MOUNT

LIGHT WAVE SYSTEMS; 7760 Burnet Ave.; Van Nuys, CA 91405; (818) 780-3002. **Product Name:** Super-Screen/Super Mount. **Contact:** Leslie Drever, owner. **Date Product Introduced:** October 1988. **Product Description & Applications:** Enhanced model of Super-Screen system. Rear section of screen has a new 4-lug ring (retrofitable) as part of its bayonet lock design. Shock-mount has a newly designed carriage section, also retrofitable. **Basic Specifications & Suggested List Price:** Complete system custom designed for all professional mics. 25+dB wind noise att. List about \$315 and up.

M&M RECORDING, INC. R&D; 54 W. Illiana St.; Orlando, FL 32806; (407) 422-6908. **Product Name:** Stagemate. **Contact:** Martin Stafford, vice president. **Date Product Introduced:** July 1, 1988. **Product Description & Applications:** Automated stage lighting system consisting of custom-programmable dimmer arrays. All scenes can be stored to disk and the entire

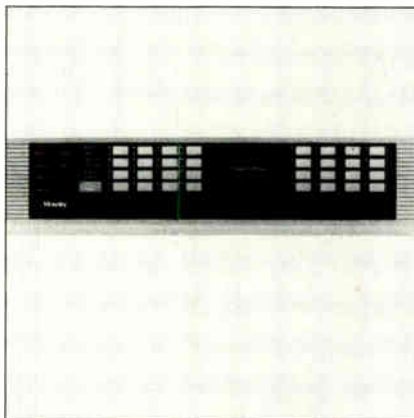
dimmer board can be stored for later recall. Rack-mountable, very user friendly. **Basic Specifications & Suggested List Price:** Dimmer arrays available in banks of ten. Infinitely cascadeable. Up to 750 scenes are available with a 40-channel system. Patch bay can be custom-fitted with desired connectors. Reasonably priced.



MOGAMI OFC QUAD WIRED BANTAM PATCH CORDS

MOGAMI (DISTRIBUTED BY MARSHALL ELECTRONICS, INC.); PO Box 2027; Culver City, CA 90230; (213) 390-6608. **Product Name:** Mogami OFC Quad Wired Bantam Patch Cords. **Contact:** Hugh Neep, sales rep. **Product Description & Applications:** The world's first studio patch cord designed specifically for the recording and broadcasting industry. The cable includes a number of features to enhance the sound quality and reliability for high-tech studios of the future. Quad wiring, oxygen-free copper and high stranding make this patch cord an outstanding investment for any studio. Another unique feature is its high-quality nickel plating, which eliminates the need for polishing or burnishing and eliminates uneven wear that causes intermittent connections. **Basic Specifications & Suggested List Price:** The cable comes in lengths of 1, 1.5, 2, 3, 4, 5 and 6 ft. Each cable comes with a color code identification kit. Cords are also available in colors including black, red, green and blue.

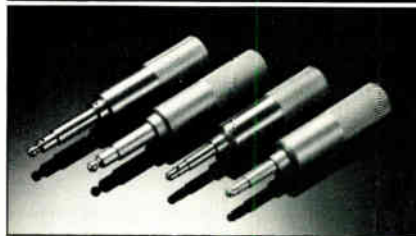
MOGAMI (DISTRIBUTED BY MARSHALL ELECTRONICS, INC.); PO Box 2027; Culver City, CA 90230; (213) 390-6608. **Product Name:** Puroflex High-Definition Audio Patch Cords. **Contact:** Hugh Neep, sales rep. **Product Description & Applications:** Mogami's Puroflex series of multi-purpose, high-definition patch cords comes in either gold or nickel plating and is available in various combinations of RCA, 3.5mm and 1/4". Lengths are available from 1 to 20 ft. User prices range from \$5 for the shorter cords to \$25 for the longest.



ARS-256, ARS-1024, ARS PC SCHEDULER

MOSELEY ASSOCIATES, INC.; 111 Castilian Dr.; Santa Barbara, CA 93117; (805) 968-9621. **Product Name:** ARS-256, ARS-1024, ARS PC Scheduler. **Contact:** Dave Chancey, nat'l sales mgr. **Product Description & Applications:** Routes your signal with 100dB SNR, .004% THD and a 0.1 dB frequency response for transparent, high-quality sound. Use the RS-232 port for terminal/PC control interface. Non-volatile preset matrices are standard. Can be configured in multi-levels such as stereo, sap, time codes, etc. Start with an 8 x 8 matrix and expand to 128 inputs or outputs. The units are easily stacked, with no limit to expansion.

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VERTIGO 1/4" TRS AND TT BURNISHERS: Each used to eliminate noise caused by contamination of main contacts in normal patching situations.

VERTIGO 1/4" TRS AND TT INJECTORS: Each allows injection of clearing solvent in breaking contacts (normals), to eliminate intermittency that occurs when patch cord has been removed.

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OTHER EQUIPMENT

THE MUSIC PEOPLE, INC.; PO Box 648; West Hartford, CT 06107; (203) 521-2248. **Product Name: KS-9000 Rack Stand.** Contact: James Hennessey, president. Date Product Introduced: June 1988. **Product Description & Applications:** The KS-9000 is a high-quality, rack-mount equipment stand constructed of heavy-duty, black anodized, rectangular steel tubing. Plastic endcaps give the KS-9000 a professional, finished look. Partially enclosed ball casters that swivel are made of high-impact polycarbonate and allow easy movement around the stage or studio. These casters also have locks in the event that a completely stationary stand is preferred. Frame supports are notched for convenient angle adjustment. **Basic Specifications & Suggested List Price:** The KS-9000 Rack Stand is 30" high and holds six double racks or 12 singles, or any combination thereof. All drilled holes are of standard rack-mount thread size. List price \$114.25.

THE MUSIC PEOPLE, INC.; PO Box 648; West Hartford, CT 06107; (203) 521-2248. **Product Name: Quick Klip.** Contact: James Hennessey, president. Date Product Introduced: June 1988. **Product Description & Applications:** This patent-pending unique and universal quick-release mic device, which allows you to attach or detach a mic clip or boom arm to a mic stand with the push of a button, eliminates both broken mic clips and the lengthy process of unscrewing boom arms. An additional plus for more comfort is being able to hold your microphone in your hand on a vertical, rather than horizontal, angle once you've disengaged it from the mic stand. **Basic Specifications & Suggested List Price:** The Quick Klip comes in two pieces: a high-impact thermal plastic socket with a threaded brass insert (3/8" x 27 thread) and a spring-loaded quick-release button and a steel-gear stud that meshes easily with the socket. This geared stud is multi-notched, so the mic clip can be inserted on the mic stand in any direction required. Suggested list. \$12.95.



OVERHEAD RACK SYSTEM

NASSA DESIGN & MANUFACTURING; Box 367; Bearsville, NY 12409; (914) 679-9544. **Product Name: Overhead Rack System.** Contact: Kenneth W. Lonas. **Product Description & Applications:** Nassa Design has introduced a new series of overhead racks to save space in the control room. The racks can straddle workstations, multi-tracks or consoles and provide two to five bays for outboard gear. The three-bay rack can hold 24 rack-units with a video monitor in the center bay. The two-bay rack over a multi-track can hold "SR" units. The five-bay rack, as pictured above, can put 60 pieces of outboard gear over your console. **Basic Specifications & Suggested List Price:** Please call for pricing and custom applications.

OVAL WINDOW AUDIO; 78 Main St.; Yarmouth, ME 04096; (207) 846-6250. **Product Name: Superloop "Pro".** Contact: Norman Lederman, director. Date Product Introduced: July 1988. **Product Description & Applications:** Induction loop, assistive listening system for the hearing impaired. Other applications include cueing and foreign language translation. Hearing-aid users switch their aids to the "telephone" mode to receive signal. Induction receivers are also available. Industrial-grade construction. Field strength meters available. **Basic Specifications & Suggested List Price:** Features include graphic equalization, adjustable signal limiting, six mic inputs, two line inputs, rack-mountable, 200-ft. loop wire, metering, low-cut filters and overload protection. List price: \$1,595.

PANASONIC INDUSTRIAL CO., AV SYSTEMS GROUP; 6550 Katella Ave.; Cypress, CA 90630; (714) 895-7277. **Product Name: SL-4300 Rack/Desk CD Player.** Contact: Joe Crocco, mktg. mgr. Date Product Introduced: April 1988. **Product Description & Applications:** Professional rack- or desk-mount CD player. Dual D/A converters and four times oversampling. 20-step random access programming. Unique "series play" feature allows one SL-4300 to trigger another for uninterrupted long-playing operation. Multifunction, 2-color display. Rack ears and wired remote control included. Accepts 3" or 5" CDs. **Basic Specifications & Suggested List Price:** 2Hz to 20kHz ± 0.5 dB; S/N ratio 96dB; THD less than 0.006%; two rackspace. Suggested list price \$500.

PANASONIC INDUSTRIAL CO., AV SYSTEMS GROUP; 6550 Katella Ave.; Cypress, CA 90630; (714) 895-7277. **Product Name: SL-4700 Rack/Desk CD Player, 6-CD.** Contact: Joe Crocco, mktg. mgr. Date Product Introduced: April 1988. **Product Description & Applications:** Professional rack- or desk-mount CD player with 6-CD removable magazine. Two D/A converters and four times oversampling. 36-step random access programming. Random play feature. Multifunction, 2-color display. Wired remote control, rack ears and one 6-CD magazine are included. Additional 6-CD magazines are optional. **Basic Specifications & Suggested List Price:** 2Hz to 20kHz ± 0.5 dB; S/N ratio 96dB; THD less than 0.006%; three rackspace. Suggested list price \$750.

PEAVEY, AUDIO MEDIA RESEARCH DIVISION; 711 A St.; Meridian, MS 39301; (601) 483-5376. **Product Name: MAP™ 8x4 MIDI-Controlled Audio Patch Bay.** Contact: Ken Valentine, product development mgr. Date Product Introduced: January 1988. **Product Description & Applications:** MIDI has become the standard for most musical applications worldwide, but there was a vital link missing in today's modern studio. Through the harnessing of microprocessor computer devices, the ultimate in synthesizer and sequencer control was delivered to individual musicians, but the patching of effects and other devices was still done by hand. Peavey has changed all this with the new rack-mountable MAP 8 x 4 fully automated patch bay. **Basic Specifications & Suggested List Price:** Electronically "moves" rack-mounted effects from one channel to another during mixdown or recording. 8 mixer send/returns. Up to four effects device capability. All effect mapping is reprogrammable to any of the eight send/return loops. Up to 128 enterable programs. MIDI or front-panel operable. U.S. targeted price \$429.99.

RANK CINTEL, INC.; 704 Executive Blvd.; Valley Cottage, NY 10989; (914) 268-8911. **Product Name: Enhanced MklHC Digiscan 4:2:2.** Contact: Colin J. Brown, exec. VP. Date Product Introduced: June 1987. **Product Description & Applications:** 4:2:2 digital flying-spot telecine or telecine update kit. Digital output to EBU and SMPTE standards. Reference input/output 4:2:2 framestore, remote facilities panel, split screen facility. Available with Amigo II preprogrammer for color correction and matchbox, a 4:2:2 digital standard still store (400 frames). **Basic Specifications & Suggested List Price:** Samples luminance at 864 pixels per line, features improved detail in low-light areas and pre-saturation control with full fade to monochrome. Includes Digivac 4 horizontal/vertical aperture correction with new diagonal filtering techniques for reduced grain and noise.

RANK CINTEL, INC.; 704 Executive Blvd.; Valley Cottage, NY 10989; (914) 268-8911. **Product Name: Gallery System.** Contact: Colin J. Brown, exec. VP. **Product Description & Applications:** 4:2:2 digital still image, database management system including Logica Gallery 2000 computer with optical disk storage and Rank Cintel ADS-80 digital slide scanner, slide file production workstation with Winchester disk and streaming tape storage, and art file graphics tablet with full image processing capability. Can be used for local, remote or global image management, broadcasts to air. **Basic Specifications & Suggested List Price:** Interfaces with Basys newsroom automation system; includes QDIO interface for use with leading graphics facilities. Stores from 400 to millions of slides. Database management/access in seconds. Uses 30-picture polyphoto display.

RANSTEELE AUDIO, INC.; 1697 Broadway; New York, NY 10019; (212) 265-5563. **Product Name: CD Prep Meter/Monitor Control.** Contact: Thomas S. Steele, president. Date Product Introduced: June 1988. **Product Description & Applications:** Eight stereo input meter/monitoring control center, rack-mount for CD prep or disk mastering use. Makes for easy, convenient and accurate RMS/peak monitoring of eight stereo sources. **Basic Specifications & Suggested List Price:** Eight stereo inputs, switch selected, +4dBm nominal, 10k-ohm balanced/unbalanced input impedance. Output level 3V RMS max., 100-ohm unbalanced to monitor system. Metering (0VU to +4dBm) left, right, sum and difference displayed on 10VU meters. Optional output for PPM metering. Price: \$3,600.

ROH DIVISION OF ANCHOR AUDIO, INC.; 913 W. 223rd St.; Torrance, CA 90502; (213) 533-5984. **Product Name: ARMS-7000 Audio Routing & Mixing Switcher.** Contact: Dan Garrigan, dir. of mktg. Date Product Introduced: July 1988. **Product Description & Applications:** The ARMS-7000 from ROH is a PC-controlled, virtual audio routing and mixing switcher. Exclusive "summing crossbar" design permits routing

of any combination of mono or stereo input sources to any combination of mono or stereo outputs. User-friendly, menu-driven programming allows the storage of over 100 prioritized presets on hard disk for fast and easy switching. Programmable relays are available for tallies or remote control. **Basic Specifications & Suggested List Price:** Careful design considerations eliminate any possibility of digital noise appearing on the audio lines. Transformer-balanced outputs are optional. All specs exceed broadcast requirements. Contact the factory for applications and pricing information.

SAKI MAGNETICS, INC.; 26600 Agoura Rd.; Calabasas, CA 91302; (818) 880-4054; Telex: 244546; FAX: (818) 880-6242. **Product Name: 24TR Metal Replacement Heads for Studer A80 & A800.** Contact: Trevor Boyer, dir. sales/mktg. Date Product Introduced: August 15, 1988. **Product Description & Applications:** Saki's new 24TR metal heads for Studer A80 and A800 recorders. Constructed with standard permalloy cores and compatible with the original Studer-built heads. **Basic Specifications & Suggested List Price:** Heads come equipped complete with proper connector. The \$2,500 price per head for either record or playback includes mounting and optical alignment of heads on the customer's base plate.

SAUSALITO CRAFTWORKS; PO Box 1792; Sausalito, CA 94966; (415) 332-3392; (800) 332-3393; (800) 223-5588 in California. **Product Name: OmniRax.** Contact: Alan Jewett, president. Date Product Introduced: May 1988. **Product Description & Applications:** The OmniRax by Sausalito Craftworks is beautifully made, inexpensive furniture for 19" rack-mountable synthesizers, effects devices, mixers, amplifiers, tape decks, etc. OmniRax is available in natural oak or birch ply or in a gloss-black finished, cabinet grade medite, a high-tech composite of interlocking wood fibers with tremendous strength and screw-holding ability. **Basic Specifications & Suggested List Price:** Optional 15" x 22" removable top shelf (\$25) for drum machine, computer, tape deck, etc. Convenient hand holds for easy mobility. Black equipment-mounting screws and washers provided. The OmniRax is available in two sizes, the large size holding 18 rackspace of equipment, measuring 45" off the floor, including the heavy-duty locking wheels (\$119.95 to \$139.95). The smaller size holds 8 rackspace of equipment and measures 21" high (\$59.95 to \$74.95). Both are 21" wide and 12" to 14" deep at the bottom.

SHAPE MAGNETRONICS, INC./MINDSEED CORPORATION; 31348 Huntwood Ave.; Hayward, CA 94544; (415) 487-5940; FAX: (415) 487-5991. **Product Name: Line Tamer Power Conditioner.** Contact: Chris Ivy, sales mgr. Date Product Introduced: January 1988. **Product Description & Applications:** Designed for MIDI computer systems, stage and tour power protection of all electronics. Unique ferro-resonant design provides inherent stability and protection from surges, noise and voltage spikes. Protects against all power problems short of blackout. No data loss during brownout to 95V. Ideally suited to applications requiring low heat and low noise generation. Seven power ratings available. Four or six rear-panel receptacles. High-tech look. Reliable, maintenance-free design. 5-year warranty. **Basic Specifications & Suggested List Price:** Prices from \$139 to \$549. Power from 150VA to 1200VA. Input range 95-132VAC for output of 120VAC ($\pm 5\%$), 150VA and 300VA: 5 1/2" H x 6 3/4" W x 9 1/2" D. Provides protection for microprocessor-based devices including: computers, peripherals, phone systems, automated machines, test equipment, lighting systems. Prices subject to change.

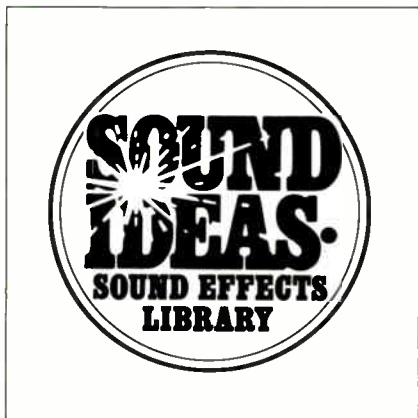
SHAPE SYSTEMS DESIGN; 125 John Roberts Rd.; South Portland, ME 04106; (207) 879-0550. **Product Name: Econoflex CD Packaging Machine.** Contact: Larry Stahlberg, mktg. comm. Date Product Introduced: April 1988. **Product Description & Applications:** The Econoflex assembles a complete compact disc package composed of a jewel box, inlay card, tray, booklet and compact disc. One operator can produce 20 completed packages per minute on the standard machine. The Econoflex can load a variety of jewel box styles, including lift-lock boxes (with optional tooling). Because each station can be enabled or disabled independently, the Econoflex can easily accommodate custom packaging requirements such as omission of booklets or inlay cards. **Basic Specifications & Suggested List Price:** Output: 20+ ppm; in-feed magazine capacity 75 jewel boxes; out-feed magazine capacity 100 loaded jewel boxes. Options include message and diagnostic display center, extra-capacity tray and disc buffers, lift-lock tooling; footprint: 79" x 44". Base price: \$83,050.

SHAPE SYSTEMS DESIGN; 125 John Roberts Rd.; South Portland, ME 04106; (207) 879-0550. **Product Name: Unit Disc Manufacturing System (UDMS).** Contact: Larry Stahlberg, mktg. comm. Date Product Introduced: May 1988. **Product Description & Applications:** The UDMS combines all phases of CD replication in one manufacturing system. It cleans a freshly molded disc, metalizes it, lacquers it and silkscreens graphics onto it—all in 3.5 minutes. The UDMS produces one disc every 8 seconds, all operations are automated and CDs are never handled by the operator. The UDMS's integrated process optimizes process control by allowing near-time testing of molded and metalized discs,

and use of floor space. **Basic Specifications & Suggested List Price:** The UDMS produces one disc every 8 seconds; its footprint is only 48 sq. ft. (not including utility rack, printer and molding machine). All stations are protected by Class 100 HEPA filters to ensure cleanliness. Base price: \$490,000.

SHARP ELECTRONICS CORPORATION; Professional Products Division; Sharp Plaza; Mahwah, NJ 07430; (201) 529-8731. **Product Name: XA-2500S Professional Series S-VHS VCR.** Contact: Bruce Pollack, mktg. mgr. Date Product Introduced: April 1988 NAB. **Product Description & Applications:** Professional S-VHS VCR offers 400+ lines of horizontal resolution, jog/shuttle dial, flying erase head, digital special effects (color art, posterization, strobe and "freeze frame") and stereo Hi-Fi audio. UL listed for commercial use; grounded (3-wire) AC line cord. Includes wireless remote control unit. **Basic Specifications & Suggested List Price:** S-VHS specs: 400+ lines horizontal resolution, S/N greater than 45dB; Hi-Fi stereo audio specs: 20Hz-20kHz frequency response, dynamic range over 90dB, wow and flutter less than 0.005% WRMS. Suggested list \$2,200.

SOUND & VISION; 689 Benson Way; Thousand Oaks, CA 91360; (805) 496-1518. **Product Name: Micro 1.** Contact: Cornel Tanassy. Date Product Introduced: Updated version August 1988. **Product Description & Applications:** The Micro 1 is a hand-held universal tape controller. It features auto punch-in and -out, record loop, play-rewind loop, three search-to-cue points, digital readout and tracking system, beep tone out, trigger out. It will work on every reel-to-reel deck from older 350s to newer decks from all manufacturers. **Basic Specifications & Suggested List Price:** Suggested list is \$399 for TTL logic level and up to \$449 for power relay versions.



NEW AMBIENCE SERIES 3000

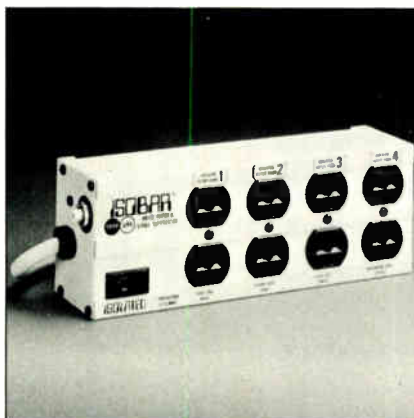
SOUND IDEAS; 86 McGill St.; Toronto, Ontario, M5B 1H2 Canada; (416) 977-0512; (800) 387-3030. **Product Name: New Ambience Series 3000.** Contact: Michael Bell, sales mgr. Date Product Introduced: October 1988. **Product Description & Applications:** Twelve compact discs containing over 200 digitally recorded, long ambience sounds. Each recording has a duration of a minimum of four minutes, eliminating the need to expand effect duration so frequently. This extensive collection of ambience sounds covers topics such as room tone, country effects, as well as a wide range of city ambiances. The collection is comprehensively cataloged for easy reference and can be purchased as a package on its own, or in combination with the Sound Ideas Series 1000 and 2000 Sound Effects collections. **Basic Specifications & Suggested List Price:** Package price \$495 U.S.

STAR CASE; 648 Superior; Munster, IN 46321; (219) 922-4442. **Product Name: Star Case.** Contact: Bernie Fryman, VP/sales & mktg. Date Product Introduced: July 1, 1988. **Product Description & Applications:** Star will be introducing workstation rack cases! A workstation rack utilizes the lids of the rack to make a table at the site of the job. The lid is removed from the rack case, the folding ultimate support legs are pulled down, and the lid attaches to the side of the case to form a table top or work surface. **Basic Specifications & Suggested List Price:** Two locking aluminum ultimate support legs installed in the case's lid cost only \$100.

SUSPENDERS; 160 Belmont Ave.; Garfield, NJ 07026; (201) 478-6903. **Product Name: S550 and S551 Pro Racks.** Contact: George Rose, sales mgr. Date Product Introduced: January 1988. **Product Description & Applications:** The S550 is a freestanding rack of simple construction capable of holding eight single-space 19" rack units. The S551 Pro Rack is a unique idea for placing your equipment at a practical height. This freestanding rack will accommodate up to 12 single-space 19" rack units and is tiltable to the angle that best suits your needs. **Basic Specifications & Suggested List Price:** S551 Pro Rack suggested retail \$118.95, S550 Pro Rack suggested retail \$43.95.

SUSPENDERS; 160 Belmont Ave.; Garfield, NJ 07026; (201) 478-6903. **Product Name: S705 Wall Mount Speaker Bracket.** Contact: George Rose, sales mgr. Date Product Introduced: January 1988. **Product Description & Applications:** A convenient mount for home stereo speakers or small monitors. The sturdy mounting arm swings left/right and has a tilt adjustment for proper speaker aiming. Will securely hold speakers up to 10" deep. **Basic Specifications & Suggested List Price:** Suggested retail \$33.75.

SWITCHCRAFT, INC.; 5555 N. Elston Ave.; Chicago, IL 60630; (312) 792-2700. **Product Name: Audio Patch Panel.** Contact: Bill Kysiak, product mgr. Date Product Introduced: September 1988. **Product Description & Applications:** Switchcraft, Inc. introduces a new audio patch panel. The unit is available in a variety of configurations. It comes completely assembled, fully shielded, ready for 19" rack-mounting. Another version has the front panel for rack-mounting with the rear panel for remote mounting with all cabling factory installed. The rear panel only is available with IDC (Insulation Displacement Connectors) inside and outside for quick, easy terminations, with circuits clearly identified. **Basic Specifications & Suggested List Price:** Each patch panel has two large horizontal designation strips and two vertical designation strips to identify the 48 premium-quality, 3-conductor jacks. Price will be in the \$700 range; part number will be APP-334BNO.



ISOBAR®

TRIPPE MFG CO.; 500 N. Orleans; Chicago, IL 60610; (312) 329-1777. **Product Name: Isobar®.** Contact: Christy Prosapio, nat'l accounts mgr. **Product Description & Applications:** Isobar surge suppressor is the most electronically advanced surge suppressor on the market. Isolated filter banks and cascade circuitry. The Isobar's 18 filtering components clean the AC line of RF, EMI and voltage spikes, protecting valuable equipment and programs from damage. **Basic Specifications & Suggested List Price:** Seven models of Isobar include: Isoblock 2-0 wall-mount \$48, Isobar 2-6 2-outlet \$59.95, Isobar 4-6 4-outlet \$79.95, Isobar 6-6 6-outlet \$99.95, Isobar 8-8 8-outlet \$114.50, Isobar 8RM 8-outlet remote switch \$129.50, Isotel 4-outlet w/modem and phone-line filter \$99.95.

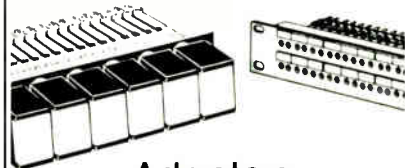


LINE STABILIZER/CONDITIONER

TRIPPE MFG CO.; 500 N. Orleans; Chicago, IL 60610; (312) 329-1777. **Product Name: Line Stabilizer/Conditioner.** Contact: Christy Prosapio, nat'l accounts mgr. **Product Description & Applications:** Trippe Lite Line Stabilizers are de-

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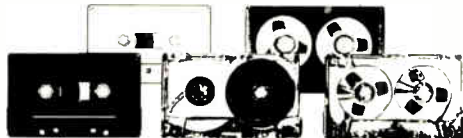


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—CONTINUED FROM PREVIOUS PAGE

signed to regulate and maintain AC output voltage going into your customer's keyboards, amps, recording gear, etc., regardless of any long-term low voltage, high voltage, electrical spikes or radio frequency interference. These systems have higher efficiency, lower waveform distortion and a lower cost than a constant voltage transformer (CVT). Model #LC1200 and #LC1800 include all Isobar features. They have suppression of RFI, EMI and give isolation from load with individual filter networks. Basic Specifications & Suggested List Price: LED voltage display on model LC1800. Three models: LS600 5½ x 6½ x 3½, \$129. LC1200 6 x 7¼ x 3¾, \$249. LC1800 9 x 9½ x 5, \$339.

U.S. AUDIO; 100 Boxart St., Rochester, NY 14612; (716) 663-8820. **Product Name: Personal Headphone Monitor System (PHMS-1).** Contact: Michael Liaocona, president. **Date Product Introduced:** June 1988. **Product Description & Applications:** (PHMS-1) a personal headphone monitor system made up of two basic components: the master module (PHMAS), which is a 19" rack-mount unit, 4-channel line-level mixer and a 12-watt stereo amplifier. The second unit is the (PHSAT) satellite module. A breakout headphone box with two separate channels, each with two outputs, L&R volume controls and mono/stereo switch. **Basic Specifications & Suggested List Price:** Frequency response: 20Hz-20kHz, total harmonic distortion: 0.2%; power output: 12 watts per channel at 8 ohms, signal to noise: 82dBV, up to eight satellites may be daisy-chained and run a total of 32 headsets.

THOMAS J. VALENTINO, INC.; 151 W. 46th St., New York, NY 10036; (212) 869-5210. **Product Name: Valentino Compact Disc Sound Effects Library.** Contact: Thomas J. Valentino, Jr. **Date Product Introduced:** 1988. **Product Description & Applications:** A 24-volume digitally recorded and mastered sound effects library. Totally new, not from analog masters. **Basic Specifications & Suggested List Price:** 24-volume set \$1,200.

VIF INTERNATIONAL; PO Box 1555; Mountain View, CA 94042; (408) 739-9740. **Product Name: VIF 1000-R Reel Hold Down Knob For Use on Revox Recorders.** Contact: Gordon Mackechnie, advisor int'l ops. **Date Product Introduced:** April 1, 1988. **Product Description & Applications:** The VIF 1000-R reel retainer provides a quick-loading, highly reliable method of securing all types of 'A' audio tape reels in place. When used to secure NAB reels, the VIF 1000-R is locked on the turntable shaft and the protruding lobes are aligned. A NAB reel can then be loaded over the retainer onto the turntable, and the upper half of the 1000-R rotated 60 degrees to lock the reel firmly in place. **Basic Specifications & Suggested List Price:** With shaft adapter, \$24.50 each. OEM/distributor discounts applicable.

WINSTED CORP.; 10901 Hampshire Ave. S.; Minneapolis, MN 55438; (612) 944-8556. Contact: Randy R. Smith, sales. **Product Description & Applications:** A complete line of modular, 19", EIA rack-mount cabinets. Vertical rack cabinets.

WIREWOKS CORPORATION; 380 Hillside Ave., Hillside, NJ 07205; (201) 686-7400. **Product Name: CF Series Cables.** Contact: Angela DiCicco, customer service mgr. **Date Product Introduced:** April 1988. **Product Description & Applications:** CF Series Cables are super flexible, 2-conductor microphone cables. They feature state-of-the-art construction that provides unprecedented rejection of hum, noise and radio interference. CF Series Cables can be counted on for ultra-flexibility and outstanding performance under the most hostile conditions. **Basic Specifications & Suggested List Price:** Approximate prices: \$20 to \$90 for cables ranging from 5' to 100'. 2-conductor construction. High-density braided shield. Super flexibility accredited to a uniquely crafted PVC jacket and inner conductors that utilize 60 strands of 40-AWG annealed copper wire. Special construction insures dependable performance even in sub-zero environments.

WIREWOKS CORPORATION; 380 Hillside Ave., Hillside, NJ 07205; (201) 686-7400. **Product Name: CQ Series/Star Quad Cables.** Contact: Angela DiCicco, customer service mgr. **Date Product Introduced:** April 1988. **Product Description & Applications:** CQ/Star Quad Cables' 4-conductor configuration plus high shield density reduce hum and noise to less than 10% of conventional 2-conductor mic cables. Ideal for use in high-noise areas because hum, buzz, radio interference and noise from SCR dimmers and fluorescent lights are virtually eliminated. Special construction utilizing many thin wire strands and a unique PVC jacket that remains pliable at extremely low temperatures, creating superior flexibility. **Basic Specifications & Suggested List Price:** Approximate prices: \$20 to \$90 for cables ranging from 5 to 100 feet. 4-conductor configuration. High shield density. Cotton filler material prevents handling noise. Polyethylene insulation's dielectric qualities provide low capacitance. Stranded construction and special PVC jacket provide pliability up to 56 degrees F.

FEEDBACK

What Did He Say?

I read Mel Lambert's article on "Console (Mis) Directions" in the May '88 *Mix* and felt compelled to comment upon the absence of any substance within it: for instance—"Our entire operational philosophy and rationale will be fundamentally affected by the tools that will be at our disposal in the coming decade," which is a bold quote pointed out in the article. This is like saying "I will go on vacation and whatever sights excite my fancy, I will take a picture of." When I finished I found myself scratching my head saying, "What did he say?"

Other than a bunch of ethereal jargon, I can't seem to find any direction to this. The author advances a few good questions—and comments and some good things to come in the future—but never really mentions what direction he thinks anything may take. He never mentions what kind of layout future consoles might take, or what kind of changes may come about in signal processing within a console, or how ergonomics might change. In effect, this article asks a bunch of questions that virtually any recording engineer asks him or herself repeatedly. It seems that the responsibility of an author is not to list all the questions that everybody already may be asking, but possibly to provide some insights, suggestions, conjecture, or speculation. There is simply no point of view present. Maybe that is the editorial philosophy behind *Mix*; i.e., be careful to tread lightly, don't say anything of substance that might irk some advertiser. Maybe you can enlighten me about all of this.

Sincerely,
Gary Falk
Falk Recording
Louisville, KY

Mel Lambert replies:

From the tone of your correspondence, I feel that you have missed the point of my column. What I was attempting to do in the May "Juxtapositions" was to remind recording and production engineers that they need to both understand the nature of the choices that will be placed in front of them, and also to actively continue an intimate and constructive dialog with console designers.

Not only would such a dialog ensure that the assignable and digital consoles coming to market within the next two to five years provide all of the necessary audio processing functions we need to get the job done, but that they incorporate the exciting additional functionalities that become available with all-digital designs.

Crossed Up In Texas

While P.T. Barnum said, "There's no such thing as bad publicity," I would like to correct a couple of points that were published in your June issue regarding my company.

The interviewer erroneously credits Doug Hall as owner of Crossroads Audio. While Doug is a most valued employee who has done a splendid job with our Concert Department, my wife, Diane Conrad, and I are the sole stockholders of the company, and have been since 1972. Our company not only provides sound and lighting services to the concert and convention industries, but is also engaged in retail sales of pro audio equipment, as well as over-the-counter daily rentals of pro audio, lighting and communications devices.

Your description of our rigging capabilities seems slightly distorted at worst, and at best very unclear. In actuality, we can hang our

P.A. by conventional means using the industry standard C.M. Loadstar Chain Hoists, or we have the capability of hanging cabinets from Genie Superlifts in venues where no suitable rigging points exist. For reasons of safety, we are limited to a maximum height of 15 feet when we use the Genie Lifts. When we choose to use the chain motors, no such height limitations exist. Chuck Conrad
President, Crossroads Audio
Dallas, TX

Cheers for the Little Guys

I have recently become interested in the impact that the MIDI revolution is having on the popular recording industry. It seems that technology is advancing so quickly that in some instances studio musicians are becoming a thing of the past. I have to take my hat off to those who are making home- and small studio-produced music a viable alternative to the large sums of money spent in hiring professional musicians. Certainly the live musician will never be totally replaced, but thanks to this new technology many are able to experience the joy of producing studio-quality productions at a more affordable price. I feel that this is going to lead to a lot of great music that may never have made it past the score otherwise. Thank you for keeping us up to date!

David V. Hinck
Idaho Falls, ID

Correction:

On page 74 of the September issue, the photo of Cherokee Studios co-owner Dee Robb should have identified him at the 60-input Neve V Series console in Studio 2.

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Circle #123 on Reader Service Card

—FROM PAGE 202

years now that the manufacturers would be willing to do that. There was a meeting in Vancouver a couple of years ago, but they were not willing to discuss solutions. They came because of pressure from our government and the European Economic Commission. But the Japanese very clearly did not come to that meeting prepared to discuss any solutions. In fact, their press release was already prepared before they sat down at the table, stating that there was no problem, and therefore no need for a solution.

We have outlined a series of objectives that are clear to the manufacturers. The essential ingredient is the desire to have a solution. Once you have that, the best minds in the Japanese hardware manufacturing community could certainly help us come up with a perfected technological solution. And the best minds in the Japanese hardware manufacturer's financial offices have the capability to offer a royalty solution either in the interim or as a long-term proposal. Both parties already have enough information on the options. It is a matter now of agreeing to proceed on those options. We don't want a repeat of the Vancouver meeting. But if they want to sit down and have a real negotiation with an eye toward a solution, then we want to participate. There is no point in a meeting that does not assume in advance that a deal will be struck.

Mix: Presumably the major labels have a lot of clout within the RIAA. How does the ownership of some of these labels by hardware manufacturers affect the RIAA approach to home taping?

Heimers: All our members have a lot of clout, and we do have the majority of the major labels. There are a number of relationships of that kind, including CBS with Sony and PolyGram with Philips. As far as Sony and CBS are concerned, when Sony bought CBS in the midst of the copy-code proposal, Sony said that they would not try to persuade CBS on copyright issues at all. I think the bottom line is that when they bought CBS, copyright protection became an issue for them in terms of CBS Records. But it really has had no effect at all on the home taping front.

Mix: The RIAA has threatened to file suit against any manufacturer who

begins importation of consumer DAT machines. What would be the legal basis for such a suit, and what precedents exist that suggest that it might be successful?

Heimers: Contributory copyright infringement would be the basis for the suit. By importing these machines, with their fine capability to reproduce copyrighted works, the manufacturers would be facilitating and contributing to the practice of copyright infringement. I don't know of a specific precedent for this kind of an action. Most people bring up the Betamax video case, but there are more differences than similarities between the two situations.

Mix: If it does come down to a suit, the RIAA would be asking some of its most important members to support legal action against their own parent companies. Wouldn't that threaten to split and thereby weaken the RIAA itself?

Heimers: We have the support of our member companies on this lawsuit. It is important to note that we as an association do not do anything independent of the record companies. We work for them. And we have gotten the go-ahead from our member companies to proceed with the suit if and when it becomes necessary.

Mix: What is your assessment of where this issue can go from here?

Heimers: What we are basically doing now is playing a waiting game, and it has been that way for months. We are going to wait until we either hear from the hardware manufacturers that they want to meet, or we are forced to sue them because they have begun a consumer rollout. In the meantime we are looking for what we feel is the best solution to the problem, which could be either technical, or a levy or some combination thereof. But we cannot come up with a solution that the hardware manufacturers will find acceptable until we get some sort of formal recognition from them that there is a problem. As long as they refuse to recognize the problem, they will not see the need for a solution. ■

Phil De Lancie is our resident expert on record mastering and manufacturing, tape duplication, CD replication, storage and formats. He's also a mastering engineer at Fantasy Recording Studios in Berkeley, CA.

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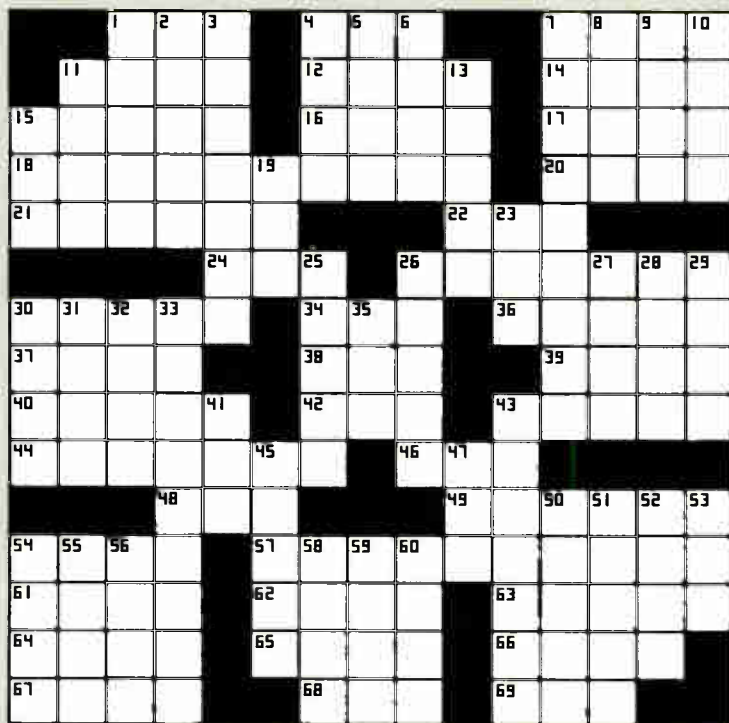
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MIX WORDS



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CONNECTIONS

ACROSS

1. "I Will Follow" ____
4. Digit
7. "Long ____ Texan"
11. Band co-founded by Jim Messina in 1968
12. Unexpected connections
14. One's own prefix
15. Man with a record number of hits
16. Old grey ____
17. The parts that mean business of 18A
18. XLR
20. Editor's word
21. Bing
22. Cambodia's Lon ____
24. Ref
26. Phantom ____
30. Flying avionics platforms
34. Residue
35. Sierra ____
37. Alone
38. Also
39. "____ Me" (from Mozart's requiem)
40. Patch
42. Barbarian
43. ____ nut, from the areca palm
44. Board controls, or pitches
46. Sorrel
48. French digit
49. Atomic town Los
54. Connected recorders are in
57. Connector with curved sprung contacts
61. Milk at Cafe du Monde
62. Catch-all phrase
63. Unpleasant
64. A voice
65. Remove the center
66. Give a speeding ticket
67. Boyish prefix
68. Certain grade
69. Some Chicago trains

DOWN

1. ____-____-plenty
2. Some on-screen symbols
3. Place to connect to

- the total sound on the board
4. Prepare a charge in a muzzle-loader
5. Like folk traditions
6. Belge
7. Two-conductor 1/4" connection
8. Mine opening
9. Kind of output connection
10. Missing
11. Carson's predecessor
13. Musical sign
15. Picks, strings, cables, etc. (abbr)
19. Name suffix
23. All-nighter
25. Signal ____ (connections)
26. Type of connector
27. Basis
28. Noun ending

29. Negotiate
30. Vipers
31. Steel ____
32. Hawaiian royalty
33. This makes a connection
35. Old French coin
41. Highest level on many pots
43. Voltage condition in a line with an 18A
45. Medieval bowed instrument
47. Is capable
50. Certain lockup
51. Sail holders
52. Numerical prefix
53. The heavens
54. Type of echo
55. Korean river
56. Neon motel word
58. Smallest piece
59. Greek ointment
60. Pub quaffs

Solution for October Mix Words



MIX 1989 EDITORIAL SCHEDULE

January

Northwest Studios
NAMM Show Edition
MIDI in the Studio

February

Southeast Studios
Production in the New South

March

British and W. European Studios
Ind. Engineers/Producers

April

Audio-for-Video
NAB Show Edition

May

Northeast Studios
Digital Signal Processing

June

Remote Recording/Concert Sound
Comparing Venues

July

Audio Education
Pacific Rim Studios

August

Acoustics and Design
Southwest Studios

September

Southern California Studios
Latin American Production Industry

October

New Products for 1990
AES Issue

November

North Central & Canadian Studios
Mixing Consoles

December

Tape & Disc Technology
Mastering, Pressing & Duplication

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*Source: Publishers' BPA statement of circulation for six months ending June 1988 (average of qualified and non-qualified circulation).

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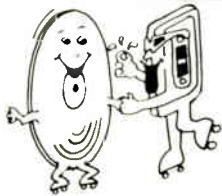
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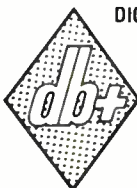
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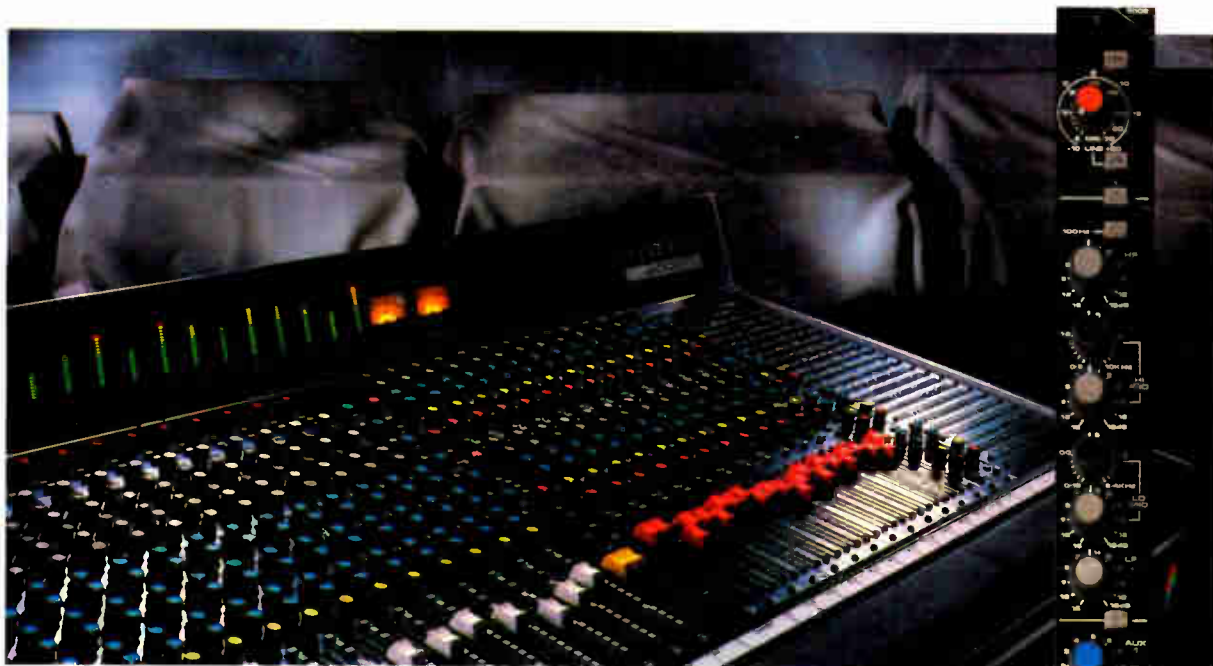
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