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NATIONAL RECORDING INDUSTRY DIRECTORY

VOL. 4 NO. 5

MAY 1980

# Mix



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# the Mix

Recording Industry Publications

VOL. 4, ISSUE 5



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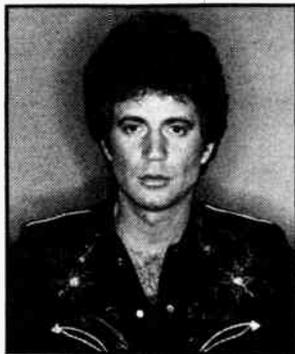
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MAY 1980

## FEATURES

- 6 CURRENT EVENTS
- 8 SESSIONS
- 10 PROGRESSIONS  
by Larry Blakely
- STUDIOSCOPE  
by Dennis Buss  
and Chris Haseleu
- 12 SOUND ADVICE  
by Dr. Richie Moore
- TOM WAITS  
FOR NO ONE  
by David Goggin
- 16 CARSON C. TAYLOR  
by Tom Donald
- VAL GARAY  
INTERVIEW  
by David Goggin
- 22 MUSIC ENGINEERING  
by Sam Borgerson
- 36 SESSION MUSICIANS  
by Bobby Bank
- OTHER SIDE  
OF THE TRACKS  
by Mr. Bonzai



## LISTINGS

- NEW PRODUCTS FOR  
1980
- 42 Amplifiers
- 44 Microphones
- 46 Mixing Consoles
- 52 Signal Processing  
Devices
- 62 Speakers/Monitors
- 66 Tape Recorders and  
Magnetic Tape
- 70 Other Equipment
- 82 CLASSIFIED ADS
- 83 FEEDBACK
- 84 ADVERTISERS' INDEX

# INSIDE

We call this our AES New Products issue, in honor of the tool and toy show for audio engineers presented in early May, at the Los Angeles Hilton, by the Audio Engineering Society. For those who like to keep tabs on what's new, we have collected seventeen pages of listings of new products, many of them in view for the first time at the show. This catalog of the state-of-the-art will be updated next November when the show returns to New York's Waldorf Astoria.

...

David Goggin had a busy month putting together two fine stories for this issue. In Tom Waits For No One, David interviews the King of Sleaze and tells us about a unique animation system used to capture Tom's stage performance in caricature. Also David visited Val Garay and relates some fascinating stories about the man behind the sound of Linda Ronstadt, James Taylor and many other old favorites.

Carson C. Taylor also has some great old stories to tell and, as Tom Donald relates, you don't have to be a child of the computer age to believe in the future of digital. Carson was one of the first people to mix in stereo and his interest remains in the newest available form of technology.

Education is an increasingly important challenge to the future of our industry and we are gratified to see fine colleges and universities develop programs in audio and recording. One of the finest programs we have encountered is currently being offered at the University of Miami. Sam Borgerson spent some time with administrator Bill Porter to give us a picture of how we wish it could have been when we were in school.

Returning briefly to New York, Bobby Bank provides us with a glimpse into the recorded history of three very active studio musicians: Elliot Randall, Bob Babbit and Alan Schwartzberg.

...

Also this month we introduce "Sessions," a column of studio activity around the country. If you are involved with a studio that would like to have people know who's doing what with whom, drop us a line in care of "Sessions."

David M. Schwartz

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# TRACKS

# CURRENT

## NEW PRODUCTS FEATURE FUNCTIONALISM

Flexibility and convenience set the tone for this Spring's release of new products for the professional audio industry. Manufacturers have responded to the tighter shopping budgets, in general, by developing equipment less gimmick oriented than in many previous years and more seriously designed with value and durability. Novelty has certainly not disappeared from the research departments; however, unique devices in this year's lineup have achieved a new high in their degrees of usefulness.

Computer technology continues to expand the capabilities of mixing consoles. Harrison is introducing a new console design concept called Distributed Control Intelligence. Their MR-1 console offers automation functions which include: insertion of two patch points; equalizer and filter insertion; main channel and monitor phase inversion; fader level and channel mute; two, three and four

channel panning; two effects sends; channel group select and group master select. Solid State Logic's new Total Recall™ is an extension of the SSL Master Studio System computer which monitors and stores the positions of every control on the SL-4000 E mixing desk, employing no audio pass elements and adding no noise or distortion.

Rupert Neve is also releasing a new mixer series, their 8108, employing microprocessor technology which enables storage of up to four console assignments to be made via a central assignment panel with individual interrogation for each channel. On the less is more side, B&B Audio is showing their MSP (Minimum Signal Path) mixing console utilizing all class "A" amplifiers, TTL (computer) compatible switching and having no transformers in the signal path.

Signal processing devices are also showing a

rapid development of their functional abilities. dbx is introducing their 900 Series of modular signal processing components with a power supplied mainframe allowing for rapid configuration of the processor complement appearing at the patchbay. ADR has brought out their new Scamp Minirack specially designed for high signal processing flexibility in areas where space is a limiting factor.

MICMIX has released their XL 500 Master-Room reverberation system which incorporates three completely independent reverb sections allowing the sound choices of live chamber, a plate or a concert hall, and variable decay from one to twelve seconds. Marshall Electronic has updated their time modulation idea with the Model 5402, capable of 400msec of continuously variable delay.

Other highlights of this season include Crown's Pressure Zone Microphones and their Badap audio computer, Sound Workshop's Series 30 mixing console and 3M's new digital editing system.

Further details and more new product listings begin on page 41.

## VIEWPOINT

### METAL PARTICLE TAPES

Metal particle tapes, using microparticles of pure iron that are denser and more magnetically retentive than ferric oxide or chrome particles, have been promoted in the consumer recording market as providing radically improved performance to the audio cassette format. Tests at Ampex's magnetic tape research facility in Redwood City, California, using state-of-the-art metal cassette decks have demonstrated less than 1 dB variation across the frequency spectrum from 20 Hz to 20 KHz with bias current at factory settings. Improvements in saturated output at short wavelengths have been measured at approximately 5 to 6 dB above the best currently available high-bias cassettes and 11 dB above standard gamma ferric oxide products.

"Any magnetic recording application has the possibility of being improved by the use of metal particle tape," says Del Eilers, audio products technical service supervisor for 3M. He adds, "The basic advantage of the metal magnetic pigment is that it has double the remanent flux of conventional oxides and it has two or three times the coercivity. This means the material is capable of accepting two to three times the magnetic field intensity before it saturates."

David Mills, manager of audio product development for the Ampex Magnetic Tape Division notes, "Metal particle tapes are capable of resolving extremely short wavelength information and reproducing it at high signal-to-noise level. As such, it is at its best in applications where high frequencies

are being recorded at slow speeds with narrow tracks.

The major tape manufacturers are currently undecided as to the possible application of metal particle tape to the professional recording market. While the performance is beyond dispute, the negative factors deal with materials costs and hardware conversion. According to Mills, "If a metal particle tape were made identical to a current mastering tape (coating thickness, width, etc.), it could produce signal-to-noise ratios 4 to 6 dB greater than conventional mastering tape. However, the cost would be approximately 3-10 times more than conventional mastering tape, the current equipment could not record or erase the tape, and the ultimate short wavelength recording capability of the metal particle would not be utilized."

Both 3M and Ampex agree that any hardware conversions to allow handling of metal particle tape would require higher bias and erase currents however Ampex feels "There is no point in even attempting to modify current analog mastering recorders to utilize metal particle tapes. The entire erase system, including heads, would require redesign and redevelopment. The reproduce circuitry would have to be redesigned to develop higher levels and to prevent overload on the output system. The work and cost involved would likely be equivalent to purchasing a complete new system.

3M also believes that "A new, rather than user modified, system is probably necessary for metal particle mastering tape. At this point in time, though, it is not certain whether a professional analog recording system using metal particle tape will be developed. The industry may jump to digital audio recording which could also use a metal particle tape. We believe it is unlikely that analog recording of audio will disappear for some time. The question is whether new analog systems will be designed, manufactured and sold."

### ALLISON, VALLEY AUDIO, VALLEY PEOPLE MERGE

The stockholders and officers of Allison Research, Valley Audio, and Valley People have announced the completion of negotiations to merge their companies. In the future the firm will operate as Valley People, Inc., with executive and general offices at 2820 Erica Place, Nashville, Tennessee.

Mr. Norman Baker was named President of the combined corporations. Norman has served in the capacity of Vice Pres./General Manager of Allison Research, for the past 4 years, and will be responsible for executing the administrative affairs of Valley People, Inc.

Mr. Bob Todrank, founder and past President of Valley Audio, has been named Executive Vice President, and will primarily be in charge of Marketing Operations and studio consultation. Mr. Gary Carrelli will retain his title as a Vice President of Valley People, and will coordinate systems engineering, installations and repair/maintenance services.

Mr. Paul C. Buff, founder and past President of Allison Research, will be named a vice President. Paul will continue in the area of Product Development.

Concurrent with the merger, the above four stockholders of Valley People, Inc. have also announced the formation of a satellite corporation dedicated specifically to new product development. The satellite facilities shall be named Paul C. Buff, Inc.

## EVENTS

**Rupert Neve, Inc.** of Bethel, Connecticut has announced the appointment of **Mr. Peter V. Horsman** to the position of Regional Sales Manager in Hollywood. Mr. Horsman joins Neve with 17 years of sales, engineering and management experience from the professional sound industry. Mr. Horsman is a member of the Audio Engineering Society and served as chairman of the Los Angeles section in 1978. He is also a member of the Acoustical Society of America.

Berkeley's **Fantasy Studios**, which have previously been available for the use of label artists only, are now open to the public. Operation of the studio complex is supervised by **Roy Segal**, a veteran of CBS's New York and San Francisco studios. The facility houses four multitrack rooms including the newly completed 46 track Studio D, and a disc mastering system. For further information, contact Roy Segal or Andrea Salter at 415/549-2500.

**PRS**, (Professional Recording & Sound) opened January, 1980, in Boston, Mass. Heading the operation is **Peter Engel**, sales manager. PRS offers both in-house and field services, and maintains a complete inventory of the most popular studio out-board products.

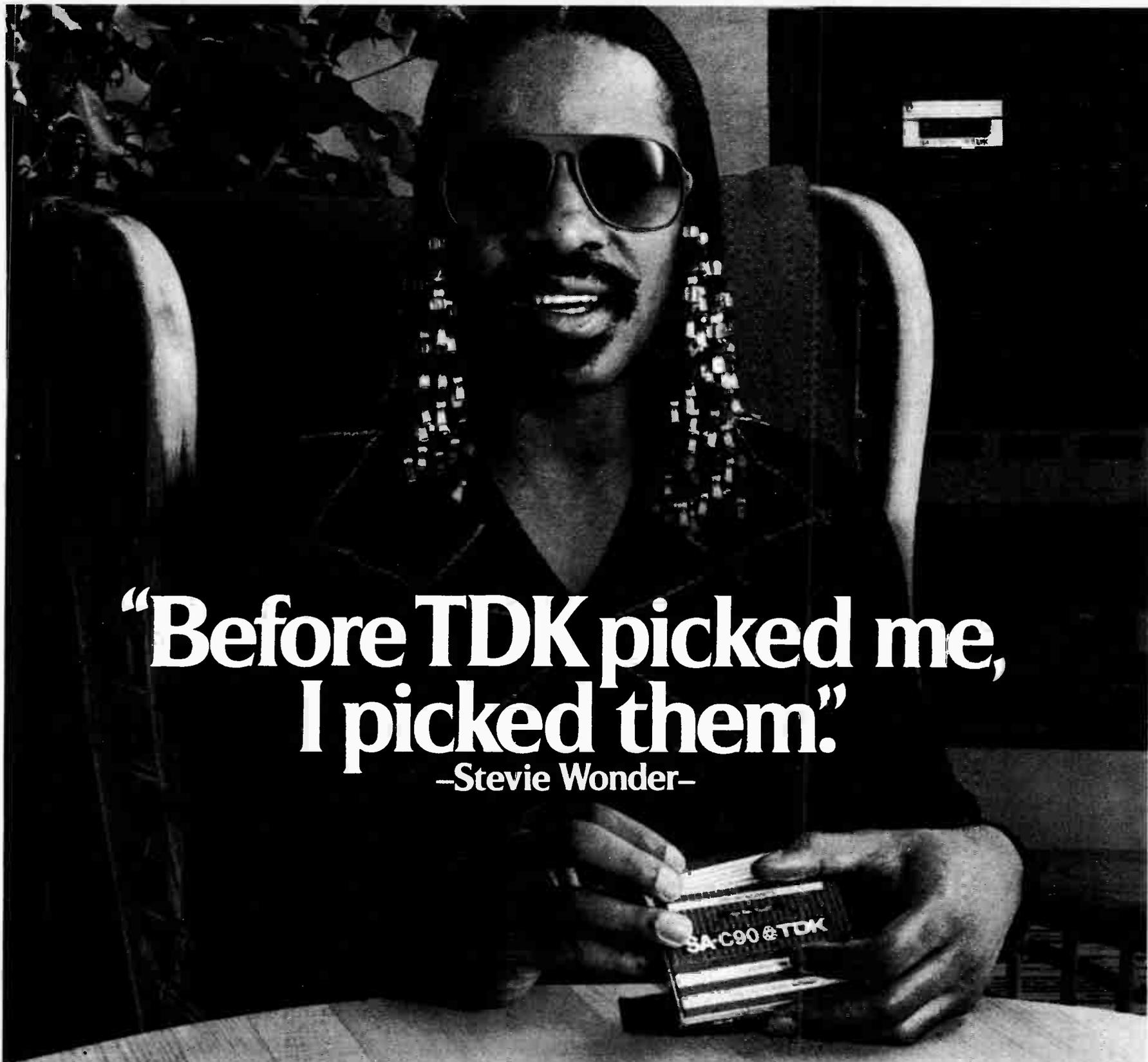
**Indian Creek Recording** has announced the opening of their 24 track studio in Uvalde, Texas. The facility is located on a 4000 acre ranch, 80 miles west of San Antonio. Chief Engineer is **John Rollo**, the 1st and 2nd recipient of the Ampex Golden Reel Award to be presented in England.

**Stuart Rock**, President of **Integrated Sound Systems**, Long Island City, N.Y., announces today that Vortec Loudspeaker components are being made available for use in a wide variety of custom applications. For further information, contact Paul Friedman at: Integrated Sound Systems, 29-50 Northern Blvd., Long Island City, NY 11101; 212/729-8400.

**James B. Lansing Sound, Inc.'s** Operations Division has been expanded with the appointment of **Jerry Feingold** as Director of Manufacturing Engineering and **Ray Blinde** as Director of Materials Management. JBL also announced the selection of **Russ Mott**, of REM Musical Enterprises in Arroyo Grande, California, as "Rep of the Year" during ceremonies held at the company's recent national sales meetings.

A series of classes designed for individuals seeking training in recording engineering has been announced by **Oval Productions**, a record production firm recently formed by **Stephen Cohn** and **Raffaello Mazza**. The classes will commence November 1, meeting twice weekly for eight weeks. Information can be obtained by contacting Oval Productions at 213/464-1933 or 876-8771, or by writing to Oval Productions, 2429 Chermoya Ave., Hollywood, CA 90068.

**Aphex Systems, Ltd.**, will now sell its Model 602B Aphex Aural Exciter sound enhancement unit, according to **Marvin Caesar**, President. Previously, the unit was only available on a lease/rental basis. In making the announcement at the recent AES in London, Caesar indicated that recording studios, broadcasters and touring musicians, the predominate users of the Aphex, will still be able to avail themselves of a lease arrangement.



**“Before TDK picked me,  
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—Stevie Wonder—

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\*In the unlikely event that any TDK cassette ever fails to perform due to a defect in materials or workmanship, simply return it to your local dealer or to TDK for a free replacement.

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# sessions

## AT SIGMA SOUND—PHILADELPHIA:

Guitarist **Gato Barbieri** has just completed rhythm tracks for his album on A&M Records. Originally slated for 24-track recording, Barbieri expanded to a 48-track final version. **Thom Bell** was producer with **Dirk Devlin** engineer. **Vince Warsavage** assisted Devlin. Philadelphia International Records (PIR) is humming along with several projects including a **Bobby Rush** album being reproduced by **Leon Huff**. Engineer **Dirk Devlin**. In addition, **Thom Bell** and **Dexter Wansel** are editing for a **Lou Rawls** project: "Ain't That Loving You," "You're My Blessing," and "Heartaches." Working on an album with the **Jones Girls** are producers **Dexter Wansel**, **Joe Jefferson** and **Sherman Marshall** with engineers **Arthur Stoppe** and **Peter Humphreys**. And coming up in the near future will be a new O'Jays album. Producer **John David** (John Travolta, Joey Travolta) has just put the finishing touches to the title track of a film titled, "The Woman Inside." **Ruth Waters** was vocalist and **Ken Present** engineer for the movie project. Davis has now begun working with **Collins & Collins** on an album for A&M Records with **Ken Present** again acting as engineer.

## AT SALTY DOG—VAN NUYS, CA:

Motown recording artist **Teena Marie** was recently at Salty Dog Recording for overdubs on her new album, **Dick Rudolph** producing and **Lewis Peters** at the board, **Dean Knight** assisting. L.A.'s New Wave group the **Alley Cats** are tracking, with producer **David Coe**. **Chrysalis/Takoma** group the **Fabulous Thunderbirds**, **Denny Bruce** producing and **Russ Gary** engineering, assisted by **Carl Cicero**. **Eddie Harris** made a special appearance for **Ted Ashford's** current album project, **Bob Rose** as engineer. Grammy nominee **Dave Pell** of 21Prez Conference currently producing new comers to L.A. **Solacar**, **Brian Vessa** engineering. The **Lettermen** are back with producer **Tony Butala** and engineer **David Coe**.

## AT RPM SOUND—NEW YORK CITY:

**Genya Ravan**, President of Polish Music, is in producing **Ronnie Spector**, **Manster & Metro Men** for her new record label. The albums are being engineered by **Neal Teeman**. Assisted by **Hugh Dwyer**. Sire Records is in with **The Pretenders**, being engineered by **Ed Stasium** assisted by **Hugh Dwyer**. Being mixed for Sire records are **The Searchers**, engineering by **Ed Stasium** with backup from **Hugh Dwyer**. **Randy Van Warmer** recording for Bearsville Records, with engineer/producer **John Holbrook**, assisted by **Dominick Malta**. **The Ramones** being remixed for Sire, at the board **Ed Stasium** with **Hugh Dwyer**.

## AT RECORD PLANT—NEW YORK CITY:

**The Motors**, produced by **Jimmy Iovine** and engineered by **Shelly Yakus** for Virgin Records... also Iovine and Yakus together on **Graham Parker & The Rumour** new LP for Arista. **The Blues Brothers**, produced by **Bob Tischler** and engineered by **Jay Krugman** for Atlantic. **Joe Perry**, produced for Columbia by **Jack Douglas**, engineered by **Lee DeCarlo**. **Rob Stoner** producing his debut album for MCA engineered by **Thom Panunzio**... Panunzio also engineered the new **Iggy Pop** LP for Arista Records. The New York Record Plant's remote recording unit, headed by **David Hewitt** has just returned from Lake Placid, New York where they recorded **Tanya Tucker**, **Dionne Warwick**, and **John Hammond** and the **Nighthawks**, who performed for the Olympians. After the Olympics, the remote unit was back on the road for a session with **Ornette Coleman**. The remote recording unit was also on hand to capture **Father Guido Sarducci's** recent audience with the students of Douglas University in New Jersey. Father Guido's words of wisdom were captured for posterity by **David Hewitt**.

## AT HEIDER RECORDING—SAN FRANCISCO:

**Sammy Hagar** mixing his latest album for Capitol Records with **Geoff Workman** engineering and **Dave Frazer** assisting.

**Smothers Brothers** in with the American Conservatory Theatre (A.C.T.) recording radio spots for their current performance in the stage production of "I Love My Wife," with **Jeff Melby** engineering. **Jo Allen** and the **Shapes** tracking/mixing for a single on 415 Records and a demo project for EMI Records with **Ann Fry** engineering. Movie soundtrack for "Bon Voyage Charlie Brown And Don't Come Back" produced by **Ed Bogas** and **Judy Munson**, with **Jesse Osborne** engineering. **Mademoiselle** completing their album project for Electra Asylum with **Vance Frost** engineering, assisted by **Steve Andreatta**.

## AT EARTH AUDIO TECHNIQUES—NORTH FERRISBURG, VERMONT:

Engineers **Mike Couture** and **Chas Eller** have recently completed work on the debut LP of jazz group **Killmanjoro**, of which **Chas** is the keyboardist. Also **The Davis Bros.** have been recording again, following release of their pick hit single "Looking For The Money" on Charisma in England. Earth Audio shares lodging and management with Philo Records, Inc., and has recently finished albums for **Philo** of **Dave Van Ronk**, **Eric Van Schmidt**, and **Utah Phillips**. Earth Audio also recorded **Mary McCaslin's** latest album "Sunny California" released on Mercury.

## AT KENDUN—BURBANK:

Studio D has **George Benson** continuing tracks for **Quincy Jones'** new production label, Quest. Engineering for Quincy is **Bruce Swedien** with **Ralph Osborn** assisting. **Norman Connors** producing **Marilyn McCoo & Billy Davis Jr.'s** newest LP for CBS Records in Studio D. Guest musicians include **James Gadson**, drums, and **Sonny Burke**, piano, cutting tracks before Marilyn and Billy start their up-coming tour. **Walter Egan** and producer **Earle Mankey** mastering Egan's new LP on Columbia Records with **John Golden**. **The Brothers Johnson** finished a promo film project in Studio D. **Quincy Jones** producer with his engineer of 23 years, **Bruce Swedien**, and **Ralph Osborn** assisting. **Willie Nelson's** new LP is being produced by Nelson with assistance from **Brad Hartman**. Project will be released on Columbia Records; mastering by **John Golden**. Producer **Harvey Fuqua** supervised overdubs for **Sylvester** on Fantasy Records. **Baker Bigsby** and **Terry More** engineered. B-Line Management artist **Chuck Negron** finishing final mixes for his new LP produced by **John Stronach** and **Tony Martin**. Chuck, formerly with Three Dog Night, has completed a folio of new hitmakers for his solo LP. Assisting Stronach at the console is **Ron Albaroz**. **Beach Boys** new single for Epic Records being mastered by **Steve Desper** engineer, **Bruce Johnston**, producer and **John Golden**. Kendun engineer. **Eric Jacobson**, producer for Warner Bros. group **Tasmanian Devils** flew down from the Bay Area to work with mastering engineer **John Golden** in Studio III.

## AT SIGMA SOUND—NEW YORK CITY:

**Victor Willis**, former lead singer with the **Village People**, is producing his own album for Can't Stop Productions with engineers **Andy Abrams** and **Carla Bandini**. Warner Brothers has **Candi Staton** working with producer **Jimmy Simpson** on her latest album with engineers **Mike Hutchinson** and **John Potoker**. **Karen Jones** is in the midst of a new T-Electric album being produced by **Jim and Cheryl Tyrell**, along with **Eddie Levert** (lead singer for the O'Jays) and **Dennis Williams** (road musical conductor for the O'Jays) who are producing four of the songs. **Andy Abrams** is engineer. Sigma is currently mixing **Flakes'** album on Magic Disc

Records, being produced by **Jimmy Simpson**; engineer **John Potoker**. **Soccer/Calep** is doing an independent album project for **Joseph Manfredi** with producer **Tony Valor** and engineer **Carla Bandini**.

## AT WALLY HEIDERS—HOLLYWOOD:

Conductor **David Blumberg** led an 111 piece orchestra recently in Heider's Studio A for the scoring of **Neil Young's** music for Universal's film *Where The Buffalo Roam*. Heider scoring service mixer **Grover Helsley** recorded the session, which broke the all time record for the number of musicians used at one time in Heider's Hollywood Studio. Producer **Bones Howe** continues in Studio 4 with overdubs and mixdown on the soundtrack album with **Stephen Bishop** and **Yvonne Elliman** for the upcoming film *The Roadie* with son **Geoff Howe** engineering. **Jan Berry** records his latest album for Ode Records; **Geoff Howe** engineering. The **Alan Price** album project for Jet Records is in its final stages with producer/engineer **Bones Howe** and **Biff Dawes** completing the mixdown. Singer/song writer **Barry Mann** cut tracks for an upcoming album for Casablanca Records, **Brooks Arthur** producing. **Olivia Newton-John** was also in the Heider Studios to do pre-records for an upcoming TV special and engineer **Jimmy Hite** recorded *The Babys* for D.I.R. Broadcast. Heider's remote units and Heider scoring service recordists travelled to Las Vegas to record **Mac Davis** at the MGM Grand and to the Pasadena Civic Auditorium where they recorded **Bette Midler** and her concert for her latest movie to be titled *Divine Madness*.

## AT SECRET SOUND—NEW YORK CITY:

**Suzanne Cianl**, performing and producing a completely electronic piece of her own conception, **Gus Skinas** engineering the sessions. The "Happy Birthday, Gemini" soundtrack was recorded for United Artists. Written and produced by **Rich Look** and **Cathy Chamberlain**, arranged by **Steve Chapin** with **Michael Barry** at the boards. **The Shakers**, recording a number of tunes, **Chris Kimsey** and the band co-producing, engineered by **Michael Barry**.

## AT STARFLEET—REMOTE:

On Thursday, April 3, 1980, **Starfleet/RCO Productions** presented Epic recording artists **Heart** in a live stereo network broadcast. Originating from the band's Tarrant County Convention Center, Fort Worth, Texas concert, and aired in stereo on 54 AOR-FM stations coast-to-coast. **Sam Kopper** of Starfleet and **Mike Flicker**, Heart's producer

## AT THE AUTOMATT—SAN FRANCISCO:

**Herbie Hancock** is recording a new jazz LP for Columbia Records, with **David Rubinson** producing, **Leslie Ann Jones** engineering, and **Wayne Lewis**, second engineer. **The Tubes** recording a new A&M Records LP with **Rickie Farr** producing, **Fred Catero** co-producing and engineering, and **Ken Kessie**, second engineer. **Santana** recording for Columbia Records with **Keith Olsen** producing and engineering and **Chris Minto**, second engineer. **Journey** finished recording their new LP, entitled *Departure*, for Columbia Records, **Geoffrey Workman** producing, **Kevin Elson** co-producing and engineering, second engineer, **Ken Kessie**. **Con Funk Shun** has completed overdubs and is now mixing, **Skip Scarborough** producing, **Leslie Ann Jones** engineering, **Wayne Lewis**, second engineer. **Pharoah Sanders** completed his album project with **Theresa Records**, **Allen Pittman** producing, **Bill Steele** engineering, **Wayne Lewis & Ken Kessie**, second engineers. **Randy**

**Hansen** recording, **David Rubinson** producing, **Jim Gaines** engineering, second engineer, **Ken Kessie**.

## AT RUDY RECORDS—HOLLYWOOD:

Rudy Records is playing host to **M.U.S.E.** (Musicians Unite for Safe Energy) for the final shooting of "No Nukes"—a film of the live concert at Madison Square Garden (Sept. 19-23, 1979). This segment of the film is a meeting of the Board of Directors for M.U.S.E. (**Graham Nash**, **Bonnie Raitt**, **Jackson Browne** and **John Hall**) in a "studio setting" and explains the purpose and goals of the organization. **Danny Goldberg** (Modern Records) and **Julian Schlossberg** (Castle Hill Productions) are co-producers of the film. The "No Nukes" LP was mixed and edited at Rudy.

## AT MAMA JO'S—NORTH HOLLYWOOD:

Warner Bros. artist **Neil Larson** is commencing work on his next album with producer **Tommy Lipuma**, engineer **Rick Ruggieri** is at the controls. **John Klemmer** was joined by **Harvey Mason**, **Abraham Laboriel**, **John Tropea**, and **Dave Grusin** for his upcoming album for Elektra Records; **Steve Goldman** is producing with **Rick Ruggieri** engineering and **Billy Taylor** assisting. Also at Mama Jo's, producer **Freddie Piro** is doing overdubs with an as yet unnamed act for Atlantic Records. Gospel recording artist **Andrae Crouch** cut basic tracks for his new release on Warner Bros. Records. Taking part were musicians **Alex Kunow**, **Bill Maxwell**, **Abraham Laboriel** and **Dean Parks**. Producer **Bill Maxwell** is working with engineer **Bobby Cotton** on the project.

## AT MUSIC ANNEX—MENLO PARK, CA:

**CAT**, produced by **John Nelder/Don McVicar** with **Roger Wiersema** engineering; **Glide**, a San Jose based R'n'R foursome, **Stephen Fisher** producing with **David Porter** at the board; **Pokerface** finishing a band-produced demo with **Harn Soper** engineering; **Back In The Saddle** completing their pre-album project with **John Kahn**, **Steve DeGrassia**, **Jay Byker** and **Bill Amatneek** producing at intervals; **Bill Melendez/Lee Mendelson** co-producing with **Charles Schulz** for the new feature film "Bon Voyage Charlie Brown" and the new Charlie Brown film strips. **Viva Brazil** is being engineered and produced by **Mark Rosengarten**; **Back Road**, co-produced by the band and **Eddie Money** have finished their demo project; **Phil Edwards** mixing two LPs for **Bud Shank** on the Concord Jazz label.

## AT ARTISAN—HOLLYWOOD:

Artisan's mastering team of **Jo Hansch** and **Greg Fulginiti** welcomed the following projects to cutting Suite A: Pablo Records LP release "Count Basie & Oscar Peterson"; Warner Bros. new group, **Arrogance**, with producer **Phil Gernhard** and engineer **Thom Wilson** supervising single release; **Starwars/The Empire Fights Back**, a promotional LP for RSO Records; **Kim Fowley's** new single for **The Industrials**; **Guy and Raina** LP for Bay Records; **Paul Chasman** LP on Rex Records; Producer **Thomas Miller**, KM Productions new single with artist **Peter Kingsbery** and Australian producer, **Greg Hooke**, flew in to master **The Castray & Hooke** project for Australian release. In the overdub/mixdown suite, Muzzy Music mixing TV music tracks for Filmmation cartoon package with engineer **Bob Stone** and composer/arranger/producer **Dean Andre** supervising. Producer **Keith Olsen** in to master **The Baby's** single for Chrysalis Records with **Greg Fulginiti**. Motown's new LP for **Syreeta**, produced by **Russ Terrana** and mastered with Artisan's Manager **Jo Hansch**. **Larry Hanby** producing the **Ozz** LP and the **Tony Scuito** single on Epic Records mastering with **Greg and Jo** respectively. Cutting room activity included the new **Cheech & Chong** record, produced by **Lou Adler** for Warner Bros. **Gregory Fulginiti** mastered **Funkadelic** in with **Ed Barton** supervising to put the final touches on their new LP. Project will be released on Lax Records through MCA. **Keith Olsen** working on a new **Santana** single from the album "Marathon" with **Greg Fulginiti** engineering.

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## STUDER REVOX



# STANDARDIZATION OF formats

by Larry Blakely

We have reached a time in our industry where we must put our heads together and develop some meaningful and long overdue standards.

As we look back over the recording and professional audio industry it seems that things were pretty simple in the beginning and through the early years. There were not many people actually using professional audio equipment and there were few choices of things like microphones, mixers, speakers, and power amplifiers. In the late 1940's and early 1950's there were probably less than 12 professional audio equipment manufacturers. When Ampex introduced the tape recorder in this country, there was no problem with standardization of tape recording formats because they had the only game in town. The format which they utilized on their machines was acceptable to the users and when other tape recorder manufacturers entered the field they simply followed suit.

Then came the 1960's and the beginning of the recording and professional audio gold rush. Multi-track tape recording became popular and the number of tape tracks increased along with the size, price and sophistication level of multi-channel recording consoles, signal processing devices, tape noise reduction, automated mixing processes, etc. Most importantly, the number of users of this sophisticated equipment was increasing dramatically.

Also during the 1960's a new "sound reinforcement" industry was born. Giant amplifier and speaker systems were created for very large outdoor and indoor concerts to provide the listeners with high fidelity sound at superloud levels. Starting out with the basic recording and broadcast equipment that was available at the time, sound reinforcement people developed special equipment to handle their special needs, as large concerts became more and more popular.

In the late 1960's to early 1970's a spinoff industry began to develop. A few enterprising companies saw the need to supply the not-so-rich musicians with professional sound equipment, previously limited to major recording stars, and so came the less expensive stage sound reinforcement equipment and special effects devices. Musicians started buying all of this equipment like there was no tomorrow and,

even today, musicians come into music stores and sound shops in droves looking for microphones, special effects boxes, mixers, stage monitor systems, etc.

Also in the early 1970's, the professional recording industry was similarly gaining an economy minded step brother. TEAC started building low cost multi-track tape recorders and mixing consoles, using smaller tape track widths, lower nominal operating levels and larger production quantities to allow their economy prices. This meant that those who wanted recording studios and could not previously afford them, as well as many aspiring musicians who wanted multi-track recording equipment in their homes or garages, now had it within their reach, and they rushed to buy faster than the manufacturers could build the units.

Likewise, in the last 15 years, the music electronics industry has experienced an explosive growth. Performing musicians began using specialty effects devices for their live performances. All kinds of relatively inexpensive phasers, flangers, delay lines, etc. started becoming available and today we find that most performing musicians have several of these "goodie boxes" to enhance their performances.

What is the bottom line? We see that the professional audio industry has grown from literally a handful of people in the 1940's to thousands of professional recording studios, hundreds of professional audio equipment and electronic musical instrument manufacturers, hundreds of pro-sound stores or departments, and many thousands of economy home recording studios. We also see that the professional audio industry has grown into a number of different segments, including:

1. Professional recording studios
2. Economy or home recording studios
3. Professional sound reinforcement
4. Economy sound reinforcement
5. Music electronics equipment

With this complexity has come about serious problems relating to the interfacing and compatibility of equipment.

Consider this typical situation. A musician walks into a recording studio with his musical instruments and effects devices and hooks it all up to make a recording of the sound he hears every time he performs. The recording engineer says, "I'm sorry, you can't use that in here because the output level and impedance of your equipment

will not interface with mine." The musician has become a victim of the technology that was created for him.

The output of most all musical instruments and effects devices are, for the sake of this article, "instrument level" and high impedance, which is radically different from "studio level" and low impedance. The 'economy' studio equipment operates at a level which is different, still, from the instrument level and the 'professional' studio level. Now we have created the situation where, if the small studio owner wants to purchase some auxiliary studio equipment he must be concerned about the interface between connectors, impedance, and operating levels if it is to work in his system. Likewise, the large professional studio cannot easily use equipment made for the economy studio.

## Standard Specifications

The industry has branched off in the various directions mentioned earlier without much thought given to compatibility or standardization. When the equipment purchaser goes to compare specifications he quickly finds that most are measured and specified in different ways and formats, making comparison a meaningless exercise. This is even further confused when manufacturers find ways to fudge a little and print a higher or better number to increase their sales. What needs to happen is for manufacturers to get together and standardize on the methods of writing specifications, so the buyer can compare properly.

There has come the time for some new kinds of action. First of all, it is time for all of the industry segments to start communicating with each other. We are seeing this with the formation of such organizations as CAMEO (a professional audio and music electronics manufacturers organization), SPARS (a society of professional recording studios), and PEPS (an organization of professional sound and lighting companies). These groups will hopefully start meeting some of the needs of the industry, however it is also important for us users of these various types of equipment to make our feelings known to the manufacturers, concerning interface problems, equipment specifications, and other matters.

If you have ideas on this subject that you would like to share, write me, in care of the Mix, and we'll pass it along. ☺

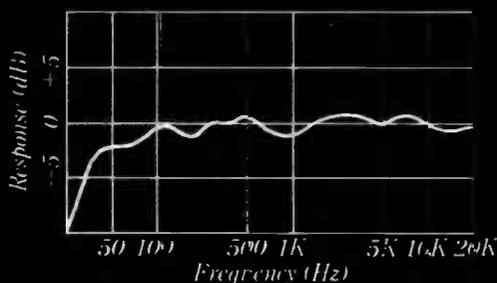
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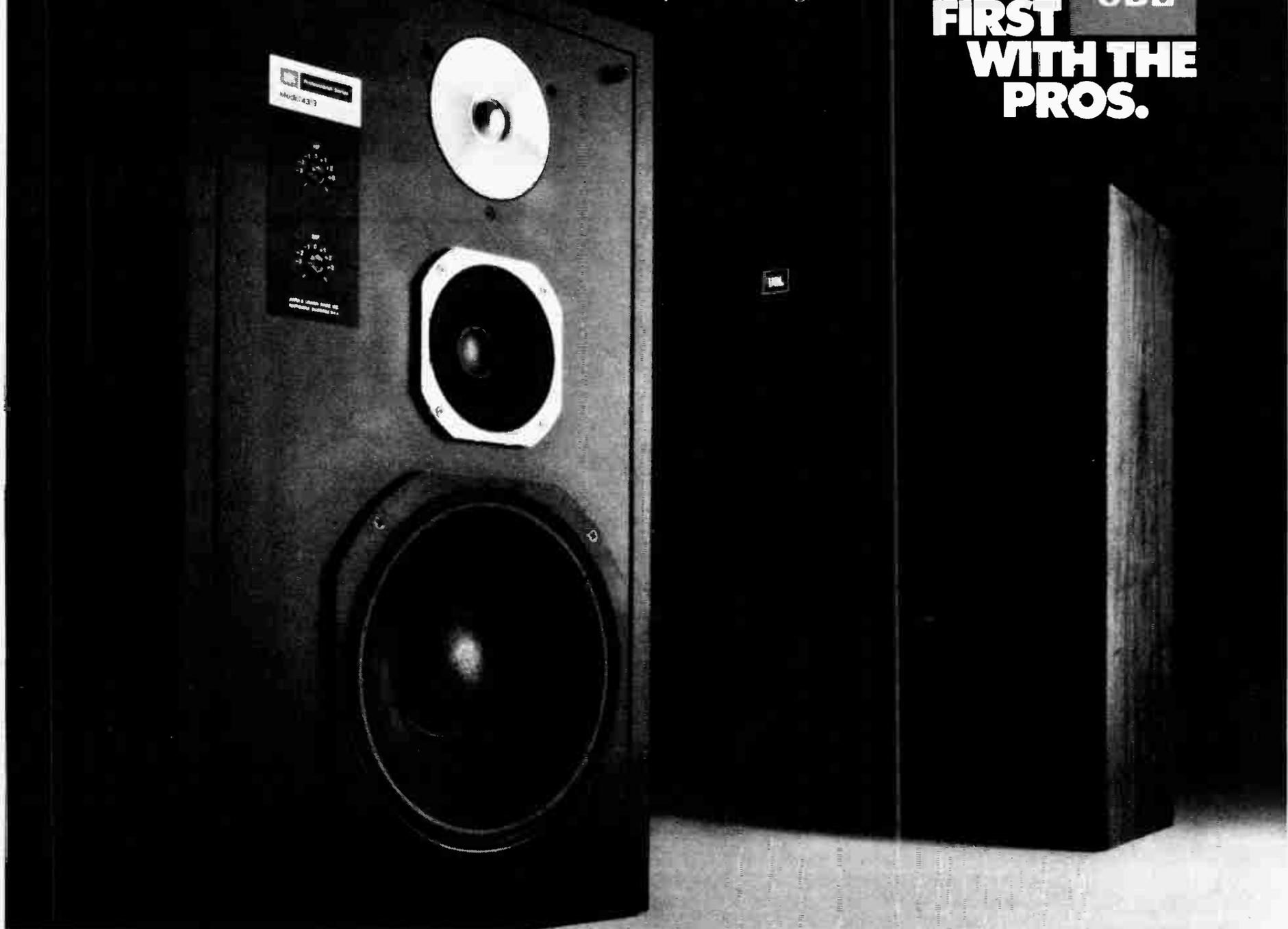
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# UNIONS

by Chris Haseleu and Dennis Buss

As a small business with few employees, the recording studio owner/manager is not usually confronted with internal union problems. Very few studios are union shops and those that are tend to be tied to larger record or broadcast companies. But, if the studio is also the home of or is part of a production company or record label then this situation changes. In either of the above cases, the studio owner/manager becomes in effect the employer of not only the engineering staff, but the musicians, vocalists and arrangers that work in the studio as well. It behooves the studio/production company to be aware of the two powerful unions that work to protect these musical employees. Knowledge of how and why the unions work to protect their members can help keep the relationship between the union locals and the studio one of mutual respect and support.

The American Federation of Musicians, AFM, is the bargaining agent for instrumental musicians, band or group leaders, musical contractors, music copyists, orchestrators and arrangers. The labor agreements that are important to the recording studio owner/manager are those between the union and the record or production companies. The most important of these agreements is the Phonograph Record Labor Agreement. This agreement sets forth the working conditions and compensation for musicians, etc., working in recording studios on record projects. Under this agreement, the record companies become responsible for seeing to it that all union regulations are followed, and union scale and pension fees are paid. This includes all masters, even though purchased from independent production companies. Some of the more important regulations or clauses of the agreement are covered below.

The contract covers royalty artists as well as the studio musicians. The royalty artist is defined as the individual or group who is to receive a return from the sale of the records. These artists are limited in how much they can receive for their time in the studio. The payments are basically held to minimum scale plus overtime. The union tries to protect the royalty artist by making a contract with the record company subject to review by the union's executive board.

The minimum scale for sidemen is the same as for royalty artists which is \$137.21 per three hour session. There are of course other fees to be paid, including a ten percent pension fund

fee and a \$3.75 welfare fund fee. The sidemen are also paid extra for doubling on instruments and there are bonus fees to be paid for work on Sundays, holidays, etc. This bonus is over and above overtime payments. If the studio musicians are a formed group such as a string or horn section, the group leader must be paid not less than double the normal scale. This is also true of the contractor. Under the labor agreement, the contractor is responsible for filing the necessary paper work with the record or production company. The contractor can also be in charge of hiring the other studio musicians. A contractor must be used if twelve or more sidemen are involved in any one session.

The union labor agreement is meant for all record companies. Even the smallest independent labels should become party to this agreement. In addition to the labor contract, there are two other agreements between the union and the record companies. These two agreements provide for payment by the record companies to special trust funds based on record sales. These funds are then used to pay the studio musicians involved with the recording and to sponsor free educational concerts.

Of course, not all studio work is on record projects. Radio and TV jingles account for a large part of many studios' incomes. The AFM has a labor contract to cover its members working on musical jingles. This agreement is between the union and the production company and/or advertising agency. There are several scales depending on the distribution level of the jingle, the medium (TV and/or radio), the time cycle the jingle will run, and the number of musicians used. For a national distribution on one medium in a session using five or more musicians, the scale is \$56.00 per hour. No more than three spots can be produced in this time at this rate. This is also limited to one thirteen-week broadcast cycle. If two media are involved, the fee is doubled. If a second thirteen-week cycle is used, then an additional seventy-five percent of the original session fee must be paid. This is an example of the union costs for jingle production.

The American Federation of Television and Radio Artists (AFTRA) is the bargaining agent for vocalists, announcers, narrators, sound effects artists and actors. The work by union members on record projects is known as the National Code of Fair Practice for Phonograph Recordings. This agreement is between the union and record and production companies. This agreement covers background singers as

well as royalty artists, and also includes narrators, announcers, sound effects artists and contractors that might work on a record. The royalty artist is, of course, an individual or group who receives any type of return from the sale of records. This does not include song writing royalties, however. The scale for royalty artists is the minimum scale with the maximum payment not to exceed three times the minimum, no matter how long the session. The union tries to protect its royalty artists by stipulating that royalty statements must be sent to the union for auditing whenever requested. The union also requires that royalty artists and their income be protected whenever a master tape is sold or otherwise transferred.

The agreement also sets the scale for background singers. The scale is sliding, depending on the number of singers used. If three or more vocalists are hired, a contractor must also be employed. The contractor receives scale plus a bonus payment. The contractor is responsible for filing the necessary paper work with the union and the record company. In addition to the scale payments, there is also a necessary contribution to the union's pension fund. The record company is also required to make payments based upon record sales to the background singers who participated in the recording.

The studio engaged in jingle production falls under a different agreement. This agreement is between the union and the advertising agency. There are both national and regional agreements that can apply to jingles. The scale for work on jingles is based upon a number of factors. These include the medium to be used, (TV or radio), the number of vocalists and/or announcers, the amount of time the commercial will be used and the distribution (local or national). There are graduated costs for re-use of the commercial and also a necessary contribution to the pension fund.

Both unions are primarily interested in protecting their members. But they are also interested in seeing that the industry grows and prospers. The studio owner/manager should know the union representatives in the area. The union halls can be a continuing source of one of the most important components of a successful studio; talented musicians, singers, and vocalists. If the studio is already or is contemplating going into the record producing business, contact the local union. They are more than happy to explain in fuller detail the workings of the labor agreement.

Recording Studios

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# Something NEW in Used Equipment

by Dr. Richie Moore

## Correction:

In last month's column on tape machine alignment we inadvertently mentioned that when using a pre recorded test tape for playback alignment a 185 nWb/m test tape should be set to read 0 level, a 250/260 nWb/m tape should read -3dB and a 370 nWb/m tape should be set to read -6dB. What we meant to say was that the correction factors are already built into the test tapes and each should be set to read 0dB. Sorry.

Technology advances quickly in recording and audio and there is always a certain excitement about the latest tools of the trade. AES Conventions are exciting chances to pick up on these and new product announcements in the trade magazines, such as the extensive listings in this issue of the Mix, are greeted with great enthusiasm from us recording equipment devotees.

One of the wonderful qualities of professional recording equipment is the high degree of durability built in by most manufacturers. Planned obsolescence, which despicably haunts many technologies, has fortunately been in short supply in our industry and this situation has spawned a serious and rapidly growing used equipment market.

Buying used audio equipment is not too different from buying used automobiles. Many are "used up" by the time they make it to your possession and should be avoided, unless you are building a collection of spare parts. Others are in good shape but are inferior in performance to what is available today. Still others have a sound of their own, even though it might not be a state-of-the-art sound, and that sound has brought about a new interest in those pieces of gear.

Some used equipment sells for many times its original purchase price for no reason but that it is in short supply or was manufactured by an

esoteric manufacturer. Very often in our industry, though, high priced used equipment indicates that there is an affection for its sound and a recognition of its durability. Even though warranties have long expired, many of these classic items will stay in operation as long as the maintenance departments can keep them running and the engineers and producers believe in their mystic qualities.

One of the major problems in choosing used equipment deals with the fact that technical literature, brochures and manuals rarely exist intact and often the equipment must be operated with a seat of the pants type of an understanding.

This little prologue is a way of telling you that we recognize the demand (and often the economic viability) of used equipment and will dedicate a few installments of Sound Advice to discussing what is available, how to find it and what to look for. Needless to say, by doing a little careful research, some smart shopping and a thorough examination of potential purchases, you can find devices built to last.

On the other hand, maybe years ago you bought some equipment that has been sitting on the top shelf of the shop, collecting dust since the month after you bought it. Well perhaps it is time to check it out again and see if it is usable to you. If not, maybe it is to someone else and it's time to find a new home for it and some new income for you.

In the coming months this column will be detailing such things as tape machines, audio consoles, speaker systems, signal processing equipment, etc. We will take each piece of audio gear that is still in common usage and trace its manufacturing origins; list model numbers and dates of manufacture; research what made any particular series more special than another; and approximate the prices that one might expect to pay now for machines in various conditions.

In essence, we will attempt to give the used

audio equipment buyer a one-stop reference to aid his purchase. These articles will also be a genealogical study of our industry's audio growth, in that we cannot describe professional audio equipment without providing some relevant background material on the manufacturers responsible for the equipment.

The first series of articles will be on tape recorder/reproducers. Due to the immense number of various manufacturers, models, and features, it will be necessary to cover these in two installments. The June issue will deal with Ampex and 3M machines.

For all you people looking to buy used equipment and not wanting to feel like a total fool while trying to do it, it is the intention of this column to give you some sound advice and save you a few coins. Until next time, have a great mix. ☺

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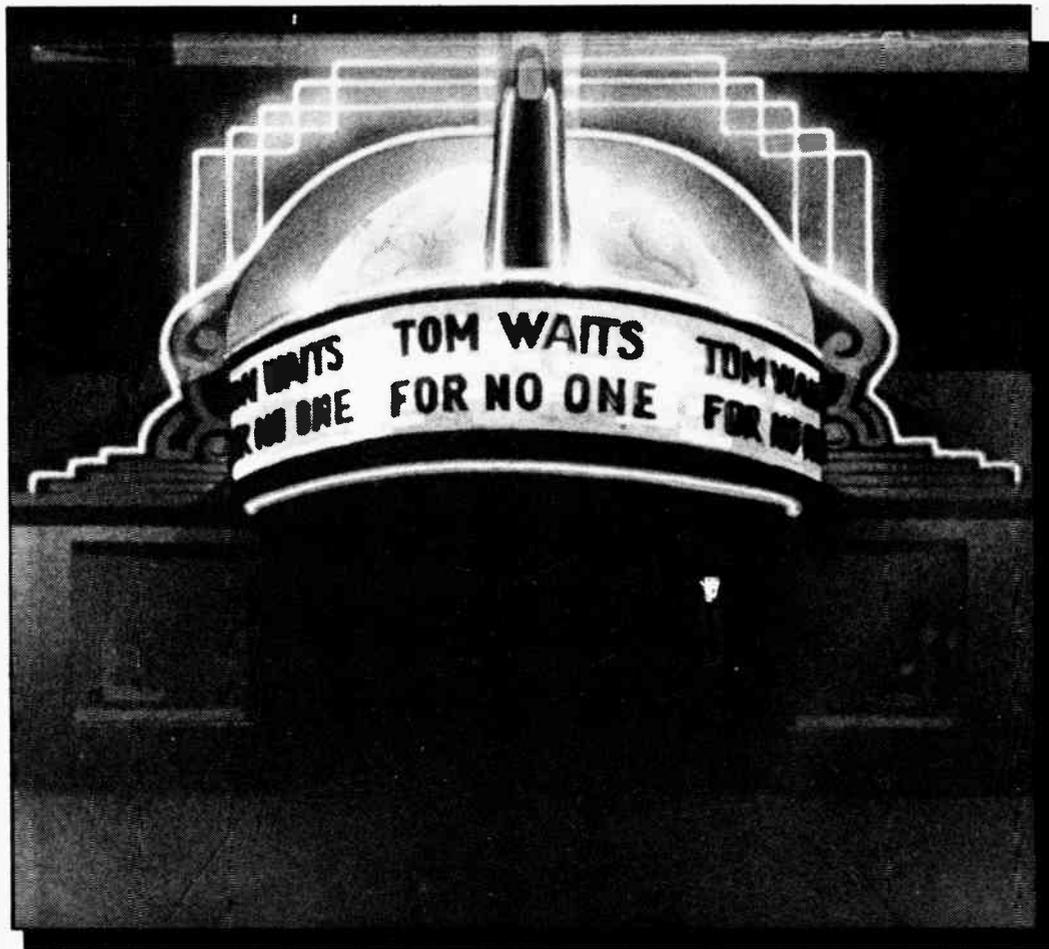
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# The making of a blue movie

by David Goggin

## The Cartoon Storyline

It is late at night in Los Angeles. A lonely performer, Tom Waits, walks down a sleazy street and spies a woman silhouetted in her bedroom window as she undresses. He begins to fantasize and the smoke from his cigarette materializes into the apparition of a luscious stripper. As he sings "The One That Got Away" she begins her seductive unveiling.

## The Videotaping of the Live Performance

Tom Waits arrived at the La Brea stage in Hollywood driving a '65 Thunderbird with "Blue Valentine" painted on the rear fender. There was a crack in the windshield and the cockpit was filled with papers and dixie cups, crumpled clothing and pointed shoes, magazines and socks. Sitting tilted over with eyeballs at window bottom level was the hero of the cartoon. He pulled up carefully and turned off the engine. He unfolded himself and got out very slowly.

We moseyed over to the entrance to the stage and opened the doors to find a bustling buzz of cameramen and technicians, a small video station and a bank of audio equipment. A mock city street had been constructed and lit in a moody fashion. The crew locked still when they saw Waits. Bruce Lyon, the producer of the project, came over to welcome the center of attention. With one hand he shook hands with Tom, while with the other he motioned for the crew to get back to work. The hum of activity

began once again while Bruce and the star headed off to the production office to discuss his performance.

## The Idea and the Process

The idea for an animated Tom Waits cartoon came to Bruce Lyon and his partner John Lamb about two years ago. Tom was appearing in concert with a stripper who danced while he sang. Bruce approached Waits with the idea of a cartoon version and he agreed to re-enact the performance for purposes of creating the cartoon.

The first stage in the process is the videotaping of the performance. After this, the images from the videotape are projected on a video-rotoscope and traced, frame by frame. The video-rotoscope is a device which was invented by Lyon and Lamb and is the only rotoscope on the market which uses video. Backgrounds are added to the visuals and the entire sequence of drawings is animated using the Lyon-Lamb process of video-animation. After checking for movement and experimenting with certain additions to the visuals, the thousands of finished drawings are photographed in the conventional manner resulting in the fully animated film version.

## Back on the Set

On the day of the initial videotaping, we had an opportunity to observe this enigmatic character, Tom Waits, in action. Backstage, he crouched down

on his haunches and waited while last minute details of lighting were being made. I crouched down coolie-fashion next to him and started off by asking him if he had any heroes. He took his time answering and when he spoke in his gravelly voice it sounded like his tongue was taking a stroll around his mouth.

"Certainly I do," he said. Rod Serling and Moms Mabley."

The call for action came and Tom got up and walked over to the doorway he would enter. He waited patiently and lit a cigarette. As the tape rolled, the smoke billowed and he slid out in his shiny black suit with stovepipe legs. He wore pointy shoes with lizard inserts, a fedora with a tiny brim, and moved like a disjointed marionette. He has a very leisurely swagger.

As the scene began, he sang and wandered around and managed to choreograph a surprising jumble of resonant expectorations, grumbles and mumbles, boneless gyrations, and slumpy steppin'. Each of the takes had an underlying consistency, but also had many differently unique touches.

## Video-Animation and the New Technology

The special equipment used in the production of the cartoon is the invention of Bruce Lyon and an animator, John Lamb. Bruce has spent over five years in the realm of video art, having had several of his works displayed at video art museums and festi-

vais across the country. He has an engineer's grasp of video, and an artist's appreciation of animation. John Lamb is a professional animator, and has contributed his work to Sesame Street and The Electric Company, among other programs and films.

Bruce and John met and decided to combine forces. They wanted to create a video system that would be compatible with the special frame-by-frame requirements of animation which has always worked with the speed and timing of 24 frames per second, while video records at 30 frames per second. Seeing the potential of video as an animation tool, they developed a recorder that records one or two frames at a time synced to 24 frames per second. The result is an inexpensive animation system with immediate playback capability. They also designed and built the new video-rotoscope which allows the animator to trace images directly from videotape.

Video in animation has many applications: pre-production testing, image projection, and in final production. The system is used as a production tool, cutting costs and giving a revolutionary flexibility to the art. Bruce and John received an Academy Award this year in the scientific and technical achievement category. Following their success with the technical side of animation they decided to collaborate on the Waits project.

### The Sound For The Cartoon

Curt Lyon, Bruce's brother and owner of a

24-track recording studio, was called on to handle the sound for the cartoon. Prior to the videotaping, he fitted Tom with a lavalier microphone. As the cord was slid down his tight pants leg, Tom gave a little shiver and then wandered around the set holding the coiled cable like a lasso. He looked like a very strange cowhand.

The scene had to be shot many times, which meant that the stripper, Michelle, had to put her clothes back on after every take. Tom graciously offered his hand at stuffing her into her form-fitted gown. She yelped ouch when the zipper nicked her. Tom suggested, "OK, let's start all over again...arrange your buns a little differently here..."

### An Interview With Curt Lyon, The Sound Engineer

*Could you run down the history of the soundtrack for the cartoon?*

Well, first of all, Bruce put me in touch with Wally Heider's studio, which originally recorded the Tom Waits album, "Small Change." We had to find someone who had worked on that project and arrange for a 2-track instrumental mix of the tune without the vocal. In this particular case there was only bass and sax.

*Who prepared the instrumental mix?*

Bones Howe, the producer of the album. He gave

me a mix of the bass and sax all the way through in its entire form, plus another track of just bass and another of just sax, so that we could use those independently for "The One That Got Away." We also got a recording of just the sax from another tune, "Small Change." That sax segment is used for the beginning of the cartoon.

We wanted to have it in 2-track form so that we could echo and e.g. it and give it a little special effect of its own, so that it didn't sound exactly like the record. The thing I kept groping with was how to get a good recording of Tom Waits singing along with the instrumental mix from the album. My experience is in studio set-ups. How were we going to record this guy who is not a conventional artist, somebody not really involved with the technical side, which is crucial to the sound of the cartoon. What you have to take into consideration is the fact that he struck me as a spontaneous "one take" guy...somebody who works that way best. I wanted to create a situation that didn't seem phony and cluttered with headphones, and multi-track tapes and that sort of thing...almost a live situation. So I had to figure out how to record his voice in a big sound stage, and feed him the instrumental mix so that he could sing along in pitch...and not get so much leakage on the microphone he was singing into that we lost all definition from the music.

We needed one track because it was going to television; we needed one track for the music; we needed one track for his new vocal, and we needed one track for the sync pulse. What we had was a sync tone, a 60 Hz tone, I believe, that locked the machine into its own speed. We used a slate click at the beginning when both the video and audio were rolling. There was a sync pulse on both the videotape recorder and the audio recorder so that they could be locked together.

*So you took the instrumental mix from the album and transferred that to one track of a four track machine?*

Right...one track of an Ampex 440 4-track. I used a small console and what I thought was the best microphone for the job. A shotgun mic would have been good for his voice, but there was so much movement involved...and the music had to be fairly loud because he was responding to its detail. He was turning his back and going in all sorts of directions. There was no way someone could stay on top of him. So the solution was to use a lavalier microphone. We picked the Sony ECM-50, a very good mic.

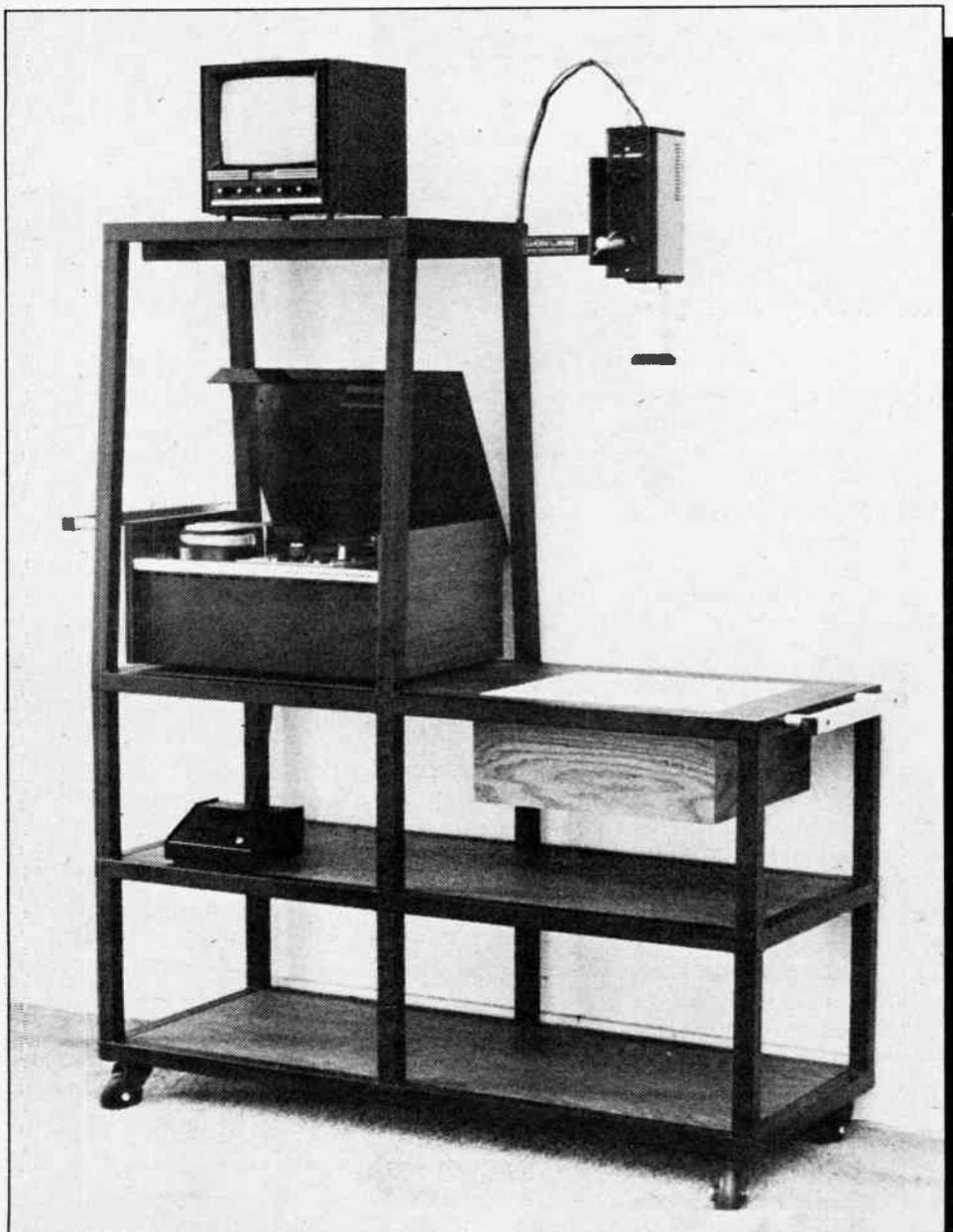
*How were the results?*

We got good results. Some of the takes really scared me though, because the mic was attached to his lapel, pretty close to his mouth so I could get some presence on his voice. When a guy starts moving around quite a bit, his jacket moving and all...he's watching a stripper and obviously not just standing there.

*Didn't the stripper pull her scarf across his shoulder and right over the microphone?*

Oh, god, it went SCHIGGGGGHHHH! That was a problem. I'd sit there with my headphones on in the corner and just pray that when he was pulling up his lapel he wouldn't knock the mic right into his chin...which did happen several times. Luckily, the right takes for the visuals had good sound.

*You thought of him as a "one take" guy...Did you find that to be true during the shooting?*



Lyon Lamb's  
Video Animation  
System



Continued from page 17

No, I didn't...as a matter of fact, he, like anybody else in the business, had an ego and when he had over 20 people watching him doing his act, each take took on an entity of its own. In my opinion, he took direction very well, and was extremely open to any suggestion that Bruce or I had in terms of our own specific requirements. I was surprised. But the pressure was on. We knew we had to get it then, because if we didn't get it then, we weren't going to get it.

***So you worked on a situation that allowed him to express himself comfortably...***

That's what we tried to do, and I think we were successful. The sound, in my opinion, is more than adequate for the production. It worked out great. It's not as quality oriented as if you had him standing stationary in front of a Neumann, and you could limit his voice and do all the things that you can do, but I think we really made out like bandits, as far as how it could have gone.

I think we were successful in creating the illusion that the technical side was invisible. My sound equipment was out of his way, and so were the cameras and the video equipment. I remember specifically watching him as he started getting more warmed up. We had it comfortable enough for him that he forgot he had a lavalier microphone on and he forgot that there were cameras flying around looking at him and everything was back away from the stage, not only kept out of his proximity from a physical standpoint, but mentally it got him into his part better.

***What was the next step after the videotaping?***

The next step was to take the 4-track and mix that down to another 2-track tape, keeping the sync pulse on one track and mixing the voice and the music together on the other track. We added some echo at that point. Stevie Wonder was recording at my studio at the time, and we had his EMT 250 digital reverb unit. It created the perfect echo sound for the saxophone and his voice. It really worked out great, brought the whole thing together. We wanted a sound that had a moody, sort of late night, foggy streetlight feel and when we cranked on the echo from that unit it just knocked us out. It made the piece. It worked.

I also did some limiting on the voice, and limiting on the bass because it got pretty radical and you also have to take out some low end for television. It's not going to show up and you may just make the speaker rumble. In a television format you have to be conscious of that.

At that point we made a cassette of the soundtrack and Bruce and John used that to build the animation...characterizations on the music and the voice. After the animation was completed we transferred the sound to 35 millimeter mag and then went into a special effects studio and mixed in a combination of voice-over material, Tom Waits grumbling and mumbling for certain reactions in the cartoon, and also added more effects...a horn here, a siren there, the ambient sound of a city street.

***Then it gets all mixed together for the final sound track which ends up an optical track on the film?***

First it's cut with the negative in the lab. They print the first optical with picture and we check that out and then it goes back into the lab and is redone again, with color corrections and things like that taken care of.

#### **An Interview With Bruce Lyon**

***How long did it take you to put together the cartoon?***

It took a long time. When we shot the videotape, it was just about a year ago...so it took us about ten months to animate.

***Who found the lovely stripper that played such an integral part in the production?***

Herb Cohen was convinced he was the best at that...Herb is Tom's manager.

***Did you have any special problems that came up in the animation?***

I think the biggest problem that we had was trying to figure out a way to materialize the apparition of the stripper from the cigarette smoke he exhaled. There were several possible ways we could have done it and what we finally ended up doing was testing several ways on our video-animation system... various densities of smoke, various timings, various qualities of blending the smoke, dissolving the smoke into the stripper. If we were too abrupt pulling out the smoke, the stripper didn't look as if she emanated from the smoke itself. If we were not abrupt enough, it looked as if the two were in no way matched...one didn't come from another. It would have just been a super-imposition of the smoke over the stripper.

***Has your system put the business ahead of the days when it was entirely done with film?***

The greatest advantage is that the animator and the director have a chance to test the animation without ever leaving the studio...without recording anything on film...sending it out to a lab to be processed and then bringing it back again to be looked at. This way, all of these things can be drawn and shot right in the studio and then looked at and analyzed immediately, so that in the case of the stripper emanating from the smoke, we could look at several options in the same day that they were drawn...and go ahead and make our decisions then, instead of waiting for the lab work. It's no different than any other studio uses the animation system for now, whether it's Disney on one hand or an independent animator that's sitting in his home outside of Chicago.

***What companies are presently using your video animation system?***

Well, just about everyone in town here...Disney, Hanna-Barbera, Bakshi, Filmation, Depatie-Freling, Duck Soup...to name a few.

***Didn't Pink Floyd get in touch with you?***

Pink Floyd bought the second system from us in England. We now have ten animation systems in England and various others spread out all over the world.

***How long is the finished cartoon?***

About six and a half minutes.

***How many drawings are involved in that six and a half minutes?***

Over eleven thousand. Each one done by hand.

***After working on this piece and dealing with Waits many times over the past year, what's your impression of him?***

My impression of him is that he is probably one of the most artistic...it's hard to say without being corny. I guess what I want to say is that he is one of the most incredible artists I've ever come in contact with. My guess is that in another age many artists were like him, in the sense that their life and their art were intermingled with one another. I think in his case it's very difficult to determine where one stops and the other begins. A recording artist may shake his tush on stage and give the impression of being the sexy bad boy, but actually live next door to Gregory Peck in Beverly Hills. Waits is a guy who's found an area in this culture that fascinates him and he has immersed



himself in it. Somehow it gives a kind of veracity to his material and his poetry that you very rarely find. I have tremendous respect for that.

**The Finishing Touches**

After the animation was completed and the vocal mixed with the instrumentals, it was necessary to record some additional voiceover sound effects for the finished soundtrack. Waits watched his animated character on a monitor and improvised some moans and grumbles and Popeye-type wisecracks to be put into the final cartoon. This last session took place on the eve of Waits' departure for New York. In a sense, the cartoon is his last Los Angeles statement and he shared a few thoughts with us before leaving.

**An Interview With Tom Waits**

*You are a true Los Angeles character. You've given an identity to a hazy city. Could you talk a little bit about your home?*

Well, I grew up in Whittier, Montebello, Pomona. I lived downtown for awhile. I've been living in West Hollywood for the last seven years... West Hollywood is such a slut.

*Are you going to miss it?*

Yeah, I guess I'll miss it, but I feel like I need a new urban landscape. So I'm movin' to Manhattan.

*Have you spent much time there?*

I've been performing there for a good long time. This'll be the first time I've actually become an inmate...so, I'm looking forward to that. I'm leaving L.A. because I've kinda run out of places. They took La Cienega Lanes and turned it into Flipper's Roller Disco. I just about had a stroke when they did that.

*How old are you?*

I feel thirty, I guess.

*Was turning thirty a big trauma?*

Well, the last vestiges of 29 were a mad scramble to make up for everything that I ruined in my twenties. I've been highly unorganized for many years and so I just went through this whole six months of this old

Reader's Digest, Better Homes and Gardens way of looking at things. I tried to settle down.

*When you die, are you going to be burned, buried, or dumped in the ocean?*

I'd like to stay in town...get a job, raise a family, all that. Those are the Golden Years.

*What do you think of the cartoon?*

I think it's remarkable. It has a lot of feeling in it...moves very well.

*Does it look like Tom Waits to you?*

Yeah...It's a little peculiar to see yourself. I think it's got a lot of style...and it has a nice fabric to it. I think it's got a big future...Mine is a little bleak at this moment...

*Really?*

No...I've got several projects I'm working on now.

*What kind of a musical scene are you going to be creating in Manhattan?*

Well, I'm going to work on material for a record I started before I left town on the road and then abandoned...Originally, I was gonna call it "Heart Attack and Vine"...but that may be subject to change.

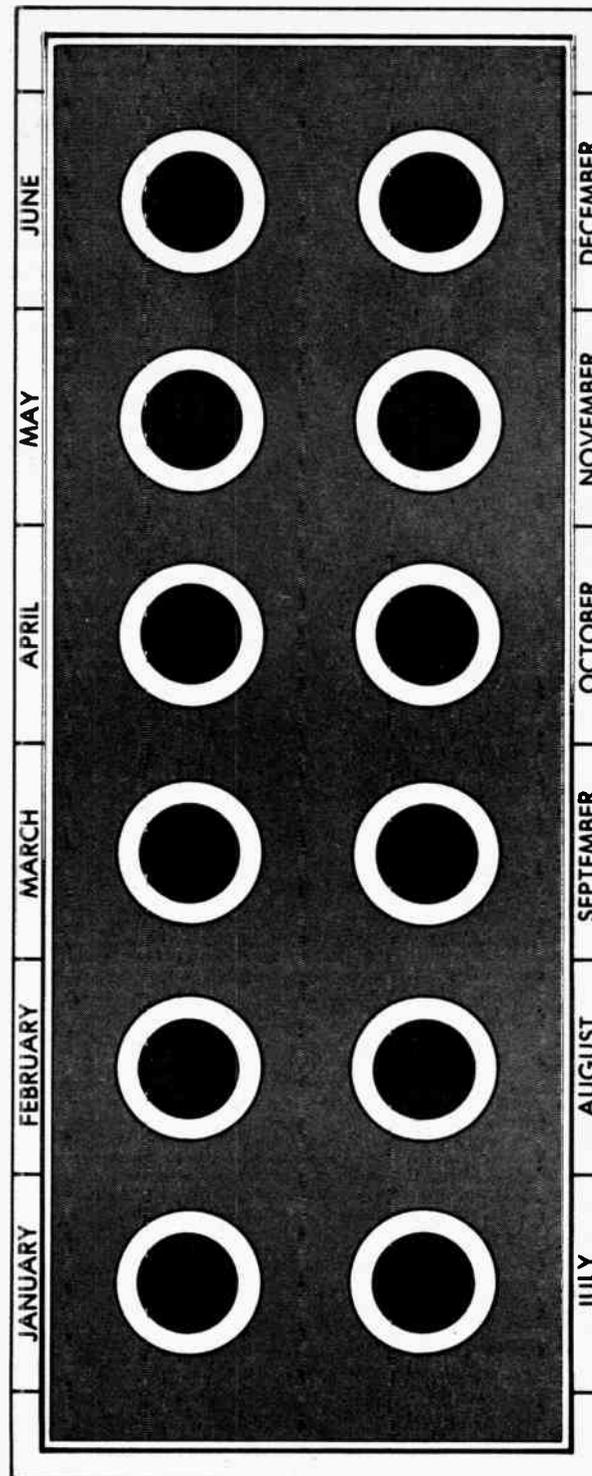
*Will you be coming back to L.A.?*

Yeah, I'll be back...for a price.

**The End**

The purpose of the entire gathering of art and machinery, sets, stripper, and Tom Waits was the making of a grand cartoon...a real illusion. The mood of the street matches the creation of Tom Waits: a crooning tenement of dark mumbling rooms. Transformed by animation, the performance was drawn into a vision of suspended eroticism...a lonely man's fantasy.

**Tom Waits For No One**  
**Producer: Bruce Lyon**  
**Director: John Lamb**  
**Character Design: Keith Newton**



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# Carson C. Taylor

by Tom Donald

## DIGITIZING THE BAY AREA



*Carson C. Taylor, currently Vice President of Audio-Video Rents, has devoted virtually his entire life to the recording arts in a career spanning over 40 years and including a 20-year stint as a senior engineer at Capitol Records. Today he is one of a small handful of active engineers who began in the pre-war wax master era and continued to work as the industry changed to wire and later, to analog tape machines.*

*Recently Carson returned from a three-week seminar at the 3M Research Labs in St. Paul, Minnesota. Together with a select group of other engineers from around the world, he completed an extensive training course in the operation and maintenance of what he calls "the most exciting development in recording since Emile Berliner invented the flat disc," the digital recorder. He plans to work on several sessions in the near future involving A-VR's new 3M 32-track digital machine.*

*Carson Taylor is a warm, gregarious man whose often boyish enthusiasm for his work belies his many years experience. This interview was conducted in his offices at Audio-Video Rents in San Francisco.*

**Mix:** *What was your introduction to recording?*

**CCT:** I started in the recording business in 1935 with a small studio of my own, which I built in my parents' house in Los Angeles. The equipment I used at the time was primitive and not always reliable. Acetates were not yet in production, and aside from wax, the only other way to record was a method using embossed aluminum discs. The stylus actually embossed the disc rather than cut it, and that, of course, was the forerunner of instantaneous playback.

**Mix:** *What kind of projects were you recording then?*

**CCT:** Anything I could get! I'll never forget the day I recorded a 40-voice choir in the studio, which in reality was my parents' living room. Things got a bit crowded that day.

**Mix:** *What type of equipment were you using?*

**CCT:** I had several Universal microphones, a carbon mic that I can remember plus a couple of early condensers. The disc embosser was also made by Universal.

**Mix:** *And then came World War II...*

**CCT:** Yes, the war came along and I folded up my operation. Due to a physical problem I was not classified eligible for the service. I then went to work at C.P. MacGregor Studios, at the time the top recording studio in Los Angeles. It was there I first met Arthur Q. (Pappy) Felthausen. I've always considered Pappy to be the man who really taught me recording. He was considered one of the top engineers in L.A. at the time and had just a wealth of experience, including work on the sound recording of the first talkie, "The Jazz Singer."

It was at MacGregor that we actually cut the first Capitol records. They didn't have their own studios at the time and we recorded people like Nat King Cole, Johnny Mercer and Peggy Lee. Of course, that first Capitol product was cut on wax, which was the standard of the day.

**Mix:** *How did the process work?*

**CCT:** We started with a wax disc of hardened caruba, about three inches thick. It had to be kept at exactly the right temperature and the surface had to be polished to an extremely high, optically perfect sheen. The discs turned at either 33 or 78 rpm and a stylus cut grooves into them. In the case of a musical error, they could be made reusable by shaving them down on a turntable that went at about 1800 rpm. That was a job I never liked.

Of course, there was no playback with that method. The producer simply decided on the best take and that particular disc became the record.

**Mix:** *How was the manufacturing process accomplished?*

**CCT:** The wax had to be metallized before it could take a plate, so the disc was sprayed with nitrate of silver or a similar solution. From there, although many improvements have obviously been made, the process of plate-mother-stamper was basically the same as it is today.

**Mix:** *What was your position then?*

**CCT:** I began as a sort of general factotum; cleaning up the studio, shaving down the wax discs and doing some maintenance. However, due to some attrition in the ranks, I quickly became chief cutter, or head engineer.

Shortly after that, I did some work for an outfit called Coast Records, which was big in the jukebox business. I remember at this particular session being very meticulous, as it was one of my first important jobs. As the take finished I rotated the turntable by hand and completed the eccentric spiral and lockout groove which, of course, were supposed to be deeper cuts than those of the music. Well, I sent the discs off for pressing and didn't think anything more of it until a week or so later when the head of Coast Records came storming into the studio. He was holding a bunch of records with large holes cut in the center. What had happened was that I had made the final or lockout groove deeper than I should and the jukeboxes, with their five ounces or so of pressure, had neatly cut right through the records and created perhaps the world's first large-hole 78's.

**Mix:** *What did the control room look like in those days?*

**CCT:** We had single speaker 18" Jensen monitors as I recall, powered by amplifiers built entirely by Pappy Felthausen. Pappy also had personally redesigned and rebuilt all the styluses and the Scully lathes we were using.

**Mix:** *What sort of boards were in use then?*

**CCT:** Here again, they were generally designed and built by Felthausen. Of course, everything was mono so there was basically only one buss. At that time there was no artificial reverberation, so one depended on the natural ambience of the studio. An engineer would use fairly close mic placement, though not nearly as tight as today, in order to engender a full sound. It was then not uncommon to use a mic at the back of the studio to pick up the ambience of the room.

**Mix:** *How were the instruments placed around the studio?*

**CCT:** Generally speaking, the orchestra or group



Left to right—1965: Carson, Dick Jones (Exec. Producer—Capitol Records), Jackie Gleason.

would set up as they would onstage and there was little or no isolation. Each group within the orchestra would share a mic, one for the trumpets, one for the saxes, etc. Usually we used only one mic for the drummer, though of course, the kits were much smaller in those days.

**Mix:** You then established an audio consultancy business shortly after the war.

**CCT:** Yes, due in part to a serious illness in my family, I took a hiatus from active studio work. I did some freelance engineering as well as some audio design and custom installation.

**Mix:** And now we come to your first involvement with Les Paul...

**CCT:** Actually, I had become well acquainted with Les when he was a session player during my stay at MacGregor. He was always interested in recording and was constantly asking me and the other engineers questions.

Later, when he and I and a couple of other fellows were involved in building his first studio behind his garage, he conceived the idea of playing all the parts himself. Of course, that was still the disc era, so each overdub was accomplished by listening to the previous parts on acetate and then recording that plus the new part onto another disc. If I recall correctly, the first piece he completed had eight parts in all. This, of course, had never been done before and was in fact the world's first overdubbed recording.

**Mix:** Your long association with Capitol Records began in 1956?

**CCT:** Yes, by that time they had built the Capitol tower and had opened their own studios there. The industry had, of course, changed to tape by then, having bypassed disc and later wire recorders. I began in a maintenance position and rather quickly progressed to recording engineer.

That was an exciting time. The idea of stereo recording was brand new and there was constant experimentation going on. We were all pushing hard, trying to extend the boundaries of the existing technology.

**Mix:** When did tape overdub capability come along?

**CCT:** Shortly after I joined Capitol we commissioned Ampex to build us the first three-track, but this machine was not set up for overdubbing. It had a full track erase head and also serious bias difficulties. Once these problems were taken care of, the door to the multi-track era was open. Let me tell you though, those first attempts were primitive, especially in the area of studio foldback. The sound off the record head going to the artist on headphone was terrible and it took a certain getting used to before one could play along.

The three-track format lasted quite a while — until the early sixties when the first four-track machine was introduced. From there it was an easy leapfrog to

eight-track and beyond. Of course by that time one of the leaders in pushing for more and more tracks was Les Paul himself.

**Mix:** Who were some of your favorite Capitol artists with whom you did sessions?

**CCT:** I recorded most of the acts on the roster at Capitol at the time, but I think that my fondest memories of that era are of working with Nat King Cole. He was one of the most gracious gentlemen I'd ever met and, of course, just a fabulously talented artist.

I always enjoyed sessions with Stan Kenton and in fact later became his personal mixer. Recording his big band and sometimes unorthodox charts presented challenges to me as an engineer that I'd never encountered before. One incredible project I recall was an album pairing Kenton and the band and, of all people, Tex Ritter.

Another date I know I'll never forget was one with Peggy Lee. Due to her tight schedule, she had to record the final tunes for an album on the day of Nat Cole's funeral. The tower was closed and there was no one in the studio except her producer, Lee Gillette, Peggy and me. Peggy was, of course, very charged emotionally on that day. She and Nat had been on the label since the beginning. Her singing on that session — "Arrivederci Roma" was one of the songs, as I remember — was nothing short of staggering.

**Mix:** Did you work with any of the rock acts that were beginning to be signed to the label?

**CCT:** I worked with some of them, but aside from Nat Cole, Kenton, Peggy Lee and Tennessee Ernie Ford, I gradually shifted to my first love, classical music. I began to work almost full-time for Angel Records, Capitol's classical subsidiary.

There is today, after some 37 years on the job, a man still at Capitol whom I would judge the "world's greatest mixer." John Palladino taught me everything I know about mixing and is considered a legend in the business. I owe him a great deal.

In 1976, after nearly 20 years, I retired from Capitol and the smog of Los Angeles and moved to San Francisco.

**Mix:** That seems to bring us about to the present. What are you doing now?

**CCT:** Well, as you know, I just returned from a seminar on digital recording at the 3M labs in Minnesota. I simply cannot begin to tell you how excited I am about working in this new medium. That's precisely what it is, a brand new medium. Digital is a major breakthrough that will forever change the world of recording. The advantages and features are unbelievable...

**Mix:** Such as?

**CCT:** Find out by trying our new 32-track here at A/VR on your next session. Seriously, I firmly believe that digital is the wave of the future and I intend to be a part of it all. ☺

1962: Indiana State Fair. Left to right: Lee Gillette, producer; Tennessee Ernie Ford; Carson; George Bennett, maintenance.



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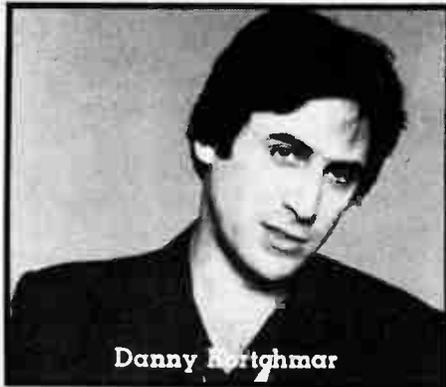
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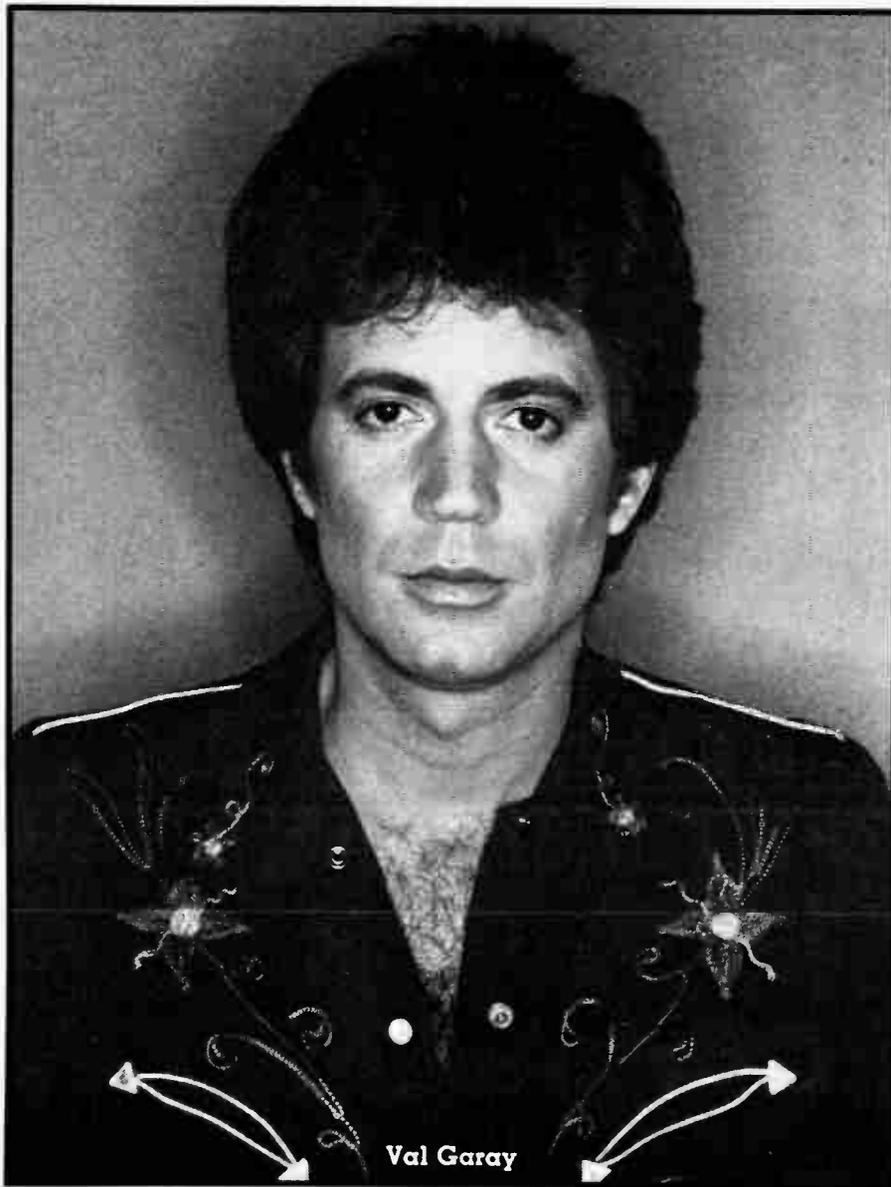
# VAL GARAY

by David Goggin

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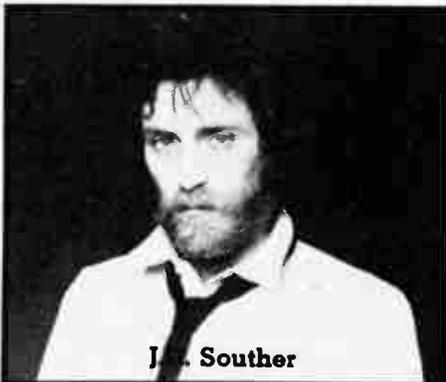
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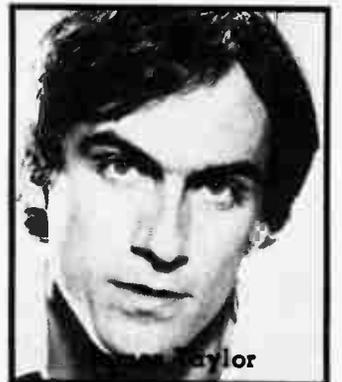
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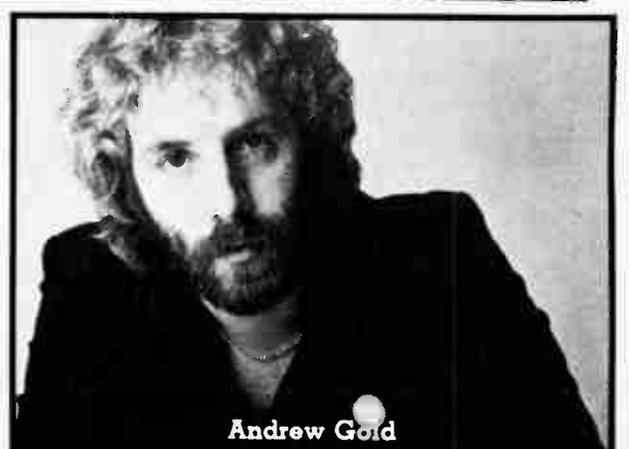
Linda Ronstadt



Karis Bonoff



Gary Edwards



Andrew Gold

**W**hen I arrive at Record One, a very busy new studio in the quiet Los Angeles neighborhood of Sherman Oaks, I am greeted by LeAnn King, former assistant director of Motown Studios, who is currently involved with research and development for Record One. She graciously invites me to have a seat and wait for Val Garay, an engineer well known for his work with such artists as Linda Ronstadt and James Taylor.

Record One has the simple elegance of a Swedish lodge. Skylights illuminate the living room with fireplace, the handsome kitchen, the offices with glass desks and the Japanese silk priats. The control room is spotless, the light oak woodwork is flawless, the rack is functionally handy and the chairs are comfortable. Visibility is unobstructed and the engineer can easily see into three totally isolated rooms.

Val soon arrives and we proceed through a large and well-lit maintenance area into his office, a skylit space with a very high ceiling. There is an immaculately polished upright piano, an assortment of choice memorabilia and row upon row of gold and platinum records on the pure white walls. The room is spacious, accommodating a large executive desk. Val sits on the carpeted floor in front of the desk as he talks about the construction of Record One, his personal history as an engineer, his influences, teachers, friends and discoveries.

**Mix:** So, you tried to get away from a "Nightclub" feeling when you designed Record One?

**Val:** I tried to get away from what most people consider the normal "space" for a studio. There are a few basic designs... the Westlake design and others... and then there's the studio that I've been working in for the last ten years...

**Mix:** That's the Sound Factory?

**Val:** Right. Steven (Waldman) and I sort of designed that studio with David Hassinger, who is the owner... who is the man who taught me as we went along. He liked our ideas and was open enough to ask for them at the time that he was building. We'd sit down with a piece of paper and we'd sketch things out. We spent a lot of time at it. The studio part of this building is basically designed after that studio.

**Mix:** Did you stick with that design because you were comfortable with it?

**I**t just worked so well. I've been in every studio in this town and a lot of studios in Europe, and I've never been in a studio that works so well. It worked so perfectly for Linda and James and the people I record with. You've got an isolation room to the side. The control room is surrounded on three sides by studios. Well, we usually have James in the room to the side and with that big window in front he can see the whole band. If you want a singer in the vocal booth at the same time, you've got it. It's just a real good arrangement for multiple choice. You can get a lot of different sounds out of the small room. It's a great combination.

When I got into the rest of the building, it got a more European feel...the light woods and all. We started moving things up. Most of the ceilings in this place are high. The lounge is eleven feet. The hall-

ways are nine feet...pretty good sized ceilings. We had to take the whole roof off the building.

**Mix:** It looks like you had a lot of fun in construction.

**Val:** It was a riot. I would come in here every morning at 8 o'clock and start fighting with the carpenters and plumbers. I took a lot of architectural and mechanical drawing when I was in high school and college. In fact, when we did the original floor plan of this place, I took an as-built drawing and outlined the outside perimeter of the building and then I drew the floor plan to exact scale. The studio was built from that. Basically, all the architect did for us was to document everything.

In the studio, I had them build to eighth-inch tolerances in wood, which they said was impossible to do. But, if you look at the finish work in the control room, you can see it's done. We had two different crews working on this building. One was a construction crew that builds studios in town and the other crew was the one that built The Sound Factory and other studios for David Hassinger. They're friends of mine...carpenters I've known for years.

I was here everyday at eight in the morning until six at night...fighting every day. And then I'd have to go to work at The Sound Factory from seven 'til three in the morning. It damn near killed me. It took eight months to build...which is incredibly fast by today's standards...but eight months of trying to do three albums at the same time. I can only remember people saying to me, "How you doin'?" and I remember answering, "I'm hangin' on by my fingernails." When I thought about it three or four months later, I really was...I was just blithered.

**Mix:** Are you happy with what you have now?

**Y**es, it's great. But now we're starting on the second room.

**Mix:** Is that the "Future Room" in the diagram?

**Val:** Oh, it's already past the "future." They're starting to pour the concrete next week.

**Mix:** Will that be a bigger room?

**Val:** It'll be an identical left hand version of the original room, except the studio itself will be two stories high.

**Mix:** What do you plan to do in there?

**Val:** Same thing...make records. Plus we're adding some video capabilities, so we can do some post-production video stuff.

(At this point Val takes a phone call...)

**Mix:** I heard you say "Andrew"...was that Andrew Gold you were talking to?

**Val:** Yes.

**Mix:** I met Andrew once in England about twelve years ago. He was drawing a lot at the time...

**Val:** Andrew could have been an artist easily. He did a drawing of Chuck Plotkin, himself and me on the back of a tape box once. I had it framed. The guy is really a talented man. He used to sit at home with earphones in his bedroom and play the Beatles' records forever. That guy is one of the best authorities on the Beatle records of anybody I've ever met.

**Mix:** Around the same time I ran into Andrew I got to visit a couple of Beatle sessions in London.

**Val:** At Abbey Road?

**Mix:** Yes.

**Val:** I worked at Abbey Road. What an amazing feeling it is to walk into that place. St. John's Wood... EMI's only studios... in that old Georgian house. The Beatles had Studio Two... the big one on the right side with the control room upstairs looking

down into it.

Steve was over there, too. We started working together at The Sound Factory at about the same period of time.

**Mix:** What year was that?

**Val:** About 1970. Steve was the chief engineer and I was the engineer...learning. We both started out together there. After a while neither one of us really got along with Dave. He ran a tight ship his way and didn't leave much room for personalities. He and I were a couple of personalities...and I don't mean in the star sense. I mean, we were just a little crazy and not terribly easy to deal with. He was young and I was younger, and it was tough. I'm sure we put him through a few changes. I eventually went to work for myself.

**Mix:** As an independent engineer?

**Val:** Yeah. When I stop and think about it right now...the talent that went through that studio...the talent that man attracted and the people he put in this business. He taught me and then I in turn taught six other engineers, all of them very successful now.

Dave Hassinger was a huge engineer in his time. He started out at RCA. He was the man who did all the Rolling Stones records from "The Last Time"...which was their first big hit...all the way through "19th Nervous Breakdown." All those Rolling Stone records that everybody thought were made in England were made at RCA in Hollywood with him. "Satisfaction," "Under My Thumb," "Goin' Home"...he made some amazing records.

**Mix:** Would you say he was the biggest influence on you?

**Val:** He was the best engineer of his time. There was nobody better. Al Schmidt taught him and then got out of engineering and started producing. When Al stepped out of RCA, Dave Hassinger took over. I mean, that guy had it covered. The outside business at RCA studios was 90% his. A strange thing happened to him. At the time, RCA was all unionized and you couldn't be an engineer and produce records. He started producing records at his friend, Richie Podler's studio over in the Valley...which is a tiny little studio called American Recording. You have no conception of how many hit records came out of that little place. All of Three Dog Night, all of Steppenwolf...the list goes on forever. He started producing records in his off time and got a huge hit record with a silly group called The Electric Prunes. He went on vacation and when he came back he discovered he had a top five record nationally. They fired him.

**Mix:** Was that "I Had Too Much To Dream Last Night?"

**E**xactly. So then Warner Brothers hired Hassinger as a staff producer. He did some good albums with Warner Brothers. He finally quit after his third Grateful Dead album when they'd been in the studio in New York doing earphone balances for three weeks. He stood up one day (*Val makes a familiar finger gesture*) and got on a plane and went home. He said to Mo Ostin, "Listen, I can't do this anymore."

At the time, he had bought a studio in Hollywood where all the Righteous Brothers records were made...Moonglow Studio. All the RJ Recorders records were done there in the early Sixties. It was a very famous little studio. The things that went on there must have been phenomenal. He basically never changed the design of it. That's where it began to evolve. The control room got enlarged a little bit,

Continued on next page

Continued from page 23

but the shape was already there. Dave made his records from the early Sixties to the early Seventies. He did the first few Jefferson Airplane albums...I can't even begin to list the records that man made.

**Mix:** *Were you a second engineer to him?*

**Val:** Well, at the time, I was producing records and doing them in his studio. He was engineering for me and one day...I don't remember how it came about...one day he just said to me, "Why don't you let me teach you...?"

**Mix:** *So you were a producer before you were an engineer?*

**Val:** Well, yes...but I was a musician before I was a producer.

**Mix:** *Who were you producing before you became an engineer?*

**E**vie Sands...John Tillotson...I made some interesting records in that period of time. Most of the stuff I did was with Autumn Records in San Francisco...people I'd known since the pre-Beatle days nightclub era. Tom Donahue and Bobby Mitchell...it was their label. They had the Beau Brummels, the Mojo Men, Sly Stone...the Tiki's who later became Harper's Bazaar...which is, of course, later, Ted Templeman. The talent they had locked up was unreal.

Anyway, I came down to Los Angeles and I was producing records in Dave's studio and he said he wanted to teach me. I said great...I thought it would be fun. Little did I know. One day I'm tellin' him how I'd like to do this and how I'd like to do that...and the next day I walk in and he says, "You wanna go up and get the sandwiches?" Wait a minute...what the fuck did I get myself into, ya know? But it intrigued me tremendously, so I really jumped in.

The first project I worked on was The Mamas and the Papas. It was...*The Movie Of The Week*. In that time, 1970, people did albums for \$25,000. This album was a \$175,000 album that took six months. We would work from 6 at night until 6 in the morning six days a week. I saw them almost push that man off the edge. We used to walk out at six in the morning and he'd look at me and say, "Are we crazy or are they crazy?... and be serious about it. Working with John Phillips, as brilliant as the man was, was a little nuts. He would do stuff like start mixing the song in the fade... do the last eight bars of the fade, then the next eight bars... tack it together and go from the back to the front. Crazy stuff.

**Mix:** *Was that album a big success?*

**Val:** No. It was the last album that they did together, called "People Like Us" for Dunhill. They got back together to do the album...right before Cass died. It wasn't successful. It was an interesting concept, but The Mamas and the Papas had always done albums with a very white rhythm section. It was always the same people: Hal Blaine, Mike Decey, Tommy Tedesco, Joe Osbourne...the Lou Adler formula of the time, 'cause Lou was producing them. John said for this album we'll use Gene Page, with a basic Motown rhythm section. That was another group of players in town: Ed Green, Wilton Felder, David T. Walker, Bobby Hall Porter playing percussion, and Gary Coleman. It was the Motown rhythm section and he had an idea of doing it that way. The tracks were brilliant. Joe Sample played piano. The first two months of vocals were brilliant, and the next two months got less brilliant re-doing the first two months... and the next two months got even less brilliant re-doing the last two months. By the third time through it was just stale. It just didn't have the

same stuff it had during the first pass... so that's why I think it wasn't successful. The songs were good. There were some great songs in the album.

**Mix:** *That's an example of having an album budget that allows you to do whatever you want. Do you think that having a restriction in that sense can sometimes force a group to perform better?*

**I**t's so hard to say. It's really hard to say. I've seen great records made both ways. Look at the Eagles. This last album, from the time that "Hotel California" was released to the time that "The Long Run" was released was a three year period. That's a long time to work on one record...yet you listen to it and it's a great album. It sounds like it was made in six weeks. Wrong. Three years. And they spent god only knows what kind of money. Fleetwood Mac...same thing. Then you've got The Knack: sixteen days, \$28,000. So, I don't know...I've seen 'em done both ways. I've worked with Jackson Brown...he's in here making a record right now...I've watched him labor over stuff for a year, a year and a half...and he makes great records. Then I've seen people sit in there and just fuck around for six months or a year and end up with...shit. They get lost.

Certain people have a certain style...also, it has to do with how much success you've had. The more success you have, the harder it is to continue to make better records. We made five or six platinum albums with Linda in a row. And we used basically the same format and sound and style for all of them. By the time we'd finished "Livin' in the U.S.A."...which was about a year and a half ago...we knew that it was time to shelve that package and try a different approach. Linda and Peter and I have been making records together now for about seven years. We are very open with each other. Linda discussed with Peter, and then Peter discussed with me the possibility of her doing it with another engineer and another producer. We were perfectly willing...not that I could stop her...but I mean there were no hard feelings. We knew it was time for a change, and the more discussion we had, the more we realized that the three of us were so close in terms of concepts and communication that we were good enough...why didn't we change, and then change the things around us...the musicians and stuff. We could probably make just as good a record or better, without putting her into a *completely* foreign environment.

**Mix:** *Was the new album done here?*

**Val:** Yes...the first one done here.

**Mix:** *Did the change in location help to get that new approach?*

**W**ell, for me it was imperative. I had to change. I had The Sound Factory down so cold... and I had pushed it to its maximum maybe a year and a half ago in every respect...electronically, mechanically, ...everything. I had squeezed every ounce of blood I could get out of it. The only way that I could get into a completely different creative environment was to go to another studio. There wasn't another studio that I liked in this town, so the only choice I had was building one. I really didn't want to build a studio, because it's a lot of work...and it's a headache on a day-to-day basis...but fortunately

I have such good people here. Some of them are from The Sound Factory.

**Mix:** *Did it cause any problems when you moved away?*

**N**o...maybe...not really. When I moved away, I didn't take people with the intention of stealing them. In fact, of the three people that came over here, two of them asked me if they could come. The third one, I approached because she was so good. I figured if she could handle me for four years, she could handle anybody. She handled me great...I never felt slid or pushed into a corner as far as time in the studio.

**Mix:** *Who is that?*

**Val:** Deborah Sommer, the traffic girl...now the studio manager. She could handle me, she could handle Peter...everybody was comfortable with her...so why change? I gave her a lot more responsibilities. She manages the studio, plus books the studio...she does a lot of other things. She has room to grow and expand her career, whereas over there she'd gone about as far as she could go.

**Mix:** *Are you training engineers here now?*

**Val:** Yes...I always do. I always say I'm not going to do it anymore, but I always do. It's a lot of work...it's really a lot of work. I hate to think about it because I have such a specific style of working. Getting somebody used to that is difficult. Some are faster than others. Greg Ladanyi is one...he works with Jackson Brown, and Warren Zevon, and Karla Bonoff, and Andrew Gold. I can't think of all the people he works with. I worked with a lot of them and had to stop.

**Mix:** *Because the challenge wasn't there anymore?*

**Val:** Oh no...god no. The challenge was there with them. They're amazingly creative people. It's just that between what I was doing myself and what I was doing with Peter, I had no more time. Because I taught Greg, it was like he basically had the same foundation that I had...so for them to go from me to him was an easy transition. Then, of course, he got better and developed his own style. Amazingly enough...if you look at the family tree, we're all rooted to Dave Hassinger's school of engineering. I used to joke about it. I had a book made up for Dave once. It said "The Walter D. Hassinger School of Engineering"...(by the way, nobody knows his real name is Walter)...and you opened the book up and it had five hundred blank pages.

There was Jim Nipar...who just became an independent engineer. I hired and taught Jim. Then there's Dennis Kirk, who I taught. Dennis does almost all of Richard Perry's recording now. They're all out there workin' real hard. It's fun to watch somebody you teach become good at it and go for it. So far, all of the people that I've taught as second engineers have gone out there and made money. It's an interesting style of teaching. You never tell 'em anything. I just teach 'em the way I was taught. You don't tell 'em anything...ever.

**Mix:** *Could you elaborate?...They must make mistakes...*

**Val:** Yes, they do...but when they make mistakes, they make mistakes themselves and they realize it. Once in a while you'll get on somebody for something if they don't turn the corner fast enough...or if they don't turn it at all. But most of the time when I teach somebody, I tell 'em for the first two months don't ask any questions. Don't ask anything...just sit there and watch. Usually, when I teach somebody, I'll have a second there who's working with me and

Continued on page 26

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Continued from page 24

the "student" will sit and watch for two months. In two months time you'd be amazed at how many questions get answered. Then they start running the tape machine and then they start patching things in and plugging things in and pretty soon they're sitting there and the next thing you know, you can feel 'em start to want to get over to where I'm sitting...and when they start scratching enough, you just move over and get another second. You send 'em on their way. That's the way it always seems to work. It seems to work real well. But you do get close to somebody as a person, as well as a comrade and everything professionally, and you hate to see them go. You have to go through the cycle again, but it's like training recruits. You can't hold 'em back...it wouldn't be fair. They get to a point where they have to start expanding their career. You just gotta sign 'em away.

**Mix:** *If such a thing could be summed up as the "Val Garay" sound, how would you describe it? What is there about it...a method of how you saturate the tape?...*

**I**ll tell you...and this is not dodging the question at all...anytime anybody has ever asked me how I do something...be it a producer, an engineer, or an artist, I have always told them to the best of my knowledge how I did it. I've never been the kind of engineer or producer that has secrets. If you asked me how I did a specific sound on a specific record, I would tell you if I could remember exactly. If you were to take and copy that, by the time you got it down, I would be on to a whole other thing. I'm constantly changing everything. I'll stick with something for an album maybe...not because I want to be different, but because basically, I get bored with it. I'm always looking for a new way to do things. It's just my curiosity more than anything.

**Mix:** *Is there a guideline, though...maybe a clarity of sound that you go for?*

**Val:** Well, yeah...but that's constantly changing, too. It really developed around drums. Drums were really the key to the kind of records that I make. Prior to that, records always had sort of an evenly distributed sound in terms of instruments...they were primarily guitar and vocal oriented. I always wanted to hear records, like Linda's records, with some punch in 'em. Regardless of how soft and light they were, I always wanted to hear 'em hit you when they happened. So when I first started making records with Linda, the whole concept I had in my mind was to make a record with her that had some "pop" to it...you know, really punched you...and nobody had, and she hadn't. There were a couple of other engineers at the time who were starting to get into it. I used to work til 2, 3, 4 in the morning and then I'd sit in the control room and listen to albums that I was starting to trip out on how they sounded...and...this is a very funny story...I've never told it before. What happened was this friend of mine, Trevor Lawrence...I don't know if you know who Trevor is...

**Mix:** *I saw him once playing on a Kinky Friedman album...just shook his hand.*

**Val:** Well, Trevor is a great saxophone player...and arranger. He was with Butterfield for a long time and then he did all of the sax stuff on "Talking Book" and that whole era of Stevie Wonder. Great sax player, good producer, good arranger, and a good friend of mine. He called me and asked if I would mix a record...a single he'd made. I really wanted to impress Trevor, so I got David (Hassinger) in...who was sort of slipping out of mixing at the time, both style-wise and generationwise. He had a great sense of

balance...the best sense of balance of any engineer I've ever seen in my life. He'd do things that would blow me away. So I talked David into coming into the studio and working on this mix with me. We threw everything in that but the kitchen sink. We did everything we could think of and Trevor was a nice enough man that he sat through the whole 6½ hours of us doing everything we could think of to make this record sound great, and then he took the tape and left.

He went directly over to Sound Labs and re-mixed it again with another engineer. He called me up that night and he said, "Listen, I re-mixed the song again and I just wanted to tell you...so you didn't hear it and know it was different and think I was an asshole." I said, "Well, that's really nice of you...but I'd really like to hear it." Of course, my mind and my ego immediately went, "This guy's so full of shit...he can't begin to believe that the mix we did is not better..." I just wanted to hear it so my ego would be satisfied. He came over and played it for me and it fuckin' blew me away. It was so good it blew me away. The things that I heard were immediately so apparent to me. At that point, I swore to myself that nobody would ever go away from me and mix a record with somebody else.

**Mix:** *Was it that "punch" you were looking for?*

**O**h, yeah, but what it was...there was no echo on anything. People always put echo on snare drums and echo on pianos and echo on this and that. This thing had no echo on the drums...no echo on the keyboards. And it was so present that it was right here in your face. The kick drum was shoved so far out in this mix...When we used to mix records ten years ago, you'd hear the kick drum behind the bass where it would sound like the bass player popped the string. Now, you can hear the kick drums...and they're right there in your face. The first thing I started to do was just start stickin' that drum set farther and farther out...and dry as a bone...and going up in frequencies. We had a console that had fifteen thousand cycles on it and I never touched any equalizer above seven. You just didn't do it. And I never rolled anything off. There's a plus and minus side to equalizers, but I'd never seen anybody roll anything off. So I sat there and started fooling around with the frequencies and rolling midrange out of things and adding fifteen thousand cycles and putting air into stuff...and suddenly, I started hearing everything just open up and become *gigantic*. That's basically what I started with as a style.

**Mix:** *What was the first record that utilized this new sound?*

**Y**ou're No Good" ...the first one. A real classic record, too. What was really funny about it...I can tell you this now. I did an interview years ago and asked them to take it out of the article because I was embarrassed...or didn't want to embarrass Linda at the time...but this is such an old story that it wouldn't matter now. It was funny, because the guitar solo in that record was a real innovation in guitar sound at the time. It was Andrew that played it. That's how Peter and I first started working with Andrew. Andrew would come by when we were doing that album...He'd come by at night and give tapes of himself to

Peter 'cause he wanted Peter to produce him... because of Peter's association with the Beatles. Peter started listening to some of Andrew's guitar playing and he said, "Why don't you play a solo on this track for us?"

So, one night we sat down about 7 o'clock at night...Linda wasn't there...and we worked 'til about noon the next day...doing layer after layer of one track doubled...slightly out of tune and kepeked. The things we did to those guitars...I can't even believe we did it...plus, we had this old machine that John Phillips had given to The Sound Factory that was made by EMT. It was a disc delay. They made about six of them. It was a reverberation unit designed for halls. You'd punch a button and it would have 25 milliseconds of delay...then 75...then 125. If you sat in the hall everything was delayed at the right increment so everybody would hear the speaker at the same time.

This thing had a disc in it with three record heads and three playback heads and it would warble because it was so old. It would warble with this funny oscillation to it. So we put the guitar through it and it would create this strange shimmering sound. If you listen to the solo on that record it has this amazing sound. It's all these guitars layered with this funny machine on it that create this really strange, hollow...almost like an early Beatles kind of thing. Linda came in and heard that guitar solo and said, "I hate it. I don't want a Beatle guitar solo on my record...I hate it." We were shattered. We thought it was the most amazing thing we'd ever heard. It was just amazing...and she hated it. Then she listened to it and listened to it and then we tried a couple other guitar solos on it with some other guitar players... blues guitar solos that were completely out of context after hearing the record put together the other way. Then the next day she came in and she said, "Yeah... I love it." She was so taken aback by it, that the first thing that came out of her mouth was, "I hate it."

**Mix:** *Weren't some of the first times you heard Beatle records...weren't they kind of disorienting?*

**Val:** Oh, completely...I'll never forget it. I was driving down a side street at 3 o'clock in the morning and I heard "I Wanna Hold Your Hand" and I almost took out three parked cars. I sat in the driveway of my house mesmerized for fifteen minutes.

**Mix:** *I bet a lot of people mark their history by the day they first heard "Strawberry Fields" or some other Beatle song...*

**T**hey got me... stole me, immediately. I was in the music business from that day on. I'd been around it all my life, but I decided that it was going to be my career at that time.

But, anyway, trying to describe the kind of sound and stuff...It's really hard. When I finished "Heart Like A Wheel," I got on a streak where I had nine or ten number one records in a row. Everything I touched or was involved in...it wasn't because of me...anybody knows an engineer or a well-engineered record cannot make a hit record. It's the artist and the songs...and fortunately, I was lucky enough to be with real talented people at the time. It was crazy. One year, '74 or '75, I think I did 27 albums... either from beginning to end or mixed them. There was a year where I didn't see light of day for fourteen months."

**Mix:** *What's your schedule like nowadays?*

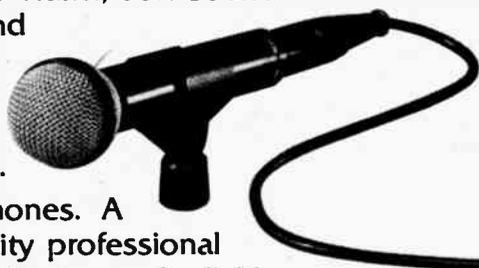
**Val:** Now it's pretty good. I do maybe six or seven albums a year.

Continued on page 28

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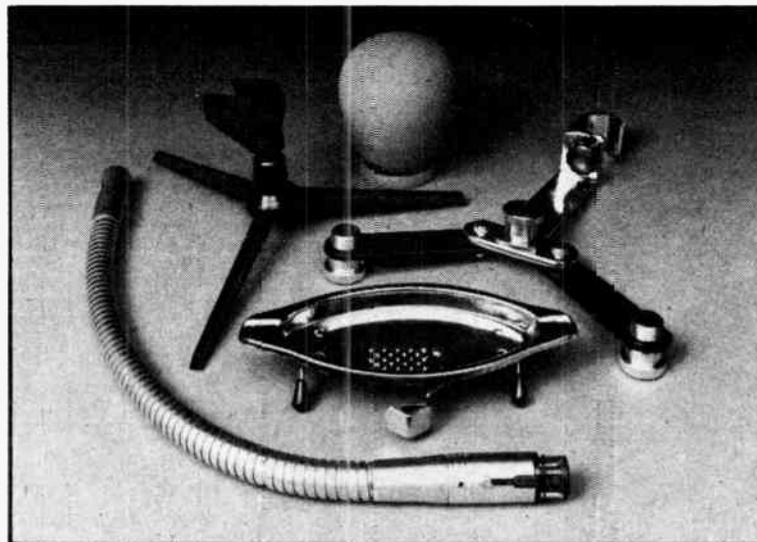
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Continued from page 26

**Mix:** Are you doing them simultaneously?

**Val:** No, I never do two things at once anymore. When I was first becoming successful as an engineer, I couldn't get enough of it. I worked with a lot of different acts that people don't even realize. I was working from 8 in the morning til 6 at night with the Blackbirds... and then from 7 at night til 2 in the morning with Peter, on either Linda or John David or whoever he was doing at the time.

**Mix:** What are some of those acts that people might not remember you engineered?

**T**he Blackbirds is a good example... R & B jazz... the beginning of that whole thing. The hit I had with them was "Walking In Rhythm."

Another act that I had a hit with that nobody probably knows is Orleans. "Still The One" ...I did that album with them. Eric Carmen; Jennifer Warnes, "Right Time Of The Night;" The Four Seasons. There's a good one..."Who Loves You" and "December '63, Oh What A Night." That was the first major hit Bob Gaudio had as a producer, I think. He's had zillions of hits as a writer, with Bob Crewe... I mean, all those Four Season records. Then he came to me and had me mix Neil Diamond's album, "Glad You're Here With Me Tonight." Then they asked me to do the TV special, which I got an Emmy nomination for... which was weird for me, because all those people that spend their lives in television, working to get something like that... and then I do one TV

special and get nominated. I thought it was a little unfair and then I lost anyway... so I didn't feel too bad about it. I always wanted to win a Grammy... and to get nominated for an Emmy when I had nothing to do with television and probably never would have... although now I'm getting into it a lot.

The next big move is, of course, the marriage between audio and video... That's clearly the next big thing.

**Mix:** How are you fitting your career and direction into that?

**Val:** Well, my partner in the studio, aside from Steve, is Mel Simon...who I'm sure you know. Right now, we're in the process of putting together all the design and wherefore to build a big video complex... because it's just around the corner...stereo television, and...the thing that I've learned...and I don't mean this out of disrespect...but the thing that I've learned after doing three or four TV specials in the last couple of years, is that a lot of the television people are like the film people in that they've been used to doing things a certain way for so long that that's the way they do them. The new technology and the new equipment and the new ways of doing stuff... well, they really don't know much more about it than I do. I think that the people that come from the audio side, as opposed to the video side, will have a little bit of an edge...in that audio is going to play a serious role in video. So, I'm going to get into video.

**Mix:** Do you think that you will contribute something to video production that will equal your effect in the audio world...like "punch" in the visuals?

**Val:** I hope so, but I don't know. I think it can be done. I've done a lot of work with a brilliant director

who is probably one of the best live music directors. His name is Stan Dorfman. Stan was with the BBC for years. Peter started using Stanley to do a lot of the video projects he did with Linda and James...a lot of the clips for television, commercials for the albums, etc. What he did was phenomenal and about two or three years ago we did a 90 minute taping with James Taylor at the Anaheim Convention Center. Just recently we did a 90 minute special for Showtime that Peter, Stanley, James, and I sort of did together. It did very well. We just did Linda's new video clips for the new album in that room next door that will be the new studio...we did it when it was all demolished. All we did was mic everything...then we ran everything down the hall to the control room. So, I had a control room environment as opposed to a truck which is usually what you're stuck with. They put the video truck outside in the alley, brought all the cameras and lighting into the room...and we shot it there. Peter, Stanley, and I plan to do more of these in the future.

**Mix:** Primarily along the lines of live performances?

**Val:** Right...music live, interesting locations. There's not a lot of it being done well. There's not a lot of acts that can do it the way we do it either. Most acts, when they do something like that, will play live and sing live and tape it...and they'll put it on a 24-track...then they go in and re-do whatever didn't come out right.

**Mix:** The way "sound-alike" records are done...

**Val:** Exactly. OK, we did it a completely different way. It's amazing how well it works. We did it all live...no overdubs. I mixed the sound and sent it directly to the truck on tape, so on the one-inch they had the mixed, finished version. There was no way to

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go back and change it.

**Mix:** *Was that in mono?*

**Val:** Yes.

**Mix:** *Did that put you through any changes... getting back to mono?*

**N**o, not at all... the only changes it puts you through is that you're mixing a live record. It's all live...everything...the echo, the mix, the whole thing. We never changed a thing. The advantage of that is that Stanley then has a working mix to cut from. Usually he has a mono feed that I send him, that is separate from what I'm hearing...it's like a bad ear-phone mix. He uses that to do all his cutting. Then usually, the 24-track stuff is mixed and given to him and he transfers it back. With our method you don't lose all those transferring generations. The sound quality is phenomenal when you do it this way...but you have to have a band that can play live, sing live, and perform live. You get the great take and you've got it. Once you get the great take, he goes and plays that back to them and they play to it and he does all of his intercut shots...so it's perfectly in sync with the music. In essence, he overdubs video, which is the most important thing to overdub, as opposed to audio...because it's a video medium to start with. So you have to get acts that can play live and sing live in order to do it this way. There's not a lot of them that can do it...or there's not a lot that think they can...but once you see the difference in quality going from that

direction as opposed to doing it the way they've always done it, it's a phenomenal difference...both in the resolution of the picture and in the quality of the sound.

**Mix:** *So that's the future?*

**Val:** Yes, I'm sure it's the future...for the music industry, too.

**Mix:** *Steve looks like he's a pretty integral part of things here...how does he fit into the operation?*

**Val:** He is an integral part. You can take a studio and divide it in half. 50% of it is creativity and engineering...the other 50% is keeping it running, both in terms of a day-to-day basis, and concept and design for the future. This man is a genius. He got into computers ten years ago when everybody thought he was nuts. Now he's got such a jump on everybody 'cause we're getting into computer technology. He was fooling around with \$25,000 Hewlett Packard computers ten years ago. He got Dave Hassinger to buy one for the Sound Factory...he had the whole studio set up on payroll and everything...and Hassinger thought he was nuts, and took it away and sold it.

**Mix:** *So he keeps you up there with the state of the art?*

**Val:** Oh, yes. There's no question in my mind, because without him I couldn't have done this...I couldn't have done it the way it's done here. He and I have a great relationship. I can say, this is what I'm trying to do...now how do I do it? He'll tell me how to do it electronically, and he does it. He has an amazing working knowledge of electronics. He doesn't have a degree, but the guy reads like a maniac and he learned. He has a great concept and can fix

anything...design anything. We're building the console for the next studio ourselves. That's a serious undertaking. The one we have now is unlike any one that Automated Process ever built...and a lot of it was Steve's design ten years ago when we did the first Sound Factory console, a console which they later started using as their state of the art design. He redesigned parts of it for them when they were building their first one. The guy is brilliant and he's a great businessman, and to have him as a partner is a gift from heaven. I didn't realize he had that ability and neither did he until we started building the studio. The first thing I knew, he was drawing up pert charts and financial designs and how much we were spending. We blew the budget pretty badly when we built this but at the same time he got a great working knowledge of finance...

**Mix:** *Looks like a good team...You've got a beautiful place here.*

**Val:** Everything works well. Peoplewise we have a great staff. Nobody yells at anybody. It's a mellow environment, but everybody gets everything done. We all sort of grew up in a different environment...a lot of yelling and screaming. It's pleasant not to have to go through that anymore. I'm conscious of that, because I know how I feel: as an employee. It's not fun, and we're trying to do it where people get a piece of this place, too...so they're not just working for wages the rest of their lives...because, this is not the end of the road for me. I'm going to finish the other studio...and hopefully on to video operation...and move on.

**Mix:** *Oh...one last question. Who was that engineer that Trevor Lawrence took his record to?*

**Val:** Bill Schnee. ☺

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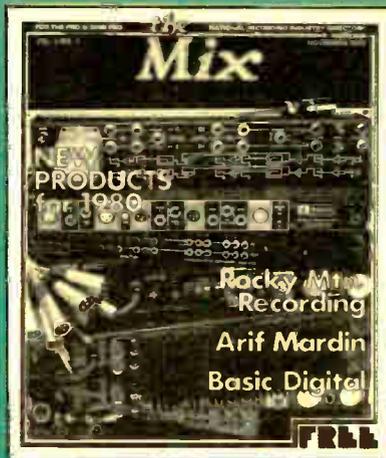
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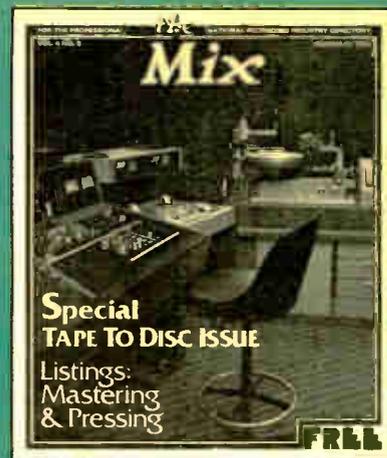
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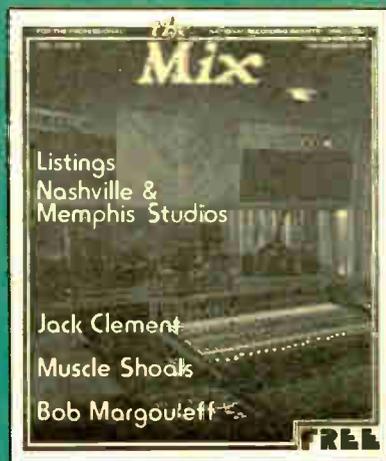
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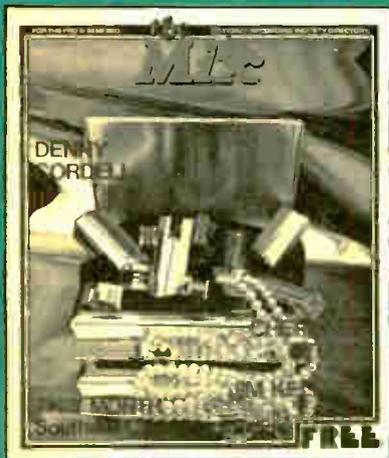
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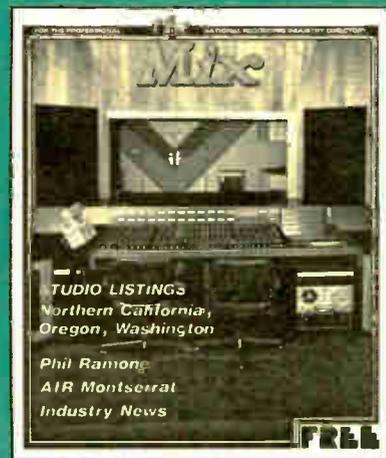
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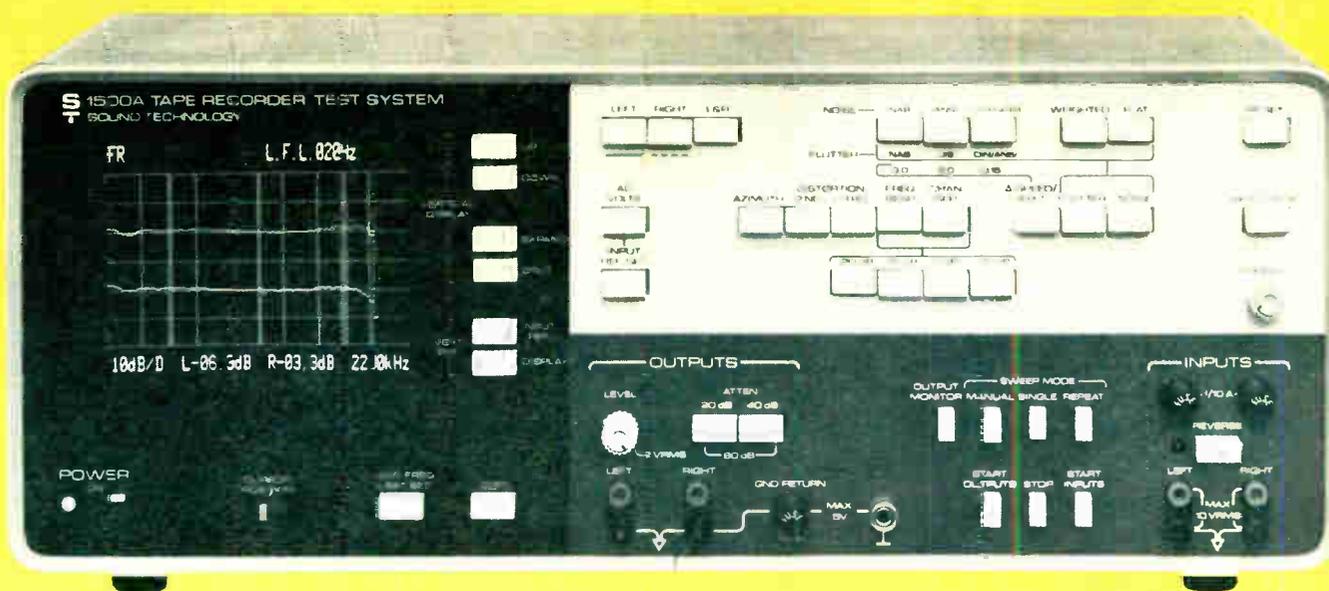
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## How to check your tape recorder in ten minutes

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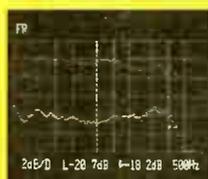
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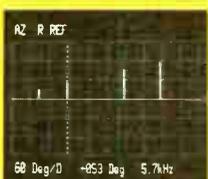
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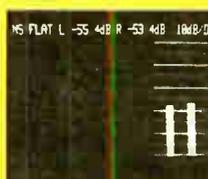
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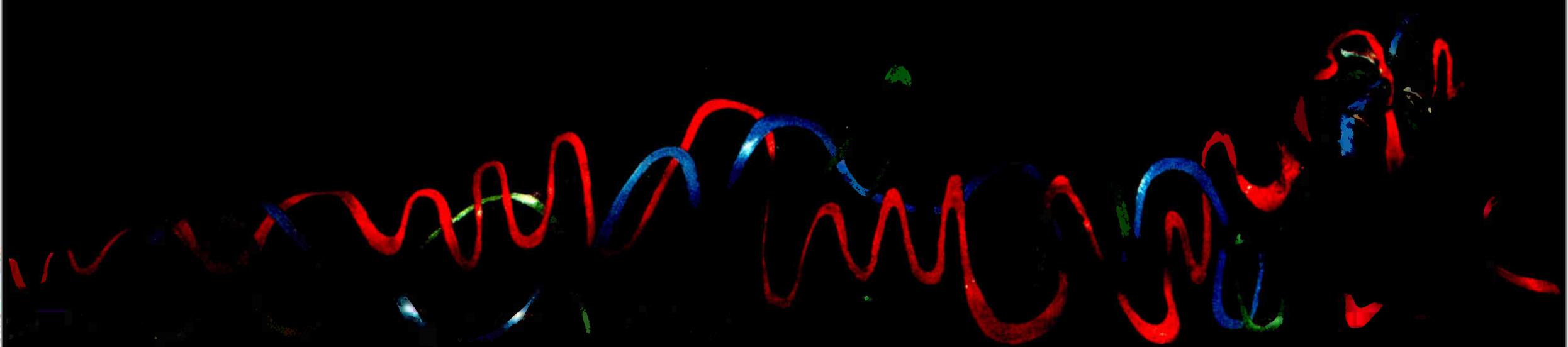
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If just hearing the word 'calculus' makes you nauseous, this course of instruction is not for you. If you honestly believe basic music arranging skills are not essential for the recording engineer, you may wish to study elsewhere. And if you think a four-year degree program for future engineer/producers is a waste of time, you'll find considerable disagreement at the University of Miami—and also a growing number of major recording studios.

The Music Engineering Technology program, part of the School of Music, is a pioneering course of study which leads to a Bachelor of Music degree. It began in 1976 with only a handful of students, but today is crammed to capacity with over 110 students enrolled and hundreds more turned away each semester. Obviously there are plenty of young people serious enough about a career in the recording industry to plunge into a very demanding curriculum.

How tough is it? A Music Engineering Technology major must complete two years of basic music

theory, one year of advanced music theory (including arranging and orchestration), three years of principal instrument study, two semesters of music literature and history, two years of secondary piano, four semesters of electrical engineering, two semesters of calculus, two semesters of psychology, two semesters of communications, two semesters of business courses, a year of music merchandising, plus courses in physics, sound synthesis, and acoustics. On top of that, there's a lot of time on the board (some students leave with over 1000 hours), touring with university music ensembles as a soundperson, and a final semester as an intern in a commercial studio.

So if suspected this might be another Mickey Mouse course, you missed the mark by, oh, say about 200 miles—the distance from the campus to Disney World.

The basic program concept is the brainchild of the School of Music's Dean Ted Crager. His idea was to train engineers to fully understand their art from a

Above: The "studio"—Gusman Hall stage. Left: Bill Porter behind the board.

musical standpoint. "For a number of years I had envisioned the desirability of training musicians to be recording engineers," Crager says. "As a former studio trumpet player, I noticed that all of the better engineers had musical ears. Some of them were former musicians, some picked it up from just sitting in the studio day after day. All of them had a love for music—and they had gotten their ears together.

Crager sketched out a rough plan for the program, took a six month sabbatical leave, and hit the road to find out what people in the industry thought about his idea. He talked to studio owners, producers, top engineers, and musicians to find out what they thought an engineer should have in the way of technical knowledge and acquired skills. While he was making these rounds, he also told some key people that he was looking for somebody to run the "hands on" core of the program—preferably somebody known and respected in the industry. Through the good offices of Dave Harrison, then with Studio Supply in Nashville and now a noted console designer and manufacturer, Crager was introduced to Bill Porter. Officially titled Director of Recording Services, Porter is now the pivotal figure in the program.

The story of how Bill Porter broke into the recording business provides a striking contrast between the way things are done now and the way they were done back in the Fifties. All you needed then was some basic knowledge, some stubborn ambition, and

Continued on next page

the good fortune to be in the right place at the right time.

In the early Fifties, Bill Porter was plugging away in Nashville as a TV repairman when he heard a new TV station was about to go on the air. He applied for a job as cameraman but was assigned instead to general maintenance and audio mixing. The station originated a couple live music shows, so Porter was forced to learn the fine art of getting a decent live sound while mixing a half dozen mediocre mikes down to mono. He soon decided that mixing music was more interesting than fixing video, so when he heard one day in 1959 that RCS studio's one and only engineer was about to leave, he decided to try for the gig.

"For two weeks I went up there everyday," Porter recalls, "waiting to talk to Chet Atkins. He wouldn't see me at first, but I didn't give up. One day I caught him coming out of the building. The secretary said 'Do something with this guy—he's driving us nuts!'" He got the job.

"I had two weeks indoctrination which consisted of watching the other engineer," says Porter. "They were trying to get as much work done as they could before he left. Actually, I had only had one full day of real education. I cut my first disc on the Friday before he left. I came the next Monday and thought, 'My God, what did I get myself in for?'"

What he was in for proved to be an incredible string of hit records. RCA was the studio in Nashville, and the town was about to ride its first wave of pop million sellers. Over the following six years, recording mono, then three-track, then four-track, Porter engineered sessions for Elvis, Roy Orbison, Neil Sedaka, the Everly Brothers, plus all the country stars of the time. One week in 1960, the Billboard pop singles chart carried 15 tunes engineered by Bill Porter.

He was forced to leave RCA when the company claimed his fledgling publishing company constituted a conflict of interest. After a six month stint at the Columbia quonset hut, Fred Foster of Monument Records lured him away to engineer at this new studios. After 2½ years there, he was about to close the financing on his own Nashville studio when he heard about a very attractive price on United Recording Studios in Las Vegas. He decided to take a chance and go west.

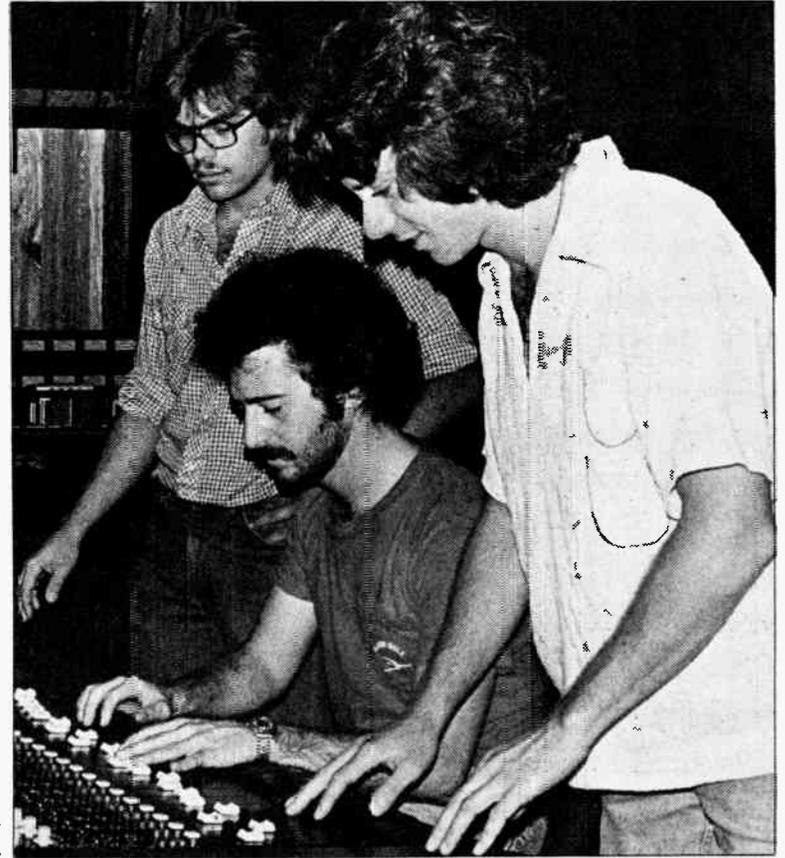
This move gave him the opportunity to renew his fruitful association with Elvis. The King became a regular client at his new studio, and when sound problems developed during his Vegas live shows, Presley asked Porter to come over and straighten things out. The singer was so pleased with the results that he asked Porter to supervise and mix the sound for all his future shows, a post which he held until Elvis died.

Of course Elvis toured very little in his last years, and Las Vegas failed to blossom as a major recording center. When Ted Crager's offer came in 1975, Bill Porter decided to take his knowledge and experience to Florida and pass it on to the next generation of engineers and producers.

"I don't teach them how to do it 'my way,'" insists Porter. "I teach them the basics, and I catch their mistakes. I have students bugging me all the time, saying 'Come on Bill, I want to see you do some more mixing, I want to see how you do it.' But I don't want them copying me. Also, I don't teach academics, per

## If just hearing the word 'calculus' makes you nauseous, this course of instruction is not for you.

L-R: Students Mike Sak, Paul Hugo and Chris Jacks.



se. I teach an occupation, a skill, and an attitude toward that skill. I feel that makes our program unique."

Because he served his apprenticeship in an era when the basics were all you had to work with, Porter realizes how important it is to fully master these skills. "Kids are going to have to come up with a good ear," he says. "A lot of them are just being mechanics. It's a simple story of the good worker—the one who's got talent—is going to get the job. Knowing the fundamental application of microphones, and having the ability to mix live simultaneous two-track masters—that will separate the real engineers from a lot who are out there now. I realize that's kind of an old fashioned concept, but a lot of studios are looking more in that direction. You've got to know what's going into that microphone, and everything that's affecting it, including placement and the distance and attitude toward the instrument. That's the basics."

This combination of a tough curriculum and Porter's personal expertise has made the Miami program the most respected of its kind in the nation. The Music Engineering Technology major is fully accredited by both NARAS and the National Association of Schools of Music, with the latter group using the Miami program as a model for its accreditation standards. A sixteen man advisory committee, which includes illustrious names like Lou Burroughs of Electro-Voice, Milton Putnam of UREI, Armin Steiner of the Sound Labs, and John Woram of Woram Audio Associates, reviews the curriculum and makes suggestions to keep the program up-to-date. This fall, for example, Miami will be the first university (to our knowledge) teaching a course in digital audio.

The program's facilities involve making the best of a situation that could be better. The studio presents some challenges that actually help the students learn about acoustic environments. What's the problem? Well, the recording room is not your normal enclosed area: it's the entire stage of the 600-seat Gusman Concert Hall. This unusual set-up has stimulated the ingenuity of students working in the program. They use an adjacent freight elevator for a drum booth, hallways and stairwells for guitar isolation, the mike closet for the bass amp, and one stud-

ent testifies to the bright reverb—nice for some solo instruments—provided by a nearby tiled lavatory. Sections of risers are set on their sides and covered with blankets and foam for on-stage isolation.

The control room had to be put up in the space allocated by the architects for the sound/lighting booth. Dave Harrison supervised the design and installation, doing his best within the confines of concrete walls already in place. The studio now operates with an MCI 416 console, MCI JH 16 recorder, JH110 two and four track machines, and JBL 4320 monitors set up for quad. Current outboard gear includes an AKG BX-20 reverb, Marshall Time Modulator, DeltaLab DL-1 delay, Countryman phasers, UREI digital metronome, Orban parametric EQ, compressor-limiters by UREI, Symetrix, and dbx, plus a full complement of dbx noise reduction.

A separate dubbing room has another MCI 2-track, a Revox A700, Yamaha integrated amp and cassette decks, and Advent speakers.

Students enrolled in the program must complete a basic course of instruction in studio technology before they are allowed active participation in recording projects. They must also pass a thorough examination, designed and written by students, which tests their knowledge of signal flow within the recording system. (A sample question: The pan buffer amp comes before the (a) pan section, (b) monitor inverter, (c) tap for echo sends; and after (a) pan section, (b) tap for echo sends, (c) quad ACN's) This screening procedure falls into the category of "preventive maintenance."

All studio operations—booking, maintenance, and general operations—are managed by senior students in the program. Students also handle the tape copy operations, the concert sound reinforcement systems, and a smaller four-track studio in the jazz rehearsal hall. The University does not wish to compete with local commercial studios, so booking is limited to student groups and a limited number of "friends of friends."

Both Porter and Crager are well aware that the

present studio does impose some limitations, and a new 24-track facility is already in advanced planning stages. George Augspurger has volunteered time in design work, and stalwart supporter Dave Harrison has offered one of his second generation automated consoles at a generously reduced price. Nevertheless, the cost of this new studio is holding the project back, so any well-heeled industry tycoons reading this piece might want to chip in. The industry as a whole could only benefit in the long run.

With or without a new studio, the program seems assured of continued success. The purpose, after all, is not to turn out "state-of-the-art" recordings. The purpose is to develop state-of-the-art people. The Miami program starts out by attracting some of the brightest college freshmen in the country, kids with SAT scores far above the national average. The math requirements alone serve to seek out those who want to dabble, and many entering freshmen are already accomplished musicians. By the time they finish the course of study and the lab work, these students are ready to walk into a major commercial studio and go to work with only a bare minimum of orientation.

The program could stop there, but it doesn't. Music Engineering majors also have the opportunity to spend their last semester of study as full-time interns in an active commercial studio. For all practical purposes, for 15 weeks the intern is an employee of the studio, although legally and technically he is still a student. The studio pays the University a tax-deductible amount in the neighborhood of \$2000, but the student receives no pay. Some quick math shows that this is dirt cheap 'wages' for a professionally trained assistant engineer. The studios are, of course, free to offer the intern a job after graduation, but they are under absolutely no obligation to do so.

The program only began a little over four years ago, so it's only recently that the first interns have gone out into the "real world." Students have interned in major studios in Miami, New York, and Los Angeles. Graduates now hold jobs at Kendun, Criteria, Howard Schwartz, and CBS in New York.

Although this program is still too new—and too unique—for a full evaluation, the reaction of some industry notables is very positive. "I think it's just fabulous," says Criteria Studios owner Mack Emerman. "We've had several graduates here, and I think from a curriculum standpoint they keep improving it all the time. I wish there had been something like that when I was coming up."

Emerman's sentiments are echoed by Nashville bassist and producer (Jimmy Buffett, Dan Fogelberg, etc.) Norbert Putnam. "From a technical standpoint," Putnam says, "it's got to be very good. It's really hard to teach kids anything creative, but you can certainly solve some technical problems that might take years to straighten out. You can save them a lot of time. I wish I'd had that as a kid."

So all you future Norbert Putnams, Alan Parsons's and Jimmy Iovines out there, take note. Write to Bill Porter at the University of Miami School of Music, Box 248165, Coral Gables, Florida 33124. But remember, the competition will be tough; thousands of other bright and ambitious young folks are also trying to get into this program. As a matter of fact, the exceptional quality of these participants is both a delight and a "problem" for Bill Porter.

"These kids are pushing me, I'll tell you," he admits. "I've got to keep my act together!" ☺

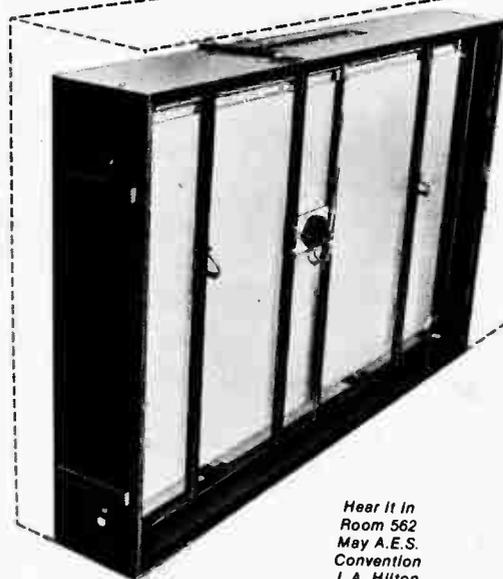
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# STUDIO MUSICIANS

## New York Session Kings

by Bobby Bank

*"I am a studio musician,  
We've never met,  
But you know me well,  
I am the english horn,  
who plays the poignant counter line,  
upon the song, you heard while making  
love in some hotel.  
I am a part of you,  
I've never tried for fame,  
You'll never know my name."*

© 1977 Words and music by Rupert Holmes

A studio musician, as Rupert Holmes' song says, "is a musician that many of us hear on countless record dates but we never see." From New York City to the streets of L.A. to Muscle Shoals Studios down south and all over are thousands of studio musicians who play on demos, recording dates, jingles, singles, scores, and productions. If by chance we look over the liner lines, we will probably notice that some names appear over and over on the many albums that are released daily.

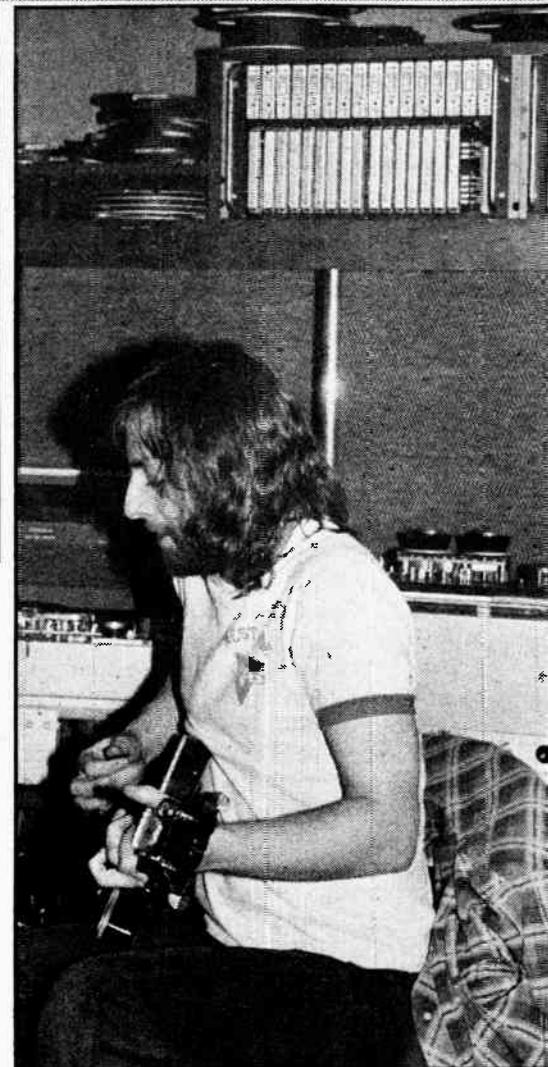
Some of these popular musicians include: Gene Orloff and the New York String Section, Steven Gadd, Vinnie Bell, George Young, John Tropea, Lance Quinn, Richard Tee, Kenny Asher, Mike Brecker, David Spinozza, Jeff Porcaro, Louie Shelton, David Paich, Tom Scott, Andrew Gold, Russ Kunkel, Kenny Edwards, J.D. Souther, and I wish I could name everyone but then I would never get to the profiles, of three New York studio musicians—drummer Alan Schwartzberg, bass player Bob Babbitt and guitarist Elliot Randall.

### Alan Schwartzberg—Studio Drummer.

New York City born Alan Schwartzberg began playing drums at the age of eight. To practice and perfect his craft, Alan worked in the Catskill Mountains in upstate New York; known to New York City musicians as the "borscht belt" and considered a terrific training ground for up and coming artists. Schwartzberg worked as the house drummer for one of the hotels, doing the evening shows. Later, Alan became house drummer of the NYC jazz club, *The Half Note*, and, later still, went on the road with Felix Pappalardi, Leslie West and Mountain.



Above:  
Drummer Alan Schwartzberg  
Right: Bass Player, Bob Babbitt (Fender)  
Left: Guitarist Elliott Randall



Photos by Bobby Bank

Schwartzberg has played on countless demos, recording sessions, productions, singles, jingles, adding the foundation to such artists as James Brown, B.J. Thomas, Barry Mann, Peter Gabriel, Alice Cooper, Meco, Harry Chapin and a cast of thousands.

### Alan, tell me about your start.

I started doing record dates for Steve Tyrell. I was doing about ten record dates a week then, all the acts that he produced: B.J. Thomas, Barry Mann, Bob James, etc. That was my training ground in the recording studio and I spent about five nights a week recording in Electric Lady Studio and really learned a great deal. Little by little, I started to do more jingles, record dates, and started to really enjoy studio drumming.

When I went on the road with Felix Pappalardi, Leslie West and the group Mountain, I was taught about simplicity in drumming, which jazz players don't know. Jazz players have a tendency to make things happen by playing more notes, and rock and roll people play simple. Even today I'm still trying to perfect that simplicity.

### Is there an Alan Schwartzberg sound?

Yes, it's starting to come into its own. I try to fit the music. That is my idea of the craft of putting drums on a record.

### What about the miking techniques that you use for your drum sounds?

I prefer to mike the drums from overhead, so that it

sounds 'live' and closer to the 1950's rock and roll drum sound which had a lot of leakage and no control. Personally, I don't like a clean drum sound. I like a *dirty* drum sound, when the rest of the stuff goes on tape, the drums come through the way they're supposed to.

### Can you define the "dirty" sound?

Well, it's not a thinking sound, it's like things happen accidentally, it's mistakes. For instance, if the padding falls off the drum, it may become the best sound that you've had all day. It's the moments when they lose control and you have to react spontaneously.

### What is the difference between a dirty drum sound and a clean drum sound?

A clean one is one that is very controlled, where an engineer will say, "hit the tom tom, hit the snare, hit the bass drum," etc, over and over again, and make it so that there is no leakage and you get no spill and to me it sounds very sterile. I do like it when the overheads are in play most of the time and you can hear leakage from the other instruments. You can now hear a natural echo and it's as if you were suspended over the drums on a scaffold about eight feet high and you were listening to the drums. They sound the best dirty. Up close, it gets very scientific and very sterile. That, by the way is the big difference between the bands and studio musicians; one sound is very controlled, neat and clean. The other one (bands) sounds, raunchy, hairy and alive. The studio is not alive.

Continued

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**What about the record producer?**

Everything is on the producer, the producer gets the blame and fame.

**What are the qualifications of a good record producer?**

It's his job to cast the right people. He is like the director of the film.

Bob Crewe is a great producer. He's spontaneous, he'll totally change everything. Charlie Calello is open and as a good producer you have to be open.

**Any memorable sessions that stand out?**

There were many where I felt the magic in the studio, even if it actually did not get on tape. I enjoy making hits and "Cat's In The Cradle" that I did for Harry Chapin was very memorable.

• • • • •

**Elliott Randall—Studio Guitarist**

Elliott Randall was born in New York City and began his musical training at the age of five. When he was nine years old he started to learn guitar and at thirteen played his first professional club date in NYC. By the time he was 14, Elliott knew that he really wanted to become a professional guitar player and set out to do so. At fifteen years old he was playing in the Village every night, in a band called Elliott Randall and the Escourts, backing up the Ronettes and Harptones and also working with the Capris. At the same time he began to play on studio demos, getting the exposure that he was looking for. In 1966 Randall moved to Ohio and became a music teacher, coming back to NYC one year later to get a bigger taste of the studio life and the acid rock and R&B music that was prevalent.

In 1969, Elliott accepted an offer to play with the group Seatrain. "As a group, Seatrain was producing itself," he reflects, "and I found out that with a group that produces itself, everybody hears it their own way and each interprets it differently."

Elliott continues about his studio musicianship, "As a studio musician, you must realize that someone wants it one way, someone wants it the other way and somewhere it becomes a challenge to make everybody happy. That, however, is a common studio date. What I've really tried to do is to get to a place where people would hire me for what it is that I do as opposed to technical stuff which, quite frankly, a lot of studio guitar players in NYC can do. When we do jingles, they (the clients) can use one of 25 or 30 guitar players, all of whom can do as good a job. The jingles are what pays the rent and the record dates are where you get a chance to stretch out a bit."

In 1970 Randall put together a band called Randall's Island, releasing two albums on Polydor Records. Elliott toured and promoted the first album, which was produced with Eddie Kramer, the second album with Marc Pessel. In 1971 Elliott joined the first Stigwood tour of the Broadway bound "Jesus Christ Superstar" and later played on the Broadway stage for a year, doing 6 nights and two afternoons per week. "You can't stretch out in that type of situation," says Elliot, "because you are playing the same thing everynight."

It was at this time that Randall began to work heavily in the New York City recording scene and was

helped on by guitarist Vinnie Bell. Randall remembers, "Vinnie, who is the first real heavy electronics man in guitar playing, took a liking to me and began to recommend me to other people."

With an invitation from the team of Becker/Fagen, in 1972, to play on their Steely Dan album *Can't Buy A Thrill*, Elliott played lead guitar on "Reelin' In The Years" and solo guitar on "Kings." It was from these sessions that people began to take notice of Randall's fine guitar work.

At present Elliott is producing a young man from Richmond, Virginia named Steve Bassett, who will be with the Elliott Randall New York Band.

**What is your favorite studio?**

We are in it right now: Mediasound Studios, New York City.

**What about the guitars that you use?**

For the acoustic guitar I use a Fylde and for electric, the same Fender Stratocaster since 1965.

**Is there a difference between the New York musicians and the California musicians?**

If you want to be a session guy in California, there are plenty of movie scores to do, they feed you different kinds of music. The bulk of the jingles is in New York. Los Angeles is a sunnier place, the pace is slower and consequently the attitudes towards walking into the studio reflect what L.A. is. In New York the buildings overshadow you, and you're running all over. The music feels denser, not better or worse.

I think that L.A. records come off with more air in them. London is still a whole other set up. In New York, I love Mediasound Studio A, also in Blue Rock Studios I feel right at home.

**Any memorable sessions?**

The jingle session that I recall was my first Jell-O commercial, and the Steely Dan sets where it felt that something was happening. I remember the Bob Crewe sessions with Franki Valli in Studio A in Mediasound, along with DiscoTex and the Sexolettes.

**Reflections of a studio musician?**

Doing it as a part of my life, it gives me great insight into what is going on. If I'm doing an R&B date in the morning, a jingle in the afternoon, and a crazy jazz thing late at night, it's helping me keep my perceptions onto what the world's music is all about.

**What advice can you give to the up and coming guitarist, let's say the guitarist who would like to get into studio work?**

For the guitarist who wants to do session work my advice is to "hang in there". It takes a lot of perseverance. The more legitimate music you know, the better you are. If you can't read music so well, maybe they'll hire you 'cause you play a particular unique style. Most studio musicians have to be able to read music.

• • • • •

**Bob Babbitt—Studio Bass Player**

Originally from Pittsburgh, PA, Bob moved to Detroit, Michigan, and started at the age of 17 to play on the Motown sessions with everyone from

Stevie Wonder to Marvin Gaye to the Four Tops. The Del Shannon sessions in which Babbitt played, taught him the basics of studio playing, and he played on the hit "Hats Off To Larry."

In 1970 Babbitt signed with Motown as an artist, but nothing happened. A record was made but consequently never released. In 1973, Bob Babbitt came to New York and soon began using his bass techniques in the studio on jingle dates and recording sessions.

**Tell me about some of your experiences with producers.**

In working with Elton John and the Thom Bell sessions, it was basically the same type of sessions as when I did the Spinners' tracks a while back, but in a way it was very different when Elton's voice went on it. Thom Bell, to me, is an amazing producer. Bell makes good pop records. Even though it is black music, it's pop. He has the knack and, for instance, he could take jazz chords and write a song and make it sound so that people can relate to it. When I moved into New York, back in 1973, Bell was probably the most important person I had met. I also liked working with Arif Mardin and Charlie Calello.

**How does a typical jingle session go?**

Fast. You go in there, and the material is already laid out and you do it. If they want a certain thing, then you give it to them or you won't be back there playing. Most of the jingles take an hour or so depending on how many spots there are.

**So you put down the rhythm section and the vocals are put in later, like a record date?**

Yes, but the main thing, with jingles, is the fastness of the sessions.

**What about the miking techniques for the bass?**

Most of the time the miking is direct, but I remember when I did a session with Robert Palmer and they brought in an engineer, from England, who miked the bass and also ran direct and got an amazing bass sound.

**Any memorable sessions that stick out in your mind?**

Well, there was a Motown session for the Temptations, where we used just about every rhythm player in Detroit. It had about 2 bass, 6 guitars, 3 keyboard players, and 3 or 4 drummers, with two sets of drums and one drummer playing the cowbell, another—tamborine, and conga players, and it seemed like all the rhythm players were in this one big room at once. I also enjoyed working on the Spinners' hits, "Rubberband Man," "Games People Play," "Then Came You," "I Like Dreamin'," "After The Lovin'," and also some Gladys Knight records.

**What advice would you give to musicians who would like to try and do studio work?**

Well, learn how to read music, play for the record, and you must have the right attitude in the studio.

**What about years from now, what direction do you want to get into?**

I'd like to get into producing records and more live concert work. ☺

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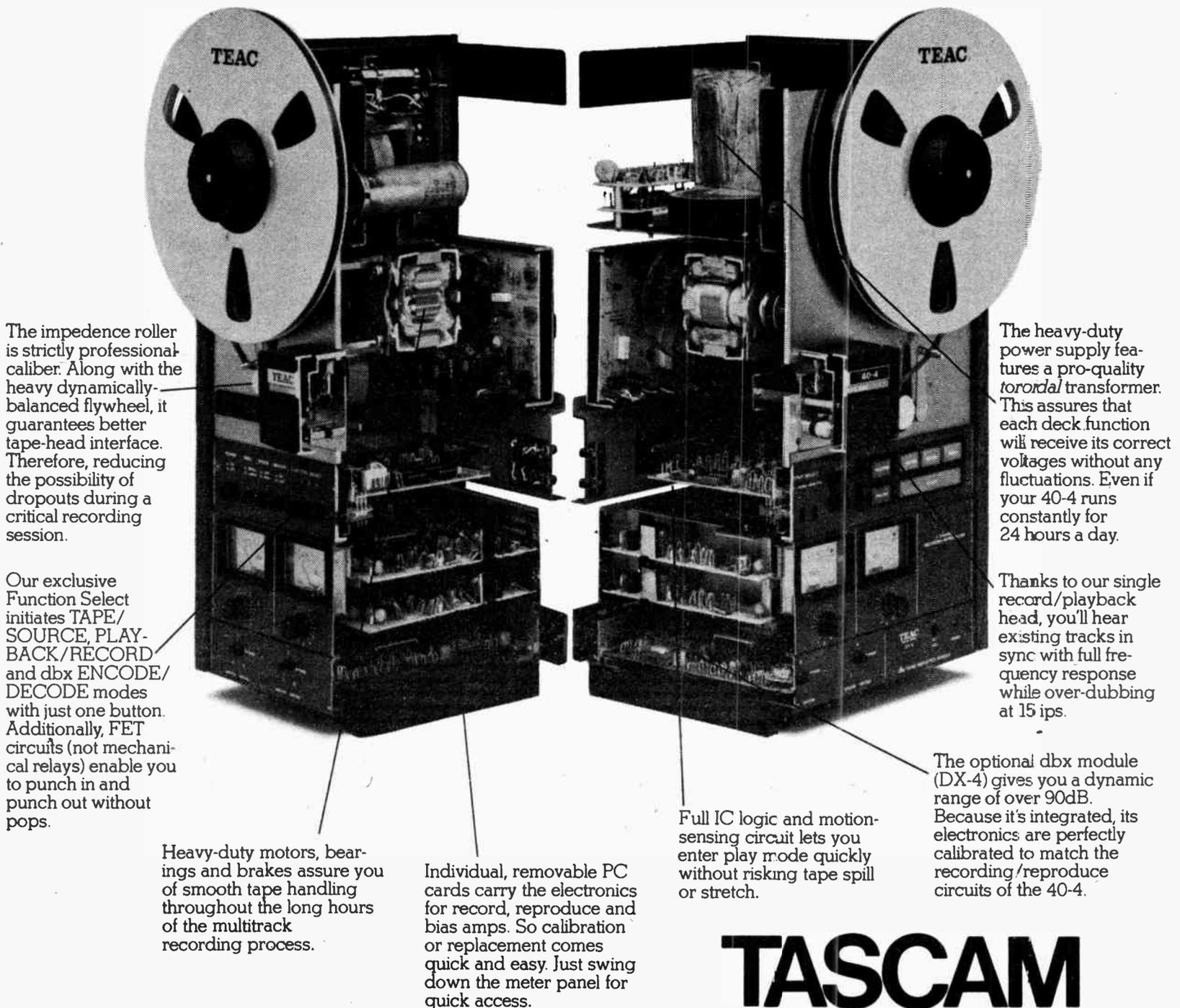
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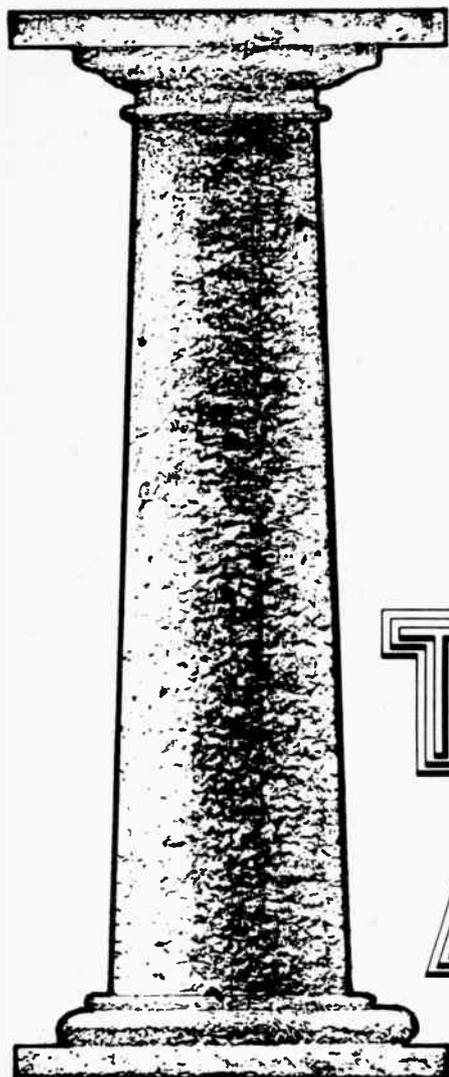
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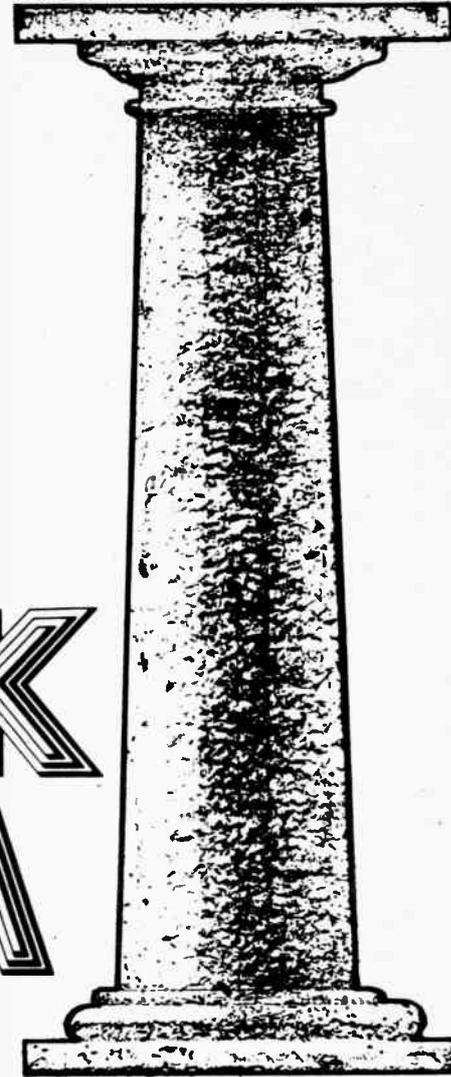
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by Mr. Bonzai



# THE ROCK MUSEUM

*The situations and characterizations in this column are purely fictional and do not reflect anything relating even vaguely to reality, living or dead.*

Well, it had to happen sooner or later... but it's still sad when a great studio dies. The legendary Sound Hole Studios in Hollywood are finished. The wrecker's ball will be smashing through those hallowed chambers by summer.

The first big hit to come out of Sound Hole was "Beer, Beer, Beer" in 1957. Guided by the visionary hands of ace engineer Milton Marvin, the Hole was responsible for over two hundred gold records in the following two decades. Every group from The Four Chaps to the late Sally Razor recorded at Sound Hole. Those of us who are part of the close-knit family of recording will miss this great studio... but there is a positive side to its demolition.

Record executive Eleazor Kharpoum has coughed up \$100,000 for the creation of a rock 'n' roll museum. Support and donations are pouring in and it looks like we will soon have a proper home for the priceless memorabilia of pop music. The outer shell of The Rock Museum is already under construction in Eagle Rock, a musical community of Los Angeles. Plans are being made to transport the dismantled Sound Hole across town where it will be permanently installed at the new location. Those of us who spent time in the Hole will be able to forever relive those crazy days of music when we were so young, rich, and foolish.

Who wants to forget how all those little holes got in the door of the tape vault? The marks from her spiked heels and arm bands serve as a vivid reminder of all the good times that "Baby Face" Mildred had among the masters. How about the cross that Vicki Valdez carved in the producer's desk when they were recording "Nun On The Run"? And who knows how the leather burrito got nailed to the ceiling of the foyer? They're all there for future generations to appreciate: the trumpet that Dizzy actually blew apart when someone jammed a potato in the bell, the steel drum that was flattened by King Billy Elephant, ...even the exploding hookah that

brought so many tears of joy to newcomers at Sound Hole.

As a member of the Board of Governors for the museum, I have been contacted by other great studios around the country who would like to contribute their historical knick-knacks. It's exciting and gratifying to see this overlooked area of the music business getting its share of representation. I was thrilled to hear from Howdy Dugan, manager of Electric Ladybug in New York. Howdy is donating the inflatable grand piano that Elton dove onto from the seventh floor of the stock exchange when he was promoting his "Rubber Money" album. Howdy is also sending us the handcuffs that were used on Jimmy C. Tiny when he was arrested at the studio during his "Thank Heavens for Little Girls" sessions, also the false nose that Princess Madeline used when people offered her cocaine, and a vial of Rudy's tears collected during the recording of the 1963 classic, "Rudy's Turn To Cry."

This museum is going to be more fun than quad! Ray Obladieux of Boneroo Studios in New Orleans is donating the definitive Dr. Fred collection: eight pounds of choice gris-gris, kitty niffles, screamers, poo-poo's, fluffers and nummers, nose horns and bat snow, bull pizzles, sen-sen, ico-ico, four bushels of wild Tchapatoolahs, and the good Doctor's own Ooloooh stick. A special bayou backdrop is being constructed to house this wealth of Cajun lore... the very same objects used during the Stompin' Zombie/Happy Voodoo sessions.

Bobby "Clean-head" Powers, who handled sanitation at Woodstock, is donating one of the festival's porta-potties along with 400 pounds of mud, beads, buttons, and incense butts. Who could resist stepping into the little cubicle, closing the door, and re-living those three days of joyful music?

Gary Arn of Different Ear studios is getting us two pairs of you-know-who's leather underwear (complete with the hydraulic padding). Apache

Studios are sending us the preserved nodes that Screamin' Mae Barker had removed while recording her last album. The Impala's famous electric guitar with the rear-view mirror is being donated by Nu-Beam Studios. A plaster cast of Bill Haley's spittle was a gift from Sundown Sound in Hollywood.

The momentum of The Rock Museum is accelerating and latest word is that the EAS is going to get involved. From the secret storehouses of the Society, we are going to be receiving some priceless lead-ribbon microphones, acid and glycerine amplifiers, a genuine Russian theramin with dual horns, and the first stereo cylinder (a recording of Thomas Edison and Graham Bell harmonizing on "Old Black Joe"). There is even a rumor that the Society is planning to finally found the first home for aging engineers.

The hearsay of a "Home for Engineers" has been circulating for years. Who hasn't shook his head in pity at the sight of an old engineer, wasted from mega-decibel overload and fried from too many all-nighters? These are the guys that have given their inner peace and inner ears to the creation of the music we love. Not many of them were as lucky as our live-in tech man and ex-engineer, Smilin' Deaf Eddie.

The Home hopes to re-create the studio situations of the past and allow these wonderful old duffers to continue making records. Their years of experience will once again be utilized as they hunch over those dusty old tubes and ancient knobs. Working on an exclusive deal with a major label, the engineers of the future Home may get their own new Old Rockers record company. After years of insecurity in a fickle business, perhaps they will finally be able to live a normal life. It gives us all something to look forward to in our old age.

And let's hope that we hear from Milton Marvin, the guy who started it all. Milt says that he loves music and the recording business, but he's finally going to do something he's wanted to do his whole life: go paint naked ladies in Tahiti. ☺

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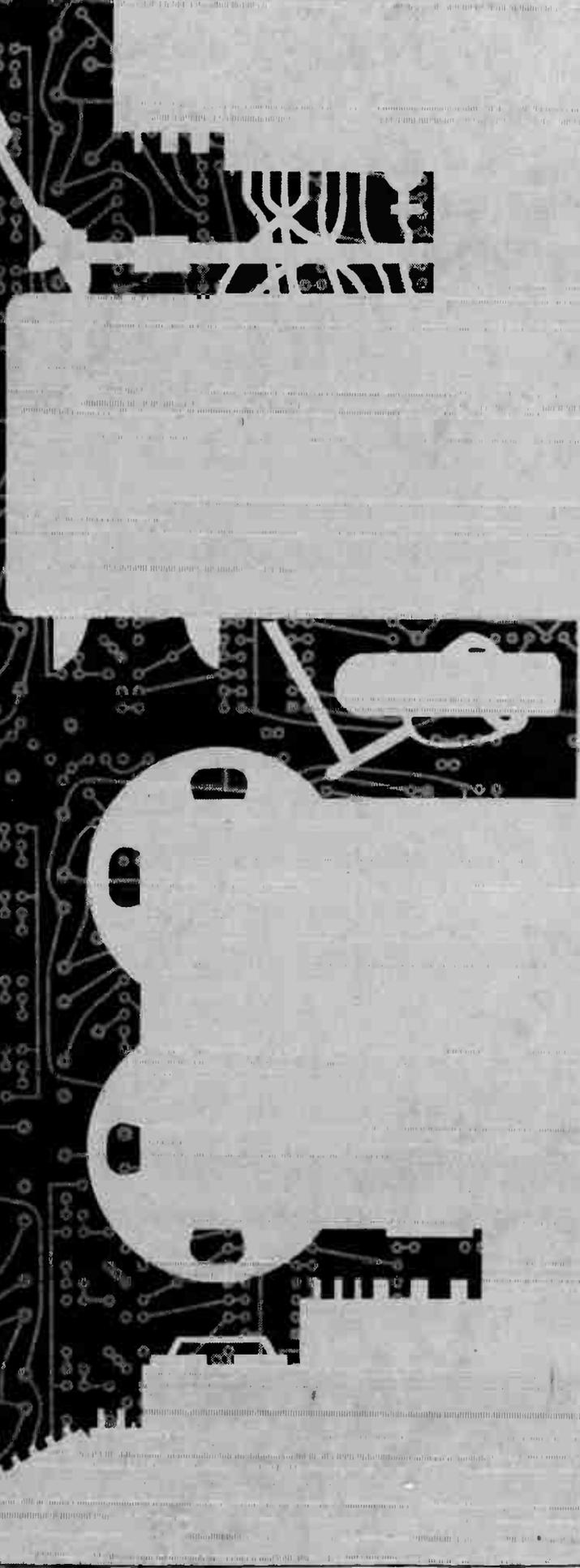
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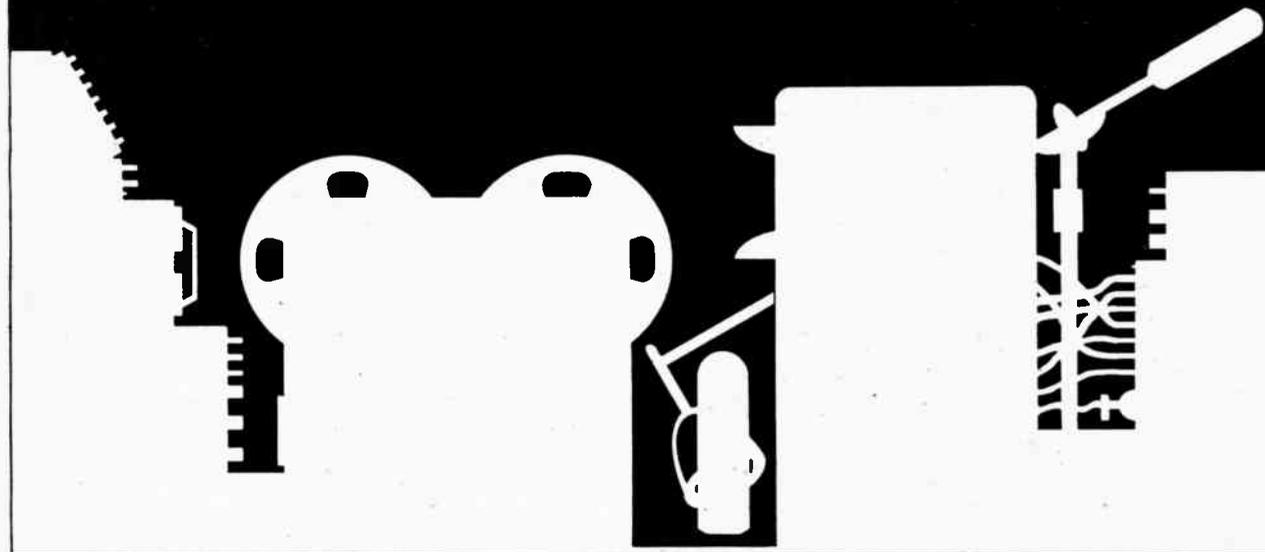
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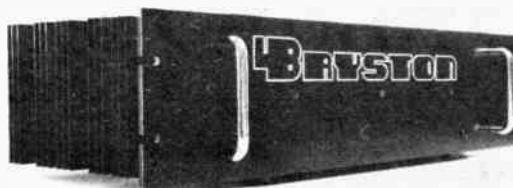
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Contact: John Russel, Proprietor.  
Date Product Introduced: 1979.  
Product Description and Applications: Bryston Manufacturing, Ltd. of Ontario, Canada has introduced the professional Series of their 2B (50 w/c 8 ohms), 3B (100 w/c 8 ohms) and 4B (200 w/c 8 ohms) amplifiers for control room use. These amps are fully complementary circuit class AB, have a bandwidth of 1 Hz to 100 KHz, need no fans, and distort less than 0.005%. Specifications and sonic accuracy (response, phase coherency, dynamic range) are designed in. The Pro Series 2B/3B/4B use separate power supplies for each channel, extremely fast transistors in all stages; slewing at 60 volts per microsecond (2 to 10 times faster than conventional amps.)  
Basic Specifications: Damping factor of over 500 at 20 Hz and 8 ohms. Harmonic dist. <0.05% at rated output.  
IM dist. <0.025% from 10 milliwatts to rated output.  
Noise is 100 dB below full output.  
Crosstalk is below noise from 20-20 KHz at rated output.  
Amps may be bridged to provide 200 w/c 8 ohms (2B), 400 w/c 8 ohms

(3B), and 800 w/c 8 ohms (4B).  
Protection is by statically set high current limiters and LED over load indicators.



Bryston Manufacturing Ltd.  
B Series Professional Power Amplifier

**EDCOR**  
**HEADPHONE AMPLIFIERS HA-100 and AP-10**  
16782 Hale Avenue, Irvine, CA 92714  
(714) 556-2740

Contact: Wayne Wyche, Marketing Manager  
Date Product Introduced: January 1980.  
Product Description and Applications: Two new professional headphone amplifiers, the HA100 eight channel stereo and AP 10 four stereo channel can be used with any combination of 8 to 2K ohm headphones. These exceptional units, in addition to having a flat frequency response, have less than 0.1% THD and a "A" weighted S.N ratio of -101 dB. These units will enhance the studio, audiophile system, in-store headphone demonstration, and any A/V system. Units can be desktop or rack mounted.  
Suggested List Price: HA 100 \$350.00; AP 10 \$210.00.

**GLI/INTEGRATED SOUND SYSTEMS**  
**GLI SA2125**  
29-50 Northern Blvd., Long Island City, NY 11101  
Contact: Paul Friedman, Sales Manager.

Date Product Introduced: June 1979.  
Product Description and Applications: Dual channel amplifier, 125 watts FTC per channel. Forced air cooling, with thermal shutdown protection and auto-reset. Plug-in modular construction. S "4" rack mount. Magnetic breaker power switch. Push to reset breakers on the output instead of fuses. Low distortion, stable, fast overload recovery and high peak power.  
Basic Specifications: 125 watts RMS ch., both channels operating.  
.1 THD, IM worst case distortion.  
3 dB dynamic peak power.  
20 V/us slew rate.  
190 watts RMS. ch. 8 ohm single channel.  
Suggested List Price: \$775.00

**INTERLAKE AUDIO INC.**  
**RWO/FOSTEX F800**  
835 Ingersoll St., Winnipeg, Manitoba, Canada R3E 2L8

(204) 668-0248

Contact: Ted R. Telesky, Sales Manager.  
Date Product Introduced: November 1979.  
Product Description and Applications: High power stereo amplifier designed for critical, yet demanding applications. Suitable for use in recording studios for its sonic accuracy and in the field for demanding sound reinforcement use. Features massive toroidal transformer, large heatsink area, input level controls with calibrations, power display, overload indicator XLR input connectors, bridgable to mono, capable of driving any load including electrostatics, full output overload protection.  
Basic Specifications: 200 watts per channel 8 ohms.  
300 watts per channel 4 ohms; 600 watts mono.  
THD 0.05% max. IMD 0.05 max.  
S/N 95 dB, rise time 1.5 microseconds.  
Suggested List Price: \$929.95

**JBL**  
**6502 MIXER/AMPLIFIER**  
8500 Balboa Blvd., Northridge, CA 91329  
(213) 893-8411

Contact: Ron Means, Prof. Division Manager.  
Date Product Introduced: November 1979.  
Product Description and Applications: The JBL 6502 combines an eight-input (six microphone and two line level) mixer with a high power, single-channel amplifier. Each input accepts an unbalanced, high-impedance signal. An optional, plug-in transformer converts it to balanced low impedance. The line inputs are unbalanced, high impedance, and may be converted to balanced low impedance with accessory plug-in transformers. One input may be internally switched to RIAA phono characteristics, and a pair of RCA-type jacks on the rear panel permits a stereo source to be fed to this input. The 6502 can be mounted in five standard EIA rack spaces.  
Suggested List Price: \$1158.00

**PANASONIC PROFESSIONAL AUDIO DIVISION**  
**RAMSA/PANASONIC WA-140**  
50 Meadowlands Parkway, Secaucus, NJ 07094  
(201) 348-7484

Contact: Paul Ackel, Engineering Coordinator.  
Date Product Introduced: August 1980.  
Product Description and Applications: Mixer/Amplifier with two channel outputs of 60 watts each. Four balanced microphone, four line and two phono inputs. All inputs mixed to each output channel independently. Microphone pan pot. Five frequency equalizer. Switches for high and low filters. Three level selectors for microphone input (-22 dB, -52 dB, -72 dB). Master volume control. Master fader with memory marker. Large peak output level meters. Mounted on 19" rack with optional bracket.  
Basic Specifications: Rated output: 60 watts + 60 watts at 8 ohms over frequency of 20-20,000 Hz.  
0.08% THD.  
Load Impedance: 8 ohms unbalanced.  
Frequency response: 20-20,000 Hz  $\pm 12$  dB. Filters: -8 dB at 10,000 Hz for high frequency and -8 dB at 100 Hz for low frequency.  
Equalizer: +10 dB at 100 Hz, 330 Hz, 1 KHz, 3.3 KHz and 10 KHz.  
S/N ratio: 80 dB or more for line and 50 dB or more for microphone.  
Suggested List Price: \$995.00

**PANASONIC PROFESSIONAL AUDIO DIVISION**  
**RAMSA/PANASONIC WP-9210**  
50 Meadowlands Parkway, Secaucus, NJ 07094  
(201) 348-7484

Contact: Paul Ackel, Engineering Coordinator.  
Date Product Introduced: August 1980.  
Product Description and Applications: Power Amplifier of 200 watts + 200 watts rated power output at 8 ohms. With less than .05% THD from 20-20,000 Hz. Electronic balanced input. 0  $\pm 20$  dBm continuously adjustable maintaining complete balance and common mode rejection. Both XLR and phone jack type input terminal. Toroidal core type power transformer. Protection circuits for over loading and short circuit.  
Basic Specifications: Rated output: 200 + 200 watts at 8 ohms, 20-20,000 Hz.  
0.05% THD.  
Frequency response: 20-20,000 Hz  $\pm 0.5$  dB.  
Cross talk: 70 dB or more at 20,000 Hz intermodulation.  
Distortion: 0.01% or less (8 ohms, 200 watts, 70 Hz; 7,000 Hz = 4.1).  
Damping factor: 200 or more (8 ohms, 1,000 Hz).  
S/N ratio: 90 dB or more.  
Input sensitivity: +8 dBm (0 dBm  $\pm 20$  dBm continuously adjustable).  
Input impedance: 50,000 ohms balanced.  
Suggested List Price: \$895.00

**SAE PROFESSIONAL PRODUCTS GROUP**  
**P-300 POWER AMPLIFIER**  
701 E. Macy St., Los Angeles, CA 90012  
(213) 488-7800

Contact: Mark Cohen, Director.  
Date Product Introduced: May 1980.  
Product Description and Applications: 300 watt per channel power amplifier with XLR balanced inputs and 1/4" phone jack hi-z unbalanced inputs. Built-in limiter. Automatic mono bridging with front panel indicator. Provision for built-in crossover cards at 18 or 24 dB/octave.  
Basic Specifications: 300 watts/channel @ 8 ohms.  
550 watts/channel @ 4 ohms.  
850 watts/channel @ 2 ohms.  
1600 watts mono @ 4 ohms.  
Note: power ratings applicable only if a 30 amp A.C. line is used.  
THD, IM, & SID all less than 0.05%.  
Meets FTC specs at 2 ohms with no thermal cycling.

**SOUNDCRAFTSMEN, INC.**  
**PA5001**  
2200 South Ritchey, Santa Ana, CA 92705  
(714) 556-8191

Contact: Roger Hagemeyer, Sales Manager.  
Date Product Introduced: 1979.  
Product Description and Applications: Stereo Power Amplifier, Class "H" Vari-Portional circuitry for cool, efficient operation — no fans needed. No current limiting. Auto-Crowbar protection. LED overload indicator. 1/4-inch phone jack inputs. Banana terminal outputs for two pairs of speakers. Standard rack front panel with handles. Walnut grained side panels included.  
Basic Specifications: 250 watts RMS-8 ohms, 360 watts 4 ohms (per

channel).  
 IM Distortion less than 0.05%.  
 THD Distortion less than 0.1%.  
 TIM Distortion less than 0.02%.  
 Signal to noise greater than 105dB down.  
 Frequency Response  $\pm 1/4$ dB, 20Hz to 20kHz.  
 Slew Rate greater than 90v per microsecond (supply).  
 Slew Rate greater than 50v per microsecond (amplifier).  
 Damping Factor greater than 150 @ 50 Hz.  
 Input Sensitivity 1.28 RMS for rated output.  
**Suggested List Price: \$649.00**

**SOUNDCRAFTSMEN, INC.**

MA5002  
 2200 South Ritchey, Santa Ana, CA 92705  
 (714) 556-8191

Contact: Roger Hagemeyer, Sales Manager.  
 Date Product Introduced: 1979.

**Product Description and Applications:** Stereo Power Amplifier with meters, level controls, clipping indicators, Class "H" Vari-Portional circuitry for cool, efficient operation — no fans needed. No current limiting. Auto-Crowbar protection. LED overload indicator. 1/4-inch phone jack inputs. Banana terminal outputs for two pairs of speakers. Standard rack front panel with handles. Walnut grained side panels included.

**Basic Specifications:** 250 watts RMS-8 ohms, 360 watts 4 ohms (per channel).

IM Distortion less than 0.05%.  
 THD Distortion less than 0.1%.  
 TIM Distortion less than 0.02%.  
 Signal to noise greater than 105dB down.  
 Frequency Response  $\pm 1/4$ dB, 20Hz to 20kHz.  
 Slew Rate greater than 90v per microsecond (supply).  
 Slew Rate greater than 50v per microsecond (amplifier).  
 Damping Factor greater than 150 @ 50 Hz.  
 Input Sensitivity 1.28 RMS for rated output.  
**Suggested List Price: \$799.00**

**SOUNDCRAFTSMEN, INC.**

EA5003  
 2200 South Ritchey, Santa Ana, CA 92705  
 (714) 556-8191

Contact: Roger Hagemeyer, Sales Manager.  
 Date Product Introduced: 1979.

**Product Description and Applications:** Stereo Power Amplifier with Stereo 10-Band Equalizer. Class "H" Vari-Portional circuitry for cool, efficient operation — no fans needed. No current limiting. Auto-Crowbar protection. LED overload indicator. 1/4-inch phone jack inputs. Banana terminal outputs for two pairs of speakers. Standard rack front panel with handles. Walnut grained side panels included.

**Basic Specifications:** 250 watts RMS-8 ohms, 360 watts 4 ohms (per channel).

IM Distortion less than 0.05%.  
 THD Distortion less than 0.1%.  
 TIM Distortion less than 0.02%.  
 Signal to noise greater than 105dB down.  
 Frequency Response  $\pm 1/4$ dB, 20Hz to 20kHz.  
 Slew Rate greater than 90v per microsecond (supply).  
 Slew Rate greater than 50v per microsecond (amplifier).  
 Damping Factor greater than 150 @ 50 Hz.  
 Input Sensitivity 1.28 RMS for rated output.  
**Suggested List Price: \$949.00**

**SOUNDCRAFTSMEN, INC.**

RA7501  
 2200 South Ritchey, Santa Ana, CA 92705  
 (714) 556-8191

Contact: Roger Hagemeyer, Sales Manager.  
 Date Product Introduced: 1979.

**Product Description and Applications:** Professional Dual Channel Amplifier. Switch for Bridged Mono operation. Patent-pending Auto-Buffer electronic switching in and out of low impedance mode as needed to assure continuous 2-ohm operation. Balanced or unbalanced operation. Class "H" Vari-Portional circuitry for cool, efficient operation — no fan needed. Level controls, clipping indicators. Auto-Crowbar protection with Auto-Reset. Standard rack mount front panel with handles.

**Basic Specifications:** 750 watts into 8-ohms bridged. 250 watts/channel stereo - 8 ohms.

IM Distortion less than 0.05%.  
 THD Distortion less than 0.1%.  
 TIM Distortion less than 0.02%.  
 Signal to noise greater than 105dB down.  
 Frequency Response  $\pm 1/4$ dB, 20Hz to 20kHz.  
 Slew Rate greater than 90v per microsecond (supply).  
 Slew Rate greater than 50v per microsecond (amplifier).  
 Damping Factor greater than 150 @ 50 Hz.  
 Input Sensitivity 1.28 RMS for rated output.  
**Suggested List Price: \$799.99**

**SYMETRIX, INC.**

HA-10B HEADPHONE AMPLIFIER/LINE DRIVER  
 109 Bell St., Seattle, WA 98121  
 (206) 682-3078

Contact: Dane Butcher, Sales Manager.  
 Date Product Introduced: January 1980.

**Product Description and Applications:** The Symetrix HA-10B Headphone Amplifier/Line Driver fills the need for a compact, reliable, and low cost amplifier for powering headphones. The HA-10B lends itself to line-driver applications where weak signals must be amplified (available gain is up to 23 dB). When used as a headphone amplifier each channel of the HA-10B will provide an ultra-clean 5 watts of RMS power into an eight ohm load.

**Basic Specifications:** Power output: 5 watts per channel, both channels driven, eight ohm load.

Total harmonic distortion at rated output: Less than .02%, @ 1KHz, eight ohm load.

Maximum output level: +24 dBm.

Hum and noise: greater than 100 dB below +24 dBm.

Slew rate: 9 volts/microsecond.

Gain: 23 dB.

Input impedance: 20K ohm.

Output impedance: 1 ohm.

Size: 1 1/4" x 19" x 7".

Shipping weight: 8 lbs.

**Suggested List Price: \$179.00**

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# MICROPHONES



## AKG ACOUSTICS

C-567  
91 McKee Drive, Mahwah, NJ 07430  
(201) 529-3800

Contact: P. Wellkoff, Marketing Manager.  
Date Product Introduced: March 1980.

**Product Description and Applications:** The AKG C-567 is a rugged miniature electret condenser lavalier microphone with more superior acoustical performance than ever previously available. Designed for professional requirements, this newest of AKG's condenser mics offers broad band and flat frequency response, field-replaceable capsule, and satin-black chrome finish for unobtrusive placement on-stage or on-camera. A full range of accessories include: tie-tac, one and two mic tie-bar, belt clip for output module, and snap-on wire mesh windscreen. Custom variations will be available for wireless mic applications.

**Basic Specifications:** Frequency response: 20-20,000 Hz.

Pattern: Omnidirectional.

Power supply: Phantom power (9-52 VDC).

Sensitivity: 8 mV/Pa (-44.4 dB).

SPL @ 1% THD: 132 dB.

Weight: 100 g (3.5 oz).

Suggested List Price: \$195.00

## AKG ACOUSTICS

D-330BT  
91 McKee Drive, Mahwah, NJ 07430  
(201) 529-3800

Contact: P. Wellkoff, Marketing Manager.  
Date Product Introduced: October 1979.

**Product Description and Applications:** The AKG D-330BT is the flagship of the new D-300 series of musician's microphones. The D-330BT incorporates AKG's studio-quality sound with a nearly indestructible housing for use in live performances. It features a stainless steel grille and multi-layer pop and windscreen and "safety basket." The transducer offers a hum-bucking coil, secondary transducer which eliminates handling noise, three pos. bass rolloff, three pos. H.F. EQ, all incorporated in replaceable plug-in module.

**Basic Specifications:** Frequency response: 50-20,000 Hz.

Pattern: Hypercardioid.

Sensitivity: -80 dBm.

Impedance: 200 ohms.

Weight: 12 oz. (330g).

Suggested List Price: \$185.00

## CROWN INTERNATIONAL, INC.

PZM™ PRESSURE ZONE MICROPHONE  
1718 W. Mishawaka Rd., Elkhart, IN 46514  
(219) 294-5571

Contact: Dennis Badke, Sales Engineer.  
Date Product Introduced: January 1980.

**Product Description and Applications:** The Pressure Zone Microphone (PZM™) is the world's first phase coherent microphone. Utilizing the discovery that within a few millimeters of a hard surface incident and reflected sound waves add coherently, Pressure Zone Microphones™ provide audibly superior performance because of the absence of comb filtering. The PZM™ eliminates the directional discrimination characteristics common to other microphones, exhibits significantly reduced microphonics, and can safely handle 150 dB SPL. Pressure Zone Microphones™ are already in use in recording studios, radio and television stations and sound reinforcement applications.

**Basic Specifications:** All four models of Pressure Zone Microphones are available in either gold or black finish.

The PZM 30 general purpose model incorporates a 5" x 8" metal plate. The PZM 6 low profile version utilizes a plate approximately 2.5" x 2.5". A lavalier model (PZM 2LV) and recessed mount (PZM-20RM) are also available.

Suggested List Price: \$350 includes a choice of either transformer or active power supply.

## EDCOR/CALREC

CONDENSER MICROPHONES  
18782 Hale Avenue, Irvine, CA 92714  
(714) 558-2740

Contact: Wayne Wyche, Marketing Manager.  
Date Product Introduced: March 1980.

**Product Description and Applications:** A new series of high performance cardioid professional condenser microphones for the recording industry. These microphones are manufactured in Great Britain and distributed in the USA by Edcor. Recent developments in capsule manufacturing techniques have increased performance and quality.

Suggested List Price: Range \$300.00 to \$450.00

## INTERLAKE AUDIO INC.

RWO/FOSTEX M77RP  
935 Ingersoll St., Winnipeg, Manitoba, Canada R3E 2L8  
(204) 668-0248

Contact: Ted R. Telesky, Sales Manager.  
Date Product Introduced: November 1979.

**Product Description and Applications:** Studio quality microphone employing the unique RP principle. This features a truly light mylar diaphragm that has etched to its surface the coil and is suspended in a magnetic field. The result is a microphone with fast transient response, very low distortion (.007% at 100 dB 0.1% at 127 dB) provides all the advantage of a ribbon and condenser in one unit, rugged yet very accurate. Features cardioid pattern for use in the studio or on stage.

**Basic Specifications:** 600 ohm impedance.

High output - 72 dB, 0dB = 1V/ubar, 50-18,000 Hz.

Distortion: .05% at 120 dB.

Suggested List Price: \$349.95

## INTERLAKE AUDIO INC.

RWO/FOSTEX M65RP  
935 Ingersoll St., Winnipeg, Manitoba, Canada R3E 2L8  
(204) 668-0248

Contact: Ted R. Telesky, Sales Manager.  
Date Product Introduced: November 1979.

**Product Description and Applications:** Studio quality microphone employing the unique RP principle. This features a truly light mylar diaphragm that has etched to its surface the coil and is suspended in a magnetic field. The result is a microphone with fast transient response, very low distortion (.007% at 100 dB 0.1% at 127 dB) provides all the advantage of a ribbon and condenser in one unit, rugged yet very accurate. Features cardioid pattern for use in the studio or on stage.

**Basic Specifications:** 600 ohm impedance.

High output - 72 dB, 0dB = 1V/ubar, 50-18,000 Hz.

Distortion: .05% at 120 dB.

Suggested List Price: \$289.95

## INTERLAKE AUDIO INC.

RWO/FOSTEX M80RP  
935 Ingersoll St., Winnipeg, Manitoba, Canada R3E 2L8  
(204) 668-0248

Contact: Ted R. Telesky, Sales Manager.  
Date Product Introduced: November 1979.

**Product Description and Applications:** Studio quality microphone employing the unique RP principle. This features a truly light mylar diaphragm that has the coil etched directly to its surface and is suspended in a magnetic field. The result is a microphone with extremely fast transient attack capabilities, very low distortion (.007% at 100 dB 0.1% at 127 dB) provides all the advantage of a ribbon and condenser in one unit, rugged yet very accurate. Figure eight pick-up pattern.

**Basic Specifications:** 600 ohm impedance.

High output - 72 dB, 0dB = 1V/ubar, 50-18,000 Hz.

Distortion: .05% at 120 dB.

Suggested List Price: \$329.95

## INTERLAKE AUDIO INC.

RWO/FOSTEX M85RP  
935 Ingersoll St., Winnipeg, Manitoba, Canada R3E 2L8  
(204) 668-0248

Contact: Ted R. Telesky, Sales Manager.  
Date Product Introduced: November 1979.

**Product Description and Applications:** Studio quality microphone employing the unique RP principle. This features a truly light mylar diaphragm that has the coil etched directly to its surface and is suspended in a magnetic field. The result is a microphone with extremely fast transient attack capabilities, very low distortion (.007% at 100 dB 0.1% at 127 dB) provides all the advantage of a ribbon and condenser in one unit, rugged yet very accurate. Noise cancelling type designed for use in applications where only specific information only must be picked up.

**Basic Specifications:** 600 ohm impedance.

High output - 82 dB, 0dB = 1V/ubar, 50-12,000 Hz.

Distortion: .05% at 120 dB.

Suggested List Price: \$359.95

## INTERLAKE AUDIO INC.

RWO/FOSTEX M88RP  
935 Ingersoll St., Winnipeg, Manitoba, Canada R3E 2L8  
(204) 668-0248

Contact: Ted R. Telesky, Sales Manager.  
Date Product Introduced: November 1979.

**Product Description and Applications:** Studio quality microphone employing the unique RP principle. This features a truly light mylar diaphragm that has the coil etched directly to its surface and is suspended in a magnetic field. The result is a microphone with extremely fast transient attack capabilities, very low distortion (.007% at 100 dB 0.1% at 127 dB) provides all the advantage of a ribbon and condenser in one unit, rugged yet very accurate. Figure eight pick-up pattern. Three position bass roll off switch.

**Basic Specifications:** 600 ohm impedance.

High output - 72 dB, 0dB = 1V/ubar, 40-18,000 Hz.

Distortion: .05% at 120 dB.

Suggested List Price: \$449.95

## PANASONIC PROFESSIONAL AUDIO DIVISION

RAMSA/PANASONIC WM-8000  
50 Meadowlands Parkway, Secaucus, NJ 07084  
(201) 348-7484

Contact: Paul Ackel, Engineering Coordinator.  
Date Product Introduced: August 1980.

**Product Description and Applications:** Unidirectional dynamic microphone. For professional vocal use with clear and well damped sound. Floating microphone unit to eliminate shock noise and triple windscreen to eliminate pop noise.

**Basic Specifications:** Nominal impedance: 250 ohms balanced.

Sensitivity: -77 dBm ± 3 dB.

Frequency response: 50-18,000 Hz.

Directivity: Unidirectional.

Wind noise: 50 dB SPL/2m/sec or less.

Induction noise: 5 dB SPL/1m gauss or less.

Suggested List Price: \$232.00

## PANASONIC PROFESSIONAL AUDIO DIVISION

RAMSA/PANASONIC WM-8150  
50 Meadowlands Parkway, Secaucus, NJ 07084  
(201) 348-7484

Contact: Paul Ackel, Engineering Coordinator.  
Date Product Introduced: August 1980.

**Product Description and Applications:** Unidirectional electret condenser microphone. Adopting back electret system, frequency response and transient characteristics are improved. Designed for miking instruments. Slim style. Two way power system used—phantom and battery.

**Basic Specifications:** Nominal impedance: 250 ohms balanced.

Sensitivity: -74 dBm ± 3 dB.

Frequency response: 20-20,000 Hz.

Directivity: Unidirectional.

Maximum input sound pressure: 142 dB SPL at 1,000 Hz.

Suggested List Price: \$240.00

## PML (AB PEARL)

XY-82 STEREO CONDENSER MICROPHONE  
Knutegatan 6, S-265 00, Astorp, Sweden  
c/o Cara International Ltd  
POB 9339, Marina del Rey, CA 90291  
(213) 821-7888

Contact: Bill Cara.

Date Product Introduced: November 1979.

**Product Description and Applications:** Stereo microphone, dual coincident cardioid capsules, full condenser type. One capsule may be rotated through 180° to provide a multitude of pick-up patterns. By use as a mono microphone thru the mixing console with one input inverted in phase, front to back pick-up ratio of up to 40 dB may be achieved. The XY-82 requires the standard 25 - 48 volt Symal powering. Current requirement is less than 0.1 milliamp.

**Basic Specifications:** Frequency response 20-20 KHz.

May operate at sound pressure levels up to 140 dB.

Suggested List Price: \$1,495.00

## KEN SCHAFER GROUP, INC.

SCHAFFER-VEGA DIVERSITY MICROPHONE  
10 East 49th Street, New York, NY 10017  
(212) 371-2335

Contact: Ritchie Filegler.

Date Product Introduced: February 1980.

**Product Description and Applications:** A complete wireless microphone system consisting of, a Schaffer-Vega dual diversity receiver and antenna system, and handheld microphone/transmitter, with system signal to noise ratio exceeding 95 dB. The new SVDS mic system is not greatly larger than a standard SM-58(cartridge included in transmitter). Runs 5 to 8 hours off a commonly available 9V Duracell battery and features a highly efficient invisible internal antenna, doing away with the visually unappealing "stick" antenna common to other wireless vocal mics. The RF System, as with all SVDS units, is both interference and dropout proof.

**Basic Specifications:** Freq.: 150-216 MHz (customer specified).

Audio Response: 30-17.5 KHz ± 2 dB.

THD: <1.7% @ 1 KHz.

S/N: >95 dB.

Dynamic range: >95 Db.

Standard mic provided w/Shure SM-58 cartridge, others available.

Freq. stability: 0.005% crystal controlled.

Audio outputs: Floating (balanced) XLR switchable for mic or line level

into 150 ohms or 600 ohms respectively.

Operating range up to 100 yds.

Suggested List Price: \$3,750.00

**KEN SCHAFER GROUP, INC.**  
**SCHAFFER-VEGA B&T WIRELESS MIC**  
 10 East 49th Street, New York, NY 10017  
 (212) 371-2335  
 Contact: Ritchie Filegler.  
 Date Product Introduced: February 1980.  
**Product Description and Applications:** Microphone/transmitter same as SVDS System. Same exact audio specs as SVDS for a lot less money. Non diversity operation means a few minutes need to be set aside for a check for dead spots on stage. Outside of that the performance capabilities are the same as with SVDS Systems.  
**Basic Specifications:** Same as SVDS except only one antenna is needed.  
**Suggested List Price:** \$2,450.00

## ACCESSORIES

**AUDIO ENGINEERING ASSOCIATES**  
**ACTIVE M/S STEREO MICROPHONE MATRIX BOX**  
 1029 N. Allen Ave., Pasadena, CA 91104  
 (213) 798-9127  
 Contact: Wes Dooley, Chief Engineer.  
 Date Product Introduced: February 1980.  
**Product Description and Applications:** An active circuit M/S matrix box with one knob stereo width control that allows AKG, Neumann, PML, and Schoeps stereo mikes to be used in Mid/Side format and then matrixed to standard left (M + S) and right (M - S) without using a transformer matrix.  
**Basic Specifications:** Inputs and outputs are line level, unity gain and use gold plated 3 carat TRS 1/4" phone jacks.  
 The M and the S inputs are active circuit differential inputs and the M + S and M - S outputs are unbalanced.  
 Input impedance is greater than 10K ohms and output impedance is lower than 600 ohms.  
 The single knob stereo width (ratio) control permits adjustment from all M, no S; to 12 dB S channel overgain.  
 AC powered from 110-220 V, 50-60 Hz mains.  
**Suggested List Price:** \$300.00

**AUDIO ENGINEERING ASSOCIATES**  
**7' COLLAPSIBLE MICROPHONE STAND (Briefcase portable)**  
 1029 N. Allen Ave., Pasadena, CA 91104  
 (213) 798-9127  
 Contact: Wes Dooley, Chief Engineer.  
 Date Product Introduced: February 1980.  
**Product Description and Applications:** A collapsible aluminum Microphone stand that collapses to 21" and extends to 7 feet. The unit weighs 1 1/2 lbs and has a standard 5/8-27 mike thread. It was developed to fit in a briefcase and to be used with portable recording or acoustical analysis equipment. An adaptor to standard camera mount stud is available.  
**Suggested List Price:** \$40.00



Audio-Technica U.S., Inc.  
 Microphone Shock Mount

**AUDIO-TECHNICA U.S., INC.**  
**MICROPHONE SHOCK MOUNT**  
 33 Shawnee Avenue, Fairlawn, OH 44313  
 (216) 836-0246  
 Contact: Bob Herrold, Product Manager.  
 Date Product Introduced: November 1979.  
**Product Description and Applications:** The Audio-Technica AT8410a is a microphone shock mount utilizing a spring-loaded "clothes pin" retaining device which securely grips most sizes and shapes of microphones. The suspension cords are of "o" ring grade rubber. Though attractively styled and light in weight, the mount is rugged and extremely functional.  
**Suggested List Price:** \$32.00

**KEN SCHAFER GROUP, INC.**  
**MARK 200 TRANSCIEVERS**  
 10 East 49th Street, New York, NY 10017  
 (212) 371-2335  
 Contact: Ritchie Filegler.  
 Date Product Introduced: 1980.  
**Product Description and Applications:** A 2-way full duplex transceiver (belt mountable) made for short distance hands free (duplex) operation. No push to talk is necessary, Leaving the hands free to operate equipment. Example, a lighting man while running his board is free to give his cues to the spot operators, or hold a conversation between himself and the stage manager. All without running any cable.  
**Basic Specifications:** Continuous 2-way operation.  
 Operates on VHF, Hi freq. (150-186 MHz) customer specified.  
**Suggested List Price:** Pair \$2,850.00 includes 2 transceivers, 2 headsets w/mics, rechargeable batteries.

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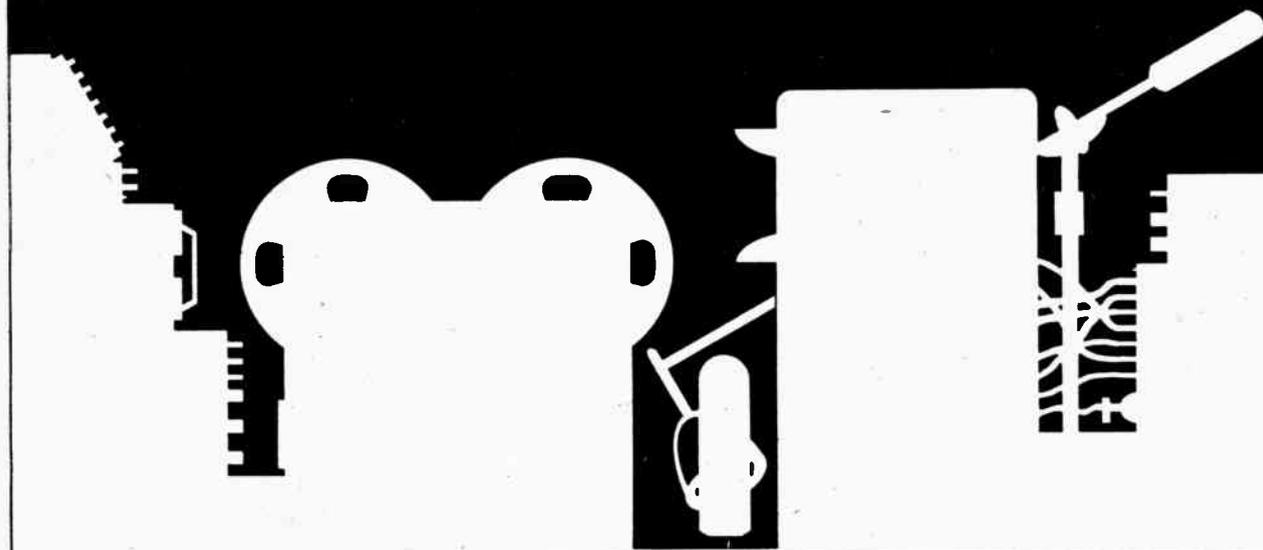
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# MIXERS



Altec Lansing  
1690 Mixing Console

**ALTEC LANSING**  
1690 MIXING CONSOLE  
1515 S. Manchester Avenue, Anaheim, CA 92803  
(714) 774-2900

Contact: Gary Rilling, National Sales Manager.  
Date Product Introduced: December 1979.

**Product Description and Applications:** The Altec Lansing Model 1690 Mixing Console is a portable or rack-mountable, eight-channel stereo mixer/preamplifier designed for musical or commercial sound reinforcement and professional recording. Engineered to meet the critical standards of the audio professional, the Model 1690 combines Altec Lansing quality and reliability with a new high level of flexibility. The secret behind this flexibility lies in the 1690's input channel MODE switches. These switches quickly configure the channel signal flow for sound reinforcement, recording/overdub or final mixdown applications. Other input-channel features are: balanced, low-impedance mic inputs with slide-type level controls, unbalanced line inputs and outputs, three-section equalization, switchable phantom power for condenser microphones and individual channel peak indicators. Optional walnut side panels and a black vinyl wrist pad complement the 1690's appearance. A molded carrying case is available for portable use. Mounting brackets are also available for rack installations.

**AMEK SYSTEMS AND CONTROLS**  
AMEK M2000A MASTER RECORDING CONSOLE

Contact: Everything Audio  
16055 Ventura Blvd., Encino, CA 91436  
(213) 995-4175

Date Product Introduced: January 1980.

**Product Description and Applications:** Automated recording console, 36 input main frame, 24 outputs with direct on 25-36 4 band variable Q parametric EQ., hi & lo pass swept filters, 6 sends, 6 returns, 2 VCA returns patchable, Allison EGC 101 VCA's, P&G faders, 480 point patch bay, 3 solos all in place, Sifam true peak reading VU meters, fader reverse, 48 volt phan-



Amek Systems and Controls  
M2000A Master Recording Console

tom on and off, swept oscillator, pink noise generator, auto fade up or down up to 50 sec. Uses Allison or comprehensive auto pack (R) automation, ultra quiet with no audible VCA coloration.  
Suggested List Price: 36 x 36 fully loaded \$81,000.  
36 x 28-28 input wired 36 \$53,000.00.

**AUDY INSTRUMENTS**  
SERIES 2000M MONITOR CONSOLE  
35 Congress St., Shetland Industrial Park, Salem, MA 01970  
(617) 744-5320

Contact: David P. Tkachuk, President.  
Date Product Introduced: 1979.

**Product Description and Applications:** The Audy Series 2000M monitor console offers 16 inputs (stackable up to 32) with 6 separate output mixes. It is intended for stage monitor mixing, sound reinforcement, theater, live recording, electronic music studios or any application requiring up to 6 independent mixes. All input mix controls are switchable pre or post EQ. All rotary controls are conductive plastic and are sealed. Penny and Giles faders are standard for the 6 output controls. Providing input preamps with a dual LED system, the Series 2000M maintains 25 dB of headroom throughout. Other standard features include: output channel patching, balanced inputs and outputs, 3 band EQ with switchable midrange, headphone monitoring featuring a solo priority system, solo output, individual channel muting, talkback, full function console stacking, six high resolution 20-segment LED bargraph output meters, work lamp socket, Anvil ATA approved flight case, and a full 2-year warranty.

**Basic Specifications:** Frequency Response: -2, +0 dB 20 Hz to 20 KHz. Bandwidth: 10 Hz to 100 KHz. Slew Rate: Greater than 10 volts per microsecond. Gain: 91 dB bal. output. Noise (20 Hz to 20 KHz unweighted) E.I.N.: -124 dB (200 ohm source impedance). S/N: Greater than or equal to 90 dB below +4 dBm, faders at minus infinity; greater than or equal to 74 dB below +4 dBm, faders at 0.

TIM distortion: 0.03% maximum up to maximum rated output (IEC method).  
IM distortion: 0.02% maximum up to maximum rated output (SMPTE method).  
THD: 0.02% maximum 0 dB mic input, +18 dBm output, 20 Hz to 20 KHz. Maximum output level: +22 dBm.  
Suggested List Price: \$8995.00

**B&B AUDIO (BASKIND, BISSOT & ASSOCIATES)**  
MSP SERIES MIXING CONSOLES  
7801 Melrose Ave., Los Angeles, CA 90048  
(213) 852-9200

Contact: David Baskind, or Ed Bissot.  
Date Product Introduced: January 1980.

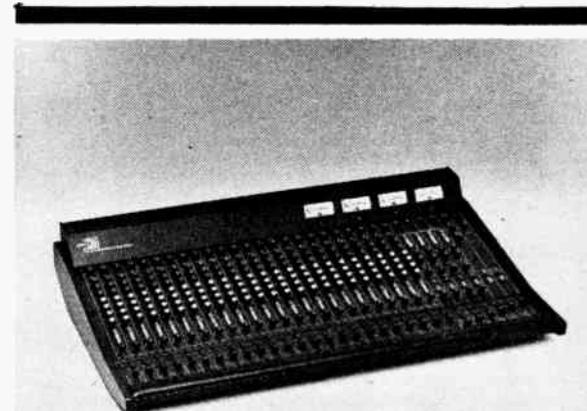
**Product Description and Applications:** The MSP Series Mixing Consoles feature: Minimum signal path design; all class "A" amplifiers; TTL (computer) compatible switching. B&B Audio VCA's available on all level and pan controls. Subminiature portable versions available. All consoles are built to customer specification.

**Basic Specifications:** 8 to 48 inputs.  
No transformers in signal path.  
Automation optional.

**BIAMP SYSTEMS, INC.**  
DISCO MIXER

9800 S.W. Barnes Rd., Portland, OR 97225  
(503) 297-1555

Contact: Gail Martin, Marketing Manager.  
Date Product Introduced: May 1980.



Biamp Systems, Inc.  
2442 Mixer

**BIAMP SYSTEMS, INC.**  
2442

9800 S.W. Barnes Rd., Portland, OR 97225  
(503) 297-1555

Contact: Gail Martin, Marketing Manager.  
Date Product Introduced: May 1980.

**Product Description and Applications:** Biamp Systems, Inc. of Portland, Oregon is now shipping its new 2442 with all the features of its successful predecessor, the 1642. This 24 x 4 x 2 board is so versatile it fits into a category all by itself. Features like 4 band EQ, 4 separate returns, direct to main assignment, access to all buses, complete input channel assignment, priority solo switching, low distortion low noise, phantom power, external power supply, and many more. The new Biamp 242 represents a major achievement in high slew rate technology resulting in sonic superiority at low cost. So if you're looking for a 24 channel mixer with excellent performance and reliability with just the right features at a great price then look for the Biamp 2442 and 1642.  
Suggested List Price: 2442: \$475.00; 1642: \$3595.00.

**BOGEN DIVISION/LEAR SIEGLER, INC.**  
BOGEN MODEL CDM ACTIVE MIXER-PREAMPLIFIER  
Forest Avenue & Route 4, Paramus, NJ 07652  
(201) 343-5700

Contact: Arthur Callahan, Sales Manager.  
Date Product Introduced: February 1980.

**Product Description and Applications:** Professional-quality unit for any applications. Six balanced i-o-z, transformer-isolated mic inputs, each preceded by a fixed attenuator pad, switch selectable on rear panel, to allow channels 1-4 also to accept 0 dBm, 600-ohm line inputs or high level (up to 1V rms) instrument mic inputs, and channels 5 and 6 to also accept a hi-z auxiliary input. Channel 6 also accepts a mag cartridge input. All inputs combined on Active Mixing bus. Separate bass and treble controls, giving up to 12 dB cut or boost at 50 Hz and 15,000 Hz. Booster level output for hi-Z booster inputs. Acoustic equalizer link. Terminal strips for 600-ohm outputs.

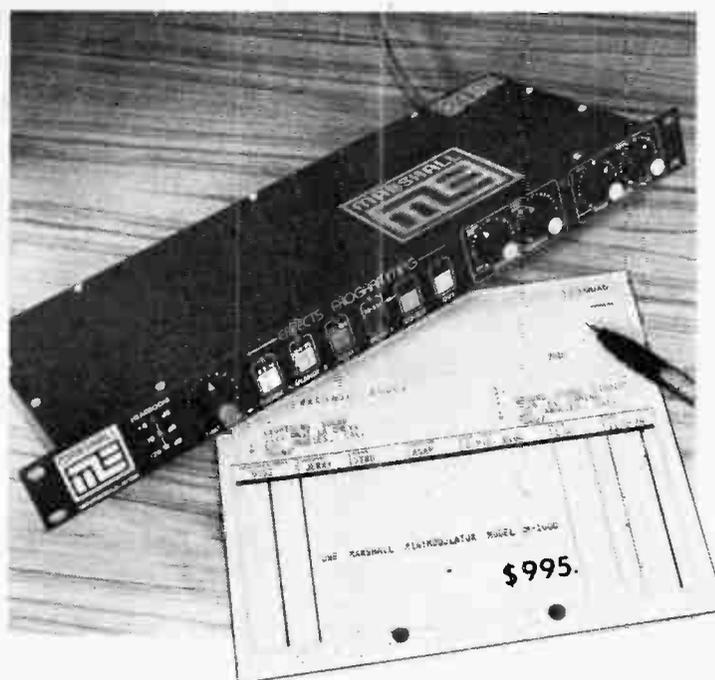
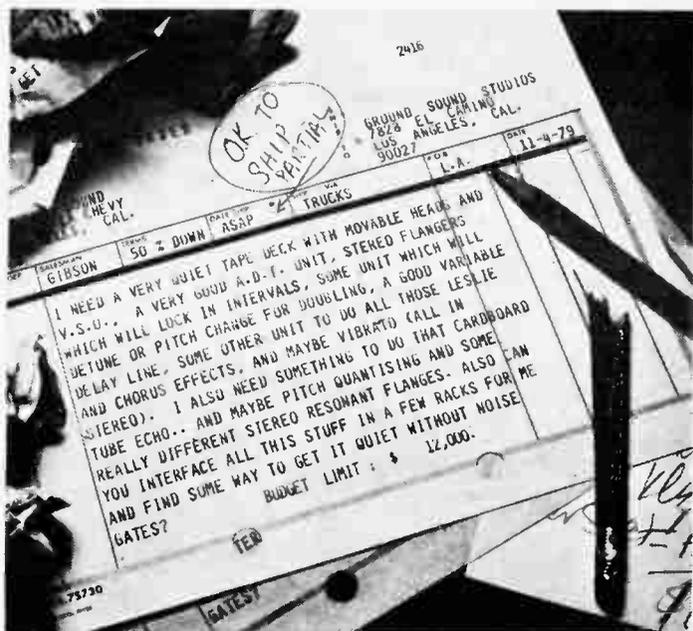
**Basic Specifications:** Rated output: +16 dBm (6.1V), 20-20,000 Hz, 1% THD. Load: 600 ohms, transformer isolated, center tapped, balanced or unbalanced. Booster output: 600mV, HI-Z. Frequency response: 20-20,000 Hz, ±1 dB at rated output. Sensitivity: (for rated output) microphone: 300 V; Mag Cartridge: 5mV; line: 25mV; Auxiliary: 150mV. Attenuator pads: channels 1-4: 38 dB, Z in = 10,000 ohms; channels 5-6: 54 dB, Z in = 50,000 ohms. Dynamic range: 40 dB. Precedence: over channels 5-6, built-in; Remote volume control - master gain control, channel 5 and/or 6, built-in. Noise level, at rated mic sensitivity: -57 dB.  
Suggested List Price: \$800.00

**EELA AUDIO**  
CONCORD 82000

13 Moleworth, Hoddesdon, Herts, United Kingdom  
(81) 88674

Contact: Claude Hill, President, Audicon, Inc.  
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San Francisco, CA 94107  
(415) 957-1067

AES Booth 62

\*suggested list

1200 Beechwood Ave, Nashville, TN 37212  
(615) 256-8900, Telex 554494

Date Product Introduced: May 1980.

**Product Description and Applications:** The Concord S2000 is designed to satisfy the requirement for a medium priced console featuring the flexibility and facilities expected in a modern "in-line" mixer. The S2000 is useful as a multi-track mixdown console, for broadcast, film and video dubbing, and sophisticated public address systems. Features include full 28-input wiring, central status switching, PROM-controlled switching, patch-bay and optional producer's desk. All switching is solid-state.

**HARRISON SYSTEMS, INC.**

MR-1

P.O. Box 22964, Nashville, TN 37202  
(615) 834-1184

Contact: Dave Purple, V.P. Sales.

Date Product Introduced: February 1980.

**Product Description and Applications:** MR-1 is a totally new console design concept of "DCI" (Distributed Control Intelligence). A true analog/digital hybrid, the MR-1 console offers more automated features than any other console before. Automated functions include: insertion of two patch-points; equalizer and filter insertion; main channel and monitor phase inversion; fader level and channel mute; 2, 3 and 4 channel panning; two effect sends; channel group select; and group master select. New Auto-Set II Hard Disk automation system is used.

**Suggested List Price:** Priced from \$219,000.00 US, not including automation, metering and patching, which are factory quoted.

**INTERFACE ELECTRONICS**

**SUPER STAGE MONITOR 312L**

3810 Westheimer, Houston, TX 77027  
(713) 626-1190

Contact: Louis Stevenson, President.

Date Product Introduced: January 1980.

**Product Description and Applications:** The 312L provides the ultimate control in Stage Monitor mixers, with each input equipped with three wide-range variable Q parametric equalizers with symmetrical 12 dB boost or cut, channel slider, solo, and 12 send pots. Mainframes can enclose 18 to 48 inputs, also include slider output masters and large four inch lighted VU meters or peak-reading LEDVU meters. In the LEDVU meter option, LEDVU's can be provided for each input if desired.

**Basic Specifications:** All interface mixers are plus or minus 1 dB 20-20,000 Hz with equivalent input noise approx. -128 dB ref. .775 volts and distortion under 0.05% up to almost the +20 dBm clip level. Noise 88 dB below a -40 input signal.

Mike inputs XLR type transformer balanced.

Outputs 600 ohm unbalanced (balanced optional).

**Suggested List Price:** 1980 list price on 32 input 312L Stage Monitor is \$20,290.00 FOB Houston, travel case not included. Interface Electronics makes mixers in all sizes and at all prices.

**INTERFACE ELECTRONICS**

**16X4A-16JV MIXER**

3810 Westheimer, Houston, TX 77027  
(713) 626-1190

Contact: Louis Stevenson, President.

Date Product Introduced: March 1980.

**Product Description and Applications:** The 16X4A-16JV mixer using the new 104JV input module provides up to 8 VCA control groups: if a group of input modules (for example 8 mikes on drums) are placed on the same VCA



group then one module in the group can submaster the entire group, while the other modules in the group still work individually. Up to 8 VCA control groups are available, providing up to 8 submasters. This eliminates the need for separate controls for submastering. One module can be designated boardmaster if desired, without disturbing the other groups. Other characteristics of the JV input module are the same as the standard Model 104 input module. If desired, LEDVU metering can be provided on all inputs.

**Basic Specifications:** All interface mixers are within 1 dB 20-20,000 Hz with equivalent input noise approx. -128 dB ref. .775 volts and distortion under 0.05% up to almost the +20 dBm clip level.

Noise 88 dB below a -40 input signal.

Mike inputs XLR type transformer balanced.

Outputs 600 ohm unbalanced (balanced optional).

**Suggested List Price:** 1980 list price on the Model 16X4A-16JV is \$7,250.00, and with the 20 LEDVU meters it is \$9,120.00, FOB Houston, travel case not included.

**JBL**

**5302 MIXER/PREAMPLIFIER**

8500 Balboa Blvd., Northridge, CA 91325  
(213) 893-8411

Contact: Ron Means, Prof. Division Manager.

Date Product Introduced: November 1979.

**Product Description and Applications:** The JBL 5302 is a versatile, solid-state mixer/preamplifier capable of combining two line and six microphone inputs. Each input is designed to accept an unbalanced, high impedance signal and may be converted to accept balanced, low impedance microphones by inserting accessory transformers in the sockets provided for that purpose. One of the microphone inputs may be internally switched to RIAA phono characteristics, and a pair of RCA-type jacks on the rear panel permits a stereo source to be fed to this input. The mixer, including accessories, can be mounted in three standard EIA rack spaces.

**Basic Specifications:** Output impedance: unbalanced, less than 120 ohms; balanced w/transformer, less than 150 ohm source. Frequency response: 20 Hz-20 KHz,  $\pm 1$  dB, with transformer. THD: less than 0.2%, 20 Hz-20 KHz, +18 dBm. Intermodulation distortion (SMPTE) is less than 0.03%. Equivalent input noise: -124 dBm, 20 KHz equivalent noise bandwidth. Shipping weight: 9 kg (20 lb). Accessories: Model 5195 matching/bridging transformer; Model 5901 microphone input transformer. **Suggested List Price:** \$819.00

**JBL**

**7510 AUTOMATIC MIC MIXER**

8500 Balboa Blvd., Northridge, CA 91325  
(213) 893-8411

Contact: Ron Means, Prof. Division Manager.

Date Product Introduced: February 1980.

**Product Description and Applications:** The JBL Model 7510 is a state of the art automatic microphone mixer which comes standard as a four-input module and is expandable to 24 input capacity. Particularly suited for installation in public meeting facilities, the 7510 can also be a useful tool in recording studio, broadcast and sound reinforcement applications. Each individual four-input module is equipped with front panel controls for level, threshold and release time settings; an additional switch allows each channel to be set for Manual, Automatic or Priority modes. In all three operating modes, a unique digital attenuator automatically reduces output gain by 3 dB for every doubling of activated microphones.

**Basic Specifications:** Overall system frequency response: 20 Hz - 20 KHz  $\pm 0.3$  dB.

THD: Mic in to direct out: Less than 0.1% 20 Hz - 40 Hz; less than 0.05% 40 Hz - 20 KHz at 6.7Vrms.

Mic in to main out: 0.2% 35 Hz - 20 KHz at 6.1Vrms.

Equivalent input noise: -127.5 dBm (150 ohm source).

**Suggested List Price:** \$1509.00

**MIDAS AUDIO SYSTEMS**

**MIDAS THEATRE RANGE (TR SYSTEM)**

54-56 Stanhope St., London NW1, England  
01-388-7060

Contact: Mr. David Solari, Sales Director.

Date Product Introduced: March 1980.

**Product Description and Applications:** The Midas TR System has been specifically developed for theatre sound mixing, distribution and recording applications. It is fully modular and is available in three standard formats; 24, 30, 36 inputs into 8 x 8 x 2 outputs. A complete range of options allow custom applications to be easily and cost-effectively catered for.

**Basic Specifications:** Complete technical information and pricing is available on request.

**NEPTUNE ELECTRONICS, INC.**

**MODEL 1420 STEREO MIXING CONSOLE**

934 N.E. 25th Ave., Portland, OR 97232  
(503) 232-4445

Contact: H.C. (Bud) Garrison, Vice president, Marketing.

Date Product Introduced: January 1980.

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**Product Description and Applications:** The NEI 1420 has studio quality specifications ruggedly built for live performance with an extra strong all-steel chassis. Soling on each channel, 3 bands of EQ, gain control with overload indicator, preamp patch point and transformer balanced inputs all add up to one of the most versatile sound reinforcement consoles to be found.

**Basic Specifications:** Each of the 14 input channels feature: transformer balanced input and line input. Channel out/in patch point (pre-EQ). Gain control with peak indicator. 3 bands of equalization. 2 effects sends (post EQ). Monitor send. Solo button. L/R pan control. Mains feature: Left, right and monitor master faders with LED VU indicators. Silent FET solo switching plus a complete headphones amplifier. **Suggested List Price: \$1599.00**

#### RUPERT NEVE INCORPORATED

5108 Berkshire Industrial Park, Bethel, CN 06801  
(203) 744-6230

Contact: Anthony H. Langley, Marketing Manager.

Date Product Introduced: May 1979.

**Product Description and Applications:** Microprocessor controlled audio console utilizing totally new design from Neve. Up to 48 track bussing with digital control of routing, bussing and output amplifiers. Microprocessor enables storage of up to four console assignments to be made via unique central assignment panel with individual interrogation per channel.

**Basic Specifications:** 32, 48, and 56 inputs; 24, 32, or 48 busses.

8 auxiliary sends.

Manual, VCA, and Necam versions.

**Suggested List Price:** Price on application.

#### PANASONIC PROFESSIONAL AUDIO DIVISION

RAMSA/PANASONIC WR-130  
50 Meadowlands Parkway, Secaucus, NJ 07094  
(201) 348-7464

Contact: Paul Ackel, Engineering Coordinator.

Date Product Introduced: August 1980.

**Product Description and Applications:** 8 in-2 out audio mixer, each input includes -70 dB attenuation. High and low equalizer. Pre or post sub mixing. Pan pot. Peak overload indicators and balanced microphone inputs. Inputs 1-4 will accept turntable connections. The main section has metered outputs A and B with high and low equalizer. Aux inputs, echo send and receive and record sends. A headphone output is provided to monitor. Echo send or program mixing is provided to both A and B channels.

**Basic Specifications:** Frequency response: 50-15,000 Hz  $\pm 2$  dB.

THD: 0.5% or less (50-15,000 Hz).

Input noise: -113 dBm or less (20-20,000 Hz).

Residual noise: -70 dBm or less.

Input Equalizers: (low 100 Hz. High 10,000 Hz):  $\pm 12$  dB.

Output equalizer: (low 100 Hz. High 10,000 Hz):  $\pm 12$  dB.

Nominal Impedance: Input: 800 ohms; aux: 10,000 ohms; from echo:

20,000 ohms; output: 800 ohms; pre out to echo: 10,000 ohms; rec out:

10,000 ohms; monitor: 8 ohms.

**Suggested List Price: \$995.00**

#### QUAD/EIGHT ELECTRONICS FLOPPY DISK EDITING SYSTEM

11929 Vose St., N. Hollywood, CA 91065  
(213) 764-1516

Contact: Phil Mobley, Dave Hadler.

Date Product Introduced: 1979.

**Product Description and Applications:** A complete disk editing update package for our standard 40 input Coronado Console, the MS4024CX. The system includes a console mounted control panel, a double-density, dual-drive, 8 inch floppy disk unit, and the microprocessor based editing computer. Optionally available is a color graphics terminal.

**Basic Specifications:** SMPTE Time Code compatible; normal and drop

frame capability.

20 minutes of total time per diskette, divided into a maximum of 32 individual mixes.

On board Time Code generator for both drop and normal SMPTE.

Operational features such as storage registers, directory listings, and error messages for fast recovery.

Preliminary control panel key description available on request.

**Suggested List Price:** Coronado MS-4024CX w/Electronic Editor System, Compumix III Diskette Recorder & Compumix III Color Graphics Terminal: \$123,771.00.

#### QUANTUM AUDIO LABS, INC.

QM-128-B  
1905 Riverside Drive, Glendale, CA 91201  
(213) 841-0870

Contact: John Pritchett, President.

Date Product Introduced: April 1980.

**Product Description and Applications:** The QM-128-B console is an outgrowth of our very successful QM-128 product line. Versatile EQ, good dynamic range, ease of service and an excellent range of functions make this console the best choice for the beginning professional 8 track recording studio. Special attention has been taken to the mechanical package and visual aspects of this console to provide the customer with the most attractive, easy to use, medium priced console available in the market today.

**Basic Specifications:** 12 mix and 14 line in balance with 8 main buss and 4 auxiliary buss outputs.

Mic nominal -80 dBm input and line nominal +4 dB (re .775V) usable

from -20 dB to +30 dB.

All outputs nominal +4 dBm unbalanced.

Balanced outputs, phantom power, super multi frequency EQ, patch bay

optional.

**Suggested List Price:** Basic console price \$5,500.00.

#### QRK BROADCAST ELECTRONICS

DISCON  
1568 N. Sierra Vista, Ave., Fresno, CA 93703  
(209) 251-4213; Outside California—(800) 344-2181

Contact: Robert D. Sidwell, General Manager.

Date Product Introduced: February 1980.

**Product Description and Applications:** Disco mixer with 7 channels, 3 phono inputs, 2 auxiliary inputs and 2 microphone inputs; phono and aux channels may be switched to cue, line or source. Cross fade on all channels; talkover has stepped attenuation; beat match to establish best and loudness between two channels; 10 segment dual LED meter; monitor, sub-

sonic filter, equalization, switchable.

**Suggested List Price: \$650.00**

#### RAINDIRK LTD.

BRITANIA  
Bridge St., Downham Market, Norfolk, England  
036-83-2165

Contact: Claude Hill, President, Audicon, Inc.

Exclusive Western hemisphere agents.

1200 Beechwood Ave, Nashville, TN 37212

(615) 258-6900, Telex 554494

Date Product Introduced: May 1980.

**Product Description and Applications:** The Britania 40 in, 24/32 out console is a straight-line board equipped with full 4-band parametric equalization, and utilizing state-of-the-art low-noise electronically balanced transformerless inputs and outputs. Connections are made through DIN standard 30-pin Amphenol/Tuchel connectors. Options available are Allison automation and Param centrally controlled, computer assisted

equalization and routing.

#### ROLAND CORPORATION

SMX-880 LINE MIXER  
2401 Saybrook Ave., Los Angeles, CA 90040  
(213) 685-5141

Contact: Ron Wilkerson, VP Marketing.

Date Product Introduced: January 1980.

**Product Description and Applications:** The SMX-880 is a line level mixer designed for a wide variety of applications ranging from keyboard mixing to PA or studio mixing or submixing applications. The SMX-880 features eight inputs and two outputs. Controls on each channel have been kept to a minimum to avoid any unwanted coloration. Each channel features controls for Volume and Pan, as well as input level attenuation. Outputs are both unbalanced (phone) and balanced (XLR connectors). An additional

headphone output allows for monitoring.

**Basic Specifications:** Frequency response: 10 Hz to 100 KHz.

S/N: Better than 80 dB.

THD: Less than 0.03%.

**Suggested List Price: \$395.00**

#### RTS SYSTEMS, INC.

HPM-41 MICROPHONE MIXER  
1100 W. Chestnut St., Burbank, CA 91506  
(213) 843-3232

Contact: Shelly Bunnett, Sales Administrator.

Date Product Introduced: January 1980.

**Product Description and Applications:** HPM-41: 4 x 1 Microphone Mixer. The Model HPM-41 is a compact, lightweight unit, designed for professional applications ranging from location film and tape to major recording console input augmentation. Phantom power and phase reversal assist in maintaining maximum studio capability.

**Basic Specifications:** Frequency response: +0 -1 dB 30 Hz-20 KHz input, -40 dBv in to +8 dBm out.

THD: Less than 0.1% 30 Hz-20 KHz, -50 dBv input to +8 dBm out.

IHF slew factor: 5.0 @ +24 dBm.

Maximum gain: 90 dB.

Input noise: -127 dBv (150 ohm termination).

Output noise: -68 dBv (78 dB S/N).

**Suggested List Price: Pro net price \$1200.00**

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The Mix is interested in finding out who our readers are. We'd appreciate it if you would fill out the form below and return it to us so we can learn more about you and what you like. To show our appreciation, we will send you a free copy of our next issue. Thanks for your time.

1. What is your age?  
 15-25     25-34     35-40     over 50.
2. Are you  male or  female?
3. What is your occupation?  
**A. RECORDING STUDIO**  
 Owner  
 Engineer  
 Staff  
 Independent  
 Maintenance  
 Producer  
 Independent  
 Staff  
 Studio Employee  
**B. MUSICIAN**  
 Full Time  
 Part Time  
 On contract to record label  
**C. PROFESSIONAL AUDIO**  
 Manufacturer  
 Dealer  
 Store Owner  
 Employee  
 Manufacturers Rep.  
 Designer  
 Consultant  
**D. MISCELLANEOUS**  
 Radio/TV  
 Student  
 Other (please specify) \_\_\_\_\_
4. How long have you been involved in recording?  
 \_\_\_\_\_
5. How much time do you spend in recording studios in one month?  
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6. What other recording related publications do you read?  
 \_\_\_\_\_
7. Do you have recording equipment in your home?  
 professional     reel to reel     cassette
8. Where did you get your copy of The Mix?  
 \_\_\_\_\_
9. What other listings, features or articles would you like to see in future editions of The Mix?  
 \_\_\_\_\_
10. Comments or suggestions?  
 \_\_\_\_\_

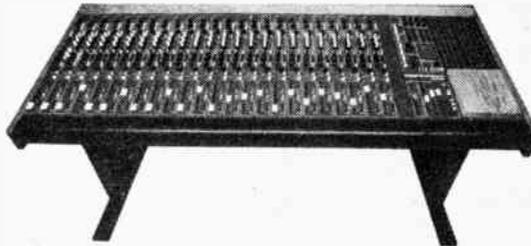
Please return this form to:  
 The Mix Publications  
 P.O. Box 6395  
 Albany Branch  
 Berkeley, CA 94706

name \_\_\_\_\_  
 address \_\_\_\_\_  
 city \_\_\_\_\_  
 state \_\_\_\_\_ zip \_\_\_\_\_

Thank you. Watch for your free copy of our next issue to be delivered soon.

**SOLID STATE LOGIC  
 SL-4000E-TV BROADCAST SERIES**  
 c/o Washington Musicworks Inc.,  
 3421 M Street N.W., Washington, DC 20007  
 East Coast (202) 333-1500, West Coast (213) 484-8034  
 Contact: Douglas Dickey.  
 Date Product Introduced: April 1980.  
 Product Description and Applications: SL-4000E-TV Series Live Broadcast Console. The SL-4000E-TV is a specialized version of the Solid State Logic Master Studio System which provides additional master operating modes and individual channel functions designed to meet the most advanced requirements of the broadcast engineering community. In addition to providing full flexibility and safety features for live broadcasts, the "Broadcast + Record" and "Broadcast + Mix" modes provide ideal signal flow for 24/48 track recording plus mono/stereo simulcast or direct to VTR mix. Real-time automated live mix features designed to simplify post-production sweetening make this a perfect system for video music productions.  
 Suggested List Price: \$175,000 to \$400,000 depending on size and configuration.

**SOLID STATE LOGIC  
 TOTAL RECALL™**  
 c/o Washington Musicworks Inc.,  
 3421 M Street N.W., Washington, DC 20007  
 East Coast (202) 333-1500, West Coast (213) 484-8034  
 Contact: Douglas Dickey.  
 Date Product Introduced: March 1980.  
 Product Description and Applications: Total Recall™ is an extension of the Solid State Logic Master Studio System computer which monitors and stores the positions of every control on the SL-4000E Series mixing desk. Complete details of input selection, routing assignments, monitor and foldback levels, panning, equalization, echo sends, compression, expansion, gating and keying are permanently recorded on floppy discs. The Total Recall network of microprocessor-controlled data buses employs no audio pass elements; thus adding absolutely no noise and no distortion to the E Series system.  
 Basic Specifications: Dual-floppy disc drive microprocessor slaved to 16-bit SSL Studio Computer.  
 Stores and recalls all console settings with 1/4 dB accuracy.  
 High resolution colour graphics display, built-in dedicated command keyboard.  
 Suggested List Price: SL-4000E Series Consoles equipped with Total Recall range in price from \$240,000 (28 inputs, VU metering) to \$400,000 (56 input, plasma metering).



Sound Workshop Professional Audio Products, Inc.  
 Series 30 Mixing/Recording Console

**SOUND WORKSHOP PROFESSIONAL AUDIO PRODUCTS, INC.  
 SERIES 30 MIXING/RECORDING CONSOLE**  
 1324 Motor Parkway, Hauppauge, NY 11787  
 (516) 582-6210  
 Contact: Emil Handke, Sales Manager.  
 Date Product Introduced: February 1980.  
 Product Description and Applications: The Sound Workshop Series 30 is a revolutionary new recording console which embodies almost all of the features and performance of Sound Workshop's highly acclaimed Series 1600, at a highly affordable price. The Series 30 is designed to be the ideal console for the expanding multi-track studio operation. It serves the 8, 16, or 24 track studio as a fully modular control center, providing a multitude of signal flow possibilities that are both clear and logical.  
 Basic Specifications: Modular construction.  
 Mainframe sizes ranging from 12 inputs to 36 inputs.  
 Choice of Equalizers, choice of channel faders, interface via Molex, jacks available on 12 input mainframe.  
 Comprehensive control room and studio facilities including slate/talkback/cue, independent studio monitor selector, echo return to monitor and cue, and internal oscillator.  
 Pre and post fader patch points, and direct outputs on all channels.  
 Nominal operating level of +4 dBm (switchable to match -10 dBm operating level).  
 Suggested List Price: Prices range from \$4,500.00 for an 8 x 6 "A" format console up to \$45,000.00 for a fully automated 36 x 24 with VCA input subgrouping and ARMS automation in a "B" format console.

**STUDER REVOX AMERICA, INC.  
 OUTSIDE BROADCAST CONSOLE 069**  
 1425 Elm Hill Pike, Nashville, TN 37210  
 (615) 254-8851  
 Contact: Bruno Hochstrasser, President.  
 Date Product Introduced: November 1979.  
 Product Description and Applications: Mixing console and telephone interface for outside broadcasting, news and sports coverage: 2 microphone/line inputs, switchable; 1 high level input; 2 master outputs with limiters; built-in monitoring unit with monitoring facilities for reporter, balancing engineer and the built-in test oscillator; built-in telephone interface with dial for CB or LB operation with call generator; built-in NiCad batteries and mains power supply.  
 Suggested List Price: \$4000.00 - \$5500.00 depending on options.



**SUPERSCOPE, INC.  
 SUPERSCOPE BY MARANTZ MIX-84 MIXER**  
 20625 Nordhoff Street, Chatsworth, CA 91311  
 (213) 988-8333  
 Contact: Ray Kwong, Acct. Exec., Pr., (213) 277-9011  
 Date Product Introduced: June 1979.  
 Product Description and Applications: A super multi-track mixer with super flexibility that bridges the gap between the disco user and the multitrack recordist.  
 Basic Specifications: 4 phono, 4 line and 8 balanced mic inputs. 4 output buses, 8 cue outputs, 4 buss send jacks, 4 buss receive jacks, 8 pan pots w/buss assignments, cascading capability, independent cue and buss monitoring system, 2 headphone monitor inputs, 8 dual frequency filter switches, 8 two-level input attenuators, input/output overload LED's, 4 large VU meters.  
 Suggested List Price: \$775.00

**TANGENT SYSTEMS INC.  
 PHOENIX SERIES MASTER RECORDING-MIXING CONSOLE**  
 2610 S. 24th St., Phoenix, Arizona 85034  
 (602) 287-0663  
 Contact: Thomas M. Scott, Sales Director.  
 Date Product Introduced: 1980.  
 Product Description and Applications: The Phoenix Series of Master Recording-Mixing Consoles, represents Tangent's entry into the world class studio market. Based on our exclusive "Universal Channel Module Concept," the Phoenix opens new operational vistas not currently offered by any other console. Coupled with our exclusive automation and digital fader system, the Phoenix Series will become the console standard for the 80's.  
 Basic Specifications: Full information and pricing available at the Los Angeles AES show. Please join us for a full explanation.

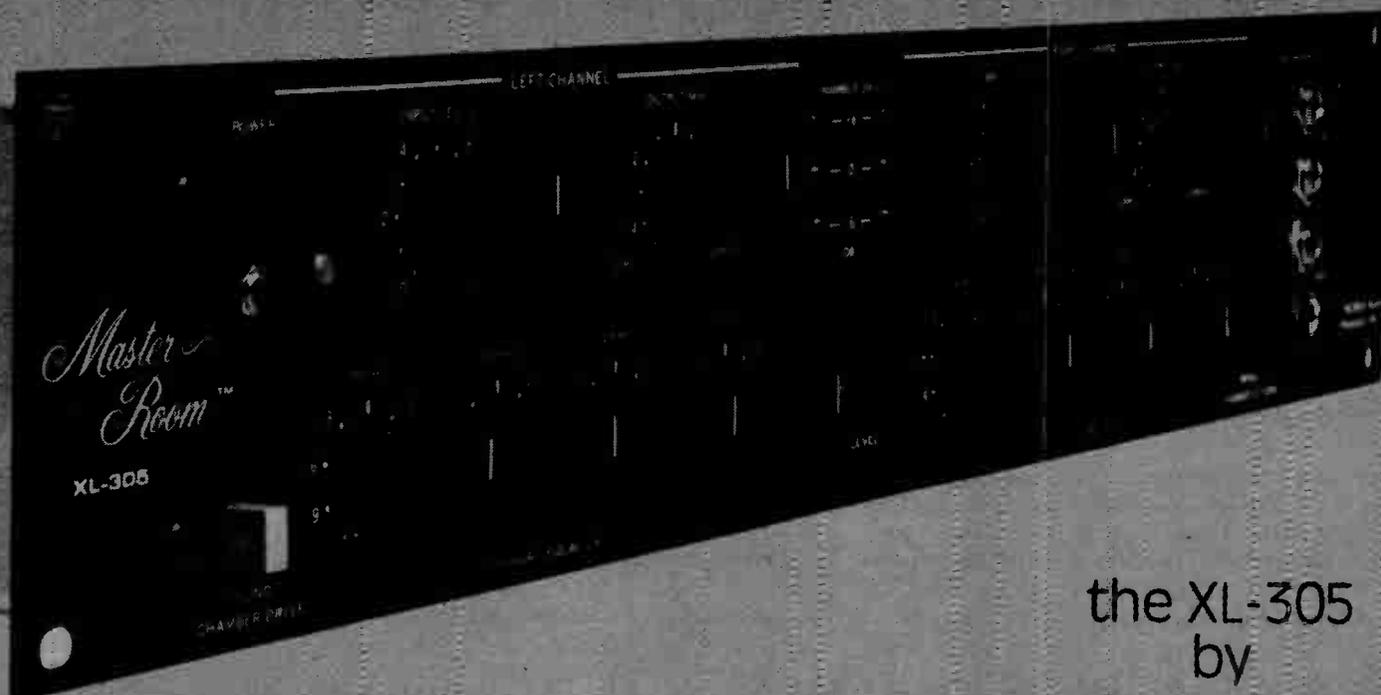
**TAPCO  
 PANJO SERIES 7212**  
 3810 148th Ave. N.E., Redmond, WA 98052  
 (206) 883-3510  
 Contact: Rick Chinn, Product Manager.  
 Date Product Introduced: January 1980.  
 Product Description and Applications: The 7212 is a high performance compact mixing system intended for live performance and recording applications. Each of the 12 input channels features low-z mic input, bridging line input, mic/line switch, 3 point overload LED, 3 band-4 freq. EQ, pre-fader send (aux), panpot, solo and channel fader. The output section offers simultaneous stereo and mono outputs, headphone amplifier, send bus masters with soloing, 2 pannable effects returns, effects to monitor controls, meter switching and various status LED's. 24V phantom power stock, reverb as option.  
 Basic Specifications: EIN (20 KHz NBW, mic in to line out) - 130 dBv.  
 Max out +20 dBv.  
 THD less than .05% 20-20 KHz @ +20 dBv output.  
 Max mic input level +6 dBu.  
 21.5"W x 8.25"H x 15.5"D. 30 lbs.  
 Suggested List Price: \$1795.00

**TAPCO  
 PANJO SERIES 7416**  
 3810 148th Ave. N.E., Redmond, WA 98052  
 (206) 883-3510  
 Contact: Rick Chinn, Product Manager.  
 Date Product Introduced: January 1980.  
 Product Description and Applications: The 7416 is a Compact high performance live mixing board in a 16 x 4 x 2 x 1 format that is also suitable for recording. The input channels feature low-z mic input, line input, mic/line switch, 3 point overload LED, 3 band-4 freq. EQ, pre and post fader sends, aux send (pre or post), channel assign switches, panpot, solo and channel fader. The outputs are available in 4 channel, stereo and mono (simultaneously). The subgroup section has 44 submaster faders (soloable and pannable) metering and talkback (mains, monitors and aux.). The output section has send masters with solo, additional metering, effects returns and stereo and mono masters. 24V phantom power is stock, reverb is option.  
 Basic Specifications: EIN (20 KHz NBW, mic in to line out) - 130 dBv.  
 Max out +20 dBv.  
 THD less than .05% 20-20 KHz @ +20 dBv output.  
 Max mic input level +6 dBu.  
 31.5"W x 8.25"H x 15.5"D. 44 lbs.  
 Suggested List Price: \$3195.00

**NEXT  
 NEW PRODUCT  
 LISTINGS:  
 NOVEMBER  
 1980**

# Incredible...

the "Acoustic Chamber Synthesizer"™



the XL-305  
by

*Master  
Room*™

- Totally new design approach
- The sound of a live acoustic chamber
- Natural sound, even on percussion
- Self-contained rack mount unit
- Full two-channel stereo

The Master Room XL-305 is a totally new design approach in reverberation technology. For the first time, the qualities and properties of a live acoustic chamber are available in a rack mount unit at an affordable price. There is a natural sound on percussion, as well as voices and all other musical instruments. This quality has not been obtainable from other compact reverberation devices. The XL-305 exhibits no unwanted side effects; it's as natural as a live chamber itself.

To hear this new advancement in reverberation, see your professional audio dealer and ask for a demonstration of this exciting new unit. Hear the XL-305 "Acoustic Chamber Synthesizer" for yourself, and you too will agree... It's INCREDIBLE.

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Upland, CA 91786 • (714) 985-0701

# SIGNAL PROCESSING



## ADVANCED AUDIO DESIGNS DIGITAL DELAY SYSTEM MODEL D-250

3890 Stewart Road, Eugene, OR 97402  
(503) 485-4251

Contact: John L. Caporale, Chief Executive Officer.  
Date Product Introduced: November, 1979.  
Product Description and Applications: Digital delay system designed for studio, sound reinforcement or instrument systems. May be remote controlled. LED delay time display. Delay time variable in one millisecond intervals. Fixed delay 0-250ms voltage controllable to a minimum of 550 ms. Simulates reverbs, echos, flange, chorus, doubling, vibratos, cone filters, special effects such as ring modification, etc. One rack space unit with over one year of field testing insuring high reliability.  
Basic Specifications: Dynamic Range: Dry 110 dB @ 1 KHz, Delay 90 dB @ 1 KHz—referred to max. output.  
Signal to Noise: Dry -92 dBm @ 1 volt RMS output-weighted; Delay -70 dBm @ 1 volt RMS output-weighted.  
Frequency Response: Dry 20-20,000 Hz; Delay 40-15,000 Hz  $\pm$  3 dB.  
Distortion: Dry less than .1% THD @ 1 KHz (15 KHz bandwidth); Delay less than 1% THD @ 1 KHz bandwidth; Delay less than .5% THD @ 1 KHz (15 KHz bandwidth).  
Suggested List Price: \$985.00

## ADVANCED MUSIC SYSTEMS

DMX 15-80 STEREO DDL  
4721 Laurel Canyon Blvd., Suite 209,  
N. Hollywood, CA 91607  
(213) 980-5717; Telex: 194781

Contact: Dr. Ian Dunn, Carole Copeland.  
Date Product Introduced: March 1980.  
Product Description and Applications: The DMX 15-80S is a high quality stereo digital delay for all audio applications. Excellent sound quality is assured by Advanced Music Systems advanced technology which provides 18 KHz bandwidth even at 2 seconds delay per channel with low distortion, typically 0.025 at 1 KHz. Regeneration and feedback filters are provided on both channels and switches allow inputs to be paralleled and/or outputs to be mixed to provide a multitude of special effects. The 15-80S is microprocessor controlled for precise delay settings and instant and accurate recall from any of the units nine memory locations. Delays may be simultaneously entered into both channels to ensure phase coincidence.  
Basic Specifications: Input Impedance (Zin): 10 Kohm, electronically balanced.  
Input sensitivity: 10 dBv (ref 0.775V).  
Maximum gain available: 20 dBv.  
Output impedance: 150 ohm, symmetrical, electronically balanced.  
Maximum output level: +24 dBv.  
Distortion: Typically 0.025% at 1 KHz.  
Dynamic range: Greater than 90 dB.  
Frequency response: 20 Hz-18 KHz-3 dB.  
Maximum delay available: 2 seconds per channel.  
VCO Control: Variable 0.05-20 Hz.  
Frequency shift avail: 0.20% continuously variable.

## ADVANCED MUSIC SYSTEMS

DISC MASTERING DELAY  
4721 Laurel Canyon Blvd., Suite 209,  
N. Hollywood, CA 91607  
(213) 980-5717; Telex: 194781

Contact: Dr. Ian Dunn, Carole Copeland.  
Date Product Introduced: March 1980.  
Product Description and Applications: The Advanced Music Systems Disc Mastering Delay is an extremely high quality digital delay line, designed to provide an adjustable preview delay for disc cutting applications. This allows mastering to be performed from non-preview tape transports and the adjustable delay ensures compatibility with a wide range of cutting lathes and operating conditions. An automatic level control is used to pro-

vide an overall system gain of unity. The delay may be selected from one of three preset values or the numerical keypad may be used to enter any required delay. The delay chosen is indicated on the four digit LED display in milliseconds. Signal level is monitored on dual LED meters which have track or peak latch modes. Track mode indicates instantaneous signal level with pulse stretching to make short peaks visible. Peak latch provides a record of the highest peak program level reached during a cutting operation. Delay extension is available to provide up to 10 seconds per channel without loss of signal quality.  
Basic Specifications: The Disc Mastering Delay uses 1 16 bit linear A-D conversion system and is offered in two standard configurations.  
A) 27 KHz bandwidth, delay to 1.3 seconds per channel.  
Frequency response 20 Hz-27 KHz +0.5, -2 dB.  
Delay modules available to increase maximum delay to 8.5 seconds per channel.  
Total harmonic distortion typically 0.02% at 1 KHz.  
Signal to noise ratio 96 dB.  
B) 24 KHz bandwidth, delay to 1.8 seconds per channel.  
Frequency response 20 Hz-24 Hz, +0.5, -2dB.  
Delay modules available to increase maximum delay to 10 seconds per channel.  
Suggested List Price: Upon application, depending on delay required.

## AKG ACOUSTICS

BX-5  
91 McKee Drive, Mahwah, NJ 07430  
(201) 529-3800

Contact: P. Weillkoff, Marketing Manager.  
Date Product Introduced: Spring 1980.  
Product Description and Applications: The AKG BX-5 is a compact rack-mount self-contained 2 channel reverb unit intended for studio and road applications. As utilized in the world renowned BX-20 and BX-10E2, the BX-5 uses the patented "Torsional Transmission Line" system for exceptionally clean and truly natural reverberation characteristics. Additional features include flexible input level control (with VU meter, overload LED's, and limiting), parametric equalization, reverb/dry mixing, fully balanced XLR's, and selectable decay times.  
Basic Specifications: Frequency Response: 20-20,000 Hz (dry path), 50-8,000 Hz (reverb path).  
S/N ratio (weighted):  $\geq$  78 dB (dry path),  $\geq$  71 dB (reverb path).  
Decay times: 1.5, 2.5, 3.5 seconds, In/Out connectors.  
Dimensions: 19"W x 5 1/4"H x 10"D. Weight: 12 lbs.  
Suggested List Price: \$1,495.00

## APHEX SYSTEMS LTD.

APHEX AURAL EXCITER MODEL 602B  
7801 Melrose Ave., Los Angeles, CA 90048  
(213) 655-1411

Contact: Ginny West, Sales.  
Date Product Introduced: February 1980.  
Product Description and Applications: The 602B is an updated version of the famous Model 602 Aural Exciter. Widely used throughout the recording and broadcast industry the 602B provides greatly enhanced presence, spatiality and clarity. Over 4000 record albums have been mixed using the Aural Exciter, as well as countless commercials, on-air use and live performances. Heretofore only leased, the Apex Aural Exciter is now for sale for the first time.  
Basic Specifications: Configuration: 2 channels (stereo)  
Size: 3 1/2" x 19" rack mount.  
Power requirements: 120V 60 Hz 30 watts.  
Input and Output: balanced, 600 ohms; OVU = +4 dBm.  
Suggested List Price: \$2750.00

## ASHLY AUDIO, INC. SC-44 KEYBOARD INPUT PROCESSOR

100 Fernwood Avenue, Rochester, NY 14621  
(716) 544-5191  
Contact: Cindy Jennison, Customer Service.  
Date Product Introduced: November 1979.  
Product Description and Applications: The SC-44 Keyboard Input Processor is basically a four input extension of Ashly's SC-40 Instrument Preamp. The SC-44 provides low and high equalization and a wide-range gain adjustment for each input. Other features include a 3-band tunable output equalizer, 5 send-recv effects loops, peak overload lights, and separate outputs for stage amplifiers and PA feeds. All inputs and outputs are interconnected with a new plug in ribbon cable system.  
Basic Specifications: Each input has a  $\pm$  15 dB level control with a low frequency shelf of 300 Hz and a high frequency shelf of 3 KHz. Noise is -85 dBV at unity gain and distortion is less than .05%.  
Suggested List Price: \$499.00

## AUDI-ENCE, INC. RFS-1 PLATE REVERBERATION CHAMBER

3325 Vista Oaks, Garland, TX 75043  
(214) 226-2189  
Contact: Gail Hawkes, Customer Service; or Bryant Hawkes, President.  
Date Product Introduced: November 1979.  
Product Description and Applications: The RFS-1 is an exceptional plate reverberation system utilizing the latest in low noise circuitry, selected steel plates, selectable low end response, adjustable high frequency response, remote chamber powering and drive for low noise floor, adjustable decay time, balanced outputs and available options for custom tailoring each system to the user's requirements.  
Basic Specifications: Inputs: one; outputs: two.  
Input Z: 10K ohms, outputs 600 ohm bal.  
Nominal operating input level +4 dBv.  
Nom output level +4 dBm.  
Broadband headroom nom 15 dB.  
Nominal decay time 4 seconds  $\pm$  2 seconds.  
Power req'd 115 volts/35 watt maximum.  
Weight: approx 350 lbs.  
Available from professional audio contractors and dealers.  
Suggested List Price: \$3,329.00

## AUDI-ENCE, INC. NG3™ 3 CHANNEL NOISE GATE

3325 Vista Oaks, Garland, TX 75043  
(214) 226-2189  
Contact: Bryant Hawkes, President.  
Date Product Introduced: May 1980.  
Product Description and Applications: The NG3 is a 3 channel, multi-function metered problem source control signal processor or simply a 3 channel noise gate with 4 function metering switchable to each channel. Applications include control of leakage, feedback in PA applications, tightening up loose tracks, improving apparent S/N ratio of such sources as guitar amps, and other noisy sources. Controls include on each channel, attack, release, threshold, decay, max gain reduction with control, internal or external control of gating action, 2 channel metering with 4 functions.  
Basic Specifications: The self-contained rack mounted (1 1/2" high) unit basic specifications are:  
Per channel: Attack 10 to 500 usec; Release 50 to 2500 msec; Threshold -45 dBv to -5 dBv.  
Maximum gain reduction from 8 to over 85 dB.  
S/N ratio under typical conditions: better than -80 dBv below .77 volt ref.  
Power requirements: 115V at max of 20VA.  
Three audio inputs/three audio outputs.  
Three control inputs, two bar graph LED meters, over/under with four function readout.  
Suggested List Price: \$1,105.00

## AUDIONICS OF OREGON SPACE AND IMAGE COMPOSER

10950 SW 5th, #160, Beaverton, OR 97005  
(503) 641-5225  
Contact: Charles Wood, President; Steve Kennedy, Tech. Services.  
Date Product Introduced: 1980.  
Product Description and Applications: The Space and Image Composer is primarily an SQ quadraphonic decoder and stereo to quad enhancement (ambience retrieval) system utilizing the Tate Directional Enhancement System. Its uses include: mix monitoring, real-time retrieval of ambience and directional effects from stereo or quad sources, vocal/solo elimination for musical and educational purposes. The Composer is an extremely useful tool for critiquing mixing techniques, and also for position encoding of multi-track sources when mixing down to quad or stereo.  
Basic Specifications: Separation: Typically 35-45 dB between any channels. (Better than phono cart.)  
Frequency response: 10 Hz to 20 KHz,  $\pm$  .5 dB.  
Output level: 2 volts max.  
THD: No more than 0.1% @ 0.5 V out 20-20K.  
S/N: -80 dB max.  
Axial tilt compensation:  $\pm$  7 deg. minimum  
Dimensions and weight: 19"W x 3 1/4"H x 9"D, 12 lbs net, standard rack mount.  
Suggested List Price: \$970.00

## AUDIONICS OF OREGON RS-1 PREAMPLIFIER

10950 SW 5th, #160, Beaverton, OR 97005  
(503) 641-5225  
Contact: Charles Wood, President; Steve Kennedy, Tech. Services.  
Date Product Introduced: 1980.  
Product Description and Applications: The RS-1 is a stereo preamplifier employing many useful and unique features. Resistive and capacitive cartridge loading switches and switchable infrasonic filter are provided internally. Axial tilt compensation circuit allows adjustment for mechanical misalignments in the arm/cartridge combination, which improves crosstalk and performance of unit when used with quadraphonic decoders and similar processors. Two tape monitors are provided with tape-to-tape dubbing facilities. Selectable muting function which allows for either audio off or cueing. Class A circuitry.  
Basic Specifications: THD and IMD typically less than .01%  
Phono sensitivity: 2 mV min.  
Phono overload: 165 mV min.  
RIAA EQ accuracy:  $\pm$  .2 dB from 20 Hz to 20 KHz.  
Source impedance: 500 ohms.  
Noise: -82 dB ("A" weighting).  
Dimensions and weight: 19"W x 3 1/4"H x 7 1/2"D, 10 lbs net.  
Suggested List Price: \$695.00

# MODULAR SYSTEMS by **McCAULEY**



... let you make the choice!

You know what sounds best to your ear. You choose which variation of our MODULAR SYSTEMS best suits your particular needs.

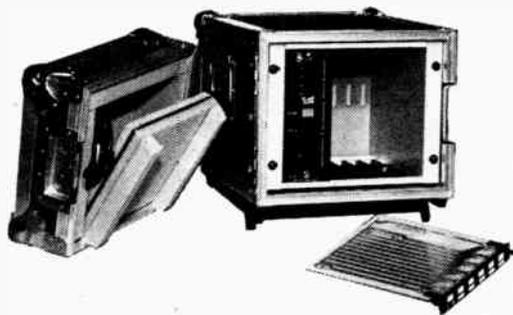
MODULAR enclosures, professionally constructed with latching covers and session hardware, are available with either 800Hz or 1200 Hz passive crossovers in order to best complement the two-inch or one-inch driver and bass speaker of your choice. A unique method of allowing quick, easy access to the driver also affords complete interchange capability of the various horn devices, thus enabling one enclosure to operate most efficiently and productively in any room situation.

The measurable characteristics of mid to high frequencies, such as horizontal and vertical dispersion, acoustic sensitivity, etc., require several predictable methods of control in order to accommodate the varied acoustical environments confronting every performer. McCAULEY's lensed-horn, which delivers wide, smooth dispersion for consistent coverage, is necessary in moderate stage-volume settings. If increased "punch" and narrow dispersion are required, the exponential horn will provide the tightest possible pattern. And finally, with very similar "cut-through" characteristics as the exponential, the radial horn with increased horizontal dispersion is for the vocalist on the move.

Whatever your particular situation calls for, MODULAR SYSTEMS by McCAULEY will fit the bill. Ask your local sound dealer where his are.

## **McCAULEY**

McCauley Sound, Inc., 13608 94th Avenue E., Puyallup, WA 98371 206-848-0363  
Sales: 206-537-6913



Audio & Design Recording  
SCAMP Mini-Rack

**AUDIO & DESIGN RECORDING  
SCAMP MINI-RACK**  
P.O. Box 788, Bremerton, WA 98310  
(206) 275-5008

Contact: Nigel Branwell.  
Date Product Introduced: April 1980.  
Product Description and Applications: This long awaited addition widens the range of the unique Scamp (Standardised Compatible Audio Modular Package) Signal processing System making it more applicable to musicians, public address, audio/visual, film location and rental areas. Musicians can configure a Mini-Rack with their favorite Scamp modules and, using the S02 Microphone Pre-amplifier, direct inject at low level; the format is ideal for rental companies and for on-location film work the Mini-Racks portability will be much appreciated. By virtue of its size reductions, the Mini-Rack will also be used in smaller studios and PA rigs such as clubs, discos, and even churches where it had previously been considered "space wasting" to rack up for 17 modules. The new Scamp Mini-Rack will hold up to 6 modules. The mini-Rack is built into a robust flight case and is powered by the new S26 Power Supply Module (which will of course fit the standard 19 Inch Scamp Rack). External connections are made via another new module—the S12 TT Jack Module. The flight case is fitted with convenient carrying handles and a useful "lid-bin" for power cord and audio connectors.  
Suggested List Price: Package price: \$630.00  
Mini-Rack only: \$330.00

**AUDIO & DESIGN RECORDING  
COMPEX-LIMITER**  
P.O. Box 788, Bremerton, WA 98310  
(206) 275-5008

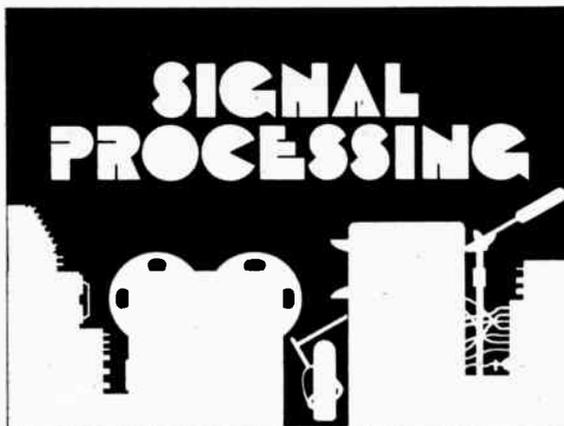
Contact: Nigel Branwell.  
Date Product Introduced: October/November 1979.  
Product Description and Applications: The Complex-Limiter comprises three separate functions: Peak level limiters with multi ratio compressor and noise expander/gate. The threshold of the compressor is variable by 20 dB relative to the peak limiter. The expander's slopes are 1:2 and 1:20 (gate) whilst range can be pre-set from 0 to 20 dB of attenuation. A wide variety of attack and release parameters are available in both sections. The Complex Limiter is ideal for stereo tape mastering, for use on individual channels of a mix; optimally loading the recording medium and reducing source and tape noise. Available as a rack mounting stereo/dual mono unit or in 'N' module format to drop into virtually any mixing console.  
Basic Specifications: The new edition of the Complex-Limiter features an additional switch position on the peak limiter to give pre-emphases at 50usec, 75usec (for FM broadcasters) or any chosen pre-emphasis curve (eg. a De'ess curve).  
All switches now have Gold contacts in keeping with Audio & Design Recording's policy of constant improvement of its products. All other specifications retain the excellence of the original unit.  
Suggested List Price: 2 channel rack mount unit: \$1890.00

**AUDIO & DESIGN RECORDING  
VOCAL STRESSER (New Features)**  
P.O. Box 788, Bremerton, WA 98310  
(206) 275-5008

Contact: Nigel Branwell, Vice President.  
Date Product Introduced: February 1980.  
Product Description and Applications: An extremely versatile studio equipment package combining a flexible sweep parametric equalizer with one channel of the world famous Complex-Limiter. The unit is the ultimate in control of individual voice or instrumental signals or as mastering equipment for the production and final adjustment of masters. The equalizer section can be switched before or after the Complex-Limiter or routed into the "side chain" of the compressor to create a frequency conscious characteristic (eg: for D'Easing, etc.). When not in use with the Complex section, the equalizer is available on an alternative input/output for use elsewhere.  
Basic Specifications: The new edition of the Vocal Stresser features an additional switch position on the peak limiter to give pre-emphases at 50usec, 75usec (for FM broadcasters) or any chosen pre-emphasis curve (eg: a D'Eess curve).  
All switches now have gold contacts in keeping with Audio & Design Recording's policy of constant improvement of its products.  
All other specifications retain the excellence of the original unit.  
Suggested List Price: \$1790.00

**BODE SOUND CO.  
MODEL 742XR FEEDBACK STABILIZER**  
1344 Abington Pl., North Tonawanda, NY 14120  
(716) 692-1870

Contact: Harald Bode, President.  
Date Product Introduced: November 1979.  
Product Description and Applications: The Model 742XR Feedback Stabilizer is a frequency shifter for the reduction and stabilization of acoustical feedback in public address and sound reinforcement systems. The well known howl, caused by resonances in the listening area and their



BODE FEEDBACK STABILIZER MODEL NO 742XR

**Bode Sound Co.  
Model 742XR Feedback Stabilizer**

build-up through feedback is eliminated by inserting the Model 742XR into the system. Thus the usable power is increased by an average of 4 to 7 dB and as much as 10 to 12 dB in some cases.  
Basic Specifications: Input mic and line level into 30K ohm.  
Output +18 dBm into 600 ohm load.  
THD less than 1% at 1000 Hz.  
Frequency response  $\pm 1$  dB 20 Hz to 20,000 Hz with AM less than .1 dB from 30 Hz to 16,000 Hz.  
Noise -82 dB unweighted, -82 dB A-weighted.  
11 shift frequency ranges 1.4 to 7.0 Hz.  
Size 3 1/4" H x 19" W x 9 1/2" D. Weight 6 1/2 lbs net.  
Suggested List Price: \$845.00

**dbx, INC.  
dbx 900**  
71 Chapel St., Newton, MA 02195  
(617) 964-3210

Contact: David Roudebush, Product Manager.  
Date Product Introduced: April 1980.  
Product Description and Applications: Frame with integral power supply intended for use with any combination of "900" Series modules with provision for storing a spare ninth module. The 900 will provide the studio or sound system operator with total flexibility in design and application of his signal processing system, allowing for rapid reconfiguration of the processor complement appearing at his patch bay.  
Basic Specifications: 5 1/4" H x 19" rack width.  
Accepts and provides power, input and output jacks for up to eight separate 900 Series modules.  
A separate, ninth space is provided to store an extra module or accommodate a double width module yet to be introduced.  
Suggested List Price: TBA.

**dbx, INC.  
dbx 901**  
71 Chapel St., Newton, MA 02195  
(617) 964-3210

Contact: David Roudebush, Product Manager.  
Date Product Introduced: April 1980.  
Product Description and Applications: Noise-gate module for use in the Model 900 frame. Can be set to remove or reduce background noise, rings or echos from primary signals in recording or sound reinforcement. Key input allows gating of one instrument by another (eg: bass guitar, keys, by kick drum). Gate feature allows the suppression of spurious information preceding a good signal during mixdown.  
Basic Specifications: Unit features adjustable attack and release rates. Threshold adjustment from +10 dB to -30 dB.  
Adjustable attenuation limit from 0 to -40 dB.  
Key and gate modes.  
In/out switch.  
LED display indicates up to 60 dB gain reduction.  
Suggested List Price: TBA.

**dbx, INC.  
dbx 902**  
71 Chapel St., Newton, MA 02195  
(617) 964-3210

Contact: David Roudebush, Product Manager.  
Date Product Introduced: April 1980.

Product Description and Applications: D'Eesser module for use in the Model 900 frame. Used to eliminate unwanted sibilance from vocal tracks. Can be used broadband as a conventional D'Eesser or for a user determined portion of high frequency content only. Broad range of special effects applications (eg: removing buzz from guitar tracks, adding punch to piano, etc.).  
Basic Specifications: Special circuitry incorporated allows unit to detect excessive high frequency energy without regard to overall signal levels. This energy is sampled from the output of a high pass filter user selectable over a range from 800 Hz to 8 KHz.  
Amount of gain reduction adjustable from 0 to -20 dB.  
Mode selection for full band width or high frequency operation.  
In-out switch and LED display of up to 20 dB gain reduction.  
Suggested List Price: TBA.

**dbx, INC.  
dbx 903**  
71 Chapel St., Newton, MA 02195  
(617) 964-3210

Contact: David Roudebush, Product Manager.  
Date Product Introduced: April 1980.  
Product Description and Applications: Compressor module for use in the Model 900 frame. Unit features Over Easy® threshold circuitry, true RMS level detection, continuously variable compression ratios and special unique negative compression feature. Used for leveling, sound enhancement and overload protection.  
Basic Specifications: Threshold adjustable from -40 dB to +20 dB.  
Ratio adjustable from 1:1 to infinity plus negative compression.  
Output buffer amplifier gain adjustable from -20 dB to +20 dB.  
LED metering displaying up to 40 dB gain reduction and bypass switch.  
Suggested List Price: TBA.

**DOLBY LABORATORIES INC.  
CAT NO. 165, 255**  
731 Sansome Street, San Francisco, CA 94111  
(415) 392-0300

Contact: Ken Fay, Applications Engineer.  
Date Product Introduced: 1980.  
Product Description and Applications: A-type noise reduction for use with professional video tape recorders.

**EVENTIDE CLOCKWORKS, INC.  
BPC101 PHASER CARD**  
265 West 54th St., New York, NY 10019  
(212) 581-9290

Contact: Heather Wood, Marketing Manager.  
Date Product Introduced: November 1979.  
Product Description and Application: This card plugs into the Eventide FL201 Instant Flanger and turns it into an Instant Phaser. It uses phase-shift networks to generate frequency cancellations in the signal (rather than the true time delay bucket brigades used in the Instant Flanger). Installation is simple, and the Phaser and Flanger cards can thereafter be interchanged at will.  
Basic Specifications: Frequency response: 15 KHz.  
Dynamic range: 90 dB.  
Suggested List Price: \$233.00

**EVENTIDE CLOCKWORKS, INC.  
JJ193/CD254 DIGITAL DELAY LINES**  
265 West 54th St., New York, NY 10019  
(212) 581-9290

Contact: Heather Wood, Marketing Manager.  
Date Product Introduced: November 1979.  
Product Description and Application: Four configurations of digital audio delay lines: the CD254 has one input, two outputs, 254ms of delay; the JJ193 has one input, four outputs, and either 510ms, 1.022s, or 2.046s of delay. These units are compact, economical, and ideal for all sound reinforcement and studio applications.  
Basic Specifications: Dynamic range: > 90 dB.  
Frequency response: 12 KHz.  
Suggested List Price: CD254: \$895.  
JJ193, 510ms: \$1195.  
1.022s, \$1395.  
2.046s: \$1795.

**GLI/INTEGRATED SOUND SYSTEMS  
GLI EQ 1500**  
29-50 Northern Blvd., Long Island City, NY 11101

Contact: Paul Friedman, Sales Manager.  
Date Product Introduced: May 1979.  
Product Description and Applications: Dual channel octave band EQ. Active gyrator circuit using high speed Bi Fet op amps. Studios, sound reinforcement, club systems and high end consumer sound systems. Turn on/turn off transient suppressor relay.  
Basic Specifications: 19" rack mount 3 1/2" high.  
 $\pm 12$  dB range.  
Less than 0.05 any combination of settings.  
Typically 0.005 under 5V or less.  
Suggested List Price: EQ 1500: \$225 retail.

**INOVONICS, INC.  
MODEL 231-00 MULTIBAND AUDIO PROCESSOR**  
503-B Vandell Way, Campbell, CA 95008  
(408) 374-8300

Contact: J. Wood, Sales Manager.  
Date Product Introduced: 1980.  
Product Description and Applications: An octave-band audio compressor which provides "dynamic" graphic equalization for a consistent, acoustically active sound. The audio spectrum is divided into eight bands and each band is individually compressed with control in each over the input gain to, and output gain from, each compressor. The signal is then recombined into broadband.  
Suggested List Price: \$1470.00

**JBL  
7130 COMPRESSOR/LIMITER**  
6500 Balboa Blvd., Northridge, CA 91325  
(213) 863-8411

Contact: Ron Means, Prof. Division Manager.  
Date Product Introduced: November 1979.  
Product Description and Applications: The 7130 is a solid-state, dual-input compressor/limiter capable of automatic gain control over a range of 30 dB. It offers three switch selectable functions (Out, Compress, and Limit) as well as three selectable release and attack times. In the function Out mode,

# Ask Anyone



The complete line of Neumann condenser microphones is available at:

**sound genesis**  
SAN FRANCISCO

2001 Bryant Street, San Francisco, California, (415) 285-8900, TWX 910-372-7393

the 7130 operates as a line amplifier. The Compress and Limit modes offer 2:1 and 20:1 compression ratios, respectively. The 7130 accepts high impedance, unbalanced microphone or line inputs. The output is either transformer isolated or direct and will drive a 600 ohm balanced or unbalanced line. Added versatility is provided through alternate input configurations.

**Basic Specifications:** The compressor can be rack mounted in two EIA standard rack spaces.  
Output level: +18 dBm (ref. 600 ohms).  
Frequency response:  $\pm 1$  dB 20 Hz-20 KHz.  
THD: Linear: less than 0.2%, 20 Hz-20 KHz @ +18 dBm; Compression: less than 0.25%, 30 dB compression, 20 Hz-20 KHz @ +18 dB.  
Maximum compression: 30 dB.  
Compression threshold: adjustable -10 to +6 dBm, continuously variable.  
Compression ratio: Compress mode: 2:1; Limit mode: 20:1.  
Suggested List Price: \$600.00

**KOSS CORPORATION**  
KOSS K/4DS DIGITAL DELAY SYSTEM  
4129 N. Port Washington Ave., Milwaukee, WI 53212  
(800) 658-0465

Contact: John Wood, Product Manager.  
Date Product Introduced: January 1980.  
Product Description and Applications: The Koss K/4DS Digital Delay selects segments of the audio signal, processes those segments and releases the information segments in nearly the exact manner and timing they would reach the listener in any one of the Koss selected live environments: club, theater, concert hall or auditorium. The realism of a digitally delayed stereo system allow the listener, for the first time to acoustically adjust his listening room to the size and environment of any of the 4 settings.

**Basic Specifications:** Complete with amplifier the K/4DS utilizes a patented single circuit conversion unit capable of storing nearly 17,000 bits of information.  
The unit is rack mountable (rack mount kits are available), and can easily be connected to any stereo system.  
Other features include R.A.M., cross-feed circuitry, separate (dual) stereo amplifiers, and contains many other extras.  
The Koss K/4DS is the least expensive, self contained digital delay system on the market today.  
Suggested List Price: \$500.00 complete with amplifier.

**MARSHALL ELECTRONIC**  
5402 TIME MODULATOR  
1205 York Rd., Suite 14, Lutherville, MD 21093  
(301) 484-2220

Contact: Pirkko Polso.  
Date Product Introduced: February 1980.  
Product Description and Applications: Four times more delay than the 5002: now 400 ms, continuously variable. Two delay lines, each now with three output taps; greatly expanding effects versatility, ease of use, and resetability. Much easier and faster to operate: separate modulation waveform selection switch, L.F.O. high and low indicator LEDs, separate flange and delay sections. Ultra fast full headroom indicator now reads input, output, and feedback levels. Separate output level controls for each assigned tap give maximum versatility.  
**Basic Specifications:** 15 KHz bandwidth and 95 dB at all delay settings. 200 microseconds to 400 milliseconds delay range.  
Full continuous 72:1 sweep range.  
New "Modulated Bias" delay technology offers several impressive advantages, such as extremely quiet operation and lack of audio processing side effects.  
Suggested List Price: \$1995.00

**MICMIX AUDIO PRODUCTS, INC.**  
MASTER-ROOM XL-210  
2995 Ladybird Lane, Dallas, TX 75220  
(214) 362-3811

Contact: Bill Allen, Sales Manager.  
Date Product Introduced: May 1980.  
Product Description and Applications: The new Master-Room XL-210 contains major technological advancements that provide truly professional studio quality reverberation at a most affordable price. The XL-210 has a smooth, natural sound that is achieved without using limiting, direct signal bleed-through, or any other signal procession often incorporated to conceal chamber deficiencies. Because of its unique design, rugged construction, and overall versatility, the XL-210 is the ideal reverb for any professional audio application.  
**Basic Specifications:** Full stereo capability, as well as full mono. Equalization includes Low shelf, High shelf, and a Mid range peak/dip control, all with 10 dB of boost and cut.  
Contains front and rear panel  $\frac{1}{4}$ " signal connectors.  
Inputs are active balanced high impedance and automatically adapt to unbalanced when a two-wire connector is used.  
Usable with echo send/return, and has a front panel Mix control to blend direct and reverberated signals.  
Frequency response: 20-20 KHz.  
Output noise: -78 dBm (direct).  
Crosstalk: better than -45 dB.  
Decay time: 3.5 sec.  
Power requirements: 100/120/240 V.  
Size:  $3\frac{1}{2}$ " rack-mount, weight 13 lbs.  
Suggested List Price: \$850.00

**MICMIX AUDIO PRODUCTS, INC.**  
MASTER-ROOM XL-500  
2995 Ladybird Lane, Dallas, TX 75220  
(214) 362-3811

Contact: Bill Allen, Sales Manager.  
Date Product Introduced: May 1980.  
Product Description and Applications: The Master-Room XL-500 is the most unique reverberation system introduced in many years. This new unit incorporates technology that stems from years of research by Master-Room engineers into every reverberation medium. The XL-500 is a full stereo system that includes three completely independent reverberation sections. The user can choose between the sound of a live chamber, a plate, or a concert hall, and the extensive equalization allows an endless variety of reverberation.  
**Basic Specifications:** Full stereo, three independent reverb sections that include the sound of a live chamber, plate, or concert hall.  
Equalization on each channel includes a low peak/dip, a low-mid sweepable peak/dip, a high-mid sweepable peak/dip, and a high peak/dip. Bar-type LEDs indicate operating level, and a set of 5 LEDs display chamber drive.



Variable decay from 1 to 12 seconds, depending on the reverb mode. Remote control is standard and contains the variable decay, operating level, and reverb mode functions, as well as the bar-type LEDs that display operating level.  
Suggested List Price: \$3600.00 (approx.). Available May 1980.

**MXR INNOVATIONS, INC.**  
THE DUAL LIMITER  
740 Driving Park Ave., Rochester, NY 14613  
(716) 264-2910

Contact: MXR, Department 140  
Date Product Introduced: May 1980.  
Product Description and Applications: Versatile new limiter employing innovative gain control circuitry. Dual channels are strappable via front-panel control for tracking operation or each channel may be operated independently. Jacks on rear panel allow the detector loop to be interrupted for additional external control. Includes LED bar-graph display of amount of compression and switch-selectable compression ratio. Both Cannon-type XLR connectors and standard  $\frac{1}{4}$ " phone plugs are provided for input/output connections.  
**Basic Specifications:** Output dynamic range; 100 dB.  
Frequency response: 20 Hz - 20 KHz,  $\pm 1$  dB.  
Note: the Above specifications are preliminary and subject to change. Additional specifications are forthcoming.  
Suggested List Price: TBA.

**NEPTUNE ELECTRONICS, INC.**  
MODEL 341 SINGLE CHANNEL PARAMETRIC EQUALIZER  
934 N.E. 25th Ave., Portland, OR 97232  
(503) 232-4445

Contact: H.C (Bud) Garrison, Vice president, Marketing.  
Date Product Introduced: January 1980.  
Product Description and Applications: Parametric equalizer with 4 bands of parametric equalization. Each band has frequency control, bandwidth control and gain control.  
**Basic Specifications:** Features four bands of equalization with in/out switch for each band plus complete channel in/out.  
Each band has LED peak indicator and varies in bandwidth from 0.1 to 3.5 octaves.  
Frequency ranges: Lo: 16 Hz-800 Hz; Lo-mid: 48 Hz-2.4 Hz; Hi-mid: 160 Hz-8 KHz; Hi: 480 Hz-24 KHz.  
Balanced and unbalanced inputs and outputs.  
Suggested List Price: \$599.00

**NEPTUNE ELECTRONICS, INC.**  
R321 ELECTRONIC CROSSOVER  
934 N.E. 25th Ave., Portland, OR 97232  
(503) 232-4445

Contact: H.C (Bud) Garrison, Vice president, Marketing.  
Date Product Introduced: January 1980.  
Product Description and Applications: Electronic crossover with stereo 2-way or mono 3-way capabilities.  
**Basic Specifications:** Stereo blamp or mono triamp capability. 16 dB/octave slopes.  
Maximally flat butterworth filters.  
High frequency phase reversal switch.  
Level controls for all outputs.  
LED peak indicators.  
Balanced or unbalanced operation.  
Microphone and phone jack connectors.  
Crossover range: 100 Hz to 16 KHz.  
19 inch rack mounting in  $1\frac{1}{4}$ " of rack space.  
Suggested List Price: \$309.00

**ORANGE COUNTY ELECTRONICS INTL., INC.**  
VS-2 STRESSOR  
c/o Parasound Inc., 680 Beach St., Suite 414, San Francisco, CA 94109  
(415) 673-4544

Contact: Sid Goldstein, Marketing/Sales Manager.  
Date Product Introduced: January 1980.  
Product Description and Applications: The VS-2 Stressor is a simplified version of the popular VS-1 Stressor which offers similar flexibility however, all controls are located inside the unit on mini-dip switches. This allows the user to adjust the peak limiter, compressor, expander, and equalization network characteristics without full front panel control. This makes the VS-2 most useful in situations where the parameters will not need to be changed often, such as AM broadcast or certain film sound applications.  
**Basic Specifications:** Input: 10K balanced, 600 ohm termination switchable.  
Output: 100 ohm balanced +24 dB max @ 600 ohms.  
System Gain: 30 dB unattenuated.  
Signal/noise: 97 dB EIN unweighted.  
Distortion: less than 0.1% THD @ 15 dB gain reduction @ 18 dBm output.  
Frequency response: 30 Hz-30 KHz.  
Suggested List Price: \$976.00

**PROGRAMMING TECHNOLOGIES, INC.**  
ECOPLATE II  
6666 North Lincoln Avenue, Lincolnwood, IL 60465  
(312) 676-9400

Contact: Jim Cunningham.  
Date Product Introduced: February 1980.  
Product Description and Applications: Steel plate reverberation device. Reverb time variable 1 to 6 seconds.  
**Basic Specifications:** Input: single unbalanced; output: stereo unbalanced.  
Frequency response same as Ecoplate.  
Reverb time: adjustable 1 to 6 seconds.  
Signal to noise: 55 dB.  
Input impedance: 10K ohm unbalanced.  
Output impedance 50 ohms unbalanced both outputs.  
Max. output level: +24 dB (re. .775).  
Power supply: 120-240 vac 50 to 60 Hz.  
Weight: 130 lbs.; Dimensions: 68" x 43" x 10".  
Suggested List Price: \$2,500.00 FOB Chicago.

**ROLAND CORPORATION**  
SRE-501 CHORUS ECHO  
2401 Saybrook Ave., Los Angeles, CA 90040  
(213) 685-5141

Contact: Ron Wilkerson, VP Marketing.  
Date Product Introduced: January 1980.  
Product Description and Applications: The SRE-501 is the first rack mounting tape echo device ever introduced to the marketplace. Combining the low noise operation with performance features that have made Roland the renowned leader in tape echo effects, the SRE-501 is suitable for any recording studio situation. The SRE-501 can produce echo, chorus, reverbation and sound on sound effects by means of a free running tape system that minimizes wow and flutter and extends tape life to more than 300 hours without deterioration of sound quality. The SRE-501 features both balanced and unbalanced inputs and outputs and features dual unbalanced outputs for stereo spatial effects. The unit is rack mounted in a carriage which easily rolls out from the rack for tape replacement or head cleaning.  
Suggested List Price: \$1095.00

**ROLAND CORPORATION**  
SEQ-315 GRAPHIC EQUALIZER  
2401 Saybrook Ave., Los Angeles, CA 90040  
(213) 685-5141

Contact: Ron Wilkerson, VP Marketing.  
Date Product Introduced: January 1980.  
Product Description and Applications: The SEQ-315 is a stereo graphic equalizer featuring fifteen bands per channel spaced at 2/3 octave intervals. Each band features a control range of  $\pm 12$  dB with center click detents on each band to remove it from circuit if desired. The equalizer frequency bands range from 25 Hz to 16 KHz. The SEQ-315 contains both balanced and unbalanced inputs and outputs, and also features variable input attenuation. Connections are either phone plug or XLR connector.  
**Basic Specifications:** Frequency response: 25 Hz-50 KHz  $\pm 1$  dB.  
THD: 0.03% typical.  
Crosstalk: More than 80 dB at 1 KHz.  
S/N: Better than 80 dB.  
Suggested List Price: \$450.00

**ROLAND CORPORATION**  
SEQ-331 GRAPHIC EQUALIZER  
2401 Saybrook Ave., Los Angeles, CA 90040  
(213) 685-5141

Contact: Ron Wilkerson, VP Marketing.  
Date Product Introduced: January 1980.  
Product Description and Applications: The SEQ-331 is a one third octave rack mounting equalizer designed for either professional sound reinforcement or recording studio use. Thirty-one bands cover the entire frequency spectrum with a control range of  $\pm 12$  dB on each band. Center click detents remove any band from circuit if desired. The SEQ-331 contains both balanced and unbalanced inputs and outputs. Connections are either phone plug or XLR connector. Frequencies range from 20 Hz to 20 KHz.  
**Basic Specifications:** Frequency response: 25-50 KHz  $\pm 1$  dB.  
THD: 0.03% typical.  
S/N: better than 80 dB.  
Suggested List Price: \$495.00

**SOUNDCRAFTSMEN, INC.**  
AE2420-R  
2200 South Ritchey, Santa Ana, CA 92705  
(714) 556-6191

Contact: Roger Hagemeyer, Sales Manager.  
Date Product Introduced: 1979.  
Product Description and Applications: 10-band/channel stereo equalizer with differential comparator analyzer and pink noise generator built in. LEDs for balancing. Test record and Computone charts included. Black anodized rack size front panel. Walnut grained side panels included.  
**Basic Specifications:** Harmonic distortion less than .01% at 2V.  
IM distortion less than .01% at 2V.  
Signal to noise 105 dB at 10V output; 100 dB at 2V output.  
Octave controls  $\pm 16$  dB boost or cut—each octave (all other octaves set at maximum);  
 $\pm 12$  dB boost or cut—each octave (all other octaves set at zero).  
Gain cut capability +22 dB/-28 dB—all controls at maximum.  
Zero gain controls -16 dB range.  
Filter type Opamp synthesized inductors.  
Differential comparator minimum input: 75 millivolts.  
Differential measurement accuracy:  $\pm 0.1$  dB.  
Hi level input: input impedance 47K ohms, gain: adjustable.  
30 dB max. frequency response:  $\pm 0.1$  dB 20 Hz to 20 KHz.  
Mic preamp: input impedance: 200 ohms or 20K ohms (switchable to or hi Z). Gain: 80 dB max.  
Frequency response:  $\pm 0.1$  dB 20 Hz to 20 KHz.  
Suggested List Price: \$499.00

**SOUNDCRAFTSMEN, INC.**  
RP2201-R  
2200 South Ritchey, Santa Ana, CA 92705  
(714) 556-6191

Contact: Roger Hagemeyer, Sales Manager.  
Date Product Introduced: 1979.  
Product Description and Applications: Stereo 10-band graphic equalizer. Zero-gain controls for in/out balancing. EQ defeat, line or tape equalization, tape monitor, "Frequency Spectrum Analyzer" test record and Computone charts included. Standard 19" rack mount front panel. Walnut grained side panels included.

*Freddie started backup singing in his New Jersey junior high school. He earned a Bachelor of Music Degree from Howard University, and taught in Washington, D.C., while moonlighting as a producer. In 1969, his first Motown production, "I Want You Back" by the Jackson Five, went platinum. Since then, he has collected close to 30 gold or platinum records. Freddie now owns his own studio in L.A. and has recently produced disco hits for Yvonne Elliman, Tavares, David Naughton, Gloria Gaynor, and Peaches and Herb.*

### ON CREATIVE EXPRESSION

"I'm thinking charts. I'm thinking commercial. And I'm thinking hit, as opposed to creative expression. Because that's usually what I'm hired for. I mean, I hear the standard rap that I would get from a company person or a manager is that 'this group, live, is a knockout. I mean, they're killers. All they need is that hit record. When they get that hit record, man, you're gonna see the baddest group that ever existed in the history of recorded music.' So they want the charts. And that's why I approach it like that."

### ON HEARING

"I only go by the ears, and I do hear very well. Musically and technically. I hear stuff all over the place. The guitar player—if he accidentally hits an open A string while he's fingering a chord, we could have thirty pieces on tape and I'll hear that and solo it out and bust him—say, 'Hey, could you keep that string quiet?' He says, 'You mean you actually heard that?' So my ears are really my fortune. That's where everything lies. Right in my ears."

### ON RHYTHM SESSIONS

"I do my basic rundown on the rhythm date. The guys are really cookin' and the groove is there and everything. I come in and take a listen to what kinds of sounds I have. But if that sound is not there, then I don't record until the sound is right. There may be some other producers who would just go with the flow. 'If it's groovin', hey, you know, we'll save it in the mix.' But I've attempted to save things in the mix. It doesn't happen. It has to be on tape."

### ON TAPE

"I do not know much about the characteristics, physically, of what tape is made of. I'm not too much into that—the chemistry involved. However, after spending six years at Motown—they had many, many rules and regulations. Now, one was that we always use Scotch Tape. When I ventured off into the world of independent producing, out of habit, and not wanting to change a good thing, I went right back to the same tape, which was 250. And I was then approached by other engineers telling me that if you switched, you could increase your performances here—you know, the bottom end, so forth and so on. And I did stray away and I did try cutting other projects on different types of tape. And the bottom line is that I came back to Scotch. I can't say that I noticed the difference of, you know, 3 dB and the low end with Scotch, and the other only gave me a dB-and-a-half. I can't say that. I only go with my ears, which tell me that my home is with Scotch Tape."

### SCOTCH 250

**WHEN YOU LISTEN FOR A LIVING.**



**FREDDIE  
PERREN  
ON TAPE.**

SCOTCH® is a registered trademark of 3M

**3M**

# The Volks Console



## 3216 by Tangent

In its short (3 year) existence, the Volks-Console has found its way into the hearts, studios and homes of engineers, producers, and musicians around the world; out-selling its competition 3 to 1. The 3216 combines ease of operation, flexibility and the best specs in the industry, and is at home in recording studios, production, S.R., and other applications.

**With features like these, its no wonder why.**

### Automation

Tangent Automation uses the exclusive Faderaide automatic Fader nulling system, and the Allison 65K programmer. Faderaide frees you to concentrate on the mix, not Fader level sets. This feature cannot be found on any other Allison based system.

### VCA Grouping

For those not needing full automation, nine voltage controlled subgroups are available. All VCA consoles may be expanded to full automation at anytime.

### Multiple Solo Systems

In addition to the prefade listen (PFL) solo, a stereo positional, and subgroup solo are provided as standard features.

### Semi Parametric EQ

One of the most musical EQ's available is a standard Tangent feature, not an expensive option as with other systems. The three band sweepable EQ covers the audio band from 20 to 20khz.

### Transformerless Circuitry

Transformerless Balancing keeps your original sound pure with incredible transient response. Noise is within 3 dB of the theoretical limit.

Transformerless Balancing is suddenly a big deal among the other console manufacturers. It should be. Tangent's been doing it for years.

### 16 Submasters

Tangent's 16 submaster busses plus "Direct" allow tremendous flexibility for 16 or 24-track work.

### FET Switching

Electronic FET switching silently rearranges the signal flow for maximum convenience and minimum repatching.

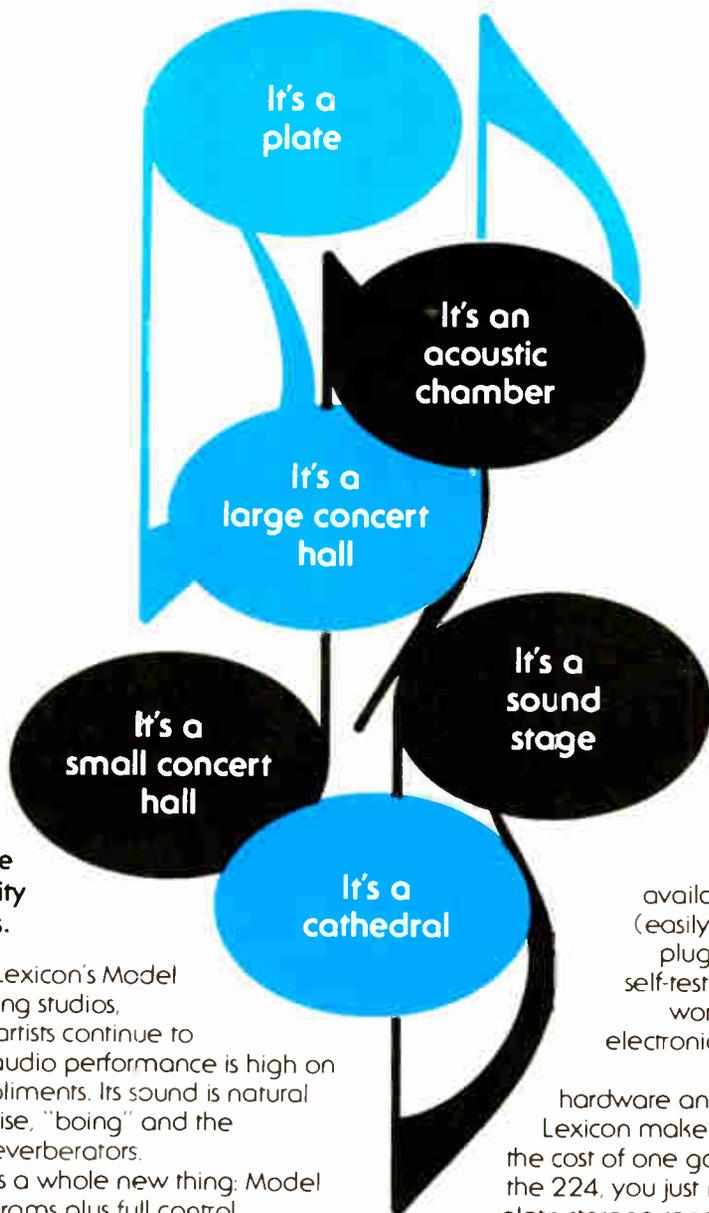
### Lots of Extras

Penny & Giles faders, multiple Echo and Cue send, Phase Reverse, Tape Return Gain, and many other features on each channel give full professional control and reliability.

## Tangent Does It . . . Again!

Tangent Systems, Inc.

**tangent**   
Musical Engineering  
2810 S. 24th St. / (602) 267-0653  
Phoenix, Arizona 85034



... A complete repertoire of the very highest quality reverb at your fingertips.

Rave Notices for Lexicon's Model 224 from the world's leading studios, broadcasters and musical artists continue to pour in. The 224's superb audio performance is high on the list of everyone's compliments. Its sound is natural and completely free of noise, "boing" and the problems of mechanical reverberators.

And its versatility is a whole new thing: Model 224's multiple reverb programs plus full control of all reverberation parameters allow audio engineers to create the sound that "is exactly right for the material." It's a whole stable of quality reverb capabilities in one compact package.

The model 224 Digital Reverb is available with 2, 4 or 6 basic reverb programs (easily updated in the field by simple program plug-in) and comes complete with extensive self-test diagnostic programs that take the guess work out of maintenance. Its mainframe, all electronic, requires only 7 inches of rack space.

If all this sounds expensive, it isn't. Digital hardware and software technology breakthroughs by Lexicon make the 224 surprisingly affordable ... about the cost of one good plate. And after you've experienced the 224, you just might find more productive uses for your plate storage rooms and acoustic chamber!

For full details write or call — better yet contact your leading Pro Audio dealer for a demonstration. Once you've heard it you'll never want to do another session without it.



# WORLD CLASS REVERB

Lexicon, Incorporated 60 Turner Street Waltham, Massachusetts 02154/(617) 891-6790/TELEX 923468  
Export: Gotham Export Corporation, New York, New York



# AWESOME

# AWESOME



That's the only way to describe the sound of the RESYNATOR. The RESYNATOR lets you take any instrument and make it sound like anything else. The RESYNATOR is totally dynamic. With the RESYNATOR, you can express the way you feel about every note you play. That's because two microcomputers dynamically follow what note you're playing and how hard you're playing your instrument. This gives your new sound an amazing degree of realism and life.

The RESYNATOR is easy to use. Front panel switches and graphics help you select a sound then select how that sound will be shaped each time a note is played. Only the RESYNATOR has CM SYNTHESIS; the incredible new way to create different sounds by using your musical notes to describe the sound quality you want.

The RESYNATOR's TIMBRAL IMAGE MODULATOR is a revolutionary new microcomputerized envelope generator, with eight waveshapes for dynamically

shaping your selected sound. You can even use the RESYNATOR to interface directly to phase shifters, delay lines, or other synthesizers.

If all of this sounds unbelievable, pick up the phone right now and call 317-924-1300 to hear the incredible RESYNATOR.

*The Awesome Resynator.  
Only From Musico.*

**MUSICO**

1225 N. Meridian St.  
Indianapolis, Indiana 46204

# Resynator

instrument-controlled synthesizer

Photo by John Myers

**Basic Specifications:** Harmonic distortion less than .01% at 2V.  
IM distortion less than .01% at 2V.  
Signal to noise 105 dB at 10V output.  
Octave controls  $\pm 18$  dB boost or cut—each octave (all other octaves set at maximum);  
 $\pm 12$  dB boost or cut—each octave (all other octaves set at zero).  
Gain cut capability  $+22$  dB /  $-28$  dB—all controls at maximum.  
Zero gain controls  $+8$  dB /  $-12$  dB range.  
Filter type Opamp synthesized inductors.  
**Suggested List Price: \$299.00**

**SOUNDCRAFTSMEN, INC.**

RP2215-R  
2200 South Ritchey, Santa Ana, CA 92705  
(714) 558-8191

Contact: Roger Hagemeyer, Sales Manager.  
Date Product Introduced: 1979.

**Product Description and Applications:** Stereo 10-band graphic equalizer. Zero-gain controls with LEDs for visual in/out balancing. EQ defeat, line or tape equalization, tape monitor, "Frequency Spectrum Analyzer" test record and Computone charts included. Standard 19" rack mount front panel. Walnut grained side panels included.

**Basic Specifications:** In-out monitoring LED voltage comparison circuit. Harmonic distortion less than .01% at 2V.  
IM distortion less than .01% at 2V.  
Signal to noise 114 dB at 10V output; 100 dB at 2V output.  
Octave controls  $\pm 22$  dB boost or cut—each octave (all other octaves set at maximum);  
 $\pm 15$  dB boost or cut—each octave (all other octaves set at zero).  
Gain cut capability  $+32$  dB /  $-38$  dB—all controls at maximum.  
Zero gain controls  $+8$  dB /  $-12$  dB range.  
Filter type precision tuned passive wire-wound coil inductors.  
**Suggested List Price: \$370.00**

**SOUNDCRAFTSMEN, INC.**

SE450  
2200 South Ritchey, Santa Ana, CA 92705  
(714) 558-8191

Contact: Roger Hagemeyer, Sales Manager.  
Date Product Introduced: 1979.

**Product Description and Applications:** Stereo 10-band graphic equalizer. Zero-gain controls for in/out balancing. EQ defeat, line or tape equalization, tape monitor, "Frequency Spectrum Analyzer" test record and Computone charts included. Black vinyl cabinet. Available with silver or black anodized front panel.

**Basic Specifications:** Harmonic distortion less than .01% at 2V.  
IM distortion less than .01% at 2V.  
Signal to noise 105 dB at 10V output.  
Octave controls  $\pm 18$  dB boost or cut—each octave (all other octaves set at maximum);  
 $\pm 12$  dB boost or cut—each octave (all other octaves set at zero).  
Gain cut capability  $+22$  dB /  $-28$  dB—all controls at maximum.  
Zero gain controls  $+8$  dB /  $-12$  dB range.  
Filter type Opamp synthesized inductors.  
**Suggested List Price: \$249.00**

**SOUNDCRAFTSMEN, INC.**

SP4001  
2200 South Ritchey, Santa Ana, CA 92705  
(714) 558-8191

Contact: Roger Hagemeyer, Sales Manager.  
Date Product Introduced: 1980.

**Product Description and Applications:** Stereo 10-band equalizer with preamp. Zero-gain LED level balancing; Sub-sonic filtering  $-3$  dB @ 15 Kz. Two external processing loops; stepped level control; two phono inputs, two tape inputs with dubbing; tuner input and auxiliary input. Includes "Frequency Spectrum Analyzer" test record and Computone charts. Standard 19" rack mount front panel. Walnut grained side panels included.

**Basic Specifications:** Preamp section; frequency response: hi-level  $\pm 4$  dB, 5 Hz to 100 KHz phono  $\pm 1/2$  dB, 20 Hz to 20 KHz.  
Total harmonic distortion: .01% at 1V.  
IM distortion less than .01% at 1V.  
Phono Signal to noise 97 dB.  
Equalizer section: In-out monitoring; LED voltage comparison circuit.  
Harmonic Distortion: less than .01% at 2V.  
IM distortion: less than .01% at 2V.  
Signal to noise: 105 dB at 10V output.  
Filter type Opamp synthesized inductors.  
**Suggested List Price: \$549.00**

**SOUNDCRAFTSMEN, INC.**

SP4002  
2200 South Ritchey, Santa Ana, CA 92705  
(714) 558-8191

Contact: Roger Hagemeyer, Sales Manager.  
Date Product Introduced: 1979.

**Product Description and Applications:** Stereo 10-band equalizer with preamp. Zero-gain LED level balancing; Sub-sonic filtering  $-3$  dB @ 15 Kz. Two amplified headphone outputs (8 ohms-2000 ohms); Two external processing loops; stepped level control; two phono inputs with variable cartridge loading and  $\pm 20$  dB level adjustment for most moving coil cartridges; two tape inputs with dubbing; tuner input and auxiliary input. Includes "Frequency Spectrum Analyzer" test record and Computone charts. Standard 19" rack mount front panel. Walnut grained side panels included.

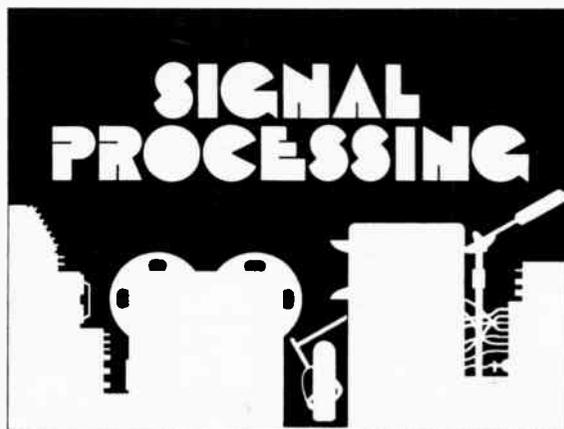
**Basic Specifications:** Preamp section; frequency response: hi-level  $\pm 4$  dB, 5 Hz to 100 KHz phono  $\pm 1/2$  dB, 20 Hz to 20 KHz.  
Total harmonic distortion: .01% at 1V.  
IM distortion less than .01% at 1V.  
Phono Signal to noise 97 dB.  
Phono cartridge sensitivity: any high fidelity cartridge 0.28 millivolts or greater output.  
Headphone level: capable of driving 8 ohms to 2000 ohms.  
Equalizer section: In-out monitoring; LED voltage comparison circuit.  
Harmonic Distortion: less than .01% at 2V.  
IM distortion: less than .01% at 2V.  
Signal to noise: 114 dB at 10V output 100 dB at 2 volt output.  
Filter type precision tuned passive wire-wound coil inductors.  
**Suggested List Price: \$699.00**

**SOUNDCRAFTSMEN, INC.**

TQ 3044-R  
2200 South Ritchey, Santa Ana, CA 92705  
(714) 558-8191

Contact: Roger Hagemeyer, Sales Manager.  
Date Product Introduced: 1979.

**Product Description and Applications:** Dual channel 21-band equalizer.



Standard ISO  $1/2$  octave centers up to 1 KHz, alternate  $1/2$  octave centers above 1 KHz. Zero-gain controls with LEDs for visual in/out balancing. Balanced or unbalanced operation. Low shelving each channel, EQ defeat each channel. Zero insertion loss. All band pink noise test record and Computone charts. Black anodized rack mount front panel. Walnut grained side panels included.

**Basic Specifications:** Harmonic distortion less than .01% at 2V.  
IM distortion less than .01% at 2V.  
Signal to noise 114 dB at 10V output; 100 dB at 2V RMS output.  
Input capability maximum 10V RMS-22 dBm.  
Output capability 10V-22 dBm.  
Input impedance 47K ohms.  
Output impedance 600 ohms balanced, 300 ohms unbalanced.  
Low shelving  $-3$  dB @ 15 Hz, 12 dB per octave roll off.  
**Suggested List Price: \$549.00**

**SPECTRA SOUND (A wholly owned subsidiary of SPECTRA SONICS)**  
**MODEL 1000B, PROFESSIONAL 10-BAND GRAPHIC EQUALIZER**  
3750 Airport Road, Ogden, Utah 84403

(801) 392-7531

Contact: Gregory D. Dilley, Engineering Sales.  
Date Product Introduced: December 1979.

**Product Description and Applications:** The Model 1000B was designed for studio and stage applications where low noise and distortion are desired. The 1000B features switchable equalization ranges ( $\pm 8$  dB,  $\pm 18$  dB), Infrasonic filters, input level controls, total channel independence, and LED overload indicators. This self-contained unit is provided complete with balanced and unbalanced inputs and outputs.

**Basic Specifications:** Circuitry: Low noise, wide bandwidth, high slew rate technology using Gyrator Synthesized inductors.  
Frequency response: EQ out, 0 Hz to 400 KHz. EQ in,  $\pm 5$  dB 20 Hz to 20 KHz.  
Frequency bands: 10, starting at 31 Hz and ending at 16 KHz.  
Control range:  $\pm 8$  dB through unity to  $+15$  dB.  
Distortion: 1.M..008% THD, typically .005%.  
Input impedance: Unbalanced, 100K ohms. Balanced 20K ohms.  
Output impedance: Unbalanced, 100 ohms. Balanced 600 ohms.  
Output level:  $+18$  dBm.  
Signal/noise ratio:  $-100$  dBm.  
Size  $3\frac{1}{2}$ "H x  $10$ "W x  $8$ "D.  
Connectors: Unbalanced standard  $1/4$ " phone jacks. Balanced, XLR type.  
**Suggested List Price: \$595.00**

**SPECTRA SOUND (A wholly owned subsidiary of SPECTRA SONICS)**  
**MODEL 4000, PROFESSIONAL AUDIO FLANGER**  
3750 Airport Road, Ogden, Utah 84403

(801) 392-7531

Contact: Gregory D. Dilley, Engineering Sales.  
Date Product Introduced: March 1980.

**Product Description and Applications:** The Model 4000 was designed to create effects such as positive and negative flanging, double tracking, speaker rotation simulation, chorus, vibrato, and tube echo effects. It produces over five octaves of flanging without input aliasing, or output quantization noise, or the introduction of any high frequency clock components. Standard features include both balanced and unbalanced input and outputs, LED overload indicators, and inputs and outputs for slaving several units.

**Basic Specifications:** Input impedance: 20K ohms unbalanced, 600 ohms or 10K balanced.  
Output impedance: 100 ohms unbalanced, 600 ohms balanced.  
Input level: 0 dBm position, 0 to 5 dBm position, 0 to  $+18$  dBm.  
Output level: Unity gain in flanging modes.  
Frequency response: Delayed channel 20 Hz to 16 KHz ( $-3$  dB).  
Signal/noise:  $-75$  dBm,  $-90$  dBm with dbx. Unweighted.  
Distortion: Less than .5% typically .1%.  
Delay time: 10 milliseconds.  
Size:  $19$ "W x  $2.5$ "H x  $8$ "D.  
**Suggested List Price: \$695.00**

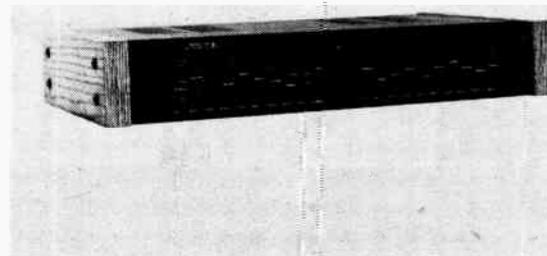
**SPECTRO ACOUSTICS**

210R and 2102R  
4500 150th Ave., N.E., Redmond, WA 98052  
(206) 882-1890

Contact: Toby Sall, National Sales.  
Date Product Introduced: June 1979.

**Product Description and Applications:** The 210R and the 2102R both have exactly the same basic design, performance and specifications. Ten silicone dampened slide pots (that never need to be cleaned) per channel. The same Gyrator Synthesized inductors for low distortion and high resistance to interference. The difference is that the 210R has a pair of unity gain adjustments and a tape EQ button so you can create tapes that are pre-equalized. 5 years parts and labor transferrable limited warranty. All American made.

**Basic Specifications:** 30 dB total adjustment, 0-500 KHz.  
Less than .0025% THD bypassed. .03% THD in line.  
210R:  $19$ " x  $5.25$ " x  $7$ " deep. 2102R:  $19$ " x  $3.25$ " x  $7$ " deep.  
S/N 90 dB (typically 110).  
**Suggested List Price: Model 210R \$300.00.**  
**Model 2102R \$220.00.**



**Spectro Acoustics**  
210R & 2102R

**SYMETRIX, INC.**

SG-200 DUAL SIGNAL GATE  
109 Bell St., Seattle, WA 98121  
(206) 682-3078

Contact: Dane Butcher, Sales Manager.  
Date Product Introduced: March 1980.

**Product Description and Applications:** The Symetrix SG-200 Dual Signal Gate™ is a newly designed gating system using intelligent level discriminating control circuitry and advanced monolithic VCA technology. The result is fool-proof, distortion free signal gating for the elimination of hum, tape hiss, effects pedal noise, excessive decay or reverb, onstage or in the studio. Operating controls for each of the two channels include attack and release, range and threshold, in/out switching, and internal/external gating control.

**Basic Specifications:** THD: Less than .03% @ unity gain, 0 dBm.  
Signal to noise:  $\geq 100$  dB below  $+20$  dBm.  
Bandwidth: 1-50 KHz, flat within bandwidth indicated.  
Input impedance: 50K ohms.  
Output impedance: 47 ohms.  
Recommended output load: 600 ohms or greater.  
Maximum output level:  $+21$  dBm.  
Attack time: 500 microseconds.  
Release time: .01 seconds to 3.4 seconds.  
Range:  $-40$  to zero dB.  
Threshold:  $-40$  dBm to 0 dBm.  
Size:  $1\frac{1}{2}$ " x  $19$ " x  $7$ ". Shipping weight: 6 lbs.  
**Suggested List Price: \$399.00**



**Urso Major, Inc.**  
Space Station S3T-282 Digital Reverb

**URSA MAJOR, INC.**

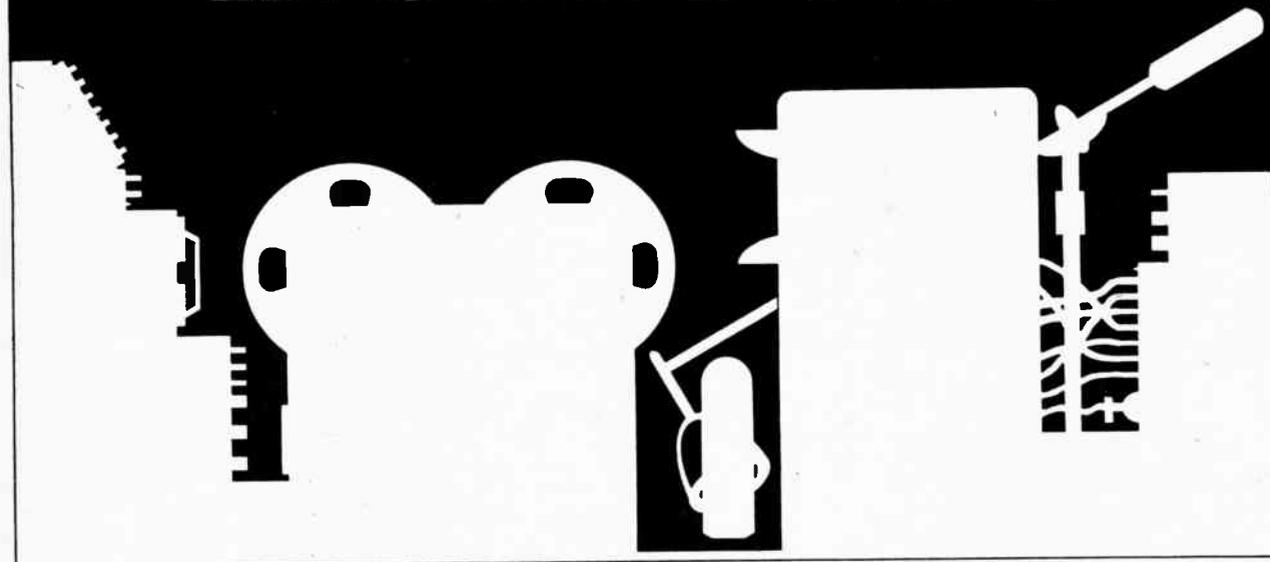
SPACE STATION S3T-282 DIGITAL REVERB  
Box 18, Belmont, MA 02178  
(617) 489-0303

Contact: Gerard Abeles, VP Marketing.  
Date Product Introduced: November 1979.

**Product Description and Applications:** The SST-282 is now manufactured in a cosmetically updated form, with black panel and color-coordinated knobs. A unique Multi-Tap Digital Delay™ algorithm synthesizes convincing stereo reverberation at an attractive price and with great flexibility. Key reverberation parameters such as initial delay pattern, decay time, and high and low frequency decay time can be independently adjusted to simulate a variety of spaces. 8 audition delay taps, in conjunction with the built-in mixer and 18 programs of delay times, can be used for pure delay effects, or with separate adjustable feedback tap for special effects. Technology is PCM with RAM memory.

**Basic Specifications:** 20-7 KHz, 0.1% T(N + D), 80 + dB dynamic range.  
Reverb decay time adjustable from 0 to 3.5 seconds.  
Echo decay time to over 10 seconds, 256 RAM delay time.  
Built in high and low frequency equalizer, 9 input mixer and feedback controls.  
Balanced input, unbalanced outputs (2), XLR connectors.  
Rack mount  $5\frac{1}{4}$ "H, 115 or 230V operation (100/200V on special order).  
**Suggested List Price: \$1995.00**

# SPEAKERS MONITORS



developed damping techniques that enable lower distortion. Third order crossover filters and space-age thermal driver design enable higher long-term power handling. A specially engineered baffle eliminates interference due to re-radiated high frequency energy. The unique combination of high efficiency 150 WRMS input power handling capacity, accurate amplitude and low distortion eliminates the previous conflict between clarity and loudness.

**Basic Specifications:** Response: 43 Hz to 22 KHz.  
Sensitivity: -95 dB 1 watt at 1 meter.  
Power handling: 150 WRMS. Maximum sound pressure: 117 dB.  
Dimensions: 30 1/2" x 23 1/4" x 16 1/2" D.

## EASTERN ACOUSTIC WORKS, INC.

MS-300  
68 Fountain Street, Framingham, Mass 01701  
(617) 620-1478

Contact: Ken Berger, National Sales Manager.

Date Product Introduced: May 1980.

**Product Description and Applications:** The MS-300 offers superior acoustic output, amplitude response, distortion and power handling. Because we have optimized the mass/B1 factor and damping relation of each driver the MS-300 achieves unsurpassed transient response and recovery. A sloped front is used to ensure that the wave front progresses in a phase related way. This irregular shape also reduces the likelihood of standing waves being generated in the cabinet. The resulting sound is not only linear in frequency response, but surprisingly articulate and natural.

**Basic Specifications:** Response: 30 Hz to 18 KHz.

Sensitivity: -92 dB 1 watt at 1 meter.

Power handling: Blamped above 350 Hz: 150 WRMS; Blamped below 350 Hz: 150 WRMS; Full range: 150 WRMS.

Dimensions: 33" x 16 1/4" x 20 1/2" W.

## THE ENERGY GROUP

ENERGY L-215 SERIES II  
11013 118th Place N.E., Kirkland, WA 98033  
(206) 882-0111

Contact: Charlie Kester, President.

Date Product Introduced: December 1979.

**Product Description and Applications:** The L-215 is an innovative new concept in bass horn enclosures engineered specifically for concert sound reinforcement. This exponential horn enclosure uses a compression port to enhance the audible frequency response below 200 Hz. The result is a better sound—more punch and more apparent loudness over conventional cabinet designs. The patented "Space Frame" construction provides increased cabinet strength with a decrease in the panel flex inherent in other enclosures. The "Space Frame" gives the L-215 a tighter sound and increases cabinet efficiency while reducing cabinet weight.

**Basic Specifications:** Construction: 3/4" 9 ply birch hardboard with Polyvinyl finish.

Speakers: Loads 2 15" speakers.

Frequency response: 40 Hz to 1000 Hz (measured with Gauss 4582 driver).

Dispersion: 80 x 45 degrees.

Dimensions: 36" x 42" x 27 1/2" D. Weight: 180 lb. ship weight. Horn length: 18 1/2".

Suggested List Price: \$487.00

## THE ENERGY GROUP

ENERGY L-110 SERIES II  
11013 118th Place N.E., Kirkland, WA 98033  
(206) 882-0111

Contact: Charlie Kester, President.

Date Product Introduced: December 1979.

**Product Description and Applications:** The Energy L-110 is a horn loaded enclosure designed for sound reinforcement systems. This exponential horn enclosure uses a compression port to get better punch and more apparent loudness over conventional cabinet designs. The patented "Space Frame" construction provides superior cabinet strength with a decrease in the panel flex inherent in other enclosures. The result is a tighter sound, improved cabinet efficiency and reduced cabinet weight.

**Basic Specifications:** Construction: 9 ply birch hardboard with Polyvinyl finish.

Speakers: Loads 1 10" speaker.

Frequency response: 200 Hz to 3000 Hz, ±2 dB (measured with Gauss 3184 driver).

Dispersion: 90 x 40 degrees.

Dimensions: 36" x 20" x 27 1/2" D. Weight: 100 lb. ship weight. Horn length: 18 1/2".

Suggested List Price: \$389.00

## INTERLAKE AUDIO INC.

RWO/FOSTEX F300  
935 Ingersoll St., Winnipeg, Manitoba, Canada R3E 2L8  
(204) 688-0248

Contact: Ted R. Telesky, Sales Manager.

Date Product Introduced: November 1979.

**Product Description and Applications:** High power stereo amplifier designed for critical yet demanding applications. Equally at home in the recording studio because of its sonic accuracy and in the field in demanding sound reinforcement applications. Features a massive toroidal power transformer, large heatsink area, calibrated input level controls, output power display with 40 dB range, overload indicator, XLR input connectors with stacking option, bridgable to mono, capable of driving any load including electrostatic loudspeakers, full overload protection.

**Basic Specifications:** 100 watts per channel 8 ohms, 150 watts per channel 4 ohms.

THD: 0.05% max.

IMD: 0.05% max.

S/N: 97 dB.

Rise time 1.5 microseconds.

Suggested List Price: \$659.95

## INTERLAKE AUDIO INC.

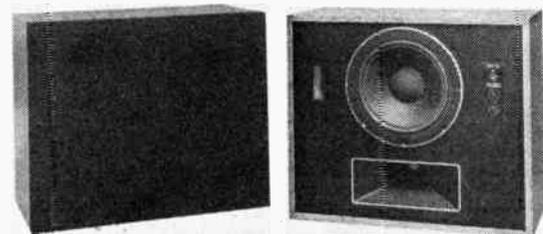
RWO/FOSTEX LS-2  
935 Ingersoll St., Winnipeg, Manitoba, Canada R3E 2L8  
(204) 688-0248

Contact: Ted R. Telesky, Sales Manager.

Date Product Introduced: November 1979.

**Product Description and Applications:** Three way studio monitor featuring phase coherent driver array, dense non-resonant solid teak mid-range horn, aluminum diaphragms in mid-range driver and tweeter, high temperature mica voice coil formers in woofers, double wall enclosure with heavy bracing. This monitor is for use in any critical application where accuracy is foremost, such as recording studios, disc mastering, mixdown etc.

**Basic Specifications:** 100 watts power handling.  
50 Hz to 20 KHz ±3 dB, 96 dB sensitivity.



Altec Lansing  
9842 Monitor Speaker System

ALTEC LANSING  
9842 MONITOR SPEAKER SYSTEM  
1515 S. Manchester Avenue, Anaheim, CA 92803  
(714) 774-2900

Contact: Gary Rilling, National Sales Manager.

Date Product Introduced: December 1979.

**Product Description and Applications:** The 9842 is a unique speaker system well suited to monitoring in recording or broadcast studios and control rooms, as well as in disc mastering rooms. It also may be used for live or recorded sound reproduction in small clubs, theatres, schools. The 9842 incorporates an automatic power control circuit. It silently and automatically reduces the input to the drivers when power levels rise above 75 watts, and it turns ON a warning light. This self-powered circuit enables the speaker to handle up to 200 watts continuous sine wave amplifier output without audible distortion or program interruption. The 9842 is extremely sensitive (95 dB SPL/1 watt/4 feet) for a moderately sized system. It is available in gray lacquer or an optional genuine walnut veneered finish. A black grille is optional.

**Basic Specifications:** Speaker components: 12" bass driver, compression driver with Tangerine™ radial phase plug, Mantaray™ constant directivity horn.

Enclosure type: Vented.

Power capacity: 200 watts with automatic power control protection circuit, 75 watts drivers alone.

Frequency response: 35 Hz to 20 KHz.

Impedance: 8 ohms nominal; 6 ohms minimum at 2 KHz.

Sensitivity: 95 dB SPL. Measured at 4 feet, 1 watt input, using pink noise band limited 500 Hz—3 KHz, shelving controls set at optimum.

Maximum long-term acoustic output: 114 dB SPL (4 feet, on axis).

Dimensions: 24 1/2" H x 28 1/2" W x 14 1/8" D (15 1/2" D with grille)—(611mm x 685mm x 357mm), (397mm).

AMERICAN ACOUSTICS LABS (AAL)  
EQUATION EQ 13 STUDIO MONITOR LOUDSPEAKER  
629 W. Cermak Rd., Chicago, IL 60616  
(312) 243-1310

Contact: Jim Mungovan, 312/327-5956

Date Product Introduced: January 1980.

**Product Description and Applications:** Three-way, tuned port, monitor speaker for any studio monitor application.

**Basic Specifications:** Frequency range: 25 to 22,000 Hz.

Impedance: 8 ohms.

Sensitivity: 93 dB at 1 KHz/1 watt/1 meter on axis.

Power range: 5 to 50 watts RMS program.

12" foam surround woofer with 1 1/2" voice coil.

5 1/4" cone type midrange with 1" voice coil.

2" cone type phenolic ring tweeter.

Crossover: 1,000 and 5,000 Hz.

Fused speaker protection.

Dimensions: 24 1/2" x 19 1/2" x 11"; hickory grained vinyl laminated cabinet.

Weight: 42 lbs.

Suggested List Price: \$175.00

## AMERICAN ACOUSTICS LABS (AAL)

EQUATION EQ 9  
629 W. Cermak Rd., Chicago, IL 60616  
(312) 243-1310

Contact: Jim Mungovan, Mungovan Communications.

Date Product Introduced: January 1980.

**Product Description and Applications:** Two-way, tuned port, monitor speaker for studio monitor applications where compact speaker is needed to conserve space.

**Basic Specifications:** Frequency range: 35 to 22,000 Hz.

Impedance: 8 ohms.

Sensitivity: 92 dB at 1 KHz/1 watt/1 meter on axis.

Power range: 5 to 25 watts RMS program.

8" foam surround woofer with 1" voice coil.

5 1/4" cone type midrange with 1" voice coil.

2" cone type phenolic ring tweeter.

Crossover: 4,000 Hz.

Fused speaker protection.

Dimensions: 21" x 12" x 8 1/4"; hickory grained vinyl laminated cabinet.

Weight: 24 lbs.

Suggested List Price: \$89.00

## AUDIOMARKETING LTD.

TINY RED STUDIO MONITOR  
652 Glenbrook Road, Stamford, CT 06906  
(800) 243-2588

Contact: Richard N. Anderson, Vice President.

Date Product Introduced: April 1980.

**Product Description and Applications:** The Tiny Red is a small monitor speaker for mounting on top of consoles. It features an Altec 405 driver in a tuned bass reflex enclosure. It's superior low and high frequency response make the Tiny Red an ideal companion to the Big or Super Red Monitor. It is finished in non-reflective cloth in several colors.

**Basic Specifications:** Size: 9 1/2" x 8" x 8 1/2" deep.

Driver: Altec 405.

Impedance: 8 ohms.

Sensitivity: 95 dB (1w 4 ft.).

Suggested List Price: \$125.00 per pair.

## EASTERN ACOUSTIC WORKS, INC.

MS-200  
68 Fountain Street, Framingham, Mass 01701  
(617) 620-1478

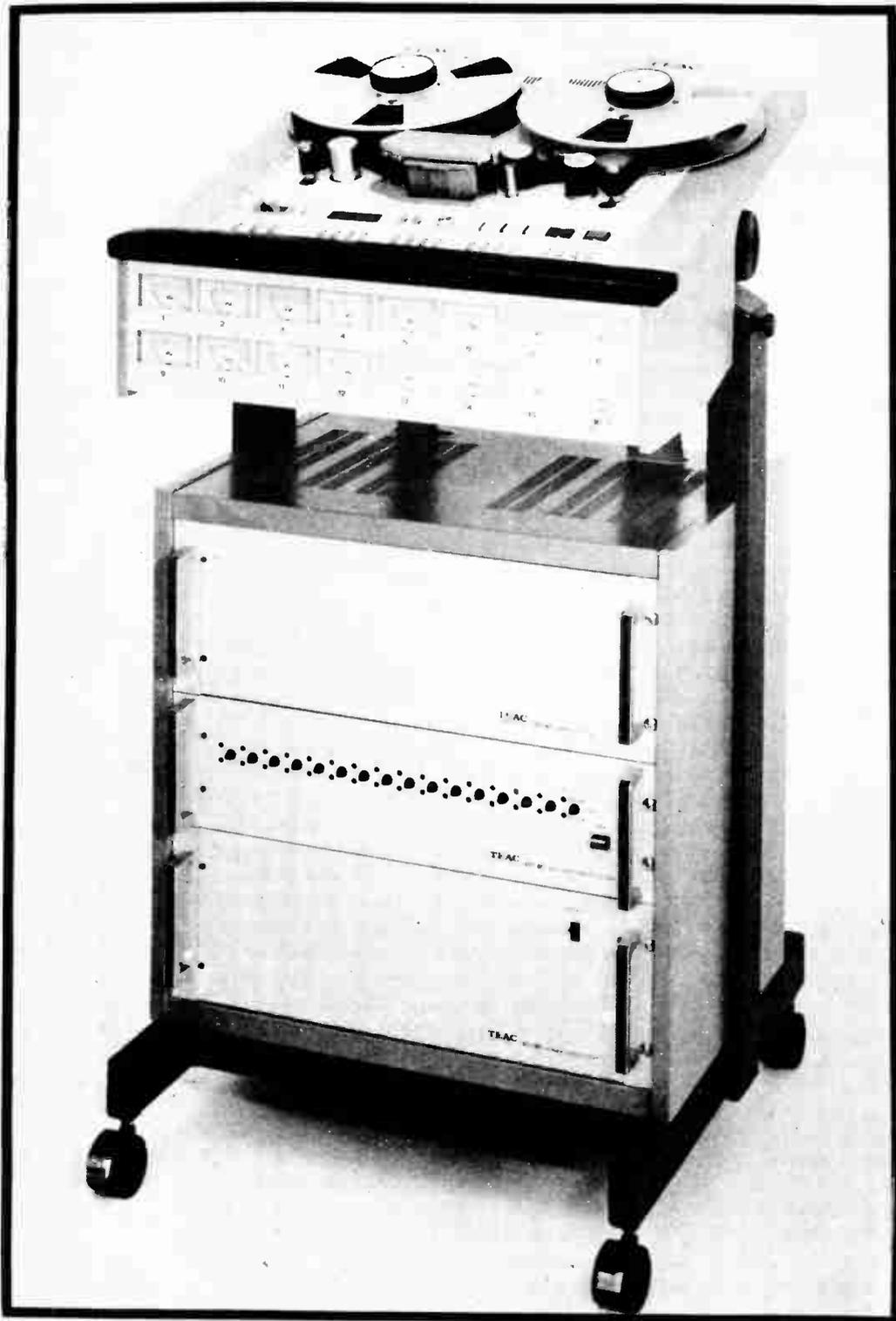
Contact: Ken Berger, National Sales Manager.

Date Product Introduced: May 1980.

**Product Description and Applications:** The MS-200 is a precision refinement of the classic three way studio monitor. It incorporates specially



# INTRODUCING THE Newest in the TASCAM SERIES BY TEAC®



## TASCAM SERIES

TEAC Professional Products Group

# 85-16

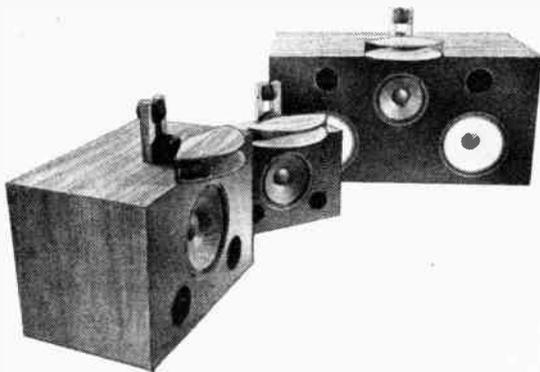
- 16 tracks on 1" tape
- 15 inches per second, and  $\pm 10\%$  record/play speed control
- 4 digit display for tape speed (% of 15 ips) or elapsed time
- Accurate zero-search function
- Plug-in front accessible PC cards for record/play amps and dbx encode/decode processing
- Three DC servo motors
- Spooling mode for fast winding and neat tape pack
- Integral dbx noise reduction
- Adjustable transport mounting angle
- Superior record/play audio performance from DC-coupled FET amplifiers
- 28 dB system headroom

## SUNTRONICS

So. California, Arizona and Nevada

**(714) 985-0701** P. O. Box 734  
1620 W. Foothill Blvd. **UPLAND, CA** 91786

12 inch woofer, teak horn with compression driver, slot tweeter.  
3.5 cubic foot enclosure with teak veneer finish.  
Crossovers at 800, 7000 Hz.  
Suggested List Price: \$1295.00



Interlake Audio Inc.  
RWO/Fostex LS-2

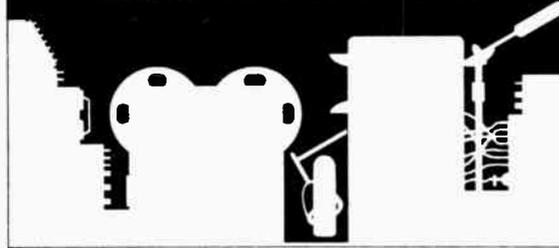
**INTERLAKE AUDIO INC.**  
RWO/FOSTEX LS-3  
935 Ingersoll St., Winnipeg, Manitoba, Canada R3E 2L8  
(204) 688-0246  
Contact: Ted R. Telesky, Sales Manager.  
Date Product Introduced: November 1979.  
Product Description and Applications: Three way studio monitor featuring phase coherent driver array, dense non-resonant solid teak mid-range horn, aluminum diaphragms in mid-range driver and tweeter, high temperature mica voice coil formers in woofers, double wall enclosure with heavy bracing. This monitor is for use in any critical application where accuracy is foremost, such as recording studios, disc mastering, mixdown etc.  
Basic Specifications: 150 watts power handling.  
30 Hz to 20 KHz  $\pm 3$  dB, 100 dB sensitivity.  
15 inch woofer, teak horn with compression driver, slot tweeter.  
9 cubic foot enclosure with teak veneer finish.  
Crossovers at 800, 7000 Hz.  
Suggested List Price: \$1495.00

**INTERLAKE AUDIO INC.**  
RWO/FOSTEX LS-4  
935 Ingersoll St., Winnipeg, Manitoba, Canada R3E 2L8  
(204) 688-0246  
Contact: Ted R. Telesky, Sales Manager.  
Date Product Introduced: November 1979.  
Product Description and Applications: Four way studio monitor featuring phase coherent driver array, dense non-resonant solid teak mid-range horn, aluminum diaphragms in mid-range driver and tweeter, high temperature mica voice coil formers in woofers, double wall enclosure with heavy bracing. This monitor is for use in any critical application where accuracy is foremost, such as recording studios, disc mastering, mixdown etc.  
Basic Specifications: 300 watts power handling.  
22 Hz to 20 KHz  $\pm 3$  dB, 98 dB sensitivity.  
2 15 inch woofers, 12 inch mid bass driver, teak horn with compression driver, slot tweeter.  
24 cubic foot enclosure with teak veneer finish.  
Crossovers at 200, 800, 7000 Hz.  
Suggested List Price: \$2595.00

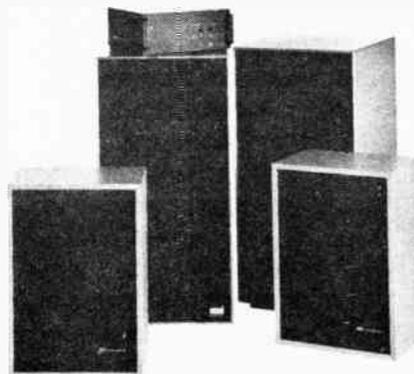
**MCINTOSH LABORATORY, INC.**  
MODEL XRT-20 ISOPHONAR LOUDSPEAKER SYSTEM  
2 Chambers St., Binghamton, NY 13903  
(607) 723-3512  
Contact: Local McIntosh dealer.  
Date Product Introduced: December 1979.  
Product Description and Applications: The XRT-20 can reproduce 300 sine wave watts from 20 Hz to 20 KHz at very low levels of IM distortion. Wide dispersion is achieved while radiating a half cylindrical time co-ordinated soundfield. Because the soundfield is half cylindrical, the energy content falls off directly with distance instead of with distance squared. Thus, the XRT-20 requires less power than conventional speakers and produces lower IM. Stereo spatial performance plus depth perception are extraordinary.  
Basic Specifications: The XRT-20 uses 27 speaker elements and consists of separate base and high frequency sections.  
It is a three way system with cross overs at 250 Hz and 1500 Hz.  
Overload warning lights and fuses prevent burn-out.  
300 watts of audio produces 114 dB SPL in a 2000 cu. ft. listening room with low IM.  
Suggested List Price: \$4,000 per pair.

**MEYER SOUND LABORATORIES, INC.**  
HIGH RESOLUTION ACOUSTIC MONITORS  
2194 Edison Ave., San Leandro, CA 94577  
(415) 569-2868  
NY Market Distribution: Vision Sound, Inc.  
110 Grand Avenue, Englewood, NJ 07631  
(201) 871-4101 or (800) 528-4710  
Contact: Larry Van Valkenburgh, General Manager.  
Date Product Introduced: September 1979.  
Product Description and Applications: ACD/John Meyer Sound Laboratories introduce High Resolution Acoustic Monitors: An integrated system of dynamic loudspeakers and matched electronics designed to pro-

## SPEAKERS MONITORS



vide high resolution acoustic monitoring of digital or analog recordings. Electronic components are phase and amplitude corrected to other parts of the system. This provides smooth linear response needed for stable stereo imaging and tonal balance.  
Basic Specifications: The basic ACD/JM system has a S/N of 110dB, exceeding that of digital tape recorders.  
Total Harmonic Distortion is less than 1% at 110 dB.  
Response is 27 Hz to 18 KHz  $\pm 3$  dB at 110 dB SPL.  
Optional 200 X subwoofers power bandwidth of the system is extended down an octave, producing 125 dB SPL without affecting distortion or S/N specs.



Meyer Sound Laboratories, Inc.  
High Resolution Acoustic Monitor

**MEYER SOUND LABORATORIES, INC.**  
UM-1 ULTRAMONITOR™  
2194 Edison Ave., San Leandro, CA 94577  
(415) 569-2868  
Contact: John Meyer, President.  
Date Product Introduced: November 1979.  
Product Description and Applications: The UM-1 UltraMonitor™ is an on-stage floor monitor incorporating a newly patented high frequency driver which reduces "horn-distortion" by a factor of 10! The UltraMonitor system includes a control electronics package which features speaker protection via SpeakerSense™. SpeakerSense is a portion of the controller circuitry which continuously monitors the voltage at the speakers and acts to reduce the drive to the amplifiers when the safe limits for power or excursion are exceeded.  
Basic Specifications: The UltraMonitor System consists of a proprietary 12-inch low frequency driver and a high frequency horn/driver in a vented 0.8 cu. ft. enclosure. The control electronics provide electronic crossover, speaker protection, phase and amplitude correction, subwoofer interface and specialized user/setup controls. The controller operates at line level (nominal 0 dBV) and is the last component in the signal chain before the user's power amplifiers.  
Suggested List Price: \$6,544.00 per system (2 speakers, 1 processor/control electronics, cables).



Meyer Sound Laboratories, Inc.  
UM-1 UltraMonitor™

**MODULAR SOUND SYSTEMS INC.**  
BAG END S-15-B  
22 N. 49 Pepper Rd., Barrington, IN 60010  
(312) 382-4550  
Contact: Jim Wischmeyer, Sales Manager.  
Date Product Introduced: 1979.  
Product Description and Applications: The S-15-B is a single 15" bass enclosure constructed from "A" Grade 13 ply birch plywood using double rabbet joints. All hardware and connectors are flush mounted to allow modular stacking. A smooth dark walnut oil finish is used to provide beauty and protection. This 5.2 cu. ft. sealed enclosure is internally damped with cotton and designed to minimize internal standing waves and allow a smooth frequency response. Designed for use in studio systems where high accuracy bass response is desired.  
Basic Specifications: Banana Input connector. 2 handles.  
Internal volume 5.2 cu. ft.  
Loaded with Gauss 4583-F. Power capacity 300 watts.  
System resonance 41 Hz. Frequency response 36 Hz to 250 Hz.  
Box type: 2nd order filter.  
Suggested List Price: \$503.00

**MODULAR SOUND SYSTEMS INC.**  
BAG END S-15-LB  
22 N. 49 Pepper Rd., Barrington, IN 60010  
(312) 382-4550  
Contact: Jim Wischmeyer, Sales Manager.  
Date Product Introduced: 1979.  
Product Description and Applications: The S-15-LB is a single 15" bass enclosure constructed from "A" Grade 13 ply birch plywood using double rabbet joints. All hardware and connectors are flush mounted to allow modular stacking. A smooth dark walnut oil finish is used to provide beauty and protection. This 9.5 cu. ft. sealed enclosure is internally damped with cotton and designed to minimize internal standing waves and allow a smooth frequency response. Designed for use in studio systems where high accuracy low bass response is desired.  
Basic Specifications: Banana Input connector. 4 handles.  
Internal volume 9.5 cu. ft.  
Loaded with Gauss 4583-F. Power capacity 300 watts.  
System resonance 32 Hz. Frequency response 28 Hz to 250 Hz.  
Box type: 2nd order filter.  
Suggested List Price: \$585.00

**PANASONIC PROFESSIONAL AUDIO DIVISION**  
RAMSA/PANASONIC WS-165  
50 Meadowlands Parkway, Secaucus, NJ 07094  
(201) 348-7484  
Contact: Paul Ackel, Engineering Coordinator.  
Date Product Introduced: August 1980.  
Product Description and Applications: Two way bass reflex type column speaker with built-in power amplifier. Four 10 inch woofers and a horn type tweeter. Rated output power of amplifier is 100 watts rms. Sensitivity is 99 dB SPL at 1 meter with -20 dBm input. Frequency response of 50-20,000 Hz. Enclosure is sturdy and for the convenience of moving around. Two wheels are installed. Making total sound system simple and reliable because of no wiring between power amplifier and speaker.  
Basic Specifications: Rated power capacity: 100 watts RMS.  
Input sensitivity/impedance: 0 dBm  $\pm 1$  dB/10,000 ohms unbalanced.  
THD: 0.5% from 20-20,000 Hz at rated output.  
S/N ratio: 100 dB or more.  
Frequency response: 50-20,000 Hz.  
Sensitivity: 99 dB SPL at 1 meter with -20 dBm input.  
Cross over frequency: 2,500 Hz.  
High frequency attenuation: 0 dB-off continuously variable.  
Suggested List Price: \$1,000.00

**PANASONIC PROFESSIONAL AUDIO DIVISION**  
RAMSA/PANASONIC WS-703  
50 Meadowlands Parkway, Secaucus, NJ 07094  
(201) 348-7484  
Contact: Paul Ackel, Engineering Coordinator.  
Date Product Introduced: August 1980.  
Product Description and Applications: Super tweeter consists of radial horn and compression driver. Frequency response of 1,500-20,000 Hz. Input power capacity of 60 watts continuous program. Power 104 dB SPL at 1 meter with 1 watt. Dispersion of 110° horizontal x 40° vertical. Titanium diaphragm with rhombic edge. Ferro fluid is added to voice coil gap to minimize temperature rise. Rear compression mounting system and multi-silt phasing plug. Recommended cross over frequency of 5,000 Hz. 8 ohms nominal impedance.  
Basic Specifications: Nominal Impedance: 8 ohms.  
Power capacity: 60 watts continuous program power.  
Sensitivity: 104 dB SPL (1 meter, 1 watt on axis).  
Frequency response: 1,500-20,000 Hz.  
Nominal dispersion: 110° horizontal x 40° vertical.  
Recommended cross over frequency: 5,000 Hz or higher.  
Cut off frequency of horn: 700 Hz.  
Magnetic flux density: 15,300 gauss.  
Voice coil diameter: 4.5 cm (1.8").  
Diaphragm: 0.03 mm (0.0012") Titanium.  
Dimensions: 24.5 x 17.0 x 23.5 cm (9.6" x 8.7" x 9.3").  
Weight: 3.6 kg (7.9 lbs).  
Suggested List Price: \$300.00 approx.

**PANASONIC PROFESSIONAL AUDIO DIVISION**  
RAMSA/PANASONIC WS-705  
50 Meadowlands Parkway, Secaucus, NJ 07094  
(201) 348-7484  
Contact: Paul Ackel, Engineering Coordinator.  
Date Product Introduced: August 1980.  
Product Description and Applications: Compression driver with 10 watts continuous program power capacity and 600-12,000 Hz frequency response. 107 dB SPL at 1 meter, 1 watt (using Ramsa WS-711 horn). Titanium diaphragm with rhombic edge. Ferro fluid is added to voice coil gap to minimize temperature rise. Rear compression mounting system and multi-silt phasing plug. Recommended cross over frequency is 900 Hz or higher. 3.4 cm (1.4") diameter throat. Fits Ramsa WS-710/711 horns or others with adaptor. 8 ohms nominal impedance.  
Basic Specifications: Throat size: 3.4 cm (1.4").  
Nominal Impedance: 8 ohms.  
Power capacity: 100 watts continuous program power.  
Sensitivity: 107 dB SPL (1 meter, 1 watt on axis).  
Frequency response: 600-12,000 Hz.  
Recommended cross over frequency: 900 Hz or higher.  
Magnetic flux density: 20,000 gauss.  
Voice coil diameter: 7.5 cm (2.95").  
Diaphragm: 0.03 mm (0.0012") Titanium.  
Suggested List Price: \$500.00 approx.

PANASONIC PROFESSIONAL AUDIO DIVISION  
RAMSA/PANASONIC WS-711  
50 Meadowlands Parkway, Secaucus, NJ 07094  
(201) 348-7464

Contact: Paul Ackel, Engineering Coordinator.  
Date Product Introduced: August 1980.

Product Description and Applications: Cast aluminum radial horn. Cut off frequency of 250 Hz. Recommended cross over frequency of 500 Hz. Nominal dispersion of 90° horizontal x 40° vertical. Fits to Ramsa WS-700/705 compression drivers.

Basic Specifications: Throat size: 3.4 cm (1.4").  
Nominal dispersion: 90° horizontal x 40° vertical.  
Recommended cross over frequency: 500 Hz.

Cut off frequency: 250 Hz.  
Sensitivity: 107 dB SPL (WS-705 compression driver).  
Dimensions: 86 x 22.5 x 60.8 cm (33.9" x 8.9" x 23.9").  
Weight: 12.5 kg (27.8 lbs).  
Suggested List Price: \$295.00

PHASE LINEAR CORP.

PHASE LINEAR LOUDSPEAKERS  
20121 48th Ave., West, Lynnwood, WA 98036  
(206) 774-3571

Contact: Harry T. Alford, Product Manager.  
Date Product Introduced: January 1980.

Product Description and Applications: P-580 loudspeaker for hi fidelity usage. P-560 loudspeaker for hi fidelity usage. P-530 loudspeaker for hi fidelity usage.

Basic Specifications: P-580: frequency response: 28 Hz to 120 KHz, ribbon tweeter, beryllium midrange with cantilever suspension, 15" woofer w/high damping capability.

P-560: frequency response: 30 Hz - 120 KHz/ribbon tweeter, beryllium midrange with cantilever suspension, 12" woofer.

P-530: frequency response: 30 Hz - 30 KHz, 3 way bass reflex system, boronized titanium midrange tweeter, 12" woofer.

Suggested List Price: P-580: \$1,200.00 ea.

P-560: \$850.00 each.

P-530: \$500.00 each.

PROFESSIONAL AUDIO SYSTEMS ENGINEERING, INC.  
PROFESSIONAL COMPACT MONITOR™  
7330 Laurel Canyon Blvd., North Hollywood, CA 91605  
(213) 982-1141

Contact: Richard Guy, President.

Date Product Introduced: December 1979.

Product Description and Applications: Professional Compact Monitors™ are ultra-compact, full range loudspeaker systems of reference monitor quality. Designed for small control rooms and mobile recording vans, the PCM systems permit monitoring at very high levels. The Professional Compact Monitor™ series uses an extended range, custom Gauss 12" woofer, and an 800 Hz cast aluminum, exponential horn and a new Renkus-Heinz compression driver. This new compression driver handles explosive transients with ease, and music's delicate subtleties with finesse.

Basic Specifications: Frequency response: Essentially flat from 30 Hz to 18 KHz.

Continuous power handling: 150 watts RMS.

Available for blamp use, or with an integral passive crossover network.

Suggested List Price: Road and studio versions available, with prices beginning at \$798.00.

RENKUS-HEINZ  
SSD 1800 HIGH FREQUENCY COMPRESSION DRIVER  
17891 Sky Park Circle, Irvine, CA 92714  
(714) 540-3154

Date Product Introduced: 1980.

Basic Specifications: Maximum continuous power input: 40 watts RMS.

Maximum acoustic output power: 10 watts.

Magnet: Ceramic magnet capable of maintaining 14,000 gauss.

Sensitivity: 147 dB-SPL when coupled to a 1" (2.5 cm) diameter plain wave tube with 1 watt input at 1,000 Hz. One watt 4' sensitivity coupled to a horn with a Q of 7 is 107 dB-SPL.

Efficiency: 25%.

Frequency response: 500-18,000 Hz.

Low frequency limit: 800 Hz.

Harmonic and intermodulation distortion: Surpasses all known driver specifications for minimal distortion.

Nominal Impedance: 8 ohms or 16 ohms.

Throat Diameter: 1" (2.54 cm).

SPECTRA SONICS  
MODEL 3000B MONITOR LOUDSPEAKER SYSTEMS  
3750 Airport Road, Ogden, Utah 84403  
(801) 392-7531

Contact: Greg Dilley, Engineering Sales.

Date Product Introduced: April 1980.

Product Description and Applications: Model 3000B is a tri-amplified, monitor, loudspeaker system designed for separate power amplifiers for the low frequency loudspeaker, the mid-range horn, and the high frequency transducer. Frequency division is achieved through an external active crossover network. The enclosure is constructed of one inch stock, reinforced with internal braces; all joints are tightly fitted and glued. The black grilles are mounted on a removable frame for access to the speakers. A termination panel in the rear of the enclosure, centrally located, provides a simple, convenient means of connecting the system; internal wiring to speakers is 12 gauge wire.

Basic Specifications: Frequency range: 20 Hz to 20,000 Hz.

Crossover frequencies: 800 Hz - 400 Hz (crossover network not included).

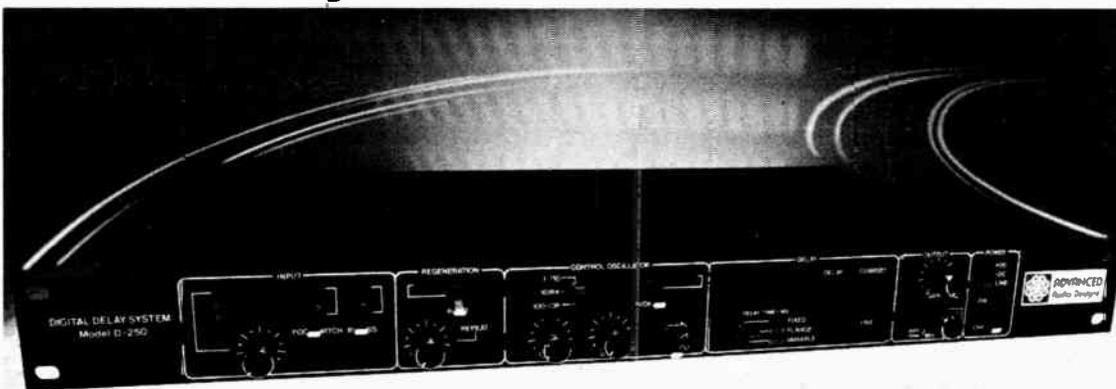
Exterior dimensions: 37 1/2" (95.89 cm) high by 17" (43.18 cm) deep by

24" (62.55 cm) wide.

Net weight: 118 lbs (53.52 kgs).

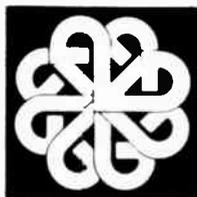
Suggested List Price: \$1271.00

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from ...



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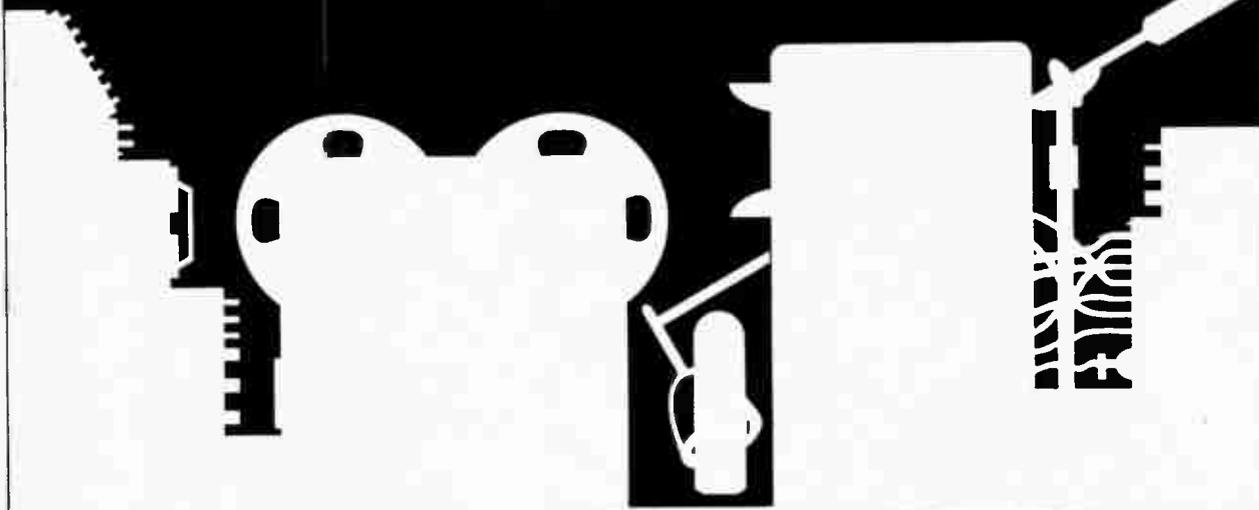
# We've got what it takes for your studio!

Two-track to twenty-four and everything in between! Major brands and a hands-on studio/control room where you can actually hear outboard gear, mikes and accessories in a working environment. Professional service and a staff that makes choosing equipment a pleasure. From your first two track to a full turn-key twenty four or more... your first choice is Hun Sound 'cause "We've got what it takes!"



415 - 454-2911  
647 Irwin St.  
San Rafael, CA 94901

# TAPE & TAPE RECORDERS



## FUJI MAGNETIC TAPE DIVISION, FUJI PHOTO FILM U.S.A., INC.

FUJI VIDEO HEAD CLEANING CASSETTES  
350 Fifth Avenue, New York, NY 10001  
(212) 736-3335

Contact: Len Stein, Public Relations.

Date Product Introduced: December 1979.

Product Description and Applications: Fuji's non-abrasive video head cleaning cassettes (VHS, Beta) clean recording heads in 10 seconds, eliminating "snow" and other problems by removing tape particles and binder residue. Fuji VCL-30 (VHS) provides 90 cleaning minimum in SP mode; 180 in LP; 270 in EP; BCL-20 (Beta), 45 cleanings in Beta I; 90 in Beta II; 135 in Beta III.

Suggested List Price: VCL-30 \$25.00; BCL-20 \$18.50.

## GARNER INDUSTRIES

GARNER HIGH SPEED DUPLICATOR

4200 N. 48th, Lincoln, Nebraska 68504

(402) 464-5911

Contact: Bruce A. Alderman, Sales Manager.

Date Product Introduced: September 1979.

Product Description and Applications: The Garner 1056 delivers perfect dubs time after time. It's precision and accuracy are unmatched. Fast 60 ips duplicating speed. Common capstan eliminates speed variance between master and slaves. Three year mechanical warranty. Compact, self-contained console. Two minute tape loading. Glass bonded Ferrite heads. 100% solid-state integrated circuitry.

Basic Specifications: Duplicating speed: 60 ips.

Reel sizes: Up to 10 1/2".

Power: 120 vac, 60 Hz, 3 amps.

Size: 42 1/2" wide, 21" high, 17" deep.

Suggested List Price: \$9,750.00

## LUX AUDIO OF AMERICA, LTD.

5K50 PROFESSIONAL CASSETTE TAPES

180 Dupont Street, Plainview, NY 11803

(516) 349-7070

Contact: Paul Murphy, Nat'l Sales Rep.

## MR. CASSETTE INDUSTRIES INC.

CORRECT REPLACEMENT™ BRAND

234 Fifth Ave., Suite 304, New York, NY 10001

(212) 689-9332

Contact: George T. Saddler.

Date Product Introduced: 1979.

Product Description and Applications: A full line of audio cassettes which replace 14 other major brands of cassettes—both mechanically and magnetically. Line includes Dynamic Energy Series, High Energy Series and Low Noise Series, each in 3 time lengths, C-60, C-90 and C-120.

Suggested List Price: Dynamic Energy, C-60 \$4.50, C-90 \$6.00, C-120 \$8.25.

High Energy, C-60 \$3.00, C-90 \$4.50, C-120 \$6.75.

Low Noise, C-60 \$2.50, C-90 \$3.50, C-120 \$5.50.

## STUDER REVOX AMERICA, INC.

STUDER MASTER RECORDER A80RC MKII

1425 Elm Hill Pike, Nashville, TN 37210

(615) 254-5651

Contact: Bruno Hochstrasser, President.

Date Product Introduced: January 1980.

Product Description and Applications: Studer Master Recorder A80RC MKII. Improved version of the A80RC with additional features. Available in mono, 2-track stereo, 2-track butterfly format, Neopilotone with resolver, mono-stereo version with mono/stereo electronics. The A80RC MKII offers a new pushbutton assembly utilizing contactless hall effect switches, improved editing facilities, electronic editing facilities with timed Bias and Erase switching, electronic start, edit mode.

Basic Specifications: Speeds: 7.5/15 ips or 15/30 ips.

Signal to Noise: 2 track butterfly 30 ips: 73 dB, 15 ips: 71 dB.

Distortion at 1 KHz and 520nWb/m flux: max. 1%.

Crosstalk 1 KHz: 55 dB.

Erase efficiency: 1 KHz: min. 75 dB.

Suggested List Price: \$8000.00 to \$10,000.00 depending on version.

## TEAC CORP. OF AMERICA

TASCAM MODEL 32-2B

7733 Telegraph Rd., Montebello, CA 90640

(213) 726-0303

Contact: Bill Mohrhoff, Sales Manager.

Date Product Introduced: 1980.

Product Description and Applications: Dual capstan closed-loop transport system. 3 DC motors magnetically capstan bearings. Touch button logic control system with motion sensing. Pitch control for accurate tuning of tape speed. Punch-in record & record mute functions cueing function.

Basic Specifications: 2 track 2 channel stereo.

1 DC brush motor with FG servo control & 2 DC slotless reel motors.

3 head. Tape speed 15 ips and 7 1/2 ips.

W/F 0.02% at 15 ips.

Frequency response 40-20K ( $\pm 3$  dB at 15 ips).

S/N ratio: 63 dB (3% THD WTD NAB EQ.).

Harmonic Distortion: 0.6% at 1 KHz.

## 3M

3M 16-TRACK DIGITAL RECORDER

Building 223-5E, 3M Center, St. Paul, MN 55101

(612) 733-7358

Contact: Clark Duffey, Mkt. Development Manager.

Date Product Introduced: January 1980.

Product Description and Applications: The 16-track Digital Recorder, like 3M's 32- and 4-track recorders, utilizes computer technology to produce tapes of unexcelled clarity, virtually free of noise and distortion and with exceptional 90 dB + signal-to-noise ratio. Multiple-generation copies made during dubbing and mix-down lack signal deterioration or noise build-up. The recorder may also be converted to a 32-track recorder by subsequent installation of a 16-track update kit. Reproduced sound is as "transparent" as the source.

Basic Specifications: Frequency response is 20 Hz to 18 KHz within  $\pm 0.3$  dB, 10 Hz to 20 KHz within  $\pm 0.5$ ,  $-3.0$  dB.

Harmonic and IM distortion are less than 0.03% 100 Hz to 20 KHz at maximum input/output level ( $\pm 28$  dBm).

Print through and flutter are not measurable.

Tape speed is 45 ips with  $\pm 10\%$  vernier on a 1-inch "Scotch" Brand 265 Digital Audio Mastering Tape.

Suggested List Price: Price of recorder is \$72,500. Price of the optional 16-track update kit is \$53,200.00.

## ACCURATE SOUND CORPORATION

ASCO 2500 SERIES

114 5th Ave., Redwood City, CA 94063

(415) 365-2843

Contact: Ronald M. Newdall, President.

Date Product Introduced: 1980.

Product Description and Applications: Duplicating system for 1/4" 2 and 4 channel, cassette and 8 track 1/4" tape.

Basic Specifications: DC servo controlled direct capstan drive (no pinch roller) 240/120 Master, 120/60 slave, Ferrite heads, plug in circuit cards, constant tension.

Suggested List Price: Price dependent on configuration, i.e.: 2 channel Master \$5581.00; 2" channel slave: \$4,150.00.

## AUDI-ENCE, INC.

TDBTM & AZT™ DIRECT INPUT BOXES

3325 Vista Oaks, Garland, TX 75043

(214) 226-2189

Contact: Gail Hawkes, Customer Service; or Bryant Hawkes, President.

Date Product Introduced: January 1980.

Product Description and Applications: The TDBTM & AZT™ Direct Input Boxes are professional devices for matching non balanced hi impedance low and high level sources to console or mixer mike inputs. The TDBTM is a transformer unit and the AZT™ utilizes FET technology. These units features include ground lift, input selection (normal - 60 dB) pads, and frequency tailoring for problem sources. Accident proof locking toggle switches eliminate blown equipment from dropping, stepping, etc.

Basic Specifications: Both devices feature smooth response from 30 Hz to over 15 KHz with typical distortion of less than .25% broadband.

The TDBTM requires no power.

The AZT™ is phantom powered with power on indicating LED.

Both devices are available from professional audio contractors and dealers.

Suggested List Price: The TDBTM is \$89.50.

The AZT™ is \$117.00.

## AURORA INTERNATIONAL CORP.

AURORA

1225 Broadway, New York, NY 10001

(212) 725-5328

Contact: George Saddler.

Date Product Introduced: January 1980.

Product Description and Applications: Cassettes for hi-speed duplicator and normal recorder use. Full line of C-7, C-10, C-20, C-30, C-40, C-45, C-50, C-60, C-65, C-70, C-80, C-90 and C-120. Japanese 5 screw molds and extended range high output densified tapes, 2-3 dB hotter than low noise types supplied by others.

Suggested List Price: Blank bulk duplicator cassette cost: \$0.35 to \$1.25.

## BASF SYSTEMS

BASF FERRO LM OPEN REEL TAPE

Crosby Drive, Bedford, MA 01730

(617) 271-4000

Contact: Paul Kontrimas, Asst. Product Manager.

Date Product Introduced: January 1980.

Product Description and Applications: High output, low noise ferric oxide tape featuring a built-in sensing foil and sturdy plastic library box. Provides far superior performance, greater maximum recording level (MRL) and S/N ratio at an affordable price.

Basic Specifications: Packaged on 7" plastic reels in lengths of 1,800 ft., 2,400 ft., and 3,600 ft.

Suggested List Price: 1,800 ft. \$12.99; 2,400 ft. \$16.99; 3,600 ft. \$21.99

## COLUMBIA MAGNETICS

ULTRA III CASSETTE TAPE

49 E. 52nd St., New York, NY 10022

(212) 975-4217, (213) 556-4836

Contact: Jerry Bronaugh, Director, Sales.

Date Product Introduced: 1980.

Product Description and Applications: Bulk professional C-60 and C-90 cassette tape for duplicators. C-60 available in 7200 ft. and 8200 ft. lengths.

C-90 available in 9600 ft. and 11,500 ft. lengths.

## COLUMBIA MAGNETICS

REEL-TO-REEL TAPE

49 E. 52nd St., New York, NY 10022

(212) 975-4217, (213) 556-4836

Contact: Jerry Bronaugh, Director, Sales.

Date Product Introduced: 1980.

Product Description and Applications: Bulk professional reel-to-reel duplicating tape, available in 3600 ft. and 7200 ft. lengths.

## COLUMBIA MAGNETICS

8 TRACK LUBE TAPE

49 E. 52nd St., New York, NY 10022

(212) 975-4217, (213) 556-4836

Contact: Jerry Bronaugh, Director, Sales.

Date Product Introduced: 1980.

Product Description and Applications: Bulk 8-track lubricated tape for duplicators. 3/4 mil available in 4200 ft. and 8400 ft. lengths. 1 mil available in 3600 ft. and 7200 ft. lengths.

## ELECTRONIC HOMES COMPANY

GRANDMASTER/TOYOTA

234 5th Ave., 3rd Floor, New York, NY 10001

Contact: George T. Saddler, S.M.

Date Product Introduced: 1972, first time to professional market.

Product Description and Applications: Full lines of highest grades audio mastering tapes and audio cassettes.

Basic Specifications: Open reel, 1800', chrome bias first in the world \$100.00 per reel. Cassettes from 99¢ to \$8.99.

## FUJI MAGNETIC TAPE DIVISION, FUJI PHOTO FILM U.S.A., INC.

FUJI METAL PARTICLE CASSETTES, C-90

350 Fifth Avenue, New York, NY 10001

(212) 736-3335

Contact: Len Stein, Public Relations.

Date Product Introduced: December 1979.

Product Description and Applications: Fuji's metal cassettes (available in C-46, 60 and 90 minute lengths) advance state of the art cassette recording by offering extremely wide dynamic range plus excellent frequency response over the entire audio spectrum. Ultra fine metal alloy particles give up to 10 dB higher maximum output level (MOL) in the important high frequencies; to 5 dB in the low range. Specially designed cassette shells assure the full benefits of Fuji metal tape. Fuji is the only manufacturer with a complete line of metal tape.

Basic Specifications: Coercivity (Hc) 1050 Oersted.

Rententivity (Br) 3300 Gauss.

Operating bias (6300 Hz) + 4 dB.

Relative frequency response (10,000 Hz) + 1.0 dB; (15,000 Hz) + 1.5 dB.

MOL (315 Hz) + 2.0 dB; MOL (10,000 Hz) + 10 dB; MOL (15,000 Hz) + 15 dB.

S/N (1000 Hz) 81 dB.

Suggested List Price: C-46 \$8.30, C-60 \$9.10, C-90 \$12.00.

THE SHORTEST DISTANCE  
BETWEEN WHAT YOU HAVE IN MIND,  
AND WHAT YOU COULD HAVE ON TAPE

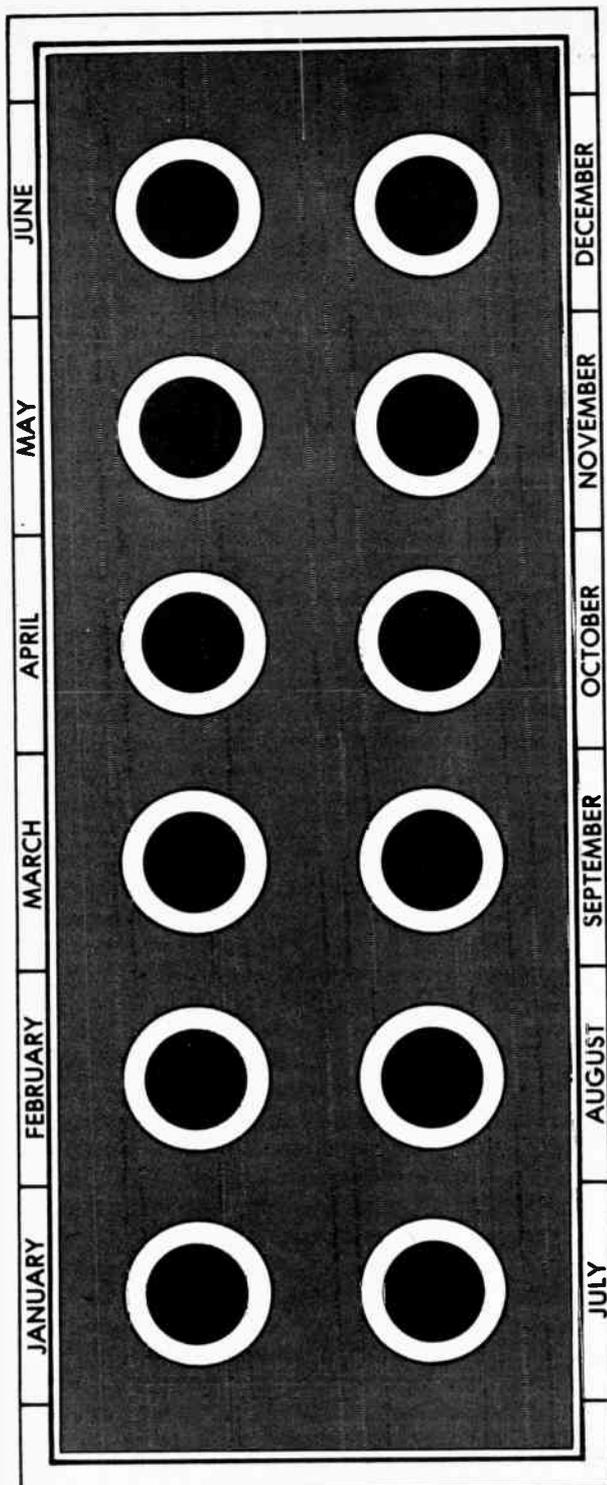
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## ACCESSORIES

### ACCURATE SOUND CORPORATION ASCO 2700 SERIES

114 5th Ave., Redwood City, CA 94063

(415) 365-2843

Contact: Ronald M. Newdall, President.

Date Product Introduced: 1980.

Product Description and Applications: Tape transport using Inovonics electronics for mono 1/4" to 8 track 1" application.

Basic Specifications: DC servo controlled, direct capstan drive (no pinch roller).

Speeds 7.5 ips to 30 ips.

Constant tension, dynamic braking, motion sense.

Suggested List Price: Transport only 1/4" 10 1/2" reel \$1980.00.

### AUDIONICS OF OREGON

#### RVR/RVP REVOX ELECTRONICS UPDATE (A-77 only)

10950 SW 5th, #160, Beaverton, OR 97005

(503) 641-5225

Contact: Charles Wood, President; Steve Kennedy, Tech. Services.

Date Product Introduced: 1980.

Product Description and Applications: RVR/RVP Revox A-77 replacement electronics update package includes 2 playback and 2 record cards along with an outboard bias filter with instructions to allow the user to update the Revox A-77 (3 1/4 ips and 7 1/2 ips version only, non-Dolby) electronics compliant to studio specifications and audiophile sound qualities. Improves S/N ratio, increases dynamic range, increases output level, as well as improves metering characteristics. Class A circuitry throughout.

Basic Specifications: S/N ratio improved by 2 dB (over stock machine).

Dynamic range (headroom) increased to 6 dB above tape saturation levels.

Improved handling of low frequency overload allows higher output levels.

Meter weighting improved to more accurately reflect tape overload.

Suggested List Price: \$375.00

### COLUMBIA MAGNETICS

#### SOUNDCRAFT MAGNA-SEE

49 E. 52nd St., New York, NY 10022

(212) 975-4217, (213) 556-4836

Contact: Jerry Bronaugh, Director, Sales.

Date Product Introduced: 1980.

Product Description and Applications: This solution when applied to recorded tape permits the user to visibly check for head alignment, track uniformity, balance and headwear. It also makes editing easier and more exact. Available in easy to use 1/2 pint cans.

### GARNER INDUSTRIES

#### GARNER BULK ERASERS

4200 N. 48th, Lincoln, Nebraska 68504

(402) 484-5911

Contact: Bruce A. Alderman, Sales Manager.

Date Product Introduced: September 1979.

Product Description and Applications: It takes just four seconds to erase all sizes and types of audio tape up to 16 inches with Garner Degassers. Easy to operate endless belt design erasers deliver clean, no whump, erased tapes. Saves time and mistakes. Four sizes of belt widths to choose from: 7", 10 1/2", 14", and 18".

Basic Specifications: 117 VAC 4-11 amps. Thermally protected.

Suggested List Price: \$795.00 to \$1,790.00

### KING INSTRUMENT CORPORATION

#### KING SEMI-AUTOMATIC CASSETTE LOADER, MODEL 680

80 Turnpike Rd., Westboro, MA 01581

(617) 366-8141

Contact: William E. Cline, Vice President, Sales.

Date Product Introduced: February 1980.

Product Description and Applications: The Model 680 is a semi-automatic loader that uses a state of the art microprocessor controller to control its five automatic switching operations and eject the cassette from the holder. It is only necessary for the operator to place the leader into position and press the start switch. All other functions of tape and leader cutting, aligning, splicing and tape spooling are precisely and rapidly performed by the machine.

Basic Specifications: 80 lbs. of air pressure at 1 cu. ft./mix. Self contained vacuum.

Suggested List Price: \$8780.00

### NORTRONICS RECORDER CARE DIVISION

#### TABLE TOP BULK ERASER, QM 250

8101 Tenth Ave., N., Minneapolis, MN 55427

(612) 545-0401

Date Product Introduced: January 1980.

Product Description and Applications: The QM 250 is a professional table top bulk eraser designed for all tape formats up to a 1" width. Research and development by the Recorder Care Division of Nortronics has resulted in a table top bulk eraser equal to or better than other units costing up to twice as much. Burn-out proof design protects the coil automatically with a thermal device which will reset itself once the coil has cooled to a safe operating temperature. Other features include a unique power switch which functions as either a momentary action or locking for continuous action, a visual overhead indicator and a NAB hub adapter.

Basic Specifications: Field strength: Surface 3,000 gauss.

1/4" spacing 1,300 gauss.

Suggested List Price: \$287.00

### OTARI CORPORATION

#### DP4050-C2 CASSETTE COPYING MACHINE

981 Industrial Rd., San Carlos, CA 94070

(415) 593-1848

Contact: Steve Krampf, National Sales Manager.

Date Product Introduced: March 1980.

Product Description and Applications: Otari has announced the introduction of the DP-4050-C2, a new compact version of its widely-used professional-quality DP-4050 in-cassette duplicator system. Featuring a cassette master and two slaves, it has the capability of adding up to nine additional slaves in groups of three, for a total of eleven slaves all driven from one master.

Basic Specifications: Although new in configuration, the DP-4050-C2 retains all of the proven features of the more expensive DP-4050-C2 models. These include an 8:1 duplicating speed ratio, long-life ferrite heads, flip-down panel for easy access to alignment controls, modular transport units,



large easy-to-read VU meters, and duplication of all four tracks simultaneously in one pass. From two to eleven C-30 cassettes can be produced in less than two minutes, depending on the number of slaves. Suggested List Price: Suggested professional user price of the DP-4050-C2 with cassette master and two slaves is \$2,950.00. Price of the DP-4050-Z3 three slave add-on unit is \$2,750.00.

### SAKI MAGNETICS

#### LONG LIFE MAGNETIC TAPE HEADS

5770 Uplander Way, Culver City, CA 90230

(213) 649-5983

Contact: Trevor Boyer, Sales Manager.

Date Product Introduced: 1980.

Product Description and Applications: Saki will be showing our complete line of long life Ferrite heads for professional studio recorders, such as Ampex, Mincom, Scully, etc. and two new developed products, one is the Ferrite head for in-cassette duplicator, such as Pentagon, Teles, or Recorder. The other is a head for high speed duplicating of the new metal tapes.

### STEPHENS ELECTRONICS, INC.

#### BATTERY POWER SUPPLY 218

3513 Pacific Ave., Burbank, CA 91505

(213) 842-5116

Contact: Gina D'Esopo, Marketing Director.

Date Product Introduced: March 1980.

Product Description and Applications: New switching power supply with self-contained battery charger, handles brown outs and power failures. Your Stephens recorder/reproducer is capable of operation for at least 15 minutes after power failure due to battery back-up. Three meters indicate operating condition of system. Higher efficiency reduces power consumption. Can be used for remotes when connected to additional 24 volt batteries. Comes with all new Stephens recorder/reproducers and is available for all Stephens with new servo drive system.

Basic Specifications: Dimensions: 7 1/2" x 7 1/2" x 3".

Input: 80-250 VAC, 40-80 Hz.

Power consumption: 50 watts for a 24 track system.

External battery source: 24 volts DC.

Suggested List Price: \$1,250.00

### STEPHENS ELECTRONICS, INC.

#### NEW HEAD DESIGN

3513 Pacific Ave., Burbank, CA 91505

(213) 842-5116

Contact: Gina D'Esopo, Marketing Director.

Date Product Introduced: December 1979.

Product Description and Applications: New heads in all formats (2 track 1/2" to 40 track 2") providing flatter and wider frequency response for better low frequency response at 30 ips, can be retrofit to existing Stephens recorder/reproducers (with capstanless Stephens transports) and come with all new Stephens recorder/reproducers.

Basic Specifications: Frequency response: ± 1 dB from 25 Hz to 25 KHz at 30 ips; ± 1 dB from 25 Hz to 15 KHz at 15 ips.

Suggested List Price: Prices range from \$1,660.00 for 2 track 1/2" to \$12,170.00 for 40 track 2".

### TABER MFG. AND ENG. CO.

#### TABERAMP

2081 Edison St., San Leandro, CA 94577

(415) 635-3831

Contact: Joe Niec, Proj. Manager; Greg Sargent, Sales.

Date Product Introduced: Spring 1980.

Product Description and Applications: VTR stereo audio for 2" Ampex and RCA quadruplex recorders using Taber heads. Replacement to Ampex tube electronics. Replacement to Ampex 440 series. Replacement to Scully 280 series. Replacement to broadcast automation reproduce electronics. match to any professional transport with Taber heads. Expandable for multi track recorders.

### 3M

#### 3M DIGITAL PREVIEW UNITS

Building 223-5E, 3M Center, St. Paul, MN 55101

(612) 733-7358

Contact: Clark Duffey, Mkt. Development Manager.

Date Product Introduced: January 1980.

Product Description and Applications: The 3M Digital Preview Units, dedicated to use with the 3M 4-track Digital Recorder, employ computer memory technology to provide preview signals for cutting (at the pitch and depth control while maintaining mastering signal in the digital domain. Program signal delay is selectable in 5 millisecond increments, 0 to 1.3 seconds or to 1.98 seconds with extended memory option.

Basic Specifications: Two channels of delay.

any of the 4 tracks selectable for preview and program via front panel switches.

Sample rate is 50 KHz nominal (controlled by machine "vari-speed").

Signal format: Digital in/digital out.

Power 20 watts.

Size 10.75 x 8.75 x 12.33 inches.

Suggested List Price: Price of the 1.3 second delay unit is \$5,500.00.

Price for the 1.98 second delay unit is \$7,400.00.



3M Company  
3M Digital Editing System

3M  
3M DIGITAL EDITING SYSTEM  
Building 223-5E, 3M Center, St. Paul, MN 55101  
(612) 733-7358

Contact: Clark Duffey, Mkt. Development Manager.  
Date Product Introduced: January 1980.

**Product Description and Applications:** 3M Digital Editing System consists of a compact console (21.5 x 6.5 x 5 inches) of microprocessor electronics. It offers exceptional precision, risk-free audition of edit preview capability, unaltered originals and slice-free masters, digital's lack of degradation throughout the process, plus a new vista in editing creativity. Control module, which determines and monitors the tape movement of two 3M recorders, offers special function buttons for determining exact edit points. Refinement can be made by as little as a thousandth of a second.  
**Basic Specifications:** Specifications are those of the recorders. A 24-digit binary number is automatically recorded every 320 microseconds to reference exact tape locations.  
**Suggested List Price:** \$7,500.00

VIF INTERNATIONAL  
JFET TUBE REPLACEMENT  
P.O. Box 1555, Mountaineer View, CA 94042  
(408) 739-9740

Contact: Gordon MacKechnie, President.  
Date Product Introduced: 1979.

**Product Description and Applications:** A new junction-field-effect device, which functions as a replacement for first playback stage tubes in most Ampex professional audio tape recorders, has been developed by VIF International.  
**Suggested List Price:** \$33.00 each. Adaptors, required for some Ampex models, cost \$16.00 each.

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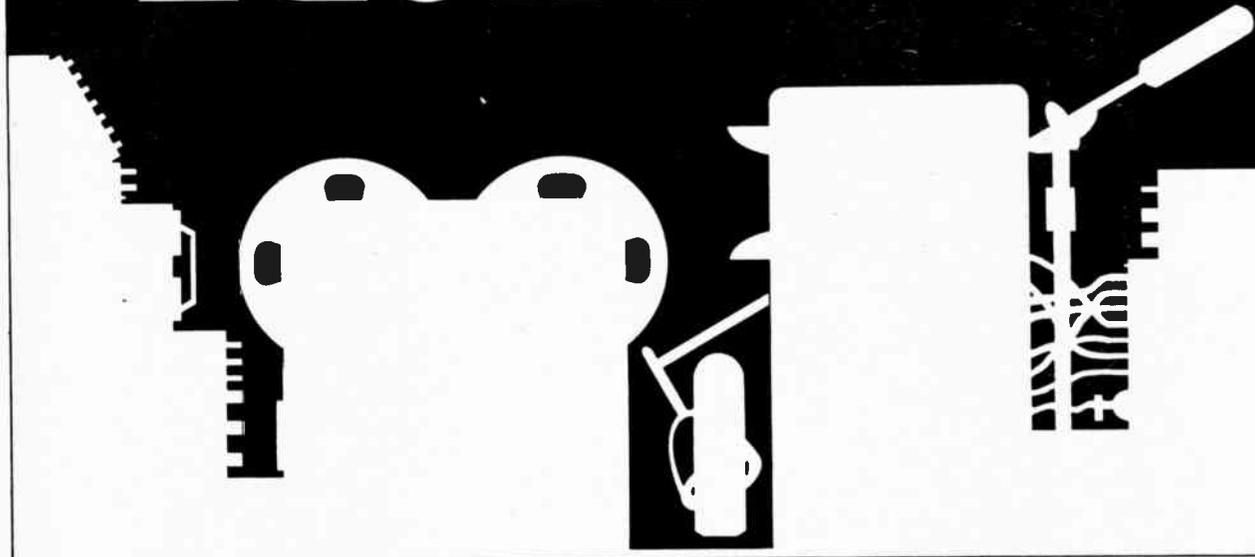
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# OTHER EQUIPMENT



## ACOUSTILOG, INC. IMPULSER IMPULSE TESTING SYSTEM

19 Mercer Street, New York, NY 10013  
(212) 925-1385

Contact: Al Fierstein, President.

Date Product Introduced: November 1979

**Product Description and Applications:** The IMPULSER allows the user to see as well as measure polarity, phase-alignment and impulse response of speakers, microphones, and electrical systems. It is used with a triggered oscilloscope (user-supplied). Flutter echo, speaker alignment in large systems and clipping are also instantly observable. Also available as an option to the 232A Reverberation Timer at reduced cost.

**Basic Specifications:** Repetition rate: From .3 to 10 pulses/sec.

Frequency: From 40 Hz to 10 KHz.

Battery-operated.

Variable Send and Receive Level controls.

Suggested List Price: \$225.00

## AMBER ELECTRO DESIGN AMBER MODEL 3500 DISTORTION AND NOISE MEASURING SET

4810 Jean Talon St. West, Montreal, Quebec H4P 2N5, Canada  
(514) 735-4105

Contact: Wayne Jones, President

Date Product Introduced: January 1980

**Product Description and Applications:** The Model 3500 is a high performance distortion and noise measurement system. It incorporates an ultra low distortion oscillator and an automatic analyzer. The instrument is also extremely compact — small enough to fit in a brief case — and is available with an optional battery. Features include: automatic set level, automatic nulling, continuous frequency tuning, switchable noise filters, true RMS meter response and a unique feature: narrow band selective voltmeter.

**Basic Specifications:** System performance to below 0.001% THD mid band and below 0.01% at 100 KHz.

Noise measurements to -120 dBV.

Frequency range 10Hz to 100 KHz.

Output level +22 dBV to -60 dBV.

Input level +40 dBV to -30 dBV on distortion and to -120 dBV on level.

Oscillator and level meter flatness (20 Hz to 20 KHz) better than ±0.1 dB.

Optional Accessories: rechargeable battery, Intermodulation Distortion Analysis capability.

Size: 3.7" x 8.8" x 10.3"; 7 lbs.

Suggested List Price: \$1600.00

## AUDIO INTERNATIONAL, INC. CM260 HEADPHONE MONITORING SYSTEM

3 Cole Place, Danbury, CT 06810  
(203) 792-0063

Contact: Jeffrey Hall.

Date Product Introduced: May 1980.

**Product Description and Applications:** The CM260 has a common power supply and distribution amplifier in a rack mountable chassis. Also included are six remote units, connected via a standard microphone cable with male and female XLR connectors. This cable provides both signal and power to remotes; the CM260 enables the individual musician to adjust level and tone in either stereo or mono mode without leaving his position.

**Basic Specifications:** Power is 3 watts per channel at 10 ohms

Gain: 0 dB to +40 dB.

Adjustable bandwidth 20 Hz to 20 KHz ±1 dB.

Distortion: less than .5% at rated power.

Suggested List Price: \$899.00

## AUDIOMARKETING LTD. TIME/SYNC ELECTRONIC FREQUENCY DIVIDING NETWORK

652 Glenbrook Road, Stamford, CT 06906  
(800) 243-2588

Contact: Richard N. Anderson, Vice President.

Date Product Introduced: February 1980.

**Product Description and Applications:** The Time/Sync active crossover uses electronic time delay to achieve acoustic alignment in multiple driver speaker systems. Designed to retro fit Big and Super Red Monitors, plug-in filter sections and adjustable speaker off-set correction make Time/Sync applicable to most any bi- or tri-amplified system. Time/Sync gives true acoustic alignment to any speaker.

**Basic Specifications:** GAIN: Unity, maximum output +18V.

SIGNAL/NOISE (Ref. 778V): -80dB.

INPUT: Balanced bridging; OUTPUT: Unbalanced.

FILTER SLOPE (Basic 0512 type for Big Red): 12dB/octave.

Others available upon request.

Suggested List Price: Time/Sync Bi-amp: \$650.00

Time/Sync Tri-amp: \$725.00

Custom Design Filter Section: Call for quote.

## B&B AUDIO/APHEX SYSTEMS, LTD. 1538 VOLTAGE CONTROLLED ATTENUATOR

7801 Melrose Ave., Los Angeles, CA 90046  
(213) 865-1411

Contact: Jon Saneerino, Dir. OEM Products.

Date Product Introduced: May 1980.

**Product Description and Applications:** The 1538 is an all-new monolithic VCA. It can attenuate signals from DC to 200 KHz better than -100 dB, with typical THD of .004% and worst case noise of -95 dBV. Its new 60 volt fabrication process enables use in high voltage circuits with increased (130 dB) dynamic range. Although pin-compatible with its predecessor, the 1537A, the new device offers lower cost, lower noise, 1/2 the external parts needed, and high voltage operation. It will see widespread use in audio, video, and instrumentation fields.

**Basic Specifications:** Bandwidth: DC to 20 MHz.

THD: .004%.

IMD: .03%.

Noise: -95 dBV worst case.

Control taper: log linear.

Package: 14 pin DIP.

Suggested List Price: OEM pricing to be announced.

## B&B AUDIO/APHEX SYSTEMS, LTD. 1539 SUPERMATCHED QUAD TRANSISTOR ARRAY

7801 Melrose Ave., Los Angeles, CA 90046  
(213) 865-1411

Contact: Jon Saneerino, Dir. OEM Products.

Date Product Introduced: May 1980.

**Product Description and Applications:** The 1539 is a junction isolated ultra-well matched quad NPN transistor array fabricated with a new high voltage, low noise process. It can be used in: ultra low noise pre-amplifiers, RMS detectors, computational circuits, analog multipliers, instrumentation amps, log converters, exponentiators, multifunction generators, and many other types of precision audio equipment.

**Basic Specifications:** Noise: one nanovolt per root Hertz at 1 mA ic.

Emitter-Base voltage: matched to 50 uV.

Current Gain (hfe): matched to 2%.

isothermal topology: 60 volt process.

High current gain (typ.450).

Suggested List Price: Pricing to be announced.

## CLEAR-COM INTERCOM SYSTEMS SYSTEM II INTERCOM REMOTE STATIONS

759 Harrison St., San Francisco, CA 94107  
(415) 988-1130

Contact: Robert E. Cohen, President.

Date Product Introduced: March 1980.

**Product Description and Applications:** Clear-Com has introduced the

System II Intercom Stations, belt pack and wall mount, for use with their popular Intercom Main Stations. Features include improved electronics allowing 12 to 32 volt operation, two or 3 wire operation and increased operating range up to six miles.

Suggested List Price: RS-100A: \$140.00 (Belt Pack).

RS-100ANS: \$120.00 (Belt Pack no signal light).

## COMMUNICATIONS COMPANY, INC. REVERBERATION TIMER RT-60B

3490 Noel St., San Diego, CA 92110

(714) 297-3281

Contact: Victor M. Hall, President.

Date Product Introduced: 1979.

**Product Description and Applications:** This new state-of-the-art measuring device will compute room decay time within seven octave band segments. Using digital readout logic, the operator can achieve accurate measurements without cumbersome chart recorders and additional equipment. The RT-60B gives you a fast, accurate, portable means of reverb time analysis.

Suggested List Price: \$550.85

## CROWN INTERNATIONAL, INC. BADAP I AUDIO COMPUTER

1718 W. Mishawaka Rd., Elkhart, IN 46514

(219) 294-5571

Contact: Dennis Badke, Sales Engineer.

Date Product Introduced: January 1980.

**Product Description and Applications:** Badap I, the interface between the acoustical environment and the computer, is a programmable audio test instrument. It is a full computer complete with input/output systems, memory registers, CPU and CRT. Badap provides measurement of third-octave response, room reverberation time, wow and flutter, critical distance and noise. Applications include room EQ, spectrum analysis, disk/tape monitoring, audio system design, room acoustical treatment, multi-channel monitoring, among others. The Badap I/TM system offers a unique "non-obsolescence" capability. Badap I/TM circuitry is designed to perform dozens of tasks by merely substituting the standard pre-programmed ROM IC's with others which will be available from Crown.

**Basic Specifications:** Badap I has a full-color display, making for easier interpretation and comparison of data.

Multiple memories permit storage/recall of all data.

Controls are touch operated, with on-screen labeling. Changes or additions to the programming are made by changing the ROMs (read-only memories) which takes only a few minutes.

Suggested List Price: \$5,495.00

## DIACOUSTIC LABORATORY DISCO DECOR

23958 Craftman Rd., Calabasas, CA 91302

(213) 888-8010

Contact: Mickey Knight, President.

Date Product Introduced: March 1980.

**Product Description and Applications:** Disco Decor is a new concept in a record storage wall unit that displays your favorite album covers, with easy accessibility for playing. The original Disco Decor design was developed for the professional recording companies to decorate their lobbies, halls and conference rooms.

**Basic Specifications:** This product is offered and designed for 3, 5, 6, and 10 albums; available in silver, gold and black finishes. See us in booth 50 at the 1980 Los Angeles AES Show.

Suggested List Price: Range is from \$19.95 to \$39.95.

## DOLBY LABORATORIES INC. CP200 CINEMA PROCESSOR

731 Sansome Street, San Francisco, CA 94111

(415) 382-0300

Contact: Clyde McKinney, Technical Services Administrator.

Date Product Introduced: 1980.

**Product Description and Applications:** CP200 Cinema Processor used in dubbing theatres for the production of all Dolby Stereo film formats. The same unit may be used for the exhibition of all film formats.

## DYMA ENGINEERING, INC. DA-815 AND DA-8151 AUDIO DISTRIBUTION AMPLIFIERS

213 Pueblo Del Sur, P.O. Box 1897, Taos, NM 87571

(505) 758-8888

Contact: Michael Ziomko, Sales Manager.

Date Product Introduced: November 1980.

**Product Description and Applications:** Dyma manufactures two self-contained audio DA's that not only fill the standard applications of distributing audio, but also pass SMPTE time code. A rack frame only 5 1/4" high accommodates ten modules of either model—the 1/10 out with unity gain or the 1/6 out with each output individually adjusted from the front panel. Connection to your system requires no lugs or special lead dress; we provide simple screw terminals.

**Basic Specifications:** Performance exceeds FM specifications.

We use the latest LSI design that affords maximum output.

(+26 dBm RMS) and high headroom.

Suggested List Price: \$259.00 per module; \$155.00 for the rack frame.

FOB Taos, N.M.

## EVENTIDE CLOCKWORKS, INC. VTU02, AIB232 REAL TIME ANALYZERS

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

(212) 581-9290

Contact: Heather Wood, Marketing Manager.

Date Product Introduced: November 1979.

**Product Description and Application:** The VTU02 works with the Radio Shack TRS-80, the AIB232 works with the Apple home computer, to give a third octave real-time audio spectrum analyzer with computer capability for about one-fifth the price of other units. Installation is very simple. The units cover the audio spectrum from 20 Hz to 20 KHz, dividing it into 31 third-octave bands, and displaying the relative amplitude on the computer screen.

Suggested List Price: VTU02 for TRS-80: \$595.00; AIB232 for Apple: \$545.00.

## FURMAN SOUND, INC. MODEL TX-3 TUNABLE CROSSOVER

618 Canal St., San Rafael, CA 94801

(415) 458-8788

Contact: Lary Collins, Marketing Director.

Date Product Introduced: December 1979.

**Product Description and Applications:** A new electronic crossover providing two crossover points, each independently tunable from 20 Hz to 20

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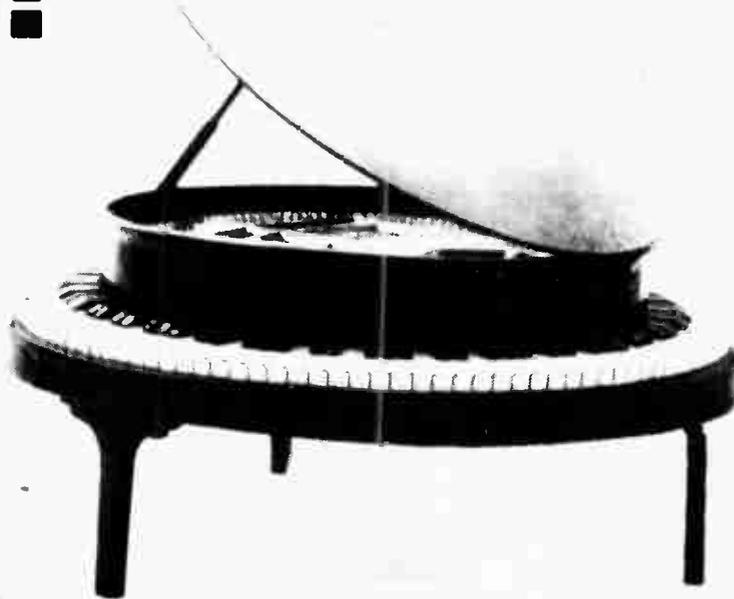
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**Basic Specifications:** Input: Standard: 10K ohms unbalanced, 1/4" phone connectors.  
Canon style connectors as well as phone connectors.  
Max input before clipping unlimited, depends on input level control setting for unbalanced inputs.  
8.7 VRMS (+21 dBm) balanced inputs.  
Output: 50 ohms output impedance, unbalanced, at each output.  
Maximum output level of 8.7 VRMS +21 dBm into minimum terminating impedance of 2.5K ohms.  
Gain: Maximum available 8 dB.  
S/N Ratio: 101 dB (noise measurement unweighted DC to 80 KHz.)  
Distortion: .01% THD measured at 1 KHz at +20 dBm output.  
Dimensions: 1 1/4" H x 19" W x 8" D, Rack-mountable; Weight: 8 lbs.  
**Suggested List Price: \$245.00**

#### IMAGE FORMATIONS

##### DIGITAL TIMER

P.O. Box 4227, Burbank, CA 91503  
(213) 980-2451

Contact: Al McPherson, George Lydecker.

Date Product Introduced: May 1979.

**Product Description and Applications:** The digital time clock offers a six digit readout. It can upcount or downcount from zero or any other time, which can be preset with the use of front panel thumbwheel switches. The clock also offers a compare register and will present a logic flag when the time in the clock and the register are equal.  
**Suggested List Price: \$895.00**

#### INOVONICS, INC.

##### ASSEMBLY 163000—X-Y INTERFACE MODULE

503-B Vandell Way, Campbell, CA 95008  
(408) 374-8300

Contact: J. Wood, Sales Manager.

Date Product Introduced: November 1979.

**Product Description and Applications:** An add-on module for the Inovonics Model 500 Acoustic Analyzer which facilitates a "hard copy" printout of real-time or reverb-time analyses on any X-Y recorder with a DC input.  
**Suggested List Price: \$395.00**

#### INTERLAKE AUDIO INC.

##### RWO/FOSTEX T10 HEADPHONES

935 Ingersoll St., Winnipeg, Manitoba, Canada R3E 2L8  
(204) 668-0248

Contact: Ted R. Telesky, Sales Manager.

Date Product Introduced: November 1979.

**Product Description and Applications:** Studio quality headphone featuring the RP principle. The RP system consists of a light mylar diaphragm with the coil etched directly on it with the entire membrane suspended in a magnetic field. The very light mass results in phenomenal transient attack and very low distortion. The sonic benefits of an electrostatic with the reliability of a dynamic. Requires no external supplies or junction boxes. Suitable for any application where quality is of prime consideration, including studio, broadcast, etc.

**Basic Specifications:** Impedance: 50 ohms.

Sensitivity: 91 dB at 1mW input.

Max power: 200 mW.

Response 20 to 25,000 Hz.

**Suggested List Price: \$39.95**

#### INTERLAKE AUDIO INC.

##### RWO/FOSTEX T20 HEADPHONES

935 Ingersoll St., Winnipeg, Manitoba, Canada R3E 2L8  
(204) 668-0248

Contact: Ted R. Telesky, Sales Manager.

Date Product Introduced: November 1979.

**Product Description and Applications:** Studio quality headphone featuring the RP principle. The RP system consists of a light mylar diaphragm with the coil etched directly on it with the entire membrane suspended in a magnetic field. The very light mass results in phenomenal transient attack and very low distortion. The sonic benefits of an electrostatic with the reliability of a dynamic. Requires no external supplies or junction boxes. Suitable for any application where quality is of prime consideration, including studio, broadcast, etc.

**Basic Specifications:** Impedance: 50 ohms.

Sensitivity: 96 dB at 1mW input.

Max power: 200 mW.

Response 20 to 30,000 Hz.

**Suggested List Price: \$49.95**

#### INTERLAKE AUDIO INC.

##### RWO/FOSTEX T30 HEADPHONES

935 Ingersoll St., Winnipeg, Manitoba, Canada R3E 2L8  
(204) 668-0248

Contact: Ted R. Telesky, Sales Manager.

Date Product Introduced: November 1979.

**Product Description and Applications:** Studio quality headphone featuring the RP principle. The RP system consists of a light mylar diaphragm with the coil etched directly on it with the entire membrane suspended in a magnetic field. The very light mass results in phenomenal transient attack and very low distortion. The sonic benefits of an electrostatic with the reliability of a dynamic. Requires no external supplies or junction boxes. Suitable for any application where quality is of prime consideration, including studio, broadcast, etc.

**Basic Specifications:** Impedance: 50 ohms.

Sensitivity: 96 dB at 1mW input.

Max power: 200 mW.

Response 20 to 35,000 Hz.

**Suggested List Price: \$69.95**

#### INTERLAKE AUDIO INC.

##### RWO/FOSTEX T50 HEADPHONES

935 Ingersoll St., Winnipeg, Manitoba, Canada R3E 2L8  
(204) 668-0248

Contact: Ted R. Telesky, Sales Manager.

Date Product Introduced: November 1979.

**Product Description and Applications:** Studio quality headphone featuring the RP principle. The RP system consists of a light mylar diaphragm with the coil etched directly on it with the entire membrane suspended in a magnetic field. The very light mass results in phenomenal transient attack and very low distortion. The sonic benefits of an electrostatic with the



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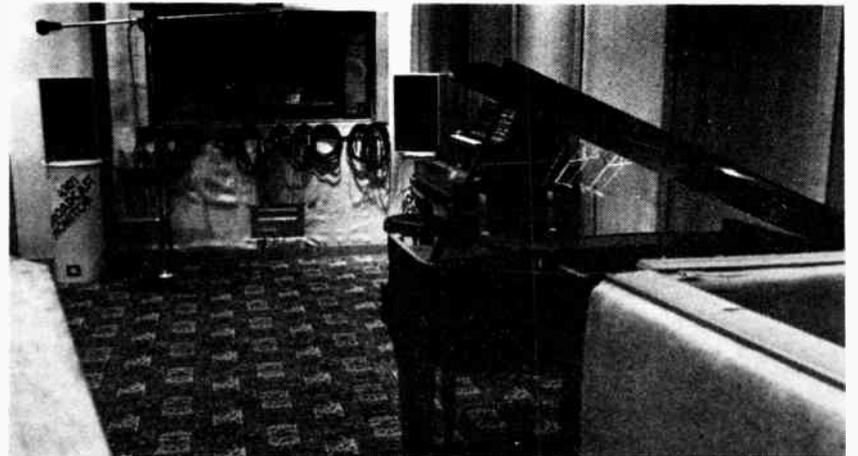
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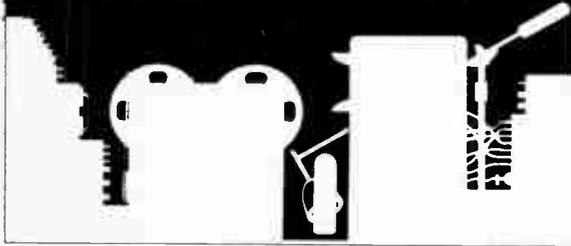


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reliability of a dynamic. Requires no external supplies or junction boxes. Suitable for any application where quality is of prime consideration, including studio, broadcast, etc.

**Basic Specifications:** Impedance: 60 ohms.  
Sensitivity: 94 dB at 1mW input.  
Max power: 200 mW.  
Response 20 to 20,000 Hz.  
Suggested List Price: \$99.95

**JBL**  
8502 MIXER/AMPLIFIER  
8500 Balboa Blvd., Northridge, CA 91329  
(213) 893-8411

Contact: Ron Means, Prof. Division Manager.  
Date Product Introduced: November 1979.

**Product Description and Applications:** The JBL 8502 combines an eight-input (six microphone and two line level) mixer with a high power, single-channel amplifier. Each input accepts an unbalanced, high-impedance signal. An optional, plug-in transformer converts it to balanced low impedance. The line inputs are unbalanced, high impedance, and may be converted to balanced low impedance with accessory plug-in transformers. One input may be internally switched to RIAA phono characteristics, and a pair of RCA-type jacks on the rear panel permits a stereo source to be fed to this input. The 8502 can be mounted in five standard EIA rack spaces.  
Suggested List Price: \$1158.00

### LOGICAL SYSTEMS & INSTRUMENTS

8401 DYNAMIC NOISE FILTER  
3314 H Street, Vancouver, WA 98663  
(206) 894-7905

Contact: Roger Cota, Design Engineer.  
Date Product Introduced: January 1980.

**Product Description and Applications:** Removes hiss and rumble from existing material. Cleans up tape radio reception and records. Eliminates noise with no audible effect on music. Connects to preamp or receiver. Tri-color LED display lets you see the filter action.  
**Basic Specifications:** Hiss reduction 15 dB at 10 KHz.  
Rumble reduction 20 dB at 10 Hz.  
Suggested List Price: \$289.00

### LOGICAL SYSTEMS & INSTRUMENTS

1081 REAL TIME AUDIO ANALYZER (KIT)  
3314 H Street, Vancouver, WA 98663  
(206) 894-7905

Contact: Roger Cota, Design Engineer.  
Date Product Introduced: January 1980.

**Product Description and Applications:** 81 LED's form a picture of any audio signal you wish to see. Enables you to visually analyze the content of many audio sources. Sell as assembled unit and as complete kit.  
**Basic Specifications:** Display 81 LED's.  
Input level 1V nominal.  
Connections: Terminal block and stereo jack provided.  
Suggested List Price: \$179.00. Kit: \$295.00.

### MONSTER CABLE

MONSTER CABLE  
101 Townsend St., San Francisco, CA 94107  
(415) 777-1355

Contact: Joe Abrams, Coordinator.  
Date Product Introduced: December 1979.

**Product Description and Applications:** Monster Cable improves loudspeaker performance: the easiest and most cost effective way to improve the sonic performance of any playback system is to improve the speaker wire. Monster Cable is low capacitance, low resistance, and low inductance. 250 fine copper strands per side in a rope-like construction increase the conductive surface area and reduce "skin effect" (the phenomenon in which high frequency signals are conducted on the outside surface). Sonic improvements happen in the smoothing of the high end, unboxing of the voice/midrange and tightening of the bass.

**Basic Specifications:** Monster Cable is available in pre-cut spade lug terminated pairs of 15/15 feet, 15/25 feet, 20/20 feet and 30/30 feet. A 500 foot spool is also available for custom lengths.  
Accessories for Monster Cable are modified banana plugs to handle spade connections and gold plated versions of the spade lugs and banana plugs.

### MUSIC

RESYNATOR  
1225 N. Meridian St., Indianapolis, IN 46204  
(317) 924-1300

Contact: Don Tavel.

Date Product Introduced: January 1980.

**Product Description and Applications:** Rack mounted instrument controller synthesizer. Connects directly to any musical instrument pickup. Two microcomputers analyze musical input and send their control information to a self-contained synthesizer. Resynator is extremely easy to use. Front panel graphics and switches help select a sound, and then select how that sound will be shaped when each note is played. Resynator can be interfaced directly with delay lines, phase shifters, or other synthesizers.

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# MIX Classified

can be found on pages 82-83

**Basic Specifications:** Accepts any input signal, mic or line.  
1 volt per octave tracking on oscillators.  
12-bit digital frequency analyzer.  
8-bit micro-computerized envelope generator.  
1V per octave controlled voltage in for VCO, FXO, FCF.  
1V per octave controlled voltage out from DFA, TIM, and FXO tune.  
**Suggested List Price:** \$1,980.00

**NEAL FERROGRAPH**  
**RTS2 RECORDER TEST SET**  
662 Glenbrook Rd., Stamford, CT 06906  
(203) 348-1045

**Contact:** Richard J. Chivers, Sales Manager.  
**Date Product Introduced:** November 1979.  
**Product Description and Applications:** All-in-one test unit measuring frequency response, signal/noise ratio, distortion, cross talk, wow and flutter, drift, erasure, input sensitivity, output power, gain.  
**Suggested List Price:** \$1,475.00 net.

**NEPTUNE ELECTRONICS, INC.**  
**MODEL 2709 ONE-THIRD OCTAVE REAL TIME ANALYZER**  
934 N.E. 25th Ave., Portland, OR 97232  
(503) 232-4445

**Contact:** H.C. (Bud) Garrison, Vice President, Marketing.  
**Date Product Introduced:** January 1980.  
**Product Description and Applications:** Low cost 1/3rd octave real time analyzer with 27 1/3rd octave bands of display, 40 Hz to 16 KHz on ISO centers. Necessary tool for the sound man to rapidly EQ any room.  
**Basic Specifications:** Features nine amplitude display steps per band. Switchable to 1 dB or 3 dB steps.  
Has internal pink noise generator and self padding balanced input. Program material is displayed when pink noise is off on 9x27 LED matrix.  
**Suggested List Price:** \$1199.00

**OPAMP LABS, INC.**  
**4-CHANNEL VIDEO DISTRIBUTION AMPLIFIER**  
1033 North Sycamore Ave., Los Angeles, CA 90038  
(213) 934-3566

**Contact:** Bel Losmandy.  
**Date Product Introduced:** January 1980.  
**Product Description and Applications:** The Model V-44 Video Distribution Amplifier consists of a Model 512 Power Supply, 4 Model 404 Video Dist. Amps mounted on a Model H-5V Chassis. The back panel has a loop thru BNC input connection, and 4 output BNC connectors for each of the 4 channels.  
**Basic Specifications:** Specs per channel: DC to 8 MC ( $\pm 2$  dB); DC to 4.2 MC ( $\pm 1$  dB).  
Diff gain: 0.1%; Diff phase: 0.2 DEG.  
Tilt and overshoot:  $\leq 1\%$ .  
Hum & noise:  $-60$  dB.  
Isolation:  $\geq 40$  dB at 3.58 MC.  
Size: 1 1/4" H x 19" W x 6" D, Weight: 5 lbs.  
**Suggested List Price:** \$400 wired, \$290 kit.

**OPAMP LABS, INC.**  
**MODEL A-45 4-CHANNEL AUDIO DISTRIBUTION AMPLIFIER**  
1033 North Sycamore Ave., Los Angeles, CA 90038  
(213) 934-3566

**Contact:** Bel Losmandy.  
**Date Product Introduced:** January 1980.  
**Product Description and Applications:** The Model V-45 Audio Distribution Amplifier consists of a Model 520 Power Supply, 4 Model 425 Video Dist. Amps mounted on a Model H-5A Panel Chassis. The back panel has four 8-terminal barrier strips for input-outputs. There is one electronic balanced input and five unbalanced output for each of the 4 channels.  
**Basic Specifications:** Specs per channel: Balanced (electronic) input impedance: 20K ohms.  
Frequency response: 20Cy to 20 KC ( $\pm 1$  dB).  
Gain: Unity (0 dBm).  
Output Impedance: (100 ohms) for 600 ohm load.  
Output level:  $+22$  dBm.  
Input Impedance: 10K ohms.  
Size: 1 1/4" H x 19" W x 6" D, Weight: 5 lbs.  
**Suggested List Price:** \$400 wired, \$290 Kit.

**OPAMP LABS, INC.**  
**MODEL 404 VIDEO DISTRIBUTION AMPLIFIER**  
1033 North Sycamore Ave., Los Angeles, CA 90038  
(213) 934-3566

**Contact:** Bel Losmandy.  
**Date Product Introduced:** December 1979.  
**Product Description and Applications:** The Model 404 Video Distribution Amplifier has one input and four outputs in-phase for use in video duplication, CCTV, school, security, and broadcast quality applications. It may also be used for subcarrier and pulse distribution.  
**Basic Specifications:** DC to 8 MC ( $\pm 2$  dB); DC to 4.2 MC ( $\pm 1$  dB).  
Diff gain: 0.1%; Diff phase: 0.2 DEG.  
Tilt and overshoot:  $\leq 1\%$ .  
Hum & noise:  $-60$  dB.  
Isolation:  $\geq 40$  dB at 3.58 MC.  
Octal plug-in: 1" dia, x 2" H; Weight: 2 oz.  
**Suggested List Price:** \$35.00

**PANASONIC PROFESSIONAL AUDIO DIVISION**  
**RAMSA/PANASONIC WS-731 DIVIDING NETWORK**  
50 Meadowlands Parkway, Secaucus, NJ 07094  
(201) 348-7444

**Contact:** Paul Ackel, Engineering Coordinator.  
**Date Product Introduced:** August 1980.  
**Product Description and Applications:** Dividing network for two way speaker system. Power capacity of 150 watts continuous program power. Cross over frequency of 900 Hz. Low cut off attenuator of  $-12$  dB/oct. With attenuator for high frequency range. Easily mounted into a speaker enclosure.  
**Basic Specifications:** Power capacity: 150 watts continuous program power.  
Cross over frequency: 900 hz.  
Impedance: 8 ohms.  
High frequency attenuation: Continuously variable.  
Dimensions: 19 x 19 x 16 cm (7.5" x 7.5" x 6.3"). Weight: 2.8 kg (6.17 lbs.).  
**Suggested List Price:** \$180.00

**RTS SYSTEMS, INC.**  
**MODEL 405 PROFESSIONAL 2-CHANNEL PHONO PREAMPLIFIER.**  
1100 W. Chestnut St., Burbank, CA 91506  
(213) 843-3232

**Contact:** Shelly Bunnett, Sales Administrator.  
**Date Product Introduced:** January 1980.  
**Product Description and Applications:** The Model 405 is an important tool for professional installations requiring a phono preamplifier capable of high fidelity and the ability to drive balanced lines. Its features include: 110V/240V 50/60 Hz operation, adjustable R&C termination, rack mount, transformer coupled outputs, hi-fi outputs on RCA pin jacks.  
**Suggested List Price:** \$345.00

**RTS SYSTEMS, INC.**  
**MODEL 424 1 X 4 AUDIO DISTRIBUTION AMPLIFIER**  
1100 W. Chestnut St., Burbank, CA 91506  
(213) 843-3232

**Contact:** Shelly Bunnett, Sales Administrator.  
**Date Product Introduced:** January 1980.  
**Product Description and Applications:** The Model 424 is designed to service professional people requiring a compact 1 x 4 audio distribution amplifier with the following features; four individual level controls and over-all master, transformer coupled line drivers, 120V/240V operation, electronically balanced input.  
**Suggested List Price:** \$354.00

**SAE PROFESSIONAL PRODUCTS GROUP**  
**AC-3 ELECTRONIC CROSSOVER**  
701 E. Macy St., Los Angeles, CA 90012  
(213) 489-7600

**Contact:** Mark Cohen, Director Pro Products.  
**Date Product Introduced:** May 1980.  
**Product Description and Applications:** 3-way electronic crossover with switchable 18 or 24 dB/octave slopes. Balanced XLR inputs and outputs. Unbalanced 1/4" phone jack inputs and outputs. Ground lift switch. Will drive more than 100 600-ohm input power amps without loading down.  $+10$  dBm gain available. Mono unit.  
**Basic Specifications:** THD, IM, SID all less than 0.05%.  
S/N better than 100 dB.  
**Suggested List Price:** Tentative price: \$450.00



Sounder Electronics, Inc.  
Custom Portable Effects System

**SOUNDER ELECTRONICS, INC.**  
**CUSTOM PORTABLE EFFECTS SYSTEM**  
21 Madrona St., Mill Valley, CA 94941  
(415) 383-5811

**Contact:** Hamilton K. Agnew, President.  
**Date Product Introduced:** 1980.  
**Product Description and Applications:** Musicians who require specialized equipment to develop their sound will be happy to learn that Sounder Electronics, the developer of the Phase Checker, also builds custom portable effects systems. Each system is designed and built to the musician's exact requirements.  
**Basic Specifications:** Since this is a custom constructed system, there is no advertised price. We work with each buyer to create a product which is within his price budget.

**STANTON MAGNETICS**  
**310 PREAMPLIFIER/EQUALIZER**  
200 Terminal Drive, Plainview, NY 11803  
(516) 349-0200

**Date Product Introduced:** January 1980.  
**Product Description and Applications:** This preamplifier features universal mounting by special brackets, instant selection of flat or NAB postemphasis curves, switchable effective rumble filter, individual adjustment of gains and high frequency responses, trimming of the capacitive cartridge loading at the input, provision for strapping power transformer for either 117 or 230V operation at 50 or 60 Hz and immunity to external magnetic AC fields.  
**Basic Specifications:** Output:  $+20$  dBm maximum.  
Frequency Response:  $\pm 0.5$  dB from 20 Hz-20 KHz in flat or NAB positions of mode selector.  
Distortion: THD  $\leq 0.05\%$  @ 20 dBm.  
Output source impedance: 5 ohms, designed for loads 150 ohms or higher.  
Gain: Adjustable 30-60 dB.  
Maximum input level @ 1 KHz: 120 mV.  
Indicators: LED pilot light.  
Size: 2 1/4" x 5" x 7 1/4" (57mm x 127mm x 184mm).



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\*Maximum power output into 8 ohm load. Power limited by load impedance. See BGW literature for details. ©1979 BGW Systems, Inc.



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Studio Maintenance Service, Inc.  
CDB-4 Direct Box

**STUDIO MAINTENANCE SERVICE, INC.**  
CDB-4 DIRECT BOX  
12438 Magnolia Blvd., North Hollywood, CA 91607  
(213) 877-3311  
Contact: David Michaels, President.  
Date Product Introduced: January 1980.  
Product Description and Applications: Provides impedance matching from electronic instrument and/or amplifier output to mic pre-amp input. Features four push button switches for 10 dB pad, 6 dB per octave filter @ 44 to 5 KHz, ground lift and phase reverse. Black anodized aluminum box, engraved, gold contacts and panel mounts available.  
Basic Specifications: Impedance ratio 20K/150.  
THD: 0.45% max @ 20 Hz, 0.017 @ 1 KHz.  
Frequency Response: -0.75 dB @ 20 Hz, -0.9 dB @ 20 KHz, (no resonance peak), -3 dB @ 40 KHz.  
Size: 4 1/8" x 3 1/8" x 2 1/8".  
Suggested List Price: \$150.00

**STUDIO MAINTENANCE SERVICE, INC.**  
CMB-4 MULT. BOX  
12438 Magnolia Blvd., North Hollywood, CA 91607  
(213) 877-3311  
Contact: David Michaels, President.  
Date Product Introduced: January 1980.  
Product Description and Applications: 1 Input, 7 outputs using 3 pin XLR type connectors. Basic application can be used for muting headphones from stereo cue amp output. Black anodized box, engraved, gold contacts, black connectors, and panel mounts available.  
Basic Specifications: Size: 4 1/8" L x 3 1/8" W x 2 1/8" H.  
Suggested List Price: \$75.00



Switchcraft, Inc.  
"Black Velvet" "Q-Q" Connector

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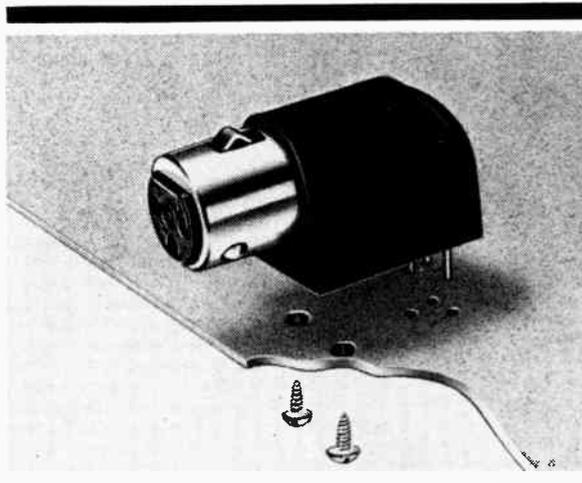
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**SWITCHCRAFT, INC.**  
**"BLACK VELVET" "Q-G" CONNECTOR**  
5555 N. Elston Ave., Chicago, Illinois 60630  
(312) 792-2700  
Contact: Ron Larson, Product Manager.  
Date Product Introduced: January 1980.  
Product Description and Applications: "Black-Velvet" textured black chrome finish cord plugs and receptacles blend with black microphones and cables. Non-reflective finish minimizes glare and "hot spots" from intense lighting on stages and in television studios. Switchcraft "Black-velvet" black chrome finish is fully conductive and assures electrical continuity through mated connectors.  
Basic Specifications: Interchangeable with Switchcraft "Q-G" and Q-GP-3 contact or 3 pin receptacles and cord plugs, and with similar connectors.  
Die cast zinc shell with textured, conductive black chrome finish. Closed entry contacts prevent "scooping" and eliminate mechanical distortion and damage.  
Available from stock in 3 pin/contacts only.  
Plugs and receptacles in 4, 5, 6 and 7 pin/contact configurations also available on special order.  
Suggested List Price: \$8.55 per mated pair.



Switchcraft, Inc.  
Right Angle "Q-G" Connector—PC Contacts

**SWITCHCRAFT, INC.**  
**RIGHT ANGLE "Q-G" CONNECTOR—PC CONTACTS**  
5555 N. Elston Ave., Chicago, Illinois 60630  
(312) 792-2700  
Contact: Ron Larson, Product Manager.  
Date Product Introduced: January 1980.  
Product Description and Applications: Right Angle "Q-G" type connector designed for PC mounting in audio mixers, consoles, PA systems, control panels, instrumentation and other high quality audio frequency applications. Detente latching for fast disconnects. "Scoop proof" contacts prevent mechanical distortion or damage. Mates with Switchcraft "Q-G" or "QGP" cord plugs.  
Basic Specifications: Right angle configuration saves space. Connector mounts and terminates directly to PC board. Stainless steel detente latch. Insert insulation maintains high electrical isolation between conductors.  
Suggested List Price: Contact factory for price and delivery.

**TELEX COMMUNICATIONS, INC.**  
**AUDIOCOM™ INTERCOM SYSTEM**  
9800 Aldrich Avenue South, Minneapolis, MN 55420  
(612) 854-4051  
Contact: Don Meehan, Director Marketing Pro Audio.  
Date Product Introduced: December 1979.  
Product Description and Applications: The Telex Audiocom is a closed circuit headset intercom system of exceptional versatility. Components may be selected for a single or multiple line intercom, suitable for small or large, indoor or outdoor, portable or permanent installations. The system provides clear two-way communications "behind the scene" at concerts and stage productions, in film or TV studios, sports stadiums and race tracks, industrial, military, public safety and security applications. The Audiocom System is designed to interface with intercom systems of other manufacture including simple interconnection with telephone type circuits.  
Basic Specifications: Audio line power level: 1 mW into 600 ohms (0 dBm). Audio line impedance: 600 ohm resistive termination for system. Line matching impedance (individual stations): Greater than 10,000 ohms nominal.  
System DC line voltage: 24 Vdc nominal, 12 to 30 Vdc operational.  
System current requirements: Portable station; 8 mA no signal, 14 mA maximum; speaker station: 15 mA no signal, 250 mA maximum.  
Wiring requirements: 3/c cable (triple) or 2/c shielded microphone cable.  
Operating Distance: Typical two station system with single 24 Vdc power supply, 5 mile, No. 20 AWG wiring.

**WAGNER AUDIO SYSTEMS**  
**SPECIALIZED AUDIO AND RELATED EQUIPMENT**  
434 Charlotte Ave., N.W. Grand Rapids, MI 49504  
(616) 453-1271  
Contact: John R. Wagner.  
Product Description and Applications: Specialized audio equipment designed and manufactured to customer requirements. Sample: Bandpass filters with super steep cutoff curves; condenser microphones with vacuum-tube head amplifiers and negligible roll-off into the subsonic region.

**WESTREX**  
**RA-1558B LIGHT BAR RECORDING METER**  
2629 W. Olive Ave., Burbank, CA 91505  
(213) 848-3364  
Contact: F.E. Pontius, Vice President, Marketing.  
Date Product Introduced: January 1980.

Product Description and Applications: Giant recording meter from Westrex. Westrex has introduced a 3 1/2 ft. long light bar recording meter for studios and dubbing theatres. The RA-1558B measures audio signal with twenty sequentially-lit color bars. The unit operates in three modes: VU, peak, or VI, and may be used vertically as well as horizontally.  
Basic Specifications: Input level as low as -20 dBm (600 ohm line) is sufficient to drive the RA-1558B.  
Accuracy is ±0.25 dB from top bar to bottom bar (40 dB range).  
Frequency response: 30 Hz to 20,000 Hz, ±0.25 dB.  
Individual light bars measure 1 1/4" x 5 1/4".  
Unit's overall size: 10 1/2" H x 42" L x 1 1/4" D.  
Suggested List Price: \$2,300.00 each.

**WHIRLWIND MUSIC DIST., INC.**  
**MEDUSA SPEAKER SNAKES**  
P.O. Box 1075, Rochester, NY 14603  
(716) 663-8820  
Contact: Michael N. Lalacona, President.  
Date Product Introduced: December 1979.  
Product Description and Applications: Single wire harness containing multiple conductors (heavy gauge cable) for transmitting multiple speaker sends from power amplifiers to speaker enclosures. Eliminates need for individual wiring of each speaker.

**WHIRLWIND MUSIC DIST., INC.**  
**MEDUSA 42**  
P.O. Box 1075, Rochester, NY 14603  
(716) 663-8820  
Contact: Michael N. Lalacona, President.  
Date Product Introduced: December 1979.  
Product Description and Applications: Basic configuration: 100' cable, 36 miles in, 6 sends. Multiple wiring in studio and on stage. Cable available in bulk or w/custom plug configurations and multiple 50' lengths. Options: "Quick Connect" multi-pin connectors at stage or board end and as cable interconnects, parallel wired jacks for greater individual line flexibility, and impedance matching line transformer.  
Basic Specifications: Rugged cast aluminum boxes, riveted chassis mounted jacks, wire mesh strain reliefs.  
Each lead at console end reinforced at stress points and provided with "in-line" cable grips and Neoprene heat shrink jackets.  
Uses Belden individually shielded, multiple pairs twisted cable with a tough jacket.

**WIREWOKS CORPORATION**  
**MULTITRUNK/MICROPHONE MULTICABLE COMPONENTS GROUP**  
380 Hillside Ave., Hillside, NJ 07205  
(201) 686-7400  
Contact: Larry J. Williams, Sales Manager.  
Date Product Introduced: December 1979.  
Product Description and Applications: Multitrunks, part of the Multicable Components Group, are the main or extension cable sections which are basic to all multicable system configurations. A specified length of Multipair cable is terminated on both ends with AMP Multipin connectors (one male and one female).  
Basic Specifications: Multitrunks are stocked in 25', 50', 100', 150', 200', and 250' lengths in 3, 6, 9, 11, 15, 19, 27, 36, and 50 pair sizes.  
Suggested List Price: Range from \$129.00 to \$3041.00.

**WIREWOKS CORPORATION**  
**CABLING EQUIPMENT AND ACCESSORIES**  
380 Hillside Ave., Hillside, NJ 07205  
(201) 686-7400  
Contact: Larry J. Williams, Sales Manager.  
Date Product Introduced: December 1979.  
Product Description and Applications: Low impedance, professional microphone cables now available in 5 jacket types: rubber, miniature rubber, Hypalon, Neoprene and 15 colors of PVC: black, blue, brown, bronze, green, grey, lt. blue, metallic blue, orange, pink, red, tan, violet, white and yellow. All are complete assemblies featuring Switchcraft QG Series XLR-type connectors.  
Basic Specifications: All cables are stocked in 5', 10', 25', 50' and 100' lengths available for immediate delivery.  
Suggested List Price: Range from \$11.00 to \$78.50.

**WOELKE MAGNETBANDTECHNIK**  
**ME108/E WOW/FLUTTER METER**  
Munich, W. Germany  
Contact: Claude Hill, President, Audicon, Inc.  
Exclusive US and Canada agents.  
1200 Beechwood Ave, Nashville, TN 37212  
(615) 256-6900, Telex 554494  
Date Product Introduced: May 1980.  
Product Description and Applications: The new ME108/108E Quartz series is the result of Woelke pioneering and experience in specialized measuring equipment, marrying quartz accuracy with Woelke quality. Compact, lightweight and easy to handle, the ME 108 Quartz is designed to be compatible in both function and form with our accessory units, the Wave Analyzer ME301C/302 and the Flutter Classification Unit ME201.  
Basic Specifications: Test frequency: 3150 Hz crystal controlled. Input signal: 30 mV-30V (no selecting required).  
Ranges: Drift: ±0.5% to ±5%; flutter: ±0.1% to ±3%.

**WOELKE MAGNETBANDTECHNIK**  
**ME110/E WOW/FLUTTER METER**  
Munich, W. Germany  
Contact: Claude Hill, President, Audicon, Inc.  
Exclusive US and Canada agents.  
1200 Beechwood Ave, Nashville, TN 37212  
(615) 256-6900, Telex 554494  
Date Product Introduced: May 1980.  
Product Description and Applications: The new ME110 series demonstrates our enterprise and vast experience in the field of wow and flutter meters by applying Woelke excellence to disc and cassette measurement. Measuring accuracy attained when measuring wow and flutter in practice is decisively increased by the use of Woelke cassettes and test discs; i.e. "very good" reproducers can now be distinguished from "good" ones.  
Basic Specifications: Test frequency: 3150 Hz. Input signal: 30 mV-30V.  
Ranges: Drift: ±5%; flutter: ±0.01% to ±1%.

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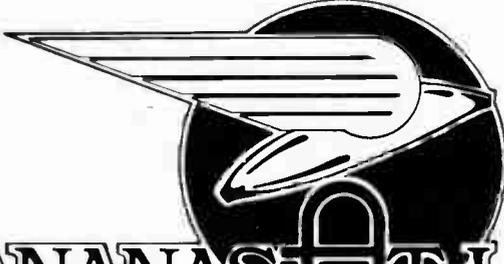
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# feedback

Dear Mix,

We feel that the Mix is a very worthwhile publication because it reaches the studio AND the client. We attempt to educate our clients in recording, for they need to know what is really professional. The more they learn, the better it is for us. They then can see the difference between a garage-type setup and a pro. We want them to see that what we have to offer is important. The Mix is a part of that source of information.

Steve Mullinix  
The Sound Room  
Port Oglethorpe, Georgia

Dear Mix

Several weeks ago we submitted data on our new 8 track studio for publication in the Mix Studio Listings section. At that time the studio was still under construction and the questionnaire got lost in the

shuffle. In order to get the questionnaire submitted before deadline it was somewhat of a rush job to complete it and send it off Air Express.

While our equipment complement, studio dimensions, etc. are accurate there is some concern whether or not we stated that the studio was LEDE. We spent a lot of design time to achieve a tapered acoustic environment, live at the front and gradually diminished reverberation time towards the back, and for lack of a better terminology LEDE may have been used to describe it.

We were unaware that this term is a protected trademark of Syn-Aud-Con for a specific design and that the use of it to describe the room is only permitted after testing by a licensed technician using TEF data/measurements. We want to strike the description LEDE from our application if it was used and acknowledge that Syn-Aud-Con had no part in the design of the studio whatsoever.

Our intention was to distinguish our room as hav-

ing planned acoustics rather than the "carpet on all planes" approach of some others. The choice of LEDE as a description of what we did to the room may have been an unfortunate misnomer and we apologize to Don Davis for it if we used the term.

Steve Manes  
Firehouse Recording  
New York, N.Y.

Dear Mix,

In reference to your article on Different Fur Studios, (Jan. '80, Vol. 4, No. 1).

To set the record warped, the "scathing punk put-down of Jerry Brown", "California U ber Alles" by Dead Kennedys was recorded at Army Street Studios and engineered by Jim Keylor.

Lester Gass  
B.S.U. Productions S.F.



# AD INDEX

Advanced Audio	65
Alco Pro Sound	74
Alshire	75
Ampex Corporation	3
Aphex Systems	15
A&S Cases	45
Ashly Audio	35
Automatt	45
Ayre Studio	79
Bananas At Large	81
BGW Systems	77
Burns Audiotronics	27

Chips Davis	69
dbx, Inc.	13
DeltaLab Research	43
Different Fur	73
Eber Electronics	36
Everything Audio	2
Express Sound Co.	32
Films for the Humanities	21
HUN Sound	65
JBL	11
Jerry Jacob + Companies	78
Larksong Tapes	72
Lexicon	59
Marshall Electronic	47
M.I. Magazine	85
MICMIX Audio Co.	51
Musico	60
MXR Innovations	4
Neumann	55
Orban Associates	47
Otari Corporation	87
Peavey Electronics	37

Programming Technologies	35
Quad/Eight	25
Recording Industry Mgt. Prog.	78
Sound Francisco	71
Sound Genesis	19,51,67
Sound Technology	31
Sound Workshop	28,29
Speck Electronics	53
Studer Revox	9
St. Regis & Leuenberger	71
Suntronics	51,63,77
Taber	69
Tangent Systems	58
TDK Electronics	7
TEAC	39
3M Mincom	back cover
3M Tape	57
Tres Virgos Studio	84
U.R.E.I.	79
Vision Sound	48,49
Whirlwind	86
White Instruments	75

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# Three hours set-up time. Four amps, a bunch of mics, monitors, etc...and what did you get? Spaghetti.



Now you're laughing. But maybe the fact that you can relate to this picture means something. Chances are that if you've ever played in a band, engineered, or had the pleasure of setting up equipment you probably know this scene all too well. The fact is, though, it's not funny when you consider that the group's livelihood depends on that equipment. And when you think of all the money you spent on mics, amps, monitors, and the rest of it, you can get sick. It's too bad, but the entire system is no stronger than its weakest link.

As the complexity of your music system increases so can your headaches. The overall success of your show can be jeopardized by bad connectors, cables and a big mess on stage. And what about the time element? A well organized act not only looks but sounds better. Being efficient saves time, and that saves money.

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mance and reliability. They are available in nine basic configurations or custom made to your specifications for flexibility.

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## whirlwind

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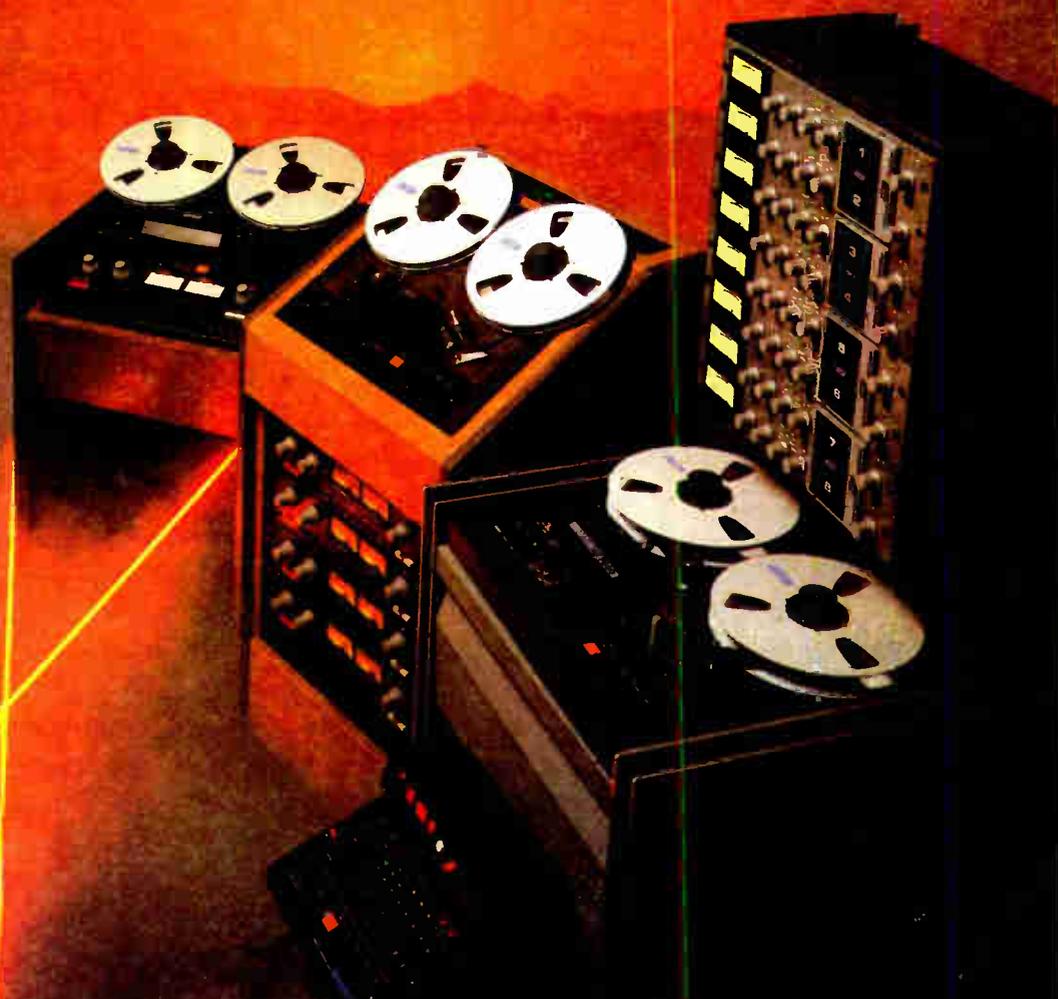
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