SERVING THE CREATIVE AUDIO AND MUSIC ELECTRONICS INDUSTRY

SOUND ARTS

MERCHANDISING JOURNAL

$2.00

VOL. 3 NO. 5
JUNE 1980

MAKING SENSE OF WARRANTIES

SELLING FOR THE STUDIO OF 1990

WHAT WAS SEEN AT AES—L.A.

EXPRESSION

MXR Innovations, Inc., 740 Driving Park Avenue, Rochester, New York 14613, (716) 254-2910

OUR ADVERTISERS ARE THE MOST IMPORTANT PEOPLE IN THE INDUSTRY. SO WHEN YOU GET TO CHICAGO . . .

VISIT WITH

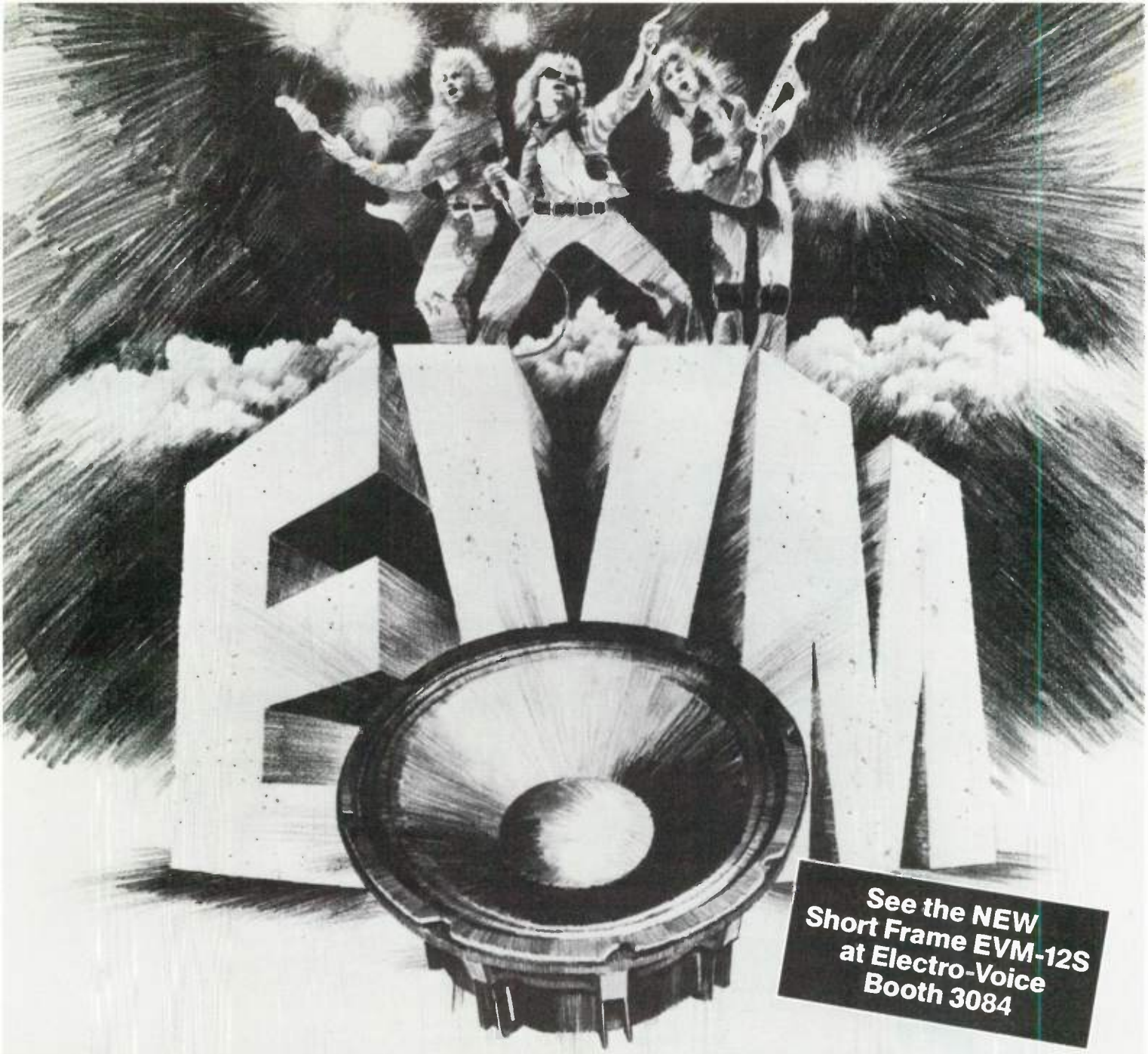
THE "STARS OF THE SHOW"

- **ADVANCED AUDIO DESIGN** NAMM 1060
- **ASHLY AUDIO** NAMM 1076
- **BOSE** NAMM 5001
- **BURNS AUDIOTRONICS** NAMM 6111
- **CALZONE CASES** NAMM 7000
- **CETEC/GAUSS** NAMM Lobby Room #7
- **COMPUTONE** NAMM 101
- **CREST** NAMM 836
- **dbx** CES 328, 330, 332, 334 NAMM 415
- **DELTALAB RESEARCH** NAMM 126
- **DIMARZIO** NAMM 501
- **DOD** NAMM 6087
- **ELECTRO-VOICE** CES 1-1, 1-2 McCormick Inn NAMM 3084
- **ESS** NAMM 326
- **JBL** CES 2-8, 2-9 McCormick Inn NAMM 4090
- **MAXELL** CES 610
- **MUSIC TECHNOLOGY** NAMM 3091
- **MXR** CES 2-34 McCormick Inn NAMM 3014
- **NEPTUNE** NAMM 6081
- **OBERHEIM** NAMM 3103
- **PEAVEY** NAMM 4069
- **SOUNDCRAFTSMEN** CES 722
- **SOUNDER** NAMM 925
- **TDK** CES 606 NAMM 3057
- **TEAC** CES 708 NAMM 3057
- **TECHNICS** CES 414
- **WHIRLWIND** NAMM 2044

Also . . .

stop by and visit us at SOUND ARTS at NAMM in Booth 1064 and Subscribe, Renew or Give SOUND ARTS as a gift to someone and receive a free "Get Smart" four color T-Shirt. (6.98 value)

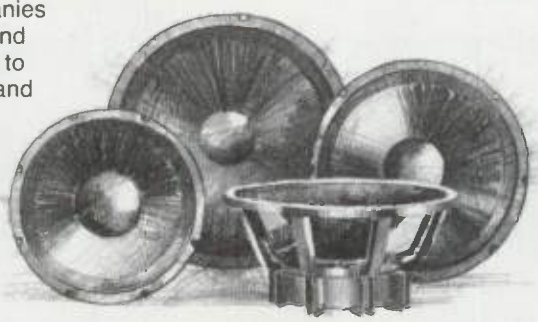

CHICAGO
IN
JUNE!!!
VISIT
WITH
THE
STARS...



EVM™-your last step up!

Electro-Voice EVM loudspeakers will take you as far as you'll ever want to go! Years of experience, testing and design refinement have resulted in a series of speakers that musicians "like." There's no other way to say it. The sound is predictable. Throw all the phasers, flangers and doublers you want at an EVM; the sound you get out is the sound you *expect* to get out. That's why companies like Fender, Music Man, Acoustic and others have been quietly switching to EVM's in their premier instrument and sound reinforcement enclosures.

The speaker itself exudes power and energy! The 16-pound magnet structure, the die-cast aluminum frame, the heavy-duty moving parts assembled by a perfected, proprietary manufacturing process – all combine to produce a speaker with incredibly high power handling capability, efficiency, and mechanical durability. All EVM's are rated at 200 continuous watts per EIA Standard RS-426. Musicians have come to know that EVM's handle that kind of power *routinely*. That's the kind of reliability many other speaker companies wish for – the kind of reliability that will have you looking for an EVM when your old speaker has ripped, torn or fried to a crisp.



The next time you build or reload a system, put in EVM's. They are available in three sizes and four models – a 12," two 15"'s, and an 18" – for screaming leads and bass lines that'll knock you over. If you put EVM's in your cabinets, it'll probably be the last time you'll ever have to load them.

Hear the new Short Frame EVM-12S at booth 3084.

Ev® Electro-Voice®
a gulton company
600 Cecil Street, Buchanan, Michigan 49107

CIRCLE 90 ON READER SERVICE CARD

"GOOD SOUNDS" from DeltaLab

Strawberry South Speaks Out!

Eric Stewart of 10 c.c.

STRAWBERRY RECORDING STUDIOS SOUTH

Strawberry Recording Studios South, 61 South Street, Dorking, Surrey. Tel: STD (0306) 87852/3

J. Camacho, Esq.,
Deltalab Inc.,
27 Industrial Avenue,
Chelmsford,
Mass. 01824.
U.S.A.

24th March 1980

Dear Jim,

Congratulations! you've certainly come up with a winner with your Acousticomputer. It is one of the few genuinely new audio signal processors to appear for a long time, as it affords the engineer a precise yet very versatile control on ambience through the entire range from a single repeat to a very smooth and full sounding reverberation; and after six weeks we're still finding new sounds and effects from the unit.

Its nice to find people who share our feelings for quality and innovative approach.

Eric Stewart and Tony Spath

Tony Spath
Head Engineer & Studio Manager

Strawberry Recording Studios South is owned and operated by 10 c.c.

DeltaLab **DeltaLab Research, Inc.**

27 Industrial Ave., Chelmsford, MA 01824 (617) 256-9034 - Telex # 951205

CIRCLE 82 ON READER SERVICE CARD

VOL. 3 NO. 5

SERVING THE CREATIVE AUDIO AND MUSIC ELECTRONICS INDUSTRY

SOUND ARTS

MERCHANDISING JOURNAL

JUNE 1980

CONTENTS

THE FEATURES

THE STAPLES

Cover art by Fran Vitrano

Sound Arts Merchandising Journal (USPS 410-410) is published monthly by Sound Arts Merchandising, Inc., 220 Westbury Ave., Carle Place, NY 11514. Controlled circulation postage paid at Hanover, New Hampshire 03755. Subscription rates: $18.00 for 12 issues; $26.00 for 24 issues. Add $7.00 per year for subscriptions outside of U.S. Subscriptions must be paid in American currency. Postmaster: Send Form 3579 to Sound Arts Merchandising Journal, 220 Westbury Ave., Carle Place, NY 11514.

COMING NEXT ISSUE!

Before You Buy — What the Retailer Should Know About Computers
Making Sense of the Warranty. . . , Part 2

SERVING THE CREATIVE AUDIO AND MUSIC ELECTRONICS INDUSTRY
SOUND ARTS
MERCHANDISING JOURNAL

Editorial and Executive Offices
Sound Arts Merchandising Journal
220 Westbury Avenue
Carle Place, NY 11514
516-334-7880

Editorial contributions should be addressed to The Editor, Sound Arts, 220 Westbury Avenue, Carle Place, NY 11514. Unsolicited manuscripts will be treated with care and must be accompanied by return postage.

A LETTER FROM THE EDITOR

Just about a month ago, our publisher, Vincent Testa, sent a letter to our advertisers updating them on where we are and where we are going. Because we feel close to the readers of SOUND ARTS, I thought it would be fitting to reprint that letter so all our readers could see it. To elucidate some points: Vinny Testa was the founder and publisher of Modern Recording magazine (which he later sold to Cowan Publishing Corp.). Some of you may not realize that *Pro Sound News*, the newsmagazine for the professional recording and sound industry, is part of our current company, as is the Recording Institute of America. The following letter tells more.

Dear Friends,

We've Moved. Yes, we've moved—for at least five years with an option on the building. We're in Carle Place, New York (national headquarters for Avis and next door to Doubleday's Garden City). The nice people at Nakamichi leased us the top floor of the building they occupy. Thanks to their good taste in architectural design, our offices now include a full kitchen, skylight and recording studio (for the moment, alas, unequipped). The larger space offers us an opportunity to have our own in-house art and production department to service both *Pro Sound News* and *Sound Arts* and of course our upcoming new consumer magazine. *So we've been moving.*

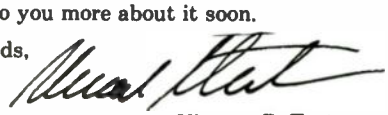
We've Been Moving. Since last October, when I resigned my relationship with Cowan Publishing, we've been on the move. I have personally been on the road visiting MI and pro sound retailers and manufacturers—meeting with customers in stores and rediscovering for myself what has been missing, while at the same time recognizing, once again, what is so good about what does exist.

It is sincerely rewarding and satisfying for me to see how important and successful Modern Recording has become. It is truly the high end audio, creative recording enthusiasts' market, just as Guitar Player *is* the guitarists' market. They both successfully accomplish their mission by delivering specialized audiences. *Core readership* is what makes them so successful and because these magazines are true to their titles, they have achieved, deservingly so, their special place in the market.

We'll Be Moving. In the next few months we will be moving on to new roads. Once again, we see an unfulfilled need in the market. This need cannot be filled by any of the existing publications, because for them to do so would seriously dilute their core readership. So, something *new, refreshing,* and *exciting is required.* Something that stands apart from all other publications. Something that fills the core need of the end user. We've found what's missing and we're moving to put what's missing back in.

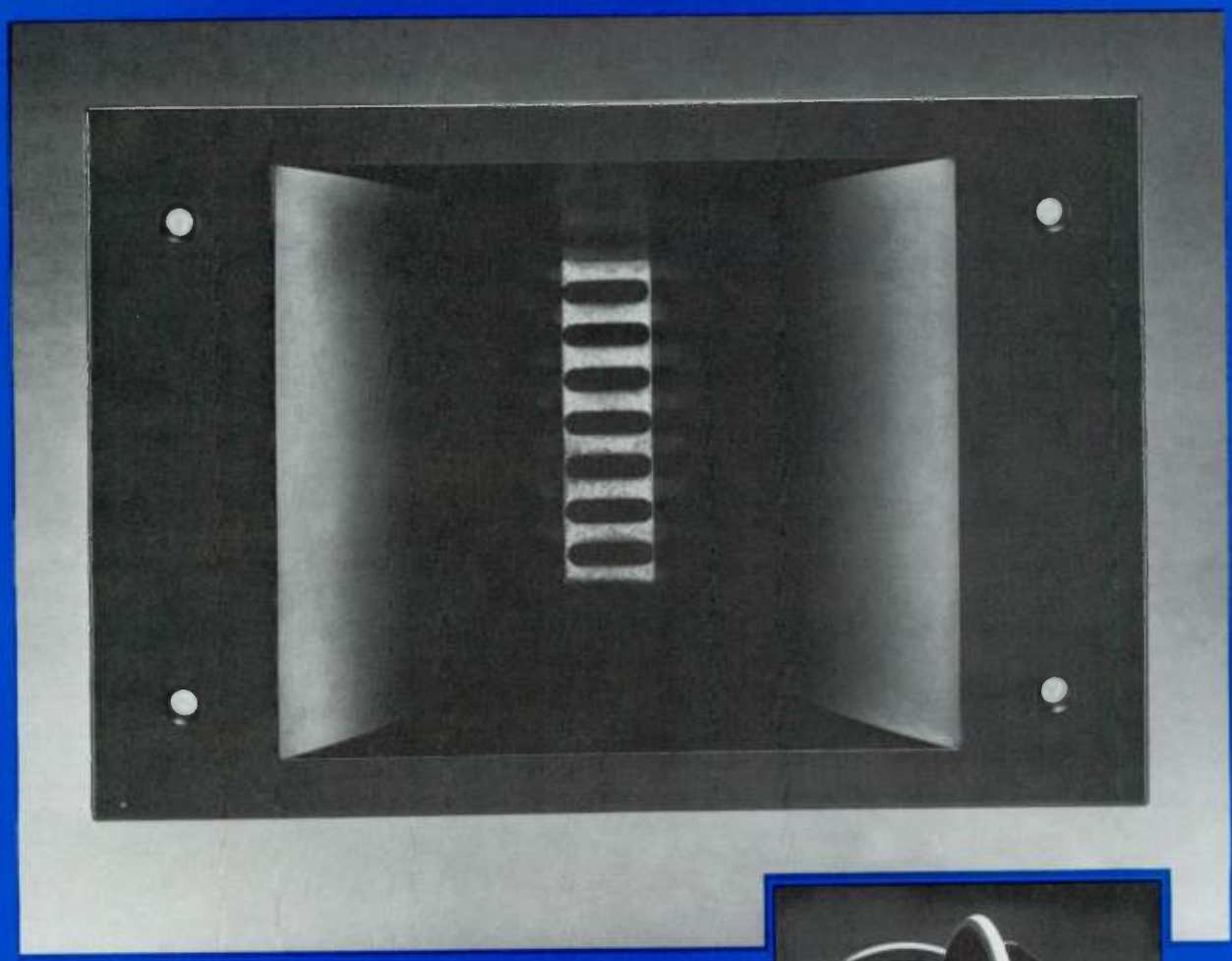
Stay tuned. Talk to you more about it soon.

Best Personal Regards,



Vincent P. Testa,
Publisher

Judith Morrison Lipton



...and now ESS Pro.

In answer to the demands of the serious professional, ESS introduces a superior catalogue of high technology sound reinforcement equipment. The initial series, focusing on products for the M.I. market, includes precision electronics, powerful low frequency and midrange transducers, plus the incomparable Heil air-motion transformer high frequency driver.

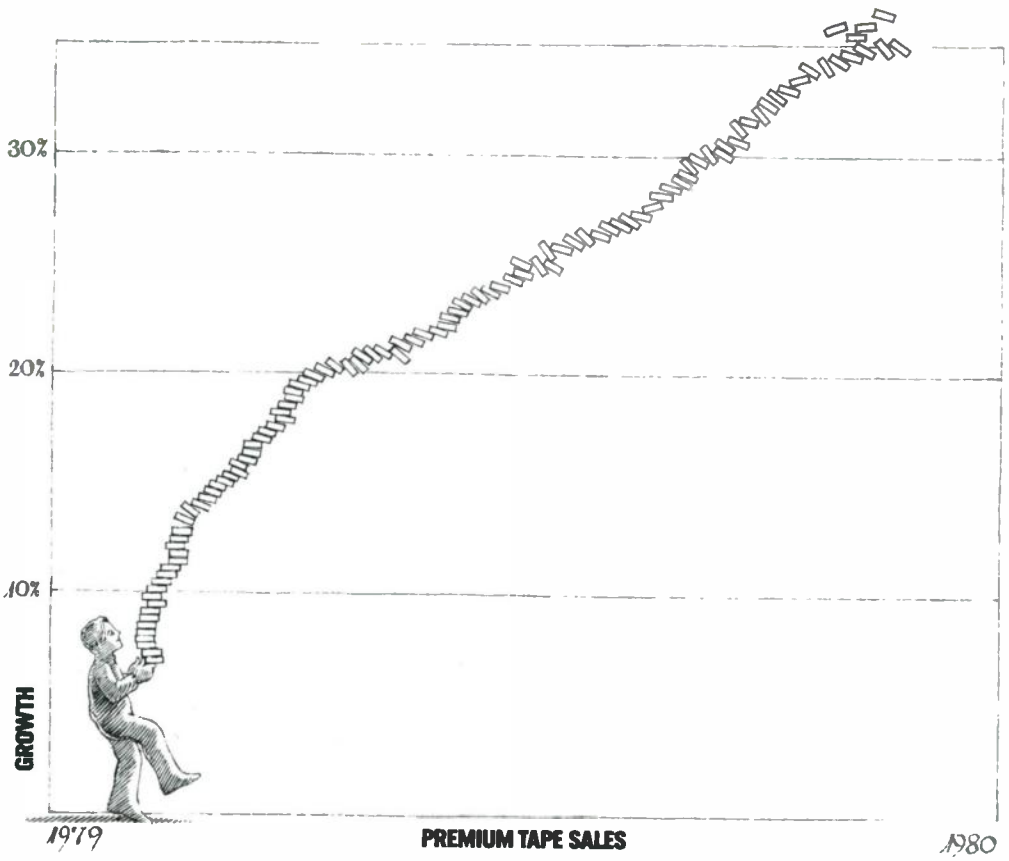
Visit us at NAMM booth 326. Experience the new standard of excellence: The ESS standard.

For complete information, telephone Ewald Consen at (213) 709-7853.

9613 Oates Drive, Sacramento, California U.S.A. 95827

CIRCLE 57 ON READER SERVICE CARD

THE ECONOMY MAY BE IN REVERSE, BUT TAPE SALES ARE STILL IN FAST FORWARD.



Blank audio cassette sales are getting to be very predictable. Every year, regardless of economic trends, it's the same old thing. Another record-breaking year.

One thing is changing though. Consumers are shifting from "cheapie" cassettes to premium. In fact, premium cassette sales enjoyed their biggest year ever in 1979 with sales of over $350 million.

As you might imagine, 1979 was also a good year for Maxell. Even in a soft economy, people will spend a little extra for a quality product.

Projected sales for 1980 indicate it'll be an even better year. Your customers will be putting even more of their money into premium cassettes like Maxell.

Maybe you should too.

IT'S WORTH IT.

Maxell Corporation of America 60 Oxford Drive Moonachie N J 07074

CIRCLE 99 ON READER SERVICE CARD

A CONTINUING INDUSTRY GLOSSARY

RECORDING

By Larry Blakely

When recording with a two-head tape recorder, you must record the entire performance before you have the opportunity to listen to the tape, *i.e.*, you must rewind the tape and place the recorder in the play mode. It is often ideal to have the ability to monitor the recorder signal off tape while you are recording to insure that the machine is actually recording as well as to listen for any of a number of other undesirable complications that could arise while making a tape recording. The two-head tape recording system *will not* provide the user with this capability.

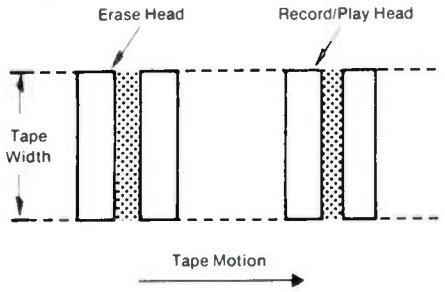


FIGURE 5. Two-Head Tape Recording System

Three-Head Tape Recording System: A tape head format that utilizes an erase head, record head, and playback head. In this system each head can have the gap optimized to perform a particular function. The erase head comes first to remove any undesired previously recorded signal. The record head comes second to record the signal. The playback head follows, which will allow the recorded signal to be played by the playback head seconds after it has been recorded. This three-head system makes it possible to monitor the recorded signal off tape while recording. The three-head tape recording system has been the choice for professional tape recorders for many years and is more expensive to manufacture than the two-head tape recording system.

ELECTRONIC MUSICAL INSTRUMENTS & ACCESSORIES

By Wayne Howe

The amplitude of each harmonic can be determined by the following expression:

$$A = 1/n \sin [n(180°)d/T]$$

where A is the amplitude of the harmonic, n is the harmonic number, and d/T is the duty cycle. D is the duration of the pulse and T is the time period, *i.e.*, for a 1:3 duty cycle, d=1 and T=3. Therefore the amplitude of the second harmonic in the 1:3 duty cycle is:

$$A = \tfrac{1}{2} \sin (2 \times 180° \times \tfrac{1}{3}) = .433$$

Notice that the multiples of the third harmonic are missing in a 1:3 duty cycle. Also, the multiples of the fourth harmonic will be missing in a 1:4 duty cycle. (See figure 11.)

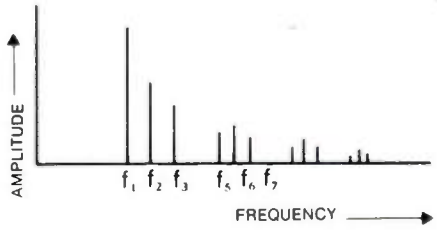


Figure 11 **1:6 Duty Cycle**

A 1:6 duty cycle excludes multiples of the sixth harmonic. (See figure 12.)

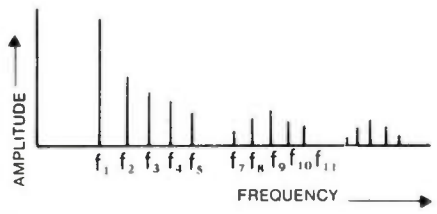


Figure 12

Variable Pulse-Width Waveform: Some synthesizers include oscillators with variable pulse-width waveforms. These oscillators can manually change the duty cycle of the pulse wave, thus creating a continuously changing spectrum of harmonics. This variation in harmonic content gives the synthesized waveform a much more "acoustic" sound. This is due to the fact that there isn't a fixed set of har-

SOUND REINFORCEMENT

By Glen E. Meyer

Specification sheets often refer to frequency response and efficiency measured in a half-space environment or in a half-space anechoic environment. This means that the low end of the speaker was measured with the speaker up against the wall or on a floor with the rest of the area being anechoic in nature. It should be noted that the low-end frequency response specification of the bass enclosure would probably be different if the system were used in another "space." The low-end might be reduced as much as 3 dB in a full-space environment and might increase as much as 3 dB in a quarter-space environment, depending on what the low frequency limits are already in the design of the box. As an example, if we move our hi-fi speakers from the center of the floor up against the wall or into the corner, the low-frequency response of the system is audibly different.

Quarter-Space Environment: Quarter-space environment would be a full-space cut into quarters by the intersection of two walls or planes. If a speaker was said to be mounted in a quarter-space environment, the system would probably be on the floor up against a wall or on the ceiling up against a wall.

Eighth-Space Environment: An eighth-space environment is when full space is cut into eight pieces by the intersection of three planes or walls. In audio, it would be like mounting the speaker system in the corner of two walls and on the floor or against the ceiling.

Vented Box Design: Now that we have defined Thiele/Small parameters, the question remains, how are they used in actual box design? Basic algebra and a decent calculator are all that would be needed for basic low signal vented box design. To perform the calculations, one needs to know the F_S(Hz), Q_{TS}, and V_{AS}(FT^3) of the driver.

A CONTINUING INDUSTRY GLOSSARY

RECORDING

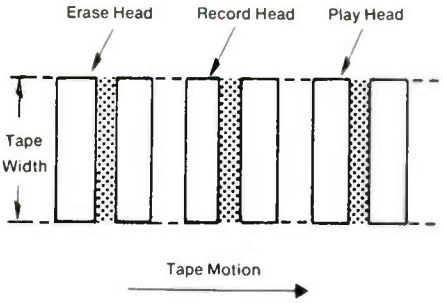


FIGURE 6. Three-Head Tape Recording System

Professional tape recorders that have the "sync" feature utilize the record head to perform both record and play functions. On most of these machines there is a lack of high frequency response in the "sync" mode. This loss of high frequency response is due to the size of the gap which is described in the two-head tape recording system. However, some tape recorder manufacturers provide additional high frequency equalization (user accessible on some models) to compensate for this high frequency loss.

Index Counter: A counter, usually with three digits, that is used to provide a reference number for tape recording. Most of these devices have a "reset button" which will bring the counter to 000. As the tape moves either forward or backward, the counter will increase or decrease proportionately. These numbers can be used to index a log sheet to aid in the finding of a particular selection. Index counters do not indicate feet of tape used, but only a reference number.

Footage Counter: Similar in almost every respect to the "index counter," with the exception that it actually indicates the number of feet of tape that has passed.

IPS (inches per second): Used for the indication of tape speed for tape recorders. This refers to the speed in "inches per second" at which the tape moves past the heads. The standard tape recorder speeds are 15/16, 1-7/8, 3-3/4, 7-1/2, 15, and 30 ips.

ELECTRONIC MUSICAL INSTRUMENTS & ACCESSORIES

monic amplitudes in the variable-width pulsewave as there are in the other synthesized waveforms.

Voltage-Controlled Variable Pulse-Width Waveform: Oscillators with this capability have a voltage-controlled input which varies the pulse-width of the waveform. Usually a very slow sine wave or triangle wave is used to drive this variable pulse-width input.

Additive Synthesis: The process by which different waveforms are generated and added or mixed together to create a total composite waveform. Additive synthesis is akin to a color TV set where the combination of the base colors can be mixed in different intensities to produce any desired color. In additive synthesis, the fundamental sine wave would be generated at a certain level while the second harmonic sine wave would be generated by another oscillator at a certain level and added to the fundamental. This additive synthesis process can go on ad infinitum with a different oscillator generating each harmonic and being mixed with all of the other harmonics. The final waveform is the additively synthesized waveform. In the early days of electronic music this is how complex waveforms were generated. However, tuning all of the oscillators was quite a time-consuming and burdensome problem (also, the cost of hundreds of oscillators was prohibitive). When the synthesist got the last oscillator tuned, he usually found that some of the middle oscillators had drifted, so he had to start tuning all over again. Because of the tuning problems, analog additive synthesis gave way rather quickly to the technique of generating high-order harmonic waveforms that were processed by using subtractive synthesis. Some manufacturers are now giving additive harmonic synthesis a comeback by using computer-aided digital techniques to generate and control each individual harmonic's frequency, amplitude and phase.

SOUND REINFORCEMENT

The driver manufacturer should be able to provide you with these parameters if they are not already contained on the engineering data sheet that comes with the unit. Knowing these parameters, you will be able to calculate the required box volume, V_B; box resonance frequency, F_B; system 3-dB down frequency, F_3; and, the magnitude (if any) of the hump or dip in the low frequency response. First, determine "optimum" volume of the box.

$$V_B(FT^3) = 15\ Q_{TS}^{2.87} V_{AS}$$

Second, is the box size acceptable? If it is okay, go to Step 3. If it is too small, go to Step 7. If the box is too large, go to Step 8.

3. Calculate the 3 dB down point, F_3:

$$F_3 = 0.26 Q_{TS}^{-1.4} F_S$$

4. Is F_3 okay? If it is low enough, go to Step 5. If it is not low enough, go to Step 7. (Remember that the driver may not ever be able to go as low as you would like.) If it's too low, go to Step 8.

5. Calculate the box resonance frequency (you will need this number to figure out the vent size):

$$F_B = 0.42\ (Q_{TS})^{-0.9} F_S$$

6. The design is completed and is an optimum Thiele alignment with no hump or dip in the response.

7. Increase the size (volume) of the box and then go to Step 9.

8. Decrease the size (volume) of the enclosure and go to Step 9.

9. Calculate the 3 dB down point of the enclosure (this is for the design that has some hump or dip in the response):

$$f_3 = f_s \sqrt{\frac{V_{AS}}{V_B}}$$

10. Is this F_3 okay? If it is okay, go to Step 11. If it is too low, go to Step 8. If it is too high, go to Step 7.

11. Calculate this box resonance frequency (needed to determine vent size):

$$f_B = \left(\frac{V_{AS}}{V_B}\right)^{0.32} f_S$$

(Continued next month.)

TEAR HERE

Eight good reasons to be a Beyer Buyer.

one The first reason is Beyer. We have fifty years experience making the world's finest microphones and headphones. And an unmatched reputation for quality, reliability and innovation. The choice of professionals everywhere.

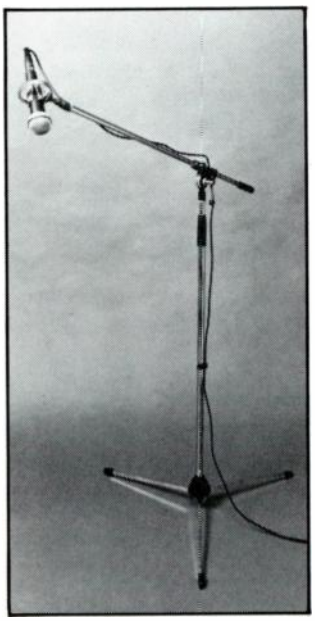
two M 160. One of the world's best-loved and most versatile microphones. Warm, soft sound favored by vocalists and musicians alike. Dual ribbon design for high strength and fast transient response.

three Beyer headphones. A full range of high quality professional models for critical monitoring and reliable communication. DT 109 combines stereo headphones and boom-mounted microphone, ideal for on-air use and disco deejays. DT 444S wireless headphone receives sound from an infra-red LED transmitter up to

300 feet away. Full 20-20,000Hz frequency response. Six hour stereo operation on rechargeable NiCad batteries.

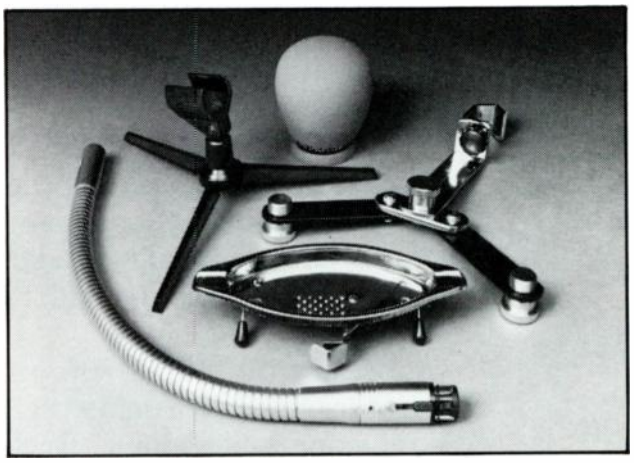
four The new M 400. A great performer's mic. Supercardioid pick-up pattern to minimize feedback. Rugged design for long life. Tapered frequency response with rising high end and rolled off lows, plus midrange presence boost. Built-in humbucking coil and pop filter. Dynamic design is unaffected by heat and humidity.

We're looking for a few more great dealers to handle the Beyer line. Contact Norm Wieland at Burns Audiotronics.



five Beyer microphone stands and booms. A full range of mic mounts for floor and desk use, with fixed and folding bases. Available with collapsible tubes for easy packing. Also heavy-duty stands for speaker cabinets.

six Beyer microphone accessories. Wind screens, impedance matching transformers, in-line switches, power supplies, wireless transmitters, stereo arms, goosenecks, clamps, thread adapters, anti-shock suspensions, and even a mic stand ashtray! The whole works. If you can use it with a mic, we make it.



seven M 713. One of our unsurpassed studio condenser mics. Modular system; accepts different transducer capsules and power supplies. Gold-vapored mylar diaphragm for high transient response. Mu-metal shield. Temperature and humidity stable.

eight See your dealer or write for information on our product line. You'll have many more reasons to be a Beyer buyer.

Beyer Dynamic

BURNS AUDIOTRONICS, INC.

5-05 Burns Avenue, Hicksville, NY 11801 • (516) 935-8000

In Canada, H. Roy Gray, Ltd.

We've kept

THE CREST P-3500 SERIES PROFESSIONAL AMPS
250 watts per channel, 8 ohms*/400 watts per channel, 4 ohms*
TOP: P-3500/BOTTOM: P-3501 (without VU meter)

We're Crest Audio. We make the world's best professional power amplifiers.

Last year we introduced our P-3500 series low profile amplifiers. Delivering 250 watts per channel into an 8 ohm load and standing just 3½" high, the P-3500 was an immediate winner.

The P-3500 quickly proved itself on major concert tours. It's been put to the test in huge stadiums, small clubs and recording studios. And it's passed every test with rave reviews.

Because the P-3500 isn't just "another" amp. It's a demonstrably better amp. Aside from it's flawless sonic qualities, it has a unique combination of design and engineering features that leave it unrivaled in the world of professional amplifiers. Quite simply, it's the best pro amp in its class.

Success breeds success.

Introducing the newest addition to the Crest line:

The P-2500 Series professional amplifiers. They're virtually identical to the P-3500 Series with two notable exceptions: Lower power rating and a lower price tag. Otherwise, they've inherited the same low profile, flawless sound, smart features and rugged reliability of our P-3500 Series. The P-2500 Series is now the best professional amplifier in its class.

Our low profile.

All the Crest amps pack their power into a rack mountable package standing just 3½" tall. That's ½ the height of conventional amps. And that saves a lot of rack space. Compared to conventional amps of comparable power, Crest amps give you the same power output while using just ½ the vertical rack space.

Our sound.

You can't buy better sound. It's solid. Tight. Incredibly clean. Undeniably accurate.

a low profile.

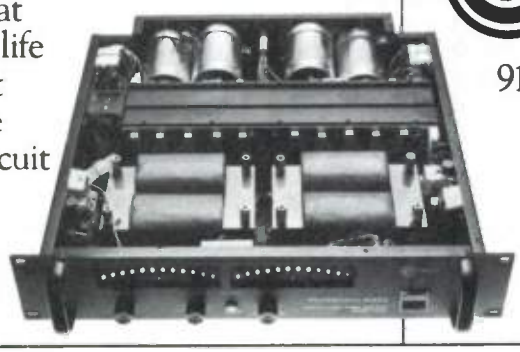
THE CREST P-2500 SERIES PROFESSIONAL AMPS
125 watts per channel, 8 ohms*/200 watts per channel, 4 ohms*
TOP: P-2500/BOTTOM: P-2501 (without VU meter)

It's what we put into our amps that accounts for what comes out. For example, we utilize Bi FET operational amplifiers coupled with 10 high speed output transistors per channel.

Our dual independent, semi-toridial 1000 watt transformers keep the bottom end tight, deep and accurate while providing miles of reliable headroom. They also virtually eliminate crosstalk.

Features that make sense.

Crest amps incorporate features that make your life a whole lot easier. Like built-in circuit breakers. Massive channeled heat sinks with forced air cooling. A special safeguard detection system that protects against thermal overload and dangerously high DC voltage levels. Turn on delay. External balanced in-put circuitry. Easy to read LED VU meters. And a totally modular electronic design.



Toughest amps in the business.

Crest amps are practically bomb proof. Inside, everything's snug and tight, securely attached to the protective 16 gauge steel chassis. Although Crest amps are sophisticated, state-of-the-art electronic systems, fragile they are not. Check us out.

CREST

Crest Audio, Inc.
9171 Gazette Ave., Chatsworth,
CA 91311/(213) 998-3120

*FTC rated continuous average sinewave over a bandwidth from 10Hz to 20kHz, both channels driven

CIRCLE 45 ON READER SERVICE CARD

I keep blowing diaphragms in my compression drivers, and my amp only puts out 30 watts per channel and the driver is rated at 40 watts. What's wrong with my drivers?

There is probably nothing wrong with the compression drivers, and though the amp is rated at only 30 watts per channel, it is capable of putting out far more power than 30 watts. Unfortunately for the drivers, beyond 30 watts the power that the amp is putting out is rich in harmonic distortion as well as squared off waveforms, and this is disastrous for compression drivers. The solution to this problem is to get a larger amplifier or not push the system as hard as it's being pushed.

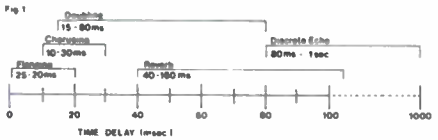
L. Richard Feld
Dimension Five Sound Co.
Philadelphia PA

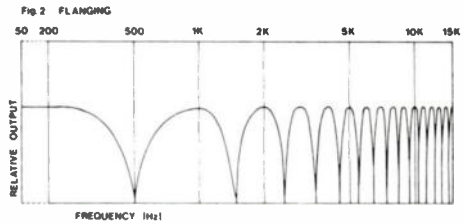
I hear a lot of talk about digital time delay. But I'm not quite sure what analog time delay is.

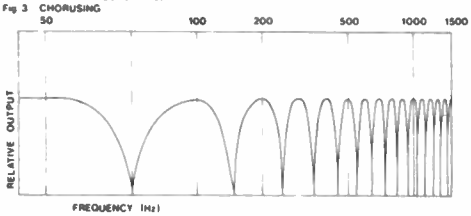
Time delay devices come in an assorted variety of effects. This category includes flangers, doublers, chorus and echo units. The different effects fall into a wide spectrum of delay times ranging from approximately .25 msec to 1 sec (1000 msec). Some of the effects overlap each other, so some devices can somewhat mimic another's characteristic function. (Remember, however, that a device functions best at what it's designed for.) Most delay-related effects are in the lower range of time delays, while most straight delay effects occur from midway to the upper ranges of delay time.

Let's discuss briefly the different effects mentioned. Basically, flanging, chorusing, and doubling have a lot in common with each other, the most outstanding relationship being the use of a low frequency oscillator. Another similarity among the effects is the utilization of harmonically-related peaks and notches, dependent on the time delay. Harmonics refers to a musical frequency multiple, twice the original note (or frequency), three times the original note and so on, the original note being called the first harmonic or fundamental.

So how are the effects different? A little theory about each device may help. First, we'll describe the flanger. The input signal is processed through circuitry which delays the signal by a specific amount. The delayed signal is then combined at the output with the "dry" (original) signal. This composite signal differs from the input in that a harmonically-related series of peaks and notches is created in the frequency spectrum. Its audible effect is one of enhanced tonality.







A chorus device operates much like a flanger, but there are differences. A major difference lies in the characteristics of the peaks and notches. Chorusing extends farther upward in the time delay range. This longer delay causes the peaks and notches to be shifted farther down the frequency spectrum with a shorter gap between them. Also with more time delay, more peaks and notches are produced. The sweep oscillator in a chorus varies the delay over a smaller percentage of the total range of delay than in a flanger. This variation of delay provides a thickened sound, or the effect of multiple voices.

When you reach the time delay range in which doubling occurs, you will find that it has the same characteristics as a flanger and a chorus, but since it extends further into the upper end of the time delay chart, the notches are affected much like in the chorus. The swept time delay in the doubler is used to create the sound of two vocalists or instruments performing in unison. The delay introduced gives the effect of the second voice, while the sweep oscillator constantly varies the pitch relationship between the original and delayed voices. This closely simulates the real life situation, where two voices will rarely be perfectly in tune.

In the upper end of the time delay, reverb and discrete echo occur. We can define reverb as a series of diminishing, very short echos, with the echos being almost on top of the initial signal. The longer the time delay becomes, the longer the time between repeats (or "slapback"), thus becoming discrete echo.

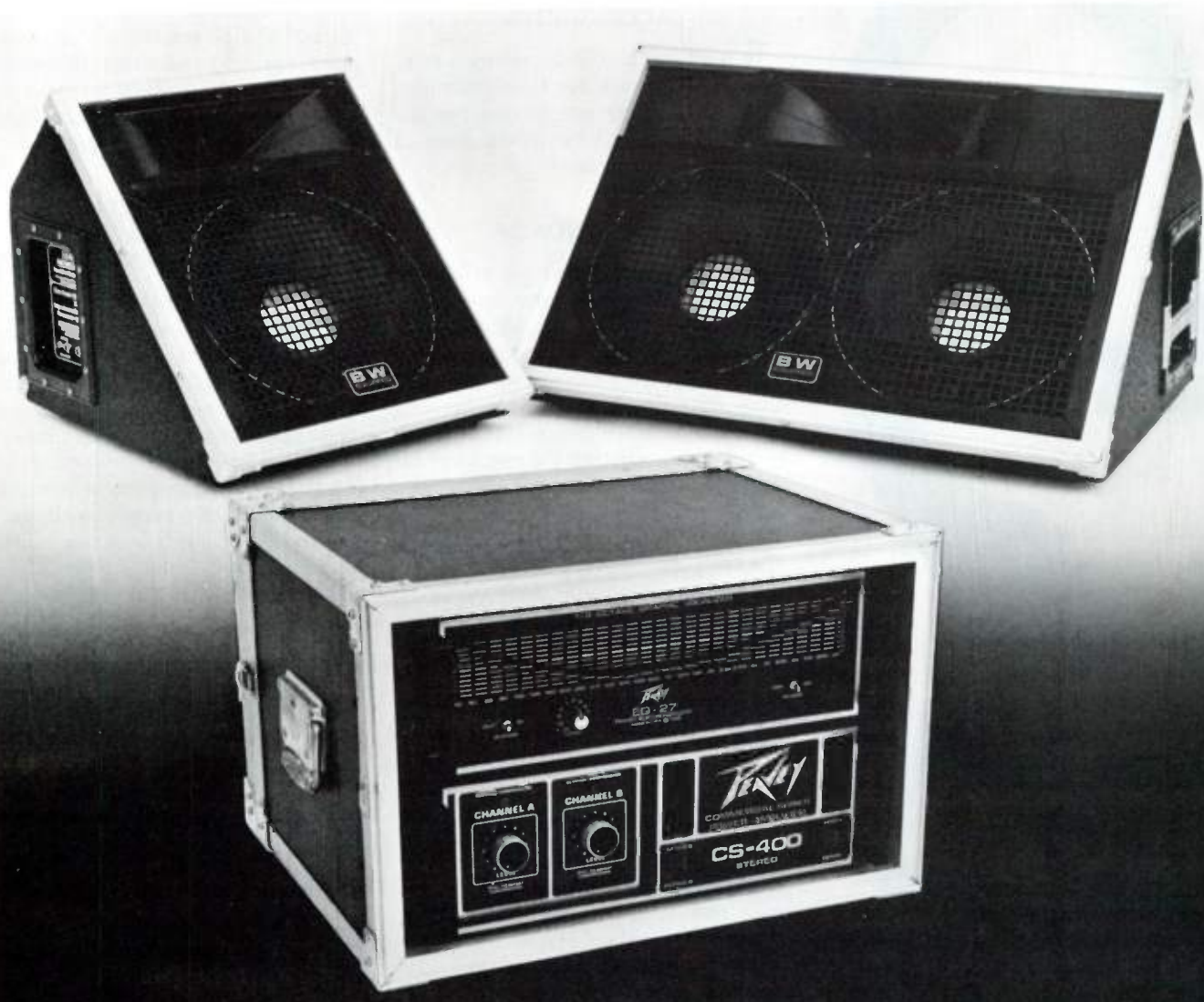
A rule of thumb can be applied to time delay: each millisecond (ms) of time delay is roughly equivalent to an acoustic distance of one foot, due to the speed of sound in air.

Most of these devices are made by using one of two types of integrated circuits (IC's); a Bucket Brigade Device (BBD); or a Charge Coupled Device (CCD). The internal operation of these IC's may be compared to a line of firemen passing a bucket of water down the line. It takes a certain amount of time for each bucket to be passed down from stage to stage to the final output.

So, consider the water an audio signal being processed and delayed in this same manner. A BBD device is used for shorter delay times not obtainable by the CCD, while a CCD is used for the longer delay times where multiple BBD's would not be as effective.

Time delay and imagination can provide an infinite variety of effects, some of which have been described here. As for the others, experimentation leads to the discovery of new realities.

MXR Innovations
"Discussion +"



PERFECT HARMONY!

Peavey Electronics' transducer technology, in conjunction with our CS Series power amp program, has created what we consider the finest portable monitor package available to keep your onstage sound clean (and closer together).

The "heart" of the system features Peavey's new EQ-27 graphic equalizer combined with the field proven CS-400 stereo power amp to provide a system producing 400 watts RMS with twenty-seven bands of equalization. This combination of power and EQ enables intense sound pressure levels on stage while virtually eliminating feedback.

Add to this the M-400's special DDT™ compression to maximize apparent headroom, transformer balanced inputs, electronic crossover, and bi-amp capability. The result is a highly versatile package with more than enough punch to get your vocals above even the loudest stage situations.

To deliver the M-400's punch, our engineers have designed a new series of enclosures with bi-amp capabilities built around our Black Widow speaker and the advanced 22A high frequency driver/horn combination.

The 1245 and 2445 monitor enclosures were created for optimum onstage monitoring, producing tremendous clarity, projection, and wide frequency response. Kick-proof grills and flite case type covers protect the units from damage and road abuse.

See the system at selected Peavey Dealers in your area or write us for more detailed information. You'll see one more reason why Peavey is ahead of its time,....and the competition.

PEAVEY®

PEAVEY ELECTRONICS CORPORATION / 711 A Street / Meridian, MS. 39301

CIRCLE 81 ON READER SERVICE CARD

By Craig Anderton

ACCESSORIES

In addition to the accessories mentioned last month for tape recorders, some accessories are needed for the studio itself. Let's run down some of the most common ones.

MICROPHONES

Every studio has to have at least a few microphones in order to capture the sounds of different kinds of instruments. Microphones vary from inexpensive to very expensive, but most home recording buffs can get by with moderately priced models. One thing to consider is whether the purchaser intends to take the microphone on the road or not; if so, then it should be durable as well as sonically pleasing.

When reduced to the bare essentials, you really only need two types of microphones: one condenser type, and one dynamic. Dynamic mics are relatively expensive, but can record loud sounds, certain singers, guitar amps, and the like very well. Condenser mics always have some form of built-in electronics, which means that there is a potential for overload as well as the possibility of noise. However, condenser mics typically have a nice, bright sound that is suited for acoustic instruments, singers who require a lot of presence in their voices, and other bright sounding instruments. Actually, how you apply a microphone is mostly a matter of personal taste; the idea is to find out what mic works best in a given application, and act accordingly.

MICROPHONE STANDS

Microphone stands should not be overlooked, although they often are. Just having a mic stand is not enough; you need some boom and gooseneck extensions as well. These are needed for when you're doing multiple miking on an instrument, and need to have different mics pointed at different places on the instrument.

WIND AND "POP" SCREENS

Microphones are susceptible to popping sounds when a vocalist uses words containing "Ps", "Bs", and the like; they also pick up the sound of air and wind very easily. To overcome these problems, vocalists often use wind screens made out of acoustical foam. These look like some kind of new Nerf ball product, and are generally quite inexpensive. Another positive aspect of wind screens is that dynamic mics are very sensitive to moisture. With a wind screen, it's harder for a singer to get the microphone element moist from his or her breath.

UNBALANCED HIGH IMPEDANCE TO BALANCED LOW IMPEDANCE TRANSFORMER

Many home recording studios use unbalanced lines. While this generally doesn't cause any loss of sonic quality if properly implemented, many microphones and other pieces of professional recording equipment terminate in balanced line, low impedance outputs. Having a suitable transformer around means that the person with an unbalanced line studio can use balanced line equipment. Usually I find it's more economical to get a mixing board designed for high impedance, unbalanced inputs and adding transformers only when necessary, as opposed to getting a board with expensive transformers at every input—which you might only need to use occasionally.

ADAPTERS

The more adapters a studio has, the better. Someone always seems to uncover a piece of equipment that has different jacks from what you're using. If you have a tape recorder that uses phono jacks, have some phono-to-1/4" phone jack adapters hanging around. If your tape recorder uses balanced inputs, make sure that you have some adapters that can accommodate phono and 1/4" phone plugs.

LIMITERS

There are a few pieces of outboard equipment which every small studio should have, even though they are not necessarily cheap. One of these is a limiter. For situations where a singer doesn't have good microphone control, or isn't aware that tape recorders have limited dynamic range, a limiter can save many a session. They can also give good sound effects with drums, guitars, and other percussive instruments.

PARAMETRIC EQUALIZER

A parametric equalizer is most widely used as a problem-solver—in other words, for correcting a specific type of

Oberheim OB-X for $2,995. Retail

We call it OB-SX

The OB-SX is an OB-X with the same FAT Oberheim Sound designed into a smaller, more portable package. User programmability is not necessary because the unit comes pre-programmed from the factory with 24 great sounds. The programs are permanently stored on a plug-in computer memory chip. Additional chips with more great sounds are available for a nominal price. Also, custom chips can be made by sending an OB-X program cassette (24 programs only) to the factory.

Features of the OB-SX are:

- Four Voice or Six Voice option
- 24 programs/48 program option
- Four octave keyboard
- Operates on line voltages from 90-130 volts or 180-260 volts
- Pitch bend and modulation levers
- Auto tune
- Hold/Chord feature
- Edit Mode: Unison, Portamento, LFO Rate, Osc 2 Detune, Filter Frequency, Attack, Decay and Release
- Transpose

Rear Panel Interfaces:

- Filter Pedal
- Sustain Foot Switch
- Modulation Pedal
- CV IN/OUT
- Gate IN/OUT
- Group A/B program switch
- Oberheim Computer Interface

Oberheim
Some Things Are Better Than Others
Oberheim Electronics, Inc.
1455 19th Street
Santa Monica, CA 90404

CIRCLE 42 ON READER SERVICE CARD

frequency response anomaly. Let's say a vocalist lacks brightness; you can dial up some high frequency boost to compensate. Or, suppose that one drum is too prominent in the overall drum sound, and since it wasn't recorded on a separate track there is no obvious way to change the level of that one drum. However, since the parametric equalizer can be used to attenuate one specific frequency band, by rejecting the frequency range containing the objectionable drum sound, it can be placed in a better perspective with the rest of the drums. Most mixers have some kind of built-in equalizer section . . . but these are usually fairly simple in order to keep the cost of the board down. By having an outboard parametric on call, you'll be able to take care of a wide range of response problems that can occur during the recording process.

ANALOG OR DIGITAL DELAY LINE

These are rather expensive items, but they're worth it if you want to progress beyond basic sound modification. A good delay line can give flanging, doubling, echo, vibrato, artificial stereo imaging, and much more. Many neophyte recording enthusiasts wonder why they can't get a good "sound" like the big studios do. Often the answer lies in effectively applying a good delay line.

SOUND LEVEL METER

While most people would not consider this accessory vital, a sound level meter is most helpful in the studio. Although they're handy for testing the frequency response of a room and performing other measurements, I personally like to use them to check the monitoring levels during mixdown. By doing so, you avoid subjecting yourself to overly loud sounds, and you can also maintain a consistent monitoring level.

EXTRA SPEAKERS

Sure, everybody has some kind of spiffy monitor speaker . . . or maybe not so spiffy! But in any event, there will be situations where a tape or record will not be played back on equally good speakers, but instead on some kid sister's record player or transistor radio. In order to anticipate what effect this will have on the recorded material, most studios nowadays have some kind of "inferior" speaker as a sort of reality test. Some people even do all their mixing on little speakers, although if you aren't experienced with this technique you're liable to end up with booming bass and ear-shattering treble when you finally do hear the mix over a good system. A very popular kind of second speaker is the series made by Auratone. These are only about $70 a pair, but give a real good approximation of what music will sound like when it hits the "real world."

BARRIER STRIPS

These are heavy duty AC extension outlets for powering amps and other AC powered equipment. They usually have a master switch located on the strip itself, which means that once that switch is turned off, anything plugged into the strip is automatically turned off as well (good for when you shut down for the night . . . it makes it very hard to leave something on accidentally).

TUNING STANDARD

I firmly believe that tuning standards were created in heaven specifically to make the life of recording engineers more trouble-free, and that every studio should have one. Seriously, though, in addition to making sure that everybody is in tune with everybody else, you can use the tuning standard to record a "tuning tone" at the beginning of a tape for musicians to tune to when overdub time comes around. The reason for putting this tone on the tape itself is that the speed of a tape recorder will vary a tiny bit from day to day—not much, of course, but more than a tuning standard would vary. So if you want to do an overdub and the tape recorder is running ever so slightly slow (flat), then it won't do you any good to tune to the tuning standard.

CONCLUSION

I know that I've left out many accessories; I've tried to include a good mix of the obvious, and the not-so-obvious, in the last two columns. Next month, we're going to round out the "Audio for Musicians" series by describing some of the problems musicians encounter when first getting started with home recording . . . and how you can help solve these problems.

Introducing a band that doesn't drink, smoke, show up late, fool around, play too loud, argue, complain, or get all the good looking ones...

THE AUTO -

The MTI Auto-Orchestra...

. . . the most exciting musical product ever created for the musician who works as a single or in a small combo.

What It Does

The Auto-Orchestra automatically plays Drums, Bass, Piano and full Strings, all selected from the easy to understand control panel. Simply tell the Auto-Orchestra what the chord changes for the songs you perform are, and it will create a rich, authentic sounding musical background upon which to showcase your talents.

How It Operates

Chord changes are made on the thirteen note Chord Pedal Board, **or** thirteen note Keyboard if you're a keyboard player. The special Volume Pedal lets you specify what type of chord it will be—Major, Minor, Seventh or Diminished. Once you've mastered these two basic components of the Auto-Orchestra, its full potential can be explored.

The Auto-Orchestra can be used with any musical instrument (guitar, piano, organ, trumpet, sax, accordian, to name a few), or by a solo vocalist. It provides the background and beat, while the melody is left up to you. Select the rhythm you wish to play, and the Auto-Orchestra automatically programs the correct Bass line, Drum line and Chord pulses for that rhythm.

Features, Capabilities and Musical Variations

The Auto-Orchestra takes you beyond conventional rhythm units by allowing you to control these backgrounds to your taste, without the music ever becoming monotonous. **32** different Drum or Bass breaks are sequenced to let you custom tailor the overall sound. A drum roll may be introduced at any time, by utilizing the **Sensor Plates.** These are attached wherever they are most convenient for you (on your guitar, horn, etc.) with harmless, double sided tape that won't mar the instruments' finish. By simply tapping them with a finger, you can have a ½ measure break, 1 measure break, 2 measures or up to 10 measures of some hot Drum and Bass playing. Both String or Synthesized Bass, with over a 2 octave range, are selectable.

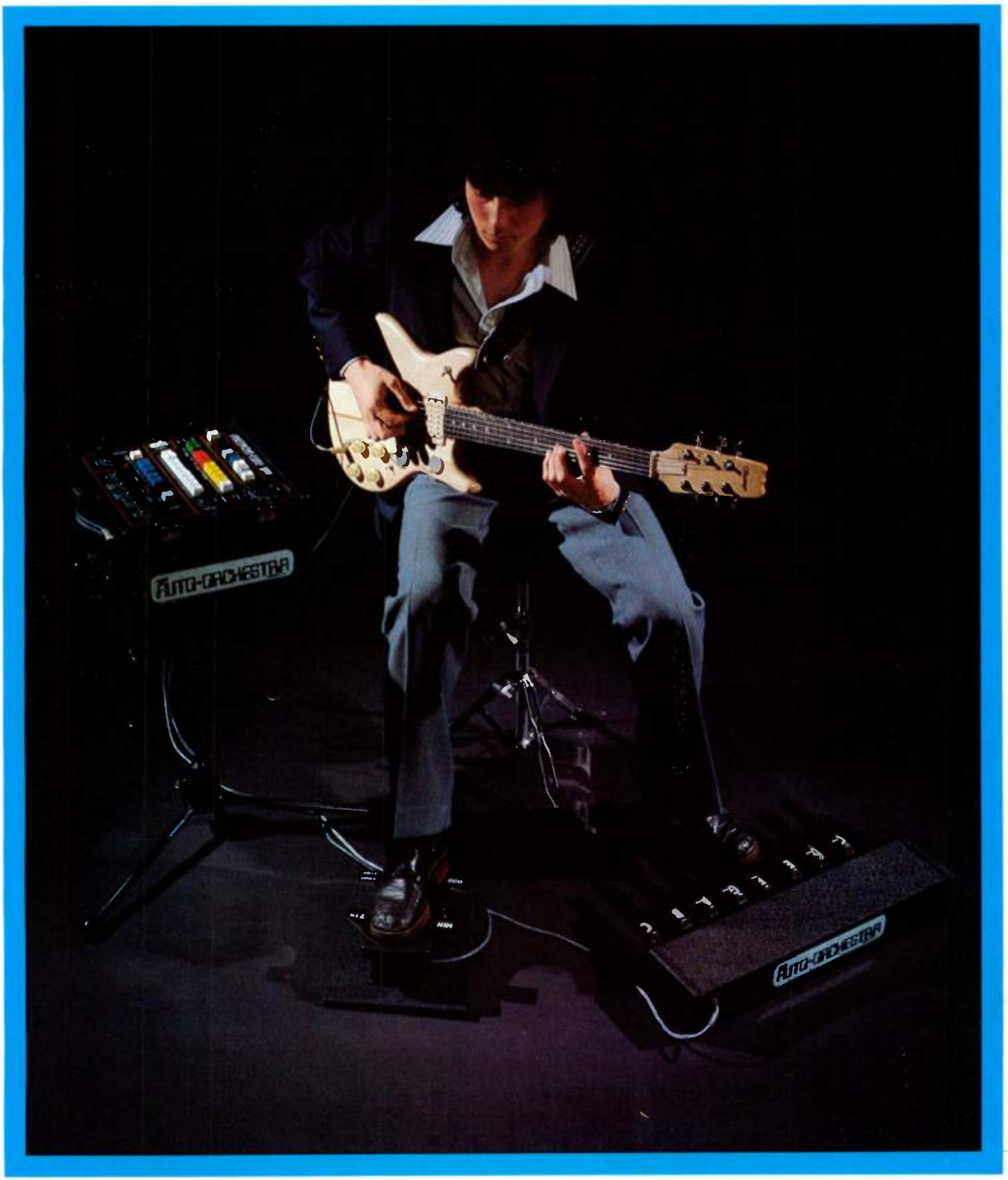
Piano sounds can be varied from a simple, pulsed chord background to a more staccato, emphasized rhythmic pattern. The same is true of the String Section—you can set it for a single note line or a full orchestral sound. In addition, the Strings can crescendo in very smoothly, then fade gently into the distance, just like a professional recording mix.

Cancel switches are provided to turn the Auto-Orchestra's sounds off and on, allowing you to modify rhythms for a specific feel. Buildups, dramatic changes, swells and fades are all easily achieved. There are **20** different rhythm selections, with an unbelievably wide range of variations and possibilities.

You'll discover an orchestra at your fingertips.

On the back page of this brochure you'll find a basic explanation of the controls and functions of the Auto-Orchestra, detailing its full capabilities.

ORCHESTRA



For the keyboard player, the Auto-Orchestra is as easy to use as a second keyboard.

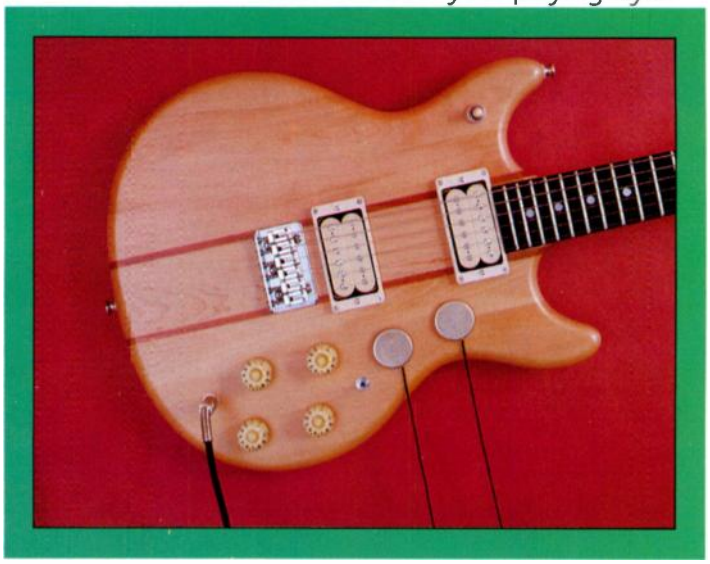
The Auto-Orchestra comes with Master Control Center, Stand, Volume Pedal w/Chord Switches, Chord Pedal Board, or one octave Keyboard.

Sensors (shown in inset) attach to the Auto-Orchestra Keyboard.

ORCHESTRA

The Master Control Center of the Auto-Orchestra. Every sound you could want is here at the touch of a button.

Sensors for Drum and Bass breaks are within easy reach of the guitarist. They can be located wherever convenient for your playing style.



The Chord Pedal Board and Volume Pedal. The thirteen note Chord Pedal Board comes with chord labels for easy learning.

Controls & Functions

Following is a description of the various controls and functions of the Auto-Orchestra. Don't be frightened by the number of controls made available to you. These allow you to sound exactly the way you want, and are really quite simple when you look at the unit section by section.

1. **Rhythms**
   Waltz, Jazz Waltz, Fox Trot, Swing, Blues, Shuffle, Ballad, Dramatic Ballad, Dixieland, Country, Country Rock, Fast Country, 50's Rock, Contemporary Rock, Latin Disco, Disco II, Bossa Nova, Cha Cha, Rhumba, Mambo.
2. **Drum Voices w/Cancels**
   Bass Drum, Conga, Bongo, Snare Drum, Clave, Cowbell, Hi-Hat, Splash Cymbal, Ride Cymbal
3. **Tempo**
   From too slow to too fast with everything in between
4. **Volume**
   Drums (Panel or Volume Pedal controlled)
5. **Off/On Tempo Break Light**
6. **Channel Selector**
   Upper or lower rhythm patterns
7. **Bass Section**
   String Bass Volume (Panel or Volume Pedal controlled), Synthesizer Bass Volume, Bass Decay, 8′ or 16′ select
8. **String Section**
   String Volume (Panel or Volume Pedal controlled), String Tone, 4′ or 8′ strings (hold), Harmonic Content—1, 2 & 3
9. **Chord Section**
   Chord Volume, Simple/Complex
10. **Master Section**
    Quick On/Off for Drums, Bass, Chords Fade In/Out for Strings
11. **Manual Bass Select Button**
    Cancels Chord and Strings
12. **Front Panel Break Control**
13. **Front Panel Start/Stop Control**
14. **Two Capacitance Sensors**
    1 Drum/Bass Break
    1 Drum Press Roll
    32 Sequences
15. **Outputs**
    Main, Strings, Drums
16. **Special In & Out for additional instruments to be controlled by Volume Pedal**

MUSIC TECHNOLOGY, INCORPORATED
105 FIFTH AVENUE
GARDEN CITY PARK, N.Y. 11040
(516) 747-7890

CAMEO EDUCATIONAL SEMINARS AT NAMM EXPO 1980

CAMEO (Creative Audio and Music Electronics Organization) is a non-profit organization made up of professional audio and music electronics equipment manufacturers. It is a continuing committment of this organization to provide educational information to the industry. Educational seminars are sponsored at each NAMM convention in cooperation with the NAMM staff. These seminars are designed to provide dealers and their personnel with valuable information to aid them in their working knowledge of audio equipment and music electronics. Dealer panels made up of successful professional audio and music electronics equipment dealers provide valuable information and methods to increase profits through the sale of this equipment.

June 29 10:00AM to 12:00 Lennex Lohr Theatre (located in McCormick Place)

MIXING FOR RECORDING AND SOUND REINFORCEMENT by Bill Porter

Mr. Porter is one of the real superstars in the field of professional sound mixing. He was the personal sound mixer for Elvis Presley and did the mixing for many live concerts for him as well as many other famous entertainers. Mr. Porter's professional recording career has given him more chart recordings than most any mixer who has ever lived. He has engineered 35 gold records, 49 top-ten records, and over 297 chart records. Some of the recording artists include Elvis Presley, Roy Orbison, Chet Atkins, Eddie Arnold, Everly Bros., Paul Anka, Louis Armstrong, Barbra Streisand, Buddy Rich, Frank Sinatra, Sammy Davis Jr., and many others. Mr. Porter is currently teaching a full four-year degreed course in music engineering at the University of Miami. It is rare that one has the opportunity to hear such a seasoned industry professional speak.

Mr. Porter will cover important aspects of sound mixing as well as microphone placement techniques. He will also share some of his personal methods and techniques. There will be a substantial amount of time allotted for questions from the audience.

June 30 10:00AM to 12:00 • Lennox Lohr Theatre (located in McCormick Place)

HOW PRO-SOUND DEALERS CAN REMAIN PROFITABLE IN THE 1980s-''PANEL DISCUSSION''

Ray Hartman - California Musical Instruments, Anaheim, CA
Dick Rumore - Paragon Music, Tampa, FL
J.D. Sharp - Bananas at Large, San Francisco, CA
Den Dues - Far Out Music, Louisville, KY
Moderator - Larry Blakely, CAMEO President

This panel is made up of very successful dealers who sell professional audio and music electronics equipment. They will share their views and methods used to counter the difficult economic times we all face. The uncertainty of today's economy is something that concerns every dealer selling pro-sound equipment. Will this rapidly expanding segment of the market continue to boom, grow at a slower pace, not grow at all or suffer severe decreases? What have successful dealers done in the past when the economy was uncertain? What must a dealer do to remain profitable and how can sales actually be increased during poor economic times?

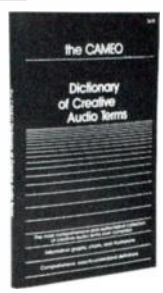
These dealers will share some of their secrets for success and what they expect to face in the coming year as well as their plans to insure profitability and increased market share. There will be a question and answer period for the audience to address specific questions to the panelists.

The CAMEO Dictionary of Creative Audio Terms

This is the first comprehensive dictionary of creative audio terminology ever compiled, and has been written for those who are not technically inclined. This volume incorporates over 1000 terms and was produced in cooperation with NAMM. Illustrations are used when necessary to give the reader a quick and comprehensive grasp where words alone might be difficult to understand.

Even an experienced professional who has worked in this field for years from time to time will come across terminology with which he or she is unfamiliar. Now there is one convenient way to find the answers — this book. It should be in the reference library of every musician, composer, arranger, producer, mixer, or salesman.

This dictionary sells for $4.95 and is available at dealer discounts from either the NAMM office or CAMEO.

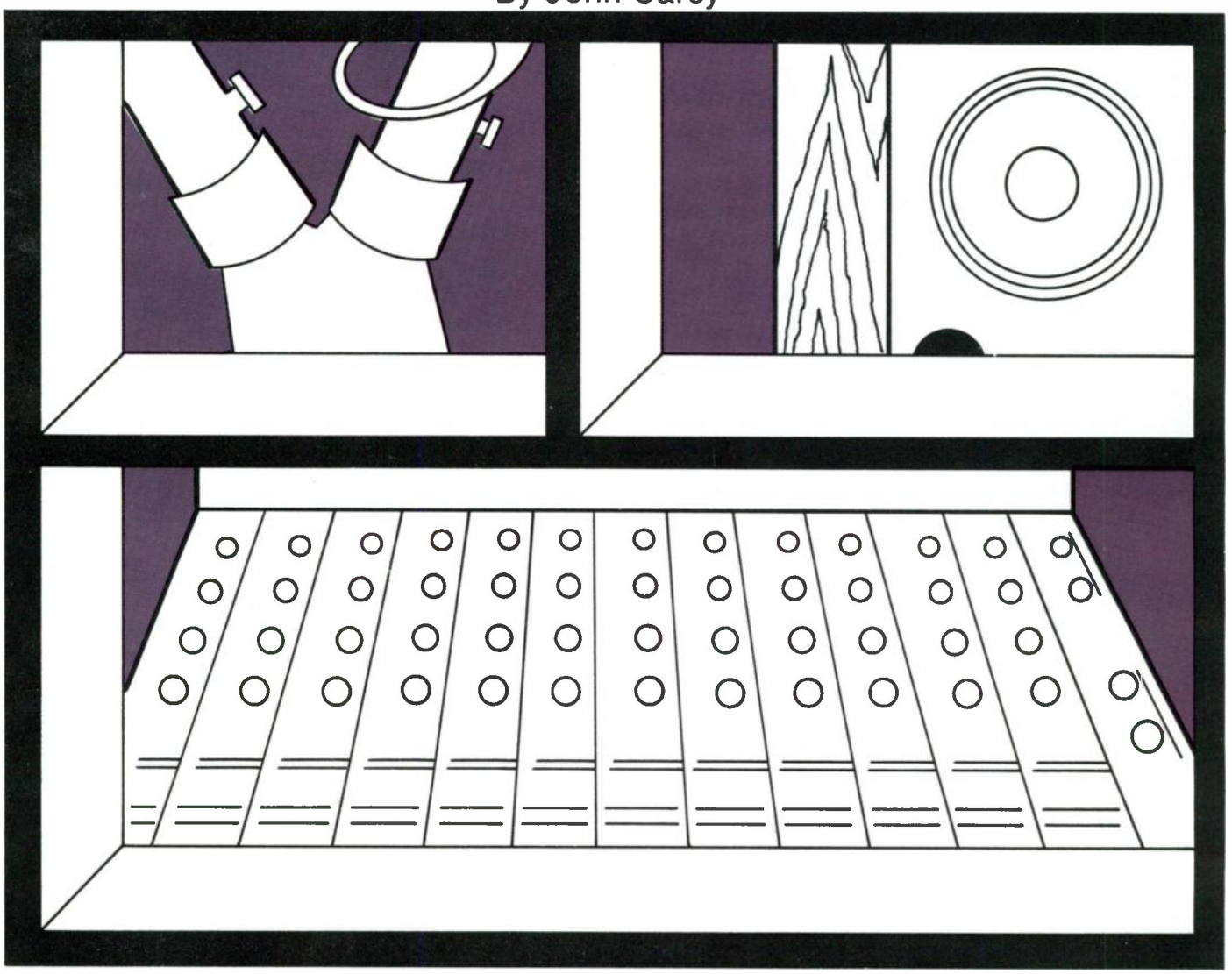


CAMEO 10 Delmar Avenue, Framingham, MA 01701 • 617-877-6459

CIRCLE 40 ON READER SERVICE CARD

SELLING FOR THE STUDIO OF 1990

By John Carey



The statement "history repeats itself" has been shown to be true in many different circumstances—especially in the area of style or fashion. In music, we can consider style the character or basic sound when analyzed down to the music's elements. This style has a large influence on recording studio designs. The various divisions within any musical period will, of course, dictate their own variations on room design. However, the subject under consideration here will be that style known as "popular music." We can by way of history see that the style of music and thus that of room design has come round a full cycle in the last ten years. From this knowledge I propose it will do so again on toward 1990.

THE PAST; 1970—1980

Through the last decade we have seen astounding changes in recording studio design. A state-of-the-art studio in 1970 was a 16-track room with little or no attention paid to geometry and with a basic acoustic design. The Ampex MM1000-16 or a Scully 288-16 was typical of the tape machines used. API, SpectraSonics, and Neve were common consoles. Rooms were somewhat live and tended to be large in size.

At this time music was undergoing a great upheaval; going from the simple, rhythmic and lyrical sound of the 60's

to the layered multitracked sound of the 70's.

Concurrently, the advances in technology created a demand for more accurate acoustic performance. In 1972 the Caribou Ranch was built. This marked the beginning of the Hidley/Westlake Audio combination and the "coming of age" for acoustic design firms.

An interesting parallel between the style of popular music and the hardware and construction techniques of studios developed. The musicians and producers sought a new and unique sound with the new equipment. The multitrack layered sound began to develop. Isolation of individual tracks became a major goal in order to provide control over the multiple layers of sound. This isolation was satisfied by very "dead" room design and close miking techniques. As the musicians and producers became aware of the advantages of mixing in accurate rooms, the older rooms were forced to renovate in order to stay competitive. A type of "one upmanship" developed and studios began to spring up all over, boasting the latest acoustic design advantages and isolation.

So we have seen studios' construction style and interior finish treatments follow the demand of the customer, the musician and producer—from the large "live" open spaces to the geometric "dead" smaller rooms.

THE PRESENT; 1980

Today we are again in the midst of musical change. Musicians and producers are seeking a new and unique sound which has become a lively or roomy sound with a raw unpolished performance. Control rooms are the subject of much controversy and many varied theories are popular on the specifics of their design; however, they are generally becoming more reflective to match the new studio style.

The latest equipment is showing an influx of digital technology for control and storage. The arrival of the video/audio recording complex signals that major changes in studio design are imminent. The video disk and video cassette provide two viable formats to be explored and developed for consumer use.

In reaction to these developments and to the history of change in studio construction and design, studio designers such as our operation at Express Sound are providing the latest generation of designs with acoustically variable spaces in the studio. The room can be made to respond to the needs of the engineer, the musician or the producer. The additional cost of incorporating this type of flexibility can be kept to a minimum during initial construction. In contrast, a room built with little or no flexibility faces redundant improvement costs in order to service the needs of the customer, should he require changes. Low cost options such as hinged panels—one side soft, one hard; draw curtains; louvered panels; sliding reflective panels over absorptive surfaces, etc., can bring *variable* reverb characteristics to even the lowest budget. The operative word is flexibility, in order to be prepared for change as it occurs. Flexibility goes beyond the acoustics of the studio. The addition of video equipment is a reality and video monitors are commonplace in both studio and control room.

THE FUTURE; 1980—1990

Rooms will become as flexible as possible to stay abreast of the latest styles or trends. For some clients, the studio may become a television studio complete with cyclorama screen, cameras, lighting grid and control, video control and tape facilities. The record label and artists will produce a video/audio package for the consumer. It may be simply the visual image of the audio performance, concert style, or it may be a complete visual creation to enhance or meld with the audio to become an integral package. The final format of the "mastering" may be on cassette or disc, but ultimately the product will be a reality.

At the next session, the studio could then be converted into a voice-over room for videotape or film. The lights and cameras can be used to tape television commercials complete with multitrack audio. The studio can be converted into a scoring room using videotape copies or film projection. Of course, multitrack audio can be recorded and mixed as it always has.

The equipment will also take on this variable format. The computer will find applications for automation of not only signal level, but routing and switching, equalization, time modulation and manipulation, and synchronization of multi-machine storage systems. The computer will eventually become the nerve center of the studio's electronic system. It has been suggested by some that the electronic system could be reconfigured to personal taste under software control by the computer. For example, one engineer could work on his favorite console or use his favorite equalizer by simply instructing the computer to use the parameters of those pieces of equipment and designate the controls necessary. One main storage bank will be shared by the console and processing system and by the business terminals to pay the bills and keep the books.

One advantage afforded by computer control of the mixing console is that the physical console will be smaller in size and less complex to operate. It will not be an accumulation of redundant controls, but rather 8 or 12 channels which can be assigned to any track of program. Once you equalized and processed the signal, the information could be stored and repeated each time. The channel could then be free to control any other channel or groups of channels. The size of the console would be reduced to a point where monitoring environments will not have to deal with a huge bulkhead and the associated reflections or diffractions. A reduction in the size of the control room dedicated to audio seems likely. The video control and director's booth will be placed in proximity to the audio control room.

Over the past ten years studio construction and acoustic design has tended to change from the use of large live rooms with little acoustic treatments to smaller dead rooms with complex design and extensive acoustic treatment. The current trend seems to be toward a return to the live room—yet tempered by useful experience. Should style turn around again it will be very costly to rebuild. A variable and flexible design can prevent additional expense. This flexibility in the future will include allowing for change in acoustics, type of recording medium (e.g., video, audio, film) and someday allowing for a console model that is under computer control.

The ideas presented here represent impressions of what may occur in the next ten years. The only way to be sure what will occur is to wait and watch. You and your customers must stay abreast of new development and ideas and be ready to react to them. A studio owner or dealer who stagnates, at the pace at which our industry moves, will be out of date in a matter of months.

John Carey is involved in both design and sales at Express Sound, Costa Mesa, California.

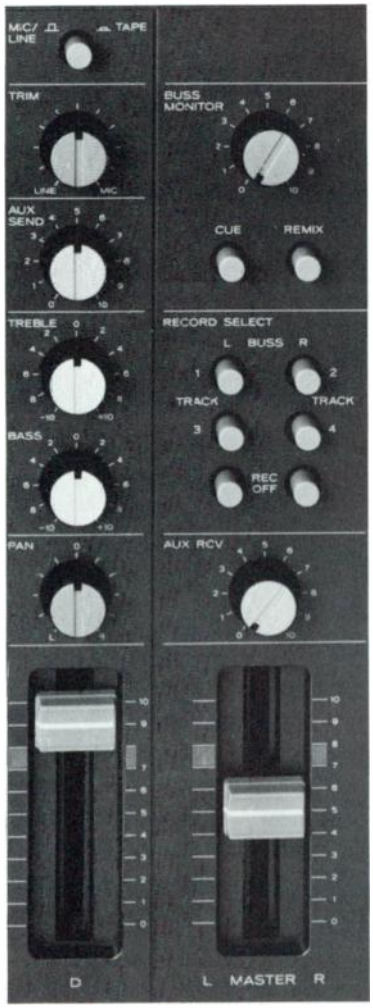
PORTASTUDIO.

LEARN ON IT.
REHEARSE ON IT.
CREATE ON IT.

Portastudio gives you all the essential functions of multitrack recording in one compact, self-contained unit.

You can work anywhere you have an electrical outlet. Connect electronic instruments directly. And try out new musical ideas. Will a keyboard work well in the break? Do you want a chorus behind the vocal? With Portastudio, you can find out before you put out hard cash for studio time.

Whether you're recording basic tracks, overdubbing, punching-in or mixing down to another cassette deck, Portastudio helps you get all the signals to the right places.



Portastudio's versatile 4 x 2 mixer section gives you mic/line/tape switching, trim control, high and low EQ, fader, pan and Aux Send for each input. The failsafe group switching matrix lets you record on up to two tracks at the same time. And the master fader gives you overall level control during recording and mixdown.

The full-logic cue system in Portastudio lets you hear everything you're doing all the time. Input and tape cueing, monitoring for recording or mixdown are all available. And every signal can be metered. Coming or going.

TEAC engineers created a totally unique format for Portastudio. Four tracks in sync on cassette tape at 3-3/4 ips. It's fast, simple, reliable and economical.

Portastudio's drive system is built specifically for the rugged needs of multitrack recording. Transport controls are all solenoid-operated for faster, easier switching. And you get a built-in variable speed control that lets you add special effects, fix a flat note or solve timing and cueing problems.

You can work with Portastudio using nothing more than headphones and a microphone. Or send the output through your home audio system. You'll also find the patch points and controls that let you use Portastudio with other equipment like echo units, equalizers and additional mixers.

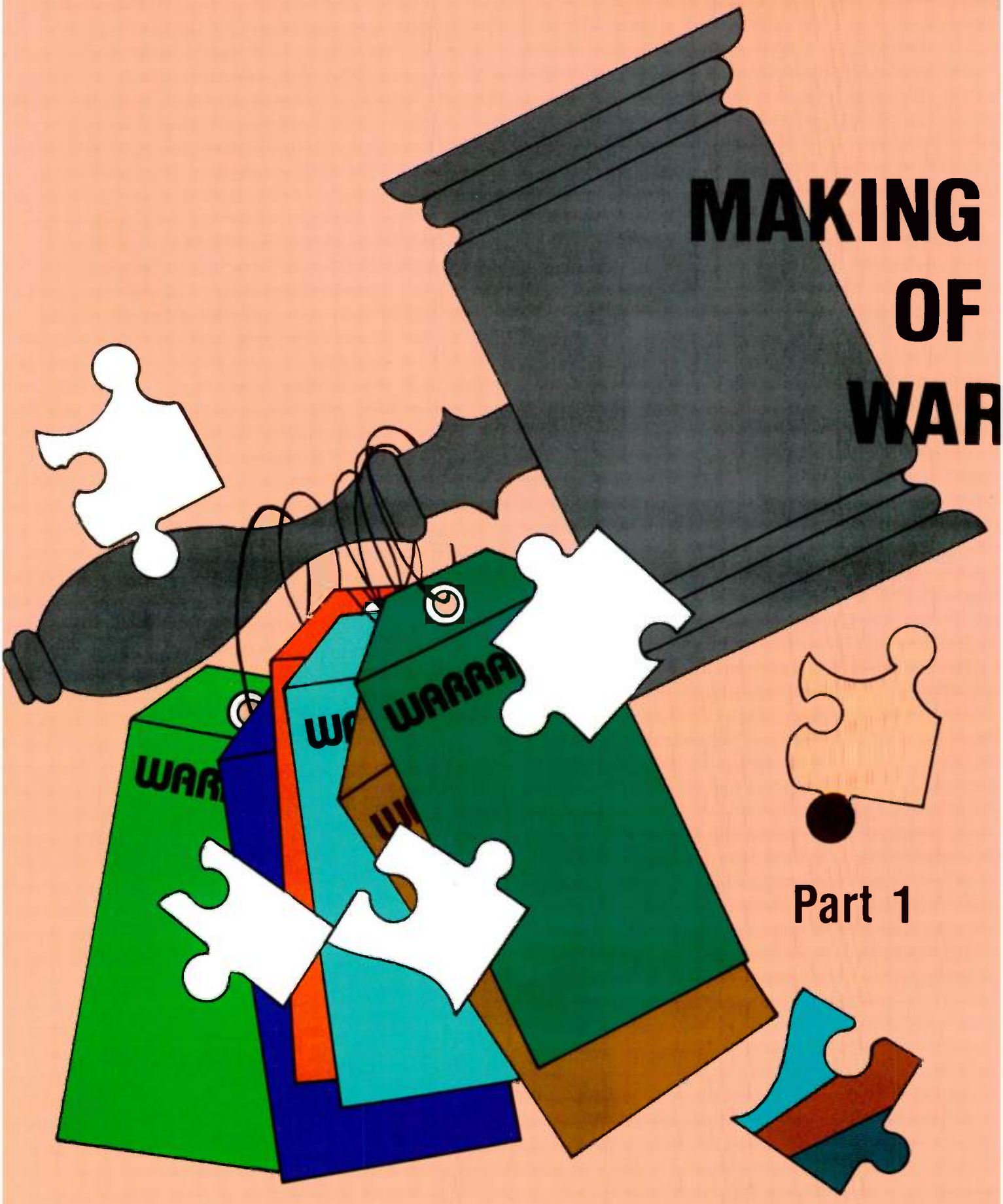
Nothing else in the world hands you so much multitrack function in such a sensible way. So see your dealer today for a demonstration of the very affordable Portastudio.

TASCAM CREATIVE SERIES

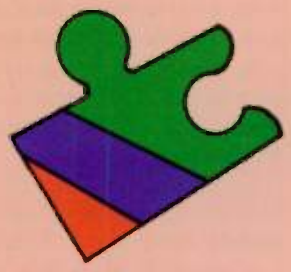
TEAC Professional Products Group

CIRCLE 87 ON READER SERVICE CARD

MAKING OF WAR



Part 1



SENSE THE RANTY

By David Schulman

Almost five years ago, the much-heralded federal Magnuson-Moss Warranty Act took effect—creating new responsibilities for all retailers. It seems fitting after five years to discuss the current state of warranty responsibility and requirements, and the problems, the history and the future of warranty legislation as it pertains to the retailer. With this first part of a series of articles, we'll discuss the history and responsibilities created under federal warranty legislation.

The Magnuson-Moss Warranty Act wasn't the first attempt at regulation of warranties and guarantees. Long before its enactment, Congress and various state legislatures had adopted laws relating to deceptive warranties. For example, 20 years ago, the Federal Trade Commission's *Guides Against Deceptive Advertisement of Guarantees* codified the FTC case law concerning disclosures required of warrantors. These guides required full and accurate disclosure of terms, conditions and limitations of warranties.

THE NEED FOR NEW FEDERAL WARRANTY LEGISLATION

Congress, however, became convinced that more specific and intensive regulation concerning warranties was required. The Senate report accompanying the proposed Federal warranty legislation (Magnuson-Moss) explained that warranties were, after all, written by lawyers and thus tended to confuse the public. Consumers, the report said, were in no position to "bargain" for warranties. They had no meaningful ability to choose to purchase products with or without warranties. The Senate report stated:

> For many years warranties have confused and misled the American consumer. A warranty is a complicated legal document whose full essence lies buried in myriads of reported legal decisions and complicated state codes of commercial law. The consumer's understanding of what a warranty on a particular product means to him frequently does not coincide with the legal meaning.
>
> * * * *
>
> It was typically a concept that the contracting parties understood and bargained for, usually at arms length. One could decide whether or not to purchase a product with a warranty and bargain for that warranty accordingly. Since then, the relative bargaining power of those contracting for the purchase of consumer products has changed radically. Today, most consumers have little understanding of the frequently complex legal implications of warranties and consumer products. Typically a consumer today cannot bargain with consumer product manufacturers or suppliers to obtain a warranty or to adjust the terms of a warranty voluntarily offered.

In introducing legislation to the Senate, its sponsor, Senator Warren Magnuson, said:

> [W]arranties have for many years confused, misled and frequently angered American consumers . . . Consumer anger is expected when purchasers of consumer products discover that their warranty may cover a 25 cent part but not the $100.00 labor charge or that there is full coverage on a piano so long as it is shipped at the purchaser's expense to the factory.
>
> * * * *
>
> [T]he Bill is designed to promote understanding. Far too frequently, there is a paucity of information supplied to the consumer about what in fact is offered him in that piece of paper proudly labelled "Warranty".

WHAT THE LAW COVERS

The Magnuson-Moss Act was enacted by Congress, and the Federal Trade Commission was empowered to prescribe the rules that would assure full disclosure of the specific terms of warranties and the availability of information concerning them—before the actual purchase of the product by the consumer. Therefore, in January, 1976, the Federal Trade Commission issued its "Rules, Regulations, Statements and Interpretations on Disclosure of Warranty Terms, Pre-sale Availability of Warranty Terms, and Informal Dispute Settlement Mechanisms." This document runs for over 50 printed three-column pages of typical eye-straining governmental type. In this first article of our series, we will try to set forth the essentials of those regulations which may apply to your business as a retailer.

As noted above, the Act covers your activities *as a warrantor,* since it requires specific warranty disclosures. It also covers you *as a retailer* even if you make no warranty other than that offered by your suppliers. The Act requires you to make warranty information available to consumers before the sale. The requirements of disclosure and pre-sale availability apply to "consumer products" costing the consumer $15.00 or more.

"Consumer products" mean products normally used for personal, family and household purposes. They do not include products purchased for commercial or industrial use or for use in the ordinary course of the buyer's business. Thus the same product may be considered a consumer product when purchased by one customer, and not a consumer product when purchased by another customer. This problem for retailers, and other problems under the Act and Regulations, will be discussed in a later part of this series.

WARRANTY REQUIREMENTS

First, the Act provides that disclosures must be presented "in a single document." The Federal Trade Commission states;

> Single does not equal "separate." The "single document" requirement does not preclude printing the warranty in a use and care manual, or directly on the product itself. It does require that all terms and conditions be presented in (at least) one location, as a coherent, easily assimilated statement.

The "easily assimilated statement" *must* contain nine separate disclosures, as follows:

- The identity of the party to whom the written warranty is extended, if the written warranty is limited to the original consumer purchaser or to parties other than every consumer owner during the term of the warranty;
- A clear description and identification of products, parts, characteristics, components or properties covered by and (where necessary for clarification) excluded from the warranty;
- A statement of what the warrantor will do in the event of a defect, a malfunction or the failure to conform with the written warranty, including the items or services the warrantor will pay for or provide, and (where necessary for clarification), those which the warrantor will not pay for or provide;
- The point in time or the event on which the warranty term begins if it is different from the purchase date, and the time period or other measurement of warranty duration;
- A step-by-step explanation of the procedure which the consumer should follow in order to obtain performance of warranty obligations, and the persons authorized to perform them. This includes the name(s) of the warrantor together with the mailing address(es) and/or a toll-free telephone number which consumers may use to obtain information;
- Information on any informal dispute settlement mechanism chosen by the warrantor in compliance with FTC rules;
- Any limitations on the duration of implied warranties (disclosed on the face of the warranty as provided in Section 108 of the Act), accompanied by the following statement: "Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.";
- Any exclusion of or limitation on relief, such as incidental or consequential damages, accompanied by the following statement: "Some states do not allow the exclusion or limitation of incidental or consequential damages, so that above limitation or exclusion may not apply to you."
- A statement in the following language: "This warranty gives you specific legal rights, and you may also have other rights which vary from state to state."

These mandatory disclosures now appear on most equipment warranties offered by manufacturers. However, since most warranties are still written by lawyers, it remains to be seen whether the sponsors of the Act have accomplished their purpose. Are today's warranties more or less complicated or more or less easily understood by the consumer than the warranties in effect before the Act?

It is important to note that even if your suppliers' warranties are in full compliance with the Act's requirements, any additional or separate warranty you may offer as a retailer must also comply.

You must make available—prior to sale to the consumer—all written warranty terms on the products offered at your store, according to Part 702 of the FTC rules. These rules, which became effective December 31, 1976, require retailers to make available for prospective buyers' review, prior to sale, the text of written warranties for warranted products costing more than $15.00. This may be done in one or more or a combination of four different ways. This requirement is important to your suppliers, since they must provide retailers with the warranty material necessary for them to fulfill their presale disclosure obligations under the rules.

As a retailer, you may fulfill your obligations in the following ways:

- You may clearly and conspicuously display the text of the written warranty "in close conjunction" with each warranted product. (The simplest method of complying with this option would be to attach a copy of the warranty or its text to the floor sample of the product. However, if not all warranted products are displayed on the floor, additional means must be used.)
- You may keep a binder or series of binders containing copies of warranties in each department where products with written warranties are offered for sale. The binders must be:

a. maintained in each department or in a location which provides the prospective buyer with ready access to them;

b. prominently entitled "Warranties" or another similar title which clearly identifies the binders;

c. indexed according to product or warrantor;

d. maintained up to date by substituting superseding warranties for old products and by adding warranties for new products. You must either display the binders in a manner reasonably calculated to get the prospective buyer's attention (such as by placing the binders at an appropriate counter) or make them available upon request. If the second alternative is chosen, a prominent notice or series of notices must alert your customers to the existence of the binders and how to get access to them.

- You may clearly display the package of any product on which the text of a written warranty is disclosed.
- You may place signs near the product which disclose the text of the written warranty. Where a common warranty is used for broad categories of products, the sign can apply to all of the products so long as the products in question are identified.

Your suppliers may fulfill their obligation to provide you with material—which will in turn enable you to comply with your own disclosure obligations—by doing one or more or a combination of the following:

- Providing a copy of the written warranty with every warranted product;
- Providing a tag, sign, sticker, label, decal or other attachment to the product containing the full text of the written warranty;
- Printing on or otherwise attaching the text of the written warranty to the package containing the product, if the package is normally used for display purposes. (If the warrantor elects this option, a copy of the written warranty must also accompany the warranted product.)
- Providing a sign which discloses the text of the warranty. (This option also requires that a copy of the written warranty accompany each warranted product.)

If the warrantor does not deal directly with you as a seller or does not know who the seller will ultimately be, he must provide sufficient quantities of the required presale material through

Cherokee Studios, Hollywood, California.

JBL 4313 Studio Monitor.
It flattens the competition.

Introducing the 4313.

Flat frequency response. It means accuracy. Naturalness. Reality.

JBL gives it to you without the bigger box that you'd expect along with it, since the 4313 only measures about 23" x 14" x 10"!

This new, compact professional monitor produces deep, distortion-free bass. And does it with a newly developed 10" driver. Its massive magnet structure and voice coil are equivalent to most 12" or 15" speakers. Yet it delivers heavy-duty power handling and a smoother transition to the midrange than most larger-cone speakers.

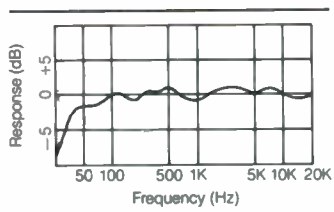
The 4313's edge-wound voice coil midrange accurately reproduces strong, natural vocals and powerful transients.

Up top, a dome radiator provides high acoustic output with extreme clarity and wide dispersion. A large 1" voice coil gives it the ruggedness needed in professional use.

Working together, these precision matched speakers offer superb stereo imaging, powerful sound levels and wide dynamic range.

Audition the 4313 soon.

We think you'll agree that its combination of flat response, power and moderate size flattens the competition.



On-axis frequency response, 4313 monitor.

James B. Lansing Sound, Inc.,
8500 Balboa Blvd.,
Northridge, California 91329.

JBL First with the pros.

normal distribution channels to ensure receipt by all sellers. The FTC staff has informally taken the position that warrantors are not required to trace their products in the case of transshipments, and that so long as the disclosure material is supplied to the *original* reseller, the warrantor has satisfied its obligations.

It is important to note that as a retailer, you may not remove or obscure any warranty disclosure materials provided by your suppliers—unless you choose to use other permissible means to make the information available to consumers.

CATALOG AND MAIL ORDER SALES

Special rules pertain to catalog, mail order and door-to-door sellers. Catalog or mail order sellers must clearly and conspicuously disclose in their catalogs or solicitations either the full text of the written warranty or a statement indicating that it can be obtained free upon request at a specific address. This disclosure must appear in "close conjunction" to the description of the warranted product. The FTC defines "close conjunction" as either the page containing the description of the warranted product or the facing page. In lieu of a disclosure in "close conjunction" to the description of the product, you may include an information section of the catalog or solicitation. In that case, a reference to that section, including a page number, must be made in close conjunction to the description of the warranted product.

This article explains rules which govern your obligations *as warrantors* to disclose, in the prescribed manner, the details of your warranty and *as retailers* to make available necessary information to consumers. The succeeding articles will focus on full versus limited warranties, state law requirements, advertising of warranties, a review of enforcement activity and a discussion of future trends in this important area affecting your business.

David B. Schulman is the senior partner of the Chicago law firm of Schulman, Silverman & Kreiter, Ltd., whose clients have included dbx, Discwasher, Harman International, James B. Lansing Sound, Jensen, Kenwood, Ortofon, Matsushita, RCA, Tannoy, TEAC, and Vector Research.

We haven't left anything out.

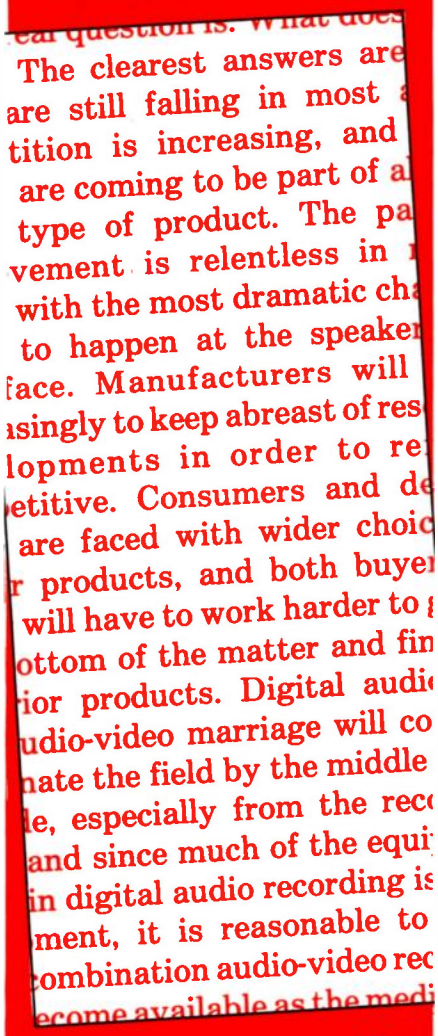
At TDK, recording is our only business. So we make it our business to supply everything for your customers. A complete line of fine audio and video cassettes, open reel tape, 8-track cartridges and maintenance accessories. With TDK, nothing is forgotten. We support you completely, with national and regional advertising, promotions, special packaging and displays. It's all there. It works hard. Let it work for you.

TDK

The Leader in Tape Technology

CIRCLE 70 ON READER SERVICE CARD

A VIEW OF THE AES LA CON-VEN-TION



By J.D. Sharp

The Audio Engineering Society's most recent convention filled three floors of the Los Angeles Hilton with every shade of recording and reinforcement equipment, as well as occupying every niche of the Hilton's convention and banquet rooms. The 1980 West Coast Convention will probably not be noted as a year of tremendous innovations, but rather as a display of refinements of recent inventions, and further realization of several of the explosive ideas of recent years.

The musician's aresenal of tools was broadened by the introduction of several all-digital synthesizers. They ranged in price from $13,000 to over $36,000, so it is obvious that they're not for everybody, but many of their features point towards the keyboard instruments of this new decade. The Fairlight CMI (Computer Musical Instrument) is perhaps the most exotic of this new breed. It features a video terminal with a light pen which is used for a wide variety of functions. New waveforms can be "drawn" directly on the screen, or existing waveforms can be altered by the same process. Patching is done in a similar manner, by touching the appropriate spot on the terminal display, without the familiar tangle of cables that accompany most modular synthesizers. Another radical feature is the ability of the CMI to sample an incoming sound from either a microphone or recording, and then load it in to the memory of a "voice module." These sounds are then pitched by the keyboard, according to the musical scale selected.

The other digital synthesizers shown had some great tricks too! All had one form or another of polyphonic sequencing. The two best examples of this capability were the New England Digital Synclavier II, and the Crumar General Development System. The Synclavier II, a thoroughly updated and expanded version of the original Synclavier, can record up to sixteen tracks of sequence—and each one of those tracks can be fully polyphonic! Additionally, overdubbing can be done on each track, and as long as the same voice is used, it doesn't require an additional track to record. The Crumar GDS includes an eight-track sequencer-recorder, which allows different voices to be recorded on each track, as well as several passes of the same voice. The eight tracks can be synchronized in a variety of ways in playback, either waiting for other tracks to finish before restarting; restarting by themselves whenever finished; or starting upon completion of a different track. An editor is provided which allows replacement of any number of notes, since it steps through the track one note at a time, and breaks up notes within chords, so that a major chord can become minor, for instance. The Crumar GDS has a deceptively simple faceplate, which is under software control, meaning that every knob has multiple functions depending on the overall mode of the unit. The Con Brio ADS 100 (and all-in-one 200) was shown with a new feature—a real-time music-writing program.

These are fragmentary descriptions of four very complex instruments, and point only to a fraction of the features of each instrument. Some trends are becoming clear for the eighties, and promise to influence the way music is written and performed, as well as the way it sounds. Three features which should have some impact are: the amazing sequencing abilities of these new instruments; the opening of new vistas for synthesized sound sources; and the dawning of the era of computer-aided music writing and scoring. None of the instruments shown were "push-a-button-and-play" affairs, and most required at least some familiarity with computer operation. It may remain for later models to translate these advances into more widely affordable and accessible packages.

"Digital" has been the buzzword for some time now, and this AES show did nothing to change that. Both Sony and Technics (Panasonic) showed refinements in their editing systems for digital tape recorders, and it was impossible to escape numerous fine, superfidelity displays of the amazing clarity and dynamic range of recordings made on the Sony, 3-M, and Technics recorders. The main advance seemed to be various methods of making edits that were comfortable to people who have been using razor blades and splicing tape for years, often with incredible precision. Sony and Willi Studer also announced that they have agreed on a common format for stationary-head digital audio recording. This may be the beginning of an attempt to standardize digital recording, which would hasten its growth; standardization has been opposed by some sectors of the industry who feel that it is just too early to finalize the standards for a field whose surface has just been scratched. There was no other evidence of a common format, and each company seems to have valid features which will probably

Panasonic adds a new division:

The Professional Audio Division

Professional audio isn't new to us. In fact, we're old hands at it. Take Technics direct-drive turntables. As a recent survey shows, 73 of the top 100 radio stations that use turntables use Technics direct drive.

Now the Panasonic Professional Audio Division introduces two lines of components for the recording and broadcast industry: Ramsa, a new name in sound reinforcement. And Technics R&B Series, a specialized line of products from a name you already know.

RAMSA When it comes to sound reinforcement equipment, Ramsa has a lot to talk about. Our super tweeter and all compression drivers have a titanium diaphragm with a rhombic edge and ferrofluid in the voice coil gap to minimize temperature rise. The compression drivers feature a 1.4" throat. While the super tweeter has a compression driver and radial horn. Our twin radial horn offers wide dispersion (80° x 40°) and a flat frequency response.

There are also four Ramsa line array speakers. The WS-135 includes four 10" woofers and a horn tweeter. While the WS-165 adds a built-in power amp. The WS-130 combines two 10" woofers and a horn tweeter. The WS-160 also adds a built-in power amp.

The versatile Ramsa WR-130 8 x 2 portable mixer accommodates two turntables, eight mikes, headphone monitoring and more. The WA-140 mixer-amplifier includes 4-balanced-mike, 4-line, 2-phono inputs and a 5-band equalizer. While the WP-9210 power amplifier offers 200 watts RMS per channel from 20Hz to 20kHz into 8 ohms with no more than 0.05% THD.

Three Ramsa microphones are hand-calibrated to meet high performance standards. For instrument miking there's the back electret condenser WM-8150. The WM-8000 and WM-8050, designed for vocal use, include floating microphone capsules and triple wind screens.

Technics R&B Series Now records can be cut as accurately as Technics turntables play them, with the new SP-02 driving unit. It has the world's best torque (28kg/cm). Wow and flutter is a mere 0.0034%. And the SP-02 is easily attachable to Neumann mastering lathes.

Next there's Technics R&B Series SL-1015 quartz-synthesized direct-drive turntable system with a heavy rubber antiresonant base and EPA-500 tonearm system. The EPA-500, which can also be purchased separately, has a titanium nitride arm unit (EPA-501H) with dynamic damping for high compliance cartridges. A tonearm base (EPA-B500) with four-point gimbal suspension. And a stylus pressure gauge (SH-50P1), fully electronic and accurate to the tenth of a gram. To match the mass and compliance of any cartridge, there are four other titanium nitride arm units with dynamic damping.

For your nearest Panasonic P.A.D. representative and more information call toll free 800 447 4700. In Illinois, 800 322 4400.

Panasonic.
PROFESSIONAL AUDIO DIVISION

CIRCLE 71 ON READER SERVICE CARD

become part of the ultimate digital audio recording standard. The real explosion in digital recording is not likely to come before the consumer is able to realize its benefits at home, either with digital records, radios, or tapes of some sort. Technics showed an all-digital system, including a digital mixing board. The original, analog signal, once it has been converted to a digital form, is modified completely by changing digital values, so noise and distortion are negligible.

Another device making use of digital technology was presented by Roland, and it was quite a surprise. The CPE-800 Compu-Editor allows any console to be automated, either with built-in VCA's or with an optional package offered by Roland. One track of SMPTE time code is recorded on the tape machine, and synchronizes the editor memory to the track. Finished mixes can be stored either on a cassette or reel-to-reel recorder. This device is not the first of its type, since Quad-Eight and B&B have previously shown "outboard" automation units, but the price is a real breakthrough, and Roland has built it to the highest standards. All fader levels can be displayed on an oscilloscope, and any or all channels can be readily updated at any point in the mix.

A fascinating use of digital control showed up from West Germany. A system called PARAM allows central programming and control for up to 128 channels of high-grade parametric EQ. Each EQ features six bands with a range of plus or minus 16 dB—but the real trick is in the display and recall of settings. As usual, a video screen shows the status of each equalizer, and the actual EQ curve can be redrawn or modified by use of a joystick controller. In addition, all the settings of an entire console can be recalled in an instant, which suggests some possibilities both for studios whose work with one group may be interrupted during a day, and for live use, where a sound man would be able to completely equalize his band, store the setting, and then turn the board over to another sound man to set up a different act. Since a sixteen-channel system currently retails for $25,800, it will be a while before too many of these things pop up—but the ease with which one could arrive at a precise EQ curve and store it is undeniable, and having a direct visual readout of those evasive parametric settings is a real aid. A final feature of PARAM is a mode where the engineer uses the joystick to draw the curve desired, after which the computer optimizes the curve, programs the equalizer, and displays the resultant curve.

A good deal of attention was given to reinforcement products. Several new amplifiers made their appearance. The UREI 6500 features Conductor Compensation, which allows the amp to take the speaker lines into consideration in its feedback loop, thus compensating for wire resistance and high-frequency transient distortion. It is a small improvement, but seems to make a significant difference in sound quality. Another interesting package was offered by a new company, Advanced Technology Design Corp. Their series of bi-, tri-, and quad amplifiers offer plug-in front panel modules which offer numerous options for crossover frequencies, as well as miniature DIP switches which tailor the amp response for level and frequency. Bi-Amp Systems introduced their model 2500 amp, featuring a large power supply and high slew rate, as well as 250 watts per channel (8 ohms). All three of these amps are not radical, but rather offer refinements in packaging and sound, and that was typical of the offerings at this show. Other new amps were shown by RAMSA, a new reinforcement division of Panasonic, and by Fostex, a Japanese producer known previously for huge amounts of O.E.M. work for numerous other labels. A/B Systems again displayed their 350 watt/channel model, which shares a concept with the new Urei: slide-out modules allowing instant replacement of an entire channel of the power amp. None of the hinted-at changes in amplifiers showed up, things like tiny, cool-running cubes pouring out 300 watts per channel, or pulse-width modulation amps (which Sony has shown primarily as a hi-fi product), or switching power supplies.

The world of P.A. components got a bunch more crowded. It seems just a few short years ago there were JBL, Altec, E-V, and a handful of others. This year RAMSA (Panasonic) introduced two new compression drivers with titanium diaphragms and ferrofluid-filled gaps. The larger of the two drivers (WS-700) is claimed to handle 100 watts of continuous program—indefinitely. Yamaha again displayed their complete line of speaker and driver components, which are just now coming to market. Renkus-Heinz showed their line of drivers, which are cost-effective and high performance. Fostex had on hand several driver and super-tweeter components, but marketing plans were unclear at showtime. There was no shortage of new cabinets either, with Klipsch showing a repackaged, single-unit LaScala, and Eastern Acoustic Works showing a new horn-loaded two-way box. Community Light and Sound had a most impressive rework of the PBL cabinet on hand called the PBL Super 90, which was loaded with TAD components, and seemed quite extended in range for a two-way system. Yamaha showed their bass bins, horn boxes, and super-tweeter combinations, and RAMSA introduced a line of self-powered columns, along with radial horns. There were several innovations in the radial area, with Community showing off the "radical radial," with a flat front for ease in mounting and set-up. A company called The Kind Horn Company showed a molded horn-case combination which solves many of the packaging problems of conventional radials, since it formed its own stackable box. JBL introduced new fiberglass horns which have uncommonly uniform dispersion and pattern control. The most dramatic and exotic systems present were brought by Meyer Sound Labs. Their monitor system, while way out of most folks' price range, was pouring out high level sound with nary a trace of distortion. Both their stage and studio monitors use a variety of tricks to control speaker and amplifier distortion, and it would not be surprising to see some of these innovations creep into other designs as time goes on. The Meyer products show up another interesting development—the replacement of paper cones with other materials in cone speakers. Specifically, the use of polypropylene is becoming more common, especially in the hi-fi end, and both Sony and Technics displayed studio monitors with honeycomb speakers which were completely flat, eliminating a source of time alignment problems.

Users of reinforcement boards had plenty new to look at, since Yamaha showed a new series of P.A. boards dubbed the "M" series. They continue the tradition of steady update at Yamaha, and seem to concern themselves more with quality of execution rather than loads of fancy features. They showed an 8 by 2, a 12 by 2, and a 16 by 2. The latter features a 4 × 4 matrix, which is similar to the PM-1000, and offers extensive options for separate feeds, recording mixes,

monitor mixes, and so on. EV-Tapco has fleshed out the new Panjo series with just about every configuration possible, from 8 by 2 up to 24 by 4, and everything in between as well. Bi-Amp Systems showed a 24-input version of the 1642, called a 2442, RAMSA introduced a "plain-jane" 8 by 2, which seemed quite solid and reasonable in price. They also showed an integrated mixer (WA-140) primarily intended for conference and club use, with four mic ins and stereo outputs driving 60 watt amps.

Many new microphones were in evidence, including Sony's new series of vocal dynamics, as well as an M-S stereo microphone for about $400, which is less than half the price of anything similar on the market. The M-S technique allows for super-realistic spatial sense in recordings, and Sony's new product reflects a growing interest in different microphones and miking methods. One of the other new mics is the PZM (tm) microphone, marketed by Crown, which uses a tiny mic element suspended in the "pressure zone" next to a plate of metal, and which is claimed to have superior phase response because it is free from ambiguous reflections. RAMSA had a line of professional, hand-made mics for both stage and studio use, including a back-electret model. Fostex showed an extensive range of mics ranging from low-cost dynamics up to studio condensers. So dealers and users will have an even wider array of mics to choose from, and new products are still arriving in this area. One other product of particular note is a new crossover from UREI, which incorporates a frequency counter (digital display) which shows the exact frequency chosen in each band. The Urei unit could handle mono 5-way, or stereo 3-way.

The idea of time- and phase-alignment seems to have taken hold in a big way. Tannoy monitors were displayed with crossovers which used a delay device to correct any anomalies in arrival time. AudioTechniques also was offering a similar unit to retrofit into Big Red studio monitors. It seems only a matter of time before the concept will spread into the wider world of P.A.'s and monitors. Technics' new line of monitors were all phase- and time-aligned, as were many others.

There were some surprises in the signal processing area. Dbx introduced the 900 series, which consists of a rack/mainframe which incorporates a power supply, and holds up to eight modules. All connections are provided at the back, both balanced and unbalanced. They showed three modules for the rack: a sibilance controller, a compressor, and a noise gate/expander. Each one incorporated at least one innovation not found on the competition, and the whole affair was quite compact and well-constructed. A similar idea was echoed at the Scamp booth, where the Scamp Mini-Rack was shown, which incorporates the user's choice of Scamp modules into a road-cost keeps coming down, and Cunning-cased unit ready for hook-up. B&B (distributed by Aphex) also showed modular parametrics and gates.

There was no shortage of effects units, with MicMix introducing two new reverbs; one is a rack-mount, stereo unit which is a lower-cost complement to their popular XL-305; the other, the XL-500, offers digital control of an analog system, and duplicates the characteristics of concert halls, acoustic chambers, and plate echoes. It has a remote control so the spring units can be placed out of sight and away from sound. Speaking of plates, their ham and Associates showed the Eco-

plate II, a compact, $2500 plate echo which has variable decay from one to six seconds. Many people have spoken of the imminent death of the plate, due to both digital units and improved spring reverbs, but the Ecoplate II lacks nothing in sound compared to the "big guys," and is competitive with better reverbs. Two high-ticket pitch shifters were present. Publison, a French company, showed their stereo harmony device, which is also an excellent stereo delay line. AMS, from London, demonstrated the DMS-15-80, which allows storage of programs in up to nine memories, as well as harmonization and delay. Programmable parametric EQ was also shown by 360 Systems, as well as the Param system described before. Once again, digital control of analog systems seems to creep in to new applications with each passing show. Marshall Electronics (no relation to the amps) showed two new versions of their Modulator: the Mini-Modulator, with presets for quick use on stage, and the 5402, with six delay taps, extended bandwidth, lower distortion, and improved packaging. Their analog remains completely competitive with comparable digital units, and represents the peak of this technology.

There were relatively few new consoles around in the lower end of the professional marketplace. Sound Workshop showed the Series 30, which represents a bridge between the high-end automated boards and small-studio consoles. It is available with as few as 8 inputs and 8 out, but can also be ordered with parametric EQ, a patch bay, and even automation. Prices range from $4,445 up to $35,370 for a 36-in, automated board with Super-Group and 24 outs. That's quite a range! An English company, TrackTech, also introduced a series of three boards, with from 12 to 20 inputs, and up to 16 outputs. The cost of these boards has been held down by the use of non-modular construction, and components have been chosen to be readily available almost anywhere in the world. Tentative pricing was in the vicinity of $13,000 for a 20 × 16 console, which seemed reasonable in light of the considerable list of features incorporated into the consoles. Tangent Systems showed the Phoenix BC-1, a battery-operated mixer for remote recording, film, and broadcast use, and they also announced a new series of mixers to be shown at the next AES in November. Otherwise, the action was at the top of the market, with Solid State Logic showing an automated board with Total Recall—which stored the settings of *everything* on the face of the console—and there's a lot on the console. Harrison also showed their new console which incorporates a microprocessor into each module. This allows changing around the modules through software rather than rewiring, so a great deal of customization can be done, and the board can change to fit changing needs. Neve showed the latest generation of NECAM automation, and their console also had a high degree of centralized, digital control of many functions.

The real question is: What does it all mean? The clearest answers are that costs are still falling in most areas, competition is increasing, and computers are coming to be part of almost every type of product. The pace of improvement is relentless in many areas, with the most dramatic changes likely to happen at the speaker-amp interface. Manufacturers will need increasingly to keep abreast of research developments in order to remain competitive. Consumers and dealers alike are faced with wider choices of better products, and both buyer and seller will have to work harder to get to the bottom of the matter and find the superior products. Digital audio and the audio-video marriage will come to dominate the field by the middle of the decade, especially from the recording side, and since much of the equipment used in digital audio recording is video equipment, it is reasonable to guess that combination audio-video recorders will become available as the media grow up together. These machines would be the "TASCAM" of the video world. A number of booths featured synchronized video and audio performances, both with analog 24-track and digital audio. Meanwhile, there's a hell of a lot of life left in analog recording as evidenced by the Teac 85-16, which opens up pro recording to a whole new catagory of user, and by the new multitracks from Ampex (ATR-124) and Otari (MTR-90). A major effect will be felt from continuing improvements in measurement techniques, especially in speaker design. Another emerging area is the testing and treatment of clubs, concert halls, and studios. More tools will become available for these purposes, at lower cost. All in all, the eighties should be an exciting era for recording and performance alike.

THE 'OVER EASY' COMPRESSOR/LIMITER.

YOU'LL SWEAR IT ISN'T THERE.

Until now the recording engineer had to settle for a compressor/limiter that was somehow... limiting. Most compressor/limiters utilize a threshold above which compression kicks in, suddenly and audibly. The engineer has to use this device quite sparingly to preserve the "naturalness" of the music he's recording.

The dbx Model 165 is a compressor/limiter that is nothing short of revolutionary. "Over Easy"™ compression allows the signal level to pass through the threshold and gradually adds the desired amount of gain change over the range of several dB. The result is compression that doesn't sound "compressed." Engineers who have used it have checked to make sure it was really connected.

The 165 incorporates other exclusive dbx design features such as true RMS level detection and feed forward gain control. A separate input is provided to the level detector. Because attack can be completed before the signal arrives at the gain control stage, this input allows the creation of special effects.

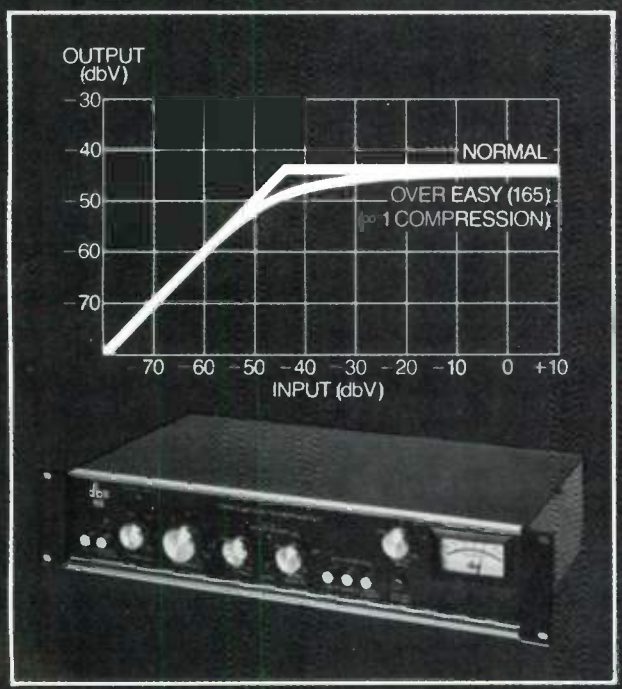
The 165 is the most flexible compressor/limiter in the dbx line. It is strappable for true stereo operation. (A master/slave switch is located conveniently on the front panel). It has manual attack and release rate controls that can be switched on for special effects. Despite all its features, it occupies only 3½" of rack space.

In the hands of a good engineer, dbx's new 165 is more than the most natural-sounding compressor/limiter you can buy; it is an integral part of the creative recording process.

dbx, Incorporated, 71 Chapel Street, Newton, MA 02195. 617-964-3210.

dbx

Making Good Sound Better



The SOUND SH

Time was when a **Fender** amp was the *only* amp to have, and indeed, one of the few brands that were available. Down through the years, as other amplifiers came on the market, Fender stuck to their basic design: two channels, passive tone controls, reverb and/or vibrato on channel two, bright switches on both channels, and independent volume controls on both channels. Only recently did Fender add a master volume to their amp's features.

So it is with some surprise that dealers will greet the newest offering from Fender, the Fender 75, a new tube-type amp that offers Fender fans the most versatile panel layout yet to be seen on a Fender amp, old or new.

The 75 has both a lead and a rhythm channel. The master volume operates both channels at the same time, but the lead master control works on the lead volume only, if the user desires. What it amounts to is a clean rhythm channel and a distorted lead channel, with a footswitch between the two. The midrange control has a 40 dB capability and a boost switch that expands midrange potential. Also, the bass and treble controls have pull-switches for added boost to the tone.

The Fender 75 contains a unique three-spring reverb which can be engaged from a footswitch at the end of a luxuriously long 12-foot cable. A green LED on the front panel signals "on" for the reverb unit, and a red light indicates that the player is using the "lead" channel. Yet another feature is the hi/lo gain switch that provides the option of 75 or 15 watts of power.

On the rear panel Fender has gone to great lengths to update their design, and the results are encouraging. The features include an effects in/out jack, a hum balance control, and an output tube matching control for balancing tube replacements. All this in addition to the usual assortment of Fender rear-panel features adds up to a very versatile package.

Another unusual feature is the speaker, a heavy duty 15″ Fender speaker that is more than capable of handling the 75 watt RMS power output of this amplifier.

Like most Fender amps, the 75 is a self-contained unit with an open-back cabinet. This type of amp is usually very bright and clean and thus an excellent amp for almost any application except hard rock and roll. However, the big speaker and the updated features just might make the difference in punch that one needs if one is hell-bent on playing one's guitar really loud for one helluva long time.

CIRCLE 1 ON READER SERVICE CARD

The Polypatch System from **Music Technology, Inc.** is unique in several ways that should be of benefit to keyboard players. The unit is equipped with a long-spring reverb unit and effects send/return on each channel. The reverb control on each channel is connected to the tone controls on each channel, so that not only the individual reverb volume, but the tone can be altered for each channel. Futhermore, when an external signal-processing device is connected to any channel,

OPPE

By Charlie Lawing

the reverb is *not* overridden. Instead, the amount of reverb and effects can be balanced on each channel. In addition, when the reverb control is turned fully to the right, the signal becomes 100% reverberated, which is ideal for synthesists who want a realistic string or brass sound.

Each channel has three-band active equalization, mic or line inputs, effects send/return loops, and level control. The master control section features gain, reverb and effects return level.

The Polypatch System delivers 180 watts RMS power into a 4-ohm load. Furthermore, there is both a preamp-out and a preamp-in jack on the rear panel. The Polypatch can accommodate another mixer as well as send an unamplified signal to an external power amp. If there is a particular effect that the user wants on all channels, a "mix effects send" jack on the rear panel makes that option possible. When that particular jack is used, the individual effects send controls on the front panel control how much of that effect is heard. For convenience, there is one low-Z cannon input on the rear panel that will accommodate a microphone on channel one.

Two fuses protect the Polypatch, one for the speakers and one for the amplifier itself. Finally, two speaker outputs finish up the rear panel layout.

Someone put a lot of thought into what a keyboard player really needs from a mixer into the design of the Polypatch System. It is one of the most versatile, sensible and compact units available today for the keyboard professional, whose particular needs have up to this point been largely overlooked.

CIRCLE 2 ON READER SERVICE CARD

Yamaha has a new little guitar amp on the market, the G-5. This thing looks like a Mesa/Boogie amp that got washed in hot water and left in the dryer too long—it is little, but very attractively built. The cabinet is made of strips of exposed hardwood that has been "dove-tailed" at the corners and finished with a clear varnish. The grillcloth is a rattan diamond-weave material that adds a classy touch to the appearance of the G-5.

Inside this pint-sized cabinet is a roaring, screaming five-watt solid-state amplifier and a monstrous 8-inch speaker that really sounds right when it is cranked up! The amp has Hi and Lo gain inputs, Master Volume, Bass, Treble and electronic Reverb controls on the front panel. The unit is AC-powered and has a headphone jack on the back panel.

The G-5 is designed for practice, but it really will get loud!. It would probably make a great little studio amp, and could even be used in a pinch on a live date, provided that the user could mic it through the sound system.

Best of all, though, is the low price and the good Yamaha name on the front panel!

CIRCLE 3 ON READER SERVICE CARD

Roland's new Bolt-60 guitar amplifier represents an attempt to compromise between vacuum tubes and solid-state electronics. The relatively small amp, which houses a single 12" speaker, has standard vacuum tubes (one 12AT7 and two 6L6GC) as well as FET circuitry. The tubes are intended to produce the warm distortion sound that guitar players seem to prefer, while the FET circuitry drastically reduces noise and improves the tone control of the unit.

The Bolt-60 has two channels, an external effects loop, built in reverb, an overdrive circuit, three tone controls and a headphone jack, all accessible from the front panel. On the rear panel are a number of features, including a line out, preamp out, and a speaker out jack.

The user can switch from channel one to channel two, that is, from distortion to clean sound, by employing the footswitch that is provided. In addition, the footswitch also activates the reverb for either channel.

The Roland Bolt-60 is a compact 60-watt amplifier that reflects the industry trend toward smaller, more sophisticated amps that can be used in a variety of situations.

CIRCLE 4 ON READER SERVICE CARD

An audio mixing console with independent mono and stereo outputs for live performance and recording applications has been introduced by **Audy Instruments**. According to the manufacturer, the Audy Series 2000 Mixing Console produces simultaneous mono and stereo outputs that allow mono and stereo formats to operate independently. It also provides separate monitor and effects sends. The console is available in 12 or 16 channels (stackable up to 32), provides input preamps with a dual LED system, and maintains head room of 25 dB throughout. Other standard features include: individual channel and output patch points; transformerless balanced inputs and outputs; three band EQ with switchable midrange; switchable pre and post monitor and effects sends; soloing for any input or output; phantom power; work lamp socket; and an Anvil ATA approved flight case.

CIRCLE 5 ON READER SERVICE CARD

Multivox has introduced "Big Jam," an effects pedal line incorporating features such as an L.E.D. indicator light that shows when pedals are in operation (green-effect on, red-straight or normal signal) and also acts as a battery power check; a noiseless maintenance-free electronic F.E.T. switch circuit; and recessed front-mounted slide controls.

The range of "Big Jam" effects includes traditional distortion with separate controls for drive, tone and level output; a compressor; a jazz flanger, which the manufacturer recommends for new-wave sounds; a phaser; a flanger; an analog echo unit with a separate "studio quality" reverb circuit; and a bi-phase pedal. Tone modifying effects include an envelope filter; an octave box; and a graphic EQ. "Big Jam" is protected by a steel casing; the pedal casing is color coded; the battery compartment is hidden but accessible; and each pedal is A.C. adaptable.

CIRCLE 6 ON READER SERVICE CARD

Bode Sound Co. has introduced its Model 7702 Vocoder. With patented circuitry for what the manufacturer calls "superior intelligibility," it also has provisions for freezing input speech and other sounds (sample/hold) and for activating crosspatches for speech scrambling.

A 16-channel Vocoder, the Model 7702 comprises a 16-channel analyzer and a 16-channel synthesizer section for the transfer of the overtone structure of sounds entered into the Voice inputs onto the sounds entered into the Carrier input. Frequency range of the 16 channels extends from 50 Hz to 5080 Hz. In addition, a high frequency channel extends from 5080 Hz to 15000 Hz, and can be operated as a bypass or activated only in the presence of "s" sounds and consonants. Special features of the Model 7702 include a patch select control; a sample/hold control; and a Vocoder bypass. In addition, the Model 7702 has a built-in pink

The SOUND SHOPPE
REAR ENTRANCE

noise source; voice activated switching circuit; high impedance line inputs and low impedance output; built-in power supply, switchable to 115 or 230 volts A.C.; and standard rack mounting.

CIRCLE 7 ON READER SERVICE CARD

New from **Beyer** microphones is the model M-130, a bi-directional ribbon microphone that is especially recommended for broadcast or recording situations in which two people are facing each other. This recommendation is because the M-130 has a unique figure-8 polar pattern that allows the mic to pick up both voices with equal sensitivity while suppressing unwanted sound reflections and extraneous side noises.

The generating element of the M-130 consists of two aluminum ribbons, each less than one twelve-thousandth of an inch thick, that move with a separation of only 20 thousandths of an inch. The M-130 has a very low inertia, which results in an excellent transient response and a smooth frequency response from 40 to 18 kHz.

The M-130 is unaffected by extremes in temperature or humidity, and is considered by the manufacturer to be immune from damage due to overload or mechanical shock. The small size of the mic makes it ideal for television and film studios, since it is only about five inches long, including the bi-directional headpiece. The M-130 comes from the manufacturer with a standard three-pin Switchcraft connector.

CIRCLE 8 ON READER SERVICE CARD

Studer Revox America has a new modular-designed audio mixer, the Studer 169. The modular design allows for easy servicing as well as a variety of configurations, all the way from 11-in/1-out to 8-in/4-out.

Included in the 169 are the appropriate pan-pots for each output setup, as well as metered, variable recovery-rate limiters. Also included are switchable cue tones, muting, solo and pre-fader monitoring facilities. Each input contains ±16 dB bass and treble equalizers and a midrange equalizer with a continuously tunable center frequency from 150 Hz to 7 kHz.

The Studer 169 also comes equipped with full reverb send and monitor controls, low-end and/or external filters, and long-throw, low-noise input and master faders. The buyer may select either PPM or standard ASA Vu meters. Input sensitivity is adjustable at each input from −61 to +4 dBu.

CIRCLE 10 ON READER SERVICE CARD

If you are looking for headphone amplifiers, **Edcor** has a pair of new professional amplifiers available for shipment. The HA 100 eight channel or the AP 10 four channel (both stereo) can be used with any combination of headphones with impedance of from 8 to 2000 Ohms. These amplifiers have a flat frequency response, less than 0.1% THD, and an A-weighted signal-to-noise ratio of −101 dB. These units can be desktop or rack mounted, and are recommended for several uses: studio, audiophile stereo system, instore headphone demo, or any audio-visual application.

CIRCLE 9 ON READER SERVICE CARD

By Steve Caraway

DEALER DOSSIER

Guitar Showcase
San Jose, California

When Bud Eastman sold his business to the enterprising young Barry Wineroth, Guitar Showcase was on its way to its place today as San Jose's largest musical retail outlet. Located in a beautiful custom built structure located mere blocks from Eastman's second location, Guitar Showcase is run utilizing "basic Christian principles," and is the retail hub of the musical wheel of the San Jose club and concert scene. On a typically beautiful California day, SOUND ARTS cornered Wineroth to talk about Guitar Showcase's past, present business thrusts and philosophies, and the future of the operation.

You must have had some musical background to have led into your involvement with Guitar Showcase.

Wineroth: I played bass, and my first group was called The Jaguars. We had a couple of records out that were regional hits out here, nothing special. From there I moved on to a group called Mixed Company, and then I stayed out of music for about a year. I got the bug again and started a band called Daddy-O. I played with them for four years and eventually dropped out because they really wanted to do it full time. At that time I was running the store and I just couldn't do that.

How did you become involved with Guitar Showcase?

Wineroth: It was ironic, because Bud Eastman, who started the store, had Eastman Studios over on Union Avenue in San Jose. I went in one day and Bud was teaching guitar. When he found out I was in The Jaguars, he asked me if I was interested in teaching at his studio. I said, "Sure I will, but I don't know how to read music!" He said, "I'll teach you first." So he taught me personally for about eight months and then I started teaching. After teaching a while, I moved up to closing purchases and then I dropped our of teaching and started NBC Booking Agency here in San Jose. After two years of NBC, I got a call from Bud, and he told me he was going to close his store or sell it, because he really wanted to get into *Guitar Player* Magazine, which he had started. He worked out a deal for me to keep the studio going, which he had moved to Bascom Avenue, and I bought the good will of the business and moved NBC Booking Agency into the facility. I felt we could keep both businesses under one roof. At the time we were mainly a teaching studio and we didn't do much selling, but I loved to sell and I would stock more and more stuff. So it came to the point where my associate at NBC bought me out and I went on with Guitar Showcase. From that point I just kept plowing everything back into the store. I figured I was only going to increase my sales by having more stock to sell. I didn't go out and borrow a big chunk of money, so I didn't have a whole lot of pressure on me and it was a lot of fun.

You must have had space problems in the old location with the increase in inventory!

Wineroth: There was equipment stacked all over that little house; we were there for 6-1/2 years. Things were really going crazy, so I looked around and I found two pieces of property for sale and that's the location we have now. The lady who owned them said that she wouldn't sell one without the other. I really only needed one, but I wanted the location so I said that I'd buy both and we closed the deal. That was the greatest thing for me, because now I need to expand and if I hadn't bought the lot next to me, I'd be up a creek!

When did you move and how much did your floor space increase?

Our culture, our ingenuity, our music.

MXR

Our music means a lot to us. Ever since the Blues, we Americans have had a language in which to share our history and our dreams. We've moved together in a common rhythm that tells us who we are and unites us as a people.

Every one of us has been involved. As performers. As listeners. As Americans who support the freedom and the youthful energy that make our music unique.

You see, you can't separate our music from our culture—because our music reflects how we live and what we value.

Take our ingenuity, for instance. It's an integral part of our music and its heritage. Americans invented the electric guitar. The phonograph. A multitude of new techniques and sounds.

It was here where the Blues gave birth to Rock 'n' Roll. And artists from around the world have come here time and time again for inspiration and support.

But the sounds and the techniques that make our music what it is are so deeply rooted in American culture that they resist imitation. To create genuine American music, you've simply got to use American methods. Others may try hard to reproduce our products, but *a copy is still a copy.*

That's why we at MXR are so strongly committed to providing a vocabulary of special effects that will enable us to express ourselves in our own special way. From Blues to Country, Rock to Jazz, we Americans have something unique and important to say. At MXR we understand that nobody can say it for us.

Because our music is who we are. It's our history. It's our culture.

It's America.

MXR Innovations, Inc., 740 Driving Park Ave., Rochester, New York 14613, (716) 254-2910

Made in U.S.A.

Wineroth: We moved in 1975 from a floor space of 850 square feet to this place which has over 7,000 square feet. We're going to be expanding when we build our new building next door, and that building will also have over 7,000 square feet. We'll lease out about 2,000 of that to other music related concerns that I am not involved in. We'll have more teaching studios next door. We'll also have a clothing shop that deals with musician's stage clothing. This essentially will be a musician's center. Jim Bruno, who runs our teaching facility, owns the house on the other side of our store lot and we already have plans to develop that property too.

The first thing that comes to a retailer's mind is: does the demand justify this tremendous expansion? What does the market look like here?

Wineroth: Our market is basically the garage band. There are so many teenagers and young people here in this San Jose area who are trying to make a name for themselves in the music field. I think that the push for that has come from the fact that there have been two or three groups from this area that *have* done something big. The Syndicate of Sound was the first group to do anything big on a national level. Then The Count Five had a nation-wide hit and a million selling record. And of course now The Doobie Brothers are a gigantic act. All three groups came out of San Jose and all three groups shopped at Guitar Showcase. It takes something to feed the kid's desire and if they plug at it long enough and they have the talent, they're going to make it.

Who are some of the name clients you have here?

Wineroth: Oh, Tiran Porter [Doobie Brothers] comes in all the time and Pat Simmons [Doobie Brothers] comes in once in a while. Bo Diddley comes in all the time. We also have a very heavy club band business here and some of those guys have been coming in since I took over the store 12 years ago! Some of those guys are getting up there in age too; Don Bascom from the Syndicate of Sound still shops here.

How do you have your staff lined up?

Wineroth: In the beginning it was just one other person and me running the store; but as time went on I realized that I just couldn't handle it any longer. It took me a while to realize it, but it got to the point where it nearly bowled me over! I tried to hold on to everything instead of trying to delegate. Once I learned delegation, the expansion happened even faster. We now have six different department heads here now in the actual retail part of the business. These department heads are responsible for doing the buying for their respective departments. They have a budget they have to stick to, but they do all the buying and dealing with salesmen. So instead of my having to talk to 100 different reps a week, I normally don't have to talk to any of them unless there's a particular problem in some department.

Can you give me a run down of your department managers?

Wineroth: Dan Aronie is in charge of the guitar department. We've got Ken Dugan, who's head of the amplifier department. Hal Belden is in charge of sound reinforcement. Jim Ratiu runs the multi-track section. Robert Vallelunga is our keyboard expert. We've got Ray Michaud in charge of percussion. Lynette Massingill looks after all our sheet music and books and accessories. Rick Allen is my general manager, who is in charge. We have an advertising agency that we work closely with and they handle our newsletter that goes out to our customers as well

Unadvertised Special

Sometimes our mailbox brings us a better ad than we could write ourselves. Here's the complete text of a letter we received from Rick Stalnecker, a musician and experienced traveller. Rick's letter says more about the Bose® Model 1800 Amplifier than we could say in a book.

"Enclosed is a picture of our present amp case. These are the original Bose amps which we put on the road in the summer of 1973. In the past six years, these same amps have played in over 500 cities and done at least 3,500 concerts from Anchorage, Alaska to Key West, Florida. This is the fourth road case the amps have outlived, and we use the finest cases available! One week they'll be in a football stadium, through several rain storms, and the next week in a studio or auditorium somewhere. We figure that they have traveled around 500,000 miles and although we have worn out 3 equipment trucks, we have yet to have the first problem with one Bose amp ever! I can't believe it! We have never even replaced a 15-cent fuse! As if that wasn't enough for these work horses, when I get home to our studio I use them for playback, mixdown, and even headphones. The last time they were out of a case, I thoroughly checked them and there wasn't even a casing screw that needed tightening.

I say all of this for one reason. Right now, everybody and their great uncle is claiming their amp to be the best, and I don't think your advertising has been saying enough about your amps. Personally, I can't say enough about their reliability, power, and inaudible distortion.

There is one bad thing though, I probably will never need to buy another amp from you!"

Thanks, Rick! Letters like yours make all of our work seem worthwhile and rewarding.

BOSE®

Better sound through research.

Bose Corporation. Dept. SA
The Mountain Road
Framingham, MA 01701

☐ Please send me the complete Bose Professional Products catalog.

☐ Please have your representative contact me.

Name:_____

Firm:_____

Street:_____

City:_____ State:_____ Zip:_____

Tel. ( )_____

as handling all our advertising campaigns.

What about your advertising policies? Years ago you ran some mail order ads. Are you still involved with that business thrust?

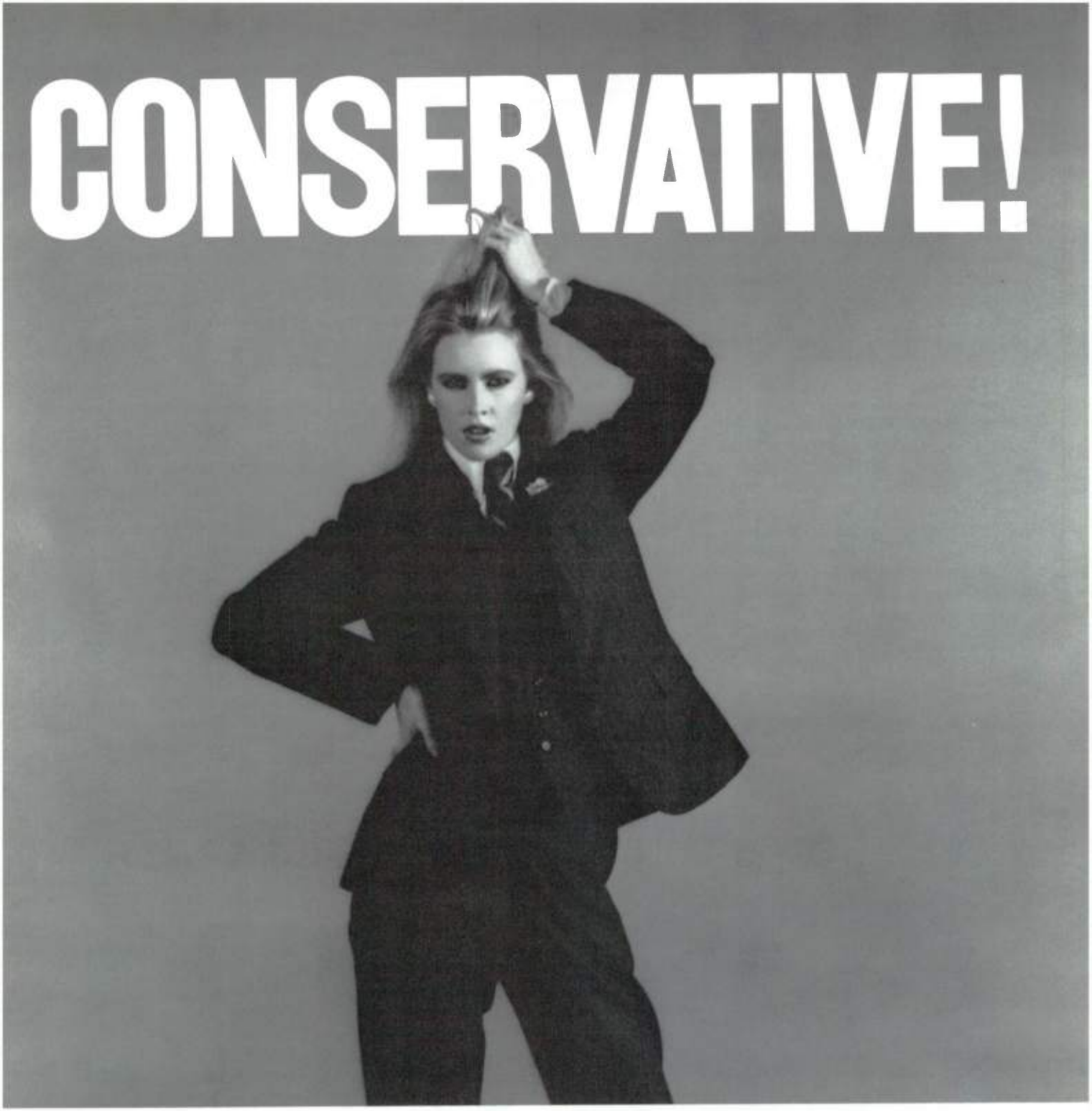
Wineroth: We're not too involved with mail order, but when we started out with that, we got a lot of requests for catalogs, but very few sales. We are into heavy radio advertising, we do some television advertising as well as running ads in *Guitar Player*, *BAM* [The California music magazine], a few local music publications, and the daily newspaper. What we rely on most though is repeat business and word-of-mouth. We try to stress our service. With a lot of stores it's "Good Deal—Good Bye!" But we want that customer to come back and if he has a problem, we want to hear about it. We have our own in-house service department here. A fellow by the name of John Arner does all the service work on all our instruments except synthesizers, so the synthesizers we have to send out to have them serviced. If someone wants the neck of his guitar shaved or a new fret job, we send the instrument to

either Kent Perkins [local Gibson authorized service center] or Dan Torres [local luthier and guitar wizard]. We don't try to do that kind of stuff here because you need a real professional and that takes time and space; we'd rather use that space to sell.

What kind of trade-in policy do you have here?

Wineroth: We encourage trade-ins, in fact we outright buy instruments for cash if a guy wants to unload an instrument. All of us here are musicians and we realize that when you change from doing practices sessions to doing club gigs night after night, your equipment needs change. That amp that you bought nine months ago just isn't right any more. We don't want to bog a musician down in that way. The thing that we've always based our store on—and I

CONSERVATIVE!



Gauss speakers. Outrageous performance in a very conservative package. Designed purely for live music, whether you play bizarre or piano bar. Speakers that stand up to 400 watts of continuous pink noise power. Speakers that stay alive. That's Gauss. A company dedicated to the proposition that music is a profession, not a hobby. A company free from the distraction of hifi design considerations. Hear us at your local Gauss music retailer. A select group of the best. They just might turn your head around!
Gauss.
Professional. Only professional.

gauss by Cetec.

CETEC GAUSS. 9130 Glenoaks Blvd. Sun Valley, CA 91352 (213) 875-1900 TELEX: 194989
CETEC INTERNATIONAL LTD. 16 Uxbridge Road Ealing, London W5, England 01-579-9145 TELEX: 935847
Divisions of Cetec Corporation

CIRCLE 89 ON READER SERVICE CARD

WRH

know this sounds like a plug, but it's not—is the fact that we try to give the customer a good honest deal. If I can make a living and sell an instrument at a 20 percent discount, then I am going to do it. I am not going to try to nick the musician for the full markup price, and just put the extra money in my pocket. I figure in the long run I'll make more money because I'll last longer 'cause we're going to make friends and we're going to keep those musicians in business. If I fleece the dollars out of them and they belly-up and stop playing music, I am the one who lost; they're going to stop buying instruments.

How do you have your store set up?

Wineroth: As you come through the front door there is an accessory counter and opposite that is the percussion section. As you move down onto the main floor we've got our electric guitar department and our amplifier area sandwiched together. The electrics are close to the amps simply because they have to be plugged into something to best test the instrument. In the rear of the electric room is the acoustic guitar room which is equipped with a double paned glass door that slides shut so the customer can test the acoustics.

What kind of problem do you have with excess noise at this store?

Wineroth: Every once in a while we'll get a couple of "Jimi Hendrixes" and they'll be jamming away at full volume and that can get a bit out of hand. This store has a high level of noise anyway, but we sort of channel it out and just attend to what's going on in front of us. In fact we encourage people to come in and jam if they want to. Nothing made me more upset with other music stores, when I was looking for an instrument, than to say, "I am looking for a Stratocaster." He says, "Fine, there's one." He points up to one that's hanging on the wall about 8 feet high and says, "Do you want it?" I couldn't even *see* it let alone play it. I wanted to hear it through an amplifier. We allow the customer to try out a phaser with the guitar if he wants to, or whatever the musician wants.

Tell me about the upstairs section of the store.

Wineroth: As you climb the stairs, at the top is our keyboard and synthesizer department. All the instruments are hooked up and ready for demonstration or hands-on testing. As you move through the keyboard room we have a big 2,000-square-foot room that houses all our sound reinforcement gear and multi-track equipment. All the equipment is set-up to be demoed in that room. We used to have studios for lessons upstairs, but all the rooms are now being used for storage. What we did was to take the small house next to our lot and convert it into about 12 small teaching studios. When we finish the new building, we'll incorporate those into the store again. We also have a small recording studio with an 8-track in it. Our customers get a discount rate on time and we also use it to cut commercials for radio spots. We have 15 teachers who rotate the use of those teaching facilities. We teach everything from voice to piano, guitar, sax, electric stick, just about everything.

With all the different lines available now, how do you decide what to stock?

Wineroth: We listen very carefully to the public, as far as what their needs are. We try to meet those needs with the item. Because each of our department managers and sales people are so knowledgeable, we take them all to the NAMM shows and we look at all the new products at the show and we "A/B" them against each other. If a product is better, then we will stock it. Our desire is to give the very best prod-

uct to the musician.

Do you ever hold educational seminars at Guitar Showcase?

Wineroth: Yeah, in fact we have seminars for our customers and seminars for our staff. We encourage that type of involvement from the various manufacturers we deal with. I was just talking to a Yamaha rep at lunch today and we are setting up a clinic for the store. We find that the more the public knows about the products available to them, the easier it is for us to do our best work.

How did you build your staff?

Wineroth: That is probably the hardest thing for a retailer to do; to come up with a good staff. Frankly I feel blessed because we have a really fine staff here at Showcase. I try to pick people who are not very flashy, who seem to be conscientious about what they are doing, and who want to do a good job. I don't want to work with the person who is a big talker. The guy who walks in and tells me how great he is; that's the guy I'd tend to shy away from. The guy who comes in and says, "I'll do the very best job I can for you;" that's the guy I'll jump on. He's the guy who's willing to learn and someone who I can train and someone who can talk to a manufacturer's rep without acting like he knows it all.

What is your general philosophy behind running Guitar Showcase?

Wineroth: We try to run this business on good Christian principles. It's "Do unto others as you would have them do unto you." You don't do it to them first, you don't stick it to them! This has been my policy all along; to really treat the customer the way I would want to be treated. Using those Christian principals, I have found the business to be really very successful. We'll do things that are probably unheard of by other dealers. For instance, I had a guy who bought an electronic organ and had it for nine months, but he claimed he didn't use it the whole time, just a few times and then he had problems with it. He said he couldn't get back over to the store during that nine months, but now that he did, he wanted his money back. We gave him a full refund on the thing. He was dissatisfied with it and we tried to look at it from his point of view. If he felt that he was treated unfairly, well, this is what we want to eliminate. I was raised by Christian parents and it was impressed on me the whole time I was growing up that if you ran your life in those ways you'd be successful. It's been proven correct 100 percent.

INDUSTRY UPDATE

Barry Shaw has been appointed Controller of Le-Bo Products Company. **Joseph Cantatore** has been appointed Assistant Controller. Le-Bo Products is a subsidiary of Shamrock Broadcasting Company.

Christopher S. Terris has been named Eastern Regional Sales Manager for Nikko Audio. He was previously with SFK Sales, Garrard/Plessey, Superex and Tech Hi Fi. **John Arce** has been named Western Regional Sales Manager. He was formerly with Fisher Corporation and Pacific Stereo.

The Signal Companies and Ampex Corporation have mutually agreed to terminate negotiations for the merger of Ampex into Signal through an exchange of common stock. The merger negotiations were terminated due to "economic conditions and depressed stock market prices."

Olson Sales has been named MXR's consumer group representative in northern California and northern Nevada.

Boston Acoustics has appointed the following representatives: Southwest Marketing Co.; Creative Audio Marketing. Dave Dunn of The New England Sound Co. of Ontario is the representative for Canada.

RolandCorp US has appointed **Richard Schatz** its representative in southern New Jersey, Maryland, Washington D.C., Virginia, Delaware and southern Pennsylvania. Schatz has been with Roland since August 1979.

Loretta Roddy has joined the Irv Rose Group as field merchandising liaison.

Nikko Audio has appointed Venture Sales Corporation its representative for Georgia, North and South Carolina, Alabama, and parts of Tennessee.

McKeen Productions Limited has been formed in Ottawa to serve as the marketing and sales representative for Castle Acoustics Ltd., Soundcraft Magnetics Ltd. and Musico Marketing.

Phil Sun has been appointed National Service Manager of Otari Corporation. He comes to the company from Accurate Sound Corporation, where he was Vice President of Manufacturing, and has extensive experience in the repair and modification of professional tape recorders.

The Consumer Electronics Group of the Electronic Industries Association has appointed Frank Barth Inc. as its advertising, marketing and public relations agency. The agency has handled several special projects for EIA/CEG during the past year, including the industry documentary film, "The Link Between Us . . . Electronics."

Crystal Clear Records has announced plans to issue albums from the Crystal Clear catalog in the dbx Encoded Disc format. The initial offering will include "Sonic Foreworks," "New Directions" and "Taj Mahal Live."

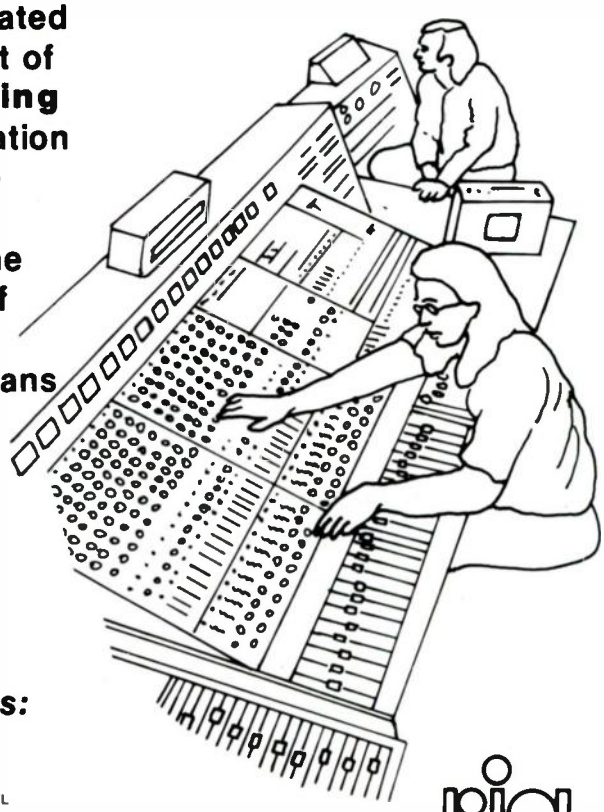
Winners in a national sales contest sponsored by Crown International were: **Garrett White**, Custom Stereo, Columbus; **Steve Vitale**, Barclay Recording, Haverford PA; **John Servo**, Sound Chamber, Rochester NY; **Ken Layton**, Listen Up, Denver; and **Ralph Gould**, McCurdy Radio, Elk Grove Village, IL.

Allison Research, Inc., Valley Audio and Valley People, Inc. have merged into Valley People, Inc. **Norman Baker** is President of the combined corporations. **Bob Todrank**, founder of Valley Audio, is Executive Vice President. **Gary Carrelli** retains his title as Vice President. **Paul C. Buff**, founder of Allison Research, is Vice President.

Hiroshi Tada has been appointed General Manager of Kenwood's Midwestern Regional office, located in Bensenville IL.

RIA, the largest and most respected network of studios offering courses in the art of multi-track recording.

When today's music conscious society made recording the new art of self-expression, the **RECORDING INSTITUTE OF AMERICA** created its national acclaimed ten week course in the art of multi-track recording, entitled **Modern Recording Techniques.** All classes are conducted on location at 16 and 24 track recording facilities. Under the guidance of professional recording engineers as instructors, the students see, hear, and apply the techniques of recording utilizing modern state of the art of equipment. This avocational course includes live recording sessions enabling musicians and creative audio enthusiasts the chance to experience, first hand, the new world of creative recording.



For information on RIA's Modern Recording Techniques course, call our local representative in the following cities:

AMES, IA
A & R Recording Studios
(515) 232-2991

ATLANTA, GA
Apogee Recording
(404) 522-8460

BALTIMORE, MD
Sheffield Rec'g Ltd, Inc.
(301) 628-7260

BIRMINGHAM, AL
Solid Rock Sound
(205) 854-4160

BOSTON, MA
Century Three Inc.
(617) 267-9800

BURLINGTON, VT
Starbuck/Ashley Rec'g
(802) 658-4616

CHARLOTTE, NC
Reflection Studio
(704) 377-4596

CHESAPEAKE, VA
Live Oak Sound
(804) 424-1372

COLUMBUS, OH
Mus-I-Col Rec'g
(614) 267-3133

DALLAS, TX
Sound One
(214) 742-2341

DETROIT, MI
RIA Detroit
(313) 779-1380

FRESNO, CA
Triad Recorders
(209) 237-7477

GREENVILLE/EASLEY, SC
Sounding Board
(803) 269-7012

HAYS, KS
Sunset Studios
(913) 625-9634

HONOLULU, HI
Audissey
(808) 521-6791

HOUSTON, TX
Sound Arts Rec'g
(713) 688-8067

JACKSONVILLE, FL
Cypress Rec'g Studios
(904) 246-8222

KNOXVILLE, TN
Thunderhead Sound
(615) 546-8006

LAS VEGAS, NV
Commercial Sound
(702) 384-1212

LA/ORANGE COUNTY, CA
United Audio
(714) 547-5466

MARIETTA, PA
Atlantic Sound Prod.
(717) 426-2637

NEW HAVEN/HARTFORD, CT
Trod Nossel Productions
(203) 269-4465

NEW YORK, NY
RIA
(516) 334-7750

NORTHERN NY STATE
Michelle Audio
(315) 769-2448

ORLANDO, FL
Aura Sound
(305) 298-2101

PADUCAH, KY
Audio Creations
(502) 898-6746

PHILADELPHIA, PA
Starr Recording
(215) 925-5285

PITTSBURGH, PA
Audio Innovators
(412) 474-6220

RICHMOND, VA
Alpha Audio
(804) 358-3852

SAN ANTONIO/AUSTIN, TX
ZAZ Rec'g Studio
(512) 432-9591

SANTEE/SAN DIEGO, CA
Natural Sound
(714) 448-6000

SEATTLE, WA
Holden, Hamilton & Roberts
(206) 632-8300

ST. LOUIS, MO.
KBK/Earth City Sound
(314) 291-4840

TULSA & OKLA. CITY, OK
Ford Audio and Acoustics
(405) 946-9966
(918) 939-0806

WESTBURY, NY
Don Casale Studio
(516) 333-7898

CANADIAN REPRESENTATIVES

MONTREAL, QUE
RIA
(516) 334-7750

OTTAWA, ONT
MARC Productions
(613) 741-9851

ST. PAULS, ONT
Maxim Canada
(519) 393-6998

TORONTO, ONT
Phase One Rec'g Studio
(416) 291-9553

CIRCLE 67 ON READER SERVICE CARD

CLASSIFIED

If you have a professional multi-track studio, and are interested in becoming a licensed representative for R.I.A.'s Modern Recording Techniques courses, call or write Mr. Chas Kimbrell, R.I.A., 220 Westbury Ave., Carle Place, NY 11514 (516) 334-7750. A large profit potential with low operating costs.

SPECTRA SONICS 1024-24 board: 24 in/out. Producers desk. Excellent condition. $20,000. 215-473-3277.

EXPERIENCED SALESMAN seeking position with western LA manufacturer or retail outlet. Contact J. Radomski, 213-306-0359.

Classifieds should be sent to:
SOUND ARTS
Classified Dept.
220 Westbury Ave.
Carle Place, N.Y. 11514

NEW!

CLASSIFIED

SERVING THE CREATIVE AUDIO AND MUSIC ELECTRONICS INDUSTRY
SOUND ARTS

Classified Department

MANUFACTURERS—*Looking for sales, marketing or technical personnel*

RETAILERS—*Looking for new salesmen*

SALESMEN—*Looking for positions at manufacturing companies or other retail sales opportunities*

REPS—*Looking for new lines*

USE
SOUND ARTS CLASSIFIED

RATES
50c per word
$25 per inch
Minimum order is $5
Check or money order must accompany copy.

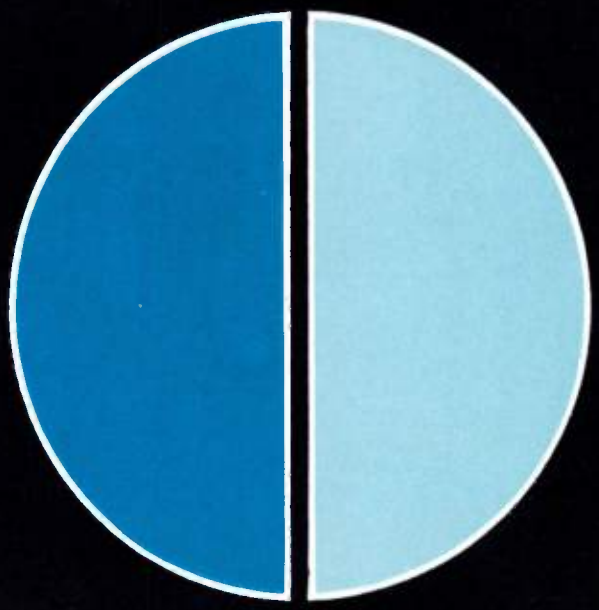
Classified ads should be sent to:
SOUND ARTS MERCHANDISING JOURNAL
Classified Dept.
220 Westbury Ave.
Carle Place, N.Y. 11514

Advertiser's Index

Finally . . .

A magazine that reflects the emotion, the excitement, the intellect, the energy and the fantasy of every musician and sound mixer.

OUTPUT



*We know what's missing and . . .

OUTPUT puts it back in.

FOR

MUSIC MAKERS AND SOUND MIXERS

COMING IN THE FALL

Contact: Margaret Lane for information on selling Output in your store. Call collect (516) 334-7880

*The creators and former publishers of Modern Recording.


See the future of the electric guitar.
The ultimate custom guitar and bass kits from DiMarzio. Send $1.00 for our special color catalog.
DiMarzio®
Musical Instrument Pickups, Inc.
1388 Richmond Terrace
Staten Island, NY 10310
(212) 981-9286
CIRCLE 99 ON READER SERVICE CARD
WRH