SERVING THE CREATIVE AUDIO AND MUSIC ELECTRONICS INDUSTRY

SOUND ARTS

MERCHANDISING JOURNAL

Special: DEALER DATA FILE

$2.00

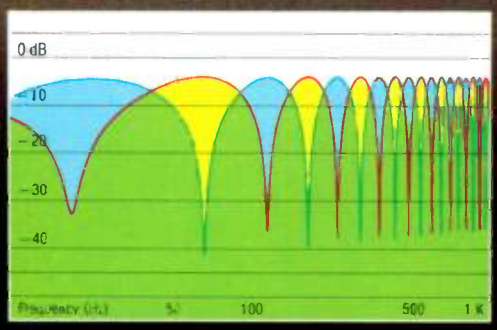
VOL. 3 NO. 2
MARCH 1980

WRAP-UP OF THE TRADE SHOWS— CES AND NAMM

MORE HINTS ON ROLE PLAYING

A TECHNICAL LOOK AT DIGITAL TECHNIQUES, PART 2

More than a chorus.



The new MXR Stereo Chorus stands alone among conventional chorus devices. Its unique design and sound almost defy description.

The Stereo Chorus utilizes advanced time delay circuitry providing a doubling effect for voices and instruments; one voice will sound like two singing in unison, two like four. As in nature, the voices can vary subtly in pitch. What you get is a natural choral effect. It can be used to thicken the sound, so that six-string guitars sound like twelve-strings. Through the introduction of extreme pitch bending, the Stereo Chorus will produce an intense vibrato, normally unattainable.

Not only is the Stereo Chorus musical and versatile, it also provides a means of achieving realistic stereo enhancement. We've included two outputs with complimentary notches and peaks in the frequency spectrum. The exact frequencies which are notched in one channel are boosted in the other. The graph shown is an actual response plot of the two outputs, which illustrates this concept. The Stereo Chorus transforms tones, harmonics and sounds into a lush and shimmering musical environment which surrounds the listener. This differs from similar devices which have one processed output, and one dry output. The Stereo Chorus provides a true stereo image which sounds more vibrant and alive than conventional chorus effects.

The manual control varies the delay time; a width control determines the amount of sweep; and a speed control adjusts the rate at which the delay is swept. A bypass switch provides noiseless accessibility to the dry signal in both outputs.

The MXR Stereo Chorus is equally geared for the studio or the road. We've included an internal switch which allows the selection of instrument or line level at both the input and output. Its high input impedance reduces the effects of loading when using long lines or other effects devices. Its low output impedance allows you to drive long lines and any other equipment. Superior circuit design has enabled us to maintain a wide bandwidth and dynamic range, ensuring signal fidelity.

The MXR Stereo Chorus is AC powered, ruggedly constructed to withstand the rigors of professional use, and is backed by MXR's reputation and commitment to the music industry. But reading about a product that has no equal is not enough. To appreciate what your music has been missing, see your MXR dealer.

MXR Innovations, Inc., 247 N. Goodman Street, Rochester, New York 14607, (716) 442-5320

MXR Musical Products Group

Fender 75 Tube Amplifier. The *New* Rock 'n' Roll Vehicle.

If you believe volume and good sound belong together in rock 'n' roll, consider the new Fender 75 Tube Amplifier. A small, rugged 75 watt tube amplifier that sounds right for rock 'n' roll from whisper to scream.

Clean and/or dirty. Fender 75 offers dual channel functions. You can have a clean rhythm sound at any volume. And by using the channel cascade foot switch, you are put into a separate channel, with its own master volume control, for ultimate distortion.

Sustainnnnnnn. Fender 75 gives you remarkable sustain and distortion potential. Do both at any volume without altering the tone. Use the first channel—and the master volume functions, adjusted for clean or overdrive.

Pull for boost. With treble, mid and bass EQ boosts, you can create most any sound. For serious treble like British heavy metal sound, pull out the treble boost —or use the bright switch to get a 6 dB boost. Mid control gives a mid frequency shift and a midboost of 40 dB. Produce a "fat" bass by pulling the bass control.

Fender did it right. It took Fender to produce an amp that's engineered for rock 'n' roll and totally reliable. So reliable you won't need a backup amp. Small and portable: 22½" wide, 22" high, 11" deep; 60 pounds. In the battle for rock sound, nothing challenges a guitar fired by a Fender 75 Tube Amplifier. Play one now at your authorized Fender dealer.

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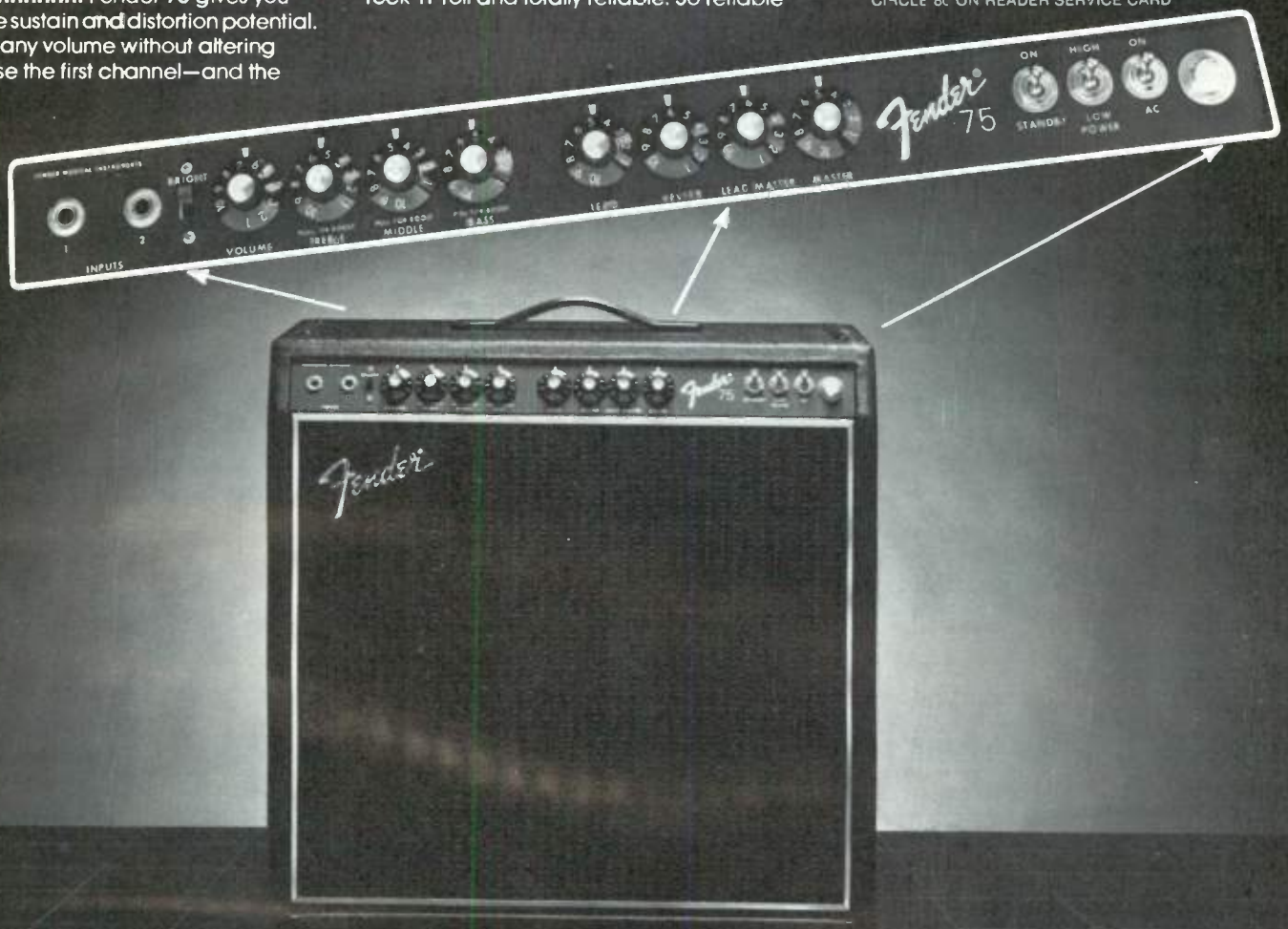

GET THERE FASTER ON A FENDER!

innovate your sound

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For more than a decade we've pushed the limits of electronic amplification and sound reinforcement equipment. We've established ourselves as the sound innovators. Our commitment is to develop imaginative concepts that give you the opportunity to discover your own unique sound. But it's really more than that. Our amps and sound systems *are* different. They're built for you. But, we go at it like they're built for us.

That's why we applied C-MOS (Complimentary MOS) circuitry to our Beta amplifiers. C-MOS was first used in the computer industry. We had no idea there was music in C-MOS until we tried it. The result is a unique overdrive circuit that is rich in harmonic content, much like tube distortion. But C-MOS does more than tubes. Distortion can be added in any amount, at any volume, so you don't destroy your ears to get that hot sustained sound you want. Yet in the clean mode the Beta is clearer, tighter than tube sound, so the characteristics of your instrument shine through.

Most amplifier people use standard speakers. We don't. We make our own so we can capture the subtle sounds that make each of our products unique. And that is what makes your sound unique. Because you can count on those differences to bring out your best. Play the fantastic Beta Series at your Sunn Sound Dealers.

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Beta Series Self-Contained Amps

Sunn endorsees include Chris Squire of Yes (shown above), John Entwhistle with The Who, Steve Buslowe with Meat Loaf, John Deacon with Queen, Joaquin Lievano and Jamie Glaser with Jean Luc Ponty.

Sunn Musical Equipment Company A Hartzell Corporation Company Amburn Industrial Park Tualatin, Oregon 97062

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VOL. 3 NO. 2

SERVING THE CREATIVE AUDIO AND MUSIC ELECTRONICS INDUSTRY

SOUND ARTS

MERCHANDISING JOURNAL

MARCH 1980

CONTENTS

THE FEATURES

THE STAPLES

COMING NEXT ISSUE!

Success with Adversarial Selling
A Retailer's Seminar
Considering the Techniques of Total Staging

Cover photography by Doug Hanewinckel

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A LETTER FROM THE EDITOR

The era of *psychobabble* ended, I hope, with the last decade. Fond farewells to Esalen, est and the primal scream. However, out of the popularization of psychological techniques and sensitivity training I also hope nuggets of useful technology of the head will survive into the eighties.

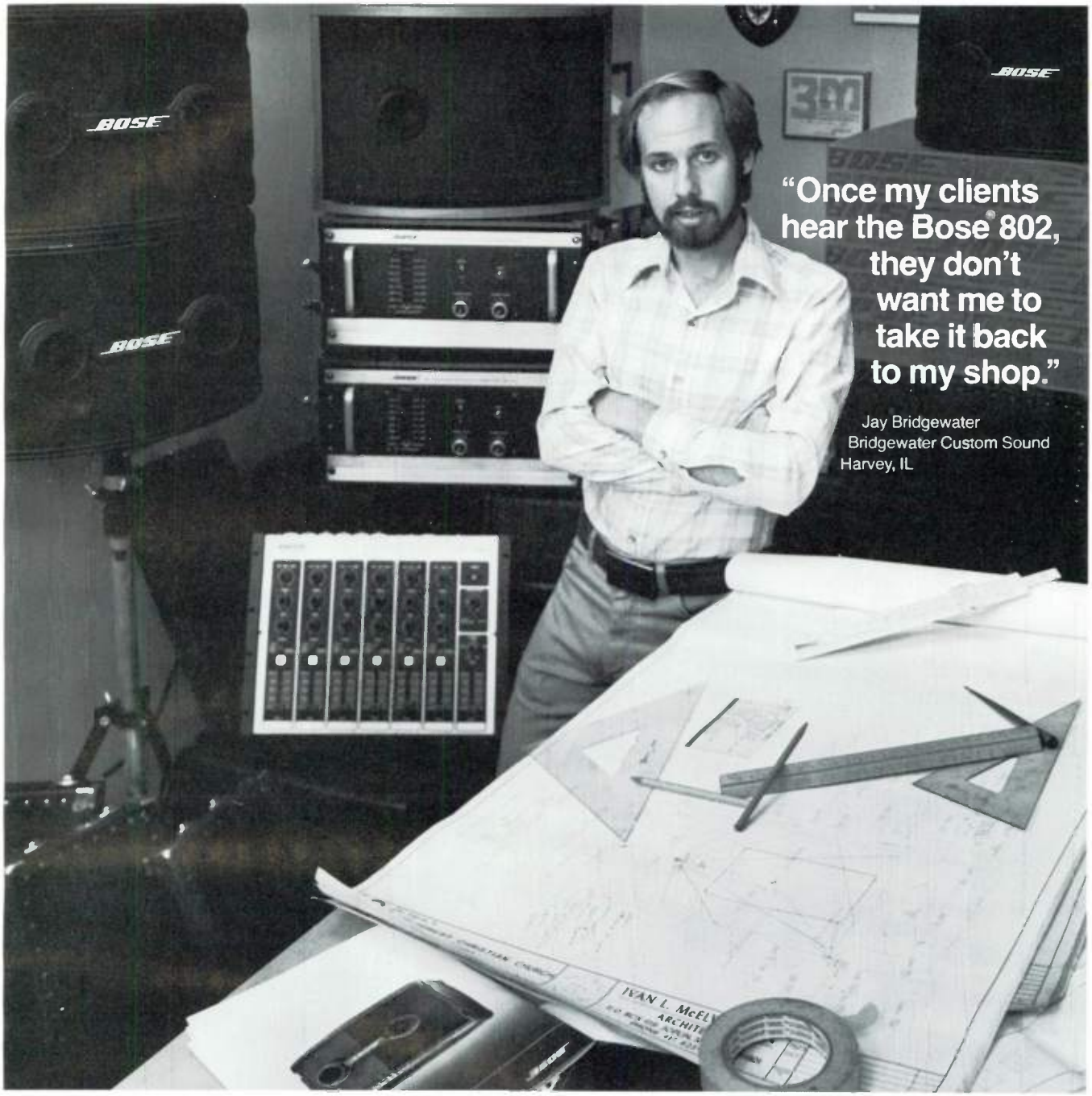
What does this have to do with a merchandising journal? Well, I can't think of any profession requiring more insight into one's own actions and thoughts along with empathy for those of another person than the sales profession—except for politics, which is after all essentially sales. Some psychologists are working with children and adults determining their scores on something called the Mach scale (Mach for Machiavelli, not for the speed of sound) which measures the manipulative ability of the individual. Is there a salesman alive who wouldn't want to go through the top of the Mach scale?

Even for one with an abundance of natural sympathy and empathy, correction and reinforcement can serve to improve skills. And for those who have to work at those skills, an understanding of manipulative processes can lead to an understanding of themselves and their customers. Role playing has long been a psychological technique for delving into interpersonal social processes. One hopes the sillier aspects have ended with the seventies. (I can't relate to my butcher and I don't care to "get inside his head.") But in the serious eighties it's time for people to use the understanding we've been building up to. Tim Rooney continues his series on Role Playing in Sales Training in this issue of SOUND ARTS. Role play is a serious way to flag attitudes of both salesman and customers and to facilitate that close.

Also in this issue, with fanfare and flourish, we bring you our semi-annual Dealer Data File—a compendium of catalogs and other manufacturer-supplied literature available specifically for dealers. Check out the Data File, circle the appropriate numbers on our Reader Service card in the front of the book, and mail the card to us.

Len Feldman and Steve Caraway checked out the CES and NAMM shows respectively and report this month on what they saw of special interest. Reactions to both shows generally were mixed on the floor (that's my reaction, not necessarily those of our writers), with some major manufacturers surprisingly absent and others surprisingly first-time exhibitors. Economic fears were definitely factored into those reactions, but there were some innovative products shown. Read Feldman and Caraway for the story.

Regards,
Judith Morrison Lipton



"The Bose 802 speaker is so versatile that it can be used in applications from churches to performing arts centers to discos.

"The speaker is very compact and aesthetically pleasing. Architects find it especially appealing. Performers love it because of the sound. We love it because it's simple to install and it saves us money and time in installation.

"Our clients like it because it works and it's reliable. You can just turn it on and forget about it. The size and simplicity make it about the only system that's practical to demonstrate on site before we make a sale. We can just bring them in and set them up on stands. Once my clients hear the Bose 802, they don't want me to take it back to my shop.

"Using Bose has opened up new avenues of business for us. Bose has helped build our reputation to what it is today."

Thank you, Jay.

It's also nice to know the 802 has a smooth frequency response that holds down feedback and reduces the need for extensive system equalization.

But we think reading what Jay Bridgewater has to say is more likely to make a Bose believer out of you. Consider the Bose Model 802 when you need speakers for a church, theater, night club or disco. It will give you the kind of performance and appearance that will make you a Bose believer.

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Better sound through research.

For the 802 Engineering Bulletin and a complete catalog of Bose Professional Products, send in the coupon below.

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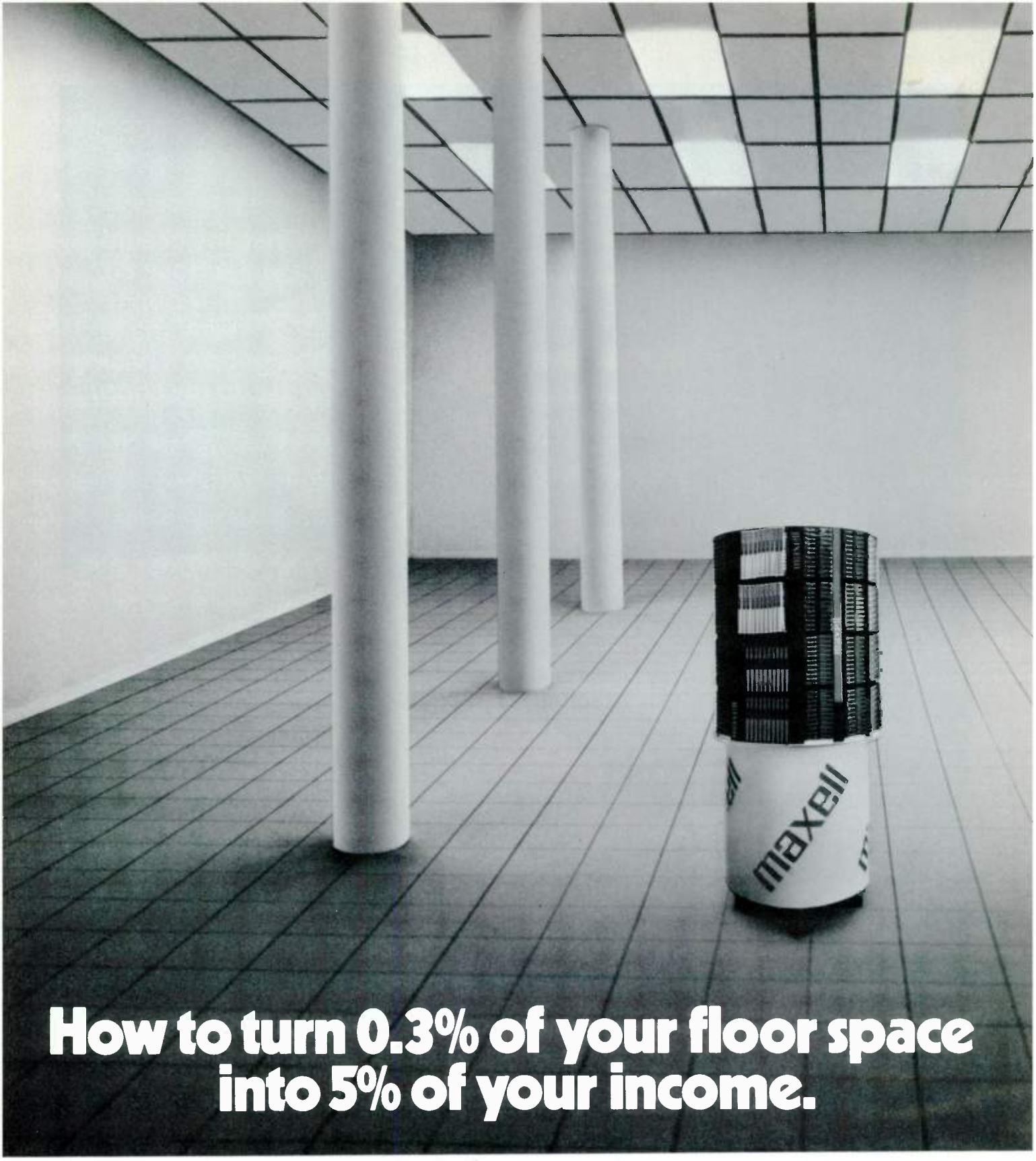

How to turn 0.3% of your floor space into 5% of your income.

In most stores, the blank tape department takes up very little space. But it takes up more than its share of room in your cash register.

And in times like these people would rather invest in better tape than better equipment.

Which is why more people than ever before are investing in Maxell.

Our success is not only due to the way we make tape, but the way we market it. Maxell's advertising program, promotional calendar and in-store displays were designed to increase traffic in your store.

Call your Maxell representative. He'll show you how a variety of tape displays, counter cards and banners can make even the smallest area in your store bring in a bigger share of your income.

maxell

Maxell Corporation of America, 60 Oxford Drive, Moonachie, N.J. 07074

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TEAR HERE

TERMS:

A CONTINUING INDUSTRY GLOSSARY

RECORDING

By Larry Blakely

Tape Lifter continued:
Some older types of tape recorders used glass rods mounted in the head cover for tape lifters; this type of head lifter was manual, of course. Many of today's tape recorders have automatic head lifters that are engaged when the machine is placed in the fast forward, rewind, and/or edit modes.

Tape Guide: Usually made of two metal or non-metallic objects placed at a distance apart that is the same width as the recording tape. These tape guides are usually placed immediately before and after the tape heads in an effort to prevent the tape from moving up and down in a vertical motion as it passes the tape heads.

Sound on Sound: A recording procedure whereby a tape track is recorded and is then played back and transferred to another tape track. When the transfer is done, usually another signal is added to the previously recorded signal and the combined signals are recorded on the second tape track. For example, a vocal is recorded on the original track; it is then played back and another vocal part is sung with it; these two combined signals are then recorded on the second track. Now there are two vocal parts on the second track. This track can now be played and a third vocal part be sung and the combined signals (three vocal parts) will be recorded on the original track. This procedure may continue. It is important to point out that the original recording (first recording) is now in its third tape generation, and audible noise has been added. If this procedure were to continue for some 15 vocal parts, the parts that were first recorded would be extremely noisy due to additive noise of the multiple tape generations. When the operator is balancing the musical parts with this recording procedure, great care must be taken, since when the parts are recorded, the musical balance cannot be altered. If alteration in the musical balance is required, it will be necessary to re-record the entire sequence from

ELECTRONIC MUSICAL INSTRUMENTS & ACCESSORIES

By Wayne Howe

AC or Alternating Current: This type of electricity varies continuously in voltage level. A typical example of AC is the common AC which comes out of your wall socket. This AC is "oscillating" or varying in voltage at 60 "oscillations" or cycles per second. This means that the voltage is varying from a maximum positive voltage (electrical pressure) down to a maximum negative voltage and back to a maximum positive voltage again sixty times every second. An audio oscillator on a synthesizer does the same thing with two differences: 1) It can vary the frequency that the voltage "oscillates"; from less than 20 times per second (20 Hz) to over 20,000 times per second (20 kHz) so that the pitch can be generated throughout the entire audio range. 2) It does this at very low voltage levels that can't harm you.

DC or Direct Current: This type of electricity does not alternate from positive voltage to negative voltage. Rather, it stays positive continually so that the electrical pressure is always pushing in one direction. An example of this is a battery, which has a positive and a negative terminal—causing electricity to flow only one way. In a synthesizer, DC may vary in its voltage level, but it will still always flow in one direction.

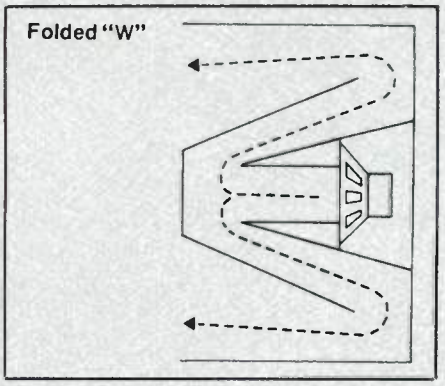
Voltage Control: A type of electronic design whereby some or all of the parameters in the circuit design are determined by a variable voltage level. By changing the input voltages, the parameters of the circuit can be changed. In synthesizers, this idea is used to control musical parameters so that frequency (pitch), harmonics, volume, rhythm, etc. can be controlled accurately by other voltage generating devices. A device such as a keyboard that puts out a variable voltage, depending upon which note is played, can be used to control the musical parameters of a device the keyboard is plugged into. The output of the device can then be used as a musical source, a voltage to control another voltage-con-

SOUND REINFORCEMENT

By Glen E. Meyer

Front Loaded Bass Horn: The front-loaded bass horn is a relatively short horn coupled to a forward throwing low-frequency speaker or woofer. Unless one is willing to go to a very large enclosure, it is best suited for upper low-end frequencies. If designed properly, it can be quite efficient. If the horn cut-off frequency is not a limiting factor, the low-end capability of a front loaded horn may be enhanced by placing (coupling) the horn on the floor, against a wall, in a corner, or some combination of same. Unfortunately, horn cut-off is directly proportional to flare rate (rate at which the horn expands). If the horn increases size rapidly (as with many short front-loaded horns), the horn cut-off frequency will be the limiting factor and will be higher than that of a horn whose expansion is less rapid (like that of a folded horn); so placing the unit on the floor, etc., will have little effect on low-frequency output.

Folded Horn: The folded horn is a speaker system in which the horn is folded upon itself to optimize space. It has the same effect as that of a long horn without the required depth. The cutaway diagram is that of one of the many types of folded horns called the folded "W."



Bass response may be optimized if the folded horn is placed on the floor, against a wall or in a corner where the surfaces tend to act as an extension to the horn. The frequency response information given by the manufacturer is often based on the unit being

TERMS: (CONTINUED)

A CONTINUING INDUSTRY GLOSSARY

RECORDING

the beginning. In today's popular multitrack recording, each part of group or parts has its own tape track, which prevents the noisy multiple tape generations of *sound on sound.* When mixing with multitrack, the musical parts can be mixed together easily. If the balance is not desirable, the parts can easily be mixed again without re-recording.

SMPTE: The abbreviation for Society of Motion Picture and Television Engineers. This also refers to a common standard of measurement for intermodulation distortion (IM), a standard reference code for the identification of frames of film or videotape, and also a code for the use of synchronizing two or more tape recorders together.

Signal-to-Noise Ratio: The difference between the maximum or nominal operating level and the noise floor, usually specified in dB. This measurement is sometimes equivalent to the dynamic range—usually for tape recorders and power amplifiers.

Dub: Usually referred to as a copy of a recording. This can be a tape copy or a reference lacquer (disc). The term is used often when referring to making copies for reference purposes; you will hear "make me a dub" more often than you will hear "make me a copy."

Copy: Used sometimes interchangably with "dub"; however, as mentioned above, the term *dub* is most often used when referring to copies made for reference purposes. Likewise, the term *copy* is typically used for copies of a more formal nature. One would say, "Make me a safety copy of the master tape." (Such a copy would not be for reference purposes.)

CCIR: The abbreviation for Consultative Commttee for International Radio, and most commonly refers to a standard equalization curve for tape machines. This equalization curve was predominant on earlier models of European tape recorders and on some earlier models of U.S. tape recorders as well. However, the CCIR equalization curve is not commonly used on modern day tape machines.

ELECTRONIC MUSICAL INSTRUMENTS & ACCESSORIES

trolled module, or both. By generating and modifying various parameters with both constant and varying voltage levels, all kinds of unusual and unique musical possibilities can be obtained with synthesizers.

Control Voltage: The name for a voltage that is being used to modify and control the parameter(s) of a voltage-controlled device. The control voltage can be DC, varying DC, subaudible frequency AC, or an audio frequency. Any voltage that is used as an actual control signal is a control voltage.

Signal Voltage: The name for the audio frequency voltage that is being generated or modified by the control voltage in the voltage-controlled device. The signal voltage is the actual musical signal that is processed by the synthesizer before it comes out in final form at the synthesizer output.

Synthesizer: Taken from the Greek, meaning "to put together," the synthesizer is therefore any device which puts together many previously known concepts out of which something totally new emerges. Specifically, it is a totally electronic musical instrument which generates, controls, and modulates electronic audio waveforms to be used in a musical context. Originally, synthesizers were pure tone devices with many oscillators. They evolved into large voltage-controlled devices with more capabilities and flexibility. The original large voltage-controlled devices were specifically designed for studio and multitrack tape work, as they were monophonic and took much time to patch and switch from one "sound" to the next. A trend toward smaller portable voltage-controlled synthesizers with faster switching procedures came about for on-the-road and other portable use.

The demand for more types of sounds and timbres which could be obtained more quickly by the performer and recalled exactly by the instrument has led to polyphonic synthesizers with digital memories and instantaneous storage and recall of "patches."

SOUND REINFORCEMENT

used this way. As is the case with the front-loaded horn, there will be little effect on frequencies below horn cut-off.

Sealed Enclosure: The sealed enclosure, which includes the "acoustic suspension" types, confines the back-wave of the woofer within the enclosure. Sealed systems became quite popular in the early 1950's partly because they were fairly easy to design through a mathematical approach. In a sealed system, three design factors are related in their design: (1) low-frequency limit (where the response is 3-dB-down, falling rapidly below that frequency); (2) enclusure size (how big the box is); and (3) efficiency (how much of the electrical input power from the amplifier is converted to acoustic output power). If two of these parameters are chosen, the remaining one is determined. If, for example, one wants to retain the 1% efficiency of a given system but obtain lower frequency response, the enclosure value needs to be increased.

Typically, the efficiency of a sealed or acoustic suspension system is very low—on the order of .25 to 1%. When compared to a vented system, low-frequency distortion is typically greater in a sealed system. In a general way, low-frequency distortion is related to speaker cone excursion. Nonlinearities in the cone suspension and voice coil motion combine to give higher distortion levels as excursion increases. In sealed systems, excursion rises dramatically as the system's low-frequency limit is approached. At the low-frequency limit, with full power in, 5 to 10% total harmonic distortion is typical in an acoustic suspension design.

Vented Systems: Vented systems have also been known as bass reflex, tune port, and phase inverter systems. Early designs followed the following procedures: Take the best woofer you could get your hands on, with the biggest magnet and the lowest free air resonance. Build the biggest box you could handle. And tune the box to the free air resonance of the woofer.

VMR™... the most talked about new component in years!

"Unbelievable!" "Demo it, and it sells!" "We cranked it up, and smiles were everywhere!" "I never heard high SPL's sound so clean!"

No wonder dealers telling the VMR story have made the Electro-Voice S15-3 one of the best selling single-enclosure PA systems in the country. Instrumentalists, vocalists and sound men all have learned that a VMR in their system means incredibly clean midrange reproduction. Dealers displaying the bold VMR baffle are getting attention – and plenty of it.

The massive 16-lb magnet structure found in the VMR reproduces unmuddied midrange frequencies with the efficiency you would only expect to find with a horn. Plus the integral Thiele-aligned VMR enclosure rids systems of the "honky" sound typical of small horns. Maybe that's why companies like ARP, Oberheim, Moog and Crumar have used the S18-3 stage keyboard

system to demonstrate their synthesizer products.

The VMR is the speaker that has made the B215-M and B115-M bass guitar systems *the* bass systems to own. No wonder companies like Gibson and Kramer have used these systems to demonstrate their basses at trade shows and seminars.

The VMR's basic accuracy is the reason you see the FM12-3 floor monitor so often on television musical broadcasts. When artists hear themselves accurately, they perform better. That's why FM12-3's sell.

If you're one of our dealers who has made VMR-based enclosures sell so well, give yourself a well deserved pat on the back. You've earned it. If you're one of our dealers who is not fully benefiting from this great opportunity, you should learn more about the VMR story. You're missing some great opportunities.

If you're not currently selling Electro-Voice VMR-based speakers, maybe you should be. They're the hottest selling systems around.

For further information about getting on the VMR bandwagon contact Chuck Gring, Music Products Sales Manager at Electro-Voice.

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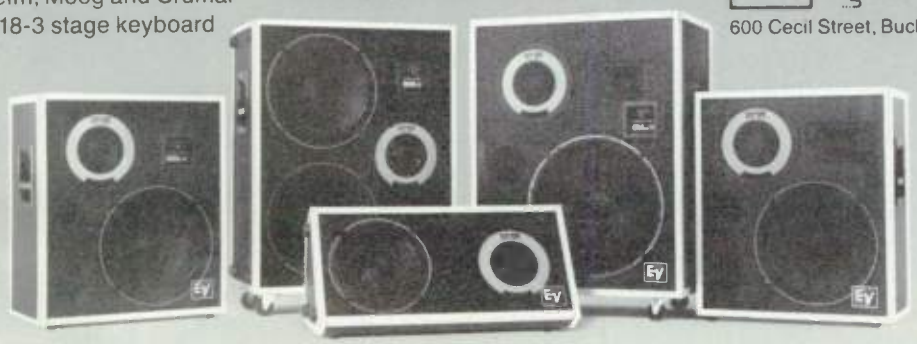

CIRCLE 90 ON READER SERVICE CARD

TROUBLESHOOTERS' BULLETIN

(1)

Troubleshooters' Bulletin is designed as an aid to the dealer. Manufacturers, retailers and service personnel are invited to contribute. Share the wealth of your knowledge. Items refer to repair of equipment, preventive maintenance, and the correction of customer misconceptions. Send your contributions to SOUND ARTS MERCHANDISING JOURNAL, 15 Columbus Circle, Suite 316, New York, New York 10023.

(2)

TAPE RECORDER CALIBRATIONS

Incoming inspection and calibration of tape recorders by an experienced and qualified dealer service department assures the customer of optimum performance and reliability. Tape recorders supplied without this dealer service compromises the end products made on multi-track recorders in particular.

(3)

When a group of tracks are bounced to a mono or stereo mix on an open track or tracks on a multi-track recorder, the recording process imparts all its inaccuracies once more on the previously recorded material. Those inaccuracies, although possibly tolerable on first generation, soon take their toll when signals are mixed and re-recorded to open new tracks. The adjustments made during the calibration

procedures provide the stringent attention to detail which at first glance may seem unnecessary but in fact minimize technical stumbling blocks in the creative process.

DOUG ORDON
AVC SYSTEMS

SERVICE TECHNICIAN ESTIMATES

Technicians are constantly asked to give estimates. This is an involved request. The cost of finding a problem is almost as much as fixing it!

Usually the problem will involve transistors. To test a transistor, in circuit, use an ohmmeter set to the "one ohm" scale. There are three leads to a transistor. Touch the ohmmeter to two of the leads and watch the meter. In two of the six possible combinations of leads (including forward and backward), the meter should move to the center third of the scale. The other four should stay at the u-per third scale if the needle shows "0" ohms or a lower third scale reading, the transistor is bad.

This method will take about 10 to 15 seconds per transistor and is about 99 percent accurate. This will shorten time on estimates considerably.

STEVE WHITAKER
HEAD TECHNICIAN
S & J SOUND

What is the transmission range of a wireless system?

A well-designed wireless system generally has a usable range of about 150 feet minimum under adverse conditions, and up to 1,500 feet line-of-sight. Receiver diversity (two receivers with two separate antennae) provides greater usable range than single receiver or "antenna" diversity operation, all other conditions being equal. Different applications, of course, require different operational ranges. For on-stage use, a wireless system must provide a totally solid radio link between performer and amp for at least 100 feet. Due to sound travel, there is an acoustic delay of about 100 milliseconds already at that distance. It is difficult, if not impossible, for musicians to keep in time at longer distances and longer acoustic delays. For studio uses, these delays are generally not a problem because the musician can be provided with direct monitoring.

Wireless systems which provide at least 150 feet under the most adverse conditions will usually serve quite well. Not all units presently available can reliably deliver this level of range performance.

John Nady
Nady Systems

What is "damping"?

Two types of damping exist in an amplifier. The artificial damping factor is the ability of the amplifier to act as a damper on the speaker's motion, to limit over-shoot and tighten the correspondence betwen the amplifier and the loudspeaker. This form of damping is a function of the feedback in the amplifier and as such it is gain and time dependent. Usually above about 100 Hz, this characteristic of the amplifier begins to fall off and lose its influence over the loudspeaker.

The second damping characteristic is the "natural" damping factor. This damping factor is a function of the number of output transistors, the size of the power supply, the quality of regulation it provides, and the actual wiring of the amplifier. This damping characteristic usually remains stable with frequency. The loudspeaker sees the natural damping factor at high frequencies where the time delay in the feedback loop inhibits the artificial damping. As the load on the amplifier gets more complex, such as under musical conditions into a loudspeaker, this damping quality takes over.

SAE

Are flourescent-type meters on tape decks better than the "normal" kind?

Fluorescent-type or liquid crystal meters tend to be pretty and very fast so that they display the energy levels of the source of your recordings in a flash. VU types of meters are slower since they display the average level rather than the peaks and since they are of mechanical design. Needle-pointer peak reading meters are faster but not as fast as the fluorescent-type. The only problem with fluorescent meters is that the divisions are very rough—the differences between 0 and +3 dB may be just one lighted segment in some cases, so accurate calibration is often difficult. Each form has its advantages and disadvantages; my own choice would be a needle-type peak-reading meter simply because accuracy of ±1 dB is significant to me for test purposes.

Terry O'Kelly
BASF Systems

What is "current limiting"?

"Current limiting," as a design concept, and as a feature found on many audio-range power amplifiers, has to do with the protection of that amplifier against self-destruction, and more specifically with the protection of the power transistors that are used as output devices.

Audio engineers have long recognized that output devices (power transistors) are generally the most susceptible to damage of any part of an amplifier. For economic reasons, they are utilized near the limits of their safe operating area. Large signal excursions in the circuitry, whether sudden peaks of music input or transients dumped back into the amplifier by reactive speaker loads, can subject an unprotected power transistor to circumstances in which it is forced to dissipate more power than it is capable of safely handling. The device therefore fails.

The crucial parameter for any power transistor is the amount of power it is being asked to dissipate at any given time, a quantity which is generated by the combination of voltage and current delivered to the load, as well as the amplifier power supply capabilities.

There are several methods which can be used to protect these devices. One is a simple redundancy of the power transistors, which can reduce the demand on each part by asking several to share the load, and thus to provide the extra headroom which will protect the amplifier against unusual loads, transients, flyback pulses, etc. Another protection method is to design and build into the amplifier what is known as a protection or limiting circuit. In its simplest form this is an addition to the circuitry which senses the current level at which a power transistor network is operating. Should a safe level be exceeded, the limiting device inhibits or interrupts the input to the power transistor to prevent its being overstressed.

In this simplest version of such a protection circuit, only the current output of the power transistors is sensed, and a safe operating area for the amplifier is developed.

In most of the amplifiers available today, however, the limiting circuitry also includes a voltage sensing device, which actually combines the output current and voltage levels in a signal fed back to the limiting circuit which is based on the power dissipation being required of the transistors at that moment. Such a circuit will generate a safe operating area, in which the addition of the voltage sensing allows the amplifier to expand its area of operation.

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CIRCLE 92 ON READER SERVICE CARD

By Craig Anderton

MISCONCEPTIONS ABOUT RECORDING

Since tape recording is such a young science/art, and since many people are involved with recording from an exclusively artistic standpoint and therefore aren't overly familiar with the technical end of things, certain misconceptions achieve respectability simply by being repeated so often. I've heard some of these misconceptions spoken by musicians themselves, but have also heard some of them mentioned by well-meaning retailers who *intend* to educate the consumer, but instead accidentally perpetuate the myths. So, let's interrupt our continuing technical discussion of recording by playing iconoclast for a month, and talking about some of the myths—and realities—of the recording process.

"If you never let the VU meter go into the red, you will have distortion-free recordings." Some percussive instruments put out signals which are too fast for the meters to respond to (VU meters have a certain amount of mechanical inertia, friction, and overshoot). With some instruments, it may be necessary to record so that the peak levels register −10 to −20 on the meter. In reality, those peak signals might be hitting as high as +5 or +10—if the meter could only read it.

"Dolby noise reduction is superior to dbx." The corollary to this statement is, of course, "dbx noise reduction is superior to Dolby." Well, it would be nice if the world was so simple that one, and only one, piece of equipment was perfect for every job . . . but that just isn't so. Several subjective considerations are involved in choosing a given type of noise reduction; for me, I've found Dolby to be preferable with the "delicate" instruments like nylon-string guitar and flute, but I've also found that dbx gives greater noise reduction overall, and works well with electric instruments. Then there are situations where *neither* system sounds as good as a little $10 per channel noise reduction unit I built one night for special applications . . . it just goes to show.

"Recording studios are only for the wealthy." Nonsense! A studio can exist on many levels, including a pair of $25 cassette decks (you can shuttle audio signals back and forth between the two decks until you get about 4 or 5 tracks). Remember, a studio doesn't have to sound great in order to be very educational; it's possible to generate a bunch of tracks on an old 3-head deck by bouncing tracks back and forth within the machine. So, if some 16-year-old comes in and wants to get involved in home recording, don't assume that he or she can't pay the freight. In fact, if that person is using something like a borrowed tape deck, that frees up more money for accessories like microphones, tape, special effects, and so on. Encourage that customer, and eventually he'll be trading up to 4 and maybe even 8 tracks.

"Four-track machines are okay for home recording, but don't expect to make professional sounding tapes." More nonsense! It bears repeating that albums as diverse as Jimi Hendrix's *Are You Experienced* and the Beatles' *Sgt. Pepper's* were recorded using 4-track machines. Granted that some specs of budget equipment might not be as good as the "big boys" (then again, they might be), but how many people have come up to you lately and said "Boy, what a great album . . . it has a signal to noise ratio in excess of 65 dB!"? Music is about art, about feelings, about communication; you don't need 24 tracks with a computerized mixer to get that music across.

"Noise reduction is bad because it colors the sound." Of course it colors the sound . . . it has to in order to get rid of the noise. You could just as easily feel that noise reduction is good because it gets rid of the noise with a minimal amount of signal coloration . . . it's all very subjective, so there are no real "rules" that apply in all circumstances.

"It is important to clean and demagnetize the heads on a regular schedule." Actually, the above statement should read "It is very, very, very important to clean and demagnetize the heads on a regular schedule."

"Cleaning and demagnetization is really the only maintenance that a tape recorder requires." I think this myth gets perpetuated because people wish it was true . . . but it's not. First, many people forget to clean the various tape guides, rollers, and other parts of the tape path with which the tape comes into contact. Second, the tape recorder head is a precision device that must be accurately positioned with respect to the tape at all times. As the tape head wears down, this positioning may no longer be accurate. In fact, if the tape recorder was subject to lots of bumps and grinds during

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shipping, then the heads may not be properly aligned even though the tape recorder is brand new. As a result, I strongly recommend having a tape recorder go through a "physical" each year where a competent service person can check the head alignment, brake adjustments, bias controls, and the like. If your store does not offer this service, try to seek out a pro audio shop to which you may refer your customers. Remember, it has been said many times that buying a tape recorder is just the beginning of a purchasing pattern . . . the potential recording musician must also buy accessories, mixers, tapes, and the like. But this continuing relationship is a two-way street; it's not just a question of the musician pouring bucks into the store's coffers. A store that fulfills its end of the deal by helping to *keep* a tape deck in good condition will earn the much-deserved loyalty of its clients.

"You need an arsenal of microphones in order to get a good sound." It certainly doesn't hurt to have a zillion mics, but one good dynamic and one good condenser mic can take care of most basic recording situations (of course, if you're trying to cover a drum set with microphones, you'll need several more). Intelligent mic placement, combined with a subtle use of equalization, can compensate for the lack of an extensive array of different microphones.

"Limiting dynamic range is artificial and unnatural." If tape recorders were all perfect, dynamic range limiters and compressors wouldn't be necessary. But tape recorders aren't perfect (at least, not yet), and a limiter helps compensate for the recorder's lack of perfection. It is not the limiter that is the culprit if you get a bad sound by using one; it is the *incorrect* use of that limiter which generally causes the problem.

"All tape is pretty much the same." Plain and simple, that's totally incorrect. I've used heavily promoted tape that just plain stunk due to atrocious quality control. On the other hand, some brands I've tried (like Maxell, Ampex, and TDK) have consistently performed to very high standards. It is vital that your customers use the best possible tape; if you can convince them of that, you'll be doing them a favor.

"The more bells and whistles a mixer has, the more useful it will be in the studio." Some people think more is better, but I disagree. In fact, I recently completed a mixing console for my own studio which is essentially a passive (*i.e.*, no electronics) mixer. It sounds great, and listeners who can be a lot more objective about the whole thing than I can agree that it sounds great. Having five channel parametric equalization for each one of 20 channels is, to my way of thinking, about as useful as having a car that goes up to 140 mph . . . how often do you need 20 channels of ultra-sophisticated equalization? And if you *do* need 20 channels of equalization, you'd better start re-evaluating your recording techniques!

"Studios must use low impedance lines." If you're running long mic lines, that statement is still true. But so-called high impedance systems have improved so much over the past few years that in many cases, a high impedance system will give an equal or better sound than a totally balanced, low impedance system since you manage to eliminate scads of transformers which otherwise color the sound. No, I'm not saying that low impedance systems have no value; I'm simply saying that high impendance systems can no longer be denigrated.

"The only way to learn about recording is through experience." While experience has no substitute, there are a number of good books available on recording—and it's odd to see that very few music stores have picked up on these as an extra way to build interest in recording. Three books which I recommend at my seminars are John Woram's *Recording Studio Handbook* and *Modern Recording Techniques* by Robert Runstein; I'd also like to mention a book I wrote, entitled *Home Recording for Musicians,* since it is the only book I know of that was written specifically with musicians in mind.

I hope the above list helps when you need to deal with a customer whose knowledge of recording is based on hearsay rather than experience. In the 80s, musicians are going to depend more and more on the retailer for education—a trend that is happening, or has already happened, in many other fields. By keeping on top of technical developments and ideas, you can render that extra service to your customer—which costs nothing, but gives you a competitive edge over the guys who know how to sell equipment, but know little about the equipment they're selling.

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CIRCLE 72 ON READER SERVICE CARD

WRH

Wrapping Up the

By Len Feldman

If I had to summarize my reactions to the recently held Winter Consumer Electronics Show in a single sentence, it would be the following: Although there were very few new product introductions, those that we did encounter were innovative and highly indicative of future trends. While the show was just about as big as it was a year ago, product emphasis seems to have shifted away from audio and sound products and towards other consumer electronics categories. The fact that the audio industry has not enjoyed a banner year of sales may have had something to do with the notable lack of new product introductions. While video, car stereo, home computers and calculators all seem to have expanded during 1979, audio just barely held its own, unless you include in that category the car stereo industry, which did show remarkable strength and growth even in the face of energy shortages and long-term doubts regarding the future of the automobile industry.

DIGITAL AUDIO COMES CLOSER

While PCM audio processors have been demonstrated at the last two or three CE shows, the recently concluded WCES marked the first time that a major company actually promised to make a serious effort to market and manufacture such processors in quantity. The company was Sanyo, whose entry into the world of high fidelity is, itself, a recent new item. For those unfamiliar with just what a PCM Audio Processor does, a word of explanation might be in order. The Sanyo Plus 10 unit (like others previously shown in prototype form) transforms audio signals from conventional analog format into a series of pulses which are used to express instantaneous signal amplitudes in binary-numeric form. This pulse code is then recorded on video tape, using any home-type VCR. VCRs make an ideal tape transport and storage medium for the pulse trains because of their wide bandwidth capability (needed for video recording). The PCM Processor, in playback, serves the reverse function. Pulses "read" by the VCR's playback head are re-translated into a continuous or "analog" audio signal for reproduction through any conventional amplifier and speaker system. While this type of digital recording is fast gaining acceptance in the recording studio, the Sanyo entry makes it possible to record digitally at home for the first time. The advantages: up to 85 dB of possible dynamic range (around 20 dB more than is obtainable even on top-ranked open-reel analog tape decks), distortion of around 0.03% and non-measurable wow-and-flutter. Sanyo is also the first producer to firm up a price for a PCM Audio Processor: $3,995. Availability will be in March of 1980 and if you are rushing out to buy one now, remember you will need a VCR (either Beta or VHS format will do), so bring along an extra thousand dollars or so if you don't already own one.

ANOTHER APPROACH TO DYNAMIC RANGE

While dbx, Inc. agrees that the sound of the future may be stored and reproduced digitally, they see that ultimate sound system as being several years away. In the interim, that company has taken its noiseless discs (introduced at last Summer's CES) a giant step forward. While earliest dbx-encoded discs used high-quality master tapes as program sources from which to create the new encoded discs, those early tapes were all analog-generated and, with the virtual elimination of disc surface noise (a benefit of the dbx process), listeners were now able to discern the even lower-level tape-hiss coming through. A logical next step was for dbx to find some of the new digitally-mastered tapes and use *them* for encoding dbx discs. That is exactly what they have done, with the assistance of Ken Kreisel of M & K Sound who used a Sony PCM-1600 (that company's professional version of a PCM audio recorder) to produce tapes with 90 db of dynamic range! Transferred to dbx-encoded discs, that incredible dynamic range is actually maintained right on through to the listener. As for decoders (necessary when playing dbx discs), dbx has added a

Continued on page 22

CES & NAMM Shows

By Steve Caraway

We're a lucky bunch to work in a business that allows us to journey to sunny Southern California each winter for NAMM's Winter Music and Sound Market. This year's 1980 market, again held at the Disneyland Convention Center, was a treat for those who journey from cooler climates. Beautiful weather greeted the crowd of convention goers who came to exhibit, buy and learn. What the average convention attendee saw was countless lines of products, a few of them old and established and a number of them new and innovative. But what are the trends hidden among these glistening new beauties?

This writer found several new ideas in product trend, design, and marketing—and what better place to start but small amplifiers. Five years ago, musicians were leaning towards using large amps and stacks of amps to get that "just right" tonal quality; in fact many guitarists still prefer large amps. But with the advent of the Mesa/Boogie line of amps and their popularity among musicians, we have seen many manufacturers jump into the ring of competition. This year, with Acoustic introducing their model 165 Tube Guitar Amplifier, Fender debuting their small 75 watt power plant, Rock Amplifier's increased product line, and Guild's collection of mini-amps, we suddenly see the market place beginning to flood with everybody's "Boogies." St. Louis Music featured four new models of their Crate Amp selection, Roland Corporation proudly displayed their Cube series of mini-amp, the Traynor TS series put its design definition on compact size and power, while Yamaha, Pignose, Gallien and Krueger, Aria's Birdie and Loco, and the Norlin Lab Series rounded out the small amp competition. As one can see in amp design, bigger is not always better!

Several years ago sound reinforcement began to cross over into the "world" of NAMM; notice that this NAMM function is no longer a Music Expo, but a Music and *Sound* Market. Power amps, equalization devices, delay units, high-end microphones, countless speaker enclosures, various frequency components and mixing consoles became common items on the NAMM "menu" and the trend continues. Mixers seem to be popping up everywhere and just about every major manufacturer now features some kind of mixer line in their product catalog. Cerwin-Vega's MX-8 Mixing Console was prominently displayed, as well as Fender's new 12 channel console, the M 12. Introduced by Yamaha was their EM-200B and EM-300B consoles to further lengthen their EM line. With BiAmp, Neptune, Fender, Yamaha, Cerwin-Vega, Sony, Peavey, Tangent, Tapco, Studiomaster, and Kelsey in the marketplace of mixers; sound reinforcement has really made its mark at NAMM. Come to think of it, it was Sony's first time exhibiting! One twist in the mixer line is Tapco's emergence into the high-end mixer market. Introducing their Panjo series, named after the pizza parlor where the idea was hatched, models 7212 and 7416 depart from Tapco's "consumer" image.

Various accessories seem to be springing to the front of today's musical market. In terms of guitar parts and accessories, the sky's the limit. Four years ago guitar necks and bodies were handled by a small number of firms; included in the list were companies like Charvel Manufacturing, ISA, Kharma Bodies, and Boogie Bodies. Today a musician can literally build a guitar from scratch with custom parts. From tailpieces, pickups, scratch plates, bridges, custom nuts, to tuning heads, the list is endless. Among the companies at NAMM this year who are now in the market is DiMarzio Inc., which is now involved in bodies and necks, in addition to other accessories and the popular pickups. Schecter now carries its own line of guitars made up of custom Schecter parts, while Mighty-Mite continues to dominate a lion's share of the parts and accessories market. If it's not Bill Bartolini designing a new bass pickup, it's Bill Lawrence jumping into the cable and connector market. Ernie Ball certainly has expanded his "string" business; today his firm manufactures

Continued on page 23

Continued from page 20

Model 224 Tape Noise Reduction System (with a suggested price of $275) for those who want to be able to use dbx encoding with their tape decks in addition to being able to play back the new dbx-encoded discs. If playback is all you have in mind, dbx has a playback-only decoder (Model 121) which retails for only $109.

A MORE MODEST DYNAMIC RANGE CLAIM

Another concept which was introduced last June reached practical implementation in the form of a product this January. Dolby, having pioneered noise reduction via companding more than a decade ago, decided to do something about high-frequency tape saturation last year, and the end result of those efforts was dubbed Dolby HX. This system, controlled by the same control signal needed for operating the noise reduction companding normally associated with Dolby B, alters bias and equalization when high-frequency, high-energy signals come along in the program material. In so doing, up to 10 dB of additional headroom at high frequencies can be obtained, regardless of the type of tape that is used.

The first company to incorporate this new circuitry into a cassette deck at the WCES was Harman-Kardon, whose Model HK-705 deck is part of a new line of mid-sized separates which marks the company's entry into the marketplace under its new ownership (Shin Shirasuna of Japan).

A NEW PRO LINE

Of interest to readers of SOUND ARTS will be the news that Technics (by Panasonic) is going pro with a new division devoted solely to marketing audio equipment to professional users. The decision to create the new Recording and Broadcast Division was made when the firm realized the extent to which many of its products were already being used in both the professional and home segments of the market. Technics turntables, for example, are used widely in broadcasting (some estimates range as high as 70 to 75 percent) while the firm's reel-to-reel tape decks are often used in small recording studios.

Among the products in the new Technics line are their first cartridges and tonearms and an extensive line of sound reinforcement equipment. Also available will be complete mixing consoles for the recording industry. Jim Parks, an industry veteran who has been called upon to head up the new professional line, pointed out that the new line will demand an entirely new distribution network, which will include three types of dealers. There will be about 200 retailers who normally carry broadcast and sound reinforcement equipment, as well as a limited number of top installers of professional equipment and, for those customers requiring special service, some sales may be made directly from the factory. A direct drive motor for turntables used in cutting records is the only product that would be offered directly at this time.

AUDIO AND COMPUTERS

The owner of a home computer or small business computer who wants to interface his or her system with audio equipment would have to seek out computer-connective components—for example, a microprocessor controlled tape deck designed for such computer interface. One such model is the Eumig FL-1000 cassette deck, which was demonstrated to fascinated audiences at the WCES. Up to 16 FL-1000 decks can be interconnected through one computer and can be individually controlled, simultaneously or sequentially, to play or record any section of any tape. One machine can play a selection while a second machine searches out another musical selection, stops and waits for play instructions.

Under the direction of a connected computer, the titles and index locations of all of the musical selections on a tape can be digitally recorded on the first few seconds of the cassette. Then, by inserting a programmed cassette into the FL-1000 and punching a few computer buttons, the user can obtain a readout of the entire contents of the tape, displayed on the computer's video screen. At the recently held AES (Audio Engineering Society) convention in New York, this very same deck (or, rather a whole bank of them) was used in an automated broadcast station setup—just one of several possible applications.

TALK TO YOUR AUDIO EQUIPMENT!

Visitors to Toshiba's exhibit were treated to a glimpse of the future as that company displayed an acoustically remote-controlled high fidelity component system that responded only to the registered owner's voice. The system memorizes the owner's voice with a combination of sophisticated electronics. A voice analyzing unit samples voice characteristics. A pattern matching unit digitizes the sampled characteristics and a central processing unit (using an 8-bit microprocessor) transmits the necessary information. A registered pattern memory unit memorizes the voice pattern to be registered and an input pattern memory unit temporarily memorizes the command for comparison with the registered voice.

A total of fifteen words can be used with the voice activated sytem to perform 19 different operations. Among the commands that can be given are power on/off, volume up and down, selection of any of four pre-selected FM stations on the tuner, play and stop commands for the turntable and play, record, rewind, fast forward, pause and stop commands for the cassette deck. Reaction to the spoken command words is extremely fast: 0.6 seconds for entry, and 0.5 seconds for recognition. If you don't speak as distinctly as the system would like, a question mark appears on the control unit indicating that repeat of a command is needed. What next?

BREAKING NEW GROUND

Bose Corporation, famed for their so-called direct/reflecting speakers which changed many people's ideas about loudspeaker system design, seem intent upon entering new product categories. Last year they introduced a complete line of stereo AM/FM receivers which, among other things, provided four sets of outputs (instead of two) for separate connection of groups of speaker drivers found in the Bose 901-IV speaker systems. Now, in a further effort to capture the total realism of a musical concert, Bose has joined a growing list of domestic manufacturers who offer audio time delay units. The Bose Spatial Expander, as it is called, uses the CCD (charge couple device, sometimes referred to as a "bucket brigade") approach to time delay, as opposed to the digital-storage approach used by such previously introduced audio time delay units as those made by Audio Pulse, Advent, ADS and others. Maximum time delay for the Bose unit is approximately 45 milliseconds and the unit does not

incorporate any recirculation or reverberation controls. Suggested retail is under $600, but those who already own a Bose receiver will not need to purchase any additional electronics other than the Spatial expander. As you might guess, Bose recommends that the rear-channel speaker be of the direct/reflecting type as well.

Not all of the major manufacturers elected to exhibit at this most recently held WCES. For example, Crown International came to the show with a really new microphone technology, but exhibited this development to their dealers and to the press in a small room at a nearby hotel. Working with such recognized audio authorities as Don Davis, E. M. Long and Ken Wahrenbrock, Crown plans to produce and market so-called PZM microphones. PZM stands for Pressure Zone Microphone and is based upon the principle that within a few millimeters of a rigid surface, the incident and reflected sound waves from a pair of equal level signals add coherently. In close proximity to the surface or boundary, then, the signals are still in phase. In such a pressure field, instantaneous pressure is uniform everywhere and response is no longer a function of the angle of incidence as it is with conventional microphones. The result, according to Crown and others who have tried out the new microphone approach, is vastly superior more realistic sound, totally free of the anomolies normally caused by the phase cancellation of direct with reflected sound.

To the SOUND ARTS type of reader or dealer, it may seem strange that this new microphone technology came from a company that was not even exhibiting at the giant WCES—but that is the kind of show this CES turned out to be. Perhaps June in Chicago will offer more items that are directly related to your concerns as a pro musical electronics dealer. In any case, we'll be there to try to find out what's new, in case you can't come to Chicago yourself.

Continued from page 21

volume pedals and the like! That brings up another area of accessories, and that is instrument tone modifiers. Roland's Boss line of modifiers received heavy attention at the Disneyland Center as did Electro-Harmonix's catalog of devices.

One unique drum accessory was the Deadringer, which allows the drummer to play with full tone and "studio sound" without having to stuff his kit with pillows or pads. Utilizing colorful rings that deaden the heads, Deadringer is said to eliminate drumhead ring. With the introduction several years ago of Kevin Godley's and Lol Creme's Gizmotron for guitars, it was just a matter of time before Gizmo Inc. adapted the device for electric bass guitars. The Electric Bass Gizmotron brought forth cello-like tones with infinite sustain each time I cruised past Gizmotron's NAMM location. With the amount of floor space devoted to the various accessories; and considering the number of manufacturers who, after careful market study, have decided to dive head first into this business area; it seems this area of the musical instrument business is one that is growing at an accelerated rate.

On the musical instrument side of things, it seems that changes are few and far between, except for the synthesizer field.

One interesting synthesizer that was on display was the "Liberation" manufactured by Moog. This self-contained keyboard synthesizer is portable and is worn like a guitar around the player's neck. The right hand plays the keyboard synthesizer part of the instrument while the left hand operates the instrument's pitch bend control, vibrato, LFO control, and volume wheel in a "guitar-like" manner. This allows the keyboardist the freedom to get out in front, instead of being penned up behind banks of keyboards. The keyboard market is now being tested by Casio, the maker of all those neat micro-electronic products and another first time exhibitor, who announced the introduction of its Casiotone Electronic Keyboard. Other keyboard manufacturers actively involved in introducing new products in Anaheim were Yamaha and Rhodes. Yamaha's new CS collection of synthesizers is designed to be small and affordable yet still performance worthy, utilizing the same features of their larger models. Rhodes featured their Mark II pianos that are designed with a flat top to handle stacking of other keyboard instruments. In terms of keyboard instruments and synthesizers, the Winter Market reflected this push in product design and technological advancement.

Guitar continues to be the most popular instrument among contemporary musicians; yet new design and applications seem to wane. Designs present at the Winter Market that stuck in this writer's mind were from Bunker Guitars, B. C. Rich, and Alembic. Both B. C. Rich and Alembic have been making custom axes for many of today's top stars for years and their craftsmanship is rarely matched. Bunker, a small company from Washington state, relies on radically designed and well manufactured instruments for the guitarist and bassist. Their 2001 series guitars feature solid brass individual bridges for each string. Dean Guitars introduced the Golden E'Lite Cadillac models, both of which are based on Dean's E'Lite line debuted earlier at NAMM. Ovation's Magnum 2 bass with graphic equalizer gives the bassist greater control of the flavorings he has at his disposal; while Martin's E-Series Solidbody electrics turned many a head.

Gibson and their LP and SG Firebrand line brings the guitarist a solid mahogany body in either Les Paul or SG shapes. These guitars are natural wood finished with the Gibson logo *branded* into the headstock—very rustic! Gibson also showed off their Second Generation Explorer and Flying V guitars. These instruments are in the traditional body styles of their "forefathers"- but are crafted out of five-piece laminated maple/walnut. With new Series VII pickups on the Explorer II and new Boomerang pickups on the Flying VII, Norlin starts a new decade with a new generation of old favorites. In the area of acoustic instruments, Hohner has come into the "vintage" wooden guitar market with their Arbor Series dreadnoughts. These instruments are all handcrafted of the world's choicest aged woods.

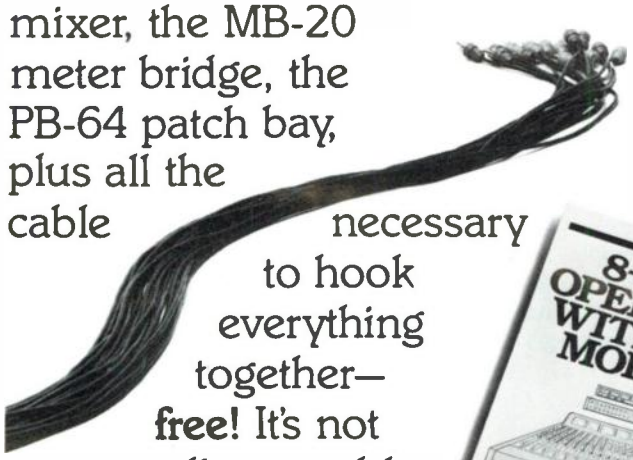
To be sure, market trends can easily be obscured by the many products, activities, and unending hoopla that revolve around a NAMM Music and Sound Market. In the areas of small amplification and tube technology, sound reinforcement components and mixing consoles, instrument accessories, and synthesizer developments we can see a picture of where this market of ours is heading. Toss in some multi-track recording developments and technology and we'll find that our ultimate consumer is the complete musician; and our industry's sales trends are simply a clear reflection of that musician.

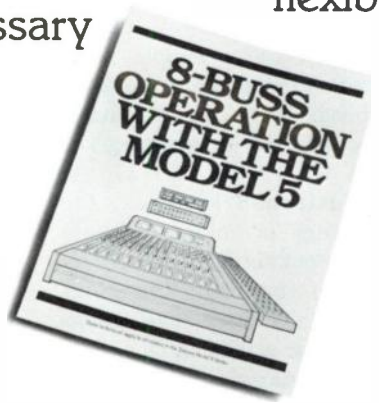
MAKE PATCHWORK PAY OFF.

Dollar for dollar and spec for spec this is the best buy in an 8-track multi-channel recording rig. Period. The 80-8 is the most popular 8-track in the world, and the results produced on it are a matter of record. Sometimes gold. The Model-5B with new IC's and color coded knobs. is the perfect companion mixer. Together, you'll have the most functional, economical 8-track hardware package you can buy.

RIGHT NOW!

When you purchase an 80-8 and Model-5B, between January 1, 1980 and April 30, 1980, you get the Model-1 monitor mixer, the MB-20 meter bridge, the PB-64 patch bay, plus all the cable necessary to hook everything together—**free!** It's not just ordinary cable, either—it's TEAC's exclusive low capacitance cable—the same high quality cable recommended for all Tascam Series systems interface.





Be sure to contact your Tascam Series dealer for details on this special limited offer. He'll show you the 8-buss operation brochure we prepared that takes you step-by-step through the most flexible, functional and economical 8-track recording system available. Now, more than ever, patchwork pays off.

GET MORE THAN $750 WORTH OF GEAR -- FREE!

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TEAC Professional Products Group

CIRCLE 71 ON READER SERVICE CARD

A TECHNICAL LOOK AT DIGITAL TECHNIQUES

Part 2

By Richard DeFreitas

Continuing the discussion we began last month: A basic delta modulation encoder/decoder system is simple. (See Figure 3.) The core of the encoder is a comparator IC, which is inherently a binary (two-state) device. When the input signal to the comparator exceeds the "reference" voltage, the comparator's output is high (logic one), and when the input signals falls below the reference, the comparator's output goes low (logic zero). Simply by clocking the comparator's output via a flip-flop, a regular stream of digital pulses is produced which can be transmitted, stored in memory, or recorded.

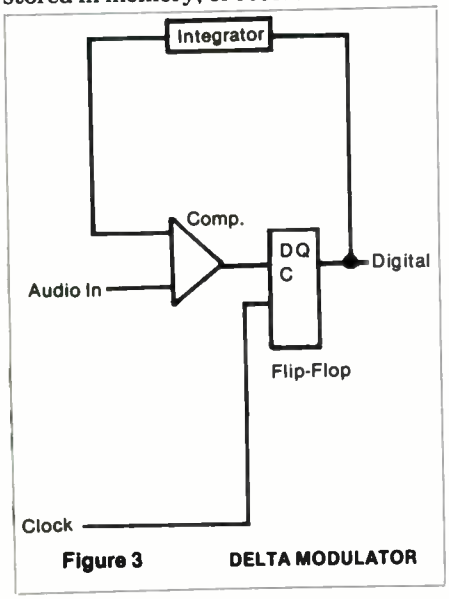


Figure 3 **DELTA MODULATOR**

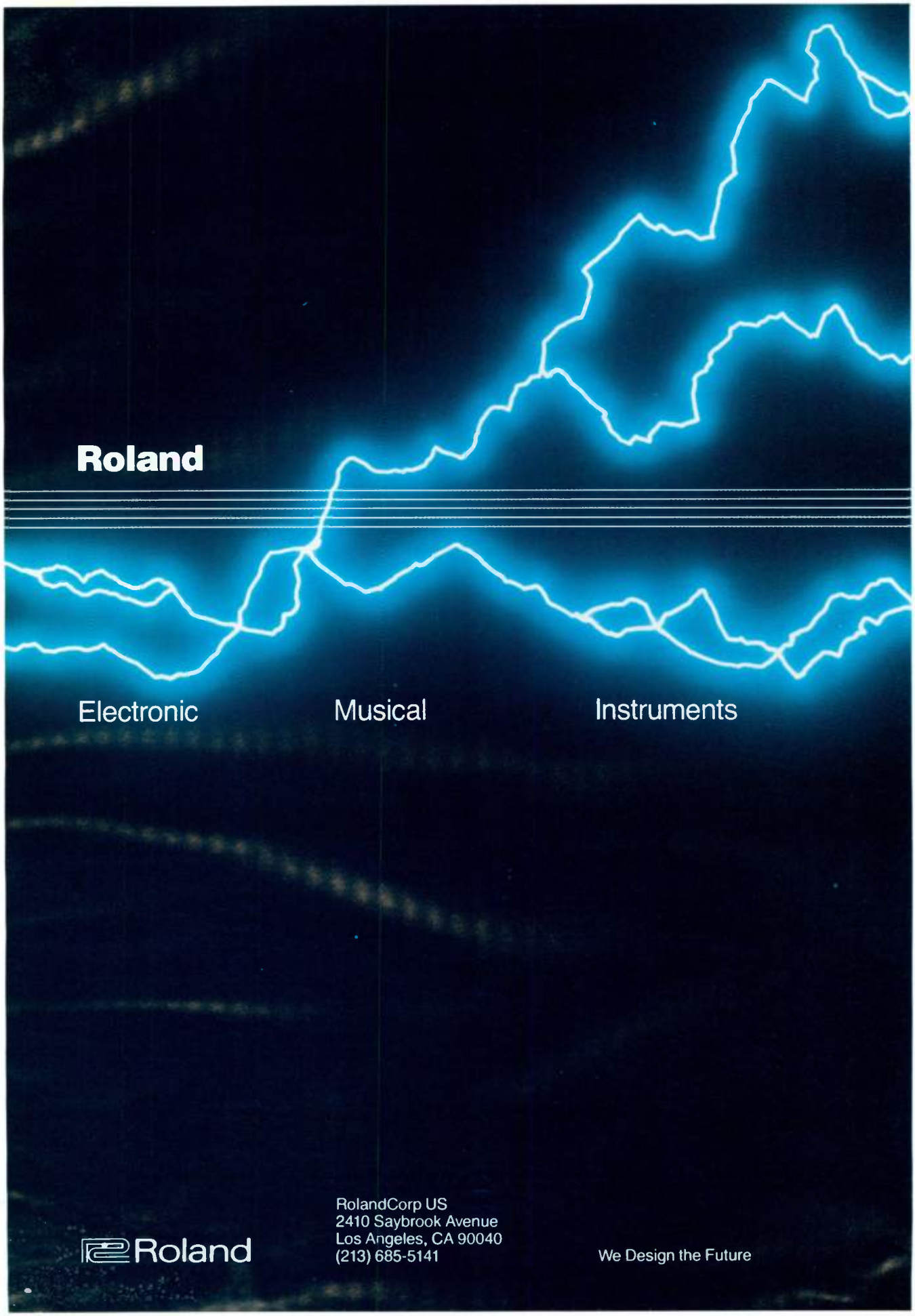
The key to the encoder's operation is the reference signal, which is actually a continually rising or falling voltage ramp obtained simply by passing the generated pulses through an integrator. The action of the comparator forces this voltage ramp to track the incoming audio signal up or down, since the comparator's output is simply an error signal indicating whether the reference voltage ramp is higher or lower than the audio waveform voltage at the moment. Figure 4 illustrates this process, showing a high-frequency audio signal, the stream of digital pulses produced by a simple delta modulator when fed this audio signal, and the encoder's reference voltage which is produced by integrating the pulse stream.

As the illustration suggests, the reference voltage is an approximate replica of the input signal, distorted by the presence of the small triangular ramp segments (which are exaggerated in size for clarity in this illustration). The triangle-wave signal which rides on top of the reference waveform actually represents the encoder's sampling frequency, *i.e.*, the clocking frequency of the flip-flop which is generating the digital pulse train. In a typical delta modulation encoder, this sampling frequency is 10 to 50 times higher than the highest audio frequency, so it is easy to remove with a simple filter.

The delta modulation decoder is identical to the encoder with the comparator removed. The decoder is basically just an integrator identical to that in the encoder, producing the reference voltage signal by integrating the pulse train. This is followed by an output filter to remove the ultrasonic triangle-wave segments and smooth the reconstituted reference signal into a replica of the original input signal.

The delta modulation encoder/-decoder eliminates the most complex portions of a PCM system: the high-precision fast-settling sample/hold circuit and the critically-accurate temperature-compensated resistive ladder networks. Indeed, the delta modulator requires no sample/hold at all; the only requirement for high precision is in the matching of the integrators in the encoder and decoders. Since the delta modulation encoder operates with a sampling frequency 10 to 50 times higher than the highest audio frequency, it does not require a sharp low-pass filter at the edge of (or within) the audio bandpass in order to prevent aliasing. (Aliasing is the creation of "beat-note" distortion products due to intermodulation between the sampling frequency and ultrasonic audio harmonics.)

However, the basic delta modulator shown here has severe limitations



CIRCLE 82 ON READER SERVICE CARD

when considered for wide-band high-quality audio signal processing. The transient response of the simple encoder is fundamentally slope-limited, *i.e.*, slew-rate limited; thus the dynamic range is large at low frequencies but declines at 6 dB/octave through the audio spectrum. This problem could be dealt with by increasing the sampling frequency (but it would have to be made unreasonably high in order to provide adequate performance) and by speeding up the integrator, *i.e.*, reducing the integrator's capacitor (but that also raises its noise level). These problems are addressed by adjusting the size of the signal going to the integrator, in a signal-dependent fashion, so that the slopes of the reference voltage ramp segments vary according to the demands of the audio signal itself. This is adaptive delta modulation (ADM).

The ADM encoder's adaptation can be activated by sensing either the amplitude, the frequency, or the slope of the incoming waveform. The preferred approach is to detect the slope, *i.e.*, the slew-rate of the signal; that information is directy available from an inspection of the transmitted pulse train. A long string of logic ones indicates that the encoder is in positive slew limit, and a string of logic zeroes indicates that the encoder is in negative slew limit; in either case the gain to the integrator must be increased. Figure 5 illustrates one way to implement an ADM encoder. The transmitted pulses are averaged with a time-constant which is long compared to the sampling interval. The mean value, K, is 1 if the encoder is in positive slew limit, 0 at negative slew limit, and 0.5 when the waveform slope is zero. Forming the absolute value of |K-0.5| yields a control signal which can vary the gain to the integrator.

The ADM encoder continuously adapts its slew rate to match that of the audio signal which it is processing. When the audio waveform is large in amplitude or frequency, the integrator forms large triangle segments in order to follow the steep waveform slope; when the waveform slope is small, the integrator forms very small triangle segments in order to replicate the waveform. Note that because of this behavior, the encoder's distortion (due to the triange-step quantization) and its residual noise actually decline as the signal becomes smaller; thus the distortion and the dynamic signal/noise ratio of the system remain nearly constant over a wide range of signal amplitudes. (With a linear PCM system the distortion and S/N ratio measure best for a "full-scale" signal which is just below the onset of hard clipping, and become progressively worse as the signal gets smaller.) However, this advantage of ADM can also be a disadvantage; under extreme circumstances the variation of the ADM encoder's residual noise with the signal slew-rate can be measured as a form of noise modulation.

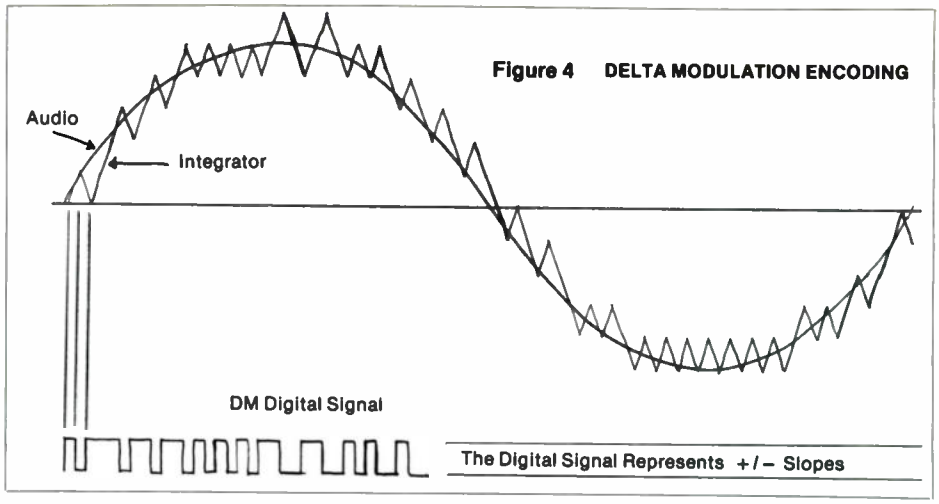


Figure 4 DELTA MODULATION ENCODING

As with the simple basic delta modulator, in the ADM system the decoder is simply a duplicate of the encoder with the comparator omitted and with output filtering to remove ultrasonic clock-frequency triangle components from the reconstituted reference-voltage signal. Since the ADM encoder's slew-adaptive gain control is derived from inspection of the transmitted digital pulse stream, there is no need to transmit a separate control signal to align each ADM decoder's gain to match that of the encoder. Each decoder generates its own gain-control signal identical to that in the decoder by inspection of the same pulse train.

Both the PCM and ADM encoding systems have distinct advantages. Essentially PCM is an absolute value encoding system and ADM is a differential encoding system. The noise and distortion characteristics of PCM are dependent on amplitude, but not frequency, while the ADM is essentially dependent on frequency and not amplitude. PCM is presently the preferred system for digital recording, although at least one manufacturer is considering using ADM for tape recording. Time delay systems currently use both PCM and ADM techniques.

On the negative side, each system has its disadvantages. PCM requires multi-pole filtering which may or may not be audible. ADM creates higher noise at high frequencies, which may or may not be audible.

The world's A/D experts have long ignored the audio market; this will change. During the 1980's encoding systems which incorporate the virtues of both PCM and ADM will be developed especially for high quality audio use. These encoders will be tailored specifically to optimize digital bandwidth versus audio bandwidth. Problems such as tape dropout and excessive filtering will be eliminated or minimized. The audio-to-digital encoder as we know it tc lay may not exist at the end of the decade. The interest is there. The effort will be made and the audio community will be the beneficiary.

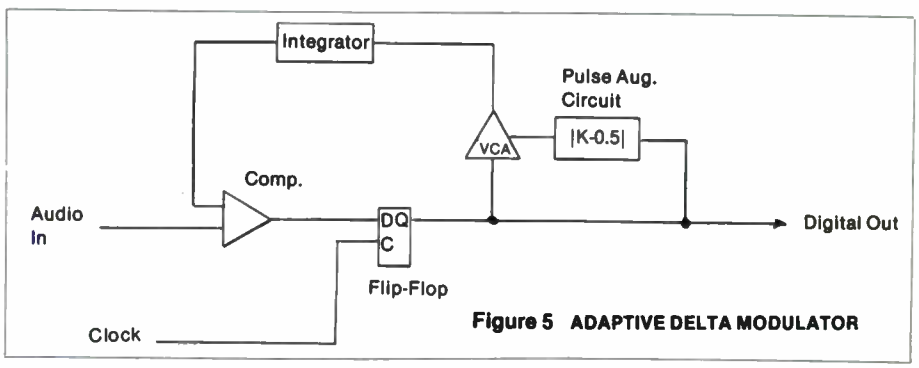
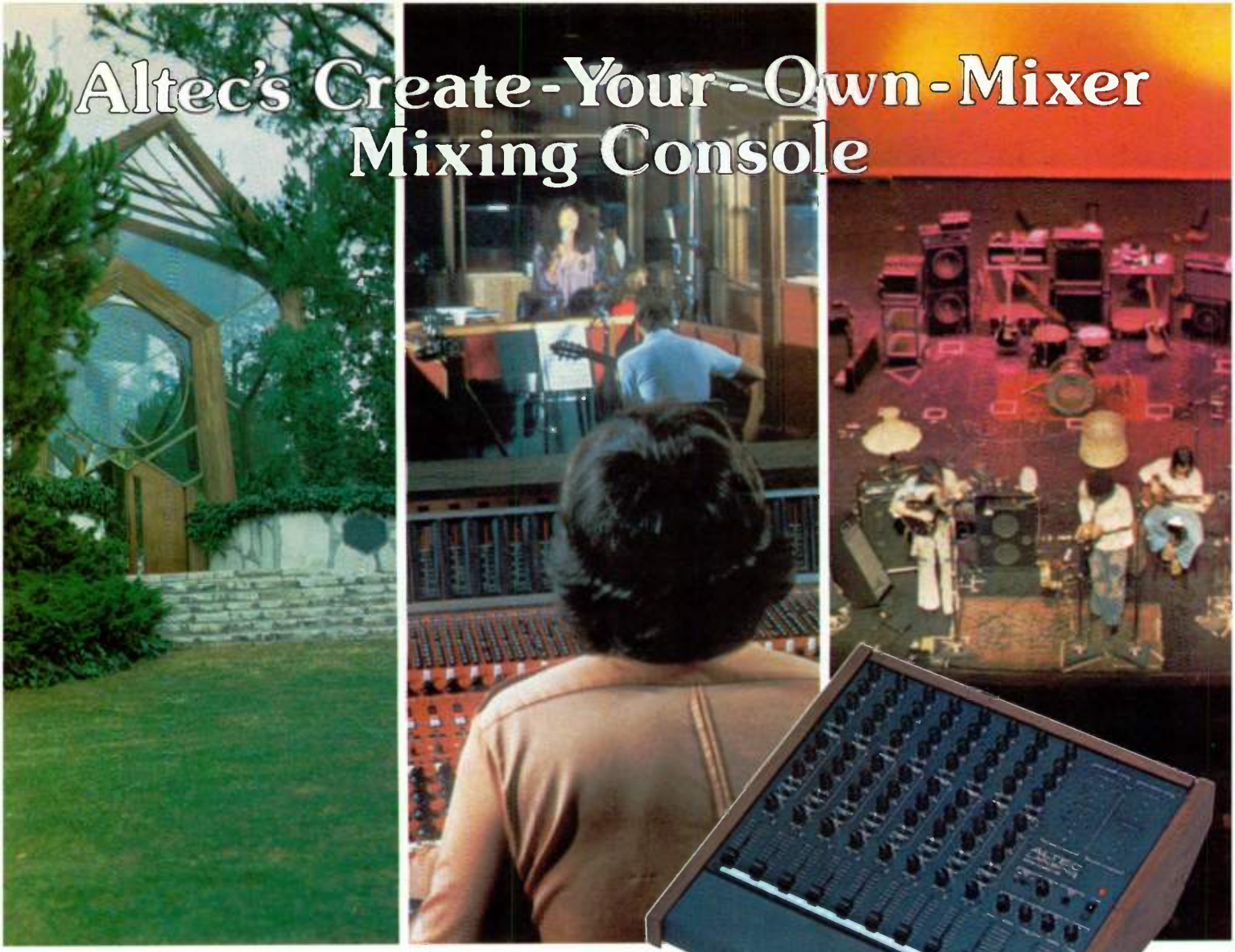


Figure 5 ADAPTIVE DELTA MODULATOR

Altec's Create-Your-Own-Mixer Mixing Console



Nobody but you could ever know exactly how you want to use a mixing console. So instead of manufacturing a cut and dried mixer which defines your system's limits, or giving you a plug-in module approach which might fit one job but not the next, Altec Lansing created the 1690 Mixing Console to give you options rather than boundaries.

No longer do you have to struggle to fit your needs into the circuitry of someone else's idea of a perfect mixing console. A mere flick of the mode switch on any of the 1690's eight input channels lets you select the channel circuitry best suited for your musical or commercial sound reinforcement, recording/overdub or mixdown applications.

If your needs change in an hour, no matter. Just flick the switch and turn the 1690 into a whole new mixer.

PA/REC/MIX Mode Switch

And, two or more 1690's linked together can give you twice the flexibility and twice the performance.

We have written a comprehensive technical letter to explain in more detail just how simply you can turn your ideal system designs into reality.

So go ahead, design your ideal system. With your ideas combined with our technology, you can easily "create-your-own-mixer" on Altec Lansing's 1690 Mixing Console. Another innovative product from the company that speaks with the Voice of Experience—with 43 years manufacturing quality audio products for America and for the world.

For further information write Altec Lansing, 1515 South Manchester Avenue, Anaheim, California 92803 or check the yellow pages under "Sound Systems" for the name of your nearest Altec Sound Contractor.

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TAPCO has recently announced an innovative dealer profitability program termed "TLC" (TAPCO Loving Care). Highlights of the program are: special pricing, priority shipment of new products, dealer listing in ads and brochures, dealer sales and technical training, automatic literature mailing, access to special incentive programs. For additional information, contact Jim Loppnow, Sales Manager, at (206) 883-3510. CIRCLE 15

The 16-page, full-color **Bose** Professional Products Catalog provides descriptions and specifications of the Bose line of professional speakers, amplifiers, mixers and accessories. Also shown are system configurations and unusual applications. CIRCLE 17

Teatronics, Incorporated, the manufacturer of portable and permanently installed lighting control equipment, offers a catalog showing its entire line of professional products. Teatronics equipment is well suited for touring, is well filtered, and is the most cost effective lighting equipment available today. Over the past 10 years Teatronics has placed thousands of systems in the hands of the performer with great success, and through innovation will continue to do so in the future. CIRCLE 16

Audio-Technica U.S., Inc. "demystifies" microphone classifications and defines the terminology used to describe microphone characteristics in this 16-page booklet. Written in language understandable to the novice, but contains information valuable to the experienced soundman or musician. For FREE copy write: Audio-Technica U.S., Inc., 33 Shiawassee Ave., Fairlawn, OH 44313. CIRCLE 18

Vantage guitars have gained enormously in popularity since being introduced last year. This catalog details full specs on the line, which combines excellent quality and payability with surprisingly affordable prices. The instruments feature their own custom electronics and hardware. CIRCLE 19

TO RECEIVE INFORMATION ABOUT PRODUCTS IN THE DEALER DATA FILE CIRCLE THE APPROPRIATE READER SERVICE NUMBER. Use Reader Service Card.

New Peavey 80 contains **Peavey Electronics'** new models for Spring 1980 including a new line of mixing consoles, equalizers, speaker enclosures, monitor systems, musical instrument amplifiers, and accessories. CIRCLE 20

Ashly Audio is now in full production at a new facility in Rochester, N.Y. Ashly's product line includes Parametric Equalizers, Peak Limiter-Compressors, Electronic Crossovers, and Instrument/Keyboard Preamps. All products are in a 19 inch rack-mount package. Ashly products are known for clean, quiet performance, powerful control, and rugged, reliable construction. For a free brochure contact Ashly Audio, Inc., Customer Service, 100 Fernwood Avenue, Rochester, New York 14621. CIRCLE 21

Every busy professional sound equipment dealer and salesperson will welcome this new **Neptune Electronics** pocket catalog. Carry it on the floor for quick reference for any feature in Neptune's 14-product line. Includes Neptune's newest—the 342 Dual and 341 Single Parametric Equalizers, R321 Electronic Crossover and the 1420 Stereo Mixing Console. Excellent customer handout. CIRCLE 22

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Sunn's new "SLP" series of sound reinforcement components offer the latest analog and digital technology to meet the needs of demanding audio professionals. The digital circuitry approach to the electronic crossover represents an industry first. Additionally dual power amps, graphic equalizer, low frequency /midrange /high frequency enclosures and Sunn engineered high performance 15" and 18" loudspeakers are being introduced.

CIRCLE 23

You'll notice several major innovations in the **Marlboro line**. All of our new amps and speaker systems now feature sturdier cabinetry with reinforced metal corners and heavier gauge covering. Soundwise, they offer increased wattage and greatly improved equalization controls. Many of the new models have a Preamp and Master Volume for producing distortion, sustain, overdrive and clipping. Overall, Marlboro's new amplifier can now cover a wider range of applications than ever before, from beginning up to experienced players.

CIRCLE 24

Octave Electronics, Inc. a division of Plateau Electronics, Inc. are the manufacturers of both the CAT and KITTEN synthesizers. Octave has introduced the CATSTICK a replacement for ribbon controllers, pressure sensitive controllers and sliders. The CATSTICK allows four modulations to be controlled with one hand. CIRCLE 25

Fender Rogers Rhodes was one of the first guitar manufacturers to use brass for their hardware. Fender now offers two lines of brass; the Standard Series and the Brassmaster Series. Both lines feature a high quality epoxy finish to prevent discoloration. No drilling required. These are Fender pieces built to replace our Fender stock pieces exactly.

CIRCLE 26

The **Roland** 1980 Keyboard Catalog explicitly details the Control Functions, Output Sections, Specifications and Applications of the entire keyboard line. Among those featured are the SA-09 Saturn, the RS-09 Organ/Strings, the MP-600 Piano, and the Jupiter-4 polyphonic synthesizer. All combine Roland's commitment to high quality and low cost in electronic musical instruments. CIRCLE 27

The **dbx** professional tape noise reduction system provides in excess of 30 dB of noise reduction and 10 dB of headroom improvement over the entire audible frequency range (20Hz to 20kHz). A tape made with the dbx system has full dynamic range and no audible noise. It is virtually indistinguishable from the original live source.

For a copy of the dbx Professional Tape Noise Reduction brochure, write dbx Professional Products Division, 71 Chapel Street, Newton, MA 02195.

CIRCLE 28

Electro-Voice Professional Microphone catalog offers complete descriptions, specifications and application information for Electro-Voice's line of professional microphones. E-V microphones are known worldwide and are the reference standard for many broadcast, film and recording studio applications. All E-V professional microphones offer E-V's unique two-year warranty.

CIRCLE 29

DEALER DATA FILE

This new, 12 page color supplement to the **DiMarzio** Catalog details their full range of guitar and bass bodies and neck, chrome and brass bridges, and assorted hardware and parts. All have been designed to surpass existing products currently on the market.
CIRCLE 30

Advanced Audio Designs makes professional performance systems like the model D-250 digital delay system which employs the latest technology available in analog to digital circuitry. The unique design features will meet your performance needs in all applications. Additional special effects available using infinite repeat; oscillator functions controlling rate, width and wave shape; and voicing function with random variations in the delay signal which is especially useful in creating a more natural voical doubling effect. CIRCLE 31

When **DOD** designs a product it keeps the musician in mind all the way. It demands a product that is functionally superior, and to ensure that it will stay that way it uses rugged brand name components such as CTS, Carling Switch, National Semiconductor, Texas Instruments, Switchcraft, etc. DOD also features solid die cast zinc or aluminum cases and Fr-4, G-10 glass epoxy circuit boards. All DOD products are hand assembled and tested. All DOD products have a one year limited warranty on parts and labor. CIRCLE 32

BOSS products presents an informative and knowledgable text on Effects Devices (including the SG-1 Slow Gear, CE-2 Chorus and DS-1 Distortion), Rhythm Devices (including the DR-55 Dr. Rhythm), PW-1 Rocker Wah, and the PD-1 Rocker Distortion. All beautifully illustrated in full color.
CIRCLE 33

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TEAC's free 16-page brochure gives you clear, basic information on how today's musicians use tape recorders, mixers and signal processors as creative tools. Once you understand the multitrack system concept you'll be ready for all those customers who are ready . . . for multitrack.
CIRCLE 34

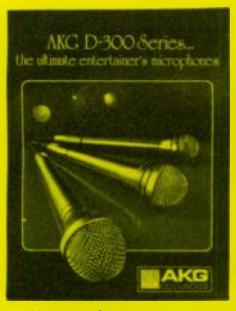
Oberheim has recently introduced the OB-X Four, Six and Eight Voice totally programmable polyphonic synthesizers. The OB-X is a low profile instrument, compact and portable, which employs sophisticated microprocessor technology and superior constructional techniques.
CIRCLE 35

Whirlwind Music manufactures complete lines of both standard and custom design plugs, cables, connectors and wires for both recording and "live" sound reinforcement applications. The 16 page all-color catalog reflects Whirlwind Music's commitment to continue to provide the best in cable and connectors, from the simplest guitar cord to the most involved custom wiring assemblies. CIRCLE 36

MXR is a widely respected manufacturer in the field of electronic signal processing. The Professional Products Catalog includes all musical instrument and studio signal processors. The Consumer Products Catalog covers MXR's range of home stereo components. CIRCLE 37

Forty-three years of **Altec Lansing** product innovations are covered in the Industrial/Professional Sound Products Catalog. A thirty-page detailing of Altec's famous Voice of the Theatre systems. loudspeaker systems and enclosures; horns; drivers and special electronics. Contains full product specifications. Altec Lansing, 1515 South Manchester Avenue, Anaheim, Calif. 92803.

CIRCLE 38



AKG has introduced a D-300 Series of robust entertainer's microphones (three models) designed for both vocal and instrumental musicians which claim the highest impact and damage resistance, the only plug-in modular capsule system replacement system, the elimination of handling noise, and nine-way presence and proximity effects controls on the mic. Information on seven other music-maker's mics are also detailed. CIRCLE 39

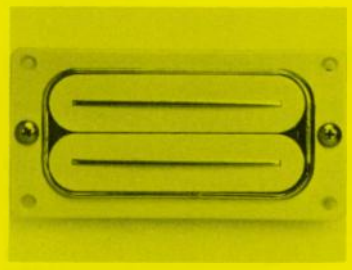
Integrated Sound Systems, Inc. manufactures high performance sound equipment for professional applications. The Gli product line consists of individual speakers and related audio electronic components such as mixers, preamplifiers, signal processors, and power amplifiers

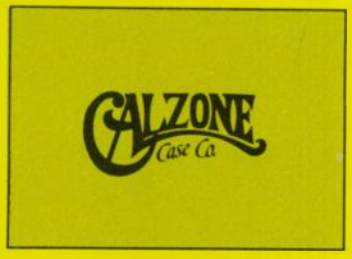
CIRCLE 40

Norton offers a complete line of hearing protectors which provide effective protection aginst most noise-related activities. Sonic II™ Hearing Protectors, Comfit® Multi-purpose ear plugs, Gun Muffler™ ear muffs and Ear Pufff™ disposable ear plugs. Inexpensive insurance against noise-induced hearing loss . . . from Norton CIRCLE 41

Maxell Corporation manufactures premium quality audio and video magnetic recording tape and accessories. Maxell's exclusive Epitaxial formula is featured in Professional quality open reel, cassettes, and VHS. Ultra-Dynamic and Low-Noise formulas in open reel, cassette, and 8-track format balance Maxell's full line. CIRCLE 42

Bill Lawrence Products introduces their new L-500 pickup. The L-500 Rhythm and the L-500 lead, both designed for maximum performance, have anti-magnetic stainless steel mounting screws; precise fitting mounting rings, and high "Q" stainless steel blades. CIRCLE 43





Calzone Cases are designed and built from the viewpoint of the musician or roadie who has to work with the cases. Offering the highest quality case priced for the average musician, Calzone Cases are protection the musician can afford — and can't afford to be without. CIRCLE 44

DEALER DATA FILE

Role Playing As Sales Training

Part Three

By R. Timothy Rooney

For those of you who tried the "throwaway close" described in the last installment of this series [December 1979], I hope it worked. If it didn't, remember I never promised it would be 100% successful. If it worked well, be cautious. Don't let it become the lead actor in your sales technique repertoire. It's very easy to convince yourself the customer didn't want to buy anything anyway. Instead of using the throwaway close as a spontaneous introduction to a customer (with a recognized small chance for immediate success) many salespeople, and I'm sure you've run into a few, use it as their "one-and-only." Don't be lazy.

We covered the skeptical objection in the last article. That was the easy one. An ample supply of proof statements was essentially all you needed to guide the customer to a close. The two more difficult objections will be discussed here.

First, the *solid objection.* The solid objection, as defined earlier, is that objection which is recognized by a definite bias against the product you're selling. "I've had nothing but trouble with these things in the past," or "I'm sorry, but this product costs far too much for the benefits I'll get from it" are examples of statements you might hear indicating a hard objection.

Hard objections are more easily handled if they are further broken down into two categories, misunderstandings and perceived drawbacks. A misunderstanding is simply that. It is an objection to your product based on incorrect information. A perceived drawback can be either a need your customer has that your product can't satisfy or something your customer doesn't like about your product.

With both types of hard objections, the strategy is to overcome the objection immediately! Allowing either type of objection to linger in the customer's mind only reinforces the validity of his objection, and the more valid your customer perceives his objection to be, the more difficult it will be to overcome it later. The strategic technique is essentially the same also. It is also similar to some you have mastered earlier. First, restate the objection in the form of a question. Then, in the case of a misunderstanding, clear up the misunderstanding. In the case of a perceived drawback, you will restate some new or old benefits with the intent of minimizing the perceived drawback. In both cases *never* agree with the objection.

An example of the technique used to overcome a misunderstanding would be as follows:

Situation: Our salesman is again selling widgets, and he is about to run into a misunderstanding concerning pric-

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Trouble-free, travel-proofed, flexible and compact—the BX-5 is also free from acoustic feedback when placed close to loudspeakers. Its professional performance and features far surpass any other reverb available in this price range.

AKG BX-Systems—in use in over 60% of recording studios world-wide

Exclusive Torsional Transmission Line—for incomparable sound "openness"

Flutter-free Performance—uncolored "natural" reverberation

Built-in Reverb/Dry Signal Mixing—controls blend of reverb and original sound

Built-in Equalization—bass contour and mid-range "parametric" controls to style the character of the reverb

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CIRCLE 71 ON READER SERVICE CARD

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ing. The customer thinks the widgets cost $10 each, when they actually cost $8 per. It is immaterial where this misinformation came from.

Salesman: *Then we're set. How many cases of widgets do want me to deliver?*

Customer: *I really don't think I need any today.*

Salesman: *Oh! Why not?*

Customer: *Well, as good as your widgets might be, I'm not sure they're worth $10 each.*

Salesman: *Let's see. If I understand you correctly, if you could get these widgets for less than $10 apiece, you'd be ready to sign the order. Is that right?*

Customer: *Well, yes.*

Salesman: *Then you'll be happy to know we had a roll-back in prices two months ago, and the widgets are now only $8 each. Was that three or four cases you wanted to order?*

The techniques are easily seen. The misunderstanding is that the customer thinks the widgets cost $10 when they actually cost $8. In restating the objection in the form of a question, the salesman has used a couple of tricks which you should try to use when possible. He has not only confirmed the objection, but in his question he has made the first move towards a close if the answer to his question is affirmative. He has essentially said, "You will buy my product if I show you you're wrong, won't you?" This probe elicits an affirmative response which is followed by the statement clearing up the misunderstanding, which is then followed by an offer to close. Note that the salesman moves for a close immediately. In doing this he is merely following the natural progression set up by his earlier question.

In setting up a role play for this section the instructor should prepare as many situations as there are people participating. The salesmen should be prepared to restate the objection in the form of a question, clarify the question and move to a close. Each participant should have the opportunity to play both the customer's role and the salesman's role at least once during the exercise. The exercise period should be fairly short. This technique will be combined with others later.

When you encounter a perceived drawback, you again must handle it immediately. In this case, however, your strategy is to present enough acceptable benefits to your customer to overcome the drawback he sees in your product. The benefits may either be ones your customer has already accepted or new ones you must present. When presenting new benefits, it is not enough to recite a string of benefits hoping to hit paydirt somewhere along the way. The benefits presented must be valid and fulfill a need your customer has. This will require open ended and short probes to uncover additional customer needs you can support.

Let's see an example where a previously accepted benefit is used to overcome a perceived drawback.

Situation: Our widget salesman is on the road again. The customer will object to the $10 each price tag. Competitive units are only $8.75. This time, though, the customer has correct pricing information. (You will recall from the previous article, our customer was skeptical of the durability of the widgets, but through the use of various proof statements was finally convinced.) We'll pick up our salesman at the same point in his pitch.

Salesman: *How many cases of widgets should I have delivered?*

Customer: *I really don't think I want to order any today.*

Salesman: *Oh! Why not?*

Customer: *Quite honestly, I think your price of $10 per widget is too high. I can get a competitive brand for quite a bit less.*

Salesman: *I see! So your concern is that you would not be getting a good value for your money if you purchased XYZ widgets, is that right?*

Customer: *You've put it quite well!*

Salesman: *Let's see! You've already seen that XYZ widgets last at least twice as long as any other widget on the market, isn't that so?*

Customer: *Well, yes!*

Salesman: *Well, then, wouldn't you agree that* actual *cost of the XYZ widget is less than half what you think it is, not to mention the money you'll save on equipment maintenance, because our widgets only have to be replaced half as often as what you're now using?*

Customer: *Well, I guess that's true.*

Salesman: *Now will that be three or four cases?*

Our salesman noted the objection, restated the objection in question form then re-presented a previously accepted benefit to offset the perceived drawback. Once he received agreement from the customer that the previously accepted benefit outweighed the perceived drawback, it was on to the close. Note that the salesman didn't simply restate the benefit; he guided the customer through it. He expanded the benefit to include things that would be relevant to the customer's argument. Things like "half actual cost" and "maintenance savings" are the expanded benefits that relate to the customer's objection to pricing. A simple statement reiterating "double life expectancy" would probably not have been enough to overcome the objection.

Now assume that the previously accepted benefit had never been used. What would happen with the same price objection now? As we discussed earlier, questions must be asked to uncover additional needs that can be supported by your product's benefits that will offset your customer's objections. This will require thought on your part. Obviously, a need supported by a benefit that has no relation to the customer's objection will have no meaning. Thus, if a customer's objection is to price, your goal is to uncover needs that you can support that will result in your customer getting more value for his dollar than he could with a competitive product. Let's pick up the sales call.

Customer: *I can get a competitive brand for quite a bit less.*

Salesman: *I see! What if I could show you how our widgets actually offer a better value for your purchasing dollar than what you're currently buying; would you be interested then?*

Customer: *I'm listening.*

Salesman: *Well, tests have shown that XYZ widgets offer at least twice the life of any competitive brand. So, over the life of the widget, you're actually paying the equivalent of only $5 per widget—not the $10 you think. Plus, think of the savings you'll have on maintenance and machine down time. Ten dollars doesn't seem so high anymore does it?*

Customer: *I guess not!*

Salesman: *Now will that be three or four cases . . . ?*

Objection noted, restated in question form that also uncovers an implied need for good value, supporting benefits given, agreement received, close made. Simple and reasonable logical sequence isn't it? Before getting into an exercise, it should be getting clearer how all of this fits together. For example, in the above dialogue, what would have happened if the customer had accepted the need for value, but had balked at your supporting benefit

New ATM31 *Fixed-Charge* Condenser

Road Tough Vocal Microphone

A great vocal microphone must do just two things:

1. Sound Fantastic. 2. Survive.

The New Audio-Technica ATM31 Vocal Microphone accomplishes both with considerable style. The sound is the direct result of new condenser technology from A-T. Our unique fixed-charge condenser element puts the electrical charge on the back plate rather than on the moving diaphragm. So the diaphragm can be made thinner, better able to react precisely to every vocal nuance.

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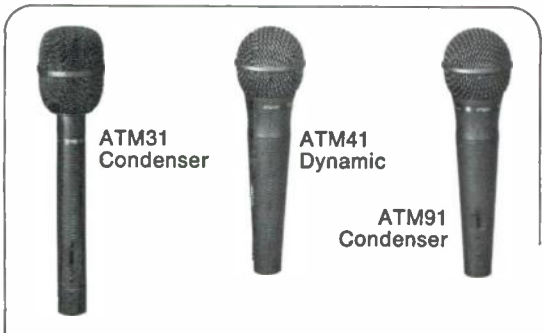
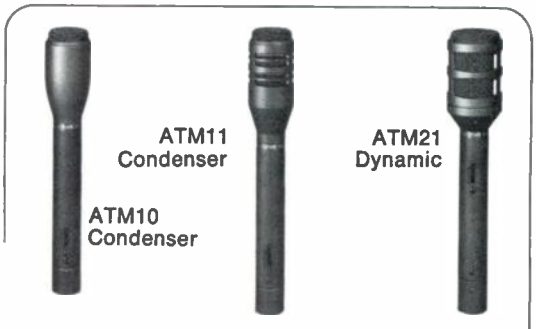
Great sound in the real world. It's not too much to ask of Audio-Technica.



FOR VOCALISTS



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statement? What attitude would he have been showing? Skepticism! The dialogue would have then gone on to offerings of proof statements, as discussed in the last article, and subsequently on to a close.

For this exercise, return to the need/feature/benefit/proof exercises that were developed for the previous article. This time the instructor should add some additional actual material to the background information. At some point during the sequence, the individual playing the customer role should express an objection based on misunderstood information (this usually takes place immediately after an offer to close has been rejected). The salesman must clear up the misunderstanding either before a close can be accepted, or the exercise continues. In other scenarios, construct the sequence so that a skeptical attitude does not appear until the customer has demonstrated a perceived drawback. Require the salesman to uncover one or more additional needs which can be supported in order to offset the perceived drawback. The customer should be skeptical of one of the benefits and requires one or more proof statements prior to accepting an offer to close.

It is not necessary at this point that all participants in role-playing duplicate each scenario sequence. One might encounter perceived drawbacks, another perceived drawbacks plus skepticism, another a simple misunderstanding. All should play a sales role at least once, however.

Things to watch for in discussing the role plays are as follows: 1) Was the objection recognized? 2) Was it handled *immediately*? 3) Was the objection restated in question form? 4) In the case of a perceived drawback that could not be overcome with previously established benefits, was adequate questioning done to uncover additional needs? 5) When uncovered, did the salesman adequately support them with benefit statements? 6) In the case where the perceived drawback could be supported with previously established benefits, how well were they reintroduced and expanded? 7) Did the salesman recognize an opportunity to close?

Now on to the most difficult type of objection. In fact, I guess you wouldn't call it an objection at all. Perhaps obstacle would be a better term. The obstacle is customer indifference—indifference to the benefits of your product and even to the product you're selling. Indifference is the most difficult obstacle to overcome for several reasons. Primary among the reasons is the fact that most salespeople have traditionally read indifference as a negative attitude. It isn't. It is neither positive nor negative. It is the attitude that essentially says, "I'm not interested in your product, because you haven't shown me any reason to be interested." Secondly, the indifferent attitude often requires so much work to overcome that the salesperson will give up rather than pursue the situation through to its hoped for conclusion.

Indifference, like hard objections, can be broken down into two categories. The first is noted when your customer expresses satisfaction with the product or service he is currently using. The second occurs when the customer exhibits no need for the product you're selling. Both categories require some plain common sense. In the first instance, you are probably not going to be able to sell a customer your product or service if your product or service exceeds his current or future needs. (To put it in the audio vernacular—even I get tired of selling widgets occasionally—you probably can't sell a 24-track tape machine to a garage band that is satisfactorily getting by with a 4-track. Maybe you can sell a better 4-track or even an 8-track, but not a 24-track.) Using the same example, if you are attempting to sell a 4-track machine to a customer who sees no need for your product, you *must* have done enough homework to know your customer does have a need, even if he doesn't realize it.

The salesman's main objective in both cases is to uncover needs and support them with benefits. In the case of the satisfied customer, the questioning technique is two pronged. The first line of questioning is to uncover possible shortcomings in the customer's current product preference. Essentially this is done to uncover possible needs the customer might have that can be satisfied with benefits your product has that aren't being satisfied with his existing equipment. In doing this, it is important that the customer's current product choice never be disparaged. You want your customer to tell you why your product is better. You do not want to tell him he is not intelligent enough to make a proper choice. If you do, kiss your sale goodbye.

A sample scenario illustrating satisfied indifference, again reverting to widgets, might go as follows:

Background: Even though your widgets cost more than your competitor's, and they both have the same life expectancy, you have inside information that the competing line's manufacturing process has recently resulted in a 30 percent out-of-box reject rate. Plus you know that these problems have resulted in long order lead time when the defective units are returned for replacement.

Salesman: *I think XYZ widgets should be your primary widget supplier. How many did you want to order for test?*

Customer: *Well none today. I'll investigate my supply and get back to you if I need any.* (Stalling—a classic symptom of the indifferent buyer.)

Salesman: *I see. Is there something about our widgets that doesn't appeal to you?*

Customer: *No, not really.*

Salesman: *I get the feeling you probably aren't going to be giving me that call. Do you mind telling me why?*

Customer: *Well, honestly, I'm really very satisfied with the widgets I'm buying now; and not only are yours more expensive, but they don't last any longer. I see no reason to change.*

Salesman: *I see! Might I ask if you've noticed that you're ordering widgets more often these days?*

Customer: *As a matter of fact, I think I am.*

Salesman: *I'll bet you're waiting longer for your order to come in too, aren't you?*

Customer: *Come to think of it deliveries don't seem to be as prompt as they used to be.*

Salesman: *I'll even bet that you might have heard some grumbling from your maintenance people about down time. Am I right?*

Customer: *Yes. In fact I've already received two calls this morning. How did you know?*

Salesman: *Well it's not generally known, but your current widget manufacturer just put in a new production line, and the reject rate is close to 30 percent. They're doing a 100 percent quality control inspection, but only on replacement orders. That's probably why your orders are taking so long to be delivered.*

Customer: *I'll bet you're right!*

Salesman: *What if I could offer you a widget that was not only guaranteed to be 100 percent operational out-of-the-box, but could also offer you 24 hour delivery on every sized widget*

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Throughout the music industry, more people are hearing the name "Norton."

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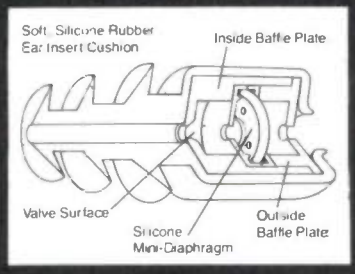

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CIRCLE 97 ON READER SERVICE CARD

you buy. Now would you be interested in giving our widgets a test?

Customer: *How soon can you have some here?*

Salesman: *24 hours maximum. What sizes do you need?*

From here the scenario would continue to the close. The salesman uncovered a need through the questioning process. The need was for a more reliable widget. The initial customer concern, price, wasn't the real customer need. Reliability was. The salesman took the customer through the process very slowly. When the statement was finally made concerning the competitive widget, nothing bad was said. The statement was an implied question that caused the customer to agree that maybe his widget source wasn't as reliable as he thought it was. From there came the benefit statement satisfying the customer's need for reliability, and on to the offer to close.

The other form of indifference, no apparent need for the product, could turn into a lengthy scenario if covered in full, so I will attempt to simply describe the process.

The technique used is simply a series of questions relating to the need *you* expect the customer might have. This technique can become very frustrating if all you receive in return is a series of no's. The first time you hear a break in the sequence such as a "not really" instead of a "no," it is your clue to proceed with an open-ended question such as, "What do you mean not really?" Hopefully, the response will be descriptive enough so that you can use it as a building block to start a more defined series of questions oriented towards uncovering a specific need. If the response is uninformative, it's back to ground zero.

If, after a long series of questions, you still seem to be getting nowhere, there is the "technique of last resort." Close the customer. It's the throwaway close we discussed in the last article, but with a new twist. First, assume a need your product can satisfy. Second, satisfy the need with your product's benefit. Third, based on assumed agreement with your need satisfaction statement, offer a close. Quite often the shock of such a tactic is enough to open the customer up to further, more productive, questioning. The customer rarely accepts the close, but it's a start. An example of this technique is as follows. Assume both the salesman and the customer are about out of patience. As a last resort, the salesman uses a throwaway close.

Customer: *No!*

Salesman: *I see. You know, I've seen the inside of your plant before. The last time I was there, I noticed that there seems to be a lot of humidity in the machining area. I know you're not using any widgets now, but I'll bet if you installed some widgets you'd cut your humidity problems in half. Not only that, but our chrome plated widgets will never have to be replaced. How many test units do you want me to deliver?*

Customer: *I doubt they'll do any good.*

Salesman: *Oh! Why's that?*

Customer: *Because most of our machining problems are caused by our inability to remove metal shavings, not from humidity.*

Salesman: *Did you ever stop to think that the humidity might be the thing that hinders the shaving removal?*

Customer: *You know, I hadn't thought of that before.*

From this point the door is open to either further questioning or on to a close.

Since we were talking about th blind introduction of benefits followed by an offer to close, there is one final sales technique for us to discuss—the introductory benefit.

The introductory benefit is very similar to the benefit statement used in the prior example, except that it is more general in scope. Although most of your sales are probably made on the sales floor, there might be occasions when you might have to go out and make a sale on your customer prospect's home territory. This is the place where you normally see the introductory benefit statement made.

Making an introductory benefit statement requires homework. Assumed general needs your customer might have can be discovered in trade papers, prior conversations in a non-selling environment, information from your prospect's competitors and even the rumor mill. All are, for your purposes, valid sources of information. This background information gives you a general indication of what product or products you are likely to be able to sell, plus what benefits your product has that will support your customer's needs.

There are additional benefits to making an introductory statement. First, it alerts your customer that you are knowledgeable about his business. Second, it tells your customer that he is not going to be wasting his time talking with you. Third, it sets an initial direction for the sales call that is most beneficial to you.

Another use of the introductory benefit statement is to change the direction of a sales call. Obviously, it is no longer really introductory at that point. If, by chance, you see the sales call leading down a path that is unfavorable to the eventual sale of your product, it's time to take a different path. Make another benefit statement that gets the call on the right track. For example, if you see the conversation leading to a point where the need your customer will express cannot be satisfied by your product's benefits, or a point where your product has no competitive edge, it's time to change the direction of the conversation. Use an introductory benefit statement to get you back on the most productive track.

An additional set of uses for introductory benefit statements are in correspondence and in telephone conversations. Generalized assumed need/benefit statements make excellent sales call follow-up letters. Similarly, when making sales call appointments over the telephone, using an introductory assumed need/benefit statement not only sets the direction for the sales call itself, but gives your customer prospect a reason to see you in the first place.

Throughout this series of articles, we have seen ways to develop needs that can be supported by our product's benefits; various types of objections and how to overcome them; how and when to use closing statements and benefit statements; and the like. Although it would be unusual, it would not surprise me if you or one of your salespeople encountered a customer who evidenced every attitude we have discussed—indifference to your product, skepticism, perceived drawbacks he sees in your product, misunderstandings about your product and satisfaction with your competitor's product. Many times the same type of attitude will surface two or three times during the course of a call. Your customer may show initial indifference to your product followed by satisfaction with his current product choices; and once you have uncovered needs that his current product choice can't handle, he may be skeptical of every supporting benefit you offer, possibly requiring two or more proof

OBERHEIM CELEBRATES

TEN YEARS

On December 31, 1979, Oberheim Electronics, Inc. celebrated its 10th anniversary. The original charter of Oberheim Electronics was to develop and manufacture products oriented toward the performing musician ("to bring the studio to the stage"). During this exciting first decade, Oberheim Electronics has been the innovator of numerous products, many of which have become standards in the electronic music field. These innovations include:

1970

First Ring Modulator for the performing musician

1972

First Phase Shifter for the performing musician

1973

First Digital Sequencer for the performing musician

1974

First Synthesizer Expander Module

1975

First polyphonic "true" synthesizer
First performance synthesizer with built-in sequencer
First performance synthesizer with digital keyboard

1976

First Synthesizer Programmer
First dual manual performance synthesizer
First Fully Programmable Synthesizer

1977

First Cassette Interface

1979

These numerous innovations have culiminated in one of the most versatile performance keyboard instruments available today, the Oberheim OB-X Fully Programmable, Polyphonic Synthesizer

statements to support every benefit. And when you're finally at the point where you would make a close, your customer may balk because of two or three misunderstandings he has about your product followed by a definite drawback he sees in your product. All must be handled.

The above sequence represents, at the least, a difficult scenario for a role play, but one that shows the way the instructor might set one up. The instructor must be able to supply enough background information to the salesperson to allow him to overcome all possible attitudes. The background information should include product features and benefits, available proof sources, and a brief statement of purpose for the sales call, *e.g.*, ABC company has just been awarded a contract to supply all the parts used in manufacturing the drive units for the Gamma Widget Press; we have reason to believe they will be required to purchase 10,000 widgets this year to meet their production schedule.

For the customer role, the instructor would make a sequence of attitudes the customer should display. An example would be: Express indifference until either an introductory benefit statement or a specific benefit statement is made, show some interest, require two needs to be uncovered and satisfied, express skepticism of second benefit, require two proof statements to accept benefit, reject close, express misunderstanding of product and require it to be overcome, reject close, express perceived drawback of product, require it to be overcome wih a previously uncoverd need express skepticism of benefit, require one proof statement, accept close.

For the other participants: Listen to the role play carefully. Learn to listen for the recognize customer attitudes. It is easy to become frustrated when listening to a role play. This is simply because you, as a bystander, will find it much easier to recognize customer attitudes than will the salesman who is under the pressure to perform well. Don't become too frustrated; it's your turn next. When making your evaluation of the role play, evaluate the customer's as well as the salesman's performance.

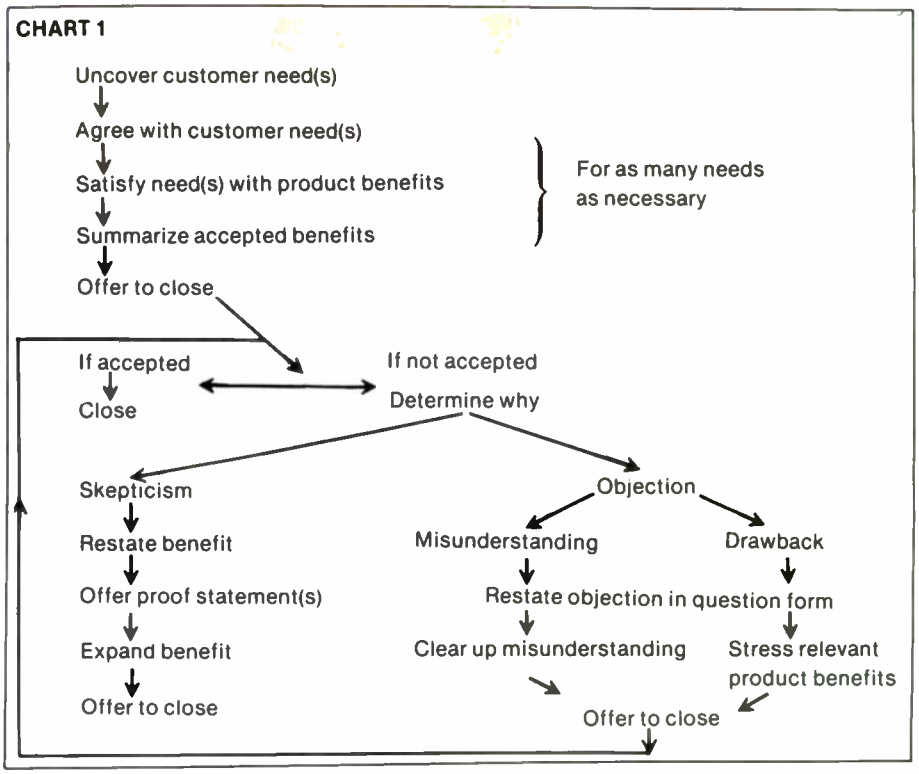
Chart Number 1 will be of value in grading participants. It will also aid the instructor in developing role play sequences. And, most of all, it should assist the salesman in following the right path to a successful sale.

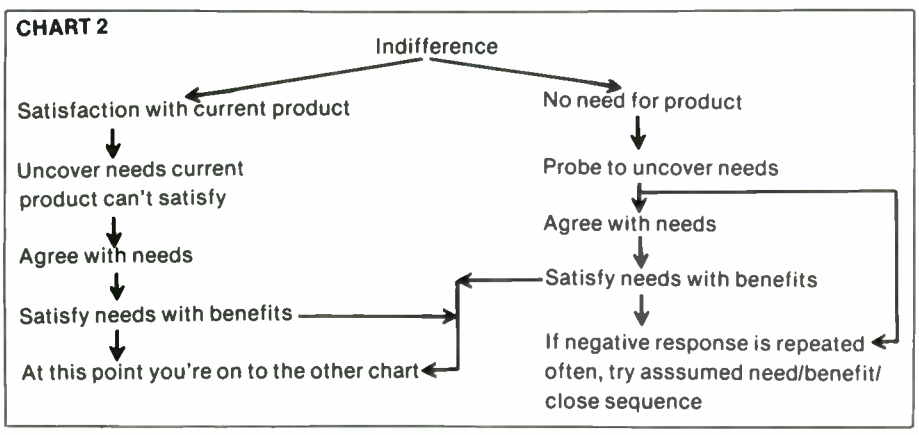
I have left Indifference and Introductory Benefit Statements out of Chart 1. Indifference, by its nature, normally is encountered at the beginning of a sales call. The Introductory Benefit Statement is used wherever necessary. Chart Number 2 is a separate chart for handling indifference.

Finally, if the idea of legitimate sales training sounds good to you, but time doesn't permit the development of a sales training program based on the concepts presented in this series of articles, there are some alternatives. Several companies have sales training courses available. Dartnell, Persuasive Communications and Xerox are three. They are not inexpensive. They can easily cost over $400 per participant. But, they are good! Beware of the $25 selling seminars that you can send your salesmen to. They are often little more than motivational programs.

I hope the skills presented in this series of articles will be of benefit to you. The skills take practice. If you are the sales manager, it's important that you give your salespeople the opportunity to practice them. The skills presented here also represent a very logical approach to selling. It is simply an "If the customer says/Then I respond" approach. A logical approach to what often seems an illogical occupation, selling, takes practice.

Last, this is not a panacea for what ails your sales program. It will not turn your salespeople into instant miracle workers who close a customer 100 percent of the time. It will, hopefully, increase their percentage of closes, and that means advancement opportunity for them and better profits for you.





Tim Rooney is Director of Advertising and Sales Promotion at Electro-Voice.

Peavey equalizers have been designed using the latest computer assisted design techinques and precision components to offer the musician, sound man, and home audiophile flawless performance without extravagant cost or compromises in quality.

The Stereo Graphic features two independent ten-band sections with 15 dB cut or boost at ten center frequencies. Filters are provided for each channel with continuously variable 12 dB high and low cut or boost.

The EQ-27 features 27 bands at one-third octave centers throughout the audio range and is fully compatible with the most professional real time analyzers.

Each system's input circuitry can be matched to a wide range of signal levels thanks to special gain/attenuator level controls. Balanced and unbalanced outputs are equipped on each unit with protection for any accidental overvoltage or short circuit situation that may occur.

Because of a high level transformer balanced output circuitry, the Stereo Graphic and EQ-27 have the capability of providing greater than +16 dBm into 600 ohms making them excellent as high quality line amplifiers.

The Peavey Stereo Graphic and EQ-27 are technically two of the finest equalizers available today. Exceptional performance and compatibility with a wide range of signal and impedance levels make these units an unmatched professional value.

PEAVEY STEREO GRAPHIC & EQ-27 price/performance no other graphics can equal.

Complete specifications and descriptions of the Stereo Graphic and EQ-27 are available upon request by writing our Literature and Promotional Department, Peavey Electronics; 711 A Street; Meridian, Miss. 39301.

CIRCLE 81 ON READER SERVICE CARD

The SOUND SH

Here's something interesting: an all tube amplifier from none other than Acoustic, one of the first companies to market solid-state guitar amplifiers with any widespread success.

But an all *tube* guitar amp? From Acoustic? Well, it just goes to show that the controversy between tubes and transistors is still going strong, and that manufacturers on both sides of the fence are going all-out to find the "right" guitar amp.

The Model 165 from Acoustic retains something of its transistor heritage, though, because it has a switchable front end, either FET or tube. In addition, the power output is switchable from 60 to 100 watts (RMS).

The Model 165 also features dual master volume controls, a five band graphic equalizer, and built-in reverb. Instead of the two-twelve inch speaker configuration one would expect in a cabinet of this size and power output, the Model 165 contains only one speaker, a twelve-inch Electro-Voice EVM 12L. That is to say, it has one really good speaker instead of two not-so-good speakers.

Moreover, the cabinet (roughly the same size as the Fender Twin) is made of hand-rubbed solid oak and walnut wood that is lock-mitred at the corners for rigid construction as well as a beautiful appearance.

CIRCLE 1 ON READER SERVICE CARD

The Korg X911 is the first really affordable guitar synthesizer that performs well enough for professional use and is at the same time simple enough for the guitarist with no prior synthesizer experience.

Korg has developed a new pitch-to-voltage converter that requires NO special pickup or other modification to the guitar. The user simply plugs into the X911 and begins to play.

There are eleven "voices" on the X911, six of which are preset: Electric Bass, Tuba, Trumpet, Distortion Guitar, Violin, and Flute. The other five voices are waveshapes of various nature, including two pulse waves, a sawtooth wave and two square waves.

Each of the presets has its own variable tone control, and each of the variable waveshapes has its own envelope control (attack or decay). In addition, the guitar signal can be processed through the filters and envelope generators for a variety of polyphonic effects.

By using footswitch controls, the guitarist can play intervals of up to a perfect fifth above or below the original note in harmony with the guitar, introduce portamento, hold a note indefinitely, and switch the synthesizer on or off.

Input and output jacks on the rear panel make it possible to interface the synthesizer with other synthesizers or sequencers. Input

OPPE

By Charlie Lawing

attenuation, octave switching and variable touch sensitivity are a few of the other features.

Korg has really hit upon a good product with the X911. Where other guitar synthesizers often left musicians bewildered at their complexity and appalled at their price, the X911 is both simple to operate and easy on the pocketbook. Suggested price: $550.

CIRCLE 3 ON READER SERVICE CARD

A new tape noise reduction system has been introduced by **dbx, Incorporated**.

The Model 224 Type II Noise Reduction System can be used with two-head recorders or three-head recorders, in which case it provides full monitoring capability. This unit has a simultaneous encode/decode function, in addition to a special decoding function that enables the user to decode dbx Encoded Discs. These special discs, which are commercially available, provide full dynamic range music reproduction against a background of silence. These discs are compatible with standard record playing equipment, and will make any system sound better.

The Model 224 will simultaneously monitor the noise reduced signal off tape during recording. The unit can be used for live recording, tape-to-tape recording, record-to-tape recording, and taping off the radio.

The most outstanding feature of this unit is the "rms detector," a device which instantly measures the dynamic content of the music. A voltage-controlled amplifier responds to the rms detector by increasing or decreasing the output level during recording and playback. Since the Model 224 acts as a linear decibel compander, the user is able to make tape copies that sound exactly like the original, with no added noise or loss of signal during the recording process.

CIRCLE 4 ON READER SERVICE CARD

At last year's summer NAMM show, **RolandCorp** US introduced their "Roland Rack" package, which consisted of several preamps, power amps and signal-processing devices mounted in a 19-inch wide road case. The idea behind the rack is simply that the musician can start out with the basic power amp and preamp in the rack, and then proceed with the various other pieces of equipment as the budget permits.

One such piece of gear is the Roland Dimension D, which, according to the manufacturer, is the "most significant new sound development" the Roland engineers have come up with to date.

The Dimension D brings life and richness of texture to recorded music via a psycho-acoustic effect known as the "Ro-Phex," which works well on almost any instrument, especially vocal tracks.

The Dimension D has four different spatial modes, which are selected by pushbutton controls on the front panel. Output is constantly monitored by a row of LED's and the unit will process both mono and stereo signals.

CIRCLE 5 ON READER SERVICE CARD

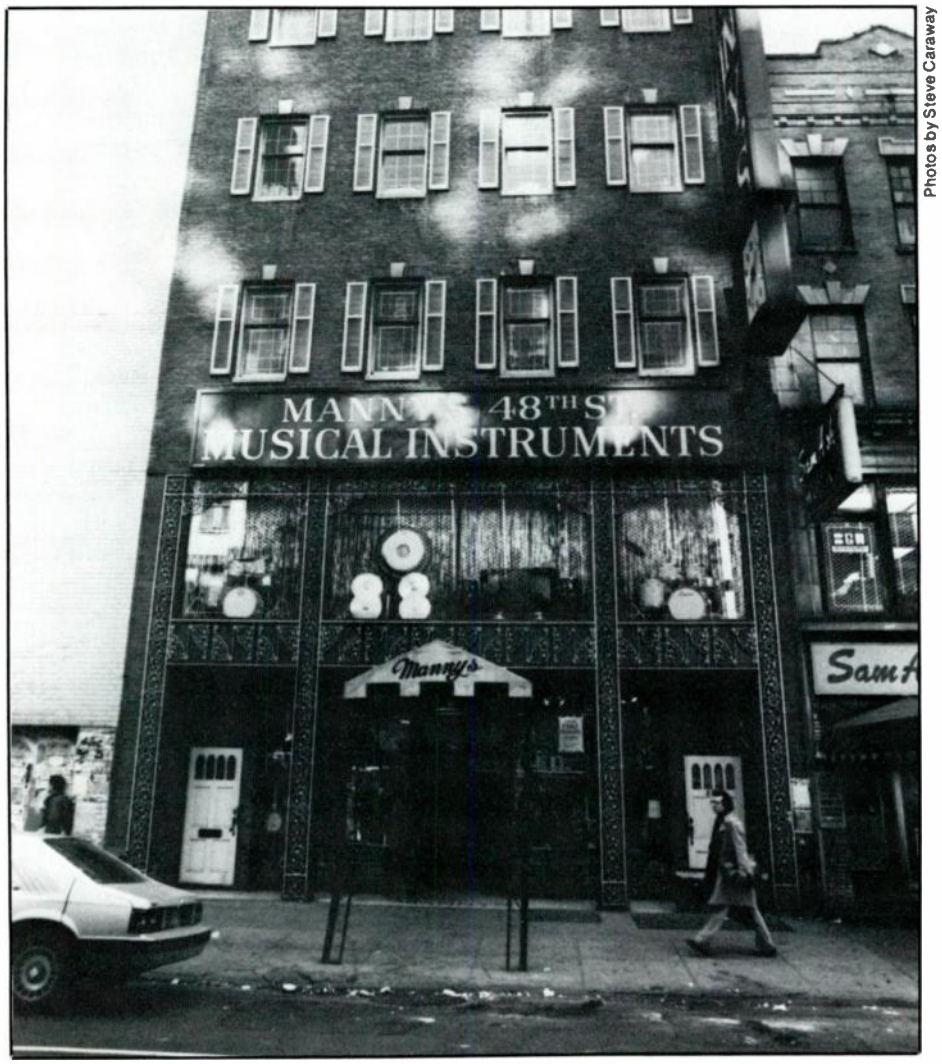
By Steve Caraway

DEALER DOSSIER

Manny's Musical Instruments New York, New York

What can one say about Manny's? Probably the most famous music store in the world, Manny's Musical Instruments has done business with the greats of the music world. From Duke Ellington to Charlie Parker to The Beatles and The Rolling Stones, the list goes on and on. Located amid the hustle of midtown Manhattan on West 48th Street, Manny's sits almost directly in the middle of a collage of musical retail outlets. Manny's was the first music store there, and now some 18 stores surround the granddaddy of them all.

It's as if you were walking into a shrine when you walk through Manny's front doors. Countless photos line the walls of this unique place of business, all of them of musicians and groups who have done their business with this New York City music store. Bob Dylan peers off the wall with one eye closed and the photo is signed: "To Manny, keep one eye closed at all cost. Love, Bob Dylan." In the same section of photos, The Who, The Rolling Stones, Jimi Hendrix, The Beatles, Eric Clapton, Elton John, The Doors, they've all trod upon these hallowed grounds.



Photos by Steve Caraway

But first and foremost Manny's *is* a music store, if not *the* music store, and it was for this reason, mainly, that SOUND ARTS journeyed to West 48th Street to talk to the late Manny's son, Henry Goldrich, about the working of this retail institution. Amid the hustle and bustle that typifies a normal day's business on the main floor at Manny's, we spoke with Henry about the past and the present realities of the operation. But one doesn't realize the scope of this business until one strolls through the crowd aisles and gaze upon just about every known piece of equipment available. Amps are stacked upon each other to save room for display, tone modifiers are behind lock and key in glass cases, custom guitars are literally chained and padlocked. "I had a guy walk in here once and he just walked out with a TEAC multi-track tape deck," smiled Henry's nephew and assistant Stuart Moskowitz." I chased him out onto 48th Street and he just dropped the thing in the middle of the street and ran away. At least we got our deck back!"

The real stunner came as Henry walked this writer through the three additional floors utilized mainly to store onhand stock. Stacks of cases housing Fenders, Rickenbakers, Guilds, Gibsons, Hamers and every known make of guitar, create narrow walkways through catacomb of musical equipment. Endless acces-

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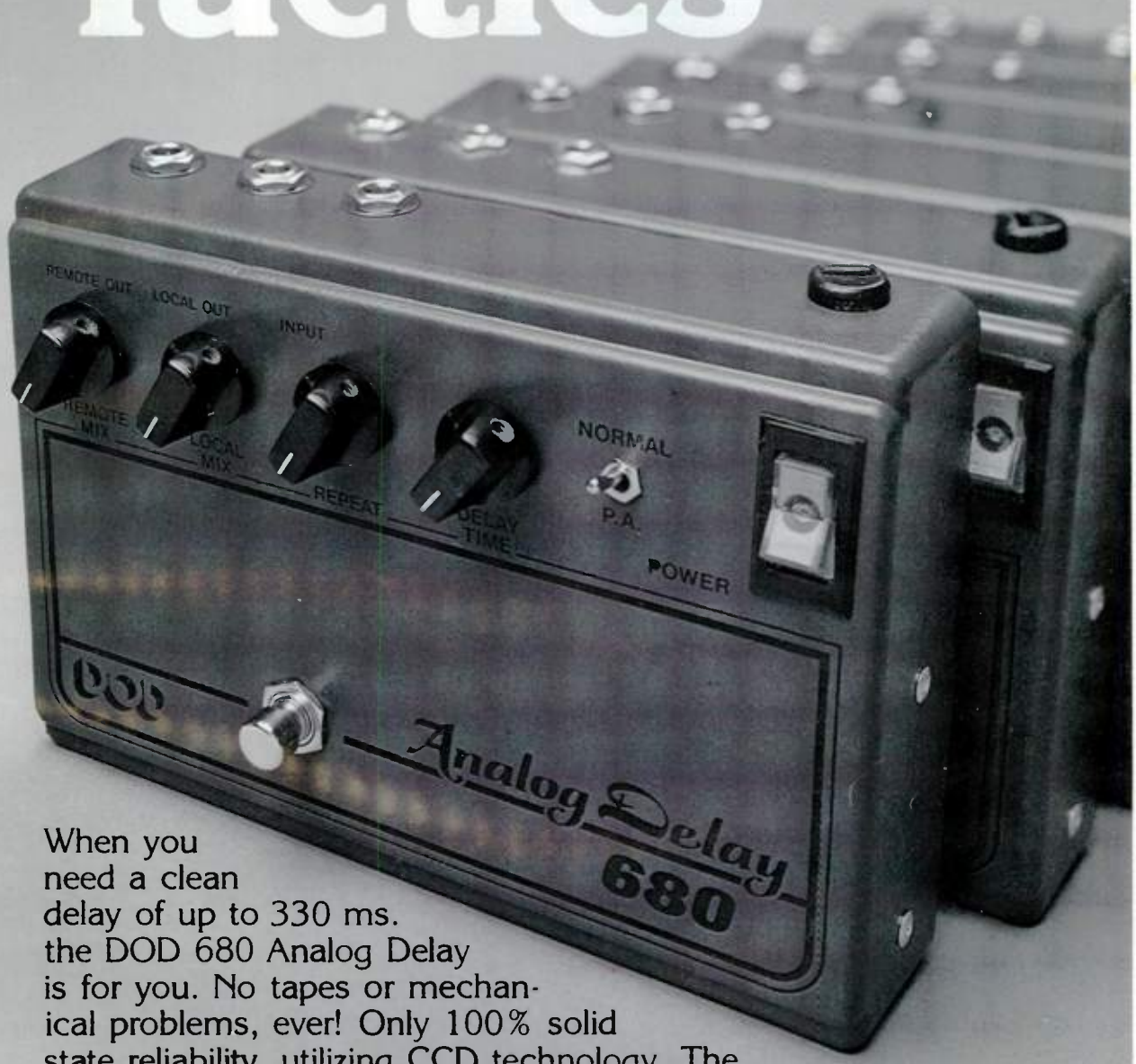

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CIRCLE 83 ON READER SERVICE CARD

WRH

sories, brass instruments, microphones, drums, mixers, the works, crowd every square inch of available space. When Henry says, "If a musician wants something, we have it," he's not kidding!

Give me the story on how Manny's came into being?

Goldrich: It all started with my father Manny Goldrich, who was working at the time for the Selmer Company in 1925. he was the first white salesman to go into Harlem and work with all the Black musicians of the time, he was a friend to every one of them. In 1929 he left Selmer and went to work with Conn. In 1930 he went to Hartford and organized the first school bands in Connecticut and in 1934 he opened Manny's just down the street at 120 West 48th Street. The first store was a tiny store, just 20 × 20; then it went to 20 × 40 and then we took over the whole building. In fact, we had a studio in that building and some of our tenants at that time were Benny Goodman, Daniel Bernard, Hi White, the photographer Popsie; they all had studios upstairs. As time went on, we grew and they left and eventually the whole building was taken over with stock. We made a deal in 1968 with the Rockefeller Corporation where they took over our old building and we took over this newer building at 156 West 48th Street. We've been here ever since. In this building we have a basement, the main floor, a mazzanine, a second floor and a third floor. On the third floor we have all of

our offices and we have stock *everywhere.*

Manny's seemed to have evolved naturally, utilizing the family in running the store.

Goldrich: Right, today we have my sister and her husband, my two nephews and my wife; and my son will come into it next year after college. Manny's has just come into being this way!

What changes has the stock gone through since the early days of Manny's?

Goldrich: In the 1930's there were no guitars or amplifiers; there were some drums, flutes, trombones, and some other brass. In the 40's my father became the "pricing guide" for the government. In other words, if we set a price on an item, that was how it was rated because it was hard to get horns during the war. In the 40's we started carrying more and more horns. As time went on, guitars started coming in in the early 50's and then with the popularity of Elvis Presley and then The Beatles, guitars and amplifiers became very popular along with drums. Now we're finding that horns are getting very popular again!

Can you mention some of the early "name" clients your father had?

Goldrich: In the old days, during the 30's, all the big bands were customers. We were the only professional music store around then. During the 40's we used to have jam sessions upstairs. The greats were there, Dizzy Gillespie, Charlie Parker, anyone you wanted to see was there. The sessions were every union day, Mondays, Wednesdays, and Fridays. They'd start at about two in the afternoon and they'd end at about six. All the greats used to come around and play. That's the way bop first got started; nobody even knew what it was. Dizzy Gillespie was in the other day and we were talking about it; he used to come and play piano. You can see them all on the wall now [gesturing to Manny's endless photo display]!

How did the photo collection start?

Goldrich: My father just started

putting up the photos of his customers in the old place. The collection just grew from there and through the years groups came in and wanted to have a signed photo of themselves on the wall at Manny's. I have about 500 pictures to put up on the wall now and I don't have the gumption to climb that high up on the ladder to do it!

You mentioned business growth along with the advent of Elvis Presley and later on The Beatles. Can you be specific about those changes?

Goldrich: Back then we had about 10 to 12 employees and today we have over 40. We now have six or seven guys just in the guitar section and five guys who control the stock. Every salesman here is an expert in his field, from the guy who knows synthesizers, to the guy who handles multi-track recording gear, to the guy running our sound reinforcement area. All of our people are musicians and as a result they know about a lot of other areas as well; we have a very efficient staff. Today a salesman has to know about every line, the good and bad points of

each instrument, everything to minor repairs on guitars. It really helps establish a rapport with the working musician/customer. We do mostly professional business; 95 percent of our business is with professionals.

Stock-wise, could I just walk into Manny's and ask for a 16-channel Yamaha board, and expect to walk out with it?

Goldrich: You got it, we have just about everything instock. Today, in this industry, you have to have the product instock to deliver it immediately. It's simple; if you don't have the product you'll lose the sale. The groups and the kids today don't want to wait. They have the money and they want to outfit their group immediately. You can't just have one or two pieces of each product either. Suppose something goes bad? We have a very large inventory here and it's stored everywhere throughout the building. We even used to store it in the stairwells until the fire department made us clear it all out [laughs].

You mentioned the increased popularity in horns. Do you see any other trends?

Goldrich: Sound reinforcement is something that's relatively new. We have a guy here who deals exclusively with sound reinforcement. A guy comes in and he gives us the size of audiences he's going to play for, and we build a system for him. What has gotten big are these multi-track recording tape decks. I think we're one of the largest Teac/Tascam dealers in the United States.

Manny's has the reputation of being the star's music store. What happens when Peter Townshend wants to come in to try out a guitar synthesizer? Do you close the store?

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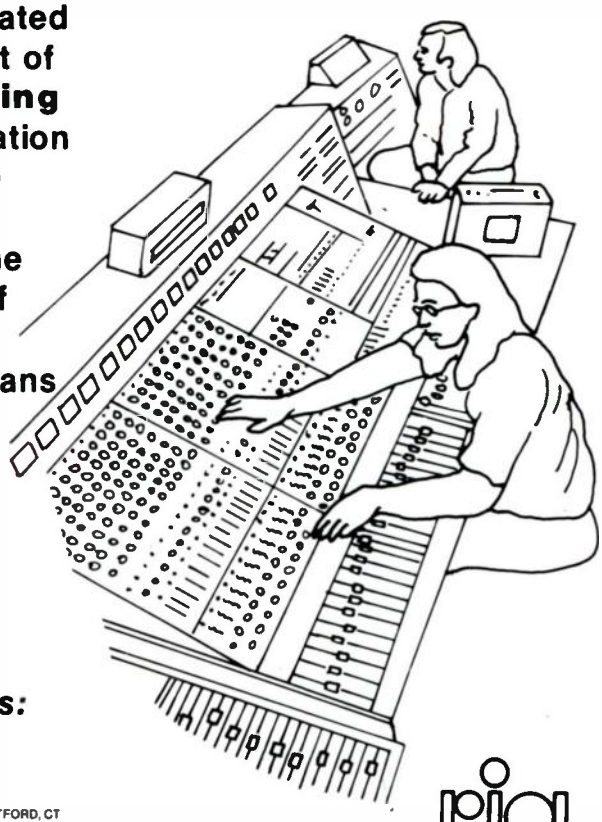

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CIRCLE 67 ON READER SERVICE CARD

Goldrich: The only person we ever had to close the store for was Jimi Hendrix. He came in here all the time before he was famous, but when he became popular it was necessary to have him come in after 6:00. But Peter Townshend and John Entwhistle just come walking in during the day. But Jimi was a very shy guy too! Stevie Wonder was in here last week for a couple of hours. One guy who comes in late every once in a while is Paul McCartney; he's a pretty shy guy too. John Lennon comes in here all the time, just walks in the store!

With so many artists doing business with you, do you ever assist them in introducing them to new products that might benefit their artistry?

Goldrich: Sure, that happens from time to time. One good example is Peter Townshend. Peter had never seen a Schecter guitar, so I showed Alan Rogan, The Who's guitar wizard, a few and he took them to Pete and now he's on to Schecter guitars! Both Peter and John are old friends; in fact John had never been to a bar mitzvah

before and he flew over for my son's bar mitzvah. He's an amazing bass player!

Just looking at the number of music store in this one block on West 48th Street, one wonders about the competitive nature among you dealers.

Goldrich: The more the better! We were the first on the street and now there are about 18 stores. As long as these guys are legitimate dealers, the more the merrier! Competition doesn't hurt. We just try to keep the best prices; the customer has the option of going next door or down the street to get a better deal. We try to have the best service and we have everything in stock. A lot of stores don't have the stock, and that's a very important thing to the customer. We find that a lot of kids are enthusiastic about the Manny's image. We get written about and people read about us and that doesn't hurt!

There seems to be a lot of hustle and bustle on the floor at Manny's. How do you keep everything straight among all the relative confusion?

Goldrich: We know where everything is. What we're dealing with here is a large inventory and a relatively small floor space. If somebody wants something we know where is it because we know it's in stock. We have five people who handle and keep track of the inventory. Most of our customers are return customers and they know what they want and they have their favorite salesman.

Do you have an instrument repair facility?

Goldrich: We do minor guitar repairs here, but we have shops off the premises who handle any type of work a musician might need. We have a complete guitar repair facility, a brass shop and reed instrument facility, we have a percussion shop, electronic repairs facility. We have complete service available to the musician. If you don't have the service, you can't sell a customer.

What is your relationship like with the various sales representatives?

Goldrich: Most of the ones I deal with I've know for a long time. If I am busy they'll wait, sometimes they'll stay here the whole day. We'll get them working behind the counter if we have to. Of the sales reps, I think 85 percent are good, 10 percent are okay and 5 percent are lousy; but there *is* that5% out there.

CIRCLE 89 ON READER SERVICE CARD

Do you do a lot of shipping of gear out of Manny's?

Goldrich: We ship gear everywhere in the world. The only places we don't ship to is Russia, Albania, China, and North Korea.

What type of advertising program do you adhere to?

Goldrich: Well, now I am not running any advertising to speak of. For years I ran an ad in *Guitar Player*, but I got sick and tired of that ad so we've stopped advertising. We'll probably get back into it once we get a new campaign together.

What kind of dollar figure can you give on your current stock?

Goldrich: I wouldn't tell you [laughs]. We turn our stock three or four time a year. With this type of inventory you have to move it that fast to stay ahead of the game.

I am curious, did Stevie Wonder buy anything?

Goldrich: Yeah, he bought two pianos, a Vocoder, a Roland synthesizer guitar; he's a very good customer. He's been coming in here since he was a little kid. I've known him all his life!

CIRCLE 84 ON READER SERVICE CARD

INDUSTRY UPDATE

Audio-Technica U.S. has promoted three executives. **Fred W. Nichols**, formerly vice president, marketing, has been named Senior Vice President. **Paul A. McGuire**, formerly national sales manager, has been named Vice President, Sales. **Dean R. Slagle** has been named Vice President, Operations. He was previously operations manager.

BASF Systems has named **Mark D. Dellafera** Marketing Manager for Audio/Video Cassettes. Dellafera was previously Director of Marketing at H. H. Scott.

Jim Edwards has been named Commercial Sound Product Manager of Electro-Voice. In this position he will also act as marketing manager of educational products.

Mark V. Rosenker has been named Director of Public Relations for the Electronic Industries Association. He was previously director of public relations for the Association's Communications Division and will continue in that capacity, in addition to assuming his new duties.

James B. Lansing Sound has appointed **George Barmaksezian** Director of Quality Assurance. Barmaksezian has been with JBL since 1966, most recently serving as manager of quality assurance.

Hiroshi Tada has joined Kenwood Electronics to assist **Bill Kasuga**, Senior Vice President. Tada previously held key positions with Sansui Electronics and Sankyo Seiki.

Shure Brothers Inc. has appointed **Stanley M. Weiss** Director of Data Processing. He was previously with Masonite Corporation.

Colin Evans has been named National Sales Manager of Tannoy-Ortofon, Inc. Evans was previously National Sales Manager for Lux Audio of America.

Bernie Mitchell has been appointed to the newly created position of Vice Chairman and Chief Executive Officer of Advent Corporation. Mitchell was previously president and chief executive officer of U.S. Pioneer Electronics, and before that was general manager of Toshiba America. **William H. Anderson**, President of Advent, has also assumed the position of Chief Operating Officer. Mitchell has also been elected to the Advent Board of Directors.

DeltaLab Research has expanded its facility to double its original size. The additional space is being used to expand engineering, sales and marketing, and accounting. Manufacturing will double its capacity.

Tandberg of America has appointed **Chuck Ackerman** as Factory Field Representative. Ackerman was previously with a New York-based rep firm and in audio retail.

Polyline Corp. has merged with its divisions, Recording Supply Co. and Pro Audio Specialties Co. The official name for all three will now be Polyline Corp.

Ira Gitlin has been appointed Marketing Coordinator of Garrard U.S.A. Gitlin has previous experience with Macy's, Audio Exchange, Harvey Sound and Lyric Hi-Fi.

Cambridge Physics has appointed the following manufacturer's representatives: **Joe Nardo** of J. Nardo Associates for metro New York and northern New Jersey; and **Robert Prall** and **Reed Parrish** of the Sounds Pro Division of Sound-Tech Marketing for the mountain states.

Jim Loppnow has been appointed Sales Manager of Tapco. He was previously Marketing Manager of Biamp Systems, and before that was associated with Hollywood Sound Systems and Filmways/Heider Recording.

A 210,000 square foot facility to manufacture the BASF linear video recorder officially opened in Fountain Valley, California in December of 1979. The LVR will be marketed in the U.S. beginning in mid-1980.

Fred Yando has been named U.S. National Sales Manager of KEF Electronics, Ltd. Yando was previously U.S. Sales Coordinator for the company.

Bruce Fowler has been named Midwestern Regional Sales Manager of Optonica High Fidelity Products, responsible for 13 midwestern states.

Dennis Gold has been named Operations Manager of Rank Hi Fi. Gold was previously a market specialist and U.S. coordinator for Panasonic.

BASF Systems has promoted **Anthony Saratora**, formerly Field Engineering Manager, to Manager, Quality Assurance. He joined the company in 1969.

Jerry Kalov, President of Jensen Sound Laboratories, has been elected President, Manufacturing Group of Jensen's parent company, International Jensen Incorporated. Kalov, who will continue as President of Jensen Sound Laboratories, joined the company in 1973.

James Hunnel has been appointed credit manager for Akai America, Ltd. He was formerly credit manager for Roadstar Corporation and was with JIL Corporation before that.

Spectrum Sound, Inc. has moved its office to Suite 101, 50 Music Square West, Nashville, Tennessee. Spectrum handles sales, installation and 24-hour service of sound reinforcement equipment.

Susan Tatum has joined SAE as Advertising Manager. She was previously Marketing Coordinator at Audio Pulse Electronics.

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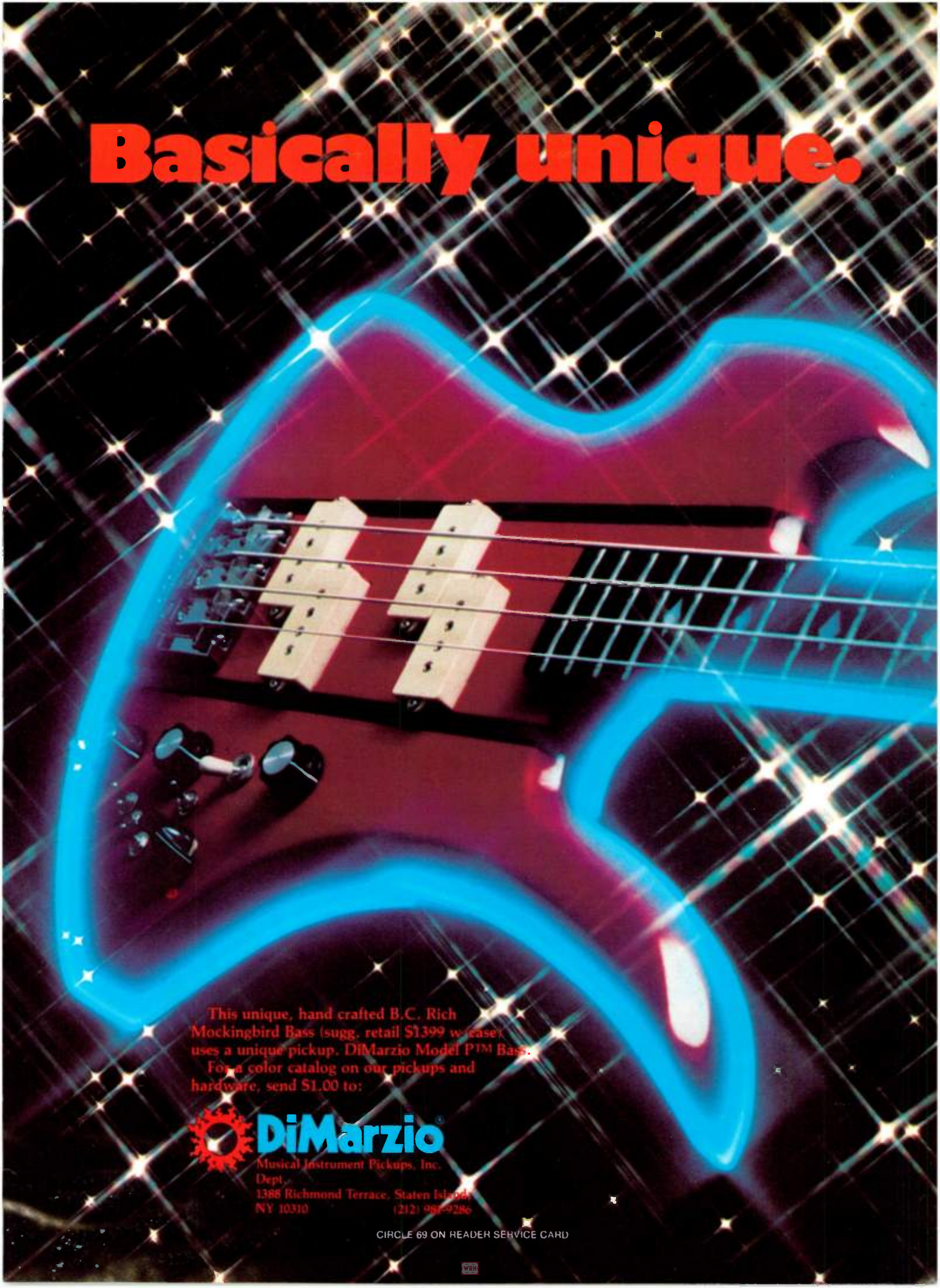
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