

SOUND ARTS

M E R C H A N D I S I N G J O U R N A L

RECEIVED MAR 21 1979

VOL.2 NO.2
MARCH 1979

It's not that we're suffering from sensory deprivation. Music — the most abstract of the arts — fills the soul with sufficient pleasure. But sensory enhancement — not to mention enhancement of profits — may be just a lightbulb away. Look to lighting as a product. . . . (cont'd on pg. 26)



Adding Lighting to the Product Mix
Trade Show Tempos: NAMM and CES
How to Sell Sound in the Spring

THE LONG AND THE SHORT OF SOUND REINFORCEMENT.



You know about the long part. Separate components can keep your hands full, what with the extra help and time needed to get your sound reinforcement act together.

Now for the short part. The Yamaha EM-200 and EM-300 stereo output integrated mixers. They leave you free to concentrate on the creativity of your job, not the mechanics of it.

You get the mixer, power amplifier, 9-band graphic

equalizer, echo and reverb control **all in one unit**—great flexibility with options to expand and enlarge.

The EM-200 and EM-300 are ideal for small to medium size reinforcement applications, wherever you need a precisely placed, superbly clean and well-defined sound

from a compact source that is easy to set up and operate.

The EM-200 has eight input channels and 120-watt speaker output. The EM-300 has 12 input channels and 200-watt speaker output. For increased flexibility, both the EM-200 and EM-300 have hi and lo impe-

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The EM-200 and EM-300 give you the short-cut to reinforcement that won't short-change the quality of your sound. They're convenient to set up, operate and locate... at your Yamaha dealer now.



CIRCLE 96 ON READER SERVICE CARD

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New ATM31 Fixed-Charge Condenser

For Vocalists Only

A great vocal microphone must do just two things:

1. Sound Fantastic.
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The result is honest, very musical sound. Vocals with punch and clarity—a direct result of our frequency-aligned response. The ATM31 curve takes into account every element in the chain...voice, amps, and speakers. It's the same kind of sound you hear on the finest recordings, but delivered on the road, day after day, in concerts and club dates alike.

As for survival, take a close look at one example of ATM31 "Road Tough" construction: the windscreen. Not simply woven wire, but *three* layers of screen. A heavy outer wire mesh, a finer inner mesh, and finally a fine brass screen. All soldered firmly in place (others use cheaper epoxy, but it can get brittle and fail at absolutely the worst times).

Every other detail of the ATM31 is as carefully engineered for performance and long life. This is one vocal microphone which will stay new-looking and new-sounding long after others are showing their distress.

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



Sell the NEW "ROAD TOUGH" Artist Series Microphones from Audio-Technica.



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ONE OF TEAC'S BEST IDEAS WASN'T A TAPE RECORDER.

It was a market.

- 1970** First 4-Channel Tape Recorder with Sync for less than \$1,000 (TCA-40)
- 1972** First Mass Produced 4-Channel Tape Recorders with Sync. (A-3340 & A-2340)
First Studio Quality 8x4 Audio Mixer for under \$2,000. (Model 10)
- 1973** First Studio Quality Recorder/Reproducer to provide 8-Tracks on Half-inch tape. (Series 70)
- 1974** First Mass Produced 6x4 Audio Mixer for less than \$300. (Model 2)
- 1975** First Studio Quality Mass Produced 8x4 Audio Mixer. (Model 5)
- 1976** First Studio Quality Mass Produced 8-Track Recorder/Reproducer for less than \$3,000. (Model 80-8)
- 1977** First Studio Quality Mass Produced 16-Track Recorder/Reproducer to use One-inch Tape and cost less than \$16,000. (Model 90-16)
- 1979**

TEAC[®]
First. Because they last.

When we introduced our first multitrack tape recorder in 1970, we were so far ahead of everyone else that many people thought it was a quad machine.

But the customers we built it for knew exactly what it was: a four-channel tape recorder with sync for overdubbing that cost less than \$1,000.

Since then, TEAC has continued to develop new products with price/performance breakthroughs as big as the market we discovered.

In fact, multitrack products—including our TASCAM Series—make up one of the most innovative and successful lines in the history of this business judging by the number of dealers who became wealthy selling it, and the number of competitors it spawned.

Getting to the market meant breaking a lot of rules and killing a lot of sacred cows. We put eight tracks on half-inch tape, for one example. And 16 tracks on one-inch tape, for another.

Doing things like that required a profound understanding of our customers' needs and their goals. But still it wasn't easy. We invested huge amounts of time, money and manpower to develop the market.

We created software to demonstrate how the products work. We developed consumer awareness through innovative sales programs using the latest videotape techniques. We even made consumer sales easier through our unique Finance America credit program.

Today, the power of the market is being recognized at last.

As profitable as it is, though, the business may not be for every dealer. It requires commitment, skill and imagination. It could be *your* best idea.

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A new generation of recording instruments
for a new generation of recording artists.

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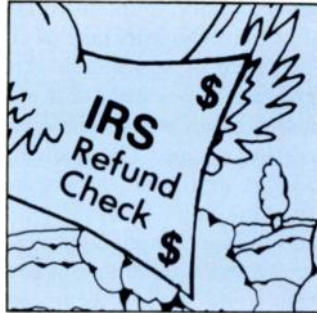
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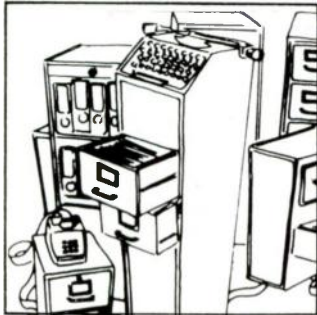


ADDING LIGHTING TO THE PRODUCT MIX

By Henry Collins and Vincent Finnegan, Jr.

Music and light may add to profits.

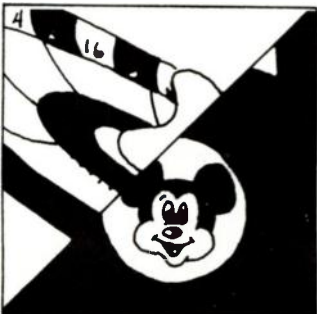
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What to Do if Disaster Strikes
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Cover Art by Barry Simon.
Photo courtesy of Entertainment Production Systems, Inc.
Designed by David Gilliland.

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panied by return postage.

A LETTER FROM THE EDITOR

Between Wayne Newton and Mickey Mouse, there was a happy haven of comfort. That is, between the extremes of Americana intrinsic to the sites of the CES and NAMM shows (Las Vegas and Anaheim to be sure), there were some serious highlights to the workings of this business. Both shows exhibited evidence of significant structuring in this industry—and the growing importance of it within both audio and MI.

I want to talk about some facets of NAMM that were most interesting to me. The growing importance of both technical knowledge and business acumen were coupled with the nitty gritty of moving product.

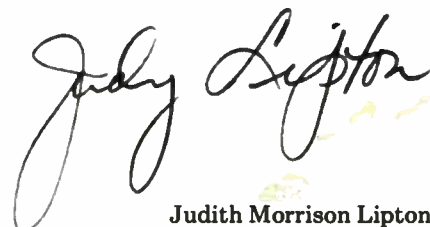
There was a complement of show specials to be sure, but the buyers weren't alone in evaluating that purchase. There was a definite trend toward technical support for the buyers. Manufacturers were noting that many of their sales were made to both the buyer and his technical support man, speaking for the technical virtuosity of the equipment, but also for the recognition of the retailer's need to know.

Also of interest at NAMM was a small exhibit in the Magnolia Room hosted not by a music oriented company, but by a computer manufacturer. The object of the sales effort was a computer hardware-software package designed specifically for keyboard dealers. The exhibit itself spoke to me of the retailer's need to keep up with technology—not only in product but in merchandising techniques. As the rest of the world becomes more sophisticated and specialized, the retailer has to keep his act in concert.

Which was an issue addressed at the seminar sponsored by Cameo at the NAMM show. All participants stressed the need for sound merchandising techniques. As Larry Rogers of Hoffman Electronics said, "You have to manage it. You can't do it monthly. You have to do it daily." The seminar itself elicited a good many honest comments from manufacturers and retailers alike concerning the basics of merchandising—getting the lines, keeping the lines, managing the finances, knowing the product. As an industry forum, this Cameo sponsored event seemed to me to be a first class first time effort at producing the manufacturer-retailer communication which Cameo sets as one of its goals. Agreement on issues wasn't necessary, the voicing of those issues was.

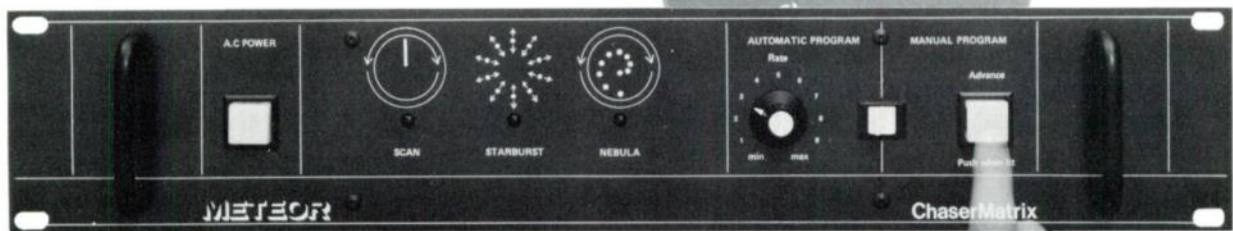
You can read more about the winter trade shows further on in this issue. We are also presenting some comments on the selling of lighting equipment, for those of you who might want to diversify or are already selling this gear. And Greg Houston advises on unique propositions for selling in the spring.

Regards,



Judith Morrison Lipton

PinWheel Scan... Starburst... Nebula...



at the touch of a button...

...or automatically

New from Meteor, the Chaser Matrix provides Starburst, Pinwheel Scan, and all new Nebula patterns at the touch of a button. Used in conjunction with the new Meteor Hub, exciting effects are available with minimal set-up and wiring requirements, and since the Hub is programmable internally, hundreds of additional light patterns may be achieved - custom effects without customizing costs!

All features and facilities of the world-renowned Meteor SuperChaser 2 may be employed, making the combination of Hub, Chaser Matrix and SuperChaser 2 the most powerful lighting package yet offered - sensational value too. Just look inside and note the state-of-the-art circuitry and military grade components used - your guarantee of the reliable performance provided by every Meteor product. See this exciting new package at your Meteor dealer or write for details to:

Chaser Matrix



Tenway SuperChaser 2

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FORUM

I just wanted to let you know that I have been waiting for a publication aimed at people in our business for over four years. Congratulations! Not only is SOUND ARTS aimed properly, but executed exquisitely. I am writing to request a copy of all your back issues previous to Volume 1 Number 8. Your section, Terms, is invaluable and the articles very informative. Thank you very much.

Alix Gordon, V.P.
Hart Sound, Inc.
Miami, Florida

Your journal is continuing to provide the use of audio equipment with a lot of information regarding systems, hardware and application techniques. Keep up the good work!

However, Glen E. Meyer seems to have fallen into one of the well known traps regarding dB in his Sound Reinforcement column in the October 1978 issue.

First, dBm *always* refers to a power level referenced to 1mW. This is in any impedance, not just on the 600-ohm line as stated by Mr. Meyer. It is completely independent of the line or load impedance.

Second, dBV *always* refers to a voltage referenced to 1.0 volts. A voltage of .775 volts r.m.s. is the specific voltage one would find when a power of 1mW is being dissipated in a 600-ohm load.

As publications such as Sound Arts proceed to inform and educate the users of audio equipment it is important that they be as accurate and specific as possible. There is very little in the audio profession that is based on concepts that "may be" or are "sometimes" valid.

John E. Lanphere
Manager, Technical Training
Dukane Corporation

Mr. Meyer Responds: *dBm is independent of impedance and one volt is always equal to 0 dBV. However, in the real world, dBV meters are used to*

indicate dBm by assuming the impedance to be 600 ohms and then by calibrating the meter such that 0 dBV is equal to 0.775 volts. May I refer you to page 39 and page 451 of "The Recording Studio Handbook," by John M. Woram.

My intent was to warn of this practice for, like it or not, you will "sometimes" find that formal definitions are not rigorously adhered to by equipment and audio manufacturers.

Glen E. Meyer
Marketing Manager
Commercial Products
Electro-Voice, Inc.

Each one of your issues is better than the last! We find SOUND ARTS to be a great aid to our sound reinforcement business. We have issues five through twelve. Could you send us the first four issues? We intend to make a reference file for our company.

Walt Bender
Authentic Rolling Sound Co.

Let me start by saying that I enjoy your magazine very much. I find it to be very helpful in my work as a manufacturer's rep. It helps me stay informed of many things going on in our industry (new products, etc.). I do have one small problem that I'd like your help with. I am missing some back issues. I'd like to have February, March, April, June, September and December. If there is any charge, let me know.

Gary Gifford
N. Browning & Co.

I have just been given several back issues of your publication and, as an instructor of classes in professional recording techniques, must comment that I am very impressed with your offering. So many times "trade journals" are 97 percent advertising, both in ads as well as in article content. For the most part I don't

even bother to read those that find their way to my desk. However, I am so impressed with your publication that I would like to request a subscription for my personal file for use in developing course material for my classes. As we are planning on expanding into a two-year degree program in this area, your advertisers can be assured of reaching many additional potential customers.

Robert Miller
Northern Virginia Community College

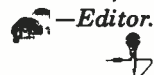
Our company greatly appreciates your fine publication. It is the only trade magazine we read cover to cover. As a matter of fact, we are sharing with our customers the content of "Matching Impedances" by Irwin Zucker which appeared in the November issue.

Clayton R. Baumann
Roy Baumann Music
Arlington Heights, Illinois

I thought SOUND ARTS readers might be interested in my latest product, a newsletter, to be called *Device*, for electronic guitarists/musicians. I think the technology of music has gotten to the point where an equipment-oriented publication is needed. While we do *not* accept advertising presently, we do offer a place to review and spotlight new devices. We hope to improve the lines of communications between manufacturers and musicians, just as SOUND ARTS is helping manufacturers and retailers get together.

Craig Anderton
Carmichael, California

Back issues of SOUND ARTS are available free to qualified readers. Unfortunately, however, our stock of the February, March, April, and May issues (Vol. 1 nos. 1 through 4) has been depleted, and these issues are therefore now unavailable.

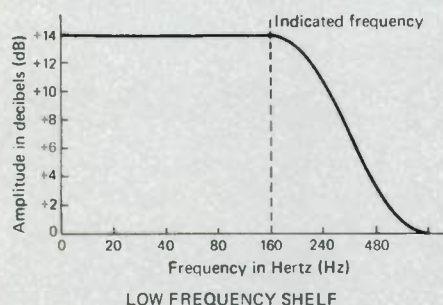
—Editor.

A CONTINUING INDUSTRY GLOSSARY

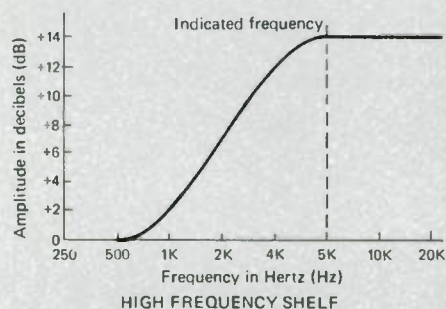
RECORDING

By Larry Blakely

As mentioned last month, there are two types of shelves: a high frequency shelf and a low frequency shelf. The reason for their names can be seen below.



It can be seen that there is a shelf. All frequencies below the indicated frequency (160 Hz) are boosted to the same level as the indicated frequency. The same is true of the high frequency shelf. All frequencies above the indicated frequencies are boosted to the same level.



All frequencies above the indicated frequency of 5 kHz are boosted to the same level.

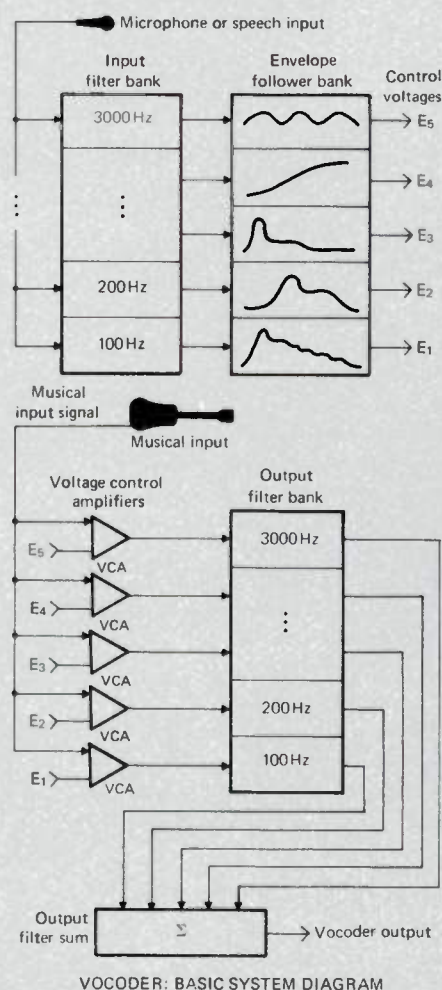
All types of equalizers will use either the peaking (bell-shaped) type or the shelving type of equalization.

"Q": Often referred to as the rate in dB per octave at which an equalizer increases or decreases its level. This is also often referred to as the rate or the slope of an equalizer.

ELECTRONIC MUSICAL INSTRUMENTS & ACCESSORIES

By Mike Beigel

The following diagram depicts the basic system vocoder as discussed in last month's column.

**Electronic Pianos:**

Clock Generator: The main timing circuit in piano and organ system. An accurate but tuneable oscillator which provided a square-wave clock signal (between 500 kHz and 4 MHz) to control all tone generating circuitry.

Top Octave Generator: A set of twelve digital dividers, which simultaneously generate the twelve semitones required for a musical octave. It operates by dividing the clock generator signal by twelve different integer

SOUND REINFORCEMENT

By Glen E. Meyer

As we discussed last month, systems that require a high impedance speaker load permit much smaller diameter wire for a given power loss in the speaker lines.

Usually, low impedance speakers are still used in such systems but transformers are employed at the speaker locations to increase the impedance to the desired value. Multiple transformer taps permit easy adjustment of individual speaker levels. For a broad range of systems, the savings in wire cost more than compensates for the transformer cost and insertion loss of the transformer.

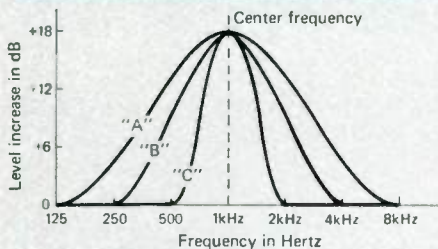
Constant-voltage high-impedance systems offer the additional convenience of eliminating the impedance matching calculations described above by keeping the full power voltage across the speaker load at a constant 25 or 70.7 volts. (Note that the "constant" 25 or 70.7 volts is present only when the amplifier is delivering full rated power and is correspondingly at the lower power outputs.) This arrangement permits the secondary taps of the transformer to be marked directly in watts. In system hookup, speaker/transformer combinations are connected in parallel across the amplifier output terminals. When all the power taps add up to the amplifier's rated output, the full rated load impedance is present at the amplifier terminals.

Powers less than rated output are fully acceptable in a constant voltage high-impedance system since the higher-than-rated load impedance that results only decreases the power delivered to the load—precisely the desired effect. Only power totals greater than rated amplifier power should be avoided: Load impedance drops below rated load, reducing power delivered at rated distortion and perhaps damaging output stages or activating protection circuitry. Constant-voltage high-impedance

TERMS ○ (CONTINUED)

A CONTINUING INDUSTRY GLOSSARY

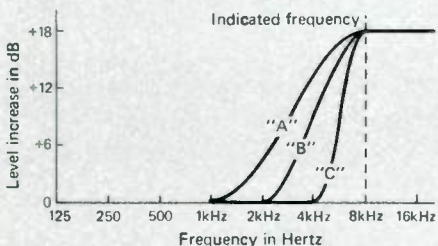
RECORDING



PEAKING TYPE EQUALIZER

It can be seen in the drawing above that curve "A" increases and decreases in level at a rate of 6 dB per octave. It can also be seen that curve "B" increases and decreases at a rate of 9 dB per octave, and that curve "C" increases and decreases at a rate of 18 dB per octave. (Remember: Double any frequency and you have the octave above; likewise divide any frequency by 2 and you have the octave below.)

When equalizing with a peaking (bell-shaped) type equalizer, the maximum amount of boost occurs at the center frequency. The slope or "Q" of the equalizer will determine how much increase in level will occur on each side of the center frequency, for x number of octaves. It can be seen that curve "A" affects frequencies approximately three octaves on either side of the center frequency, that curve "B" affects frequencies approximately two octaves on either side, and curve "C" affects frequencies approximately one octave on either side.



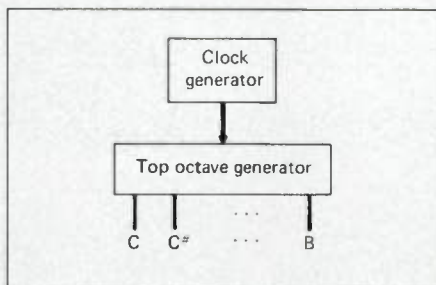
SHELVING TYPE EQUALIZER

A shelving type equalizer also has a "Q" or rate of level increase to the frequency indicated on the equalizer.

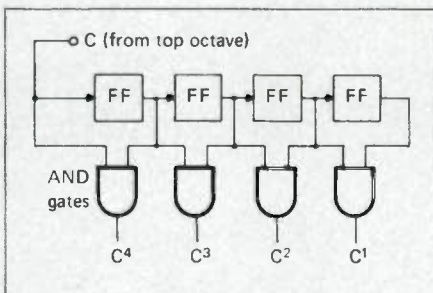
See explanation of terms used in above diagram in next month's issue.

ELECTRONIC MUSICAL INSTRUMENTS & ACCESSORIES

ratios. Top octave generators come in LSI integrated circuit packages, and can be specified with varying degrees of tuning accuracy. The tuning ratios will never drift, since they are all based on the master clock frequency.



(Octave) Divider Circuits: A chain of digital "flip-flops" connected to each output of the top octave generator creates the different octaves of each note, as required for the frequency range of the instruments. Often, two or more flip-flop stages are gated together for each octave, producing a more audibly pleasing tone than a simple square wave.



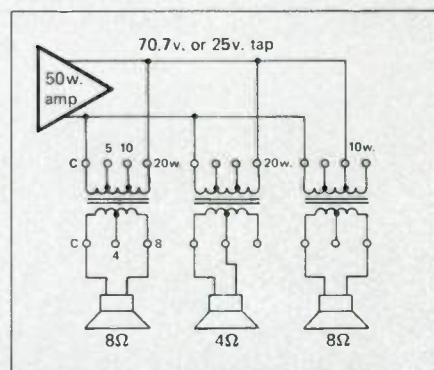
Keying Circuits: When a piano key is depressed, this circuit creates a simple exponential "envelope" function, which controls the amplitude of one note derived from the octave divider circuits. Thus, a rough approximation to a struck-string tone is produced. Keying circuits are often found in hybrid or LSI-integrated circuit form. Some new designs have touch-sensitive volume control. One keying circuit is required for each note.

See diagram in next month's column.

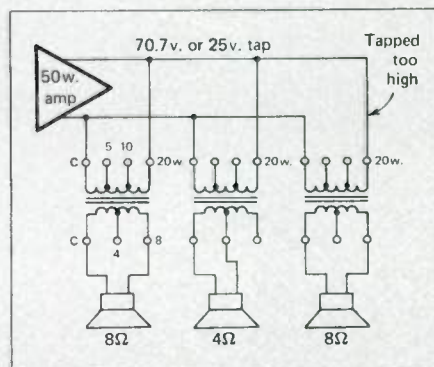
SOUND REINFORCEMENT

systems are generally found wherever many speakers are used and distributed over great distances. Examples of such locations are airports, factories, school classroom announce systems, and background music systems in offices.

A correctly wired system using two 8-ohm speakers and one 4-ohm speaker:



Note that the total of the taps equals the rated power of the amplifier. The same system incorrectly wired might look like this:



Note that the transformers are tapped such that the total is 10 watts greater than the 50 watt output capability of the amplifier.

In next month's column, we will continue our discussion of voltage systems utilized in high-impedance/constant voltage systems and the pros and cons of high impedance voltages. We will also discuss power loss in long lines and compensation for same.

Hot sound vs. hot air.

Lathes—Disk Cutting	Microphone Mixers	Microphones	Mixer/Consoles—Portable	Noise Reducers	Open Reel Recorders 1
Scully 31.1%	Shure 45.6%	Neumann 18.3%	Tascam 16.4%	dbx 48.8%	Ampex 27.8%
Neumann 29.1%	Ampex 11.4%	Shure 17.5%	Teac 9.6%	Dolby 47.8%	Scully 17.5%
Presto 18.6%	Tapco 4.5%	AKG 15.4%	Shure 8.9%	Burwen 6%	3M 7.4%
Westrex 4.7%	Custom 4.2%	Electro-Voice 14.6%	Custom 7.7%	Kepelex 6%	MCI 6.8%
Fairchild 4.3%	Sony 3.6%	Sennheiser 8.7%	Ampex 5.0%	Other 2.2%	Teac 6.7%
Rek-O-Kut 4.0%	Teac 3.6%	Sony 7.9%	Sony 2.8%		Tascam 6.0%
Other 8.2%	Altec 2.4%	Beyer 5.1%	Tapco 2.8%		Other 27.8%
	Voice Mix 2.4%	RCA 4.0%	Interface 1.4%		
	Tascam 2.2%	Altec 1.1%	Yamaha 1.2%		1) Fewer than 16 tracks
	Other 20.1%	Other 7.4%	Other 6.9%		

It's the sound!

U.S. EQUIPMENT BRAND USAGE SURVEY

Open Reel Recorders 2	Phono Cartridges	Speakers—Monitor	Synthesizers	Turntables	Video Tape Recorders
MCI 36.4%	Shure 49%	JBL 34.4%	ARP 43.4%	Technics 27.2%	Sony 56.9%
Ampex 26.5%	Stanton 26.8%	Altec 20.5%	Moog 25.3%	Thorens 12.6%	JVC 11.2%
3M 15.7%	Ortofon 3.1%	Auratone 10.7%	Oberheim 3.1%	Dual 6.8%	Ampex 9.9%
Scully 9.1%	Audio Technica 2.9%	Electro-Voice 7.8%	EML 2.7%	Philips 5.2%	Panasonic 9.9%
Studer 6%	Pickering 2.7%	KLH 2.4%	Korg 2.5%	QRK 4.9%	JVC 4.0%
Stephens 3.8%	AKG 1.7%	Westlake Audio 1.8%	Syn Aire 2.3%	Garrard 4.7%	RCA 2.9%
Other 2.5%	Empire 1.6%	Advent 1.3%	Yamaha 2%	Rek-O-Kut 4.3%	Other 5.2%
	Micro Acoustics 1.4%	Big Red Mastering Labs 1.3%	Cat 1.5%	Sony 4.1%	
2) 16 or more tracks.	Other 10.8%	Klipsch 1%	Roland 1.5%	Pioneer 3.1%	
		Other 18.8%	Other 15.7%	Other 27.1%	

Billboard 1978-1979 International Recording Equipment & Studio Directory
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Recording studios choose a synthesizer because it has the best sound, not the lowest price. And in *Billboard's International Recording Equipment and Studio Directory 1978-79*, their choice is clear. If you want great sound, the choice is ARP.



45 Hartwell Avenue
 Lexington, Massachusetts 02173

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 CIRCLE 88 ON READER SERVICE CARD



TROUBLESHOOTERS' BULLETIN

①
Troubleshooters' Bulletin is designed as an aid to the dealer. Input is invited from both manufacturers and retailers. 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, 14 Vanderventer Avenue, Port Washington, New York 11050.

② TROUBLESHOOTING FROM THE KEYBOARD

Isolation is the technician's most valuable tool, but many techs fail to employ the concept of isolating the problems from the console before "raising the hood."

Some suggestions:

1. Never take a customer's word for the problem description. Always sit down at the keyboard and evaluate the symptoms for yourself.

③
2. Take your time! Hurrying the analysis causes jumping to conclusions that ultimately wastes time.

3. Do your homework! Thoroughly know at least the block diagram flow of the instrument and especially the division of functions. For example, if there are two audio systems, know which voices are assigned to each.

4. Relating to number three above, determine whether the malfunctions are all re-

lated to just one system. If so, you have already cut your potential problem area in half. (4)

5. Apply this same principle to other areas of the instrument. By trying various voices and functions and by keying in all divisions of the instrument, many problems can be localized right at the keyboard.

6. Look for the simple and the obvious! Techs have a tendency to assume every problem is serious and tend to whip out the 'scope before even turning the switch.

Look (and listen) before you leap is an old adage but vitally important advice for any technician. (5)

DAVE GEORGE
ALLEN ORGAN COMPANY

SPEAKER EFFICIENCY

Most of us are very aware that most power amps put out less power into higher loads, and more power into lower loads. Wire has resistance. The smaller the wire, the

more resistance. Placing 50 or 60 feet of smaller wire between the amps and speaker could mean that the speakers have two or three ohms more impedance. Theoretically, the power amp should be connected directly to the speaker terminals. Of course, this is practically impossible. The wire from the amp to the speaker should be kept to five feet or shorter distance, and no less than 18 to 16 gauge wire should be used. This will provide better transient response, more power and better efficiency. (6)

BOB HEIL
HEIL SOUND

Common Consumer Questions

What kinds of spring reverbs are available, and what do they do?

The spring reverb is the simplest and most economical approach to artificial reverberation. Basically, it consists of three elements: a transmitter transducer to convert an electronic musical signal into mechanical vibrations, a stretched coil spring, and a receiving transducer to re-convert the mechanical vibrations transmitted by the spring into an electronic signal.

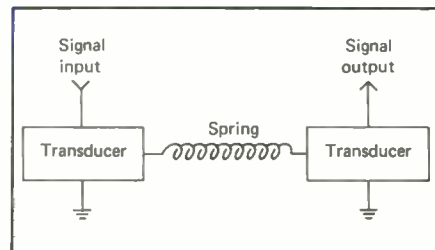
The sound vibration, passing through the spring, is delayed and also modified by reflections and resonances in the spring-transducer mechanical system. This is the basic mechanism for simulating the complex pattern of delays, reflection and resonances found in returned room reverberation. Since this electro-mechanical system is sensitive to outside vibration and shocks, it must be well isolated from the outside environment.

The range of quality and cost in available spring-reverb systems is surprisingly wide. The simplest systems, comprising just the "basics" described above, are usually found built into musical instrument amplifiers. The quality ranges from marginal to quite acceptable, depending on the length of the spring used, the number of springs in the system and quality of the transducers. Anybody who has ever kicked a guitar amplifier with reverb will testify that they are usually deficient in mechanical isolation.

More sophisticated spring reverb systems, separately packaged, offer various techniques which enhance the quality of the effect. One method employs a parametric equalizer to "smooth out" the frequency spectrum of the spring system. To increase the dynamic range of the system, and to prevent distortion caused by overloading the driver transducer, a limiter is placed before the driver system. Multiple springs and transducers in each reverb section will enhance the "dimensionality" of the effect, eliminating the "one dimensional" characteristic sound of less expensive spring reverb units.

For control of over-all reverberation time, and for further enhancement of the effect, a feedback system around the reverb-loop injects a varying amount of "reverb" signal back into the transmitting transducer. This "thickens" the sound and increases the reverb time. A simpler method of changing the reverb time or intensity is to mix the reverb and the original with a fader control. Some systems employ both of these methods.

The spring itself can be made much more responsive and natural-sounding. Some methods of doing this include etching the spring to vary its thickness, pulling or stretching sections of it, and supporting or damping it at various points. These methods, while



expensive, enhance the effect markedly. Finally, in more expensive systems, two or three stages of mechanical isolation protect the system from external room noise and shocks. The reverb system is then sufficiently protected against distortion due to acoustic feedback.

Spring reverb systems in separate package are available from AKG, Intersound, Biamp and other musical product companies.

Mike Beigel

*Beigel Sound Lab Audio Design
Warwick, N. Y.*

How and when should an attenuation pad be used?

An attenuator can be both friend and foe. When used properly, it will maximize system signal-to-noise ratio. When used improperly, it can degrade signal-to-noise ratio or cause an input amp to distort due to overload.

Most electronic devices used to pro-

cess audio signals have a specific input level which will give optimum noise and distortion specs. If an input stage, such as a tape recorder input amp, is overloaded with too high a level it will distort, yielding unacceptable results. If this same stage is underloaded with too low a level, it will degrade the signal-to-noise ratio of that stage and thus the entire system from this point onward. The need to match the input level to this optimum window between noise and distortion is satisfied by an attenuator.

Let's look at an example. You wish to connect a console with +4 dBm outputs into a tape machine, with noise reduction, designed for -8 dBm (-10 dBv) operation. Tascam's 90-16 is one such unit. The first amp in the tape machine's signal path is in the noise-reduction unit. This amp overloads at, say, +14 dBm. When using a console with -8 dBm (-10 dBv) outputs, the resulting headroom is 22 dB and the signal is well above noise. However, when used with a console with +4 dBm outputs, the headroom shrinks to 10 dB. Although the signal-to-noise ratio is greater, the headroom is insufficient.

Now you say: "Yes, but I can reduce the record level to match the machine." This would be true for a machine without noise reduction. Record/Input level does not affect the input to the noise-reduction unit.

The answer is to place a 12 dB attenuation pad on the outputs of the +4 dBm console. The console won't be affected and the machine will receive -8 dBm (-10 dBv) input levels to the noise-reduction unit thereby maintaining the optimum signal-to-noise ratio and distortion specs.

To summarize, an attenuation pad is used to match level between two pieces of electronic equipment, where the output of the first device will overload the input stage of the second device under normal operating conditions.

*John A. Carey
Project Engineer
The Express Sound Co.*





TDK SA. Number one with your number one cassette customer.

In the world of audio, the perfectionists are a highly visible minority. In the premium cassette business, they account for 8% of the market in numbers, but over 18% in sales. Because of the influence they exert on their friends, their overall impact extends far beyond their purchases. Among audio perfectionists, the number one cassette, of any bias, is TDK SA.

The perfectionists want the best possible sound quality, and since most quality manufacturers set up their decks to sound their best with SA, SA is the logical choice for home use.

The perfectionists appreciate technological superiority. SA's advanced cobalt-adsorbed gamma-ferric oxide particle formulation made it the first non-chrome high bias cassette. And many parts of its super-precision mechanism, such as its double hub clamp and bubble liner sheet have yet to be equalled.

The perfectionists insist on reliability, and they know that TDK was first with a full lifetime warranty*—more than 10 years ago.

For the retailer, the opportunity is a lucrative one. Create an SA customer and you are also creating a better customer, one who

buys more cassettes. Then he converts his friends and... you get the picture. It's all part of the ongoing process that has made TDK SA the number one selling high bias cassette in America. We'd like you to be part of that process. TDK Electronics Corp., Garden City, N.Y. 11530. In Canada, contact Superior Electronics Ind., Ltd.

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



TDK

The machine for your profit machine.

By Craig Anderton
SYNTHESIZER SYSTEMS

Figure 1 shows the four building blocks required to implement a basic, one-note-at-a-time synthesizer. Whether you're talking about drum synthesizers, keyboard synthesizers, or guitar synthesizers, they will all be variations of this common structure. Let's examine each block in detail.

SOUND GENERATOR

This section creates actual notes, noise, tones—in other words, this part generates raw sound. It comprises electronic circuits called *oscillators* (or tone generators) which, when monitored through an amplifier and loudspeaker, make a sound that (if tuned to the audio range) can be heard by people's ears. The sound generating section of a synthesizer will have one or more oscillators. The greater the number of oscillators, the more complex a sound you can create. Another sound generator is called *white noise*; we'll discuss that later, as well as alternatives to the conventional oscillator.

One of the most exciting talents of the synthesizer for musicians is the ability to specify what type of sound is wanted. If you want the mellow type of tone associated with a flute, or if you'd prefer the biting type of sound that comes out of a trumpet, by appropriate dial-twiddling you can obtain either one...and just about anything in between. But, just because we have something that generates sound doesn't mean we have a synthesizer. It's mandatory to be able to turn the sound on and off at will, as well as have some mechanism that allows us to tune the oscillators to various specific pitches. That way we can put spaces in between notes, and play actual melodies.

With a synthesizer, the oscillator frequency, or pitch of the note we hear, corresponds to a voltage fed into the oscillator. In other words, the oscillator has a tuning control that responds not only to the twist of a wrist as in the case of a dial, but also to the

presence of a voltage being fed into the oscillator. Generally speaking, the lower the voltage, the lower the oscillator frequency; the higher the voltage, the higher the oscillator frequency. If this concept of "voltage control" sounds confusing, think of it this way: as a car engine is fed gas to control its speed, an oscillator is fed volts to control its frequency.

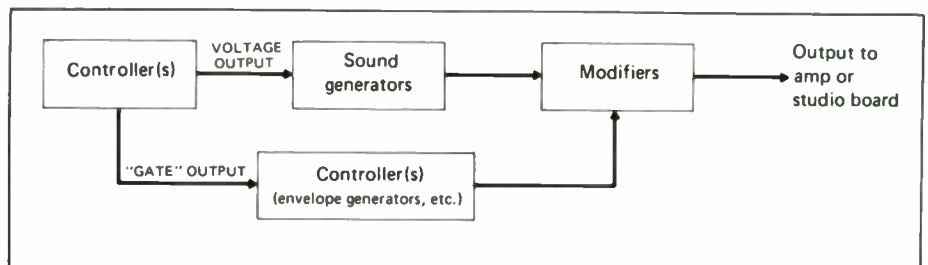
CONTROLLERS

This brings us to the block at the immediate left of the sound generator block, labelled *controllers*. In many cases, the controller is a keyboard. Each key puts out a certain voltage and sends this voltage to the oscillator; the oscillator responds by giving us a sound. Changing a key changes the voltage going to the oscillator, and therefore, the pitch of the oscillator. An interesting feature of the synthesizer is that once a key is hit and produces a specific voltage, it will continue putting out that voltage until another key is hit. We'll see why this is useful later in the series. Because of this feature, the oscillator will keep putting out sound continuously—unless it is turned on and off, or otherwise altered, later on down the signal path.

Another controller could be a guitar. In this case, a piece of equipment (called an interface) is required to convert the guitar signal to a voltage capable of controlling the oscillator(s). Other interfaces exist that work with wind instruments, drums, and so on. The important point to remember is that regardless of the controller used, they all produce, in the end, a specific set of voltages that causes the oscillator(s) to put out a specific set of notes.

MODIFIERS

These take the raw sound from oscillators and modify it in various ways; one modification is the on/off type of gating we considered earlier. How do we actually accomplish this gating? In the case of a keyboard synthesizer, the keyboard generates a gate, along with



These are the "big guns" in "professional" power amplifiers. Each of these amplifiers has individual features and abounds with specifications to impress potential buyers and to satisfy the professional user but they are not created equal... especially in reliability under professional (rack mounted) conditions.

Some of these "big guns" have been talking about everybody else being "behind", others are talking about comparator LED's, while others depend mostly on their good looks. The Peavey CS-800 comes out on top when you consider the features, the specifications (which are as good or better than anybody's), total power output, and price per watt of professional power.

Some companies have recently "discovered" LED's and comparator circuitry that Peavey pioneered and has been using for years. These recent "converts" were most vocal in the past against LED's...that is, until they updated their "planned" units. Some of the

other companies spend a lot on cosmetics but not much on built-in forced air cooling and large numbers of output devices to enable reliable rack mounted operation under

continuous professional use.

Each channel of the Peavey CS-800 features 10 output devices and 2 TO-3 drivers bolted to massive modular heatsinks that are forced

cooled by a 2-speed fan, has special distortion detection circuitry and LED indicator (not simple overload), as well as a functional patch panel on the rear to facilitate the use of plug-in balanced transformer modules, electronic crossover modules and speaker equalization modules custom tailored to Peavey's SP-1 and SP-2 speaker systems.

In comparing pro amplifiers, one should apply the old commercial sound "dollar-per-watt" rule. The CS-800 is again "on top" at 81¢ per professional watt. The fact is...Peavey is not behind anyone in power, durability, features or performance.

Below are the respective published specifications of the "heavies" in pro amps. Check for yourself to see how we all stack up. You might be surprised.



Peavey Electronics
711 A Street
Meridian, Miss. 39301

HOW DO THE "BIG GUNS" STACK UP?

	OUTPUT TRANSISTORS MFRS. MIN. RECC. LOAD	COOLING SYSTEM	SPEAKER PROTECTION	GENERAL CONSTRUCTION	TURN ON DELAY	OUTPUT CIRCUITRY	T.I.M.	LIST PRICE	DOLLARS PER WATT
Peavey CS-800	800 W Total 400 Watts/Ch. @ 4 Ohms 260 Watts/Ch. @ 8 Ohms (Both Ch driven)	20 2 Speed forced air cooling	Yes	Totally Plug-in Modular	None Required	Quasi Complimentary All rugged NPN Silicon Outputs	Not given. No accepted Measurement standards Presently exist.	\$649.50	\$0.81 per Watt Based on 4 Ohms/Ch. min. load
Crown DC-300A	360 W Total 180 Watts @ 8 Ohms 4 Ohms Nct Given	16 Conventional Passive Airflow Only	No	Hard Wired	None Required	Quasi Complimentary. All rugged NPN Silicon Outputs	Not given. No accepted Measurement standards Presently exist.	\$919.00	\$2.55 per Watt Based on 8 Ohms/Ch. min. load
BGW 750 B	720 W Total 360 Watts/Ch. @ 4 Ohms 225 Watts/Ch. @ 8 Ohms	20 2 Speed forced air cooling	Yes	Modular	Relay Circuit	Collector drive Complimentary using PNP & NPN Silicon	0.2% No measurement details given.	\$1099.00	\$1.53 per Watt Based on 4 Ohms/Ch. min. load
Yamaha P 2200	700 W Total 350 Watts/Ch. @ 4 Ohms 200 Watts/Ch. @ 8 Ohms	12 Conventional Passive Airflow Only	No	Hard Wired	None Required	Emitter follower drive complimentary using PNP & NPN Silicon	Not given. No accepted Measurement standards Presently exist.	\$1095.00	\$1.56 per Watt Based on 4 Ohms/Ch. min. load

All above figures based on manufacturers' published specifications and minimum recommended load impedances as of 11/1/78

a voltage output. This gate basically tells the rest of the system "hey—a key is being pressed." If we have an audio gate that responds to the keyboard gate, then the sound generated by the oscillators can be controlled by this gate so that when the keyboard gate is on (meaning a key is down), the oscillator output passes through the audio gate to the audio output of the synthesizer. When a key is up and the keyboard gate goes away, the output of the oscillator is then blocked and we don't hear a note any more. The best way to accomplish this gating is with a module called a *voltage controlled amplifier*, or *VCA*. This is basically an amplifier whose gain (volume) depends on a voltage—this is similar in concept to the oscillator whose pitch depends on a voltage. However, in the case of an amplifier, no voltage means no gain, and higher voltage means more gain.

Well, this is an improvement to our system—but we still have a long way to go. Just turning notes on and off isn't very exciting, and besides, if we want to synthesize the sound of traditional instruments we need much more flexibility. As a result, a synthesizer will include provisions to alter the

attack and *decay* characteristics of a note. *Attack* simply means that instead of having the note go from full off to full on instantly, it takes a finite amount of time to do this. *Decay* works in reverse; instead of having the note go from full on to full off instantly, it again takes a finite amount of time. A good example of a decaying note is a plucked guitar string; once you pluck it and "turn it on," it takes a certain amount of time for the guitar string to stop vibrating and therefore stop producing sound.

How do we add attack and decay? Again, we have some circuit modules designed to do just that, called either *envelope generators* or *transient generators*. They respond to the gate generated by the keyboard, and as soon as a gate occurs, they create a voltage that varies in a programmable way from full off to full on, and back to full off again. The time it takes to complete the attack and decay is controlled by front panel knobs. By feeding the programmed voltage change into the voltage controlled amplifier, the loudness of the sound going through the VCA is proportional to the control voltage fed into it. You can think of

the transient generator as a controller for the VCA.

There are other modifiers, too. One of the most common is a *filter*, which can alter the harmonic structure of a raw sound. These can also be controlled by envelope generators so that the harmonic structure of the note changes in a predictable fashion (for example, you might want the note to start off bright and brassy, but then become more muted and mellow as it decays). Other modifiers include ring modulators, which add different mathematically related notes to a single frequency; delay lines, which can create echoes and other special effects; timbre modulators; and so on.

By the way, there are also controllers other than envelope generators. Some modifiers might be controlled directly from the keyboard, so that different notes played on the keyboard will "tune" a given modifier in a particular way. Or, there may be some kind of sweeping, low frequency oscillator that causes cyclic changes in a modifier. An example of this type of cyclic change is the "whoosh-whoosh-whoosh" of a typical phase shifter, like the kind you'd find in an effects box. There are other types of controllers, which we'll cover later.

SUMMATION

Let's sum up and look at what we've covered, relating it to a typical keyboard synthesizer:

There are sound generators (oscillators) that create raw sounds. The pitch of these sound generators is usually set by the keyboard, which is one kind of controller. Other instruments may be used as controllers with the addition of suitable interfacing units.

The controller assigned to control pitch will also put out a gate signal that tells the rest of the system when a key is down. This is important so that devices like envelope generators know when to start their attack/decay cycle. In future installments we'll cover more complex types of these generators.

Modifiers, controlled by other controllers such as envelope generators, modify the basic raw sound produced by the oscillators. These final, refined sounds then go into an amplifier/speaker combination so that we can hear them.

We'll that's it for the basics. We'll talk some more about synthetic sound next issue.

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The Trouper I Monitor system allows you to create four independent monitor mixes for the on stage artist. A separate solo system gives the operator complete **UNI-SYNC** accessibility to each mix. Write for details or ask  your dealer for Trouper.

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CIRCLE 90 ON READER SERVICE CARD

HOW TO SELL SOUND in the Spring



by Greg Houston

At last Christmas was over. Time to take down the tree, put away the decorations and start chewing the fingernails about how to pay for December's inventory. Sure, we had a great holiday season, but where in the hell did all the money go? Oh yeah—to pay for June, July, and August inventory. (Remember how you were waiting for Christmas to pull you out.) And the Credit Manager from ? is on the phone and wants a check and you know you need a vacation 'cause you're going crazy but you know you can't leave now....

Wait!

Just take a minute and relax. Take a deep breath and continue reading this article. Contained within is the magic potion you need, a plan of action to generate badly needed cash flow. All it takes is using your own sales force as the tool and your own need to generate cash as the motivation.

PRODUCT FOCUSING

Product focusing is one way to generate needed cash and at the same time alleviate inventory. Certainly after the holiday season there are areas of inventory that are over-represented. These items, though bought with the highest intentions, are now like little non-profit safety deposit boxes, each one representing their cost in investment dollars at the time of purchase and devaluating every moment in today's deflated dollar market. Do not get caught in the trap most smaller retailers do: You can't afford to invest in inventory while waiting for the retail price to go up. What makes you think if it hasn't sold today at

today's price, it's going to move tomorrow for more? The old saying, "This ain't a museum," holds true here. Unless you intend to become a collector instead of a retailer it's time to turn this dead weight to cash. Product focusing is the answer.

All product focusing requires is an applied, defined approach to the products that need to move and the proper motivation for the sales force. A quick glance at the inventory dating should tell you which items are candidates for the quick boot out the door. A good rule of thumb is any item that hasn't turned at least four times in the fiscal year. For new items, anything on the floor over three months. Remember, no matter what the intrinsic artistic or speculated value an item has, if you can't eat it, sell it. Take the original cost in the item, add ten percent for the salesman and move it. For every month the item has been on the floor over four months, reduce the cost by five percent of the original cost for every month beyond the initial four months before adding the salesman's ten percent. For example, that collector's item Magnatone amp that has been around for a year and only cost \$100 should go for \$66. Believe me—you're making money. Next time the governor wants the taxes or your head salesman wants a commission check, try paying in Magnatone amps or "C" melody saxophones.


Promoting a sale such as this is primarily up to the sales force. Motivation lies in making it clear to the salesmen that these items are carrying a proportionately larger commission at sale cost than if they were selling at full retail. In other

words, the salesman can figuratively "give it away" and still make full commission. The net gain for you is needed cash flow in slim times plus the fact that hot inventory remains on the floor at profitable prices.

GRAB THAT TAX REFUND AND RUN

No matter if you run a pro shop or a full service operation, the greater percentage of the customers dealing with you will be receiving tax refunds at this time of year. Studies have shown the average Joe views his tax return as "disposable income," i.e., he feels it is money already spent, and uses it for personal recreation or luxury items, rather than to pay bills or buy groceries. It seems a genuine shame to let all those fat tax refunds go for snowmobiles, digital watches and cameras when they could be going toward a brand new guitar or P.A. from your store. The trick is to convince the Average Joe that buying a guitar, P.A. or other instrument with his tax refund is the correct and acceptable thing to do with it. Link this with making it easy for him equals a good post-Christmas promotion that sells.

A promotion that has worked extremely well rewards the customer for bringing his uncashed and unspent refund check to your store for redemption. A ten or twenty percent discount on any purchase made with an income tax refund check serves several purposes for both the customer and the dealer. As long as you get plenty of identification, the return check is as good as cash, and seeing it before its cashed tells the intelligent salesman



“We enjoy being on the road. But when you play a hundred different rooms a year, you can have a hundred different acoustical problems. And that’s no joy. So now we use the new Fender MA 8S Stereo Sound System. We e.q. the treble, bass and midrange with the five-band graphic equalizers — and it’s like every room is identical. Then with the stereo separation, people hear us loud and live. Sound systems have come a long way since I left Jacksonville for L.A. Oh yes, they have.”

Ray Charles on Fender Stereo Sound.



Fender
MADE IN U.S.A.

exactly how much the customer has to spend! It's better than X-ray eyes into the wallet, giving some idea to the exact amount of the customers' disposable income. This promotion fulfills the customers' need to cash his refund check and dispose of it in a way that makes proper use of his disposable income. The reward of a percentage discount is the reason why he spends it at your store.

A promotion such as this requires advance planning as to how to deal with these customers when they come in. Any customer flashing refund checks is prequalified and should get the red carpet treatment.

USE YOUR RESOURCES

A main concern this time of year is floor traffic, or more appropriately, lack of same. This is somewhat dependent on the individual type of operations—whether it be mall or free-standing, downtown or suburb—but is a problem common to all. Some of the most productive and most expensive means of increasing traffic campaigns are also risky and highly dependent on usually more factors than a budget can

afford to take into consideration. Certainly wise advertising measures are recommended, but let's try some other approaches that really don't cost a dime and that tend to yield much more direct results.

If your particular store is in the instrument rental business, you are well aware that this time of year is rental return time for those young hopefuls who decided to play football instead of french horn. Most stores take back the instrument, check it for damage, thank the patron for coming to them to rent and calmly kiss a sale goodbye. Not only is a rental lost, but a qualified (through the rental application) customer just waltzes out the door at a time when store owners would kill for customers.

At the time of the return of the investment, it should be made clear that any rental money paid can be applied towards the purchase of any other instrument in the store. Students who couldn't see the advantages of B6 clarinets in their social life can be turned around to guitar or another instrument more socially recreational. No money is lost in the transaction. At this time it must

be made clear to the customer that it is to their advantage to apply the money to another instrument, rather than waste it.

For customers who have already returned instruments before the program was initiated, it's time to put Ma Bell to work. Take all files of returned instruments from the last four months and start dialing the phone. Explain to the patron that their rental money is still good if applied to another instrument of their choice. Of course, the salesman involved should be capable of probing the customer's interests in, and then coming up with figures that reflect a substantial applied rental while maintaining a substantial profit margin for the store.

As these projects and promotions indicate, they all take a very direct effort by the sales force to pull off. Your job as owner, manager or salesman is to see that they are clearly defined and fully supported so that there are no questions as to purpose or intention by the sales force. Like any promotion, they require planning and execution, but can be expected to yield holiday-type profits.

Should you buy the new Sound Workshop 262 Stereo Reverb or should you retile your bathroom?

That's a tough decision to make. Perhaps you stay up nights pondering this very question. But please take the time, right now, to consider this important matter.

Think how great your voice sounds when you're lathering up in the shower. It's because the hard, ultra-smooth surface of the tile takes your normally lifeless voice and bounces it

back and forth adding depth and magnitude. It's called natural reverberation.

There are, and have been, devices available which simulate natural reverberation. But a professional quality studio reverb (that sounds as natural as your bathroom) used to cost well over a thousand dollars.

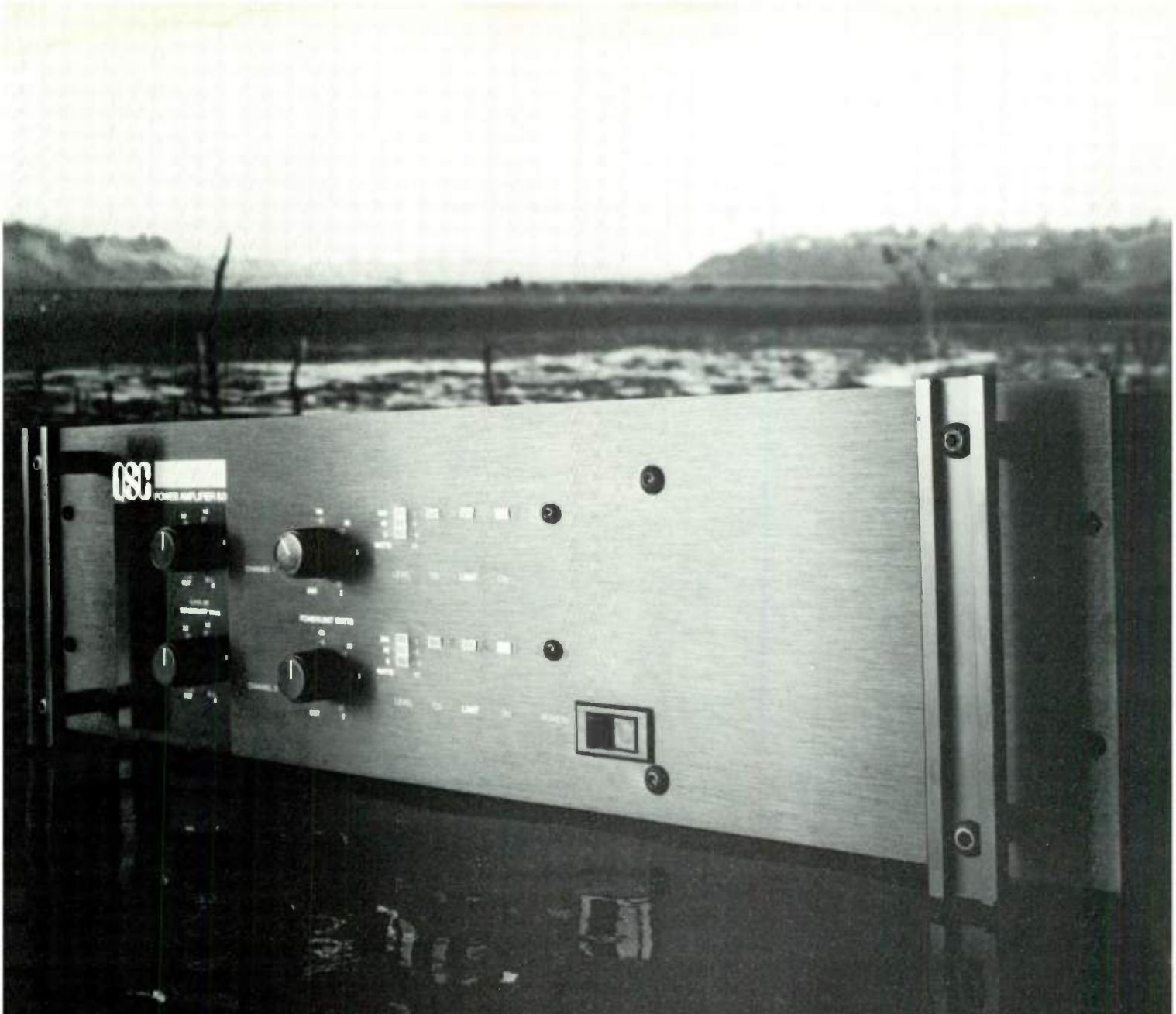
Sound Workshop introduces the new 262 Stereo Reverberation System . . . for well under a thousand dollars. We thought you'd like to know.



Sound Workshop
PROFESSIONAL AUDIO PRODUCTS

Sound Workshop Professional Audio Products, Inc.
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CIRCLE 75 ON READER SERVICE CARD



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Dealers kept asking us "How about a high-power amp with low distortion that's loaded with options and has an exciting list price?" We listened and set out to build "The Complete Amp" with reliability, power, specs, features, price and profitable margins. We've succeeded. Our reputation has been built on the design and construction of cost-effective gear combining maximum performance with simplicity and reliability. Now QSC offers a package you can't find in any other amp, REGARDLESS OF PRICE OR OPTIONS. The A 8.0 delivers 300 watts of clean power to each channel (20-16 kHz with less than .09% THD rising gradually

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As a professional audio dealer you can't afford to make excuses. At QSC we make no excuses, period.

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AUDIO PRODUCTS

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CIRCLE 89 ON READER SERVICE CARD

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Then there's the Variable Voicing . . . Six-Band Graphic EQ . . . and newly-developed Weighted Action of the MP-600 Electronic Piano.

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Feature for feature, you'll find all of Roland's Professional Products attractive . . . and quite far above the mundane.

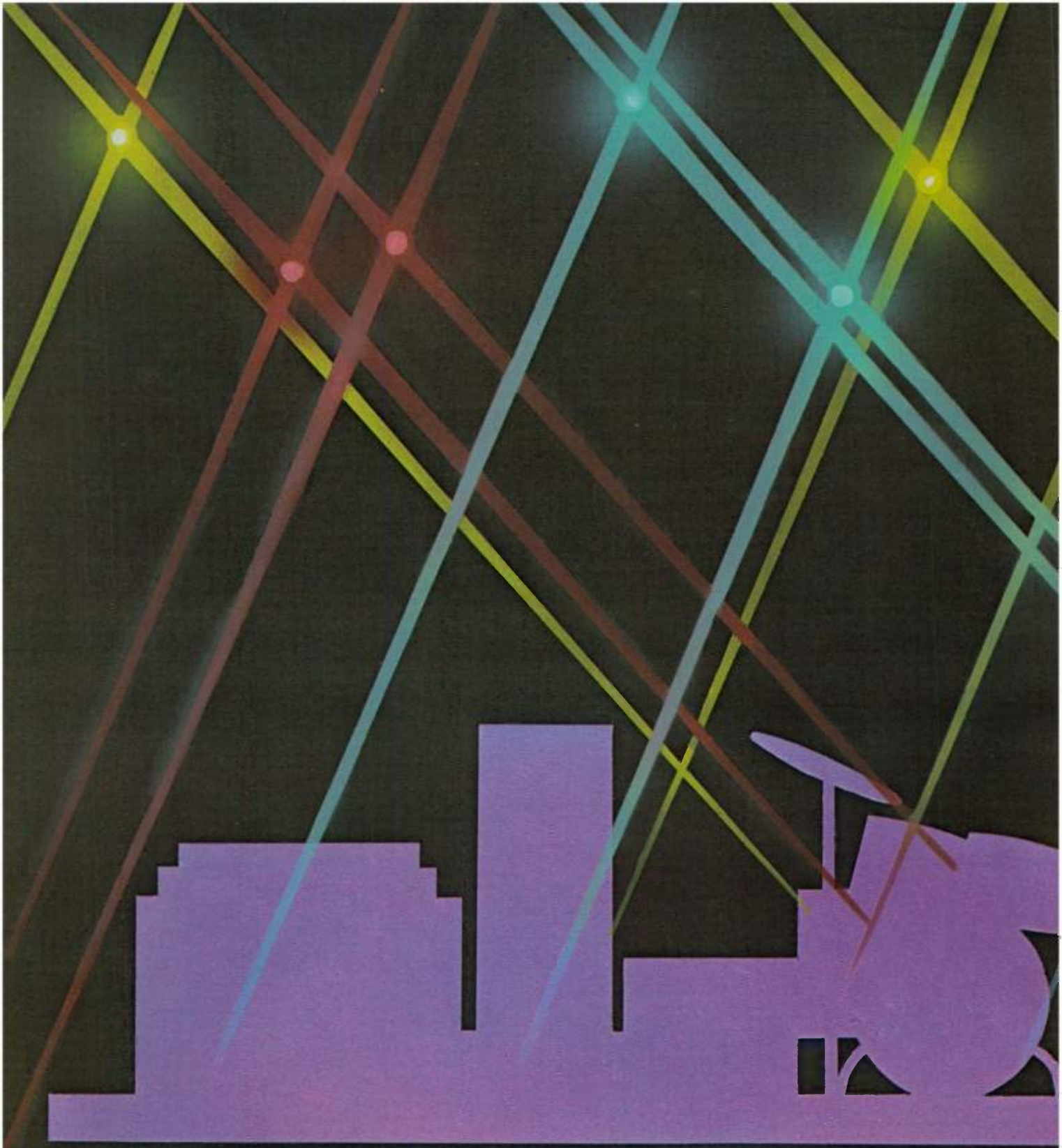


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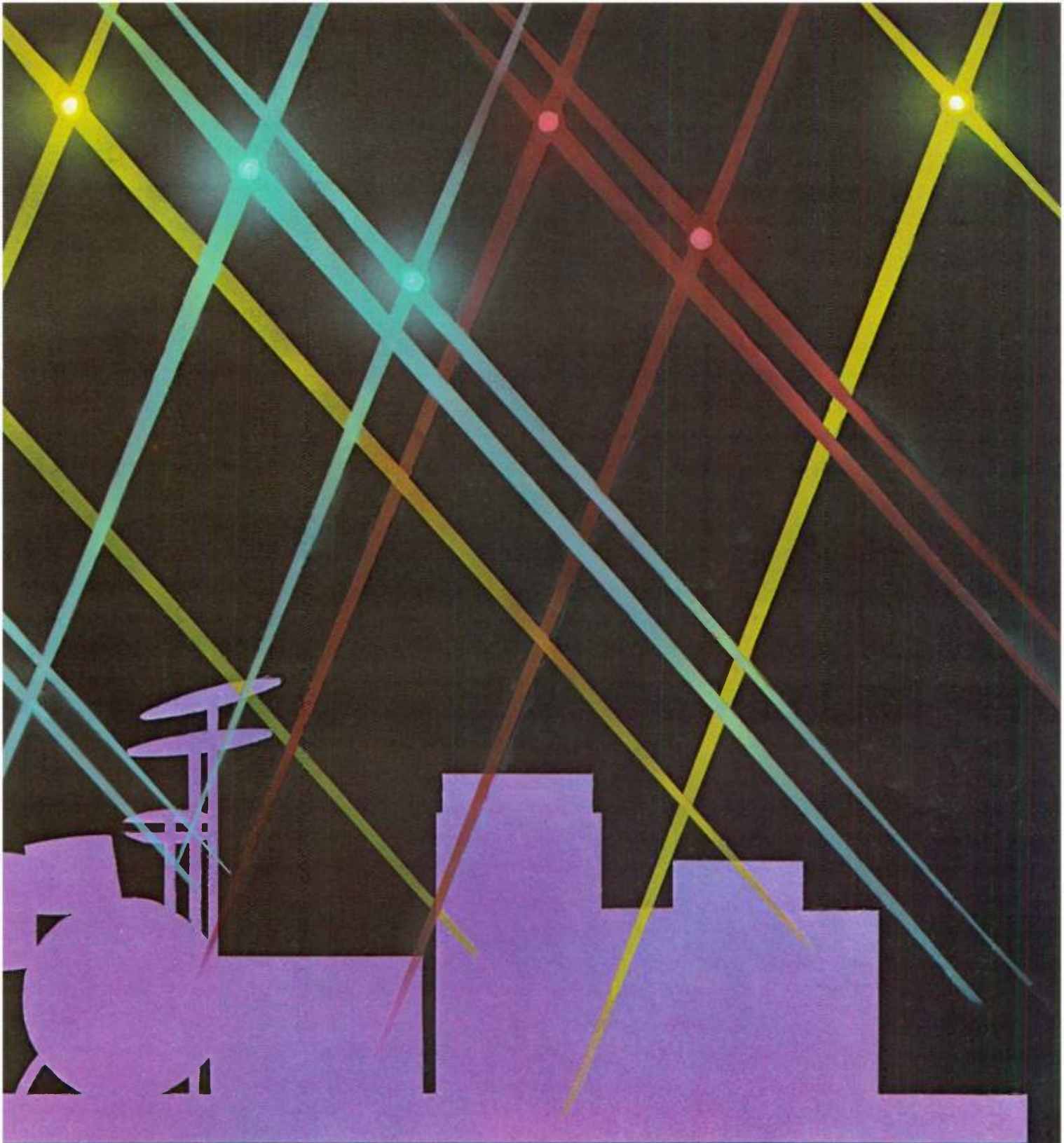
*Shown from left to right
are the new Roland
PARAPHONIC RS-505,
the amazing Roland
JP-4 POLYPHONIC SYNTHESIZER
with Computer Memory,
and Roland's latest
MP-600 ELECTRONIC PIANO.*

CIRCLE 94 ON READER SERVICE CARD



ADDING LIGHTING TO THE PRODUCT MIX

By Henry Collins & Vincent Finnegan, Jr.



Light and sound make a marketable mix. That was the premise we started with when Henry Collins went out to investigate more of that mixture. Vincent Finnegan, Jr., National Sales Manager of Meteor Light and Sound, had some ideas on that subject worth repeating. So here we have Collins' queries and Finnegan's responses on

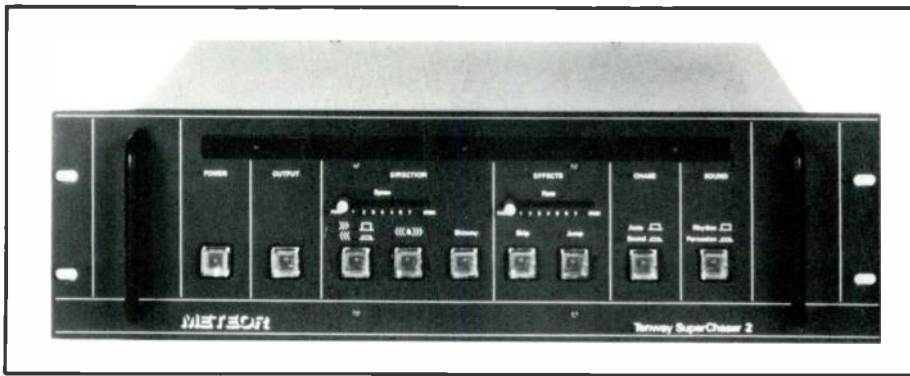
multi-media, or at least dupli-media, in the retail outlet.

—Editor

Is disco—with lighting—a worthwhile market?

The disco business, quite frankly, is a five billion dollar industry. And in spite of its growth, it's still an indus-

try that conducts much of its business largely by word-of-mouth. Disco is still a very worthwhile market, particularly in the area of lighting. I would say that of those clubs in operation for about a year and a half, 60 percent of the dollars that were poured into light and sound went towards the purchase of lighting equipment. Just because the



disco industry hasn't become as institutionalized as the hi-fi business, a retailer shouldn't believe that there's no money to be made. Actually, its quite the contrary.

It's a fact that a good many individuals are involved in the installation end of the disco business. However, they represent a very small share of the total market. Over-the-counter sales make up the largest share of dollar volume in the entire industry. We must remember that the term "disco" need not apply only to clubs and club owners when it comes to final sales. A fairly large percentage of disco lighting equipment is sold to mobile deejays and for use in the home as well. Disco, slowly but surely, is becoming recognized as a mass market industry.

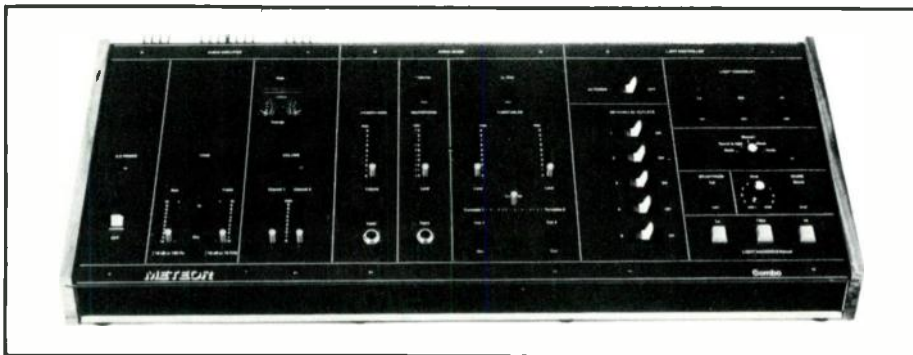
As for those few individuals who make their living as sound or light installers, a large percentage of their business comes from large clubs, spending anywhere from \$20,000 and up on lights alone. These are by no means simple installations. And in these instances, a club owner might do well to go to an installer. On the other hand, a large share of the dollar volume in sales is in the \$5,000 to \$20,000 range. Meteor is primarily concerned with this market segment.

With products that meet stringent electrical safety regulations, and especially with those that are U.L. listed, there are absolutely no installation problems at all. There's no reason at all why a retailer can't become an in-

staller. In fact I encourage it. I will say, however, that any retailer who's considering doing lighting will first want to locate an electrical contractor in the event that an AC line must be installed from time to time.

Who is best equipped to market disco lighting?

First of all, I have to say that sound and light are the two key ingredients behind a disco. I find it hard to separate the two. A retailer who is currently marketing sound equipment might feel that lighting will become too great a demand for him to meet in terms of time spent on installations and service. In some instances I would be inclined to agree with that line of reasoning. However, there's no reason why a retailer can't successfully market lighting equipment if the product is simple to install, easy to use and offers a variety of add-on features for future expansion. I have found in many cases that customers who were in the market for sound equipment were also looking to spend money on lighting. So you see, audio retailers don't have to look far to find potential buyers. All that is really necessary is that the dealer let the public know that he's selling lights as well as sound. The first step would be to set up an in-store lighting display. It doesn't have to be elaborate or expensive. All it has to do is enable the dealer to demonstrate various lighting effects and control features to the customer. Naturally I would recommend that the dealer start



off with a very simple and basic system. The sale of the system should not be limited to just permanent installations. It should also appeal to mobile deejays and the general consumer as well.

Does simplicity limit creativity?

A lighting system may be designed with simplicity in mind, but that doesn't mean that the dealer or the consumer can't create with it. By simplicity I mean ease of operation, installation, etc. Let's consider a basic system which retails for about \$3,000. This system would consist of 10 six-foot tenway light strips and two lighting controllers. You could liken this hardware to an artist's paint and paint brushes.

At Meteor, we sell packaged systems, but we don't inhibit the user's design creativity in any way. In other words, we sell the paint and brushes but we don't paint the pictures. The system that I just described can be installed and used a number of ways. The lights can be set up in a starburst pattern on the ceiling or on a wall. They can also be arranged in a square shaped pattern directly over the dance floor or in any configuration that the user might happen to want. The variety of effects and the number of layout designs that are possible are virtually endless.

Are consumers reluctant to buy lighting equipment from an audio retailer?

First of all, I don't believe that the purchase of lighting equipment for discos has reached the level of sophistication where an individual simply walks into a lighting store and walks out with lights. A good many of the lights used in discos are not available in theatrical lighting stores. And on the other hand, you won't find many lighting stores that specialize in disco lighting. In nearly all cases, retailers who generally sell disco lighting equipment are also involved in the sound end too. So on the contrary, there's absolutely no reason for me to believe that customers would be reluctant to buy lighting equipment from audio retailers. In many cases, it's the only way they can buy it.

I believe that the only real reservation that anyone would have about buying lighting from an audio retailer would center around his ability to design and install the system. Many might assume at first that an audio retailer is ill-equipped or isn't knowledgeable enough to sell or install light-

ing. Remember, most of this doubt is due to the fact that many customers not only want to buy the lighting, they want it installed too. I have to say this, however: If a retailer really knows his product, whether it's audio or lighting, a customer is less likely to question his abilities. Naturally many retailers may not want to go to the trouble of familiarizing themselves with lighting. I personally feel that any audio retailer, especially those currently involved in the disco market, simply can't afford not to know anything about lighting. The mere fact that a good number of lighting controllers have to be interfaced with audio hardware should be reason enough.

Lighting, like audio, is a very broad field. It would require quite a bit of effort to master all the secrets of lighting, but then all that isn't necessary. To sell and install lighting simply requires that the retailer understand his product and the needs of his customer. Naturally the more you know about lighting, the better, but you don't have to be an engineer to comprehend it.

What is the average dealer margin?

A dealer can expect to make 40 percent off the retail price, which I must say is a pretty hard act to beat in light of all the price wars and discounting that's going on in the audio industry. In the lighting business, you're dealing with a simple supply and demand situation—nothing could be more natural.

What is necessary in the way of inventory?

A dealer would want to carry a supply of light controllers and six-foot, tenway light strips. These would comprise a basic system, and in most cases will service the needs of many customers. A dealer may also want to stock special effects projectors for those customers who want more and can spend more. In some cases it's even possible for a dealer to carry a basic inventory and place additional orders as sales come in. You'll find that a large number of customers are willing to wait for a item to be put on order if it's not in stock. You will, however, still have those customers who "simply must have it today."

How can a dealer best market lighting?

I mentioned earlier that the in-store display need not be elaborate, but that the emphasis be on demonstration. The display can be a "hands-on" or "hands-off" type, though I would

think that the hands-on display, from a consumer standpoint, is more effective. The lights can be mounted on the wall as opposed to the ceiling, which would simplify installation and offer customers a better viewing angle. One or more controllers can be wired to the lights so that each can be demonstrated at any given time through the aid of a switching box.

In addition to the in-store display, a dealer will also want to make some effort at advertising to potential buyers. A dealer should concentrate his efforts locally and in a medium that offers the largest concentration of potential buyers in the disco market. He might want to consider advertising in record charts and in regional liquor trade publications which go out to bars and club owners. If a dealer is currently advertising in one form or another, naturally he would want to include the fact that he is now selling lighting.

In any advertising campaign directed at reaching the disco market, the advertiser will want to bear in mind that the effort must be consistent and well timed. It's important too that the dealer take advantage of

word-of-mouth advertising by leaving dealer/installer I.D. plaques at clubs that were installed by him. This is one sure way to sell both your product and your abilities as an installer in one stroke. You'd be amazed to find out just how much business can be generated by this sort of word-of-mouth advertising alone.

Though disco lighting is purchased primarily by club owners and mobile deejays, there are also a considerable number of consumers making use of this equipment in their homes. I believe that before long, disco will not be restricted to just clubs, but that it will emerge as a form of home entertainment. In fact, we're presently selling a good number of our Clubman One-One M mixers to consumers for home use, so it's quite apparent that the interest already exists.

Today people are very light- and sound-conscious, especially when it comes to entertainment. The ever-increasing sale of home video projectors and videotape recorders will testify to that. Consumers want a light and sound medium that they can control. One that they can program to meet each of their changing moods.

You like the way your amp sounds, but it's too loud.

You know the problem well enough. To get the sound you want out of your amp, you have to turn it up loud. Too loud for most small clubs and practice sessions. You've tried everything: Distortion boxes, compressors, hot pickups and amps with "master volume" controls, and they just don't sound right. What's left? The answer's simple. The Altair PW-5 Power Attenuator lets you turn down the volume *without* affecting your amp's own natural full power distortion and sustain. So now you can get the sound you want at any volume.

ALTAIR CORPORATION Dept. C Box 7034 Ann Arbor, MI 48107

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DEALER DATA FILE



Superior performance and reliability characterize the entire TDK line which includes quality recording tape in the open reel, cassette, and 8-track formats. Subject to particularly rigid quality control standards, TDK tape products have earned consistent favor among discerning tape enthusiasts, independent testing laboratories,

audiophile publications, and tape deck manufacturers. In fact, most major deck manufacturers use TDK's state-of-the-art SA cassette as their high bias reference for quality control tests on their decks. The firm also offers a host of tape accessory products which facilitate proper maintenance and efficient storage. Circle 47



Microphone cables and more...

Wireworks offers Multi-cable components and systems in pair sizes ranging from 3 to 50 pairs, and unlimited lengths. Also available is a complete line of low impedance, shielded microphone cables in three jacket materials: Rubber, Neoprene and twelve custom colors of PVC. Circle 48



Audio-Technica manufactures quality microphones for studio and sound reinforcement, headphones and cartridges which feature innovative design, precision and integrity. Circle 45

Are you ready for multitrack?

TEAC

TEAC's new 16-page guide helps dealers introduce customers to the equipment and techniques of multitrack recording. Dealers can use the booklets to bring customers in, qualify their needs and plan purchases. Circle 51

Now available from Roland Corp US is the Electronic Musical Instrument Vol. 2 Catalog. This catalog represents the largest, most diversified line of electronic musical instruments in the world. Included are: the JP-4 Polyphonic Synthesizer, the 700 and 100-M Modular Synthesizers, the RSS series of professional sound reinforcement and recording accessories, plus many keyboards, amplifiers and effect pedals. Send \$1.00 to cover postage and handling to Roland Corp US, 2401 Saybrook Ave., Los Angeles, Ca. 90040. Circle 49



TO RECEIVE INFORMATION ABOUT PRODUCTS IN THE DEALER DATA FILE CIRCLE THE APPROPRIATE READER SERVICE NUMBER ON PAGES 51 AND 52.

ARP synthesizers are the first choice of the world's leading professional musicians. The ARP line includes three variable lead-line keyboard synthesizers (Axxe, Odyssey, 2600), a live performance sequencer, three variable/preset or programmable instruments (Pro/DGX, Omni-2, Quadra), and the ARP Avatar guitar synthesizer system. ARP gives musicians a variety of musical options at every price level. Color catalog includes detailed panel descriptions and specifications. Circle 53



Crumar, one of the hottest keyboard lines, features the Orchestrator, DS-2 Synthesizer, T-1, T-2 Organs, Performer string unit, Roadracer Piano, plus many accessory items. Circle 54

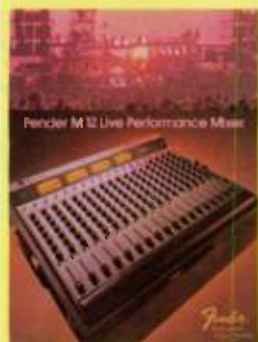


Endorsed by over 50 of the world's leading musicians, DiMarzio offers a complete line of pickups and related hardware for electric guitars & basses, acoustic guitars. Circle 55

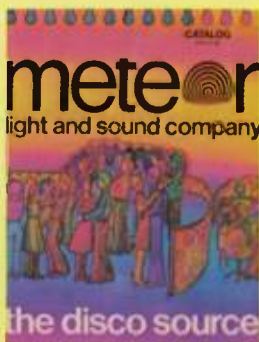


The ROAD Professional Standard Series catalog, describing ROAD's unique, exciting, and affordable system of mixing consoles and sound reinforcement components, is now available from ROAD. Circle 56

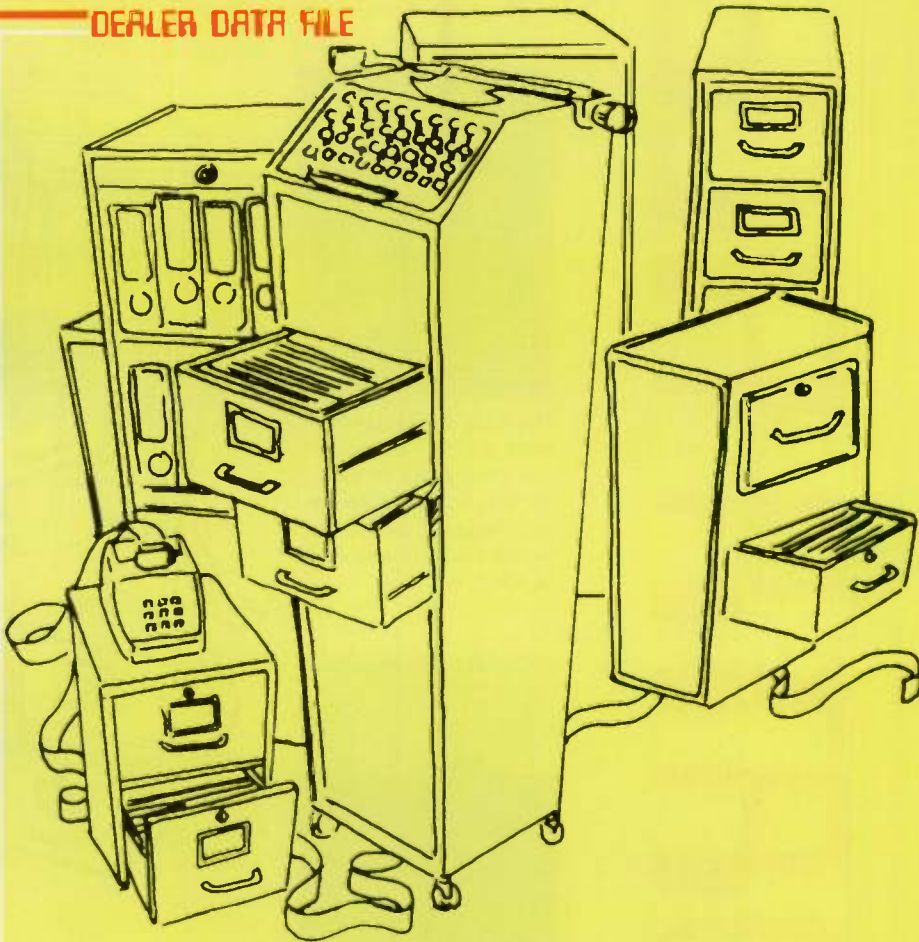
MXR is a widely respected manufacturer in the field of electronic signal processing. The Professional Products Catalog includes all musical instrument and studio signal processors. The Consumer Products Catalog covers MXR's range of home stereo components. Circle 66



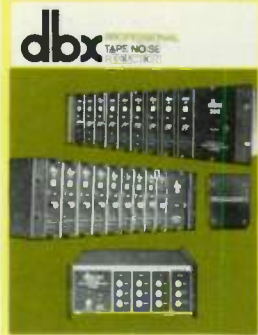
The newest introduction from Fender Professional Sound Products is the M-12 live performance mixer specifically designed for professional sound reinforcement. Circle 63



Meteor Light & Sound catalog depicts the entire range of Meteor Light & Sound products for home, mobile discos and professional discotheques. Circle 52



Recognized worldwide for its studio noise reduction system, dbx, Inc., a BSR subsidiary, offers a gamut of noise reduction systems, compressor/limiters, and accessories



for creative audio, professional, broadcast, and disco applications. Recent introductions from the Newton, Massachusetts-based firm are Models 163 and 165 compressor/limiters featuring "over easy" action which is virtually inaudible even at high compression ratios. Circle 57



Sound Workshop is perhaps the most unique and innovative company in the creative audio marketplace. Their US-built consoles, mixers, and signal processors have set standards for quality and reliability. Circle 61



Free 1979 Neptune Catalog. Complete specs on mixers, equalizers, analyzers, amplifiers and electronic crossover. Write Neptune Electronics, 934 N.E. 25th Ave., Portland, OR 97232. Circle 67



Product brochures available with a complete line of specification data sheets from TAPCO

or TAPCO manufacturing representatives. Circle 59



Eddor delivers with the quality CM 1000, 2000 and 2100 Capacitor Microphone System, and pricing that is a shade less. Circle 44



QSC Audio Products feature "Complete Amps" with reliability, power, specs, features, price and profitable margins. Circle 43



Catalog '78

Marlboro, the largest selling line of small, compact amplifiers & sound systems that deliver high acoustic output. Circle 50

DEALER DATA FILE

DEALER DATA FILE



The Altair Power Attenuators, the PW-5 and the new PW-6 with a balanced line output, are fast becoming a necessary tool for the serious professional guitarist. Circle 65

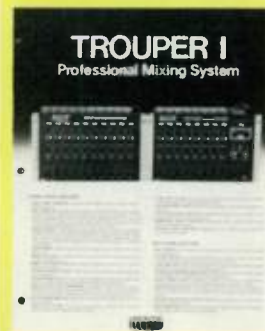
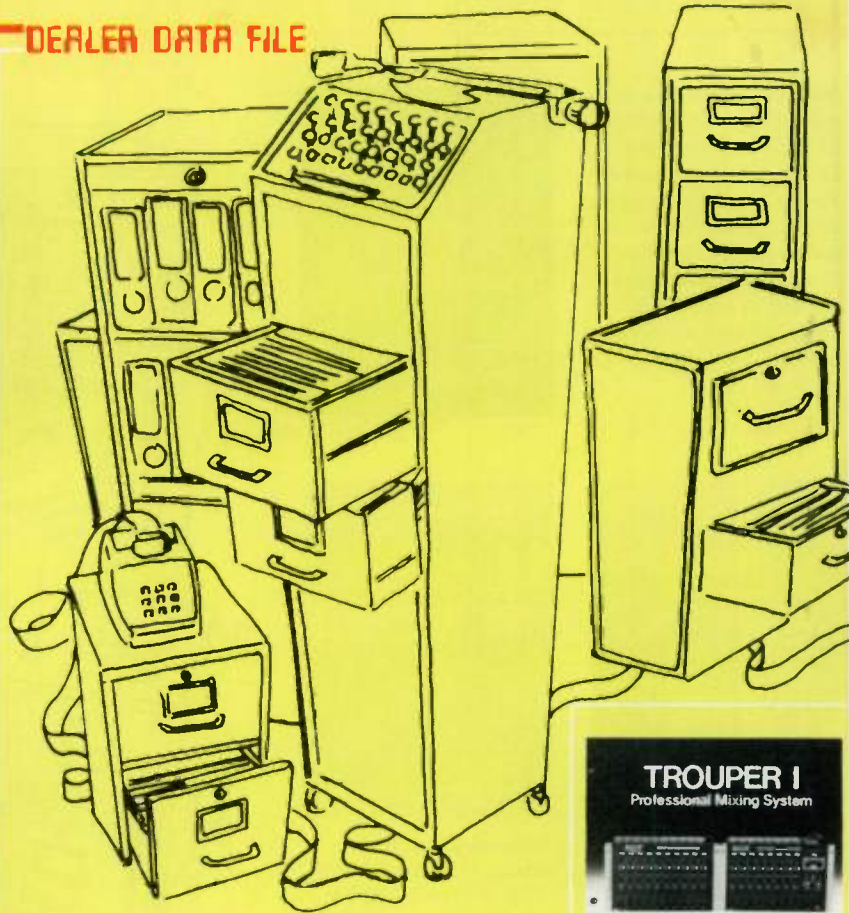


Information is available on Yamaha's PM-2000 Mixer. A professional console for sound reinforcement. Designed like a custom console, the Yamaha PM-2000 fills the need for greater performance for a new generation of sound reinforcement engineers. Circle 60

Peavey Electronics is a leading manufacturer of sound reinforcement equipment, transducers, guitar amplifiers, P.A. systems, guitars, electric guitars and basses. Peavey has long been known for inordinate quality at down-to-earth prices. Circle 68



Guitar players look to Mighty Mite for *firsts* in the music industry! *First* in hot pickups with a lifetime guarantee and professionally designed brass bridges and hardware. *First* in custom guitar kits made of exotic and rare woods. Serious musicians agree that Mighty Mite products are the best to create the dynamic sound so many creative players are seeking. Circle 64



Uni-Sync has complete single sheet literature available on its product line including specifications, architectural specifications, front and back panel features and product photos. Circle 58



Electro Voice Pro-Line Microphone Catalog detailing performance, applications and available accessories for the eight microphones designed specially for the performing musician. Circle 46



Whirlwind Music manufactures complete lines of both standard and custom design plugs, cables, connectors and wires for both recording and "live" sound reinforcement applications. Circle 62

trade show tempos trade show tempos trade show tempo

Las Vegas Winter CES...

By Len Feldman



West Coast Expo NAMM

By Phil Missimore

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If I had to describe the recently concluded Winter Consumer Electronics Show held in Las Vegas in a single sentence I would say that the show was at once the biggest and the smallest ever. Fortunately, the editor of SOUND ARTS has allowed me somewhat greater wordage, so I'll explain.

Physically, the show was enormous, utilizing *all* of the floor space at Las Vegas' giant Convention Center, spilling over into the adjacent Hilton Hotel ballrooms and conference rooms and a good portion of the square footage at the remote Jockey Club which, for what to me remains a mystery, the show's managers assigned to so-called "esoteric" high fidelity manufacturers. More about these high-end product exhibits later.

As for my ambiguous description of the Vegas event as the "smallest" of shows, it is prompted by the dearth of truly new product entries which were displayed. A great deal of what I saw had been introduced earlier, even as early as the Summer CES held in Chicago six months earlier. In addition, many of the things I expected to see were absent entirely.

METAL TAPE AND CASSETTE DECKS

A major exception was the proliferation of pure metal particle cassette tape. This high-performance tape, first introduced by 3M ("Scotch") some

months ago, was now being offered by such well known tape manufacturers as TDK and Fuji, with other major tape makers at least showing prototypes of metal tape. For once, the hardware and software manufacturers seemed to be talking to each other. We counted no fewer than sixteen cassette decks which offered metal tape recording and playback capability.

A few of the more conservative of these deck makers, recognizing that universal standards had not officially been agreed upon, were offering decks which, while presently not set to record or erase the new metal tapes, could be retrofitted with the necessary tape heads and/or electronics at a future date. Some of the manufacturers offering such machines even promised to do the retrofitting at no charge when final parameters for the metal tape are set.

Of particular interest to the active recordist was an entry from Teac, a cassette deck believed to be the first to offer multi-track capability (wherein the recordist has access to individual tracks of the cassette, for sound-on-sound and over-dubbing applications from one track to the other). Evidently more and more companies seem willing to abandon the cassette tape format established so many years ago by Philips in their attempt to universalize the cassette tape's compatibility now that B.I.C./Avnet has paved the way with their line of two-speed cassette

decks. Separating the two tracks of a stereo cassette constitutes as much of a departure from the "standard" cassette configuration as does doubling the speed from 1-7/8 ips to 3-3/4 ips.

WHERE WILL THE MINI'S AND MICRO'S GO?

Having visited Japan last October and seen the many mini-components which are being offered to consumers in that country, I was certain that every major Japanese exhibitor at Winter CES would be offering these miniaturized components to American consumers. Such was not the case, however. To be sure, a few of the well known electronic component manufacturers did offer mini-components, but even those that did confined their offerings to just one model in each product category (one tuner, one preamp, one mini power amp and, in one instance at least, a matching mini-cassette deck). At least one of the mini power amps, from Toshiba, will have the ability to "strap" both channels for double power. The mini-makers seem to be treading cautiously, aware perhaps, that what is acceptable in their own domestic market is not always a winner in the United States.

VAUDIO PRODUCTS

That's my newly coined term for components that embrace both audio

and video technology. And there were several examples of them at WCES. It's no secret that PCM or digital audio recording is the next major revolution in high quality sound, what with its tremendous dynamic range capability (usually in excess of 80 dB from quietest to loudest sounds), low distortion (often under 0.05%) and complete absence of wow-and-flutter. It is also well known that digital recording on tape requires tremendous frequency response or bandwidth capability. But such bandwidth is exactly what is available on video cassette recorders, whether they be of the VHS or Beta format. No wonder, then, that we saw PCM audio processors from the same companies that pioneered the video cassette recorder, such as JVC and Sony. Current offerings of PCM audio processors (the term applied to these "accessories") run to in the excess of \$4,000. And that assumes ownership of a video cassette deck.

Ultimately, I think, digital audio recording will find its greatest acceptance from people engaged in the musical performing arts. After all, it makes little sense to simply transcribe *existing* program sources onto digital or PCM tape, since the limitations of the original program source (limited dynamic range, limited signal-to-noise ratio and higher distortion) cannot be overcome by recording such programs digitally. A whole new library of source material will have to be created in digital format before the advantages of PCM can be fully realized.

The marriage of video and audio that everyone keeps talking about was evident at the Winter CES at more practical price points, too. There were, for example, a pair of receivers shown by Wintec which took an obvious step beyond Pioneer's earlier-introduced "TV audio tuner." These receivers are able to tune to the audio portion of TV channels in addition to tuning to regular FM programming. They arrive at a time when TV broadcasters have been freed of the limitations of low-fi telephone lines which they had previously used to pipe the audio portion of their programming from studio to transmitter or across the network. Now that TV sound can be diplexed on the same coaxial cable that is used to carry the high-frequency video signals about, the sound that you hear when tuning to TV programs can be just as high in fidelity (albeit in mono) as the sounds you pick up on FM stations. By turning down the

volume control on your TV set (whose audio circuitry is anything but hi-fi) and tuning to the appropriate channel on these Wintec receivers (or the Pioneer TV audio tuner, or a similar tuner introduced by, of all people, the Finney Company who make Finco antennas) you can realize the full potential of high fidelity TV sound.

ESOTERICA

As we said earlier, if you wanted to see what the high-technology small companies of the world were doing in Las Vegas, it required a taxi ride from the main exhibit areas over to the Jockey Club at the south end of the Strip. Here, nestled in small rooms on ten floors of one of the few hotels in Vegas that does not have a gambling casino, you could visit with the often lonely entrepreneurs of budding companies whose technology often exceeded their marketing know-how.

While most of these exhibitors were involved in speaker system technology (there were speaker "breakthroughs" in at least one out of every two rooms at this establishment), there were clearly some innovative products in other categories as well. Take, for example, Robert Carver's revolutionary magnetic field amplifier—a cube-shaped affair, measuring 6-3/4" on a side and weighing around 12 pounds, that delivered (are you ready for this?) 200 watts per channel of audio power at less than 0.05% harmonic distortion and uses *no* power transformer or electrolytic storage capacitors. Exactly how the unit works remains a mystery which will be disclosed only after Carver is assured of proper patent protection, but from the sound of the unit Mr. Carver may well have a tiger by the tail and may soon have to ward off other manufacturers knocking at his doors in the state of Washington, all of them seeking to enter license agreements with him. Nor does Carver plan for his fledgling company to be a one-product line. He proudly showed his sonic-hologram generator preamplifier—a unit which does for sound what laser holography does for three-dimensional images in space by "pinpointing" sound sources so you can almost reach out and touch the performers in space.

I was pleased to see, too, that with all the graphic equalizers currently being sold (and often misused by consumers), someone finally came up with an idea whose time has certainly

come. The company was Audio Control and, believe it or not, they were showing a relatively inexpensive (\$549) octave-band equalizer with its own self-contained real-time LED analyzer and a built-in pink-noise generator. With this all-in-one device and any reasonably well calibrated microphone, one can equalize one's sound system properly instead of performing the EQ job by the hit-and-miss technique which most owners of EQ equipment generally use.

AUDIO TIME DELAY ENLARGES LISTENING SPACE

Although audio time delay units are certainly not news to semi-pro and professional musicians and recordists, the proliferation of these devices at the Consumer Electronics Show suggests that the effectiveness of these add-on devices is now being recognized by home music enthusiasts as well. Though in many ways similar to four-channel systems of yesteryear (they require an extra pair of speakers and a second stereo amplifier), adding time delay to a stereo system is far less costly, since no special program material is required and the secondary speakers and their driving amplifiers need not be of the same high quality (or have the same bandwidth) as the primary system components. At least one company has taken the obvious next step. Audio Pulse, in their Model Two, has combined its digital audio time delay circuitry with a 25-watt-per-channel amplifier so that all one would need to add would be those extra speakers.

FAR OUT PRODUCT AWARD

All of which prompts us to wonder why, at this time, one company insisted on "introducing" a new quadraphonic SQ decoder for use in cars, of all places. Yes, Fosgate has actually bet on the resurgence of 4-channel sound with the introduction of a 4-channel equalizer-amplifier for car use as well as a high-end 4-channel system for recording studios, discos and home audio systems. And here we thought that the pursuit of 4-channel sound was dead!

Within the audio domain there were several other far-out product ideas, but my award for the most far out idea of all has to go to Pioneer of America. I'm not yet sure if the whole thing was a put-on or not, but picture, if you will,

FOR THE SMALL STUDIO OWNER WITH BIG IDEAS.

If you're a small studio owner, you may have a problem: your ideas are far beyond your present equipment.

Maybe you're an engineer, dreaming of an automated 24-track studio. Maybe you're a producer, searching for "the next big thing." Maybe you're an artist, trying to land a record contract. What you need is something that will get you from where you are to where you'd like to be.

Sound impossible? Not to us. At dbx, we're committed to make professional recording technology available to anyone with the determination to make use of it. We make a line of rack-mountable signal-processing devices designed and priced especially for the small studio.

Our tape noise reduction systems, the 155 (4-channel, switchable), the RM-155 (8-channel, switchable) and the 158 (8-channel, simultaneous), all offer the same 30 dB noise reduction and 10 dB head-room improvement as our state-of-the-art units and are fully compatible with them. They enable you to make master quality tapes, instead of demos, on your present equipment.

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though I will admit that there is a certain pleasure to be had from feeling your music as well as listening to it. Talk about combining the sense of sound and sight. Here's a combination of the tactile and the audible. Who knows? Perhaps next year in Las Vegas we'll be tasting and smelling our music as well. . . .

their feelings with open checkbooks. Almost all booths reported a steady stream of business, with orders at the very least matching their expectations. "This is one of the most active NAMM shows I've ever been at," remarked one retailer who commented that he has been to more than a half-dozen NAMM markets. "Even though everyone says we're going to have a recession, I just don't see it. Sales have been steady, and there seems to be no slowdown at all."

NAMM

If you had to find a phrase that would sum up all the activity at the Winter NAMM Show in Anaheim, the most apt description would probably be, "more of the same, but better."

No new industry trends surfaced at the show, at least in terms of any radical departures from previously-established trends. Polyphonic synthesizers were more in evidence, of course, and the trend toward smaller, more compact amplifiers was solidified with manufacturers such as Marshall, Unicord and others putting heavy emphasis on more compact amplification systems.

The merchandise on display was perhaps best summed up by one retailer, who said, "I've basically seen all this equipment before; it's just been refined and more highly developed."

EMERGING PATTERNS

Nonetheless, certain patterns do emerge, when talking to both retailers and exhibitors at the show. First, the trend toward disco is definitely becoming stronger. Sound reinforcement companies such as SAE and BGW reported a strong dealer interest in higher output power amps, while companies such as Musical Instrument Corporation of America reported a brisk interest in total disco packages, with amplifiers, turntables, mixers and lighting systems.

At the same time, however, some musical instrument retailers indicated a desire to stay away from disco applications. "We've been approached to do several disco installations," reported one Washington retailer, "but we really don't want to get into that area." Other retailers, however, indicated that they were intending to make a more concerted effort to capture the disco market.

Yet another pattern, which has developed over a period of time, is the

increasing sophistication of keyboard synthesizers and related products. Manufacturers such as Arp, Moog and Roland all featured polyphonic and/or digital synthesizers in Anaheim. Arp's new Quadra polyphonic synthesizer seemed to draw a particularly heavy crowd. The Quadra features programmable functions for four synthesizers: bass, strings, polyphonic synthesizer and lead synthesizer. The Moog polyphonic and Roland Jupiter 4 synthesizers also offer the musician a wide range of tonal possibilities.

The sophistication of keyboard synthesizers has spilled over into other areas as well. Guitar synthesizers were very visible at the show, although most retailers indicated that they were unlikely to invest heavily in them. More importantly, however, several manufacturers exhibited vocal synthesizers that were both available and seemingly very workable. Unicord, Moog and Electro-Harmonix were among the manufacturers with vocorder units on display. The Unicord display and stage show was one of the largest draws at the market, and certainly one of the loudest (if Walt Disney only knew that 10,000 music fanatics were cranking out 100 dB within earshot of the Magic Kingdom. . . .)

POSITIVE ASSESSMENTS

Certainly, the NAMM Winter Market has to qualify as a numeric success; well over 10,000 persons registered for the three-day event, compared with 9,600 last year. Over 230 different manufacturers, from guitar straps to dulcimers, were involved at the show, which sprawled across the entire Disneyland Hotel complex.

Even more importantly, however, the retailers in attendance were uniformly positive in their assessments of the show, and most of them backed up

These sentiments were echoed by other retailers, as well as by exhibitors. A TEAC representative commented, "In the past, we've seen a lot of retailers lose interest when we tell them the real costs involved in providing professional recording and sound reinforcement equipment to augment their MI lines. This year, however, it seems like more retailers don't blanch when we talk about it with them. I think that is partially due to synthesizers becoming more and more of a staple item for the progressive MI dealer. He realizes, with synthesizers, that you have to be able to service them—and you can't do that without the facilities and the expertise of a full-time technician. Since the principles are the same in terms of sound reinforcement and recording equipment, more and more dealers are realizing the real commitment needed to make pro recording gear profitable." Are there more dealers this year asking about pro recording/sound reinforcement equipment? "Definitely."

ATTENTION GETTERS

In addition to the broader trends, some individual booths attracted considerable retailer attention, or provided insights into new developments within the industry that retailers may soon be using. The Stick, that 10-stringed beast developed years ago by Emmet Chapman, still drew large crowds around its booth; Remo attracted large gatherings for its new roto-tom heads, and MXR and other accessory manufacturers reported considerable buyer interest in various portable signal modification devices such as flangers, delay devices, eq units, and such.

Yet another development that has been introduced before was the Pianocorder, introduced once again by Superscope. This unit, which carries a retail price tag of \$1,800, is a player

piano which operates on a tape cassette attachment. The piano plays with full expression. The educational/institutional possibilities of the Pianocorder are bountiful, when one considers the costs involved in hiring teachers, etc. The Pianocorder could potentially serve as a self-instructional device, since one can record and then playback mistakes, and as a low-cost alternative for restaurants and similar establishments looking for music. It is too early to tell, however, just what degree of market penetration Super-scope can obtain with the unit; the firm has obviously pinned some very high hopes on this unit.

One of the more interesting products on display at the show was the Ultimate Support System series of speaker, mixer and keyboard stands. Instead of typically bulky, heavy speaker stands, these units are made of lightweight aluminum, which carry very heavy loads. They fold down into small packages, and can be carried in nylon tote bags. Several retailers indicated a keen interest in the product, and many said they already had placed orders for some of the units. "It's one of the most useful products I've seen at the show," commented one Southern California retailer.

COMPUTERIZED DATA SYSTEM

While the emphasis at the Winter Market was on products, rather than services, one exhibit may indicate a future direction for dealers in terms of their own businesses. MBI Data Systems was exhibiting its FANDi computerized system, which is currently designed for keyboard retailers. An MBI spokesman, however, indicated that the system could be adapted for the typical MI dealer, particularly with regard to inventory and accounting.

The FANDi system uses a common typewriter keyboard and very simplified instructions, and seemingly can be very easily learned. The system can provide the typical retailer with such items as a daily sales summary by store, individual salesperson performance, inventory restocking requirements, inventory aging information, the status of delivery trucks, notifications of special sales, and much more. For example, complete customer profiles can be stored in the system, as well as wholesale, retail and used instrument price lists. "Just about

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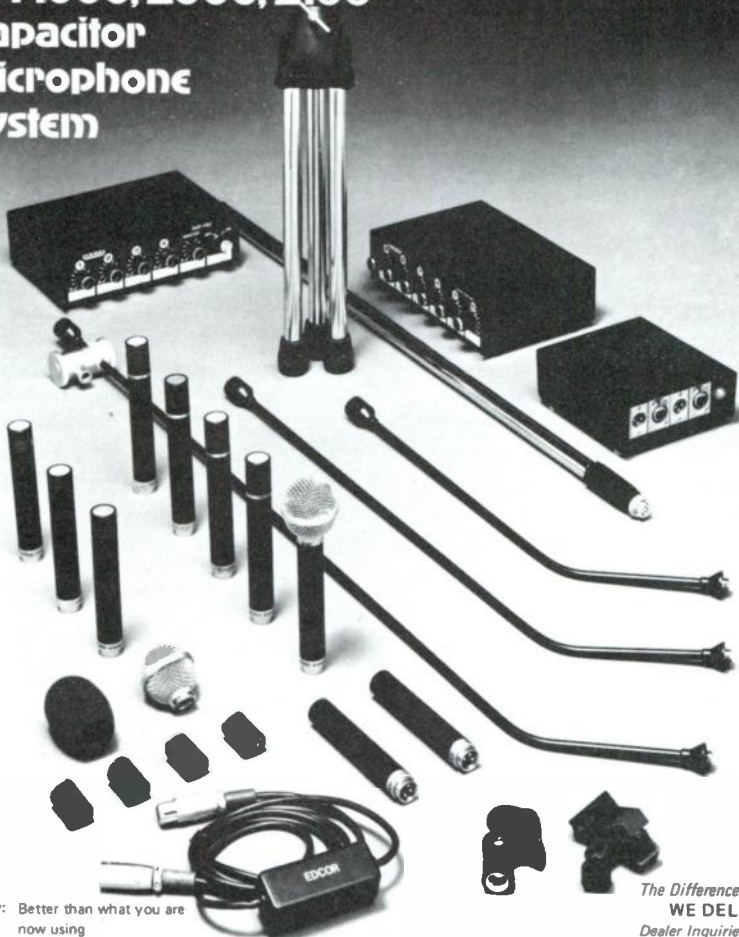
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any information relevant to the keyboard retailer can be stored in the system," according to MBI.

At the same time, a retailer can input data into the system about items such as receipt of merchandise, movement of inventory, sales data, and so forth.

The problem, according to MBI, is that the typical MI inventory is so varied, it's tough to assign control numbers to all the items. The number needed for a keyboard retailer is far less. However, the firm definitely foresees a scaled-down version that would fit most MI dealers to service their accounts payable and receivable, and similar items. While reporting a "very strong" dealer interest in the program, MBI also adds that the system will not be ready till after the middle of the year.

GOING TO MARKET

While no new trends seemed to emerge from this year's Winter Market, there were certainly many new individual products. In addition to the aforementioned polyphonic synthesizers by several manufacturers,

several new products in the sound reinforcement/mixing area were unveiled at the show. SAE, for example, displayed its new Pro line of sound reinforcement equipment, featuring three different power amplifiers of varying output. A lot of interest was also shown in the Biamp series of mixers and power amps. Other manufacturers such as Tapco, Sound Workshop, Yamaha and Unisync had very busy booths, while more and more sophistication could be seen in live-use mixing boards as well. The new "a" series mixers from Tangent also seemed to draw intense retailer interest.

STOCKING UP

And the bottom line indeed was retailer interest. The mood, as mentioned before, was one of buying. "If anything, I wish this show could last for about a week," commented one Northern California retailer. "We're opening up a retail store in our area soon, and this show is just perfect for us. We're doing all our stocking of basic inventory at this show." What items interested him the most? "Well, almost everything. We've bought a

little of everything, trying to get the best prices possible. We'll have some club-type sound reinforcement, in addition to basic musical instrument lines."

More established stores had much the same attitude. Several larger Southern California and West Coast retailers were at the market, and all of them indicated that they were indeed buying, rather than just window-shopping, in Anaheim. Throughout the show, the main thrust of retailer comment was extremely enthusiastic: "great," "very helpful," and "fascinating" were among the phrases that kept repeating themselves.

Even retailers who were not buying considered the show beneficial. "I don't really buy much here," claimed one dealer, "because we're big enough that we can contact the manufacturer directly and have him come out to our store for a personal demonstration. But the Winter Market is a chance for me to renew contacts within the industry, and meet people that I usually only see at the NAMM shows."

Another manufacturer mentioned often by retailers was Road Amplifiers. "I'm interested in their line, because of their smaller amps," reported one retailer.

SPECIAL EVENTS

Of course, one of the basic appeals of the NAMM Winter Market is a chance for retailers to rub shoulders with professional musicians, and Anaheim was no exception. Among those performing during the convention were: Louie Bellson, drummer Jake Hanna, drummer Ed Shaughnessy, guitarists Joe Pass, Herb Ellis and Tommy Tedesco, and bassist Ray Brown. One of the more unique events was a special dealers-only party thrown by Ibanez guitars at Knott's Berry Farm before the official convention opening. Special appearances at the show by Steve Miller and Alphonzo Johnson highlighted the special party.

At the same time, educational sessions were also held throughout the market, on such diverse topics as "Computers and the Music Retailer," and "Everything You Wanted to Know About Harmonicas But Were Afraid To Ask." A panel discussion on the topic of "Sound: A Profitable Direction for You," was also held, sponsored by CAMEO (Creative Audio and Music Electronics Organization).

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DEMAND FOR SOPHISTICATION

The trend definitely does indicate a greater number of music instrument retailers broadening their product lines to include some form of sound reinforcement equipment. Even smaller retailers told SOUND ARTS that the demand in their stores was for more sophisticated sound equipment for the local club musician, or audio enthusiast. While many retailers continued to express reservations about offering pro recording equipment as part of their inventory, the common feeling was that any dealer, if he wishes to be successful, must carry some state-of-the-art P.A. gear, microphones and power units. "I don't need large P.A. systems," claimed one Ventura, California retailer, "but more and more people come into my store asking for club-sized P.A. equipment."

And what of discos? Most retailers interviewed by SOUND ARTS felt that disco was here to stay, and represented a potentially active market for aggressive retailers.

"I definitely intend to pursue the disco market," reported one Southern California retailer. "I've been approached several times by people who want me to do a disco sound system, and I'd be foolish not to take that business."

However, some retailers in less urban areas were taking more of a "wait and see" attitude on heavy buying of disco-oriented equipment. "Unless you order in volume, it's hard to get a good price on disco equipment," commented one dealer. "In my area, I don't know just how many discos can actually survive financially. Unless there are enough to make it worth my while, I'll wait before I go into the disco area." He conceded, however, that "if discos are successful, I want to be the retailer they all go to for their sound systems."

Perhaps one of the more interesting products at the show was once again something that was not really new. The Gizmo, a guitar-synthesizer type device developed by former 10cc members Lol Creme and Kevin Godley, has been known to the musical community for almost two years. However, the Gizmo is apparently now a production item, and once again drew considerable crowds at the show. The device, which mounts on the bridge of an electric guitar, may or may not be a way to expand the tonal possibilities of the electric guitar, but it certainly indicates

the gradual industry trend towards more signal processing for electric instruments, and in packages that are increasingly more compact and modular.

UNCHECKED GROWTH

In retrospect, it seems that all parties concerned with the NAMM Winter Market were happy: the show organizers, who could point to record attendance levels; the retailers, who were able at a glance to view the entire

spectrum of products and services available to the musical instrument dealer; and the manufacturers, who were pleased with the amount of buying activity going on. Even though the Winter Market revealed no new trends or radically new products, the enthusiasm exhibited at the show augurs well for the status of the musical instrument industry in 1979: active retail sales, and a feeling of confidence that the industry's growth pattern will continue unchecked throughout the coming year.



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CIRCLE 77 ON READER SERVICE CARD

The SOUND SH

Altec-Lansing has introduced the Model 14 as an addition to their high-end consumer speaker line. Included in the Model 14 is a power overload device, "automatic power control," which continuously monitors the power delivered to the system and automatically corrects any overload. The system continues



to operate while it is in the protection mode. Features include the Mantaray, Altec's constant directivity horn; and the Tangerine radial phase plug. The dual band equalizer allows for separate adjustment of the mid and high frequencies. The components are housed in a tuned, vented enclosure. The 14, according to the company, is capable of delivering 94 dB SPL at four feet with one watt of input power. Additional features are a walnut veneer finish, 12-inch bass driver with die-cast aluminum frame, and a five-year warranty.

Also newly introduced by Altec-Lansing is the new 934, which, according to the company, "fulfills a long-standing desire of the working musician: a blend of high performance and small size." The 934 includes the Mantaray constant directivity horn and the Tangerine radial phase plug. The crossover network features a built-in dual-band variable equalizer which can be defeated by means of a panel-mounted switch, converting the equalizer to a full-range attenuator for the high-fre-

quency driver. The cabinet measures 22"×26"×17" and is finished in black leather-grained vinyl. It is "biamp ready," capable of receiving the Altec 1224A biamp in a pre-fabricated panel.

CIRCLE 2 ON READER SERVICE CARD

Microphone stands are necessary but troublesome items for most bands. Necessary for an obvious reason, and troublesome because they have to be disassembled and packed away for transport. The heavy cast iron bases take up a lot of room in the equipment trunks, and when you get twenty or thirty of them together, the weight (and the cost of shipping) becomes a problem.

Atlas Sound has an answer to this weight and storage problem with its newly introduced Porta-Series stands.

The PS Series stands are designed like cymbal stands; i.e., they have a collapsible tripod base that does not have to be removed from the stand for packing.

In addition to being lighter and more portable than other stands, the PS stands are sturdier, too. They have a grooved cam machined



By Charlie Lawing

into the tube assembly for positive locking action, and tempered springs in the tripod base assembly provide greater stability.

The PS stands have a diecast baked epoxy base, chrome-plated tubing, and standard 5/8"-27 male threaded ends which make them compatible with all mic clips, goose-necks and such.

The PSC extends from 35 to 63 inches, folds up into a 32-inch length for travel, and weighs only 4½ lbs.

CIRCLE 3 ON READER SERVICE CARD

Strider Systems, Inc. has introduced its DCS (Digital Control Synthesizer) II polyphonic synthesizer. The DCS II features two polyphonic voices which can drive up to eight notes each, commanding a separate synthesizer module on each note; single button, instant access to 48 voice patches; a 256-note memory sequencer; programmable joystick; single and/or multitrigger keyboard; and unlimited storage of memory on cassettes, with built-in interface. Retail prices range from \$2,295 for the single note version to \$4,795 for a six-note unit. Accessories include a microsequencer, volume pedal, filter pedal, and Calzone flight case.

CIRCLE 4 ON READER SERVICE CARD

One of the basic elements of guitar playing (if not *the* basic thing) is keeping the instrument in tune. In recent years, as guitarists have become more aware of the instrument and how it works, more and more players have come to rely on the accuracy of electronic tuning devices rather than their own ears when it comes to tuning a guitar. This increased reliance has spawned a number of tuners, ranging in price from under \$100 for a small portable unit to several hundred for the top-of-the-line chromatic tuner.

One such tuner is the Peterson Strobe Tuner. It is accepted as being on a par with

the Conn unit; both are recognized as being the tops in the field.

Peterson now has an improved model which provides "hands-off" tuning via a footswitch that will change the note to which the player wishes to tune. A lighted indicator on the front panel indicates which pitch is in use, so the musician can stand several feet away from the unit and tune his guitar quickly and silently. The advantage of this should be



obvious to anyone who has ever tried to tune in the middle of a song or while a jukebox is blaring across the room.

The Peterson Model 700 will transpose the display indicator for Eb, Bb, and F instruments, so bands with horn sections can use the tuner also.

In every professional environment that I have stepped into, whether it was a studio, concert hall, or night club, the really professional bands made liberal use of electronic tuners to insure precision and accuracy when tuning. The benefits are even greater when you consider that a good unit such as this one can be used in the guitar repair shop to set intonation on any guitar. Peterson is a leader in the field, and once you get your hands on a tuner you'll wonder how you ever got along without one.

CIRCLE 5 ON READER SERVICE CARD

DEALER DOSSIER

*Grice Electronics
Pensacola, Florida*

Grice Electronics began 32 years ago as a hobby of the son of a local realtor who used Dad's backroom to hoard parts and pieces needed by hobbyists and repairmen. Floyd's hobby now allows him to serve as Chairman of the Board over a family-supervised chain of five stores located in Pensacola and in Mobile, Alabama; Panama City, Florida; and Ft. Walton, Florida. Brother Francis is now President and General Manager, and Francis' sons Tommy, David and Mike are presently working their way up in the hierarchy.

Walking into the front door of the flagship store, the customer finds he is standing before an electronic department store. There are divisions that vend video, televisions, computers, hi-fi, auto stereo, calculators and the random wristwatch. Yes, a fine line of parts is still the mainstay, but confined to a room to one side is the division for the sale of sound reinforcement and studio recording equipment that currently rivals all other departments for top honors.

The room, although small, is extremely functional. All mixers, amps and speakers are operational and easily interchangeable. Peavey, Tapco and Teac are the featured consoles hooked up to Altec and Peavey speakers. McIntosh amps are the local favorites and Grice displays monitors by JBL, Altec and the Electro-Voice TL series. Of special interest is the unique display of special effects. Running off of a Teac 1, Grice has assembled a wall of special effects just begging to be played with. Everybody in the store wants to play with the Eventide Harmonizer and Instant Flanger, the Tapco Re-Verb 4400, the Loft Digital Delay, phasers and distortion boxes. The setup is used to educate as well as entertain the inquisitive customer and is a great ice breaker to loosen up a timid client.

Since Grice deals with a large number of clients who are advancing in the arts of home recording, they display 2-, 4- and 8-track recorders by Teac including a 2-track Master Recorder. Last but not least is a working

display of stage lighting which also figures in a great number of Grice sales since many prominent customers are discos and professional performing musical groups.

Heading the division is Richard Couture who has been a member of the Grice team for twelve years and like everybody else began in the stockrooms and moved up into heading the hi-fi sales division. It is only through the singular efforts of this former stockboy that the top brass at Grice decided to carry a line of P.A. and recording equipment. Since it was his bright idea, the department was given to him to manage and control, its success or failure weighing heavily on his shoulders.

Starting out in the backroom of the old downtown location, Richard initially stocked the room to the ceiling and began telephoning prospective customers with the news that he was open for business. Working as manager/salesman/installer began to wear thin, so Richard collared a customer, Dave Wheeler, to share the load. Today, Richard independently supervises a \$100,000 inventory that turns six times a year, and he has doubled his staff to meet the demand.

Why is this the only store in the chain that handles sound equipment?

Couture: The only reason it exists here is because I convinced Grice that it would sell. There is no one we could find with the interest or expertise to establish this operation in the other locations. Leads and generation of sales originate from the other stores and so we reach out into a wide area.

How extensive is the area that you reach?

Couture: That's hard to say. We go anywhere for anything. In the last two months we have installed systems in



Jackson, Mississippi; Beaumont, Texas; and Orlando, Florida. Many of our leads come from existing customers and from a building contractor who erects a lot of churches requiring P.A. systems.

My initial impression is that this is a division in a large department store. Why not expand into a larger area or better yet, into your own location?

Couture: We operate independently of the rest of the store, and if you saw the advertising that Grice does you would not know that we exist. There have been three other businesses in this area that have folded because they attempted too much too soon. Over-expansion has bankrupted a lot of businesses. In two years, Grice has doubled its staff and tripled its sales volume in sound systems. Our fear of overreaching has prevented us from branching into the sale of musical instruments—that and a lack of cooperation from M.I. manufacturers and a scarcity of expert help.

How do you effectively service a large area of the country with a staff of merely four?

Couture: Pensacola is not very large and there isn't anything around it so we have to deal in a large area. We are attuned to traveling 2, 3, 4 and 500 miles for a client. Most recently I drove to Orlando to install a system at a large tourist attraction, and along the way I stopped off at several businesses to see if they might be interested in making improvements.

We reach clients in these wide areas primarily through word of mouth. We take a lead and it is literally exhausted. A lot of manufacturers help us. Seven months ago we were working out of a backroom and the demand on our time was greater than the supply. We couldn't keep up with what we had so we never needed advertising.

Were you filling a consumer need or trying to create one?

Wheeler: Both. The demand was created through Richard's expertise. Five years ago in this area, the musicians had nobody to turn to other than somebody that was in to hi-fi. Most musicians were ignorant of the products that were available to them. I was a customer before I came to work here and I knew that I had to search someone out to help me find what I was looking for. Richard was one of the few in this area that knew anything about microphones, mixing consoles, snakes and the other things that no one else seemed to know about.

We created a demand by influencing our customers with products that they had never seen before—special effects and digital delays and multi-track studio equipment. We set it all up and show them what it does. The majority of M.I. buyers may be aware of the equipment, but they don't know who to see about buying it.

Who is your average customer?

Couture: Saloons, discos, churches, entertainment centers. The walk-in trade is basically professional musicians and preachers.

Preachers?

Wheeler: Preachers. You are in a part of the country where a lot of religious sects are into large P.A. systems. Thunder of God. A church that seats 300 people usually has a \$10,000 sound system and a 4-track studio in the balcony to record the sermons and the choir. Preachers around here are into cassette duplication and record production. When they are in the mood, when the spirit moves 'em, Rev. will switch on the recorder, crank out a few dupes and sell them at the door as the faithful are leaving.

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able amount of equipment. They know what effects they want to create but do not know what to buy or where to buy it. They come to us. The religious market makes up 30 percent of our gross sales over a year's time.

Are there a lot of working bands in the area?

Couture: There are a lot of working musicians on their way up but very few professional bands. The disco boom has put a lot of working musicians out of work and therefore disco has become a large market for us. In that sense, the market is dictating the direction our business is taking.

Any recording studios in this area?

Wheeler: Two or three semi-pro. I have an 8-track at home and I have all the work I can handle, which is limited, because I do not try to compete with the people we are selling equipment to. One studio records primarily gospel and has turned out maybe 50 albums in the last year. The other has just opened and is struggling.

These aren't 24-track operations, just 8-track demo studios built on a very small budget aimed at a very small budget-minded customer. The problem here is that many of these people are new to the business and have no idea what recording and production are all about. They walk in with \$100, which to them is a lot of money, and expect to walk out in a couple of hours with a production comparable to Richard Perry. Studio time around here may only run \$35 an hour, but the clientele cannot afford to spend 45 studio hours on one song. Reconciling these differences has been difficult, but many musicians are now buying their own recording equipment to save money. When they feel that they have their material down solid, we will go into a club with a half-track mastering unit and record them live, and in that way they get a quality product at limited expense.

On what other level do you work with bands?

Couture: We go into clubs and troubleshoot their equipment. We have videotaped performances so that the bands can work on appearance and presentation. We will suggest equipment changes and educate them on the benefits of EQ or anything that will improve their sound and stage presence. We will set up a combined system of sound, lights and video just to gain a working experience with the equipment so that we can discuss it intelligently with our customers. You

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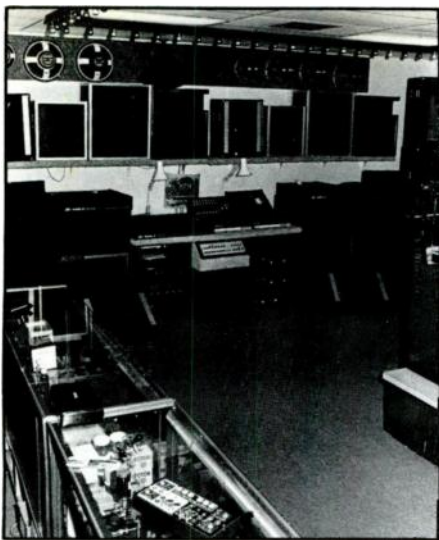
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can read all you want on mic placement, but you won't actually learn anything until you go out and do it. We will not recommend anything to a customer that we have not done ourselves. In effect, you would be lying to a customer if you make recommendations of which you have no personal knowledge.

What are the common problems that you encounter when troubleshooting most bands?

Couture: General ignorance in equipment match-up and EQ and in mixing. Basically, we try to offer constructive criticisms without getting into debates about matters of taste. Since our business is based on word of mouth, our advice must be sound, and cooperation means everything.

Wheeler: That is what separates us from our competition. We do a lot of work in the field, where our competitors won't leave the store. I would rather deal with a musician in his own atmosphere than try to explain abstracts to him in a store. Sometimes we visit a client in a club with a special effect that he will not let us leave with. Real time analyzers, mics and EQ can best be sold in the nightclub.

Couture: Where a customer may come in and show a sincere interest in a new product which we haven't tried in the field, we will allow him to try it out to see if it will do what we think it will do.

Do you go as far as having the service department disassemble a product to see if it stacks up to its specifications?

Couture: No, we don't go to that extreme. We will try the product, but specs don't mean much to us. Something can be off specs but still do the best job for that amount of dollars, so

we don't try to disprove the manufacturer's product.

Some dealers think it is their responsibility to inspect the goods and report back to the manufacturer, especially when rejecting a product. Do you have that sort of flow between Grice and manufacturers?

Wheeler: Oh yes. There are some reps that cringe when they call on us because they know they will get nothing but criticism from us. If we see something break down in the field, we won't handle it even if they push it at us. The feedback generates changes in

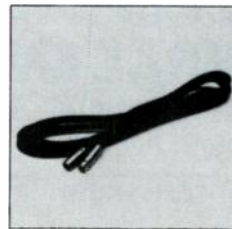
the equipment in some cases.

What is the nature of your hiring practices?

Couture: We are only a staff of four. All of us sell, but each has a specialty. I manage the department, handle the buying and the books, maintain contacts and work in the field. Dave is second-in-command when I am gone and Rick and Travis specialize in design and installation. Travis hires out as a soundman and stage manager and is currently working in that capacity for Black Oak Arkansas.

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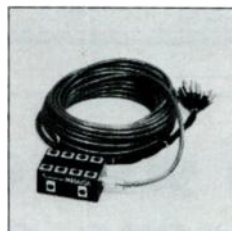
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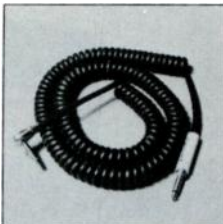
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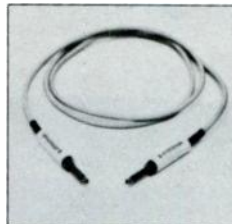
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sound and lighting for concerts and so it has been valuable to have an employee who can work those areas. Dave, on the other hand, specializes in studio work and therefore handles a lot of customers coming in to buy recorders, and Rick's forte is P.A.'s. We are not four hi-fi enthusiasts working on a job—we are all interested in the particular field that we work in.

There are four things I look for in a prospective employee: expertise in a particular field; a friendly attitude; the ability to remember if an idea works; and the ability to always be able to create excitement in making the same repetitious sales.

With the four of us, I would say that we do the work it takes 16 people in other stores to do. I get 150 percent interest and 120 percent work out of the others at all times.



What incentives do you provide the salesmen?

Couture: The whole department runs on a commission basis.

To what extent do you train the employees and keep them up-to-date?

Couture: Being as small a group as we are, all four of us work together and keep each other posted as to what's new. We have a meeting every morning to outline who is going to do what and to discuss new equipment. Very rarely does the public come in and tell us of something we hadn't heard of. We attend all of the trade shows to find out what's happening, and the reps are in constantly to conduct seminars.

What are your priorities in developing contacts with the public?

Couture: A good direct mail program to churches and discos will be helpful. The musicians are too spread out.

There is no entertainment magazine in this area to advertise in and the expense in trying to reach those few would be prohibitive. I would rather work on a rapport with the customers that we have and make a larger profit from less business as opposed to starting price wars and making less over a large volume of business.

The large discount houses thrive on selling equipment cheap and that is their drawing card. Our customers will pay more but get much more in the way of cooperation, service and expertise.

What is the first thing that you do in establishing a relationship with someone who walks in to buy a sound system?

Wheeler: We find out what it is that they want to create and visit the location to run tests on what they will actually need. We run pink noise analyzers, real time analyzers, EQ tests, and suggest acoustical improvement where feasible. Often times we are outfitting a club which has to be as architecturally interesting as the entertainment it supplies. So what we think is optimum sound-wise will not meet with the owner's aesthetic approval. When we are lucky, we get involved from the inception and counsel the builders on construction.

Do most of your clients have budgets to work with or do they spend whatever it takes to do the job properly?

Wheeler: In most instances we can provide what a client wants in his price range, but we will not recommend a "get by" situation. In some cases it becomes necessary to say to the customer, "If you don't do it this way, we want no part of it."

Couture: We initially try to put ourselves in the customer's position and find out what he wants without coming right out and asking him what he has to spend. After ten minutes you pretty well know what kind of pocket-book he's got and then you can select the best product within that price range. We will try to fill his needs from what we presently stock, especially where anyone of several products may fit the need. We don't handle a lot of different lines, but we would never sell the customer something that wouldn't work.

We keep a very clean inventory and you won't find one piece of our equipment on display for long. We won't keep what we don't sell on a regular basis. If something ceases to sell, we

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chop the price and move it.

Why would someone in Miami or Orlando or Texas call you and pay the extra expense in having you come out to do a job?

Couture: Word of mouth. The one thing that our clients will tell us is that they heard that we know everything about their particular situation.

Why wouldn't that person just go to a local dealer and save the added expense?

Couture: We have gotten calls from more than ten different states, and it is because they have heard we are the

most cooperative people to do business with. For instance, one club in Orlando was prepared to buy their equipment in Orlando at a cheaper price but went with us because we promised to install the system, teach them how to operate it and fully service it to our satisfaction as well as theirs. People are willing to pay more when they know they will never have to worry about the system working properly. Our clients believe that service is worth more than a 5 percent discount.

Do you find many walk-in customers afraid to ask questions for fear of

appearing unknowledgeable?

Wheeler: Yes, but even the experienced people find our display impressive. We demonstrate a complete assortment of special effects that everyone wants to see and learn about. When we spot someone who is intimidated by the display, we initiate his interest by pulling him over to show him what it's all about. When you spend the time to educate someone, he always comes back and he will also tell everyone else about the store. However, most people who come in here are looking for something specific, not just to look around.

What policies do you have for trade-ins and repairs?

Wheeler: As far as repairs are concerned, we fully service everything we sell and we will provide a replacement system while the unit is being re-

Dear DiMarzio,

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paired. If a client wants to upgrade his system, we will give him the full purchase price in credit towards the higher unit, although we usually recommend that he sell outright, and usually we know of someone who is interested in what he has.

What new trends are you experiencing?

Wheeler: We are selling more high quality mixers, signal processing devices and amplifiers with limiting devices.

Are your major accounts returning to upgrade and improve their systems?

Wheeler: Yes, we have a big add-on business. We keep an ongoing file on our customers, what they own, what they are buying, and by reviewing these files we will call on them from time to time and inform them of new developments. We will hear from many of our clients six to eight times a year.

CIRCLE 78 ON READER SERVICE CARD

INDUSTRY UPDATE

Roger Pryor has been named General Manager of Sony's newly established Digital Audio Products Division. He was previously manager of Sony's video products special project development section.

Musical Instrument Corporation of America's Marlboro Sound Works division has acquired the complete operating assets of Clifton Woodworking Corp. According to **Ed Finger**, President of M.I.C.A., the purchase "was based on the ever-increasing demand for Marlboro equipment." Current plans call for a doubling of production in 1979.

Don Johnston has been promoted to Sales Director-East of Fender/Rogers/Rhodes. He moves from the position of regional sales manager, Illinois.

All sales division responsibilities and general management of Soundcraftsmen have been assumed by **Ralph Yeomans**, President and Chairman, and by **Paul Rolfes**, Vice President. **Chuck Gassett**, one of three original principals in the company and general manager of the sales division, has left the company.

Marketing Manager **Frank Santucci** has left Orban Associates. **John H. Delantoni**, President and General Manager, is assuming Santucci's duties until the naming of a successor in early 1979.

Little Speaker Company, which manufactures loudspeakers under the name of Burhoe Acoustics, has appointed a national network of 12 representatives. The reps are: Pacific South Coast Marketing; Market Dynamic Sales Corp., Fahy Marketing Assoc.; Jack Goldman; G-Men and Associates; Karet-Senescu Assoc.; Marketing and Sales; Naeseth & Assoc.; Bill Newman Marketing; L.P. Marketing; Carolina Marketing Assoc., Inc.; and Audio Marketing.

Jon Sanserino has been named Director of Original Equipment Manufacturing Products at Aphex Systems, Ltd. Sanserino has previous experience with Heathkit, Multitrack, Control Data Corporation and Spectra-sonics.

Epicure Products Inc. has been acquired by the Penril Corporation, a supplier of data communications equipment, and producer of electronic test and measuring instruments and power supplies. Epicure will continue to operate from its present location "with no changes in management or policy."

Tonmeister Instruments Co., Inc. has been formed in Fort Lauderdale, Florida, with exclusive representations of Sennheiser (UPM 550) test instruments, the Woelke line of wow and flutter meters, A.M.S. digital delay lines, harmonizers, phasers and flangers, and Barth products. **L. Heinz Meyer** is president of the new company.

Snider Campbell Marketing has been named sales rep for the state of Hawaii for JVC high fidelity products and home entertainment products. **Legato Associates**, of Mt. Laurel, New Jersey, has been named sales rep for JVC high fidelity products. **Alexander Co.** of Washington D.C. has been named to rep JVC home entertainment products.

The topic for the 1979 Midwest Acoustics Conference will be "Digital Technology: Impact on Recorded Sound." The conference will take place at Norris Center, Northwestern University, on Saturday May 12. More information can be obtained from **William R. Bevan** at Shure Brothers.

Linday E. Freese, formerly northeastern sales representative with Rothchild Musical Instruments, has been promoted to Executive Assistant to **Paul A. Rothchild**.

Elliott Schwartz has been appointed Director of Sales for KLH Research and Development Corp. Schwartz was previously with Bose and Teledyne Acoustic Research.

Trusonic has established permanent headquarters in Fountain Valley, California. With the new facilities, the company is planning a re-entry into the home high fidelity and musical instrument speaker market, in addition to the present car stereo speakers.

Stuart A. Rock has been appointed President of Integrated Sound Systems, Inc., a subsidiary of the VSC Corporation. Integrated Sound Systems manufacturers and distributes GLI sound equipment. Rock was previously General Manager of the GLI division.

Louis Nanassy has been named Manager of Engineering for Sony's newly established Digital Audio Products Division. He had been national manager of Sony's broadcast engineering department.

Vincent A. Basse has been promoted to the position of Product Specialist for Fender Musical Instruments, with responsibility for further development and administration of training programs and product clinics for dealers.

Barry Goldman has been named National Sales Manager for TEAC Audio. Goldman, formerly national sales manager of Cerwin Vega, replaces **Joe Pershes**, who resigned his TEAC post. **Bill Mohrhoff** has been named National Sales Manager of TEAC Tascam Series. He replaces **Ken Sacks** who has also left the company. Mohrhoff held sales executive positions with Acoustic Control, Ampeg-Selmer and Ovation Instruments, Inc. before joining TEAC last year. **Roy Kamin** has been named National Training Manager of TEAC. He has been a member of the company's sales and marketing staff for three years.

Sonic Research, Inc. has named **George P. Petetin** U.S. Marketing Manager. He previously spent nineteen years at Pickering/Stanton and 2½ years as Vice President of Marketing at ADC.

David G. May has been appointed General Manager of Diversified Concepts, Inc. Sound Products Department, replacing **Philip B. Clark** who is now devoting full time to Special Projects, Research and Development.

Pat Donaghy has been named Marketing Administrator at Acoustic Control Corporation. He was previously a merchandising manager with CBS Records.

Brad Townsend has been appointed Regional Sales Manager for the Pennsylvania area by Fender/Rogers/Rhodes. **Paul Goossens** has been assigned to service dealers in the North Carolina-southern Virginia area.

Redwood Audio Manufacturers has appointed **Wayne Inouye** of NCM Marketing of San Carlos, California, the RAM sales representatives for northern California.

Robert T. Davis has been named Vice President of Professional Market Development at Altec Lansing. **Irwin Zucker** has been promoted to Vice President of Consumer Market Development. **Chris Christianson** has been named Vice President of Industrial Relations at the company. **Curtis Pickelle** has been named Director of Marketing Communications. Two new district managers have also been named by the company. **Cordie Miller**, based in Miami, will cover the southeastern states. **Bill Haddon**, based in San Antonio, will cover Texas, Louisiana, Kansas, Missouri, Oklahoma, Arkansas, and Mississippi.

Sony Industries has appointed **Frank Leonardi** Vice President of the Audio Division. He replaces **Gus Ishida** who returned to Tokyo.

KEF Electronics has appointed three new rep firms: **Theodore Pappas and Associates**; **RB Sales**; and **Al Moskau 7 Associates**.

Marc Finer has joined Sony Industries' Audio Products Division in the newly created position of Sales Training Manager.



1979

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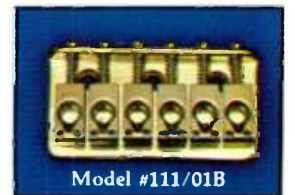
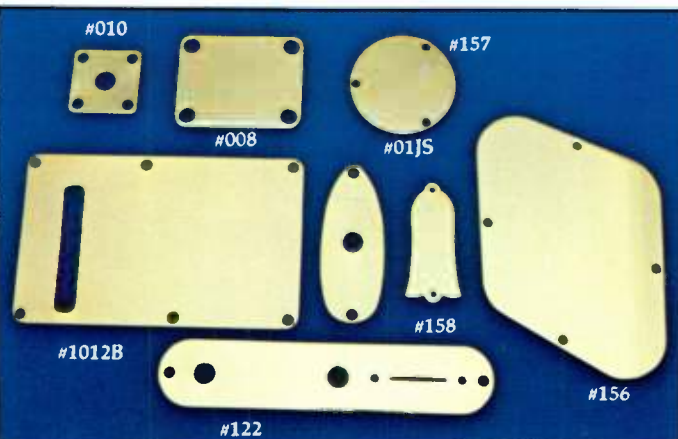
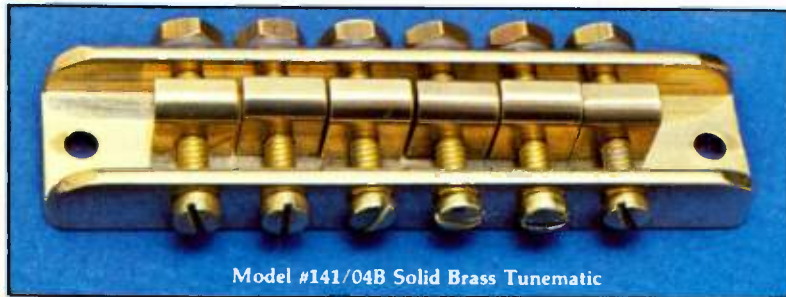
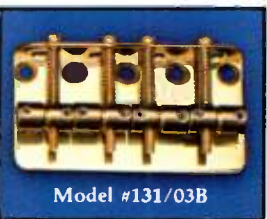
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It was soon realized that this mysterious sound was actually the result of a time delay causing the cancellation of certain harmonically related frequencies whose sweep could be controlled.

Later, it was also discovered that the same sound could be attained electronically by splitting the signal, passing one half through time delay circuitry, and re-combining the signals. The only setback was that this effect could be produced only with expensive electronic equipment, limiting its use to large recording studios.



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itself, and regeneration of the flanged signal for more intensity.

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