SERVING THE CREATIVE AUDIO AND MUSIC ELECTRONICS INDUSTRY

SOUND ARTS

MERCHANDISING JOURNAL

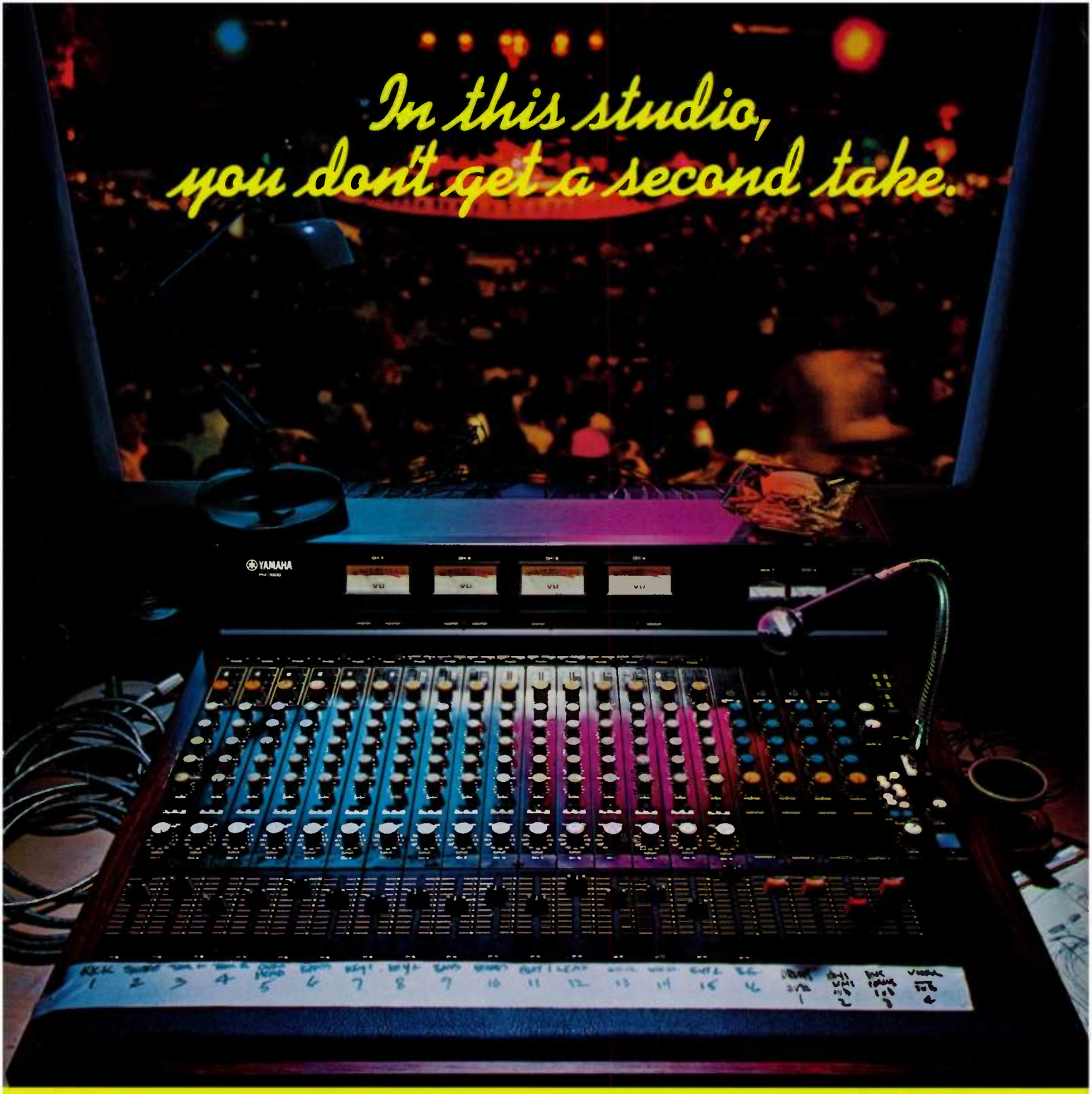
OCTOBER 1978
VOL. 1 NO. 9

What You Should Know About Studio Installations

Running a Repair Station

Big Sound, Little Sound: Qualifying for PA Systems

Selling Specialty Items



When you perform in front of a live audience, you put everything on the line.

That's why you're so careful in selecting sound reinforcement equipment. Because once the music starts, you can't afford to have it stop.

At Yamaha, we know that the show must go on. Regardless.

That's why we designed our PM-1000 Series mixing consoles to the highest standard of quality and reliability. Professional.

Whether it's our 16-, 24-, or 32-channel model, the PM-1000 Series is capable of surviving the kind of punishment and abuse that only "the road" can dish out.

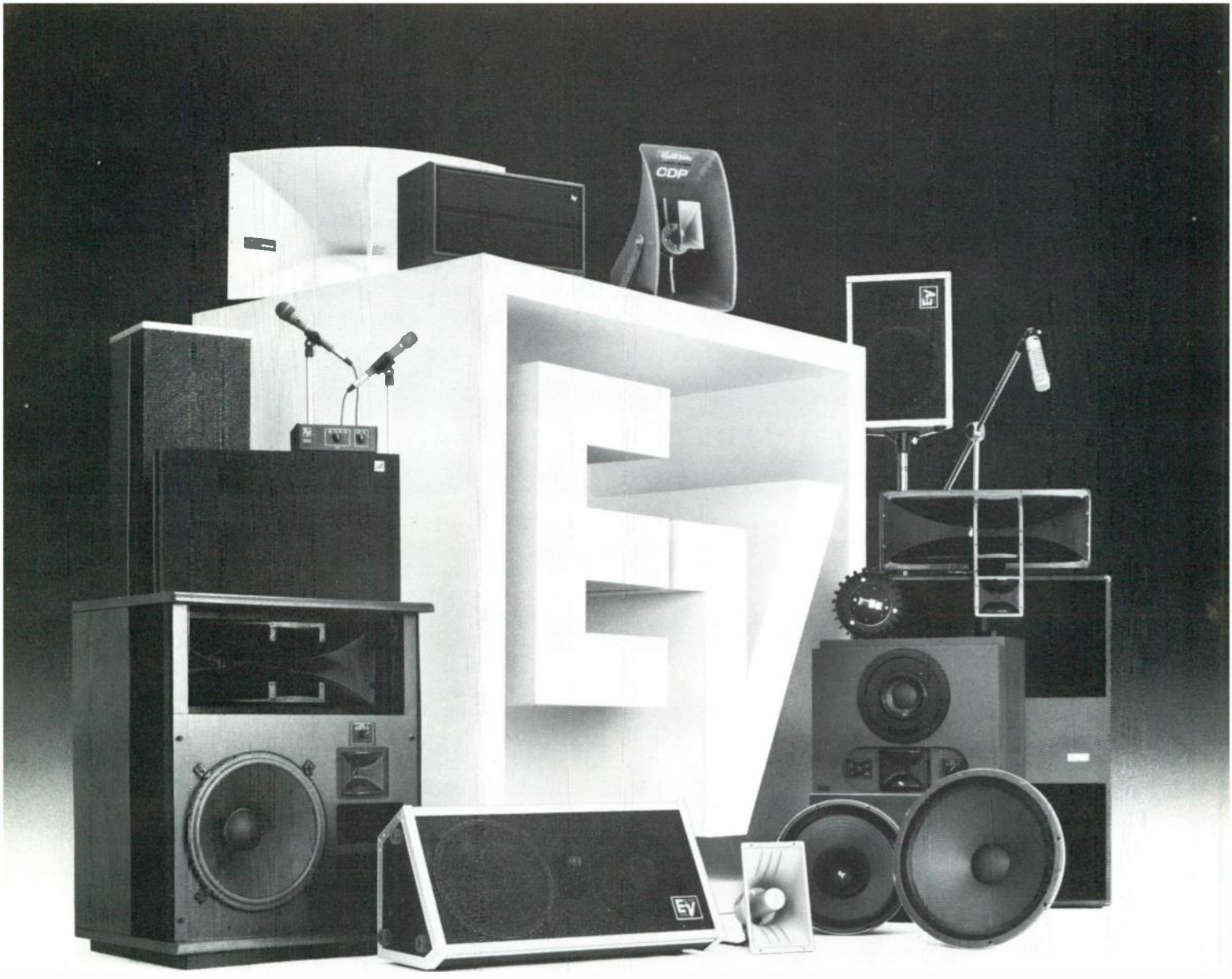
Tough isn't enough. Realizing that every job has different sound requirements, Yamaha also designed the PM-1000 Series for maximum flexibility. With features like an exclusive 4x4 matrix with level controls that allows four independent mono mixes.

There's also the complete complement of controls you'd expect to find on the most sophisticated consoles. Transformer isolated inputs and outputs. Dual echo send busses. An input level attenuator that takes the +4dB line level to −60dB mike level in 11 steps. Plus 5-frequency equalization. To give you plenty of headroom for clean, undistorted sound, the PM-1000 can drive a 600 ohm load to +22½dBm.

Get your band on the wagon. All around the world—night after night, gig after gig—you'll find Yamaha mixing consoles the choice of more and more professionals. People who don't regard professional quality as a luxury, but as a necessity. Your Yamaha pro sound dealer can give you all the reasons why you should join them.

YAMAHA

CIRCLE 93 ON READER SERVICE CARD



Listen to the Electro-Voice story. Your customers are.

As a dealer, you should be interested in the Electro-Voice story, because whether you are selling to the music market, the high fidelity market, the commercial market or the professional market, Electro-Voice is the leader.

The music that your customers listen to at home was probably recorded using Electro-Voice professional microphones and mixed using E-V Sentry® studio monitors. Is it any wonder that E-V Interface® high fidelity speaker systems are rated among the finest for home systems?

If music is your business, it's good to know that the famous EVM loudspeakers are not only standard in many manufacturers' "premier" lines of enclosures, but are the replacement speakers of choice by many concert sound men. These same speakers are standard in *every* Electro-Voice music speaker product. And E-V microphones are seen being used by more vocalists and instrumentalists on stage than ever before.

Commercial Sound? Think of installations like the Pontiac Silverdome, Yankee Stadium and the Las Vegas Convention Center. They're all Electro-Voice. No wonder so many contractors turn to Electro-Voice sound systems for their church, gymnasium and office building contract-sound installations.

If your business is selling sound, Electro-Voice has a story to tell! A story your customers will want to hear. A story that will make a lot of profitable sales for you. To hear the Electro-Voice sales story in person, contact Dave Rothfeld, General Sales Manager, Electro-Voice, Inc., 600 Cecil Street, Buchanan, MI 49107. Phone 616/695-6831.

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CIRCLE 83 ON READER SERVICE CARD

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

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. So if you'd like to explore your potential in this market, drop by the TEAC Exhibit at the AES Show Booth 1200. It could be *your* best idea.

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TASCAM SERIES BY TEAC®
A new generation of recording instruments for a new generation of recording artists.

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VOL. 1 NO. 9

SERVING THE CREATIVE AUDIO AND MUSIC ELECTRONICS INDUSTRY

SOUND ARTS

MERCHANDISING JOURNAL

OCT. 1978

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COMING NEXT ISSUE!

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Impedance Matching
Understanding Your Customer's Sound Problems

Cover Photo by
Jerry Hogersen

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SOUND ARTS

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A LETTER FROM THE EDITOR

If gestalt is your bag, this is the issue for you. The aim of any retailer—anybody, for that matter—is to have his share of the pie. The share of the retailing pie is dependent upon an integral whole—gestalt if you will—that is more than the sum of the parts of a retail operation. From initial financing of the store to diagnosing of an equipment malfunction, all facets of the operation coalesce into a presentation to the consumer that can be good, bad, indifferent and all points in between and beyond.

Precisely because of the versatility and multiplicity of ingredients of a successful retail operation, all those ingredients can't be covered in one issue of SOUND ARTS. We would then be a textbook and not a magazine and lose, I think, the immediacy we strive for.

We have, however, tried to cover several aspects of retail sales specifically geared toward this industry—from qualifying the customer to diagnosing that forementioned malfunction.

In "Big Sound, Little Sound," retail salesman Bill Robinette offers some tips on qualification and initial discussion with the consumer of a P.A. system. In "So You Want to Know...," Craig Anderton this month advises on the value and design of an A-B testing system for effects. It's a how-to piece on applying to this industry a sales tool that has been eminently successful in the high fidelity industry.

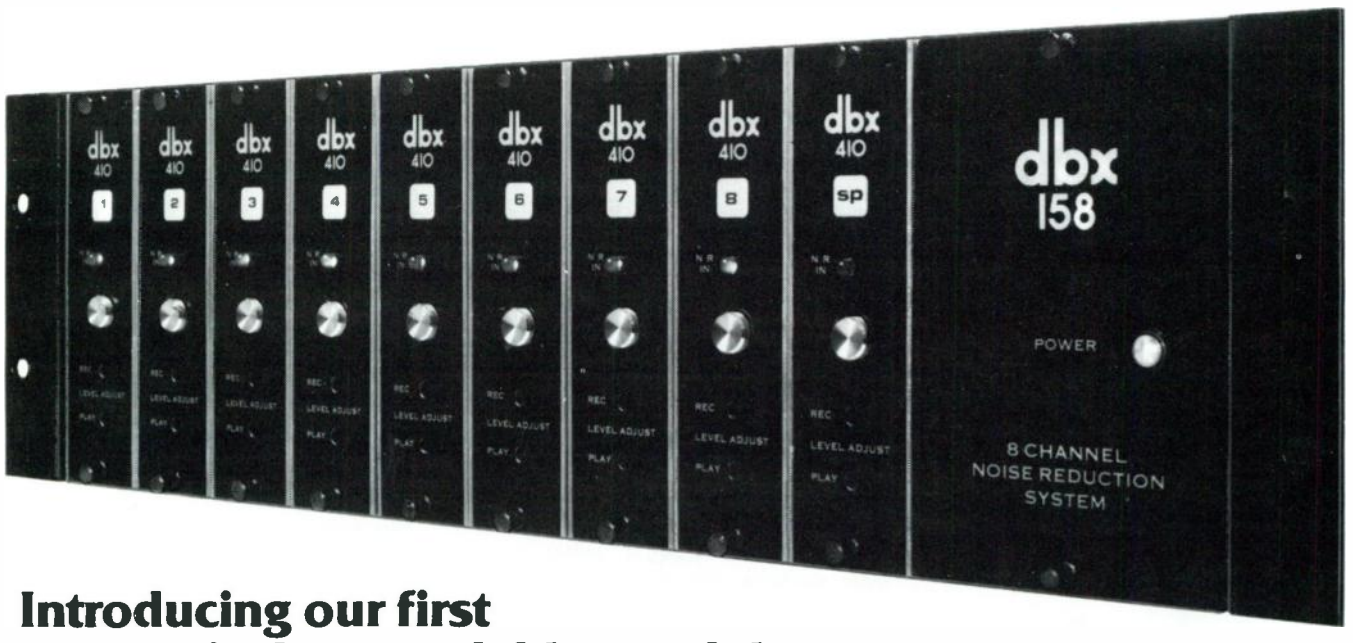
From qualification to concrete sales tool, we go to in-store moneymakers—specialty items of bags, boxes and straps, as Greg Houston has written about. High margins, high turnover, relatively low investment can all turn into consumer service if the merchandising is on target. And Greg sets his sights and shoots straight.

For those who have or are thinking of branching out, studio installations are discussed by a pro—Jerry Smith—from the initial money requirement to the nuts and bolts and hammer and nails.

After all is said and done, after the sales and the step-up and the installation, the repair station comes in. This month we are initiating a periodic series on the retail-operated repair shop, looking at it from differing points of view and, we hope, offering some salient advice and pertinent points. To start, Mike Beigel talked informally with the staff of a middle-sized retail operation about their repair routine specifically and about their concerns generally. It's a straight-talking discussion of the place repairs hold in the merchandising chain—where it is often the weakest link or at least the hardest to secure. So from qualifying the customer to repairing his gear, the savvy merchandiser puts together a whole enhanced by its parts. Gestalt is the word. Sales is the dance.

Regards,
Judith Morrison Lipton

dbx 158.
IT'LL GROW ALONG WITH YOU.



Introducing our first economical, expandable, modular, simultaneous tape noise reduction system.

Now you can have a tape noise reduction system that will stay with you from high-end audiophile, through semi-pro and into full professional equipment.

Our new dbx 158 system can start life in your place with the 158 main frame and as few as two modules or as many as eight modules for its full eight channel capacity. It also has storage space for a ninth spare module in its compact chassis. The rear panel has phono and multi-pin connectors that will interface directly to your cables. Additional 158's can be used for 16 or 24 track recording.

The dbx 158 offers the semi-pro recordist or small studio all the advantages of dbx professional systems, including 30 dB of noise reduction, and 10 dB additional recorder headroom. It's a classic 2:1 mirror image compander which preserves the full dynamic range of program material without audible tape hiss. Each module contains separate record and playback noise reduction electronics. Its simultaneous record/playback capability permits the noise reduced, decoded tape to be monitored while recording without manual switching or remote control.

Requiring only 5¼" of rack space, the 158's light weight (17 lbs.) makes it easily portable for location dates. And naturally, tapes recorded with this system are compatible with any other dbx professional tape noise reduction system as well as on board dbx tape noise reduction in TEAC/TASCAM recorders. We'll be happy to send you further information and the name of your nearest dbx dealer. Just write us.

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Here's a generous offer: buy all 8 channels up front, and we'll throw in the ninth module free.

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FORUM

Your magazine is the most informative publication I receive at my store. I want to keep all back issues to use as reference material for my customers and myself, but I have never received Vol. 1, No. 1 or No. 5. Would you please send me these issues? Keep up the good work.

Sincerely,
Paul Gill
HiFi Corner
Louisville, Kentucky

Being a small company and a newcomer to the music industry, it was a pleasure seeing your write-up on our company and its products in the NAMM article (August, 1978). Moreover, we were impressed with the fact that your comments were comprehensive, succinct and accurate. Well done.

Yours truly,
R. Dale Scott
National Sales Manager
HM Electronics, Inc.

Thank you for your response to my request for copies of the May issue of Sound Arts Magazine, which we were glad to get. However, we did not receive either the June or July issues. Would it be possible to get copies of the back issues that I have detailed above? I certainly hope that you don't think me a nuisance, because I do like my employees to read your magazine, and I think we get a lot out of it.

Thanks again.
Garry Brown
G. B. Sound
Burlington, Ontario

Your August '78 issue of Sound Arts featured a story entitled "Disco Sound Installation." I would like, if possible, to reprint the article in full for use in a self-promotion effort. The promotion would simply consist of a mailing which would include current product literature and the reprinted article.

I am delighted with your publication and the story and would be extremely grateful if you could extend us the opportunity.

Very truly yours,
Richard F. Long
President
Richard Long and Associates Inc.

Just a note to let you know how much we appreciate your sending us SOUND ARTS each month. I would like to offer you congratulations on your fine magazine. I think it is one of the most informative and well put together magazines I have seen. Thank you again, and good luck in the future.

Sincerely,
Stuart Moskowitz
Manny's Music Store
New York, New York

We would like to take this opportunity to express our sincere thanks to you and Charlie Lawing for the outstanding coverage of our new FF-1 Frequency Follower. We have already received several phone calls from your reader service cards. Thanks again for your help. We hope SOUND ARTS will continue to grow and prosper.

Sincerely
Alan S. Pearce
President
Polyfusion, Inc.

SOUND ARTS is a super concept! Especially now during a new era of electronic sophistication and distinction from the general music industry. What pro audio dealers (and manufacturers) desperately needed was a "textbook" publication. SOUND ARTS deserves rich and hearty congratulations.

Kind Personal Regards
John T. Gollehon
President
Gollehon Industries, Inc.

TEAR HERE

TERMS:

A CONTINUING INDUSTRY GLOSSARY

RECORDING

By Larry Blakely

The access provided by the *Mic Pre Out*, as described last month, allows an individual microphone input to be routed through a compressor/limiter, outboard equalizer, etc. when connected between the mic pre out and the line in jacks.

With a limiter connected as above, the singer sings into the microphone, the microphone level is increased to the line level via the microphone preamplifier, and mic preamplifier output is then directed into the compressor limiter input. The signal is then processed and the compressor limiter output is connected to the console line input which returns the compressed vocal signal into the console input strip. By using this method, a single vocal mike (for example) can be compressed or limited individually without compressing any other instruments or vocals in the mix. When the compressor limiter is removed (disconnected from the jack strip), a jumper would normally be placed between these two jacks to allow the mic preamplifier output to be routed directly to the line input of the recording console.

Large recording consoles utilize what are called "Normals" on their patch bays which do not use the jumpers mentioned above. In this case, if nothing were connected to the patch bay, the signal would be routed for normal operation. When patch plugs are inserted in the mic pre out and line input jacks, the normal signal path would be re-routed and the signal would pass through the device which was connected to those two jack points or patch points.

Looking further into the recording console, we have the following:

Mixing Amplifier: Yet another term for combining amplifier.

Summing Amplifier: Another term for combining amplifier or mixing amplifier, all of which are used interchangeably.

ELECTRONIC MUSICAL INSTRUMENTS & ACCESSORIES

By Mike Beigel

Exponential VCA: The ratio of the signal gain to the control voltage is an exponential function, so the output voltage is related to the control voltage in terms of dB (decibels) per volt.

Two-Quadrant VCA: The signal input to this type of VCA can be an AC signal, but the control voltage must be between zero and some positive voltage. Therefore, an AC signal such as a low-frequency oscillator cannot be used "as is" to control another signal. However, Two-Quadrant VCA's suffice for most musical uses. The usual configuration is an Envelope Generator for the control voltage and a signal source for the AC input voltage.

Four-Quadrant VCA or *Analog Multiplier:* This type of VCA can have an AC signal applied to both its signal and control inputs. Four-Quadrant VCA's are often used as "ring-modulators" in which two audio oscillators are "multiplied" to give interesting resultant sum-and-difference tones. Many bell-like sounds can be derived by this technique. These VCA's are generally *linear*, not exponential, amplifiers.

Analog Sequencer: Consisting of a number of sets of knobs (representing time-lengths and control voltages), these sequencers are usually limited to relatively short sequences (16 or fewer events). They are relatively inexpensive, and each parameter can be modified while the synthesizer is being sequenced.

Digital Sequencer: These sequencers use a computer-like memory and expensive analog-digital interfaces. They allow the musician to store complex and lengthy sequences of musical material. The sequences, usually "keyed in" by playing at the keyboard, can be edited and modified in many ways. Their capabilities justify the higher price, but they do not make analog sequencers obsolete.

SOUND REINFORCEMENT

By Glen E. Meyer

Decibel: Abbreviated as dB, is a unit of level equal to ten times the logarithm of the ratios of two powers ($N_{dB} = 10 \log (P_{out}/P_{in})$) or is equal to twenty times the logarithm of the ratio of two voltages or pressure ($N_{dB} = 20 \log (V_{out}/V_{in})$). When a specific reference power or voltage is used, the decibel symbol is followed by a letter indicating the reference used,

Sound Pressure Level: Abbreviated as SPL, is the acoustic pressure or loudness of the signal expressed in dB.

Fletcher-Munson Curves: A set of frequency response curves of the human ear showing its characteristic at different intensity levels. It graphically shows that our ears do not respond equally to all the frequencies in the audible range. At low SPL we hear best in the region of 2,000 Hz to 5,000 Hz, while the very high and very low frequencies are attenuated. (A "loudness" switch in a hi-fi pre-amp is an attempt to compensate for this characteristic.) At high SPL's the ears become more sensitive to both the high and low frequencies, giving the ear a more flat response.

dBA: The weighting or frequency filtering in a SPL meter that has the approximate response characteristics of the human ear at low sound pressure levels. It is the most commonly used weighting.

dBC: The weighting or frequency response contouring in a SPL meter that has the approximate response characteristics of the human ear at *high* sound pressure levels.

dBm: Indicates that the stated level is with reference to 1 milliwatt of power in a 600-ohm line.

dBV: The decibel voltage in which the reference voltage is 1 volt or sometimes 0.775 volt.

Threshold of Hearing: 0 dB-SPL, zero reference level, or the lowest sound pressure level that a listener with healthy ears can detect. It is

TERMS: (CONTINUED)

A CONTINUING INDUSTRY GLOSSARY

RECORDING

Phones: Again, another word used sometimes to label a Cue Send or Fold Back feature of a recording console. As one can see, the terms Cue, Phones, and Fold Back can be used synonymously in as they are all one and the same. However, on some recording consoles, there may be a jack which is labeled "phones" (which is a place to plug in headphones for monitoring purposes). This obviously is not the same as the Cue, Phones, and Fold Back described above.

Mixing Buss: A combining system that utilizes combining amplifiers most commonly with switches to route a certain signal to a number of different combining amplifiers. For example: The cue send system that was described before would feed signals from any input and any mix or balance you desired to the musicians in the studio. However, everyone hears the same signal or mix. Perhaps the drummer does not want to hear the bass part or vocals, but the other musicians do. A more exotic cue send system utilizes selectable mixing busses (mix busses). Such a feature, for example, could have the cue send pot (control) and beside it two switches labeled Cue-1 and Cue-2. These would be two mix busses. You now have the flexibility to drop the bass and vocals for the drummer by using Cue-1 (buss) and let the other musicians hear the entire music mix that has likewise been selected via pushbuttons to the Cue-2 (buss). This flexible system allows different selections of console inputs to be fed to two separate headphone systems. This is accomplished through switchable (selectable) mixing busses. Some large studio recording consoles have four selectable (switchable) cue send busses.

A recording console is a system of switches, combining amplifiers, mixing busses, level controls, and amplifiers to allow the operator the flexibility to creatively express himself and the musicians by making a painting of recorded sound.

ELECTRONIC MUSICAL INSTRUMENTS & ACCESSORIES

Categories of Synthesizers: Synthesizers have evolved into a number of commonly recognized categories, according to the type of circuitry used, methods of construction, and form of control mechanism employed.

Modular Synthesizer: Each basic function of the synthesizer is built into a separate, self-contained package (VCO, VCA, Env Gen, etc.). An arbitrary number of these "modules" can be combined in many different ways for systems of great complexity. The original voltage-controlled Moog and ARP synthesizers were all modular. Modular systems are still being built, and are popular in advanced studio systems.

Solo Synthesizer: A synthesizer which has basically one "voice" (though it may have two or more oscillators). Generally used as a "melody" or "lead" instrument, it can be quite sophisticated.

Preset Synthesizer: A synthesizer in which a number of attractive or commonly-used sound "patches" have been pre-programmed into the unit, and are each available by pressing a single button. Generally, these "presets" are not user-alterable except for certain parameters.

Programmable Synthesizer: A new generation of equipment allows the best aspects of "patched" and "preset" synthesis techniques through computerized technology. Each sound-configuration is developed under the musician's full control, and then "memorized" by the synthesizer programmer for instant recall at a later time, along with other stored "programs."

Digital Synthesizer: Inside this type of device (which will become more popular in the future) all signals are represented by binary numbers— combinations of the "zero" and "one" states of switching circuits. Essentially, this type of synthesizer is a special-purpose digital computer. A digital-to-analog converter at the output produces recognizable musical signals.

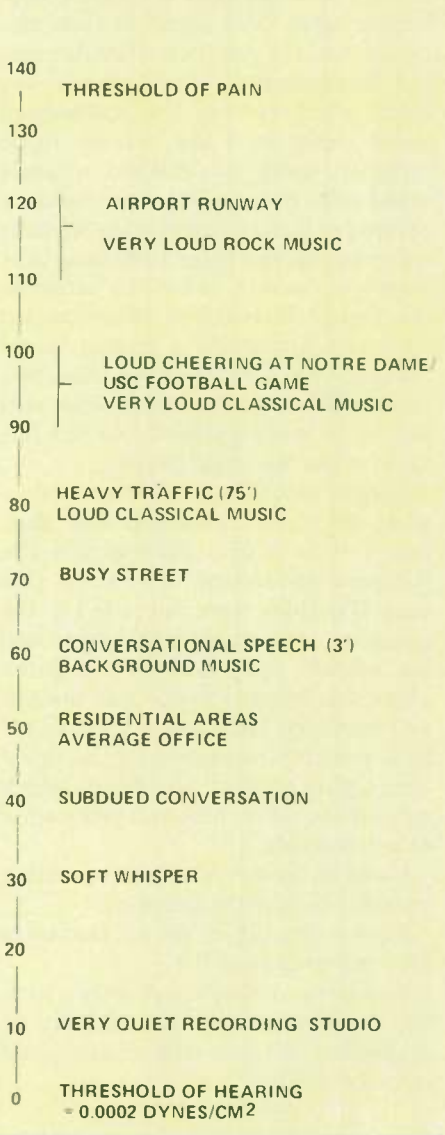
SOUND REINFORCEMENT

equal to a sound pressure of 0.0002 dynes/cm², 2×10^{-4} ubar, or 2×10^{-5} Newton/M².

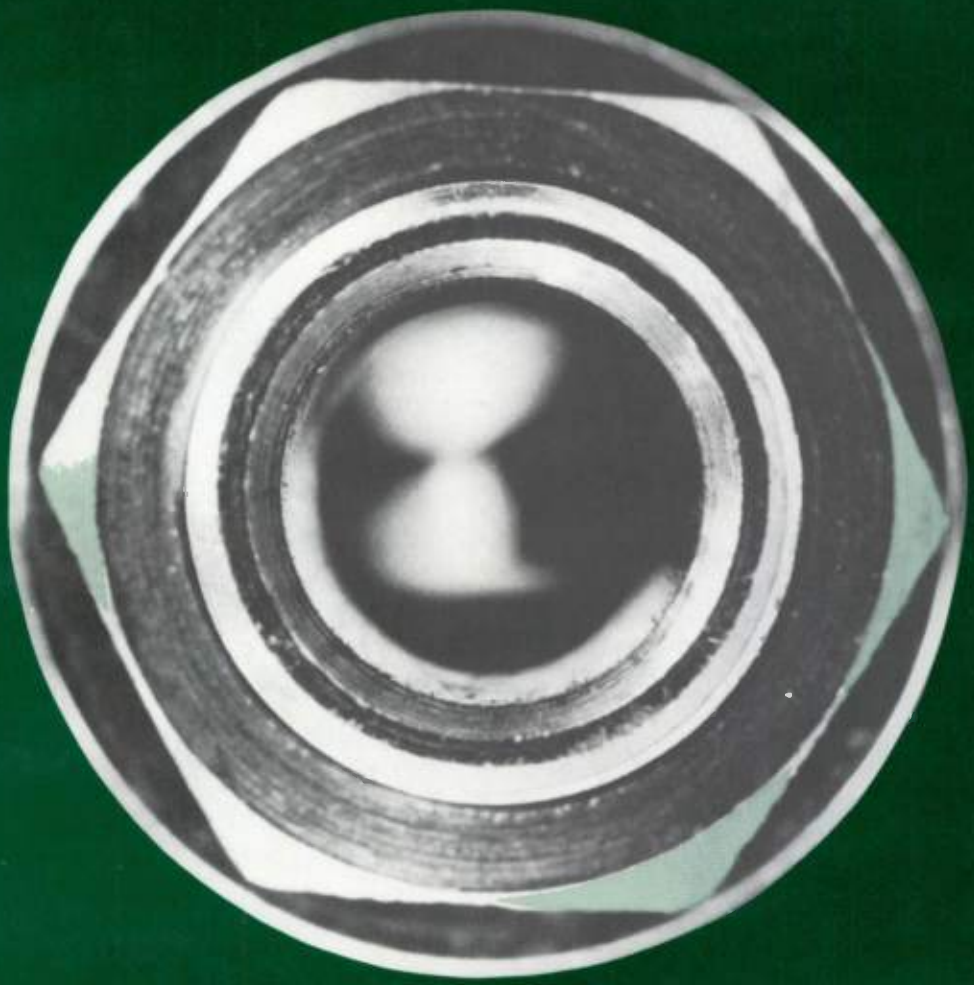
Loudness Increase: In order to give a definite impression that there is an increase in loudness of a given signal, the output level needs to be increased about 3 dB.

Perceived Loudness Doubling: To double the perceived loudness, an output level increase of about 10 dB is needed.

Typical Sound Pressure Levels:



This door represents expanded realms of creativity.



MXR opens this door.

MXR has made a commitment to itself, its customers and the future of the music industry—that is to continue as the leader in the field of electronic signal processing.

MXR Professional Products Group

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

CIRCLE 86 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 of repair and maintenance and correction of customer misconceptions. Send your contributions to SOUND ARTS MERCHANDISING JOURNAL, 14 Vanderventer Avenue, Port Washington, New York 11050.

(2)

MICROPHONES ELECTRICALLY OUT OF PHASE

Microphone problems such as erratic frequency response, poor bass response or low output may result from microphones being wired electrically out of phase with respect to each other.

Check the disconnected cables with an ohmmeter (or better yet, a cable tester) to verify that the wiring to pins 2 and 3 are not inverted at one end. Also, the microphones themselves may be wired out of phase.

(3)

Plug the two mics in question into a mono sound system. Talk out each microphone individually from about one foot, noting the level with level controls at the same settings. Bring the two mics right together. Now talk into the pair from the same distance. If the mics are out of phase, their combined output will drop.

GREG SILSBY
ELECTRO-VOICE

BALANCED INPUTS

4

Don't be too quick to assume that because your customer bought microphones from you with low impedance balanced outputs you will now be free from noise pickup on the microphone lines. He may be terminating the cable with a 1/4" 2-conductor phone plug or you may find that his mixer or mixer amplifier utilizes XLR connectors but has no transformers inside to maintain a balanced line. Some equipment manufacturers use these connectors (wired

5

unbalanced internally) strictly for standardization and reliability reasons.

Some balanced inputs are balanced by the use of differential amplifiers on the input, rather than by transformer couplings. Such inputs, though balanced, may still prove incapable of rejecting significant amounts of radio interference or other noise.

GREG SILSBY
ELECTRO-VOICE

FIRST CHECK

6

Problems most often seen by dealers servicing tape recorders include the most basic. Check first for:

1. Pitch control in wrong position.
2. Timer function set on.
3. Cassette recorder set on full auto stop.
4. Adjustments set incorrectly for either 2-track or 4-track.

GARY MANZO
TECHNICS

What is "real time"?

Real time could be defined as the actual time during which something takes place. For the purposes of audio electronics, phenomena are described as occurring in real time if they keep pace with our perception of events in actuality.

Traditional acoustic analysis for the purposes of equalization has been limited to "after the fact" plotting of sonic processes. Numerous measurements of the sound pressure level in dB of prescribed frequencies had to be taken at specific points in the listening environment. It was then possible to chart the environment's frequency response.

This sampling procedure could be viewed as "slow-motion" when compared to visually comprehending aurally perceived sonic phenomena as they actually occur, i.e., in real time.

While recognizing that any acoustic/time analyzer takes some finite length of time to digest and display the data received, it is possible for some devices to acquire and store more data while processing the previous batch. Thus a continuously updated spectrum (each slightly "out of date" when generated) is visually available.

For instance, the Crown RTA-2 Real Time Analyzer responds in one sixth of a second showing the user the amplitude and frequency response of an entire system in what, for all practical purposes, is real time.

Murray Young
Crown International

Why is higher speed (15 or 30 ips) recording preferred?

Frequency response is improved at each successively higher tape speed because the signal is recorded over a longer piece of tape. Other advantages of higher speed recording operation are:

When recording at 15 ips, as compared to 7½, all audio frequencies can be recorded at full level without saturating the tape. The result is about a 6 dB improvement in signal-to-noise ratio at 8,000 Hz. Similarly, 30 ips offers another 3 dB over 15 ips at 8,000 Hz and 6 dB at 16,000 Hz. Thirty ips also improves transient response because of the spreading out of the wavelengths and reduces several high frequency problems as well, such as track-to-track phasing, dropouts, azimuth angle errors, and losses due to tape and bias differences.

On the flip side of the coin are higher tape costs, which at 30 ips are, naturally, double those of 15 ips; reduced low frequency response because of head bump (which now occurs at 60 Hz instead of 30 Hz); and higher frequency of the print through. Absolute print through will also be increased if you use 30 ips and choose a thinner base tape to increase playing time. Besides, noise reduction systems like Dolby or dbx can get you a 10 dB to 30 dB signal-to-noise improvement at 15 ips, and most recording engineers seem to feel a signal-to-noise improvement nearly always buys you more than some of these other fringe benefits (particularly with eight or sixteen channel recording where signal-to-noise and cross talk are more of a problem).

David R. McClurg, Consultant
Otari Corporation

What are the types of amplifiers used in electronic music and sound reinforcement and how do they differ?

Amplifiers are classified into several types, which are determined by the operating parameters and/or the construction and components of the amplifier itself. All amplifiers are made up of one or more stages (individual circuits or sections) which each amplify the signal.

Class of operation refers to the operation of an individual tube or transistor and it describes *how much* of the input signal is amplified. If the *entire* input signal is amplified, the output signals will be identical in waveform to the input except the output signals will be larger, or stronger. An amplifier that does this is known as a class A amplifier.

A tube or transistor operating as a class B amplifier only amplifies *one half* of the input signal: either the negative or positive half of the wave. To avoid distortion which would result from amplifying only half the signal, two transistors, or tubes, may be used in a tandem sort of arrangement called a push-pull circuit. In the push-pull circuit one transistor amplifies the negative half of the signal and the other transistor amplifies the positive half. This results in the entire signal being amplified.

Class C amplifiers amplify *less than half* of the input signal and are generally not used where high quality audio reproduction is needed. However, these amplifiers are used for some special applications, such as radio transmitters, where a high energy efficiency is required.

Besides class of operation, other designations are used to describe amplifier circuits. One circuit often found in electronic music equipment is the voltage controlled amplifier, or VCA, in which the gain or output is controlled by a control voltage, which may come from a different area of the system.

The Op-Amp (short for operational amplifier) is a simple-to-use amplifier circuit, which is generally built into an integrated circuit. It contains all the needed semiconductors and associated parts to form a complete amplifier circuit, and needs only to be connected to the input, output, and power supply leads. Usually Op-Amps are not used where a high power output is needed, but they can be used in the earlier stages of power amplifiers, mixers, and other electronic music equipment.

A differential amplifier will amplify only the difference in signal level between its two input leads. This difference in level is actually the wave of the input signal. Any external noise or hum picked up by the input circuitry will not be amplified, since it will appear on both leads and there will be no difference between the two leads.

Neil Lewbel
Consultant, Technical Writer
Kew Gardens, NY

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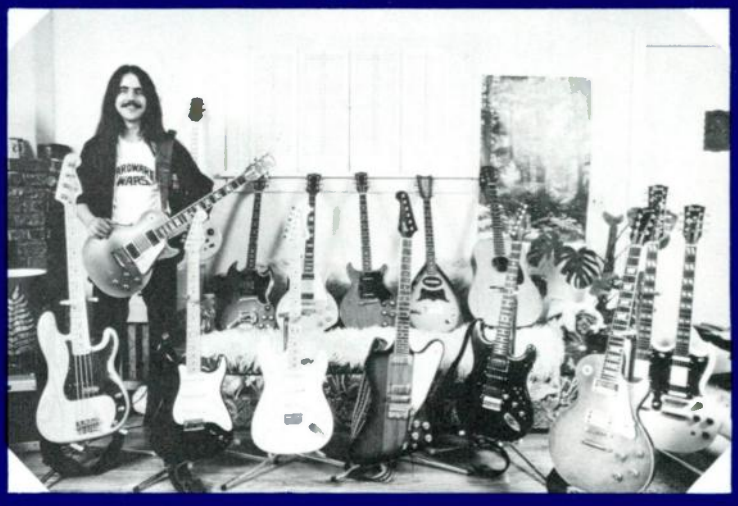
COLLECTEM



By Jon Sievert

This month's featured guitar collection belongs to the Jefferson Starship's fine young lead guitarist, Craig Chaquico. Craig calls it a working collection. "I don't collect for the sake of hoarding. It's a small but functional collection. I try to use all of them."

Chaquico, 23, has been playing since age 10. He joined his first working band while still in high school in Sacramento. His English teacher, Jack Traylor, also happened to be a singer/songwriter who was impressed by Craig's playing and invited him to help form the group, Steelwind.

Unbeknownst to Craig, Traylor was also a man with connections. "After we'd been playing together for awhile," relates Craig, "Jack said, 'Let's go down to San Francisco. I've got some friends there I'd like to jam with.' " The friends turned out to be Grace Slick and Paul Kantner.

Traylor played them a tape of one of his tunes, "Earth Mother," and Kantner "flipped" over it. Shortly thereafter, on his 16th birthday, Craig made his recording debut on Grace and Paul's "Sunfighter." He subsequently appeared on six more Grunt albums including Steelwind's own "Child of Nature" (BFL 10347). When the Starship eventually evolved into a working, touring band, Chaquico was tapped for the lead guitar spot where he continues to exhibit growth.

GUITARS

1957 Les Paul Gold Top (Craig is holding it): "I still consider this my main guitar. I've recorded more with it than any other. Just about all of "Red Octopus" and "Spitfire" was done with it. It's basically pretty stock with the original finish and pickups though Glenn Quan has done some work on it—mostly maintenance things. It's the heaviest Les Paul I've ever lifted. I got it from Norman Harris in Los Angeles."

Left to right in picture:

1960's Fender Precision Bass: "This is not a particularly old Precision but it's a really good one. It sounds very good recorded directly into the board."

1957 Fender Stratocaster: "This is almost an exact duplicate of Clapton's "Blackie." It's got a maple neck and the finish is all original. The only thing that is not stock on it is an Alembic booster that fits in where the original jack was so it can be returned to stock. I've used it on the road some and on a few cuts here and there for that Fender sound. You can hear it on "Big City" on the "Spitfire" album."

1960's White Fender Stratocaster: "I use this primarily as a spare road guitar."

1963 Gibson Firebird: "I got this in Bowling Green or Green Bay. I just remember the initials of the town were BG or GB. I always check out music stores and hockshops when I go into a new town if I have the chance. I asked this guy in one store if he knew of anybody with old guitars for sale and he had a friend of a friend who played in a country band who had one to sell. So I went out to this little roadhouse and waited for three or four hours for this guy. The wait paid off. I got it real cheap and it's in absolutely mint condition. I played it on "Show Yourself" on the "Earth" album."

1978 Boogie Bodies Stratocaster: "I just got this guitar today. I ordered it for the "Earth" tour because it's completely black with silver accessories—the same color as the album. The neck is ebony and whenever I see a picture of myself playing, I'll know it was from the "Earth" tour. Now all I have to do is figure out how to keep Paul from wanting to play it. He's really into all-black."

1959 Les Paul Sunburst: "This is my most cherry guitar. Everything on it is original with the cream patented-applied-for pickups. I used it almost exclusively on the "Earth" album but I'm afraid to take it on the road."

Ibanez Double-Neck: "I got this from a music store in Sacramento. I used it most recently on "Runaway" ("Earth"). I used the 6-string for the verses and the 12 for the chorus."

Back row:

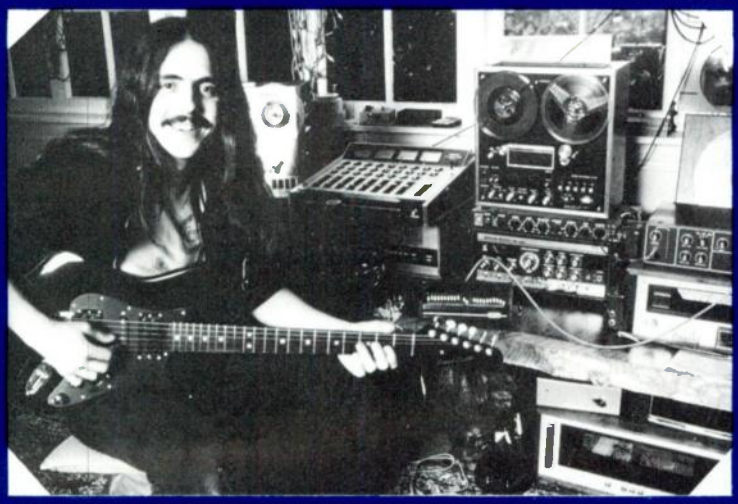
Gibson L-6 (partially obscured): "This is a really good guitar for being so new. I used it on "Dragonfly" quite a bit. It's very reliable."

1957-59 Gibson SG: "I just scored this from one of our road crew. Eventually I'd like to put John Cippolina-type pickguards on it to make it look like a real San Francisco Special."

Gibson Les Paul Gold Top (early 60's): "I basically use this as a spare for my other gold top when I'm on the road. It looks a lot like the '57 but it's definitely not the same. For one thing, the '57 has a one-piece neck but this

TORS

Craig Chaquico's Musical Instrument Assemblage



one has seven pieces."

Gibson Les Paul TV model: "I'm thinking seriously of taking this out on the road with me instead of the '57 just because of the weight factor. I love the '57 but it's giving me bad posture because it's so heavy. This has the old-style single-coil pickups and it sounds really neat. The pickups did tend to hum a bit so I took it to Larry Cragg (Prune Music, Mill Valley, CA) to have them shielded. Now I get more highs and lows than you can get from a stock humbucker."

Danelectro Bellzouki: "This is my one real oddball. It's got ten strings and was designed after an old instrument called a bouzouki or bazouki or something like that. The body is masonite. I don't play it much."

Martin D-18 (early 60's): "My only acoustic guitar. I also got this from Norman Harris. I used it on "Count On Me" and "Love Too Good" on "Earth." It's just a fine sounding guitar."

AMPLIFIERS

"I've got six Fender blonde Bassmans that are just cherry. I used to have two more but they were ripped off out of Winterland. Bill Graham gave me $200 to replace them which would just about cover the cost of the tubes. I've been very careful with them since then. I use one on the road and mike it because it sounds so good through the PA.

Fender Tweed

Epiphone Electra Zephyr: "This is a totally outrageous amp. It's maple with inlaid rosewood strips. I don't know how old it is but it sure sounds good."

HOME RECORDING SET-UP

"It is basically a home stereo set-up with a four-track recording studio. It has all the basic home components, e.g. turntable, FM receiver, etc. Also has a Sony 4-track plugged in the auxiliary of the ESS pre-amp. Sony 2-track plugged in AUX 2. Sony cassette recorder plugged into cassette input. Plus an MXR graphic equalizer that can be plugged in anywhere along the system. I've got an 8-channel Sony mixer. Actually the 4-track is plugged into the mixer and the mixer itself is plugged into the pre-amp. Helm pre-amp with four different curves. It has bass, midrange and treble controls with 12 dB boost plus or minus. Position control for the midrange so you can pick what part of that range you want. I use that to plug my rhythm ace to get my bass drum sound. Telegraph key—Rhythm Ace—Helms pre-amp. Delay multi-flanger. I use a cardboard box for the drum. I strike the box with a microphone next to it and I run it through the delay to fatten the sound and give it a little room echo. I also use it for vocal doubling.

"I have an ESS 500 watt power amp for the lows—my system's bi-amped—and a 70-watt Dynakit that goes to the highs. Now in my speaker columns I have 10" JBL's and ESS towers for the lows. I have Heil air-motion transformers for the highs—those are really hip by the way. Plus I've got a Space Echo which is plugged into the mixer so I can run vocals. Also I've got two ADS 300's right in front of the mixer so I hear mixdowns on small speakers. Some friends of mine at Good Kharma made these small 50 watt power amps. I have one for each speaker. The unit is about half the size of a carton of cigarettes. They sit right in front of my mixer with the ADS's on either side. My demo tapes are the highest quality of anybody in the band. When I bring my tapes to rehearsal they've got all the drum part, the bass part, all the rhythm parts and a couple of ideas for vocals.

"I use the 4-track as much as possible—get as much info on there as I can—then I mix down to mono or sometimes stereo to the two-track. So I combine when I'm mixing down to the two-track and I just take the tape itself off the two-track and put it on the 4. That way I have three open tracks left. I can keep going quite a few times that way. I can also to the tape while it's being transferred from 4 to 2 track. Sound on sound.

"For example, there's a tune that we're going to do on the tour that wasn't on the album called "Temples and Pyramids." When I took that to rehearsal it was on a third-generation cassette mixed down to stereo. I had one guitar on the left channel, one on the right, a right cymbal, a high hat, maracas in stereo, a cabase, a scratcher, bass guitar, snare with time delay, kick drum EQ'd through the Helm pre-amp to make it sound fat, a tambourine, two vocals in stereo. There was also phasing and time delay."

So... U want to know about A-B Testing

By Craig Anderton

A-B testing is, of course, a process which allows a comparison of two pieces of audio equipment. A hi-fi store will usually have some sort of switching gizmo to switch between the "A" and the "B" speakers (or as is more likely the case, dozens of different speakers). This allows the customer to concentrate on a specific feature of the sound of one speaker (for example, the low frequency definition) and then immediately switch to the other speaker for an instant comparison.

Customers like to be able to compare various devices, for many reasons:

The customer gets to participate in the actual selling of the piece of equipment. If one device sounds much better to a customer than another device, the selling job has been done—by the product and the customer's ears.

People have very different tastes. Let's say you're comparing two fuzz tones; there is really no such thing as a "best" fuzz, and what may sound beautiful to one person will sound terrible to another. Again, comparison helps to create an informed (and satisfied) purchaser.

People remember the store as one that made it easier for them to check out their purchase, and to have an informed opinion about what they're buying.

It would be nice if your clientele could instantaneously compare the tone of guitars, the sound of effects, the power handling of two different speaker baffles . . . but here we run into some bad news: I know of no commercially available device made for stores who want to patch things like that together for an A-B comparison.

Now, for the good news: The rest of this column is about building one yourself. Don't panic; if you've put in a dimmer switch, made any kind of simple auto repair, or can figure out what makes a flashlight work; and if you can make a good solder connection, you can be pretty sure you have the technical competence to put the thing together. If you still don't think you can deal with building a simple electrical device, surely someone you know can . . . perhaps a repair person.

First, you need some parts, which, if you don't have them yourself, can be provided by a retail electronic parts store. Here are the parts you need:

1 DPDT toggle switch

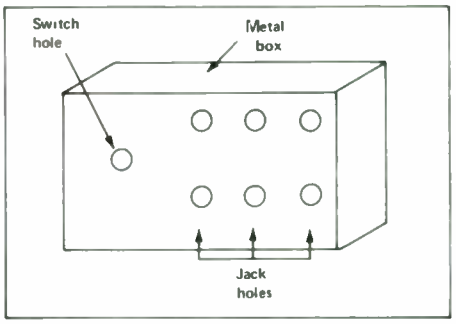


Figure 1.

6 ¼" mono open circuit phone jacks

1 metal box to hold the switch and jacks

You will also need some wire and solder, along with a drill, soldering iron, wire clippers, and needlenose pliers. A repair shop may already have all this stuff handy.

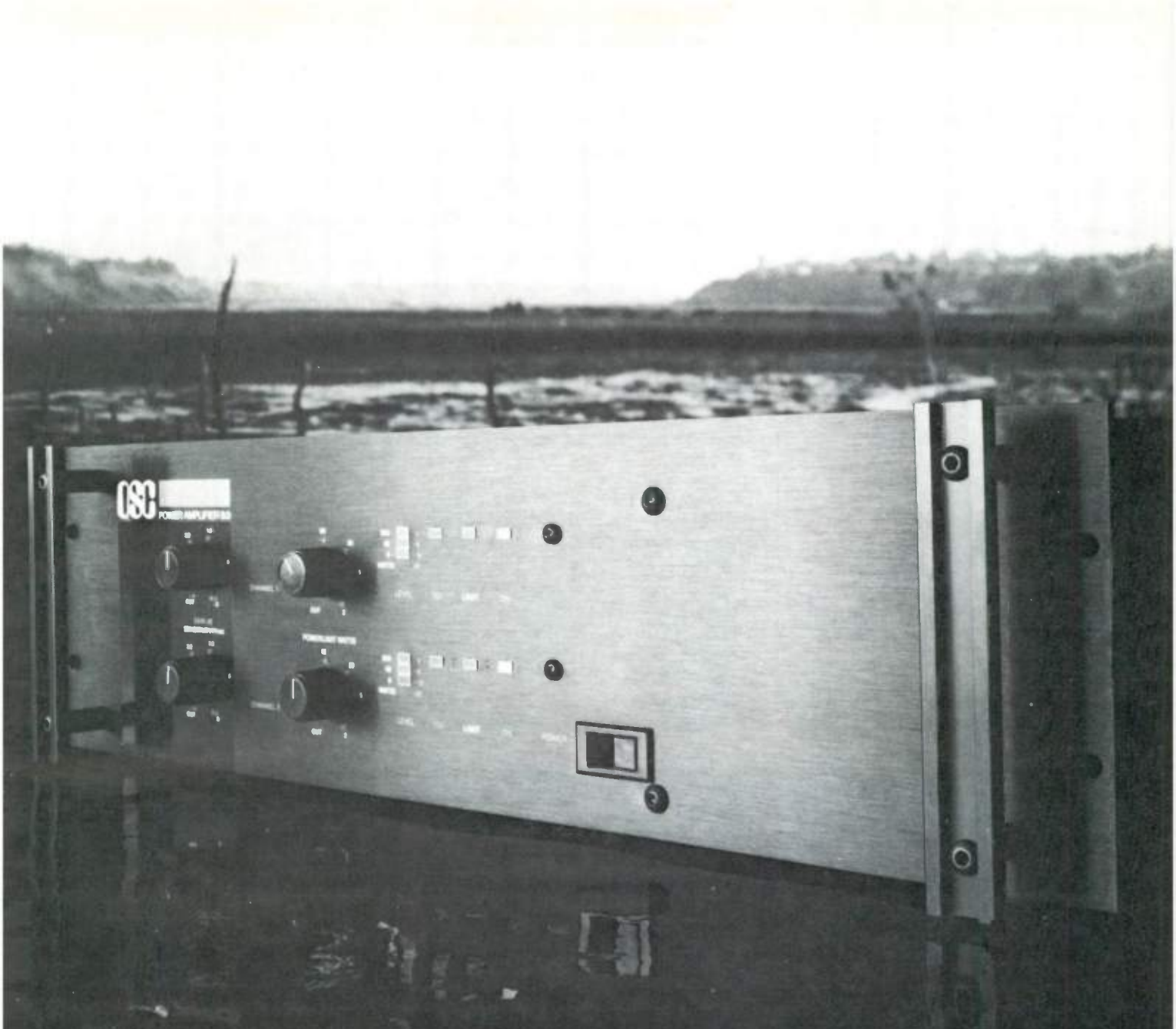
The first step is to drill holes in the metal box for the jacks and the toggle switch. A layout like figure 1 is fine.

OK, now examine the jacks. They'll look somewhat like figure 2. One solder lug will run out into the center of the jack; this is the *ground* lug. Another lug will come out of the jack somewhere else; this is the *hot* lug.

Next step is to mount the various jacks and the switch in the metal box. Make sure that the jacks are mounted securely and tightly; you don't want them loosening on you one day six months from now.

Figure 3 shows how to wire up the switch to the jacks. Begin wiring by connecting all the ground tabs together (wire shown as black line). Use enough heat when soldering to insure a good solder connection. Usually I'm warning people about using too much heat, but in this case of a jack ground lug, it takes quite a bit of heat to get the metal up to soldering temperature. Continue wiring by wiring the various "hot" lugs of the jack to appropriate switch terminals, as shown by the dashed lines. Be careful about using too much heat on the switch lugs, as it could melt the plastic surrounding the lugs and cause unreliable operation. Also, notice that we've given each jack a designation; this will help in identifying the jacks for labelling purposes.

Now, looking at the unit from the front (with J1-J3 facing up and J4-J6 facing down), let's label the thing. J3 is the "From Instrument" jack; J2 the "To Effect A Input" jack; J5 is the "From Effect A Output" jack; J1 is the "To Effect B Input" jack; J4 is the "From Effect B Output" jack; J6 the "To Amplifier or Monitor Amp" jack.



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So much for the construction; it's time to explain how to patch in and out of the various jacks. Gather together some patch cords; you'll need them.

As an example of how to use the A-B box, let's say you want to try an instrument through two different effects, "Effect A" and "Effect B." Plug the instrument into J3; then run a cord from J6 to your amplifier (or other type of monitor) input jack. Now connect a cord from J2 to Effect A's input jack, and a cord from J5 to Effect A's output jack. Finally, run a cord from J1 to Effect B's input, and a cord from J4 to Effect B's output jack.

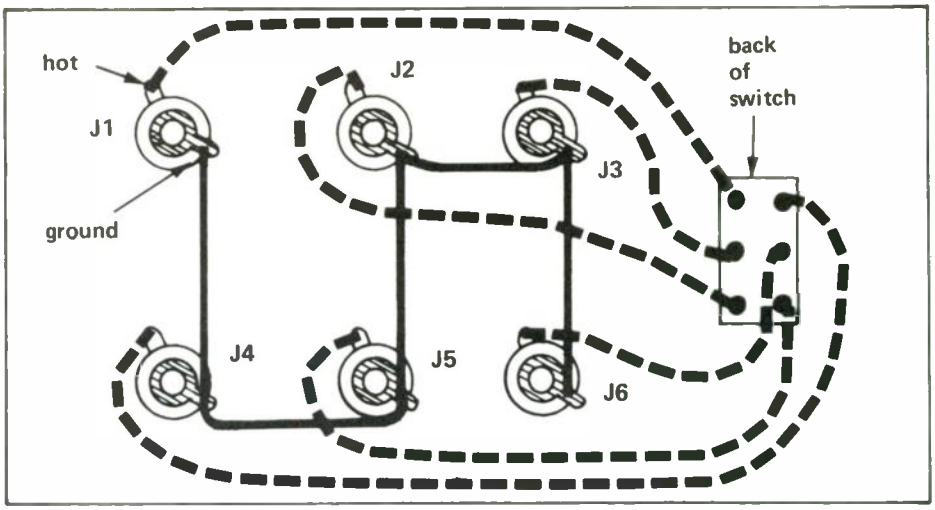

Figure 3

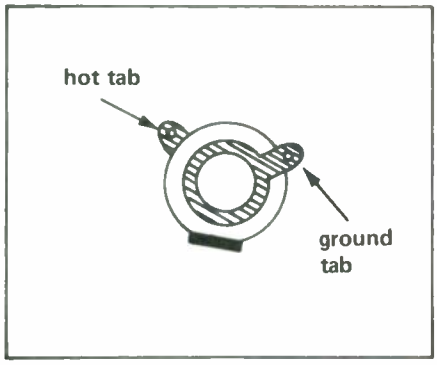

Figure 2

Flicking the switch "up" connects Effect A into the signal path between instrument and amp. Flicking the switch "down" connects Effect B into the signal path between instrument and amp. (Note: Some switches are arranged so that "up" will give Effect B and "down" will give Effect A, but these are rare.)

Although this is an obvious way to use the A-B box, there are some other tricks you can use it for. For example, say you want to switch between two different amps to compare sounds. Plug your instrument into J3 (the instrument jack), but then run a cord from J2 to one amp's input, and then run a second cord from J1 to the other amp's input. Toggling the switch should give you either amp. This is also a handy device for people who want to set up two different sounds on two different channels of a single amp, and wish to be able to switch between channels.

Another example: Suppose you want to switch between two speaker baffles. Plug the output of the amp head into J3, then run a cord from J2 to baffle A and another cord from J1 to baffle B. However, make sure that you are using both wire and a switch capable of handling that power. Also, your connections had better be good—a shorted connection or loose ground could spell Instant Defective Merchandise in a power situation. (You will not run into these problems with low power devices such as guitars, effects, and low level audio signals.)

For safety's sake (both you and the equipment!), connect up the A-B box while amps, effects, etc. are OFF. After everything is patched in, then turn on your various pieces of equipment.

This month's column is sort of an experiment. Next month, we'll return to explaining basic audio theory and equipment. Please let us know if you'd like to see any more columns devoted to problem solving such as the above.

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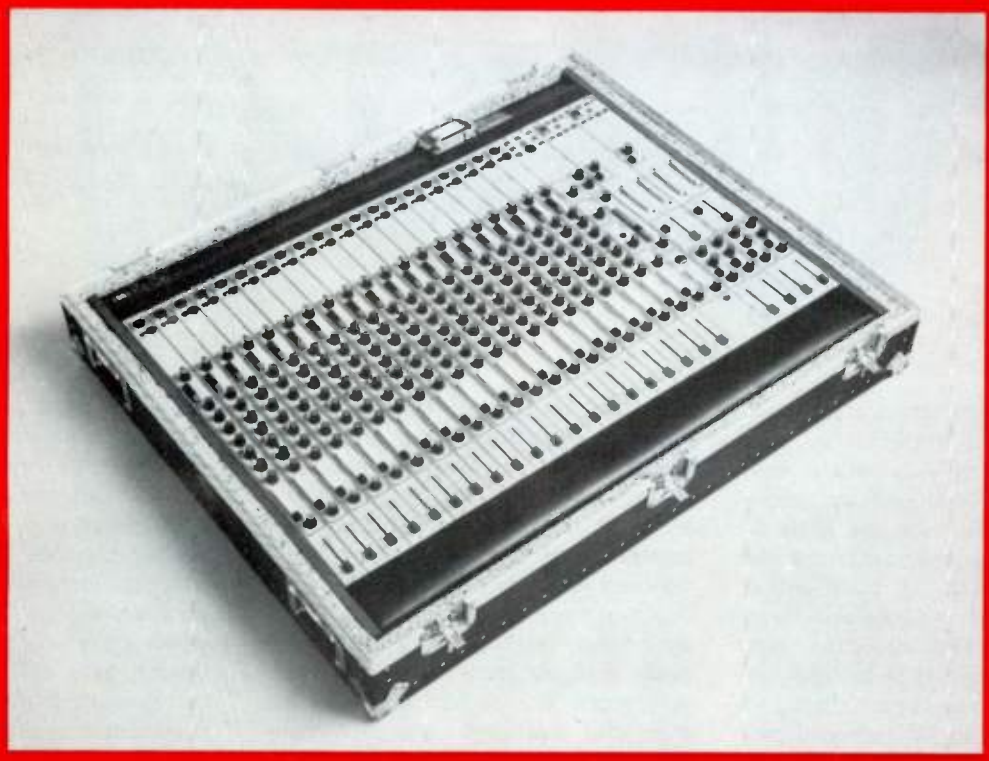

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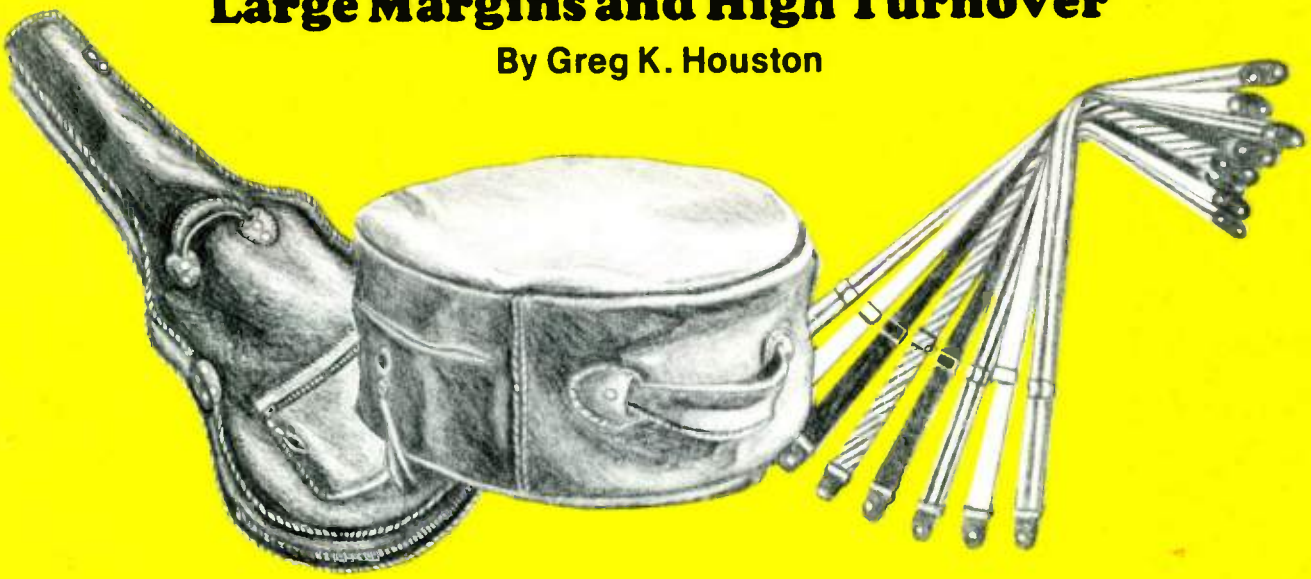
Selling Specialty Items

Turning Boxes, Bags, and Straps into Large Margins and High Turnover

By Greg K. Houston



Fuzz babies, cry-mamas, stick bags, cymbal bags, gig bags, straps, and jacks. Ask most music retailers what they think of merchandising accessories and they'll show you their diplay: a crowded showcase with cracked glass teeming with the little cuties. Entombed until resurrected by a brave, if unknowing customer, who has just persisted despite the scowl of the salesman who has to get through a maze of cabinet locks, corroded batteries and tangled cables in order to demonstrate the item in question. The demonstration itself is often a ceremony consisting of "Go ahead and try it out, I'm gonna' grab a cup of coffee."

This situation is becoming a thing of the past. More and more dealers are relying on better made, higher ticket accessories as their bread and butter lines. Salespeople are realizing that the higher margins offered by accessories mean larger commissions. The sales themselves can often lay the foundation for larger instrument sales and less discounting. In all, bags, straps, and boxes are becoming both the welcome mat and the close to consistently larger and more profitable sales.

I'VE GOT ONE OF THOSE, I THINK . . .

Most stores seem to regard higher priced accessories with the same attitude they do strings, picks and reeds; items to be requested by the customer and not necessarily actively sold. Granted, a customer may ask for a phase shifter or wah-wah pedal on occasion, but most dealers seem to prefer their customers peering through crowded showcases and wallracks as opposed to active demonstrations and explanations. In dollar-for-minute involvement, accessories yield higher profit margins than higher priced instruments; are easier to stock and maintain; and offer very attractive discount structures when bought in reasonable quantity or mixes. The key is to make the salesperson aware of your accessory situation and encourage him to view the items as he would a guitar or amplifier sale. With this attitude, many stores have found funny little boxes and exotic straps and bags paying the lights, rent and often supporting a low margin "rock 'n' roll" store image.

GETTING THE SALESPERSON INVOLVED

Because, more often than not, accessories can be purchased at better than full discounts, these items become particularly attractive to salesmen's spiffs and extra commissions. Many manufacturer's representatives make very comfortable livings selling straps and bags and many retail salespeople are finding that selling one gig bag or effects pedal a day makes the car payment. Dealers find they can place proportionally larger commissions on accessories than on instruments. A ten dollar spiff on a fifty dollar accessory is proportionally better than the one hundred dollar commission on a one thousand dollar instrument sale. The former requires less time involvement and formal product knowledge than the latter, and when purchased correctly by the dealer nets full margin after the commission. It doesn't take long for a salesman to realize that moving out a few accessories daily along with his instrument sales can quickly move him into a higher tax bracket. The dealer sits back and the product pays for his help.

Many dealers use the accessory department as a training ground for novice salespeople. The products lend themselves to structured and tangible demonstrations while accustoming the salesperson to commission work. This greatly reduces the cost of a training program and removes the possible risk of a high discount or the possible loss of a high ticket instrument sale by inexperienced salespeople. In addition, sales help trained in this fashion tend to integrate the accessory sale into their instrument sales, making for larger and more profitable "package deals." Often a successfully trained salesman in this area will stay with accessory sales exclusively, establishing a professional accessory department which not only pays for itself and returns consistently high margins, but

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TAD is an abbreviation for Technical Audio Devices, the professional products division of U.S. Pioneer Electronics Corp.

WRH

is also an effective customer draw that the discounters and bootleggers neglect.

GIVE IT TO THEM IN MERCHANDISE

A customer asking for a discount is often really asking for "special treatment," a feeling that he or she is getting that "special deal" that the every day customer is not entitled to. This is a sort of psychological reward for being a smart shopper, but for some reason salespeople confuse "special deal" with "cash discount" and end up throwing away profit with heavy discounts. High ticket, high margin accessories can be extremely effective tools here to combat these cash throwaways and yet satiate the customer's psychological needs.

Example: A customer shopping for a set of drums at XYZ Music Store has expressed the fact that he is shopping and it is going to take an extra special deal to allow him to make his decision. The salesman, aware of what his accessory department has to offer, has determined that a two hundred dollar discount will probably stack the deck in his favor, but he is unwilling to sacrifice this kind of profit in order to satisfy his customer's ego. Instead, he selects from his accessory display an item that he feels will appeal to the customer, roughly the near value of the discount (in this case, say, a hand tooled leather cymbal bag). The bag is marked retail at one hundred and seventy-five dollars, but since it was purchased in quantities of six and paid for C.O.D., it cost the dealer seventy dollars. This is placed in the customer's hands with the explanation that "anybody can get a cash discount, but that leaves the customer with a set of drums and nothing to carry his cymbals in." This bag is a tangible, something he can touch and feel, and something exclusively offered by the particular dealer. The customer's ego needs are satisfied by the fact that he will be one of the few percussionists, if not the only one, in the area to sport such an expensive and luxurious cymbal carry-all. The salesman reduces a large cash discount (which would have probably been matched or beaten by a competitor), increases the profit margin and the amount of goods turned, and opens the door for an exclusive net gain closing statement setting the store apart from the rest. The result is a profitable sale.

The above seems over simplified but its success is proven daily from big city markets to mom and pop music stores. It's proven in drum sales, and in guitar sales where hand tooled leather straps, phase shifters, wah pedals, etc. become the clincher and the closer. Don't be so anxious to give away profit when you can turn more merchandise and increase your margin.

DON'T QUIT NOW

A common mistake made by a salesperson is to quit selling at the time the sale is made. There is a common feeling that once the customer agrees to a sale, it should be written up as quickly as possible, before he has a chance to change his mind. Granted, sales should be written up quickly after the entire sale is closed, but what encompasses the entire sale? Once the customer says yes to a sale, and has placed himself in a mental "open to buy" frame of mind, he is at the point of highest receptivity to the salesperson's sug-

Greg K. Houston is a retailer and sound consulant. He has done consulting work for Reunion Blues and Ms. Perc.

JBL TO GO.

When you're on the road, you need all the sound you can get.

With as little weight and bulk as possible.

Enter JBL's very compact, very durable and very high-performance traveling sound system. Three tough little pieces of equipment that can put out more sound than a truckload of ordinary gear.

The Ice Cube (also known as the 6233) is a super-compact, high-power amplifier. With a whisper-quiet thermally-controlled two-speed fan. It's only 5¼" high and weighs just 35 lbs.

It delivers a clean 600 watts, 300 RMS per side both channels driven into four ohms from 20 Hz to 20 kHz. All with less than .05% T.H.D.

The Strongbox (also known as the 4682) is a fully self-contained speaker system. Its King-Kong-proof thermoplastic enclosure is its shipping crate. Complete with built-in suspension holes and carrying handles.

Inside are four 10-inch extended-range speakers, a pair of high-frequency ring radiators and a precise dividing network. All integrally engineered to handle the Ice Cube's amazing power output beautifully and accurately.

Which all means, if you want the most sound per pound, go with JBL.

JBL

GET IT ALL.

James B. Lansing Sound, Inc./ Professional Division, 8500 Balboa Boulevard, Northridge, California 91329

CIRCLE 97 ON READER SERVICE CARD

WRH

gestions. This is the point where custom accessories show their best value, complimenting and showcasing the sale. Particularly in the case of high ticket instruments (hand made guitars, drum sets, large amplifiers, etc.), custom-made straps, effect boxes, road cases, and gig bags will be seen in the customer's eyes as useful supplements to the purchase, and the purchaser will often take a "now or never" attitude towards their purchase. It should be pointed out that a custom-made strap complements an eight hundred dollar guitar much better than the vinyl and plastic one that came with it, or that it seems a shame to carry those five-dollar-an-inch Turkish cymbals home in a plastic bag. Points such as these make their strongest impact at the time the customer has taken mental possession of the sale. This is the point where the salesman can use accessories wisely to widen the customer's perspective of the sale.

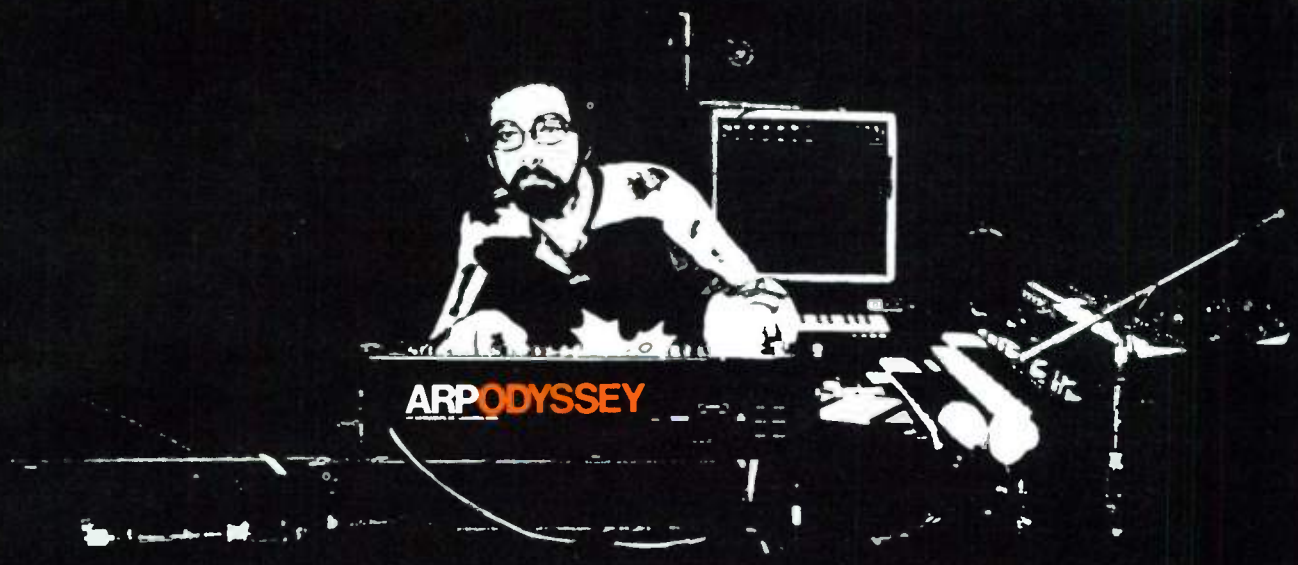
NAIL THEM DOWN . . .

Probably the most difficult challenge in selling accessories is displaying them effectively, yet keeping them out of the reach of sticky fingers. Locked display cases foil thieves, but more than not end up looking like the inside of a closet, not particularly conducive to quick demo's or catching the eye of potential customers. The solution takes a little preparation and ingenuity, but results in attractive theft-proof displays that are quickly employed in sales demo's.

Effects boxes are the easiest to rip off, but also the easiest to display effectively. The entire line of a manufacturer's boxes should be mounted on a single board or hollow slanted box, inputs and outputs wired together, and all battery terminals wired to an AC to DC power supply (available from most any jobber). This arrangement allows the customer to plug into the first box, out of the last, and have at his disposal any effect on the board. This makes for quick and impressive demo's, and allows the customer to try multiple effects that used to take an octopus to hook up. Be careful though; customers have become so involved that they have been known to purchase entire display boards. It's often a good idea to have an extra, just in case.

Expensive straps, cymbal, stick, and gig bags take less preparation, but can be displayed just as effectively. The important thing to remember here is their individual function and display them in that manner. Stick bags should be tied with granny knots (find a sailor) to floor toms and displayed with broken or warped sticks and mallets (leave the good end sticking out). Custom straps should be placed on higher ticket guitars with strap-locs and used actively in guitar demo's. Gig bags should be filled Santa-stocking style with various musician-type goodies and hung behind counters in a manner that attracts attention but not hands. All of these methods bring the customer in close contact with your profitable accessories, opening an early avenue for inquiry and sale.

In conclusion, the marketing of accessories does not just happen. They won't move out in numbers just because you have them in stock. However, if one uses the above outline as a guide, develops a marketing strategy concerning smaller items, buys intelligently and, above all else, actively sells the merchandise, he'll find accessories provide a small-investment, high-margin market that is easy to maintain from both an inventory and help standpoint. They can also pay for your next vacation to the islands.



"You cannot duplicate the sound of the ARP Odyssey on any other instrument... it is one of a kind." Tom Coster/SANTANA

Almost four years ago, keyboardist Tom Coster joined up with legendary guitarist Carlos Santana. Today, millions of miles and several platinum albums later, Tom Coster is recognized as one of the finest synthesizer talents in rock.

Tom is an experienced musician, producer, composer and arranger, and is a veteran on the ARP ODYSSEY.

"The Arp has some advantages. It seems to stay in tune a little better, and some of the sounds I get on it I just can't get on any other instrument. I can get close, but not the same. I like the vibratos that I can get out of the Odyssey. They're so sweet and soulful. Carlos Santana said a beautiful thing that explains it. He says the Arp has a feminine sound... I agree with that, and that's the way I use it in the band."

Perhaps it is the Odyssey's unique, clean sound, more than any other factor, that has made it the most copied — and listened to — synthesizer in music. Certainly the Odyssey maintains its state-of-the-art status with constant factory updates, including a patented low-noise filter, digital noise generator, improved "human engineering" features and, most recently, PPC, a pitch bend/vibrato system activated by three pressure-sensitive pads.

Yet sound is still the key. The Odyssey cuts through amplified guitar and resonating percussion with a driving, ballsy edge or a soft, lyrical quality.

"Another thing that I do on the Odyssey is to start out soloing using one oscillator, and then as the solo builds and becomes more intense, I put both oscillators on and use the ring modulator. By rocking my right hand back and forth on the keys, bending the high and low notes, I can get a sound that's like two guitarists trading licks. I use the 2-voice keyboard feature in that effect, too."

All the great sounds of the Odyssey are protected by a durable steel chassis, packed with 100% in-circuit tested electronic components, and backed by the industry's largest factory-trained field service network.

It's built to take the hard knocks of the road without losing any of its powers.

"I just finished a tour of Australia and Japan. The Arp keyboards fared fantastically, and sounded great, too. I used the hell out of the Odyssey on Santana's latest album, and now that I'm doing more co-production of Santana albums with Carlos, I expect to be using more of the Odyssey in the future. Really, great sound and reliable performance are everything to a musician, and the Odyssey has never let me down."

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or send us $1.00 for a full-color catalog of the entire ARP synthesizer line.

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ARP Instruments, Inc., 45 Hartwell Avenue, Lexington, Massachusetts 02173

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Patrice Rushen • Jerry Peters/Hubert Laws • Blue Weaver/The Bee Gees • Mike Mandel • Richard Tandy/Electric Light Orchestra
Kelly Dunn/The Lost Gonzo Band • Darius Brubeck/The New Brubeck Quartet • Peter Brown

CIRCLE 88 ON READER SERVICE CARD

BIG SOUND
LITTLE SOUND
Qualifying For P.A. Systems

By Bill Robinette

Caught up by the local musician's demanding strive for excellence and perfection in sound systems and amplification equipment, the retailer is in the position of having to have a great deal of knowledge in electronics, sound system design and acoustical engineering. Sophisticated sound systems have grown and advanced in technology at an ever increasing rate of speed which will not slow down.

Certain good selling methods can help to promote sound system sales. Keep in mind that selling an inadequate system to a group results in your customers' searching to find someone with the knowledge to help them, which is where they would also take their future business. But selling an adequate system and giving good service and advice will result in long term relationships and good referral

business. Also keep in mind that you have to know as much to sell one piece of equipment as to sell an entire system, since each piece must be compatible with the balance of the customer's equipment.

The first thing to do in any sale is to qualify the customer, but let's qualify the customer for his *needs* in a sound system as well as the amount of money he wants to spend. Let's just start by asking what kind of music he plays, such as: jazz, country, rock, hard rock, wedding band, polka band, stage band and so on. This will give you a basic knowledge of the kind of sound required. For instance, you wouldn't want to sell a small column P.A. system to a hard rock band that plays college concerts and wants to mike everything. At the same time, you wouldn't sell a ten thousand dollar component system to a wedding band or a light rock band working in lounges.

What we really have to deal with in designing a system is sound pressure level (S.P.L.) which can be determined in general from the type of music played. It would also be good to know the size of the rooms they play, and also the seating. This will give you a good idea of the power needed. For instance, a room seating 500 people can usually take 200 to 400 watts of power, whereas 500-1000 people should be served in the area of 400 to 1000 watts. Also, some manufacturers will give information in their specification sheets such as: This monster system will handle up to 2,500 people. Of course, such statements from manufacturers can't always be taken as gospel, but they can be a guide.

Now there will be other qualifications to be considered in the system, such as: the number of mics, echo, reverb, phasing, flanging, E.Q., and so on. If they need 16 mics you wouldn't sell them a 12-channel mixer, and if they need echo, you wouldn't sell a mixer that has no echo send and return. If six people are in the band, and six people sing, and assuming you need mikes—as a minimum—for keyboard and drums, you would then have two keyboard mikes, 4 drum mikes, and six for the vocals. An extra four channels should be available for expansion. If they want more than one effect, there are mixers available with more than one effects buss. After you put all these things together, you should make a diagram on paper of what they need. At that point you can start choosing the type of equipment that you would want to use to suit their particular needs.

Bill Robinette is a professional sound installer, retail salesman and recording engineer.

PAPER AIDS

Now that you know what the consumer wants, making a simple diagram will help you choose the gear needed. This does not have to be technical at all, just simple. It will also make you look concerned for the customer. Not to mention the fact that it has just that air of professionalism. (See figure A.)

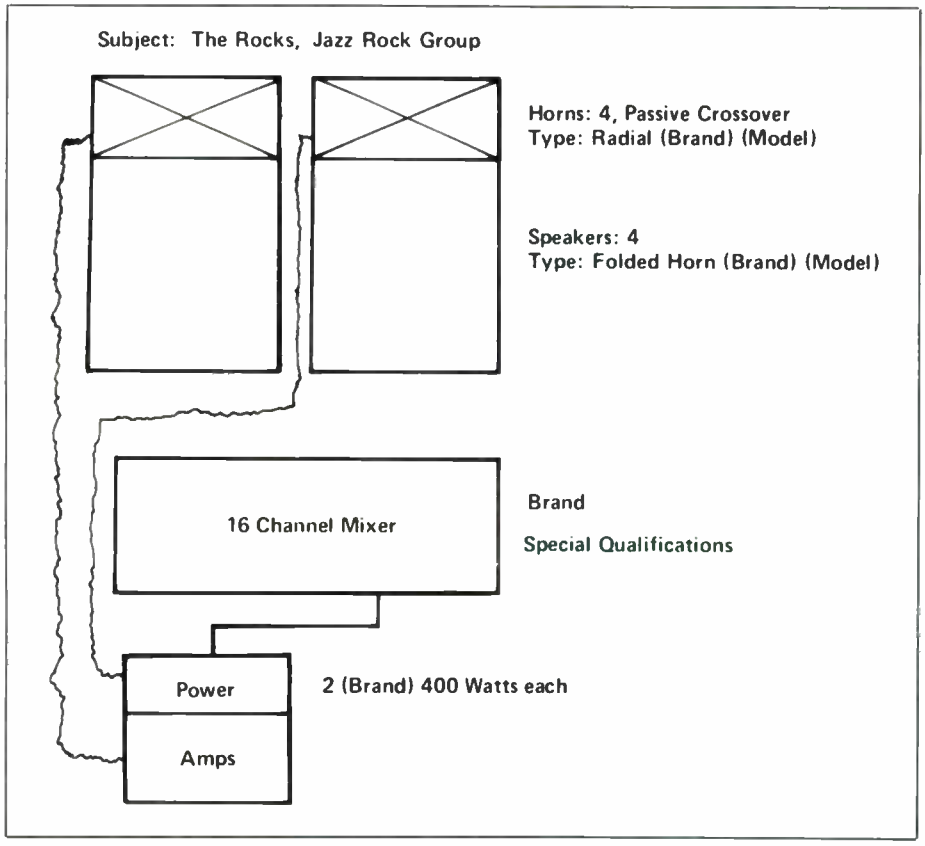


Figure A

The use of a sound system requirement sheet, as shown in figure B, will also help you and the consumer, and will help make your presentation more consistent.

KNOW YOUR LIMITATIONS

Your limitations are simply the limit of knowledge you have in any given area in our business. This can lead to overselling as well as underselling. For example: A group goes into the local music store to buy a large professional sound system and the dealer has a hot dog salesman who will sell anything, even if he has no working knowledge of the system. In one case, a band bought a system from just such a dealer, and the dealer neglected to sell any crossovers with their large component system. The band instantly blew up their horns, and needless to say, they were a bit upset. Well, the first thing they did was to call the dealer from whom they bought the gear, and he commenced to tell them that there is no warranty for blown horns. So they took their entire system to another store where a salesman with a good background in sound systems told them they never had crossover, and this was the cause of the horns blowing up. The salesman who originally sold the system and neglected to complete it with the proper components has lost this group and any friends of the group forever. But the salesman who saved the day is now receiving all of the band's business and their referral business also.

The question comes to mind: "How

SAMPLE SOUND SYSTEM REQUIREMENT SHEET

This requirement sheet provides necessary information so your individual needs for a perfect sound system may be achieved. Please provide as much information as available.

Manager or Leader's name _____ Address _____

Name of group _____ Phone _____

Number in group _____ Budget _____

Number of mikes to use _____ Hi imp. _____ Low imp. _____

Vocal Mikes _____ Instrument Mikes _____ Leslie Mikes _____

Individual EQ? _____ Reverb? _____ Echo Send? _____ Monitor Send _____

Tape Input? _____ Tape Output? _____ Input Attenuators? _____

Do you need stereo capabilities? _____ Need VU meter? _____

Need electronic crossover? _____ Need external input for outboard mixers _____

Need graphic equalizers _____ Graphics for Main or Monitor or both? _____

Will you need a Snake? _____ How long? _____

Also available microphone substations devices for bass, keyboard, etc.

AMPLIFIER — SPEAKER DESIGN

What will be the largest hall system will have to fill? _____

If used in clubs, will system be hung from walls or ceiling? _____

Vehicles to be used for hauling? _____

Do you have existing amps or cabinets to use with system? _____

Volume group plays at? _____ Type of Music? _____

Do you need tweeter? _____ Special requirements _____

Figure B

do we sell systems without making mistakes due to limited knowledge?" The first step is to admit your limitations. Outside help can be called in, such as your service technician. Just keep this in mind: It is not embarrassing to admit you don't know, and your customer will respect you a lot more for making his system right the first time with the proper knowledge rather than sell him something wrong that will upset the balance of the system.

CHOOSING THE EQUIPMENT

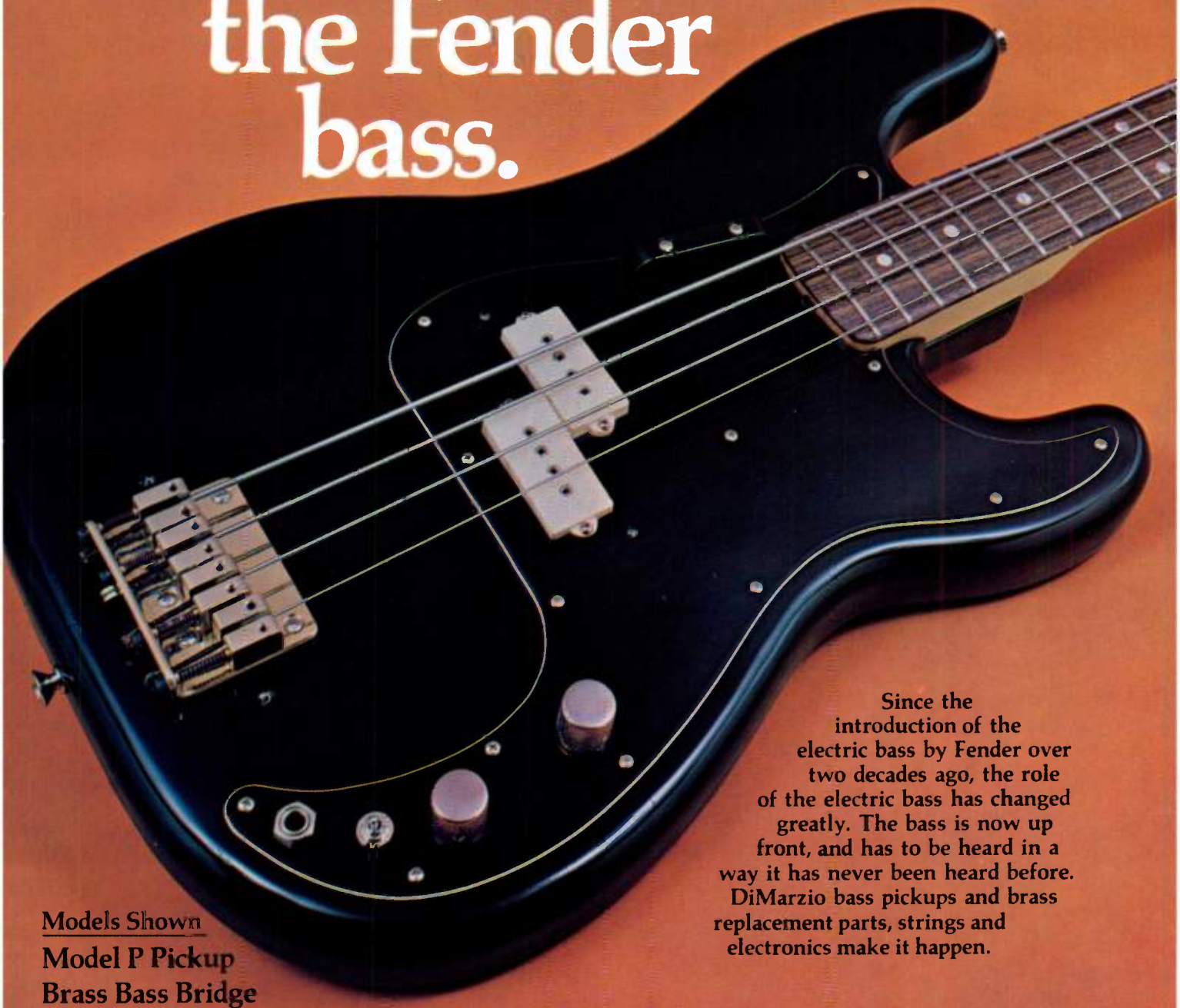
Once you have successfully determined the customer's needs for his complete sound system, you may now start putting together various manufacturers' gear to suit the needs and the price. There are numerous manufacturers who carry large selections of sound equipment to suit all your needs in specifications as well as price, so it should not be too difficult at this point to satisfy your customer. Putting the package together is complex enough to be treated in a separate article.

SERVICE AFTER THE SALE

This is probably the most important part of the closing, because the customer wants to be assured that he is covered when these components break down. It's always a real good idea to offer free loaner pieces as substitution when and if his gear breaks. That way he will be thoroughly convinced he will not miss any playing dates. Service can also constitute a better profit margin, and if you develop a good service reputation, the customers will pay the difference. Musicians today are making fairly good money as a rule, and blowing a week or two of gigs because of faulty gear may well cost them a lot more than paying a few dollars more in the beginning and feeling secure that if anything goes wrong they are covered.

If you put all of these things together, and don't overstep your bounds in selling the gear, the result should be a long list of happy and forever returning sales and referrals. The bottom line in selling sound is that the band should sound good and the band should be happy.

The best news for bass players since the Fender bass.



Since the introduction of the electric bass by Fender over two decades ago, the role of the electric bass has changed greatly. The bass is now up front, and has to be heard in a way it has never been heard before. DiMarzio bass pickups and brass replacement parts, strings and electronics make it happen.

Models Shown
Model P Pickup
Brass Bass Bridge
Bass Strings

For a color catalog, send 75¢ to:

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Musical Instrument Pickups, Inc.
1388 Richmond Terrace, Staten Island, NY 10310
(212) 981-9286

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CIRCLE 92 ON READER SERVICE CARD

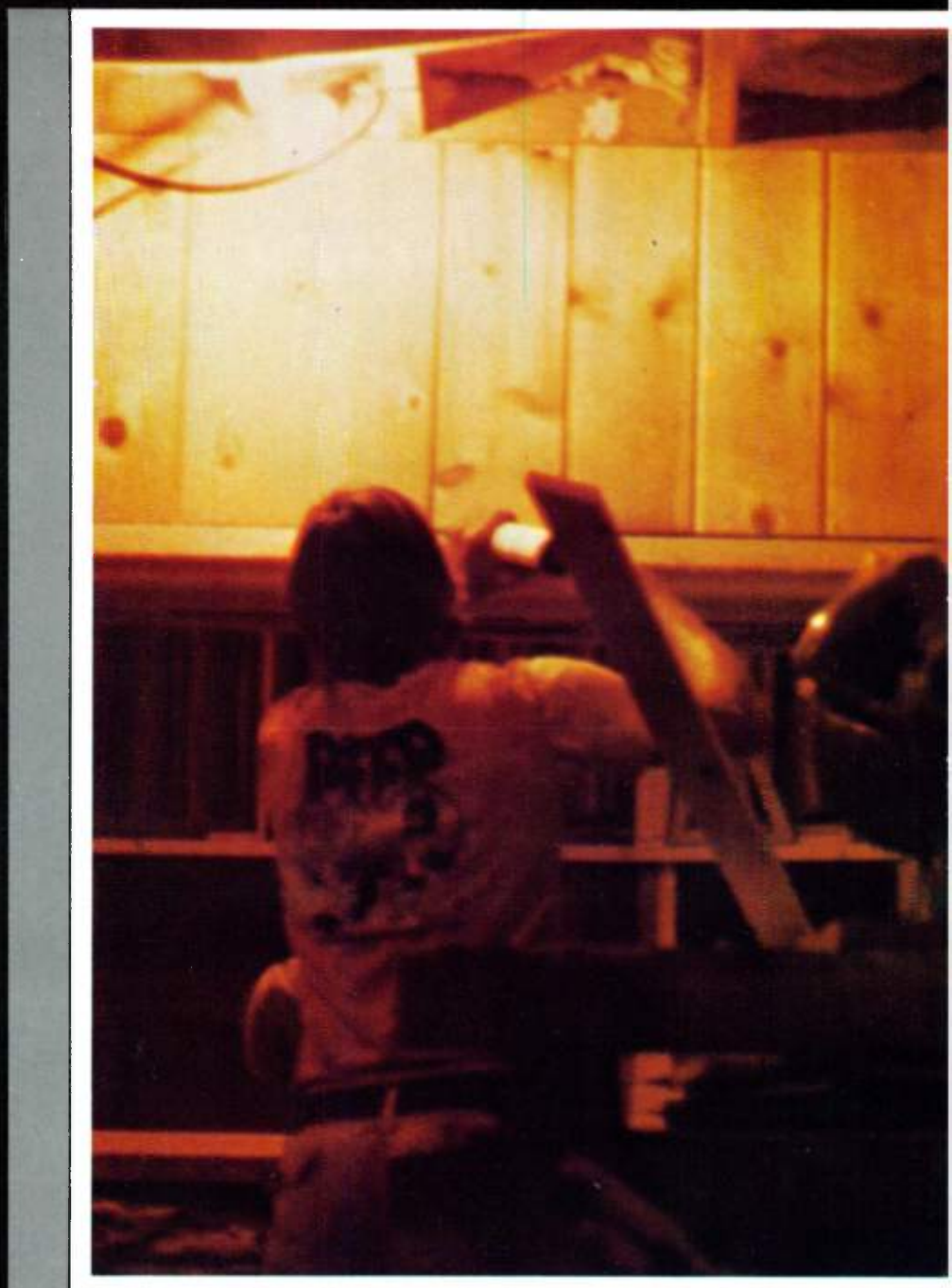
Installing the Studio:

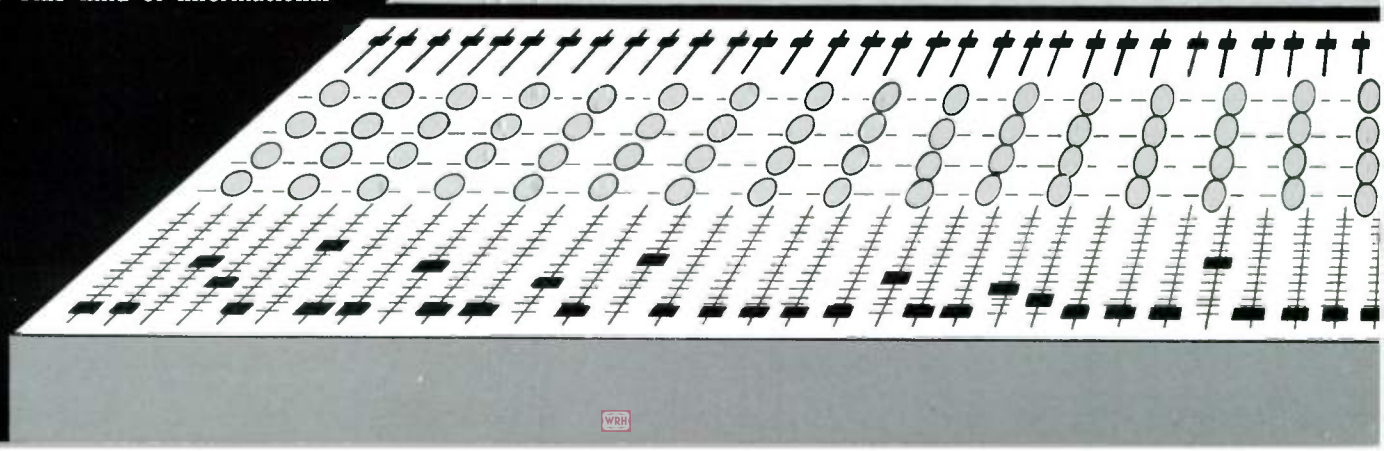
WHAT A DEALER SHOULD KNOW

Everyone who sells recording equipment and systems is familiar with questions about building or treating rooms. The market continues to grow, the necessity for having the right answers in-house becomes more apparent. Each dealer must decide on the extent to which acquiring these answers serves his existing business and when it entails beginning a new business. The following pages briefly summarize some basic information all dealers should acquire and some thoughts on the decision to expand into construction and design.

The first level of dealer involvement with room design might be called casual consultation. You should be able to give your client simple information about rooms, about local market conditions and rough budgets. Your salesmen should be familiar with the literature on the subject, and understand your market plan and limitations of your company's resources.

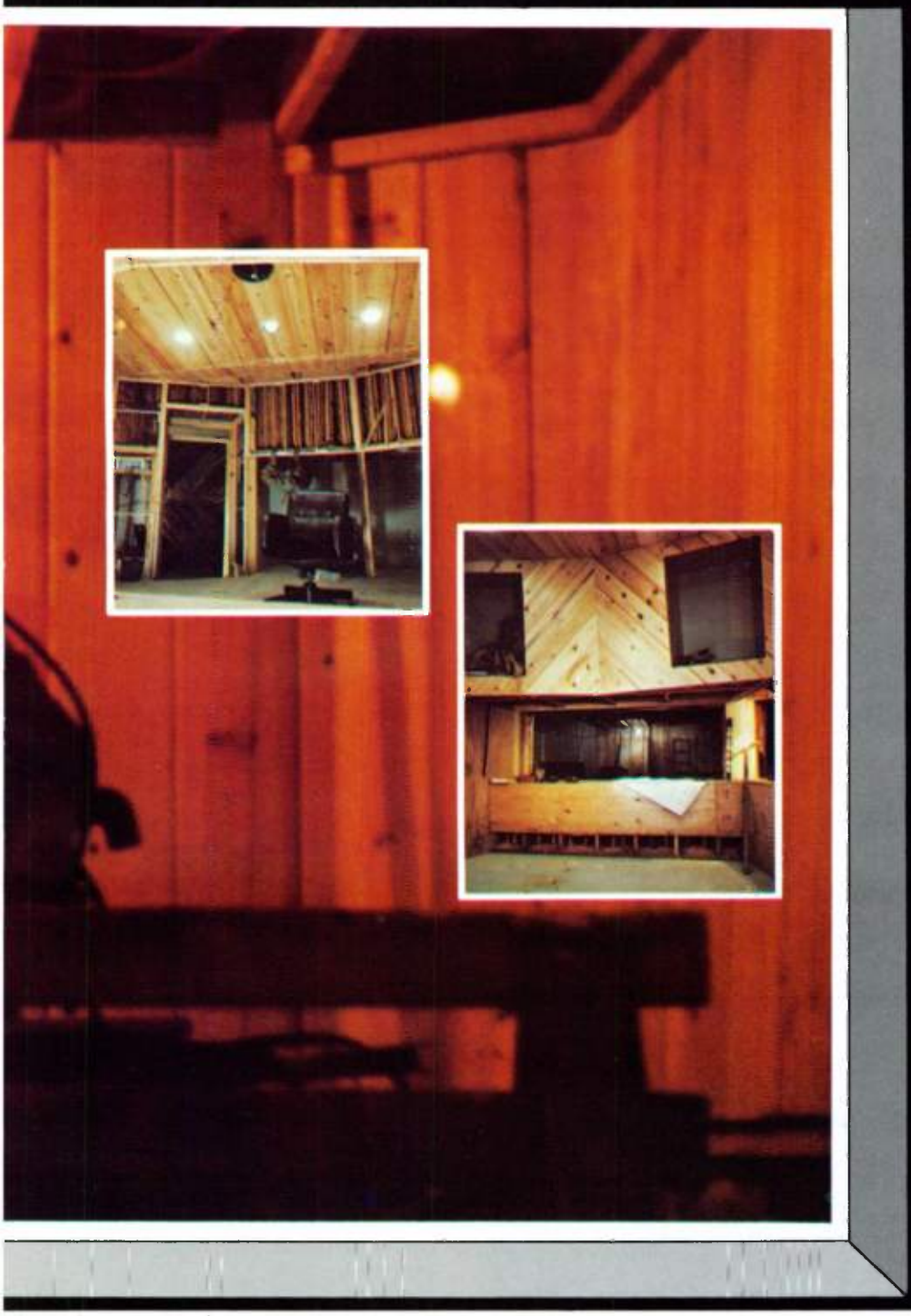
The most important aspects of design are the same at all budget levels. Quietude is the most costly quality. Low budgets should seek quiet sites. Just as 3 dB of additional level for a P.A. requires twice the power and speakers, an additional 3 dB of quietude, especially at low frequencies, requires twice the treatment. Size and proportion are next in importance: adequate size to work in, adequate size for growth, and adequate size for cost effective construction. Proportions and geometrics determine the characteristics of a room and such things as non-parallel walls and symmetry from the monitors out are obvious subjects of discussion. Any competent salesman in this industry should have a grasp of these concepts. This kind of informational





What You Should Know

By Jerome C. Smith



exchange should be part of selling and considered casual (no charge) consultation. Beyond this the ante goes up.

The second level of involvement encompasses financial and marketing expertise. It is at this point that a more mature salesman is required. The amounts of money and risks involved escalate quickly. Banking, SBA loans, accounting formats and recording studio modus-operandi become common subjects. Such information is not easily available and requires either an experienced individual or an intensive training investment in your staff. Without being able to help your client generate his funds, you will not be able to close large projects. Clients expect to find help in developing realistic projections. If you can provide that help, you will not only step nearer to the close, you'll know precisely what and how much to sell. Remember that return business from a studio client is much more profitable than the first deal with him. If you blow the planning stage for him someone else will get his return business as well as his Studio B.

Market planning is part of the projections and planning. An open ear is most of what's required to be of value in this regard. The dealer has constant access to normally inaccessible information. Organize the clues given you by other clients as to rates, types of recording markets and time availability. Assembling such information will reveal keys to your particular market. The subsequent value of your expertise to your clients is obvious. To appropriately apply this information to different clients, your salesmen must recognize the facets that are most suited to each.

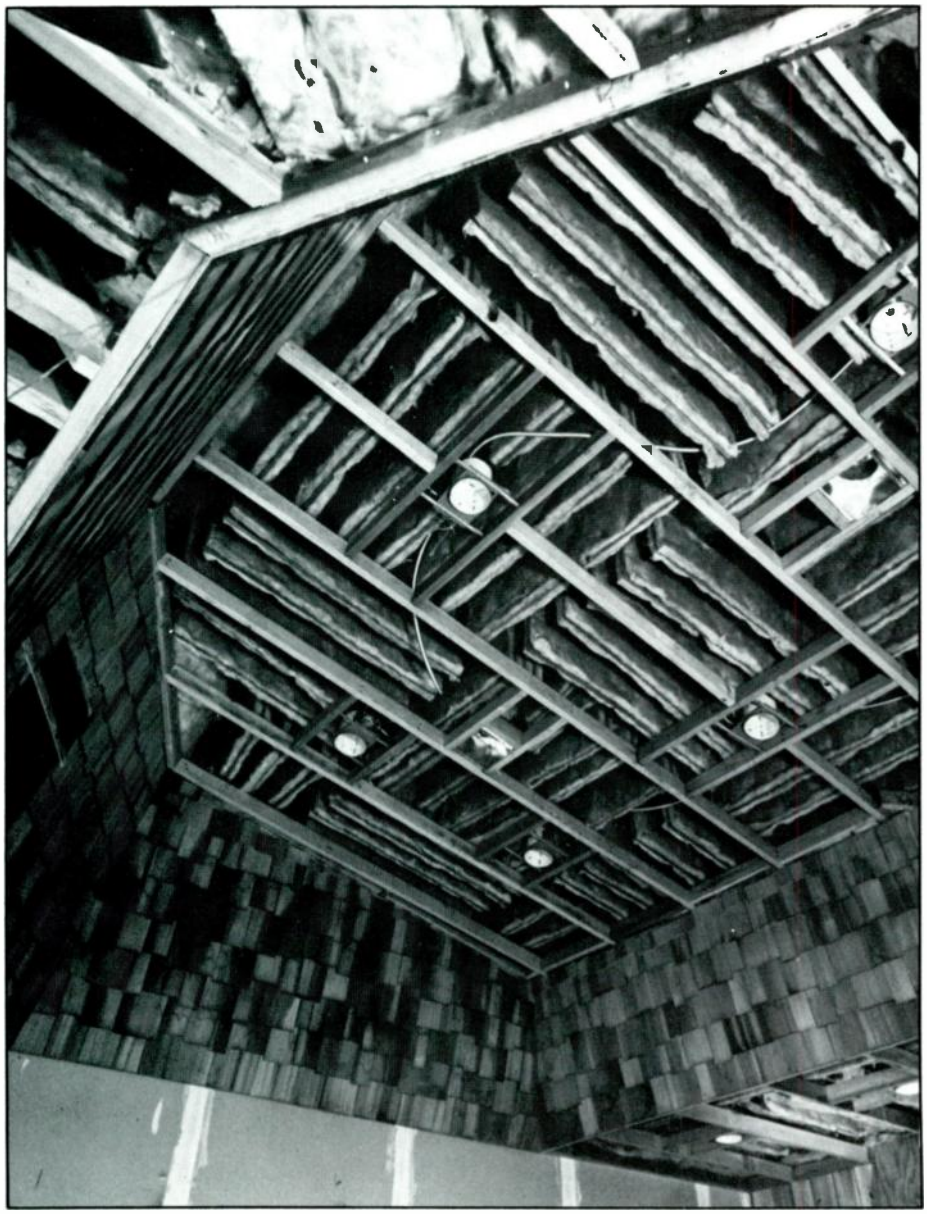
Beyond casual consultation, financial and market input, there are tre-

mendous risks for the neophyte turnkey house. The difference between a room that should be right but isn't and a room that sings is experience. Expect to lose money on the first few attempts at construction. Consider yourself lucky if you break even and don't lose friends or clients.

One way to tiptoe into the field is to start by providing geometrics and interface overlays. Invest in drafting equipment and make your salesmen think on paper. When workable preliminaries are finished, have an experienced designer review them for you. Provide detail sheets of key structural and trapping techniques and have a local architect render them in code-approved format. It is most sporting to design and build a room for your company or yourself first. Much better to suffer for your own learning experience than to have some trusting fan pay for it. Besides, he might sue.

Beware of "shake 'n' bake" acousticians. They abound in every market region. Their credentials, be they academic or experiential, mean nothing unless you have seen their finished work or have talked to their happy clients. A room once finished is very costly to correct and an unhappy client can terminate your whole career as a builder.

Once you have designed and sold a project, your problems are just beginning. Contractors are conditioned by their experiences to not believe architects and acousticians. If you don't agree, just get a square and level and examine the room in which you're reading this. Home-building is normally a very inexact art and shortcuts are the name of the game, with city inspectors as the referees. You *must* convince your contractor of the importance of not taking unauthorized shortcuts. You must also invest the time necessary to make him understand why. You should plan on frequent site visits to help him avoid temptation.



PHOTOS BY JERRY HOGERSEN

Obviously the answer is to use the same contractor over and over. Equally obvious is the fact that in the early phases of your turnkey business you won't be able to keep him constantly busy. If he is a good builder he won't wait in the wings while you try to close the next deal. The only solution is to develop someone in-house who can provide the link between design and construction. This is as difficult as finding a gregarious technical genius. However, if you develop such a person, he can earn his way in between projects by doing estimates, sales backup, custom cabinets, etc. Such a person should be much less expensive than an in-house contractor.

Funding large projects can also be a problem. You must be able to keep paying bills while the job does its typical hurry-up-and-wait cha-cha. Often a bank can be very obtuse about the release of letter of credit funds while you and the client are bickering over who authorized pink carpet. Funding can be very tough even where no client/turnkey company problems occur. A situation such as material shortages not only costs the client money but can create havoc in your cash flow plan.

Ultimately a studio should reflect the same kind of care and passion that a fine instrument does. Like a fine instrument it is the craft of the builder, not the materials or design, that separates mediocrity from art. Talent and training create fine instruments only when coupled with experience. If you must build studios as a business, then be assured that passion will be the first reward, success and profit will come only with experience.

WHAT EVERYONE SHOULD KNOW

Thanks to the knowledge and generosity of many qualified professionals, the "magic" of studio design is now largely in the public domain.

Jerry Smith is proprietor of Express Sound in California.

Unfortunately, that does not mean that fewer studio owners screw up their new rooms than in the past. The application of proper acoustic theory, ratios, treatments, absorptivity coefficients and trapping is only part, and perhaps not the major part, of a satisfactory studio project. Executing the theories within a budget and a time frame that one can afford is the goal.

Lack of planning is the constant problem. Adequate planning is the solution. Two extra weeks on the drawing board and materials list will save two extra months in the construction stage. This is almost as true as Murphy's Law. It's the only sure way to cut Murph down to size. Although projects of different sizes require different degrees of documentation, all projects require some planning in these major areas: Target market identification, dollar resources, structural design, material and labor costs and time frame.

Formal reports, blueprints and profundity are not required. An organized report of the information pertinent to your project, as far as you can take it, is all that's needed. Doing your homework at the earliest stage will enable you to remain friends with your backer, the local carpenter, your customers, your dog and your old lady (or man). The old "design as we go" philosophy will surely alienate all of the above.

There are innumerable ways to build a studio. The key is to isolate the specific elements of purpose, facility and resources that are unique to yours. If you assemble known data before diving into the theoretic cosmos, you will probably find that many choices are self determining and other problems leave only a few solutions from which to choose. The studio is your vehicle for success. No one can produce what you want without your input. If a professional is retained, he'll first have to acquire the same information before he can satisfy you. Better accomplish this first stage through your own self-discipline than through the process of paying someone to extract it from you.

Establishing a profile of your target market is the first step. This profile contains the reasons for attempting the project in the first place. This part may not be very difficult. You should know what additional services are desirable and what level of facility is necessary to provide them. You should also feel comfortable with the amount of additional income you can reasonably expect. Define the promotional programs necessary for reaching that target market and don't forget to budget for them.

Next, you must discuss money or "the source of rudest embarrassment." Obviously, this is a problem that no consultant can solve for you. If you are contemplating a project of over twenty-five thousand dollars and are not familiar with rudimentary cash flow projections, then you should tell daddy to also hire you a studio manager. In your projections, sketch in a reasonable construction time frame and remember that overhead expenses while you're down must also be budgeted. Plug in the amount of capital available for the project and carry the projection far enough ahead to establish a realistic payback plan. When this money massage looks reasonable to you then arrange for the funds. Hesitancy to qualify the funding at this point is a sure sign of wheel spinning. Further planning before this is accomplished is a waste of your time and of anyone else's time involved. Taking this kind of budgetary approach will clarify the construction techniques and design criteria practical for your project. It will also reveal any requirements for professional financial assistance.

Once budget limitations are established, the room design can proceed realistically. Start with a rough scale drawing of the existing facility. Note the location of key utilities, structural limitations, traffic and

equipment flow and any troublesome factors such as bearing walls that can't be altered, support posts, noisy air or heating units and outside noise sources. Most facilities have at least a few built-in no-no's that are cheap to avoid but expensive to conquer.

The next step is the initial stab at basic geometric room shapes. This is the area that often requires some professional assistance. If you've done your budgetary homework, you'll know whether or not outside help is affordable, and roughly to what degree. Even if money is no object the owner should attempt to evolve a preliminary sketch. His ideas, even if entirely wrong, will enable communication between the consultant and owner to be better focused and more efficient. Excellent literature is available on geometrics, theory and layout. If you're not familiar with them, then become so at this stage.

When sketching control room ideas, remember to start by locating the mixer's position. Templates cut out to scale for the console, machines and racks are important aids in visualizing the ergonomic consequences of different designs. I know of a world class studio that was completed before it was noticed that once the console was installed, the door wouldn't open. Establishing the mixer's position in elevations will reveal necessary window heights and vertical monitor rotation. Most important is to remember that the relationship of the mixer's ears to the monitors is the first priority. Make sure that listening and common procedural movements are as comfortable and convenient as possible. Design around the ears. Take it as far as you can. Then if you buy professional design services, your designer can efficiently apply his craft. If budgetary and physical limitations are available to him, his plans should incorporate structural directions that accommodate your needs.

Do not get overeager at this point. Generate a materials list from the plans and identify areas where subcontractors are called for. Get on the phone and rough in costs. After ballpark material and subcontractor costs are assembled, multiply the total by three and see if you're still within budget. A typical full-on turnkey construction project runs thirty percent materials and seventy percent labor. If you have a "friend who's a carpenter," you may save some labor money; then again you may lose a friend and go over budget. Studio construction is unlike any other kind. If either you or your carpenter friend underestimate this factor, you will both lose.

Studio construction technique is more like boat building than house building. There are few, if any, square corners or parallel walls. Dealing efficiently with compound angles and airtight layering is not the forte of your basic journeyman. Usual methods of estimating labor costs, material waste factors and quality control procedures will not make it. If you pay for an extra layer of sheet rock and one laborer misses a nail, punches through the gyp and then covers with tape instead of patching, you have wasted the whole expense of the additional layer.

Experienced supervision of the actual construction phase is probably the most important outside service to consider—at any budget. The

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notorious overbudget studio syndrome is most often due to the honest but inaccurate cost estimates rendered by contractors encountering their first set of studio plans. The choice left to the owner in this situation is a serious one. If the dollar source is limited, then such an honest mistake can be critical. Make sure that the plans contain enough detail to clearly illustrate differences between standard construction and studio construction. Make sure that the crew is motivated and educated to the point that they realize that one sneaky oversight or one too many shortcuts can blow the whole deal. Employing experienced on-site supervision prior to actual start-up can insure that costs and time-frame estimates are realistic. A good supervisor will cost you much less than "headscratching" burden costs typical of "virgin" studio contractors. Also remember that if you choose to supervise yourself, you will definitely learn a lot, but the price of the education will affect you for a long time and usually in a particularly irksome manner.

One other subject should be touched upon. Try not to create pressure for yourself by scheduling completion for Wednesday and sessions for Thursday. There are many factors concerning construction time that are completely beyond control. Be smart and plan a little fudge factor into the publicized finish date. If you can, you should also allow for a low pressure shakedown period. All audio equipment breaks and Murphy lurks in the wings. New rooms, no matter how well designed, require some degree of tweaking and pilot adjustment. Indeed, pilot error is to be expected at the outset. Do yourself a favor and book a few non-critical work sessions before you put the cojones on the line.

After all is said it is still possible for hit records to come from garages, living rooms and outdoor toilets. Nothing takes the place of fine artists and good music. The role of the studio is to facilitate the businesslike execution of many projects. All rooms are different and vagaries in acoustic performance will prevail despite the best laid plans. If you take the time to prepare as fully as possible, you will limit these vagaries as much as possible. You will also find that well researched and thought-out plans become a self-fulfilling prophecy and the overall quality of your endeavor will benefit.

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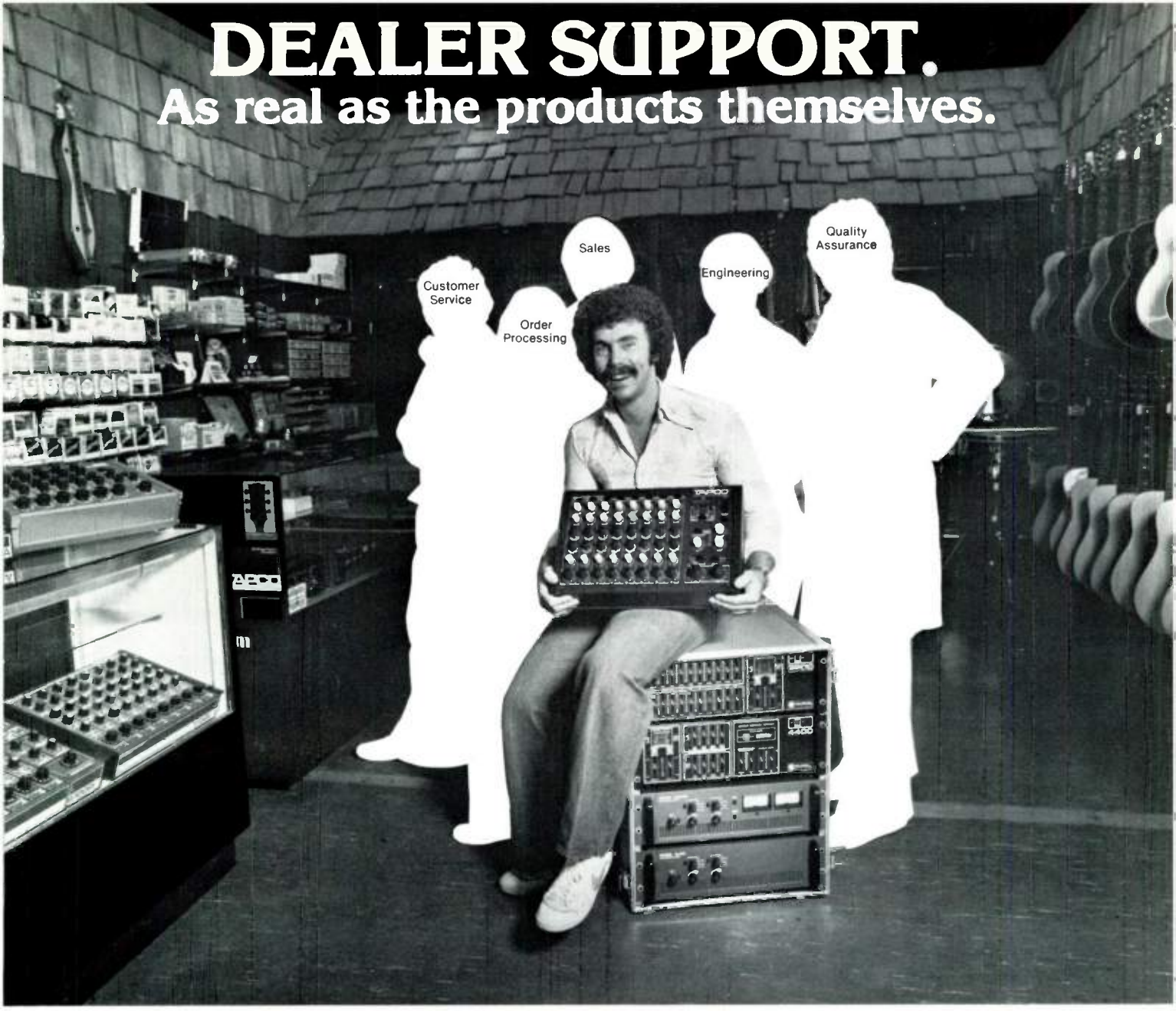

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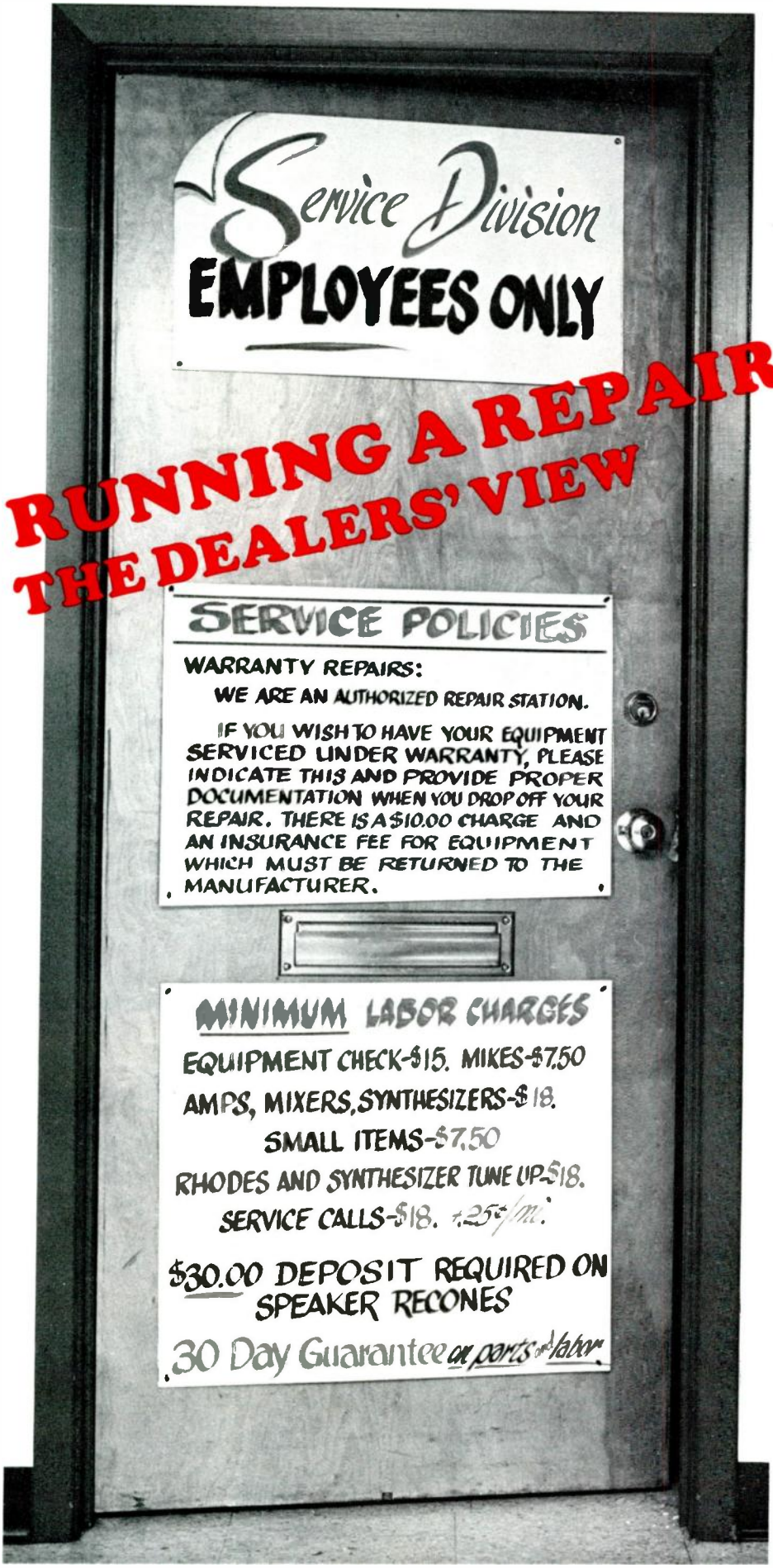
CIRCLE 87 ON READER SERVICE CARD

RUNNING A REPAIR STATION-THE DEALERS' VIEW

by Mike Beigel



The repair shop is an important aspect of most successful retailers. Customers, especially professional musicians, need the assurance that their equipment can be maintained; and the retailer who offers an efficient and reliable repair center will usually be the preferred establishment in his locality. So we decided to take a look at some of the diverse aspects of the repair shop, from the point of view of the store owner and the service technician. We interviewed Derf Nolde, Steve Seibel and Rich Chorné at Nolde's Music Box. Nolde's is a medium-size operation in Flemington, New Jersey. Since there are many other types and sizes of retailers, the perspectives mentioned here can be broadened with the help of SOUND ARTS readers. We would appreciate your comments and insights.

Nolde: One big problem is how much to pay a technician. It seems that a full-time top technician working for a company might expect to get fifteen thousand a year. So I would suspect that we ought not pay more than that for a full-time excellent technician.

What do you suppose an excellent technician is?

Nolde: He has versatility, number one.

Seibel: Especially in this type of business, because of the viability of the products. In this business, you have to be familiar with speaker cabinets and you have to know a little bit about speaker design and have a good ear, especially. That's an extra. When you are servicing audio equipment,

you should be able to diagnose problems from what you hear, because most of the time when somebody is trying to explain what is wrong with their equipment, it has to do with music. And then the technician has to somehow translate that into how the circuit works, and to be able to decide exactly what is causing this problem, if there is indeed a problem.

Nolde: A guy who has a great deal of get up and go can probably make appreciably more if he wants to open his little shop. There is potential for him to make more money. There are more repairs around than can be handled. There's no doubt about it. Now of course, you have all the liabilities of opening your own business. A lot of guys don't want to do that, but it seems that technicians who want to work for someone else and who really have all these qualifications are few and far between. We advertised at most of the local trade colleges and got no response whatsoever.

One technician we had had an associates degree in electronics. Another never had any formal electronics training and he probably had as much savvy as anybody. Another has a bachelor's degree, but not in electronics.

Seibel: No, it's in English. He got most of his schooling from a home correspondence course, and a lot of field experience.

Nolde: Now, Steve is a graduate in Physics, with some electronics courses on the side and a correspondence course. I imagine that a formal education is coincidental. There is no basic educational requirement. But it does involve this unique combination in music and electronic capability, which everybody we discussed has. But finding them is not easy. We have advertised in the paper, we advertised at the colleges, and you just don't come across these people very often.

Is there any way to create your own technician from the material that is available?

Nolde: We've worked with some kids who had all the requirements. One was a musician and he had an education, but he never got any speed or any real confidence in what he was doing. We worked with him for a couple of years. So it's hard to be able to analyze the ingredients correctly. You start off with a kid and invest that much. We can't afford to create and train our own men. We can't afford that investment, because we don't know how they are going to turn out, and we may lose two years. So what we have to look for is a pretty well prepared guy, and there just ain't that many.

Do you think that there could be a generalized six month course on repair work?

Seibel: I certainly think that something could be created along those lines.

Nolde: You see, this whole idea is a four or five year phenomenon. Academia does not start to support reality for ten or fifteen years. But I think you are putting your finger on it.

Let's talk about warranty service.

Nolde: The warranty station of course is purely a supportive thing. I doubt that we can make money or even possibly break even. You do all this stuff for a $7.50 reimbursement. You may have a job that may take two hours and get $7.50 for it.

Seibel: The manufacturers give us all the schematics and other service information. Parts kits usually have to be paid for, and can be purchased from the manufacturer. They are supposed to contain all the parts you need. They will continue to refurbish the kit for you at no charge. One company has an extreme case where the parts kit costs us around $360 plus a piece of special equipment which they make, or its equivalent, plus...

Nolde: The only reason we do it is to support the sales. I would never do it as a business by itself. They say that they will repair for $7.50 or else send it back to the factory. Well, obviously, it is much easier to take a slight loss and do the work ourselves than to pack it up and have the customer wait four weeks and all that. So we're at the mercy of the manufacturer.

Seibel: I think the trend is going to change now.

Are some manufacturers better than others in dealing with parts or selling their products? There is another aspect to that. There are some manufacturers whose repair incidents are a lot worse than others.

Seibel: A good reliable company will have very few field failures in their equipment. Their parts delivery time will be very short. And it will be easy to get a technician on the phone to talk to if you have to get something serviced. You could come up with a list of manufacturers we sell for and rate them as far as reliability and service backup goes.

How about service on an installed sound system?

Seibel: That's another ball game. When you get into the pro audio and installation business, the amount of service backup you have to have is much more than for a regular musical instrument in electronics.

When you start sending a guy out, what do you charge?

Seibel: We usually set a flat rate for a service call. The customer pays for parts if the equipment is out of warranty and for any shop time if a piece of equipment has to be taken out and brought back here. If we call a repair man in, we charge a flat rate, $18 an hour—that's the shop rate. Organ service is usually higher, $25 minimum.

Are you a medium sized store?

Nolde: I would say so.

How many people are involved in the repair work?

Nolde: One and a half persons.

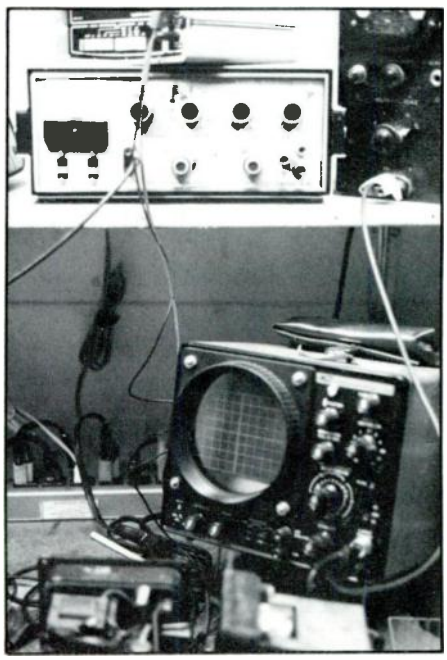
How many devices do you repair in here?

Seibel: I'd say fifteen to twenty a week on the average. This fluctuates with the seasons.

Where does the time go besides on the repairs?

Seibel: I have not kept very good track of exactly how much time is spent doing repair work and how much time is spent *supporting* the repair work. That is, ordering parts, taking care of the shop, fixing test equipment, calibrating test equipment. There is all that stuff peripherally—the overhead.

The next question is something for the middle-size store. How much area do you use and how much does that cost for rent and utilities?



Nolde: We have about four hundred square feet and it is not enough.

Why isn't it enough?

Nolde: There isn't enough space to store all the equipment.

Seibel: When you have thirty or forty pieces in the shop to repair, when many of them are rather large—keyboards, power amps—it takes a lot of space to store. Plus, we need bench space for the technicians and storage space for our parts.

How many days of cash flow do you think it takes between the time you do a repair and the time of payment?

Nolde: At least 30 days, because we're not going to send in every $7.50 request. We'll hold them and send them in a batch and it takes another three weeks for the manufacturer to get around to paying them.

How do you feature your service center in relation to this store as a whole, as far as the customer is concerned?

Nolde: Well, we tell the customer that we have full-time servicemen, that a professional musician will never miss a job because he doesn't have his equipment. If worse comes to worse, we'll loan him something. We'll give him top priority with a problem he comes in with.

Seibel: If someone's piece of equipment breaks down he doesn't have to take it 50 miles to a service center in order to get it repaired.

Is there anything related to the subject of repairs that's caused you to discontinue using certain manufacturers? In other words, does the manufacturer's policy on either quality control or warranty reimbursement influence you to not use the product at all or to heavily buy one set of product?

Seibel: Not to a large extent. I don't think we've ever gone to the extreme of cutting off a manufacturer simply because his warranty repair situation wasn't up to par. I have made choices of one manufacturer over another when it comes to things like their warranty on their equipment and their reliability.

It seems to me that the warranty works against you in this case. If you're losing money on the warranty repair, when the warranty period is over, the better off you are, but not necessarily the customer.

Seibel: You know, customers aren't stupid, and they know they don't have to take money out of their pocket to get something fixed if there's a warranty on it.

Nolde: I don't think we cut any manufacturer off, but I think we definitely push some companies because we're cramped and we know we're going to have a minimum of repairs.

Do you do warranty repair for everything you sell?

Seibel: Almost. Some manufacturers prefer limited warranty repair stations. They were finding out that many of the centers that were originally doing repair work for them were not competent enough.

So it's a high technology product.

Seibel: Definitely. The repairman has to go to a special school in order to become a warranty station.

Nolde: Do you feel that most of the companies that we do work for have checked us or you out very carefully?

Seibel: No, to tell the truth. Usually, what they require is a list of technicians and their qualifications, a list of test equipment that you have in the shop and maybe a few general questions answered. I have been visited by a few reps and manufacturers who just want to see the shop, but other than that nobody's ever given me a test to find out if I can fix this or that piece of equipment and I would imagine that would only happen when somebody raises a real big stink about the quality of work in a particular store.

How do you find out if your repairs are profitable?

Nolde: Well, you really have to add up your expenses and income and see what the differences are, but I just haven't done that.

Why haven't you done it?

Nolde: I been too busy with other more essential areas. The store's grown by leaps and bounds. So much is happening and I've been devoting full-time plus to getting some things organized. I just haven't gotten in to the shop. I'm tightening up on the warranty repairs. I'm making sure that we don't just honor a warranty and say the hell with it; that we do submit. Actually, we have it set up so that a customer may not pick up a piece of equipment under a warranty unless the forms are right there, signed and put through. I have people in the office meticulously getting the stuff out and sending it in. So I've tightened up on that end of it. It's hard. It's hard to know where to tighten up the general repairs to pay. We know we haven't done much there. Basically, we have to have a shop, we have to do the repairs to support the sales, we know we're making money as a company and the sales are what are doing it.

Are there stores that don't do repairs at all?

Nolde: Not at this size. You couldn't sell stuff like this without making repairs. Your sales would fall off very shortly. You have to support it.

Seibel: I would say that the companies making the most money are the ones that do have a competent service backup staff.

Does a store necessarily have to

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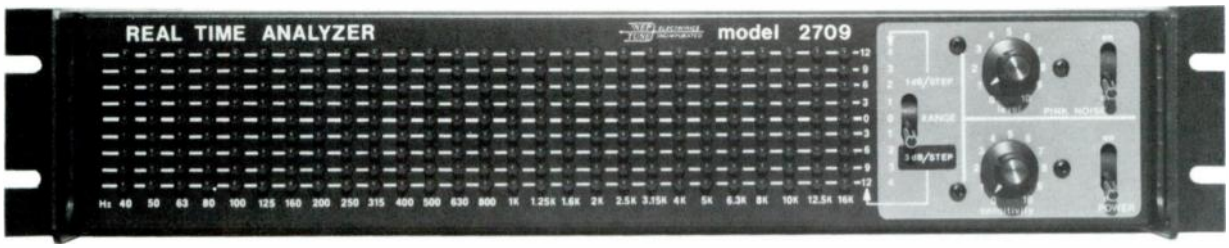

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have its own repair facility in order to offer repair service?

Nolde: Obviously, a guy who does that is going to charge more. We did some stuff on contract and that cost us far more per piece.

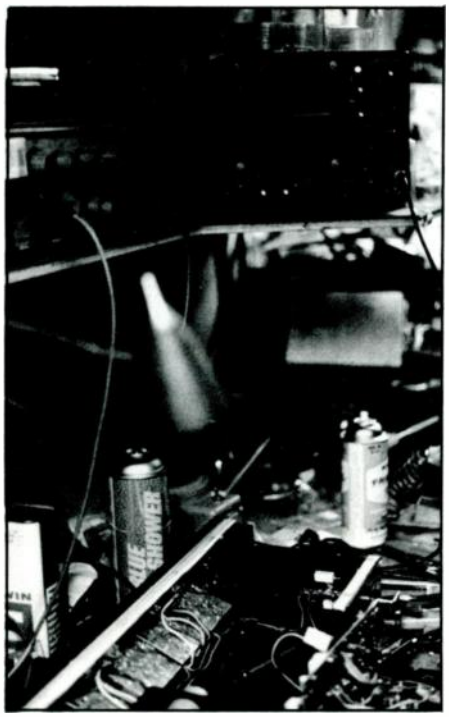
Seibel: And it really limits the communication between customer and service person and salesman. It has to be a really close knit family. You can't do everything by a piece of paper.

Nolde: I would say that at this size you have to have an in-house man. There's no other way of doing it practically.

Do you have a minimum charge?

Seibel: Yes, we have a minimum charge on different pieces of equipment and we have a flat hourly rate.

Minimum plus or minimum including the flat hourly rate?



Seibel: We'll charge the minimum unless it takes longer than an hour to do.

How about stuff that you can't fix?

Seibel: If we can't fix it, our policy is that we return it to the customer at no charge, and that's a very lenient policy.

Nolde: That's very lenient and also a very rare situation.

Seibel: Yes. I've only encountered one piece of equipment that I couldn't repair.

Nolde: Steve, give me an example of a minimal rate on a type of repair.

Seibel: Minimum rate might be $7.50.

Can you clarify which equipment has which minimum rate, or is it directly in proportion to the cost of the equipment or is it something different from that?

Seibel: It's proportional to the complexity of the equipment. For instance, there's not a whole lot of things that can go wrong with a microphone and usually within ten or fifteen minutes you've boiled it down. If you have a 200-watt power amp on the bench that has an intermittent problem, it can take a whole lot longer. On something like that we are into the hourly rate. There's dogs and there's easy repairs, and you've got to set your service rates so that you make some money on the easy repairs, but then again you end up losing on some of the other repairs.

Do you generally shy away from warranty repair on equipment that hasn't been sold at the store?

Nolde: Going on the assumption that I don't make out at all well on warranty stuff, why should I take care of someone else's problem?

Could it be to get new customers?

Nolde: I'm more inclined to say, "How come you're here, if you bought out there?"

Instead of, "Well, welcome and keep coming."

Nolde: If we were grabbing for business, I would probably be inclined, but we have so much, so much business.

Let's see what kind of equipment you have here. A B&K model 1470 scope dual trace, a B&K digital multimeter, an audio analyzer. What's that? It has a generator and distortion analyzer?

Chorné: But it has a load for 4, 8, 16 and 600 ohms.

You have another little scope there?

Chorné: This is what some people call a spider, an octopus—it shows figures or semiconductors for in-circuit testing.

Right. In-circuit semi-conductor tester. We also have a regular semiconductor tracer, curve tracer.

Chorné: Curve tracer goes to the scope.

Sine square audio generator. You don't have a sweep generator.

Chorné: We have the Ivie system.

Do you measure things acoustically or with electronics?

Chorné: Both.

We have an RC bridge comparator with a Conn strobotuner, another B&K scope for the other technician and another set of digital meters—we have an AC volt meter which reads low level too. We have an RMS meter. A clock, to tell how long it's taken for repairs. We have a speaker and monitor facility and a regular stereo for amplifier bank and dummy loads for measuring amps, up to around 3 or 4 hundred watts. And let's see what kind of manuals do you have?

Chorné: I have my private stash of manuals.

Let's see, textbooks, audio encyclopedia, sound system engineering, master service books. What do you use the calculator for?

Chorné: Mostly for power equations.

Why does it take three hours to do repairs?

Chorné: I service customers. We talk to customers. We wind up doing hardware things to the pieces.

Custom modification?

Chorné: Well, if a screw is missing, or a panel is bent . . .

It doesn't get charged off to repair?

Chorné: That all gets averaged out and the paper work is tremendous and keeping up with the schematics is tremendous.

Do you spend a certain amount of time every day reading?

Chorné: Yes, either at home or here.

What other kind of paper work is there?

Chorné: Just keeping up with the warranty reports, sending them in so we can get reimbursed, which is a losing battle. And then, the store paper work, keeping track of our time, our own time individually.

How long does it usually take for the flow of equipment through here?

Chorné: Normally about a week to ten days.

Do you ever have to do emergencies?

Chorné: Constantly.

Siebel: To sum up, I think that a few years ago it really looked as if America was turning into a throw-away society, but I can't see that trend continuing. This is a pretty long range and personal view of things, but just looking at what's happening to the rising prices on equipment, it's becoming increasingly important for people to have their existing equipment repaired rather than going out and buying something new. So much for that. As far as reimbursement on warranty repair, it is getting better. We have just been in touch with one of the newer manufacturers, who is setting up a warranty center and is going to pay $18 an hour, which is the best repair rate in the business right now. I think the trend is changing.

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Introduction of a new series of power tube guitar amplifiers has been announced by **Music Man, Inc.** The amps feature footswitchable distortion, built-in phasers, line in-line out jacks for effects accessories and provision for remote master volume control. This family of amps includes four 112 models—two with built-in phasers and two with footswitchable distortion. They are available with either 65 watts output RMS or 100 watts RMS; also, the 200 watt models are equipped with Electro-Voice speakers. There is also a 115-100-EVM model with a 15-inch Electro-Voice speaker, built-in phaser and remote master volume jack. Music Man has also announced the availability of a full selection of gauged Music Man guitar strings and bass strings, designed for use both on Music Man instruments and on other brands. The guitar strings are available in gauges of .007 to .056. The plain guitar strings are of top-grade high carbon steel and the ball end is attched with a lock twist. Wound guitar strings are of nickel steel winding on a specially-contoured steel core. The overall length of Music Man's bass strings is 49″ with a 38″ winding. They are available in gauges of .040 through .115. All contain a specially-contoured steel core. The flat wounds are built to the proper gauge by compound winding and are finished with a specially-ground ribbon wire; round wounds are built up with a compound winding and finished with a perfectly-balanced round wind; half rounds (brights) are built with a special round winding which is then ground for both shape and texture.

CIRCLE 1 ON READER SERVICE CARD

JVC Corporation has a new power amp on the market, the model M-7070. This new monophonic amp has a class-D power supply and DC amp construction with three differential amplifier stages. The class-D power supply, with efficiency as high as 80%, is completely free from thermal loss, according to JVC. Further advance information indicates that the amp is compact, lightweight, and offers rapid response and a high degree of stability. The M-7070 uses a dual-power system with the class-D power supply feeding the class-B output amplifier; a second power supply activates the class-A pre-driver stages. Because the class-D power supply has extremely low internal impedance, the M-7070 can produce power inversely proportional to the load impedance (240 watts into 4 ohms; 120 watts into 8 ohms; 60 watts into 16 ohms). It is capable of accommodating low load impedances with ample power reserve. The M-7070 delivers 120 watts, minimum RMS, at 8 ohms, with no more than 0.003% total harmonic distortion. A fully complementary parallel output stage employs newly developed wide-band, low-distortion power MOS FETs. There are three differential amplifier stages in the M-7070, directly coupled to the output stage. On the front panel, 12 LED peak power indicators provide

OPPE

By Charlie Lawing

visual check of the output power in watts. Selectable switching is provided for two speaker systems—A, B, A+B; cannon input connectors are provided in parallel with the subsonic input terminal. A headphone jack is included. Suggested retail price: $1599.95.

CIRCLE 2 ON READER SERVICE CARD

Another good line we've found at Strings and Things is **QSC**. They have undergone steady improvement since we took on the line, and indications are that this upgrade will continue. QSC's most recent product is the power amplifier 8.0, which offers the most complete package of power, specs, and features available today. This fan-cooled amp has an 8-ohm power rating of 175 watts per channel, 20-20 kHz with less than 0.09% THD; power into 4 ohms is 300 watts per channel. It will also operate in bridged-mono mode, delivering 600 watts into 8 ohms. The standard version of this amp comes with an extensive and complete list of features that are often extra cost options, if available at all.

One of the most useful features is the PowerLimit circuit. The PowerLimit control is continuously variable, making it much more versatile than other amplifier limiting circuits available today. It uses include preventing clipping, protecting loads by limiting the output, and reducing the maximum volume to a given level. The PowerLimit control is extremely wide-range, going from full power (Out) down to 2 watts (-22dB) at 4 ohms. Each channel has independent Gain and PowerLimit controls; both are calibrated.

A lot of attention has been given to information display, speaker protection, an input/output connections. LED indicators are used on each channel to display all information. This includes level, output clipping or overload (TDI), operation of the Powerlimit circuit, and DC power. Three different types of speaker protection have been built into the amp, two of which can be adjusted to suit the particular loads being driven. The amp comes, standard, with 3 pin XLR type balanced inputs. Phone jacks are used for the unbalanced line outs, single-ended inputs, and parallel input patching jacks. The speaker outputs have both 5-way binding posts and paired phone jacks.

Care has been taken to ensure that the A 8.0 withstands the abuses of constant touring

and operates reliably even in the most hostile environments. The amp is encased in a steel housing, and the power transformer is anchored with a 9 point mount to prevent it from coming loose under any conditions. The constant speed fan, equipped with a washable dust filter, cools both the output stages and the power supply. The amp will operate on 115/230V-50/60 Hz AC. Rack mountable or freestanding, it measures 5¼" tall, 19" wide, 12½" deep, and weighs just 35 lbs.

The QSC Power Amplifier 8.0 has a suggested price of $698.00.

CIRCLE 3 ON READER SERVICE CARD

Spectro Acoustics has introduced the Model 2102 stereo graphic equalizer to accommodate what the company sees as a need for "quality equalizers" in the $200 price point. The new model is physically smaller than the

company's Model 210, but offers the same circuitry and specification parameters of the earlier model. At 17" x 3½" x 6", the Model 2102 fits into a Spectro Acoustics Type A walnut cabinet or is rack mountable via enclosed mount converters.

CIRCLE 4 ON READER SERVICE CARD

Five mountable studio system products are being marketed by **RolandCorp US** as the Roland Studio System (RSS) in a 19-inch EIA-3U rack. The units can also be purchased separately. According to RolandCorp, these products represent the beginning of a complete line of high-performance studio system products. The new units include:

The RV-800 stereo reverb features volume, reverb and direct panning controls and switches for direct on/off, stereo/mono modes, extension unit on/off, compressor on/off, and reverb effect remote selector. Suggested retail price: $795.

The GE-810 monaural graphic equalizer features a control range of ±3 dB, ±6 dB, with input and output phone and pin jacks and a remote (EQ on/off) jack. Suggested retail price: $650.

The GE-820 stereo graphic equalizer is a 24-band model with range controls, input and output levels and jacks similar to the GE-810. Suggested retail price: $725.

The PH-830 stereo phaser features intensity, frequency and resonance controls, and input, output phase on/off, remote mode, sweep speed and wave form switches. The unit has external control voltage. Suggested retail price: $725.

Both power amplifiers—the PW-250, with 125 watts per channel, and the PW-500, with 250 watts per channel—contain a 4/8 ohm load switch which increases the power at 4 ohms 35 percent.

CIRCLE 5 ON READER SERVICE CARD

Dubbing it "the latest in phase shifter technology," **Analog/Digital Associates** has announced the availability of the Final Phase, a voltage-controlled 1800 degree phase shifter. Offering patented phase shift stages and a sweep modulation scheme, asymmetrical sweep patterns, multiple phaser effects, modulated sweep, syncopated beats, and many other effects are easily obtained. Continuously variable Range and Intensity controls produce effects as subtle as rotating speakers to intense phasing. The Overdrive foot switch introduces "distortion ranging from a thunderous jet-phase lead to a smooth

tube amp harmonic distortion that may either enhance phasing or be used by itself." The Final Phase is synthesizer compatible and may be triggered, swept or modulated externally with a 0 to +5 volt control voltage. In addition, the optional A/DA Control Pedal A may be used to sweep the Final Phase to obtain wah-phase effects. The Final Phase has a low noise FET input stage that will not load down even the guitar pickups, Very low current consumption, 3 milliamps, guarantees long battery life, or you can use the optional AC/DC converter. The A/DA Final Phase is shipped with batteries and has a one year warranty. Suggested retail price: $139.95.

CIRCLE 6 ON READER SERVICE CARD

The SOUND SHOPPE
REAR ENTRANCE

Akai has introduced the Model GX-267D 4-track, 2-channel tape deck with two-way recording/playback and automatic reverse. The three-motor, six-head deck operates in stereo or mono modes and can be set for manual, auto-reverse, or continuous play. The heads are GX glass and crystal ferrite. All function controls are full logic solenoid operated. The three motors are an AC Servo direct drive capstan motor and two reel motors. Tape speed can be set for 7½ or 3¾ ips and the deck operates either vertically or horizontally. Green lights above the controls indicate standby and direction. Specs, according to the company, are wow and flutter, less than 0.06% RMS at 7½ ips; signal-to-noise ratio better than 56 dB; distortion less than 0.5%; frequency response 30-25,000 Hz ± 3 dB at 7½ ips. Approximate retail price is $800.

CIRCLE 7 ON READER SERVICE CARD

One of the names my customers mention most often when discussing audio gear is **Crown**. I thought you might like to know that Crown has a new 35 watt dual channel power amplifier designed to drive studio monitor speakers. Although its principal application is intended to be in professional sound studios where rack space for equipment is limited, the new amplifier should also be in demand by hi-fi enthusiasts, particularly as a separate headphone amplifier. The new Crown D-75 provides 35 watts continuous average power per channel into an 8-ohm load and 45 watts continuous average power into a 4-ohm load. A rear panel switch converts the D-75 instantly to monaural with 95 watts continuous average power available for an 8-ohm load in mono. The D-75 was designed as a replacement for the Crown D-60 amplifier, which has been discontinued, and has many entirely new features (including completely new circuit boards). It retains the slim-line shape of its predecessor and is suitable for 19″ rack mounting. The D-75 amp incorporates the Crown IOC (Input-Output Comparator) that reports all types of amplifier overload. The

IOC monitors output feedback and the error signal generated by comparing output and input. It reports accurately on front panel LED's not only clipping but also TIM, protection circuit activation, and unusual load problems, In addition to the IOC, the D-75 front panel includes LED signal-present indicators activated by output levels over 48 watts into 8 ohms. The Crown D-75 has a suggested retail price of $349.

CIRCLE 8 ON READER SERVICE CARD

The **Boss** Model KM-60 6 x 2 stereo mixer is being marketed by RolandCorp US. Each of the six channels has its own treble, bass, pan-pot, volume and attenuator controls, along with input and output for effects. It can be stacked to give 12-channel capability. Signal-to-noise ratio, according to the company, is more than 63 dB. Suggested price is $350.

CIRCLE 9 ON READER SERVICE CARD

By Murray M. Silver, Jr.

DEALER DOSSIER

Ace Music Center
N. Miami Beach, Florida

In the early seventies, when numbers of pop stars had formed a fraternity of musical millionaires, the entire complexion of the industry began a long series of changes to insure their success and afford them every luxury that their sizable bank accounts could afford.

This new leisure class of professional musicians changed its Park Avenue winter address for Beverly Hills and Key Biscayne. In Miami, Florida a small garage knocked out a few walls and hung up a sign that read "Criteria Recording Studios" and a musical instrument store that had been situated around the corner for twenty years took notice.

Side by side, Criteria Studios and Ace Music Center have grown into a prosperity largely based on the professional musician who comes to Miami for a working vacation.

Ace Music center opened as a traditional musical instrument store in the early fifties under the design and management of Gus Rubin. In years to come, sons Fred and Dave inherited the business as co-owners and lured old family friend Chuck Messenger out of retirement to become general manager. As the aforementioned change in the industry came about, Ace Music center gradually moved into sophisticated sound reinforcement, home recording equipment and top of the line instruments and synthesizers. To facilitate the changes, Ace hired Neil RiCharde to manage the sales staff, stocked a warehouse with everything from soup to nuts and bolts, and fully equipped a service department.

PHOTOS BY MURRAY M. SILVER, JR.

Walking into Ace Music Center, the customer passes walls plastered with autographed 8x10 black and white glossies of the store's more prominent clientele. The sales counter is just inside the front door from which many accessories are handled. To eliminate the problem of running the small sales staff ragged, customers can help themselves to many of the items without assistance.

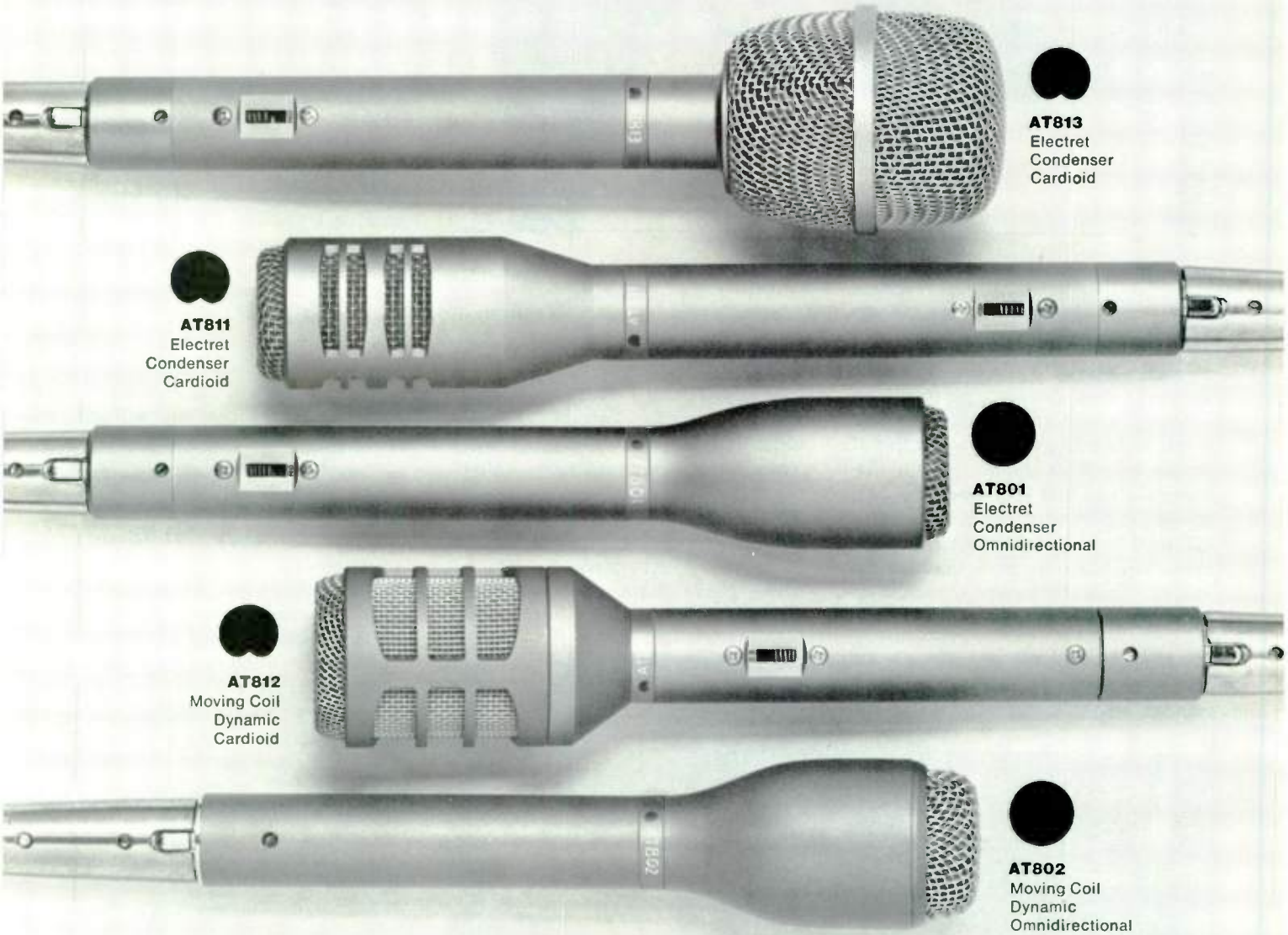
At the front end of the center aisle, two large wardrobe trunks with white stencilled letters on their sides identify their owners as the Bee Gees. Directly behind them is a long line of pianos and synthesizers consisting largely of ARP keyboards, the Yamaha CP-70 Electric Grand Piano and ensembles by Korg and Oberheim.

In the same general area, factory fresh drum kits are stacked to one side and two rows of trade-in and rental equipment are on the other. The stock of used equipment is mostly amps and special effects and the turnover occurs weekly. Ace backs all of its used equipment with a 90-day guarantee. The usual requests for rental equipment are for P.A. systems which might rent for as low as $25 per day or for keyboards ranging from $10 to $100 per day, including a choice of synthesizers.

At the rear of the store, a sound stage is equipped to provide ample space for demonstrating power amps. Yamaha and Tapco mixers are hooked to speakers by Cerwin-Vega, Yamaha, Acoustic and Unit. Co-owner Dave Rubin also designs and engineers the Ace cabinet.

Two of the most impressive aspects of Ace Music are never seen by the public—the service department and the parts warehouse. Service manager

Audio-Technica introduces five new microphones... and a pleasant surprise.



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AT811
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Cardioid

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AT812
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Take a close look at these new Audio-Technica microphones. Three electret condensers and two dynamics. Plus two clip-on miniature electrets (not shown). All are superbly finished. Carefully thought out in every detail. With the right "heft" and feel. Professional A3M Switchcraft output connectors, of course.

Then listen in your studio. Full-range, peak-free, clean and crisp. With no distortion even when used close-up to high-level performers. And the balanced, phased Lo-Z (600 Ohm) output matches pro and semi-pro mixers alike.

Now for the surprise. The price. Both omnis are nationally advertised at just $60, for either dynamic or electret condenser element. The two basic cardioids are just $80, while the AT813 electret condenser with integral windscreen is pegged at $95. All complete with full one-year warranty.

Once you've seen and tried these new Audio-Technica microphones we think you'll welcome them. Not just because they cost so little...but because they do so much. Available now from your Audio-Technica Professional Products dealer.

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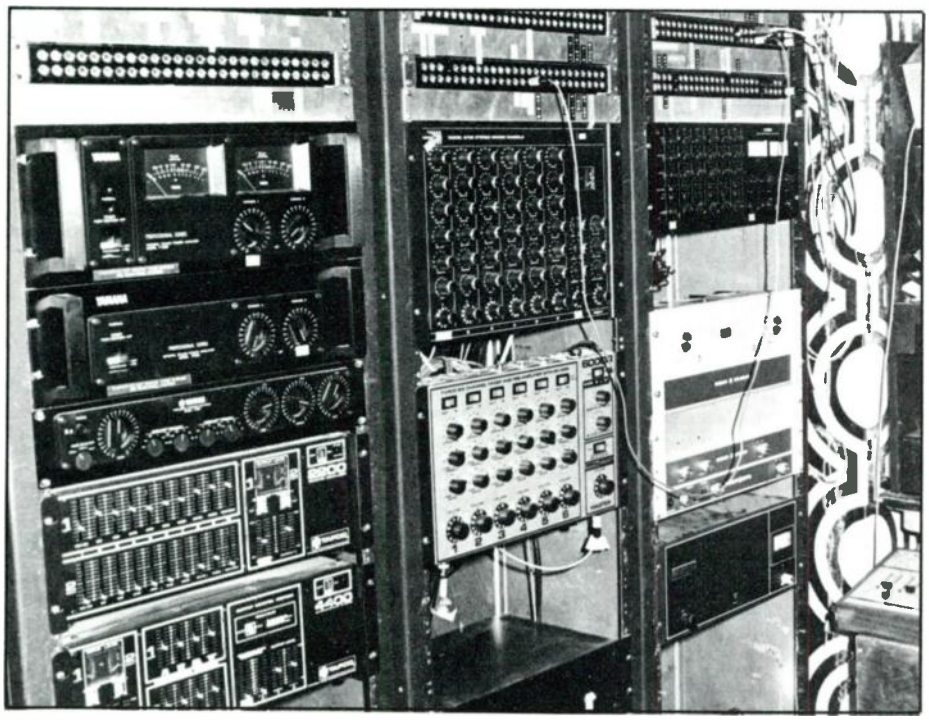
CIRCLE 94 ON READER SERVICE CARD

John Dalnes was formerly a physics student at Michigan State before being drafted by Ace from Elko. Dalnes supervises a same-day repair service which is equipped to re-cone speakers and conduct performance tests on sound reinforcement equipment. Before Ace will sell a new line of equipment, it is John's job to disassemble and test each part of a unit to see if it does what the manufacturer claims it does. He is an authorized warranty repairman for more than twenty major manufacturers, including Tascam.

To facilitate his task, John employs an HP 339A distortion analyzer to monitor distortion in amplifiers. Output is gauged by a T922 oscilloscope and a Variac autotransformer.

John has long been recognized by manufacturers as a valuable counselor and troubleshooter. Among his more recent projects were installing a snake connector in an Oberheim eight voice unit for the Bee Gees and a trip to Criteria to lecture their technicians on tuning their synthesizers.

The parts department boasts a plentiful supply of every spare part imaginable. Ace will often buy used equipment or accept trade-ins solely for the parts, which range from nondescript screws and a single tamborine jingle to Yamaha's newest synthesizer



SOUND ARTS visited Ace Music Center to discuss the store's operation with its general manager Chuck Messenger, sales manager Neil RiCharde, and ace salesman known to one and all simply as Walt.

Messenger: Gus Rubin started Ace Music over 25 years ago as a traditional musical instrument store. He was an astute businessman who followed the trends as they occurred. He stayed with it until the explosion in sound reinforcement happened five or six years ago. At that time his sons joined the business and they anticipated what was going to happen to the industry. They were able to make a gradual transition from the traditional M.I. store into sound reinforcement.

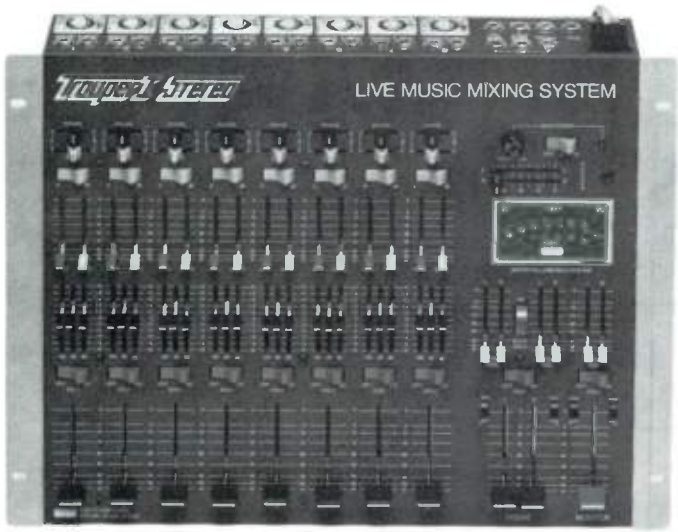
Ace has always been just a step ahead of the market because of the experience in this store. Our employees have been here a long time and they can see what is happening. They also get help from our customers who are up in the business who will come in and say, "Hey, I saw this or I saw that." Guys like K.C. (of the Sunshine Band) and Bob Marley have been coming in here since they were kids and couldn't reach the counter to buy a set of strings.

RiCharde: Miami became one of the largest recording areas, so naturally we have become one of the largest equipment dealers. However, Ace Music established its name in this area long before Criteria Studios ever came into being and Clapton and the Bee Gees ever recorded. We were known as the most fully equipped store in the world and the musicians knew where we are. We didn't build Ace Music just for the stars; anyone can walk in here and ask for anything and we have it.

Messenger: Our average customer is the professional musician, the working pro. The backbone of the business is the drummer who comes in here day after day to buy his sticks and heads or the keyboardist who comes in to ask what's new in synthesizers. We have a free and easy atmosphere in this store. The customer who comes in here feels at home here. You can see by the way we dress that everything here is very relaxed.

What continues to attract the professional musician to Ace Music?

TROUPER I
INSIDE OUT



Anyway you look at the TROUPER I it is designed to perform, from its easily serviceable components to unique features, like a solo system or house and echo pan pots. The TROUPER I is flexibility. It is expandable to 18 inputs, available in mono or stereo and capable of handling any mixing situation. Take a look inside and out.

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CIRCLE 91 ON READER SERVICE CARD

Messenger: When groups pass through Miami on tour, they will drop in to see what's new because we will display the latest entries on the market. Unless it is a real odd-ball request, chances are we've got whatever it is in stock. Everything on the floor is like a toy—a guy can come in and play with it no matter how expensive it is because that's what it's there for. Every amp and synthesizer is hooked up.

The atmosphere in here on a busy day is incredible. One guy will be trying out a bass, another a guitar, another a synthesizer and it gets really wild. It is an atmosphere the musicians really seem to like. There are no salesmen standing around unless the customer needs special instruction.

What are the prerequisites for hiring a salesman?

RiCharde: We are very careful about hiring salespeople. No one person does the hiring; we have meetings about it. Our salesmen are full time salesmen. One of our requirements is that the salesman is *not* a musician. We don't hire the guys who play at night, because being a salesman is a full time profession. We don't have a high rate of turnover—one salesman has been here 21 years and another for nine, so our guys are here to stay.

Do your salesmen specialize in particular departments?

RiCharde: No, that didn't work because someone would come in to pick up a synthesizer and the salesman would say, "I don't sell the synthesizers," and the customer would ask, "What do you mean you don't sell the synthesizers?" We tried departmentalization and it didn't work.

Our salesmen develop a working relationship with certain customers who become clients on a regular basis. Each salesman maintains his own separate accounts. A regular customer walks in the door, goes straight to his salesman and the other guys leave him alone unless one might have more familiarity with a certain piece of equipment. Then they will help each other out. They work together. Sometimes a customer will walk in and a salesman will ask if he can be of help and the customer might ask for a particular salesman who may be busy. Some customers will wait for the salesman they have been doing business with for five or ten years because they feel easier, more relaxed.

Is there a free flow between salespeople and management?

RiCharde: We are very verbal with

each other; nobody pulls any punches.

Messenger: We do have a sales meeting once a week and it's give and take. We tell the salespeople what has happened in the previous week as well as inform them about what is new. We keep them up to date on things we think they should know and they let us know what they have been hearing from the customers about what is new that we could use. We also have regular training meetings for which we sometimes have a manufacturer's rep or engineer come in and conduct a demonstration on a new line.

RiCharde: Because our salesmen have to know about everything, it is important that we give them all the information possible. Being here as long as they have, they pick up a lot of things themselves. A salesman can demonstrate a sound system, a guitar or a synthesizer and can communicate with the customer. And because we are well known in the industry, many manufacturers will ask us if they can come in and conduct a seminar on their new product.

With such a small staff and such prominent clients buying high end equipment, it sounds like you don't have much time for beginners.

Messenger: Let's get down to the basics of it. Anyone who walks in here, whether it's the Bee Gees or the kid next door, is treated in the same way; they get the same product at the same price. There's no differentiation even though the Bee Gees may spend a hundred grand and this kid will spend a thousand. No one gets a special price. We have a discount policy which the salesmen must stay within. The kid's money is as important to us as the Bee Gees' because that kid could be bigger than the Bee Gees ten years from now. K. C. has been coming in here since he was 13; Bob Marley was brought over here as a kid and dragged in by the hand.

Ace Music spends next to nothing on advertising. How do you reach the consumer, especially the newcomer?

Messenger: Word of mouth, reputation, one professonal musician to another. We don't spend for advertising, we spend for service. You can't influence a knowledgeable musician with a thirty-percent-off ad in a local newspaper or with giveaways, because that doesn't mean anything to the pro. They are more concerned with service and replacements when they get stuck. That's more important than the five or ten bucks. Some guys will shop for the five-dollar difference, but the knowledgeable musician knows that if he buys an amp from Ace and he is playing within a hundred-mile radius and the amp goes down, he knows he doesn't have to send it back to the factory. He can get it repaired here while he waits, for no charge, or we will loan him one until his is repaired. We are service oriented.

Successful bands on tour, rather than trust a local dealer, will pick up the phone and call us and we will send whatever they need air mail and have it delivered. There is no question of money, we get it on a plane in half an hour.

RiCharde: A lot of big stores have slowly earned bad reputations for poor service because their attitude is "Here is our stock, we give you a great price, buy it and we don't want to see you again." We have never adopted that philosophy and we never will.

Messenger: We want to see you again. We depend on it. Our whole philosophy of business is designed towards getting the customer to

return. If we make a good buy on something, occasionally we will advertise a special and give the customer a break on the deal that we made. Other than that, we do not advertise regularly—maybe an ad on the radio two or three times a year.

RiCharde: We would rather spend ad money on service. Ace does not have to spend a fortune in throwaway ad dollars to develop a reputation. We have the finest service department in the country and I will put it up against anybody's.

Ace Music has been in the same location for years and has remained virtually unchanged cosmetically. What sort of environment are you trying to promote?

Messenger: We don't put carpet on the floor or elaborately design glass-enclosed booths for demonstrations because of our location. This is south Florida. The norm here is sandals and cut-offs and a guy doesn't want to have to put on a shirt to go to a music store. He wants to be comfortable.

RiCharde: A lot of stores play the big show and lack for service and merchandise. We spare the flash and provide the product and deliver on the service in an atmosphere the customer likes.

When a new customer walks through the front door, what does Ace do to sell him on the store?

Messenger: We first find out what the group has and what they intend to do. We will work with what they already own if it is useable. We are often asked to solve problems where the musician did not buy the right product, or it does not work correctly, or it's something he doesn't need or he has overspent in one area. In many cases, a musician can get what he needs for half of what he was prepared to spend.

A lot of customers are shy about talking to a salesman. They try to make out that they are a little better than they are. If they would simply tell the salesman and then listen to what he recommends, the customer would come out better. But these days people are reading more and have a better general knowledge.

RiCharde: Many groups do not see the significance of equalization and a lot of them do not know how to effectively put it to use. We will go to local clubs to troubleshoot for bands, but it is tough to work with a group that has a soundman who considers himself to be a genius; it's hard to tell them anything. We can be most helpful to a band where we have supplied the equipment for the club that they are playing in.

Do you install sound reinforcement in clubs and concert halls?

Messenger: No. It is perhaps the most whored business in the industry. Some dealers will take a line and break it up into M.I., pro sound and sound installation and its the same equipment.

RiCharde: The biggest problem is with sound engineers with dime store degrees who write to the manufacturers and ask to become franchised dealers. These guys are working out of their garage and can't sell the equipment. They usually have no overhead and they end up giving the equipment away and making their money from a service and installation charge. Usually these guys install the equipment incorrectly and it doesn't do anything for the product. Even worse, the manufacturers really don't care what the guy sells the equipment for as long as they get their end of it. They don't look at the long run, the established dealer who handles the equipment and in time can sell the fire out of it.

There are legitimate sound contractors and there are illegitimate ones. We will sell to the legitimate ones and work with them. They make bids on the big halls and are strictly professional. My only complaint is with the guy working out of his garage.

Are you seeing a substantially increased interest in home studio equipment?

RiCharde: We are getting into that field more and more. A lot of musicians are getting tired of spending $150 an hour for recording time. When they add up what they have been spending, they realize that they can afford a small studio and make their own tapes. Then they get into 8-track, so that's what we stock.

Are these customers serious hobbyists?

RiCharde: No. Strictly the working pro.

Messenger: The hobbyist does not come to an M.I. store for sound equipment. He will go to the hi-fi store, because he does not associate sound equipment with the conventional M.I. store.

RiCharde: The hi-fi stores usually have little to no working knowledge of

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If we can't do it correctly the first time around we work until we find a way. We won't bend it, we won't shorten it, because we found out a long time ago that you can't cheat physics. We don't use inferior materials because the result is always an inferior product. No gingerbread, no inadequacy. Just simple, straight-forward designs with the built-in toughness and strength that have become the hallmark of every Community product.

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In other words, we give our best so that you can give your best. We take pride in what we do and we sincerely believe that what we do is build superior pro sound equipment.

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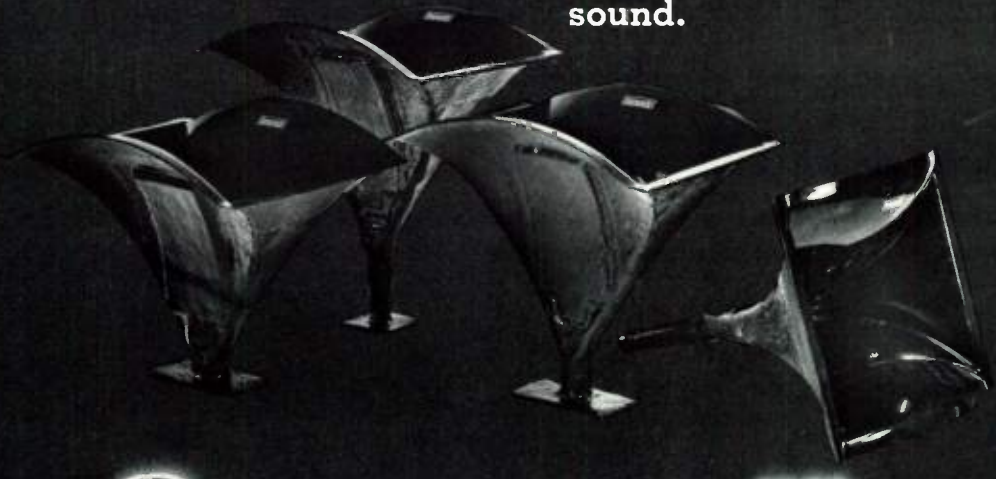

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CIRCLE 90 ON READER SERVICE CARD

Specs and Price.

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The Tangent Model 3216 Professional Recording Console. Take a look at the specifications and the price . . . you won't find any other consoles in the world that compare with Tangent.

SPECIFICATIONS

Total Harmonic Distortion (1 kHz, +20dB output)	.004%
Intermodulation Distortion (+20 dB output)	.004%
Signal-to-Noise (Equivalent Input Noise)	-128 dB
Frequency Response (± 1 dB)	10 Hz-65 kHz

These are typical specifications measured by MODERN RECORDING in the "Hands On Report", October 1977. The unit reviewed was a Model 1202, which the Model 3216 surpasses with even cleaner and quieter performance.

PRICES

Eight channels in a sixteen-channel mainframe	5,940
Sixteen-channel mainframe, filled	9,960
Sixteen channels in a twenty-four channel mainframe	10,860
Twenty-four-channel mainframe, filled	14,220
Twenty-four channels in a thirty-two-channel mainframe	15,420
Thirty-two-channel mainframe, filled	18,780

tangent
musical engineering

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