

SOUND AND COMMUNICATIONS

COVERING TELECOMMUNICATIONS
AND ELECTRO-ACOUSTICS

JUNE 1984

19-MEANS- TOP
J. B. LANSING SOUND INC
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CA 91329**

EV PRO SOUND PRODUCTS

The competition in the professional sound field is pretty fierce. Ask anyone who has ever competed for a contract with EV Professional Sound Reinforcement products and they'll tell you that on a head-on, feature-for-feature, dollar-for-dollar basis, there's really no competition at all. Especially when EV's "Sound in Action" line is pitted against Altec and JBL. The truth is that many of their basic products are based on technologies that go back more than 50 years, to the first sound motion pictures. But designing sound products that are capable of filling a theater, concert hall, auditorium or stadium with high quality sound is a lot more demanding than reproducing the sound tracks of yesterday's talking pictures. In addition, the mechanical design and manufacturing processes of today and yesteryear are miles apart. (We ought to know, since EV's been making transducers since 1927).

For example, you've been hearing recently a lot about the sophisticated theories of A.N. Thiele and Dr. R. H. Small, as applied to low-frequency systems. What you probably *don't* know is that Electro-Voice applied these theories to product design ten years ago. EV *invented* the Constant Directivity™ horn. And we developed the first high-performance compression driver that can really "take it," and handle high-level inputs on a long-

term basis. In other words, EV examined what was wrong with yesterday's products and combined up-to-date design, manufacturing techniques and materials in a product line that provides better acoustic performance, as well as significant weight, size and cost advantages.

Want proof? EV Pro Sound products are making hearing as exciting as seeing in such diverse places as Disney World, the Pontiac Silverdome, Circus World, Sun City Sundome, Yankee Stadium and the E.J. Thomas Performing Arts Center at the University of Akron, as well as countless numbers of churches, schools, theaters and clubs all over the country. And to help you get to know more about our products and installations, there's a new catalogue that not only describes the complete

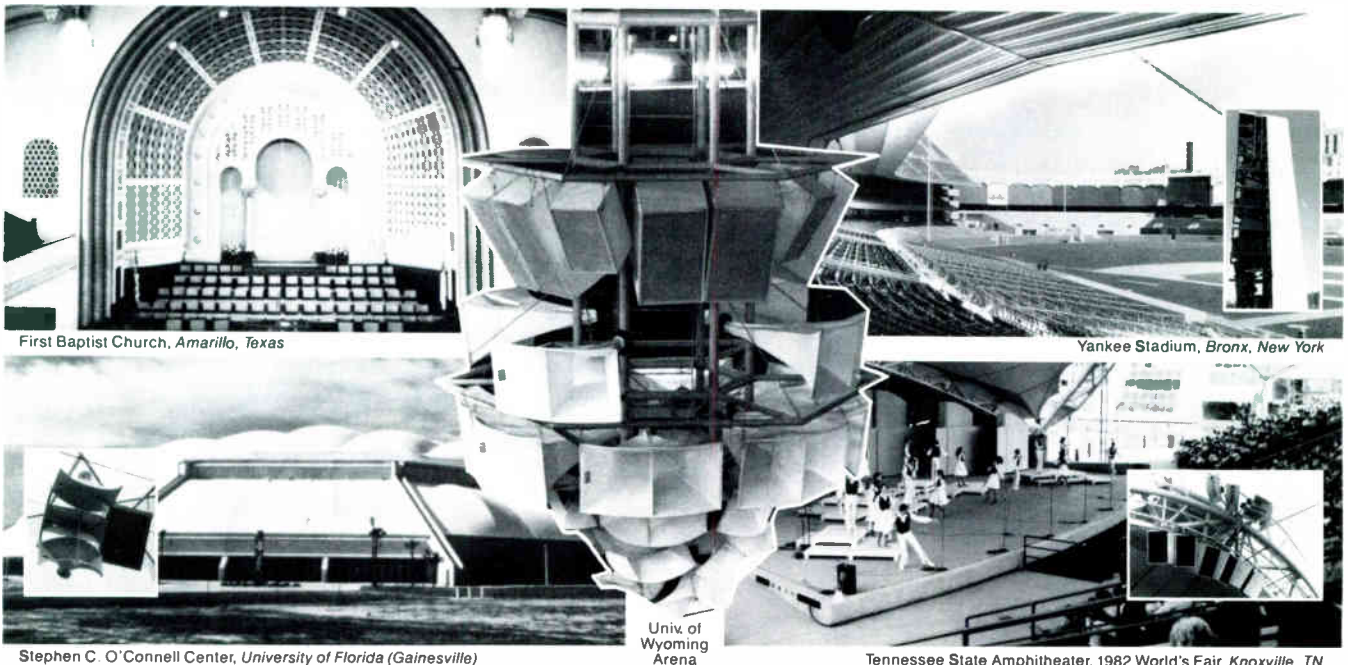
line of EV Pro Sound Reinforcement Products, but outlines EV's contributions to the field. There's also information on product performance testing and EV's standard-setting Engineering Data Sheets.

To put EV Pro Sound Action on your side, send for our new catalogue and get a good look at the EV position. Write to: Jim Long, Electro-Voice, Inc., 600 Cecil Street, Buchanan, MI 49107

FEATURE-FOR-FEATURE, IT'S TOUGH TO EQUAL EV PRO SOUND PRODUCTS. DOLLAR-FOR-DOLLAR, IT'S IMPOSSIBLE.

a gulton company

EV **Electro-Voice**®
SOUND IN ACTION™



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Yankee Stadium, Bronx, New York

Stephen C. O'Connell Center, University of Florida (Gainesville)

Univ. of Wyoming Arena

Tennessee State Amphitheater, 1982 World's Fair, Knoxville, TN

MEET THE MANUFACTURER YOU DESIGNED.

Funny, isn't it? In a business where it's so important to treat your customer right, when was the last time a manufacturer made *you* feel important?

When was the last time you didn't have to worry about back-ordered equipment? Out-of-the-box failures. Arbitrary distribution. Or sudden price increases that left you holding the bag.

And even when you could get the hardware you needed, how often have you found yourself in a bidding war, with everyone on the street selling the same package? Forcing you to cut your price—and margins—for the sake of a sale.

If all this sounds painfully familiar, maybe it's time you met people who believe in *solving* your problems, instead of *creating* them: Walker Telecommunications.

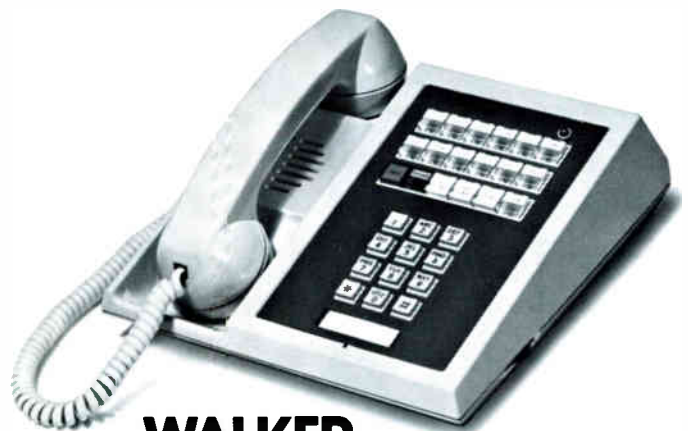
Our growing line of Reliant™ full-featured business communications systems gives you the performance, flexibility and *value* you need to compete. With microprocessor-based features that don't take an engineering degree to use. Or to sell.

We've designed Reliants for faster installation. Built them to provide the highest reliability. Backed them with a level of technology and manufacturing experience our competition would envy. And stocked them in *depth*.

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In short, we've not only listened to your problems; we've done something about them.

Isn't it time we talked?



**WALKER
TELECOMMUNICATIONS
CORPORATION**

200 Oser Avenue, Hauppauge, NY 11788 (516) 435-1100

SOUND AND COMMUNICATIONS

JUNE 1984



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combining SOUND MERCHANDISING & MODERN COMMUNICATIONS
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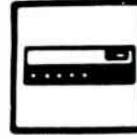
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managing editor
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production manager
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reader service
MILENA M. KREPINSKY

sales offices

EAST COAST & MIDWEST
 156 E. 37th St.
 New York, N.Y. 10016
 (212) 685-3480

WEST COAST
JOBSON, JORDAN,
HARRISON & SCHULZ, INC.
 119 W. Bellevue Drive
 Pasadena, CA 91105
 (818) 796-9200

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You've just chosen the ideal DC voltage to phantom-power these new ATM electret microphones.

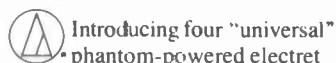
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Introducing four "universal" phantom-powered electret microphones. Designed to work from external power, internal regulation automatically handles any voltage from 9 to 52 VDC without adapters, switches, or rewiring. Just plug in and enjoy. With current drain a mere 0.3 mA at 9 volts (4 mA at 12-52V) a 9V battery lasts thousands of hours, not just the 60 or 70 hours typical of other mikes.

When your power supply isn't available, or isn't enough, use ours. The new AT8501 Dual Battery Supply holds two 9V batteries. One to use, and one in reserve. Instant switchover and test LED eliminates guesswork. And spares are as near as the closest shopping center. Neat.

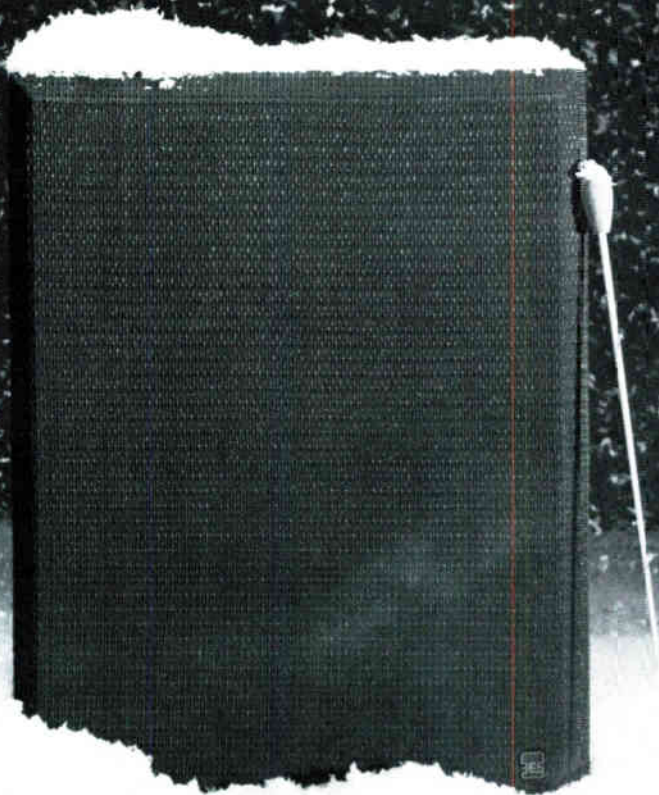
But convenience and versatility are just two of the advantages of the new ATM models. All-new electronics provide plenty of headroom inside the microphone with no more than 1% THD even when used in acoustic fields of 141 dB SPL. Which sets new standards for clean sound even close-up to big brass or inside a powerful drum kit.

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Before you add another microphone, compare our sound, our convenience, our reliability, and our cost. Write for literature and list of nearby ATM microphone specialists. Get great sound...right from the start! AUDIO-TECHNICA U.S., INC., 1221 Commerce Drive, Stow, Ohio 44224. (216) 686-2600.

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After a triumph at the Bowl, we've opened in Fairbanks!



You may have heard of BES speakers by now. They work so well in drop ceilings that new I.B.M. and G.E. Conference Centers have just changed original specifications to install them.

But our portable speakers work well anywhere you want to put them, including outdoors. To establish long-term proof, we installed 128 of these to provide sound augmentation for the Hollywood Bowl. After nearly two years of smog, temperature and humidity extremes, we're pleased to report original performance is *unchanged*.

Our portable speakers are 4¼" thin, weigh less than 15 pounds, and are rugged enough for anybody to carry anywhere. They work well indoors or out, in any sort of weather, and they cost less than other systems of high quality.

BES is the first new technology for commercial speakers in over 30 years. Each speaker is a full-range system which is highly accurate from 40 Hz to 19 kHz ± 3 dB. It radiates from the front and the back equally, and is essentially spherical across the entire frequency spectrum.

Our long-term outdoor test in Fairbanks* is still underway, but our speakers have survived their first winter at -40°F and under, with unimpaired performance. If you live anywhere else, please contact us for more information now.

*Test data available upon request.

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EDS/NSCA

Las Vegas—There was some trepidation, prior to Contractors Expo '84 (sponsored by the National Sound and Communications Association). Will it draw an audience? How can a highly vertical practice within the large distributing area sustain a separate show?

Happily, the results demonstrated that the alarmists were off-base:

—810 sound and telecommunications contractors attended the 3-day conference and exhibit;

—108 exhibitors of products, systems, accessories and hardware sanctioned a show devoted to the contractor;

—42 workshops, centered on the circuits that engage the sound contractor—sound distribution/reinforcement, security systems, life-safety systems and the specialty products appertaining thereto—were well attended and highly valued. The management side of the business was also examined, especially the impact of the computer as a management tool, handling sales, inventory, service records and subscription/lease accounts, in addition to the computer as the handmaiden to the design of speaker systems.

This Conference received accolades from exhibitor and attendee for its planning and execution, thanks to the stewardship of Francis C. Rebedeau/executive secretary; Lloyd F. McKinney/president of NSCA; and Wes Alderson/Expo committee head, all under the direction of Harold Lander, Expo chairman.

The Expo '84 committee side-stepped the common complaint of

most conventions—the self-defeating programming of workshops while the exhibition hall was open for traffic. The NSCA program committee planned the workshops to run from 9 AM to noon—four workshops concurrently. Each workshop was taped by a professional service. The attendee had his choice of actually hearing one, and then purchasing the tape of the others for his information. Little was lost in the workshops, according to an Expo '84 committee member.

The exhibition hall was open from 1 PM to 6 PM. The exhibitor found two elements catered by Expo '84 to have worked in his favor: the timing of the conference that provided him with a clear field to meet his customer and prospector among the contractors. Additionally, meeting his customer or prospect in an open area, one-to-one, allowed for a concentration of data, because the supplier was being quizzed by a knowledgeable inquirer, not some catalog collector.... professionals meeting professionals!

The NSCA booth concept was limited to the four walls surrounding the open area of the hall, and within the well of the hall were low table positions, allowing for a full exposure of product and personnel. And the product offering was squarely within the lines carried by the sound contractor: amplifiers, speakers, microphones, hardware, cable and wire, intercom systems, test equipment, lecterns, mixers, wireless mikes and wireless paging

systems, security system products and signal processing gear.

The standard line of sound contracting products was joined by a number of musical apparatus producers of audio gear, seeking to expand their customer base; likewise, makers of recording studio apparatus and equipment for the broadcaster made presentations.

A fast, non-scientific survey among the exhibitors and the attendees turned up this consensus of opinion: As a first-time attempt to walk without holding EDS's hand, the conference was a success. Much product information was exchanged, much field application experience was offered in an attempt to "lend a hand" in the design of newer equipment.

It was obvious that the sound contracting business needs its own convention, for the industry has come of age—there is a maturity among contractors not evident before. The contracting fraternity has been joined by professional engineers and former physics majors who are active in engineering, sales and management, within the sound contracting business, and in all the major trading areas of the United States—all 215 of them, as defined by the United States Commerce Department!

The sound distribution/installation business, coupled with the intercom system (duplex, especially), now rattles along at a \$500 million clip, annually.

Expo '85 has been penciled in

Contractors, exhibitors and manufacturers through the aisles at NSCA's Contractors Expo '84. 



for Orlando, Florida, March 9, 10, 11, at the Sheridan Twin Towers.

There was trepidation, too, before the EDS (Electronic Distribution Show) convened, that the NSCA conference would put a crimp in some conference action, as to attendance, booth participation and workshops. According to reports, it never happened!

What the dual-conferencing (NSCA overlapping with EDS—April 23 through April 27) exhibited was an audience for both, because some products and some attendees stand with one foot in each precinct.

EDS was seen as an expanded conference for the industrial distributor and the firms engaging in MRO (Maintenance/Repair Operations) in all areas of industrial manufacturing and commercial outlets. The old general line operator is an endangered species—there is a fast-dwindling market for the repair of entertainment electronic gear. Much of the general line product once sold over-the-counter is now blistered-packaged. Even telephone products (now that divestiture is the operating word) are blistered-packed.

However, industrial electronic products evidenced a wider spectrum for the industrial distributor and the electrical product distributor, who was in attendance, by invitation of the EDS corporation. There has been a subtle change over the past eighteen months, according to some independent reps, who've noticed more and more product, once limited (by the manufacturer) to the parts jobber, now inventoried by the electric parts distributor. A prime example, they said, was wire and cable, and associated hardware, coupled with products common to the installation of computer systems and fire alarm systems, et al. The move, they said, was spurred by the adoption of fire codes and life-safety codes by some 36 states. New York City's Law 5 initiated concern over life-safety by the fire department, and was accelerated by such major fires as the MGM Grand Hotel/Las Vegas, the Stouffers Inn/Westchester, NY, and other fires that took a heavy toll of life!

EDS's workshops were concerned with management problems, and with emerging markets that were seen as dependent upon the indus-

The National Sound and Communications Association, meeting in executive session at the close of their Contractors Expo '84, elected a new set of officers: Harold Lander, president; Harold George, vice president; and Mel Wierenga, treasurer. The new members of the Board of Directors are Jack Redd, Per Haugen and Ronney Harlow. An expanded Board of 12 members will be announced shortly, according to Lloyd McKinney, immediate past president.

trial electronic distributor for product delivery in small quantities of all manner of electronic and microcomputer gear.

EDS has announced that the 1985 Convention will be in Chicago, IL, April 30-May 2, 1985, at the Hyatt Regency Hotel.

The trepidation expressed by some independent sales representatives that the splitting of the shows into two distinct arenas would lead to no one's advantage was demonstrated to be wishful thinking!

A number of conference "officials," who preferred to be unidentified, remarked that the independent sales rep had a small problem, but not an unsolvable one. To a certain extent, the rep must now choose where he will conduct his sales—in sound contracting, or in industrial electronic products. These have become two distinct areas, and the rep helped to create them: He demanded a new sales pricing policy for the sound contractor, as distinguished from the electronic distributor. Where the product or system was common to both areas, he pushed them equally hard to the two customers. He, the rep, was a "second" to the sound contractor in his bidding bout with architect, general contractor, and purchasing committee. The rep introduced, cajoled, moved the industry into the subtle split. And now he must choose where he will stand—in the very near future.

Trepidation sometimes is caused by lack of initiative—why rock the boat?

However, this year's dual experience in Las Vegas proved to the doubters that this new concept could make the sailing smoother than ever.

The Williams Sound Personal PA wireless FM listening system for the hearing impaired has a lot of people excited.



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Our dealers.

Our competition.

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If you take us apart, you'll take us on.

When we decided to expand the Quam line to include ceiling baffles, backbox enclosures and assemblies, we wanted to do more than just complement our loudspeaker offerings. We wanted to give the contractor another choice. Judging from the growing list of contractors who have switched to Quam, we did just that, with an unbeatable combination of quality, price and service.

Take us apart for a side-by-side comparison of ceiling baffles, for

example. From the heavier gauge metal to the more durable epoxy finish, Quam baffles are made in our own plant to look, install and perform better. The same is true of the entire Quam line, from enclosures to transformers to 8" speakers.

You don't pay a premium for this higher quality, because as always, Quam's prices are very competitive. Nor do you pay the hidden cost of maintaining inventory. All catalogued

items, including assemblies, are ready to ship on receipt of order from our 70,000-piece warehouse stock. You buy Quam only as you need the parts.

Take us apart. Then take the competition apart. You'll see that Quam is your best choice. Call or write for your free Quam commercial sound products catalog, and take us on. It's the sound decision.

Quam: The Sound Decision



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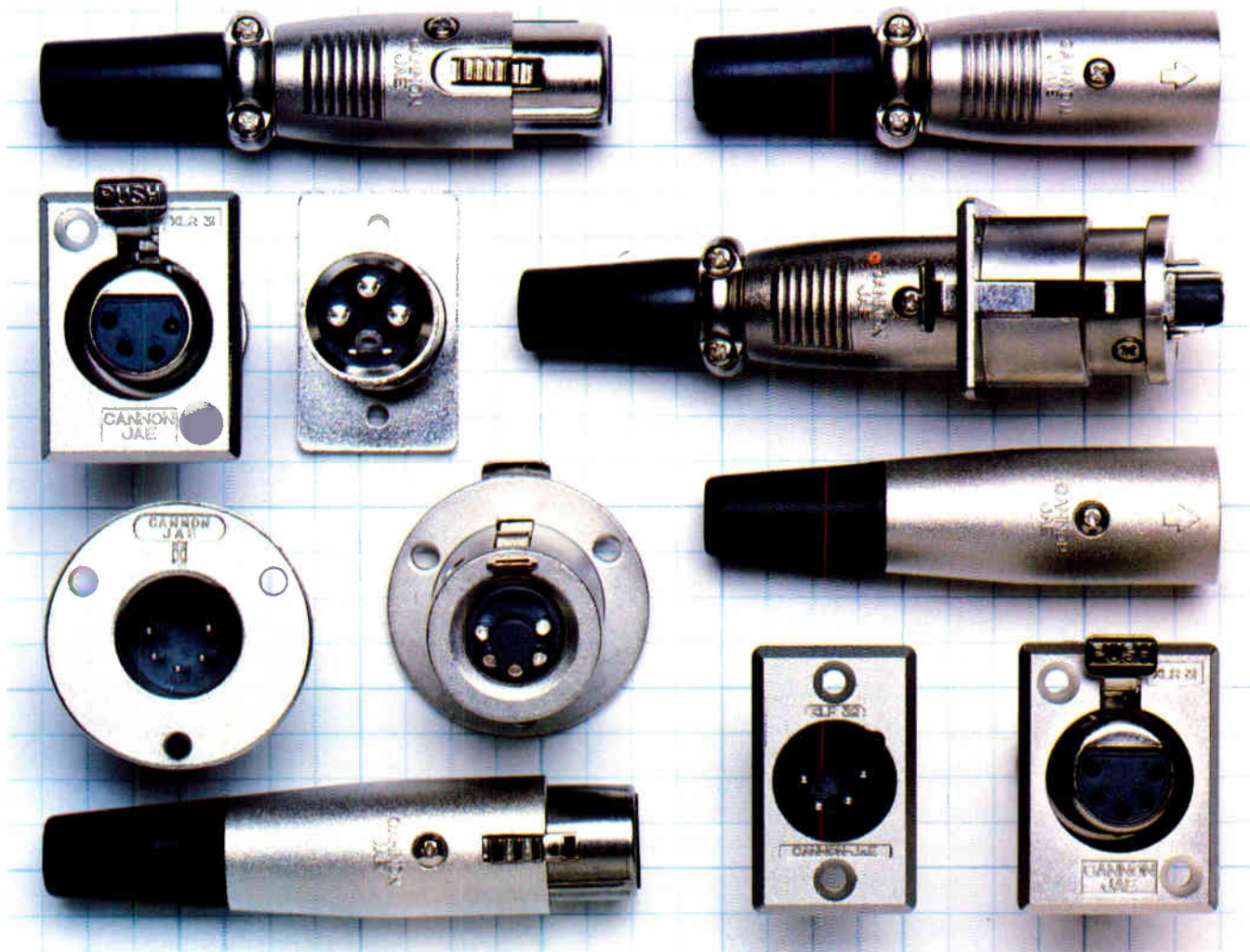
EDS/NSCA Exhibitors

Highlights from the products showings at both Las Vegas conventions

- AIPHONE—intercom, paging and entry security intercom systems.
- ARGOS—packaged portable sound systems, lecterns and PA systems.
- ASTATIC—dynamic cardioid microphones, Models 960, 965 and 985.
- ATLAS SOUND—Model MSB-21 microphone stand, combining a vertical stand with a horizontal boom and strobe device for emergency A/V signaling.
- AUDIO TECHNICA—Uni Point condenser line and gradient microphone.
- BEYER DYNAMIC—full line of dynamic, condenser and PA microphones and communication headsets
- BLONDER-TONGUE—ESHM modulator for CATV and private cable systems.
- BOGEN—administrative communications systems, intercom phones, reinforcement amps, mixers and power amps.
- BOSE—302 Tandem-tuned Bass System, a transducer loading system.
- CANARE CABLE—cables for audio, music video and industrial applications.
- CETEC RAYMER—Model 1010/1040, 100-watt paging amplifiers.
- CLEAR COM—intercom products specifically designed for the teleproduction industry—CP300 and MS 808.
- COMMUNICATIONS COMPANY—RAD-30 Room Audio Director.
- COMMUNITRON—office intercoms and telephone modular parts.
- COMMUNITY LIGHT & SOUND—pattern control series professional horns and Cluster Computer™.
- CONTROLONICS—infrared professional sound systems.
- CREST AUDIO—3000 and 4000 Series amplifiers.
- CROWN—TEF 10 audio spectrum analyzer/computer.
- CUSTOMTRAX—quality music for foreground sound.
- J.W. DAVIS—Patronis Pataxial Loudspeaker System.
- DYNA-SYSTEMS—time varying mixing unit, S110 Series, available in 1, 2, and 3-channel.
- EDCOR—GLA amplifier series.
- ELECTRO-VOICE—professional sound reinforcement products.
- EMS—2100 Series amplifier with full function paging.
- ENVIRONMENTAL SOUND—lightweight drop ceiling monitor systems.
- FANON/COURIER—cordless, memory and speaker phones.
- FLORENCE—UL-listed NC7 Visual Nurse Call System.
- FSR—DL-64 digital system for conference and board rooms.
- GALAXY AUDIO—M1202 12-channel mixing console.
- THE DAVID HAFNER CO.—professional high-powered amplifiers.
- HOUSE OF METAL ENCLOSURES—full line of electronic enclosures.
- INDUSTRIAL RESEARCH PRODUCTS—transversal equalizer.
- KLARK TEKNIK—DN301 attenuating graphic equalizer.
- MACKENZIE—Z-MAC digital command transmission system, Model ZD.
- OAKTRON—ESP sound masking speaker system.
- PANASONIC—WA 745 high-power amplifier.
- P/H ELECTRONICS—cordless simultaneous interpretation system.
- PHI TECHNOLOGY—Voicelog II, voicelogging machine.
- PROTECH AUDIO—Ambicon 65302 automatic level control/limiter.
- QSC—Series One—Model 1151 mono amplifier, 1200 medium power amplifier and Model 1400 high-performance amplifier.
- QUAM-NICHOLS—backboxes, speakers, baffles and transformers.
- RING GROUP OF NORTH AMERICA—Ring 3000 console for schools requiring up to 75 room selector switches.
- SAMSON—wireless microphones.
- SIEDLE INTERCOM/USA—4-ounce black-and-white CCD camera.
- SIMPSON—Telephone industry test set.
- SHURE BROTHERS—automatic microphone systems.
- SONIC SYSTEMS—ceiling flush reflector on 22-12 Sound-sphere.
- SONY—PA 200 compact public address system.
- STENTOFON—simplex and duplex intercom systems.
- SWITCHCRAFT—audio accessories.
- TAPE-ATHON—music for foreground, background and broadcast, and the Messenger II System.
- TELECOURIER, INC.—System 800 T816 pocket receiver, designed for the health-care market.
- TELEX—FM wireless interference-free microphones.
- TOA ELECTRONICS—audio amplifiers, mixing consoles.
- WESTPARK COMMUNICATIONS—drive-thru communications systems for the fast-food industry.
- WHEELLOCK SIGNALS—wireless electronic device signals for the hearing impaired.
- WILLIAMS SOUND—power loop audio induction loop system.
- YAMAHA—PC2002 power amplifiers.

THE POMONA PROMISE

Our constant goal is to provide the audio engineer with the best audio connectors available in this country. Or anywhere.



At the same time sound came to movies, the original audio connector was born.

That was some time ago. These audio connectors have met the needs of many audio engineers since then. Matter of fact, our audio connector has become a legend in its own time.

And we at ITT Pomona Electronics intend to keep it that way.

Our XLR, XLRB, XLA series for audio, electronics and other low level circuit applications are rugged, quick disconnect devices that perform where reliability and quiet operation are the password.

We have the most advanced designs. We boast the best workmanship and fast delivery.

At ITT Pomona Electronics, we know there is no such thing as standing pat. We also know that your needs change and your expectations become greater as the demands become more severe. To this end we will continue to create a better way. A better product.

That's a promise.

All of our products are described and illustrated in our 1984 General Catalog, and it's free. Just call (714) 623-3463 or 623-6751. TWX 910-581-3822.

Write to us as ITT Pomona Electronics, a Division of ITT Corporation, 1500 E. Ninth St., P.O. Box 2767, Pomona, CA 91766.

In Europe; ITT CANNON BELGIUM S.A./N.V. Rue Colonel Bourg Str. 105 Space A (B.3) 1140 Brussels, Belgium. Phone: 02-735-6094.

Our products are available through your favorite electronics parts distributor.

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Eyeing the Aisles

at EDS/NSCA



Bill Fluster (left) and Gerow Brill, Clear-Com Intercom Systems



Peter Hamilton (left) and John Karamon, Sonic Systems



Marty Eggerts (left) and Marty Siskel, Blonder-Tongue Laboratories



Dennis Badke (left), Jim Bumgardner (center) and Tony Satariano, Crown International



Richard Pass (left), Richard Bothell (center) and Kilroy Hughes, EMS Music



Earl Zausmer, Siedle Intercom/USA



Ed Costello, Wheelock Signals



Richard Kastel, House of Metal Enclosures



Bob Klein, Panasonic Industrial Co.



Roger Carroll, Industrial Research Products

Let a leader in sound technology lead you through the commercial sound barrier. Introducing Panasonic Commercial Sound Systems.



For more than 40 years, the parent company of Panasonic, Matsushita Electric, has supplied the international commercial sound market with products. Dependable, quality products that are the result of the engineering expertise, sophisticated testing and rigorous quality-control standards of Matsushita—one of the largest and most innovative electronics companies in the world.

And now, Panasonic is introducing a line of quality compact sound amplification/paging units that offer some of the most advanced features available today.

Our 30, 60 and 120 watt 5-input Mixer Power Amps (Models WA-735P, WA-745P, WA-755P respectively) feature a built-in AM/FM tuner, three low impedance microphone inputs, a transformer balanced auxiliary input for telephone paging, a voice-activated priority circuit and a tone generator for sound level setting. Plus a two-tone calling chime for paging.

Many of these features are offered without an AM/FM tuner in our other 60 and 120 watt 5-input Mixer Power Amps (Models WA-740P, WA-750P).

Our 15 and 30 watt 4-input Mixer Power Amps (Models WA-300P, WA-320P) feature two low impedance microphone inputs and a transformer balanced auxiliary input for telephone paging. And both can be powered by a DC 13.2 volt source for portable operation.

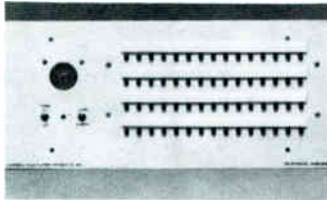
Remember: Panasonic is a leading name in advanced sound technology. So, if you're looking for Commercial Sound System equipment, follow a leader: Panasonic.

For more information on Panasonic Commercial Sound Systems, please contact: Commercial Sound Systems Department, Audio-Video Systems Division, Panasonic Industrial Company, One Panasonic Way, Secaucus, NJ 07094.

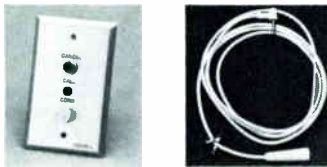
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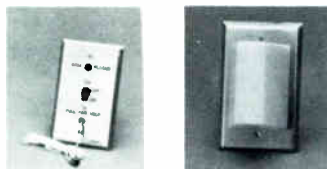
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Audio Technica US*



*Peter McLean, Ring Group of North
America*



*Jim McGohan (left) and Bill Everhart,
McGohan Electronics*



Blair Hunnicutt, Tape-Athon Corp.



Jo Earp (left) and Susan Provine, J.W. Davis



Jan Sandri, FSR



John Fly (left) and John Lee, Crest Audio



Brock Jabara, Galaxy Audio



*Gene Ware (left) and Jim Burke, Westpark
Communications*



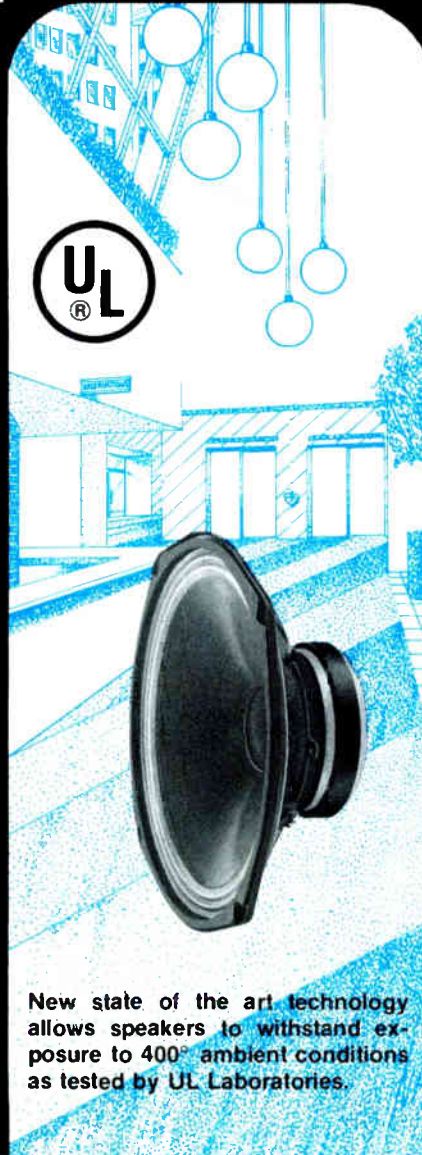
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BOOK SHELF

MOBILE RADIO SERVICING is the one "servicing manual" that is meant for the technician's kit, or the servicing deck. 12 chapters cover simplex and semi-duplex systems; transmitter and receiver circuits; tone-coded squelch and carrier-activated squelch, and more. Additionally, there is a full section devoted to test equipment: Frequency Counters, Modulation Meters; Signal Generators; Audio Oscillators, etc., their operations and performance measurements. Every aspect of mobile radio systems is explained, from alignment and tune-up through field servicing, with two chapters devoted to troubleshooting. This is one text that's worth double the price!

Soft cover..... (reduced to) \$12.50

COMMUNICATIONS STANDARD DICTIONARY by Martin H. Weik, D.Sc. clearly defines terms used by designers, developers, manufacturers, vendors, users, managers, administrators, operators and maintainers of communication systems and components. All entries are arranged in alphabetical order and every significant work in a multiple-word entry is also featured in the main listing. There are illustrations, cross-references and easy-to-spot italicized terms.

Hard cover..... \$39.50

SPECIAL COMBINATION OFFER. Two reprints from SOUND & COMMUNICATIONS' series on PABX systems, written by Douglas Green, and long considered the "standard" work by the interconnect industry. The work has been hailed by sales managers for its thoroughness in presentation, its clarity, its sweep of the subject, and its expertise. Service managers have declared it the definitive work for training installation crews.

2 pamphlets..... \$6.00

CONCEPTS IN ARCHITECTURAL ACOUSTICS by David Egan is a new approach to the presentation of acoustics. It is designed to meet architects and engineers and designers on their own terms, with most of the information presented through quick-reference concept sketches, figures and charts. There is a full exposition in a step-by-step computation that assists in understanding the behavior of sound in an environment. There are concise guidelines for speech privacy design and analysis, and a list of sound transmission loss data for nearly 40 common building constructions. And much more. By following the book's practical job-tested information one is able to make sure that there are no acoustical surprises in completed buildings.

Hard cover..... \$44.50

SOUND SYSTEM ENGINEERING, by Carolyn & Don Davis, is the masterwork of the professional/engineered sound system field. Starting with basic system configurations, individual chapters discuss Audio Environment, Interfacing the Electrical & Acoustic Systems, Equalizing the Sound System, and Instrumentation. This volume explains fully the steps in designing, testing, installing and maintaining a sound system, along with photos and graphs that enhance the text. Don Davis has included test questions (with the answers) about the mathematical science in acoustics, to hone your skills.

Hard cover..... \$22.00

PRACTICAL GUIDE FOR CONCERT SOUND by Bob Heil is the sum collection of notes, experiments and logs of a man who spent over half a decade building/servicing/fashioning sound amplification systems for some of the country's best

known travelling musical combos and rock concert stars. There are 19 chapters, ranging over the full line of amps/mikes/speakers/compressors/crossovers. . .but, there is also a spelling out of balanced and unbalanced lines; the care and feeding of cables, and the interfacing of hi-fi gear with pro sound equipment.

Soft cover..... \$10.95

LEASING PRINCIPLES & METHODS by Jack Leonard Green, 320 pages/hard cover, grew out of a series of articles that first ran in SOUND & COMMUNICATIONS on money management. The author expanded the six articles into a full explanation of leasing—its advantages over outright purchase—and fleshed out the work with 32 pages of documents and financial instruments, covering every financial exigency. Interconnect phone dealers and duplex intercom distributors will find this volume of exceptional use in crafting lease arrangements for telecommunications systems.

..... \$49.95

(including TEFRA '82 Tax Supplement)

HANDBOOK ON ESTIMATING is the combined knowledge of four men who've accrued almost 100 years of experience in the sound system business, estimating jobs price-tagged from a few hundred dollars to over a hundred thousand dollars. You won't find a circuit diagram, nor a discussion of acoustics, time delays, or installation techniques—this is strictly a volume devoted to the plain arithmetics concerning time, materials, men, overhead, insurance and taxes, that are a vital part of the estimate that brings in the dollars, and **MAKES A PROFIT!** Each element of these items—and more—are given their proper treatment, and are shown in their relation to one another, broken down into pennies (an hour's time for a technician is broken into its 60-minute segments, and the price for that minute is scored and tallied with the rest of the estimate). Equipment suppliers are invited to seek quantity purchase price discounts.

Soft cover..... \$15.50

MODERN COMMUNICATIONS SWITCHING SYSTEMS/2nd Edition by Marvin Hobbs is a step-by-step treatment of telecommunication switching techniques by the telco, into crossbar and microcomputer switching techniques for the customer-owned system. The elements of Stored-Program Control are detailed, as well as Time-Division Switching Systems. There is a complete presentation of PBX systems. This work will find a ready audience among the interconnect dealers whose installation and servicing crews are "crossing over" daily with the telco.

Soft cover..... \$9.95

VIDEO SECURITY SYSTEMS, by Keith Bose, is a work of increasing importance now that security systems are becoming more sophisticated and an integral part of the communications system for industry, commerce, institution, school, and the leisure/housing markets. The technical aspects of the CCTV camera and its peripherals are presented in word and picture—from installation tips to maintenance practices. Two chapters are of special interest: Cameras, Monitors and Video Recorders covers the range of tubes, signals, night viewing cameras. Signal Processing, Special Effects and Color deals with amplification, equalization; then special effects, screen splitting and character displays.

Hard cover..... \$17.95



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M. Ebara, Canare Cable



Alan Shirley, Electro-Voice



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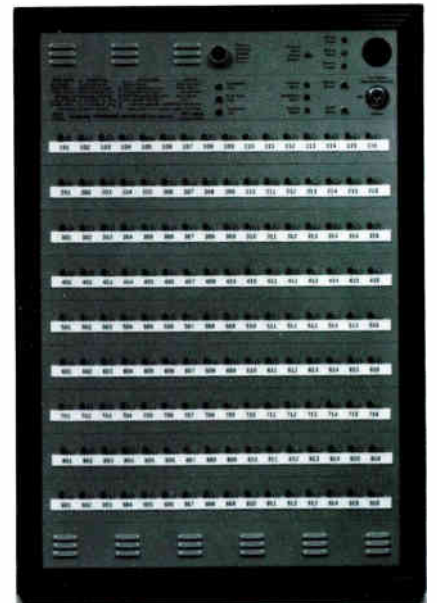
Gary Sippelle, Controlonics Corp.



Pascal Delbruck, Environmental Sound

FIRE WARNING

Model FSC is a fire warning system which provides a smoke detector for each guest room in a hotel, along with a central annunciator that powers all the detectors and indicates when one of them is in the alarm condition. This system is the first to be UL-listed under the new category, Fire Detector Annunciator. The system provides a choice of ionization or photoelectric-type smoke detectors, and can also operate with thermostat or rate-of-rise heat detectors. Standard battery back-up will power all smoke detectors as well as the central equipment for 24 hours in case of power failure.



Besides the primary listing, Underwriters has also listed the system for use with a host fire alarm panel, so that an alarm is automatically entered if the attendant does not respond to the fire condition within a specified length of time. In addition to the hotel industry, the system can find application in apartments, retirement centers, dormitories, and any place where multiple smoke detectors are used.

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Long Distance Profit Sharing

by Paul Stier

In a major move to compensate interconnect companies for their customer referrals, a national long distance service is offering a form of "profit sharing" which could return major sources of income to the private telephone industry.

Under the plan, the company will not only share its profits with interconnect firms on their direct referrals, but on referrals made by their customers as well.

"What we're talking about is a potential source of revenues for the interconnect companies which could rival the income produced through their everyday operations,"

says Haydon Cameron, national project coordinator for Multi-Call, Inc. of Ft. Lauderdale, FL.

"It's a revolutionary plan, not a token plan, and one that will more than reward an industry which until now has been operating totally on a gratis basis. And that's unfortunate, since they've been the major income producers for the long-distance services, but have been forgotten when the accounting has been done," he adds.

Now in service nationally, Multi-Call handles long distance service to 98 percent of the U.S. and key cities in Canada. As a re-seller of WATS and other types of OCC services, the

company offers rates which are comparable to other major services now available.

Multi-Level Commission Plan

At the heart of the Multi-Call plan is a system of commissions which grow in volume at a geometric pace. As Cameron explains:

"Let's project, mathematically, how the principle of volume referrals works. An interconnect company introduces the plan to five of its customers. Next, because the customers are also eligible for the same commissions, they introduce it to just five other companies, who in turn introduce it to five more. At this



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Each lightweight receiver features a full five digit liquid crystal display to communicate messages and receiver status.

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point the interconnect company is getting commissions on all the phone calls, made every day, by 125 companies. Now if this five-company sponsorship—remembering that all these companies are eligible for commissions as well—continues just twice more, the interconnect company would now be receiving commissions on 3,125 businesses. And the commissions would go on from there."

"If one were to factor the Multi-Call commission on an average corporate phone bill, the numbers would be literally astronomical," he adds.

Cameron also points out that the commissions are ongoing, and remain in place so long as these companies remain on service.

"And it is doubtful if any of the interconnect company's referrals would leave. After all, what company would give up a plan which is bringing in revenues of this magnitude? Put another way, the interconnect company could look on this as a virtually permanent income base," he adds.

Additional Income

Under the Multi-Call plan, how-

ever, the interconnect companies receive income in another way. Specifically, this involves commissions on hook-up fees which are paid not only on direct customer referrals, but to referrals made by the customers as well.

"Depending on the numbers of new customers the interconnect company brings in, up to a 45-percent commission is paid on direct referral hook-up fees. In addition, the interconnect company is also eligible to receive hook-up commissions on all the referrals made down the line," says Cameron.

"While these are one-time payments, the revenues generated through this aspect of the plan can be enormous in their own right," he adds.

Cameron points out that this aspect of the plan was created to bring the interconnect company into total "partnership" with Multi-Call.

"We wanted to ensure that the interconnect companies shared in every aspect of our income," says Cameron. "And this would include the sharing of our income on each of the corporations which are charged a one-time \$150 hook-up fee," he adds.

A Sales Tool For Interconnect Companies

In addition to the direct financial benefits of the plan for interconnect companies, Multi-Call spokesmen point out that the plan is also a sales tool.

"Because the same commission structure is available to the customers of the interconnect companies, referral of the plan is actually a direct customer benefit," says Cameron. "For example, the interconnect company can position the plan as a way that its customers can actually eliminate their corporate phone bill entirely. Or they can project that, if aggressively pursued, the plan can generate the income necessary to eliminate other business overhead expenses as well," he adds.

In addition, Cameron points out that offering the service can actually make it easier to sell the interconnect company's systems.

"After all, if you're going to sell a company a \$10,000 system, it's a lot easier if that system can be paid for with income derived from the Multi-Call plan," he says. "In fact, many of our current interconnect customers are using this as a major element in their sales effort. Not to mention the

And, as you might expect, the options are truly mind-boggling. For example, you can specify programmable features such as volume control, and automatic or manual speech acceptance.

For high noise areas, you can even order receivers that vibrate.

This receiver has a mind of its own.

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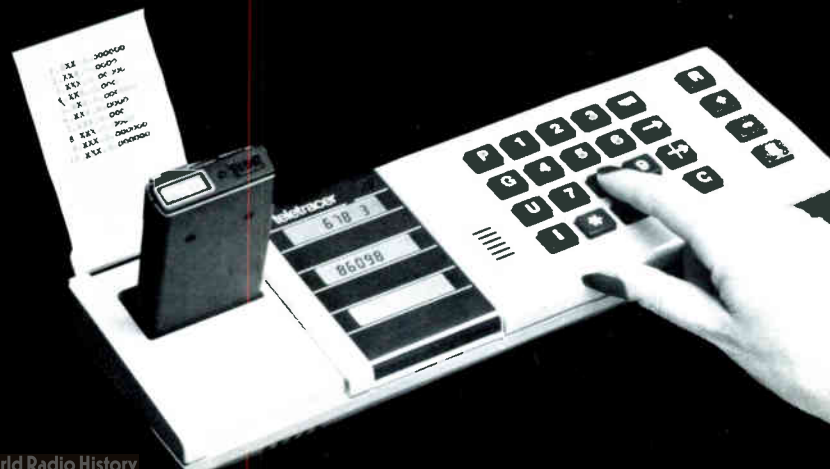
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ERICSSON 



good will the introduction of such a plan builds.”

Reduced Overhead Makes It Possible

According to Multi-Call spokesmen, the commission structure is made possible by the elimination of major marketing expenses.

“The fact is that we’ve virtually eliminated the astronomical costs associated with national and local advertising campaigns, direct-mail efforts, and the huge field sales forces that are required by other telecommunications firms,” says Cameron.

“Instead, we’re simply returning these monies back to those who refer what they believe to be a good thing to others. It’s merely a plan that involves going back to basics and

building our business on word-of-mouth referrals, rather than creating an expensive image which does no one any good,” he adds.

Cameron points out that the actual operation of the plan is a refined version of the “network marketing” concept that built such giant corporations as Amway, and put them on the New York Stock Exchange.

“The difference between ourselves and Amway, however, is that the concept of network marketing is now being applied to a necessity—rather than to things that the potential user doesn’t really need. After all, few companies or people would turn down an offer to cut a major business expense by up to 60 percent. And no one would turn down

an opportunity to generate large volumes of income just for referring a good thing to others,” he says.

Acceptance of the plan was recently demonstrated in a test market the company conducted in south Florida. According to company officials, 87 percent of those introduced to the Multi-Call plan signed up for the service—and that included companies which already had existing long-distance services.

“In many cases we found that there was dissatisfaction with the current OCC. In other cases we found that a sizable number of customers didn’t yet have a long distance service,” says Cameron.

“But without question, the major reason for this acceptance rate was the plan itself. In many cases the customers felt that they were just tired of paying any phone company—discount service or not—without ever getting anything back but a bill,” he adds.

Carried out over a three week period, more than 1,000 corporate and residential users signed up for the Multi-Call plan in South Florida, including such leading interconnect companies as Pacesetter Communications in Hollywood and Ameri-Telephonics in West Palm Beach. (During the same week in Texas, such interconnect giants as Telemation, Inc., American Business Telephone Systems, CIC Corp. and The Communicators, Inc., also joined the growing list of subscribers saturating the U.S. on a city-by-city basis.)

“The response was staggering,” says Cameron. “And it was all done without advertising, without direct mail campaigns, and without a paid sales force. It was just something that everyone wanted,” he added.

Now available to interconnect companies and their customers throughout the U.S., company officials expect that it will permanently alter the course of telecommunications marketing in the nation. In fact, they believe that the network marketing concept is here to stay, because traditional approaches can’t possibly compete.

“Under the old plan, all anyone does is refer business and pay,” says Cameron.

“Under our plan, everyone wins. And that’s simply unbeatable,” he adds. □



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The ADM 310 unit offers 310ms in 10ms increments at *full power bandwidth* (20Hz to 20KHz) with greater than 90dB dynamic range.

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- | | | |
|--|--------------------------|--------------------------|
| 1. Offer a wide range of system sizes, from a small department to the largest company with more than 5,000 stations? | Yes | No |
| 2. Give you the reliability of fully-electronic microprocessor-based construction? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Feature extremely compact size; fitting, for example, a system in a single drawer? | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Let you locate the central switching unit in any habitable room? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Feature 24-volt maximum voltage to minimize spark and shock hazards? | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Give you plug-in expandability in groups, or a station at a time? | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Provide inexpensive system expansion without re-wiring? | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Are so easily expandable that your own people can do it? | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Offer a range of stations, such as desk, wall, flush-mounted, etc.? | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Offer heavy-duty stations for public areas? | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Allow easy user programmability to accommodate your needs? | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. Access in- and out-bound telephone lines with standard tone dialing? | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. Sector a building, isolating zones into a total of 15 independent areas plus all-call? | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. Let you join systems in different buildings together via dedicated tie-lines? | <input type="checkbox"/> | <input type="checkbox"/> |

- | | | |
|--|--------------------------|--------------------------|
| 15. Provide, as a standard feature, 2 alarm channels? | Yes | No |
| 16. Provide alarm channels with priority over conversations and all-call paging? | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. Offer conference facilities for up to a dozen or more parties? | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. Restrict stations, such as conference rooms, from any disturbance? | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. Provide 8 separate programs for communications, background music, and news? | <input type="checkbox"/> | <input type="checkbox"/> |
| 20. Access closed-circuit TV cameras, including on-and-off switching, plus pan and tilt control? | <input type="checkbox"/> | <input type="checkbox"/> |
| 21. Turn lights and equipment on and off remotely? | <input type="checkbox"/> | <input type="checkbox"/> |
| 22. Monitor temperature levels in different areas? | <input type="checkbox"/> | <input type="checkbox"/> |
| 23. Unlock doors? | <input type="checkbox"/> | <input type="checkbox"/> |
| 24. Access compatible dictation equipment? | <input type="checkbox"/> | <input type="checkbox"/> |
| 25. Offer units of modular construction so easy to service your own people can do it? | <input type="checkbox"/> | <input type="checkbox"/> |
| 26. Give you versatility via remote reprogramming by phone? | <input type="checkbox"/> | <input type="checkbox"/> |
| 27. Do all this with no main distribution frame required? | <input type="checkbox"/> | <input type="checkbox"/> |
| 28. Do plenty more? | <input type="checkbox"/> | <input type="checkbox"/> |

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Tip & Ring

JEUMONT-SCHNEIDER, S.A. AND TIE COMMUNICATIONS, INC. HAVE AGREED TO TERMINATE, AMICABLY, THEIR 3-YEAR-OLD AGREEMENT that provided TIE Communications exclusive marketing rights for the Jeumont-Schneider digital telecommunications switching equipment in the United States and Canada.

VIDEO TELECONFERENCING IS PRACTICED BY FEWER THAN 10% OF A SAMPLE OF THE NATION'S LARGEST CORPORATIONS, according to a recent survey by Frost & Sullivan, Inc. of in-house communications managers.

A mere one-in-twenty use true 2-way teleconferencing; another 4% report 1-way video teleconferencing, in which only one location is on camera and the other parties are limited to audio contributions.

Audio teleconferencing—the traditional “conference call,” sometimes enhanced with still-frame

video or facsimile transmission—is well established, with 40% of respondents reporting current usage.

Managers attribute their resistance to the much touted video teleconferencing to loss of personal contact and relatively high costs. Further, participants have to leave their offices and go to special rooms, often across town, thus negating some of the time savings that are teleconferencing's main selling point. Nevertheless, communications managers see a bright future for the practice, with nearly half expecting that their firms will use teleconferencing in the future.

Revenues to service providers are split among a very large group, including companies that operate wire, cable and microwave networks, those with satellite paths and those without, and analog versus digital transmission technologies.

Such revenues are estimated to account for only \$370 million in 1983. Of this, fully \$300 million is attributable to audio teleconferencing, \$19 million to 1-way video, another million to freeze-frame video (in which video signals are transmitted over narrow audio-quality lines one “frame” at a time), and \$50 million to AT&T's Picturephone Meeting Service.

EAGLE TELEPHONICS, INC., HAUPPAGE, NY, IS A NEW ENTRANT FOR CUSTOMER-PROVIDED EQUIPMENT, OFFERING 1A2 KEYSETS, AMERICAN-MADE, according to an announcement by James Perrone, vice-president/marketing. He added, “Clearly, Eagle/One's 1A2 compatibility (with the more than 60 million Western Electric 1A2-type keysets currently in use is an advantage that serves to halt obsolescence. It offers many unique new features, as well as all of the new features being found in other systems. Also, Eagle/One has the valuable standard features being eliminated in the foreign-made systems.”

MITEL CORPORATION ANNOUNCED THAT IT HAS MET ALL REQUIREMENTS OF THE U.S. AND CANADIAN TELECOMMUNICATIONS AUTHORITIES TO SELL THE SX-2000 Integrated Communications™ System in North America. The corpor-

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tion said it had passed all FCC tests to import and sell the SX-2000; likewise the Department of Communications and the Canadian Standards Association granted full approval for the sale of SX-2000 in Canada.

Shipments will begin early in 1984, through a series of Factory Authorized Dealers in North America. The SX-2000 has fourth-generation architecture capable of providing advanced voice communications, as well as the data and image needs of a highly computerized office. It was developed by Mitel Engineers in Canada and the United Kingdom.

THE LATEST FROST & SULLIVAN, INC. MARKET STUDY OF THE DIVESTITURE MOVE REPORTS THAT THE SHIFT FROM ANALOG TO DIGITAL TECHNOLOGY WILL NOT NECESSARILY BE PEACEFUL. Traditional suppliers in each equipment area will be challenged for market share by new entrants, often leaders in related fields applying computer expertise to telecommunications equipment.

The study concentrates on five major equipment categories: central office switches, private branch exchanges, transmission systems, networks and key telephone systems. Among the conclusions reached are the following (selective): *Private Branch Exchanges (PBX)* The number of digital PBXs is expected to rise from 9% of 1982's installed base of 225,000 units to 53% of 330,000 by 1990. Most digital systems today are aimed at larger users with greater needs for data, as well as voice handling. Western Electric has only recently entered the market, most of which belongs to Rolm and Northern Telecom. However, the list is growing, keeping prices down.

Key Telephone Systems: This product's 3.4-million unit installed base is growing at a moderate 4%-7% per year, but only the small group of large users (20-100 stations per system) will find the data handling characteristics of digital hybrid models attractive. Sales will increase from 136,000 units in 1982 to 280,000 units in 1990, Frost and Sullivan believes.

RING GROUP OF NORTH AMERICA, MELVILLE, NY, HAS RECEIVED A CONTRACT FROM THE CITY OF ROCHESTER, NEW YORK, TO INSTALL AN ENHANCED 911 EMERGENCY SYSTEM. Paul Ruggieri, vice-president/Sales & Marketing for Ring's Automatic Call Distributor, said that the unit to be installed by Oct 1/84, is an enhanced, microprocessor-based system which makes it easier for police, fire and hospital personnel to respond to an emergency.

One of the Ring special ACD features—Automatic Number Identifi-

cation (ANI)—can provide the emergency room or police dispatcher with a read-out of the calling number as soon as 911 is dialed. Remarked Ruggieri, "Our other enhancement, Automatic Line Identification (ALI) provides not only visual indication of the calling number, but also the address of the caller and the name of the tenant at that address. All the data is brought up on the screen at once. This allows the dispatcher to summon the nearest police cruiser, fire-fighting apparatus or ambulance service." Information is provided by the local telephone company's data base.



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New Products

COMMON CONTROL

A microprocessor common control system, the Jr. Exec., provides a comprehensive feature program aimed to fulfill the requirements of small to medium-sized organizations. It is housed in a single equipment cabinet which can support up to 246 ports consisting of station line circuits, trunk circuits and up to 4 attendant consoles. In terms of speech path switching, the system features Time Division Switching in a Pulse Code Modulation Format with 8 Time Division Busses. Each Time Division Bus is accessible by all stations and trunks and is totally non-blocking. The Attendant Console is a modern low-profile unit. There are 20 programmable keys. The attendant console keys can be programmed to answer individual trunk lines, trunk groups, to provide Direct Station Selection (DSS) capability, station line terminations, paging, hold, etc. The console is also used for data base management and for reviewing Advisory Messages from the systems diagnostics. Use of the Attendant Console with the Jr. Exec. is optional. The hardware also accommodates already installed key telephones without any rewiring. The



system may thus serve as the control system for small key systems or hybrid KTS/PBX systems. It can replace a key system, while making use of existing telephone equipment and service already in use. The Jr. Exec. may be equipped with industry-standard single-line instruments and, on an optional basis, also be equipped with either Electronic or 1A2 type key telephone apparatus. If key telephones are installed, the

system can provide up to 4 key-phone driver circuit packs. Each pack provides 32 drivers, with programmable lamping, hold, etc. Feature phones are optionally available with the unit. Standard features include SMDR, Least Cost Routing, Uniform Call Distribution, restrictions including toll and area/office code restrictions, account codes, call forwarding, and call pick-up.

For more information write 632 on the inquiry card. Or write: Solid State Systems Inc., 1990 Delk Industrial Blvd., Marietta, GA 30067.

CABLE TIE KIT

The KP-506 kit contains 300 popular cable ties, 50 cable tie mounts and an installation tool, all in a sturdy, compartmented polypropylene box. A positive latch prevents accidental opening, and the tight fitting lid retains the contents in their respective compartments. Convenient and economical, the kit measures 10 $\frac{3}{4}$ " wide x 7 $\frac{1}{8}$ " deep x 1 $\frac{1}{8}$ " high.



For more information write 633 on the inquiry card. Or write: Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981.

ACCESS TEST SET

The T308-01 PCM Channel Access Test Set provides complete decoding and encoding of the DS-1 time slot information for analog measurement. Microprocessor control menu-driven and user prompts make channel selection, changes in operating modes and parameters simple and straightforward. Receive and transmit functions with Originate, Looped and Drop and Insert modes provide the needed access features. The

T308-01 has a looped-timing error function to compare the digital transmit output to the digital receive input synchronization. It also provides precision measurement of Level, Frequency, and PCM offset of selected channels. Direct computation from digital samples provides unusual accuracy.



For more information write 634 on the inquiry card. Or write: Plantronics Wilcom Inc., P.O. Box 508, Laconia, NH 03247.

OUTDOOR PHONE

Designed for use out of doors, the Weatherproof Phone has a Lexan housing that is water and dust-tight and corrosion-resistant. The hook-switch and handset cord are also especially designed to withstand severe use. Both DTMF and pulse versions are available; both have a sealed pushbutton dialing pad, for added protection against moisture, dust or other contaminants.



Optional features include a lockable door, an armored handset cord, a spring-return door and a noise-cancelling microphone.

For more information write 635 on the inquiry card. Or write: Gai-Tronics Corp., P.O. Box 31, Reading, PA 19603.

INTERCOM

A two-wire digital intercom system, Ericom Direct, eliminates the need to touch the receiver or press the buttons, because the system is hands-free. Many organizations find hands-free communications essential, because employees refer to numerous papers and documents while talking. The setup also benefits companies that don't want to tie-up telephone lines with internal calls: employees are able to put internal calls within the company on hold when external calls come in to the office. The key feature of Ericom Direct is voice recognition, referred to as PRINA. An employee, using his own voice, can program the names of people who are frequently called into a voice library. When a particular name is requested, Ericom Direct identifies the user's voice and automatically makes the connection.



Other features are secretarial pickup, three-way conferencing, call forwarding, call transferring, message waiting and paging. Ericom Direct is similar to a PBX system without trunk lines. However, it is a cheaper alternative if calls are not made outside the organization.

For more information write 636 on the inquiry card. Or write: Ericsson Communications, 7465 Lampson Ave., Garden Grove, CA 92642.

TELECOM PROCESSOR

The TP8200 Series telecommunications processor provides a range of models with from 128 to 2,000 lines, and for call storage capacities from 4,000 to 400,000 lines. Basic applications software packages serve the commercial and lodging markets. The complete package of

optical software, available for the TP8200 Series will assist in facility management, account code billing, and directory searches. A special rating package serves overseas applications. Availability of optional software varies with specific models.



For more information write 637 on the inquiry card. Or write: United Technologies Com Dev, P.O. Drawer 5336, Sarasota, FL 33579.

CORDLESS PHONES

Pacer cordless telephones feature 10-channel, 46-49 MHz operation. There are models for both tone and rotary dialing. Selectable features include hold buttons, remote FM intercom, hands-free speakerphone, memory dialers, last-number redial, and others. The line boasts handsome contemporary styling.



For more information write 638 on the inquiry card. Or write: Pathcom, Inc., Pace Communications Div., 24105 S. Frampton Ave., Harbor City, CA 90710.

PLENUM CABLE

EXAR telephone plenum cable is UL-classified for fire-resistant and low-smoke properties. It may be used without conduit and is simple to strip and terminate. Bright colors

and readily identifiable color coding make for quick installation. Footage markings on each cable simplify routing and optimize cable usage.

For more information write 639 on the inquiry card. Or write: Champlain Cable Corp., P.O. Box 7, Winooski, VT 05404.

CALL FORWARDER

"Phone Forward" is a compact electronic device which can be encoded to forward incoming calls to any local or long-distance number. It uses two telephone lines: one to receive incoming calls and one to reach the pre-programmed number.



The portable device may be used with rotary/pulse or touchtone phone lines; installation is quick and easy.

For more information write 640 on the inquiry card. Or write: Cynex Mfg. Corp., 28 Sager Pl., Hillside, NJ 07205.

COMMUNICATIONS COMBINER

Model 606A is a four-way, four-wire communications combiner that sends and receives four voice-grade circuits over one line or channel. It features a 4W/4W VF bridge, plug-in amplifiers, isolation transformers, filters, terminations and a universal AC/DC power supply. Line amplifiers can be easily reversed from send to receive or vice versa by inverting slide-out circuit cards. Equipped with a switchable 600-ohm termination for unused bridge inputs, the unit accepts 115/230 VAC at 50/60/400 Hz or 12 VDC at 120 ma nominal. Available with optional filter modules and additional circuits, it measures 5.25"H x 5.7"W x 13.2"D and weighs 8 lbs.

For more information write 641 on the inquiry card. Or write: Astreon Corp., 23 Shaffer St., Lowell, MA 01854.

Solve communication problems in high noise areas



ADCO industrial intercoms

ADCO units are designed specifically to give clear, penetrating communication under the most difficult plant operating conditions. In high noise areas such as production zones, metal shops and loading docks, voice reception and transmission now can be fully efficient. And distortion-free, since each self-contained unit amplifies the signal.

Intercoms can be spliced into existing plant systems at noise-troubled points...or set up independently with plug-in power and ordinary 2-wire connection between stations. Volume at each unit is adjustable to ambient noise levels.

Heavy-duty cast aluminum housings are designed for industrial use...fully sealed, weatherproof, all-transistorized. Wide range of optional, special-purpose models and features—write for complete catalog.

ATKINSON DYNAMICS

A Division of Guy F. Atkinson Company

10 West Orange Avenue
Department R
South San Francisco, CA 94080

Phone: (415) 583-9845

REMOTE CONTROL

A DTMF remote control system, Model 6003, provides for the control and monitoring of unattended equipment using two-wire and four-wire communications. Through touch-tone codes, the operator can control six relays, with the ability to select momentary or latching action, tone responses to verify execution of commands, or determine the status of six logic inputs. A programmable access code permits unit addressing or security functions. The unit is contained in a wall-mount enclosure. Standard barrier strip terminals provide for easy installation.

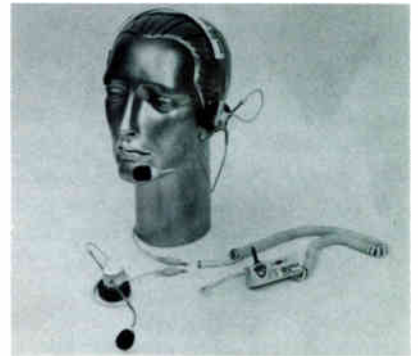


□ For more information write 642 on the inquiry card. Or write: Monroe Electronics, Inc., 100 Housel Ave., Lyndonville, NY 14098.

PHONE HEADSET

EasyTalk telephone headsets allow personnel in small offices to use the phone hands-free. They come in two versions: the TH-15H is a lightweight, full-headband headset with a foam-padded speaker and an adjustable boom microphone. The TH-15E headset is an ultra-light over-the-ear-mount with foam-padded speaker and adjustable-boom mic. Both models include the TH-15 phone headset amplifier, which operates off phone line voltage. Sophisticated surge voltage circuitry protects the unit. Volume is adjustable with a dial on the side of the amplifier. The headsets deliver audio up to 6 dB louder than conventional units. The amp mounts with double-sided tape on the telephone body and connects to the phone with a standard snap-in plug. A coil cord with quick-disconnect

fitting comes out from the unit and either headset is attached. A switch allows quick, easy switchover from headset to handset. EasyTalk phone headsets also come with a "mute" switch for private conversation a-sides.



□ For more information write 643 on the inquiry card. Or write: Nady Systems, Inc., 1145 65th St., Oakland, CA 94608.

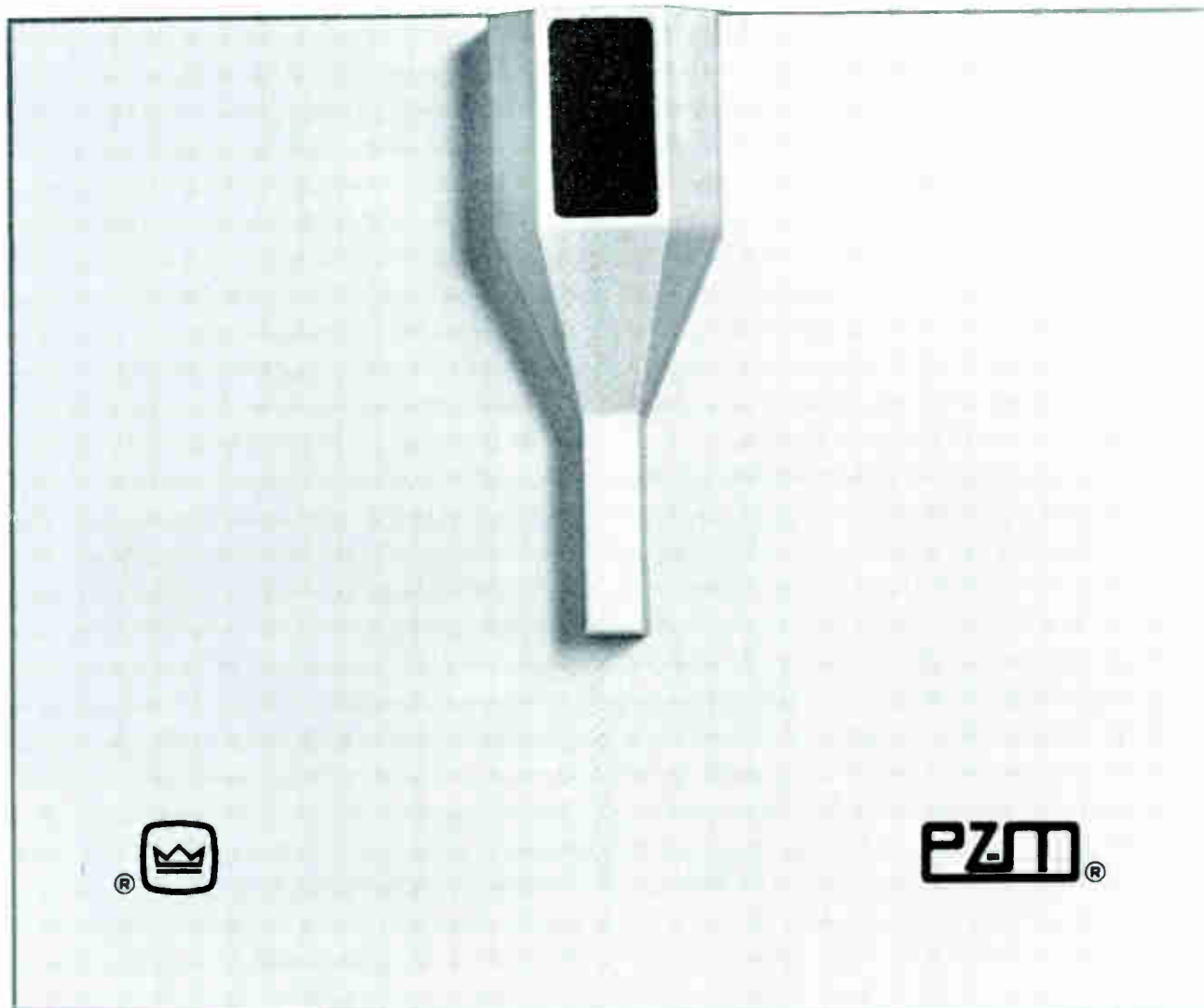
PHONE ANSWERER

A new concept in telephone answering machines, Repond uses voice synthesis to deliver messages the user programs by means of the buttons on the keyboard. No microphones or tapes are required. In addition to the answering message, a forwarding phone number may be programmed. All programming takes only a few seconds; messages are delivered by a professional, but human-sounding, voice.



□ For more information write 644 on the inquiry card. Or write: Inter-telephon U.S.A., Inc., 111 Anza Blvd., Burlingame, CA 94010.

A peculiar look that eliminates a peculiar sound.



It's a matter of physics.
Whenever you place a microphone near a hard reflective surface, sound from the source reflects off that surface into the microphone.
Conventional microphones receive direct and reflected sounds at different times, causing phase interference - this colors the recorded tone quality.

The Crown PZM captures direct and reflected sound waves at the precise moment they are in-phase; adding coherently and reinforcing each other.

Since phase interference is eliminated, music is reproduced with a naturalness never before experienced.

Sometimes a microphone has to be "flat" to provide a flat response.



CROWN[®]

1718 W. Mishawaka Rd.
Elkhart, IN 46517
(219) 294-5571



Reflecting on Wireless Mics

“It’s not Broadway, but we do have major stage productions,” says Randy Mobley, director of audio services at the Crystal Cathedral. The massive 12-story structure of steel and glass, in Garden Grove, California, is the setting for full-scale performances with large choirs, orchestras and the dynamic oratorios of founding pastor Dr. Robert H. Schuller.

Sophisticated wireless microphone systems must operate flawlessly for capacity crowds of 3,000, as well as for live TV broadcasts seen throughout the country.

The audio team installed three different systems before settling on one capable of reliable operation. Their choice was an extensive Sony equipment package.

Even with the best wireless microphones, elusive dead spots and drop outs can be present. These effects are not caused by weak signals but are the result of strong signals reflected within the operating area. Reflections created by the Cathedral’s 12,000 panes of glass and the weblike steel support trusses posed a considerable challenge.

With singers and speakers in constant motion, the audio staff

chose a Sony diversity reception system. By installing two receiving antennas that are physically separated, the chances of both antennas simultaneously encountering drop-outs is next to nil. In a diversity system, the two receivers operate on the same frequency with a switcher that continually samples both. Under adverse conditions, the Sony processor chooses the stronger of the two signals and locks onto it. Otherwise the receiver outputs are mixed. The net result is a continuous uninterrupted transmission.

Reflected signals were only the worst of the problems at the Cath-

dral. "We also have about 15 walkie-talkies that interfered with wireless transmission," explains Mobley. "The power allowed for walkie-talkies is much stronger than that for wireless microphones. In fact, clicking a walkie-talkie can even turn on the lighting dimmers."

Two elements of the Sony system eliminated the walkie-talkie problem. Precise design and manufacture of components results in unvarying transmissions and clearly defined channels that reject "out-of-band" signals. In addition, the Sony system operates in the higher UHF range of frequencies. This 950-MHz range is less subject to interference from other radio signals and electromagnetic emanations.

The "Glory of Christmas" production, which included such major stars as Carol Lawrence, Robert Goulet and Jim Nabors, was the largest in the Cathedral's history. The potential dropout problem was compounded by metallic costumes worn by performers and twirling ornaments adorning the steel superstructure. "The ornaments acted as continually changing random reflectors," continues Mobley, "but through all the presentations the wireless microphones worked flawlessly."

Although the installation at the Crystal Cathedral is a customized one, all components are off-the-shelf. Five systems operate simultaneously on five separate frequencies. Four ground plane antennas, with boosters hidden in planters on the massive stage, receive signals that are then routed by cable to the audio control booth where the rack mounted receivers are located. Antenna dividers then feed ten receivers with five diversity switchers.

Dr. Schuller, the consummate television minister, is equipped with the ultimate in foolproof wireless technology. He wears two tiny lavalier microphones and two hidden bodypack transmitters. This redundant arrangement virtually eliminates the chance of microphone failure or RF interference.

The Crystal Cathedral is recognized throughout the world as a marvel of modern architecture. Behind the scenes is a comparable marvel of modern audio achievement. □

OWI • ART AUDIO

**Think Small,
Think Quick.**

B A P 1 0 0




OWI brings forward a special kind of qualitative, extension mini-speaker, one intended for the installer as well as the end user: The BAP-100. **/SMALL BUT EFFECTIVE.** Dimensions of 7-1/8" x 4-1/2" x 4-1/8" allow easy handling and unobtrusive installation, yet this 2-Way sacrifices little else. **/SPEEDY INSTALLATION.** With features such as a built-in line matching transformer, input power selector knob (2.5W, 5W, 10W or 15W) and an input line voltage of 70.7V, nothing extra is necessary beside a screwdriver or possibly, a power drill. Needless to say, this aluminum diecast model comes complete with a bracket and hardware. Exercise sound judgment — investigate the BAP-100 and OWI's complete mini-speaker line, including the weatherized, outdoor BAW-50. The quicker the better.



OWI **OWI INCORPORATED**
1938-A Del Amo Blvd., Torrance, CA 90501, (213) 533-6955

**Move up to the standard of
communications with the
Beyer DT 109s.**



Demanding engineers no longer have to "settle" for marginal or sub-standard communications headsets just because there's nothing else available. Representing a higher standard of communications excellence, the Beyer DT 109s feature a dynamic noise-cancelling boom mic with a frequency response of 40 to 12,000 Hz for unmatched intelligibility and comfortable double-muff headphones to insure isolation and prevent fatigue. Beyer DT 108 single-muff headphones are also available.

The Dynamic Decision **beyerdynamic**

Beyer Dynamic, Inc., 5-05 Burns Avenue, Hicksville, New York 11801 (516) 935-8000

Crosstalk

McMARTIN INDUSTRIES INC., Omaha, NE, has named Broadcast Technologies Group, Inc., New York City, as consultant, to provide ongoing research and development support to McMartin's "Comuni-Quik" network of paging services utilizing the SCA channel for transmission.

HAMMOND MANUFACTURING COMPANY, INC., Buffalo, NY, has named Paston-Hunter Co., Inc., Syracuse, NY sales representatives for the UTP 3 territory.

FSR, INC., Cedar Grove, NJ, has appointed Richard Pass Associates to represent their product line in the Mid-Atlantic area—Philadelphia, southern New Jersey, Virginia, Maryland and Delaware. Tortech Marketing, of Ontario, Canada, has been appointed to represent the FSR line in Canada.

MITEK CORPORATION, Winslow, IL, has named James Straus vice president, responsible for sales and marketing of a variety of loudspeaker lines for consumer, automotive, professional and commercial applications from the corporation's divisions—American Acoustic Labs (AAL) MTX, Grafyx and the newly formed Magnum Loudspeakers.

COMCAST SOUND COMMUNICATIONS INC., Bala Cynwyd, PA, a wholly-owned subsidiary of Comcast Corporation, F. Jerome Purcell, president, announced the formation of Comcast Telecommunications Inc., to be located in Center City, Philadelphia. Structured as an operating unit within the Sound Division of Comcast, the company will design, market, install and service telephone communications systems for small and mid-sized companies. Also, the company will provide sound and video systems for commercial, industrial and institutional applications. Initially, it will concentrate its marketing efforts in the 8-county Philadelphia metropolitan area. At the same time, Purcell announced that two telecommunications veterans have joined the organization: James M. Maloney (who has been named vice president and general manager), and Bruce A. Morrow.

LEE DAN COMMUNICATIONS, INC., Hauppauge, NY, has named Williamsboro Electric Supply Co., Inc., Brooklyn, NY, as distributors of their Master Line of commercial and residential sound markets products.

LAWYERS RADIO NETWORK, INC., Omaha, NE, reports that it plans to develop a national FM/SCA service which will transmit recent legal news to subscribers. The plan is to produce 34 hours of tape each week, categorized by specialty for easy access, and to provide receivers to subscribers to enable reception, all for a very reasonable fee. The network also projects a data service, live-call-in and news programming seminar (continuing legal education) programming, as well as limited advertising time programming, and recorded tape sales. The new service will make it possible for

"SWISS ARMY MIXER"?

An appropriate nickname for the
SM 26 SPLITTER MIXER
... a single rack space unit which contains:

- Master L & R inputs with stereo level control
- Six mono inputs and six mono outputs with level controls
- Six dual function mix/pan pots
- Master L & R outputs with stereo level control
- Built-in variable gain for -10dBV/+4dBm interface
- Left and Right expand outputs

This 5 lb. grab-bag of ins-outs-and-pots will split, mix, pan, boost, or any combination of the above to solve an unbelievable variety of signal routing problems: keyboard mixing and monitoring, live recording splitting, additional studio or stage monitor bussing, zone level controlling, intercom splitting, line boosting, etc., etc., etc.

If you've got the signal, the SM 26 has the path ... and for only \$299 suggested list price!

RANE CORPORATION
6510 216th SW, (206) 774-7309
Mountlake Terrace, WA 98043

those involved in the legal profession to stay current with minimal effort, by listening to weekly updated audio briefs of cases and legislation, etc., the Lawyers Radio Network said.

THE BRUCE F. BOND COMPANY, Thousand Oaks, CA, has compiled a database of telecom manufacturers' representatives from data submitted by reps themselves. A customized report can be generated for a requesting manufacturer from three selection criteria: (1) Type of products currently handled; (2) Customer concentration; and (3) States covered. The report is then manually screened for possible product line conflicts, and mailed to the requesting manufacturer, generally within 72 hours, states Bruce F. Bond, president. There is a charge for this service.

CETEC RAYMER, N. Hollywood, CA, has appointed William C. (Bill) Allison to the sales staff as Southern California sales representative,

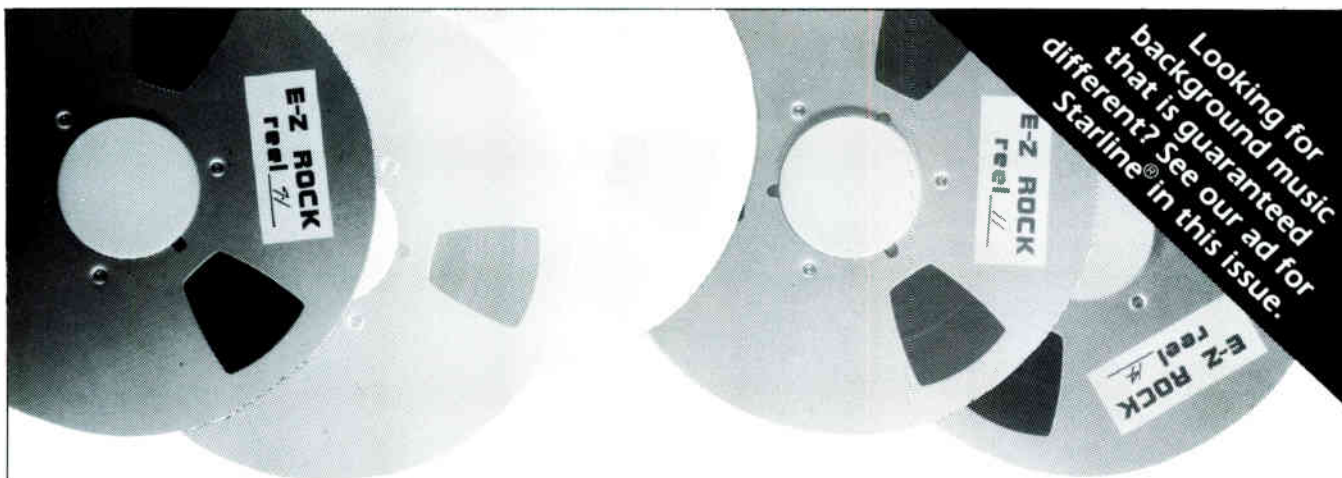
Richard P. Drake, Raymer president reported. Meanwhile, Milton Leventhal, who has been associated with Cetec Raymer in various sales and marketing capacities, will now assume the role of national marketing consultant, Drake said. And Techno Associates, Cetec Raymer sales representatives serving Texas, Oklahoma, Louisiana and Arkansas, were awarded the company's first annual "Rep of the Year" citation, receiving a permanent award trophy.

WHEELOCK SIGNALS, INC., Long Branch, NJ, reported that Peter De Santis has joined the company as Northeast District sales manager, and will serve a dual sales function as Wheelock's life-safety market manager. De Santis will be responsible for the coordination of sales, covering the entire Wheelock product line, in all of New England, Metropolitan New York and New Jersey and part of Pennsylvania, and will be reporting to Edward W. Costello, vice-president-marketing/sales. Before joining Wheelock, De

Santis was hardware product manager for Auth Electric Inc., Deer Park, NY.

CLEAR-COM INTERCOM SYSTEMS, San Francisco, CA, has named GEROW D. BRILL as national sales manager, succeeding Edward Fitzgerald in the position. Brill was with Philips Broadcast Equipment Corporation as product manager, then with the Ampex Corporation as senior product manager, camera products division.

RING GROUP OF NORTH AMERICA has moved to larger headquarters, at 230 Community Drive, Great Neck, NY 11021, Ron Stone/president, reported. Stone said that the new facilities afford the company greater capacity inventory for their Tridex systems, ACD systems and newly introduced school systems, and an enlarged sales support team under the dual direction of Peter McLean and Sid Davis.



E-ZRock®: SCA Foreground music

Today's distributors are picking up the hottest thing available in contemporary foreground music via SCA: **E-ZRock** from Music Programming, Inc. Not too hard. Not too soft, just right. **E-ZRock** is mixed by professionals for long hours of satisfying listening without boredom. From the era of the Beatles to the age of Michael Jackson, give your customers' audiences the pleasure of **E-ZRock**—programming with a human touch. Let the hits roll on and on and on . . . !

- Largest opening library available
- Minimum 150 ASCAP AND BMI selections added each month
- Made exclusively for music services via FM, SCA, phone line and cable
- Programmed, digitally processed and recorded on state-of-the-art equipment
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E-ZRock® by Music Programming, Inc.

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New Products

LAND-MOBILE HEADSET

A super light headset for hand-held land-mobile transceivers, the ProCom 352-1C weighs 2.6 ounces when worn with the headband. However, the snap-on headband is removable so the headset weighs only one ounce and can be clipped directly onto eye or sunglass frames.



When using the headset, the radio remains on the operator's belt—there is no longer any need to hand-hold the radio for communications. The headset is equipped with an in-line push-to-talk switch which also clips to the belt. A soft ear tip channels incoming messages directly to the operator's ear, so communications are essentially private. The noise-cancelling electret microphone is designed for very close talking and transmits the operator's voice clearly even in high noise environments. The electret mic is also immune to electromagnetic or radio frequency interference, so it can be operated effectively near power lines, large transformers, generators, broadcast towers and other equipment which often interferes with radio communications. The headset plugs directly into ICOM or Ten-Tec hand-held transceivers.

□ For more information write 619 on the inquiry card. Or write: Telex Communications, Inc., 9600 Aldrich Ave. S., Minneapolis, MN 55420.

MONITOR SPEAKERS

The NS-500M three-way acoustic suspension monitor speaker system uses carbon fiber in its 12-inch woofer cone. A recently developed 3½-inch titanium carbide semi-dome mid-range driver makes for strikingly clear sound in that range; a front-panel control permits precise

mid-range adjustment. The crossover is designed with an off-axis coil layout to eliminate the possibility of inductive distortion.



Three-way mitring and computer-assisted design assure fully resonance-free enclosures. A companion model, the NS-200M, is also a three-way acoustic suspension unit, with a 10-inch pure spruce woofer cone, titanium carbide semi-dome mid-range and titanium carbide dome tweeter.

□ For more information write 620 on the inquiry card. Or write: Yamaha Electronics Corp., USA, 6660 Orangethorpe Ave., Buena Park, CA 90620.

SOUND SYSTEM



The Omnivox has a compact master console which may be equipped with any combination of optional modular elements. It allows simultaneous sound distribution of up to five separate programs; any program, paging or announcement may

be directed to single or multiple zones, or system-wide. The speaker enclosures have built-in anti-induction amplification on integrated circuits. Optional capability is available for emergency alarms programmed to initiate system-wide sound alerts, overriding the volume controls on all equipment, and broadcast over all speakers.

□ For more information write 621 on the inquiry card. Or write: Security Intercom Inc., 1833 N. 105th, Seattle, WA 98133.

VIDEO INTERCOM

A video intercom system can provide security for the entrances to businesses, plants and residences. The entry system makes possible positive identification before opening the door. The system is available with up to three room stations, and two door stations. The trim, compact room station projects only 2½" from the wall, and is only 1¼" deep.



Vandal-proof, the camera lens is protected by a high-impact resistant shield. The door station panel is heavy-duty aluminum with tamper-proof screws. The door station camera has a wide-angle lens with 50° coverage, and a beam sensor to protect against excessive light. When the call button is pushed, a lamp automatically illuminates the caller with a soft, unobtrusive light. The caller can talk completely hands-free. The door station monitor displays the caller's image immediately after the call tone sounds. A button for release of an electric door strike is also included. Simply wired, the system's installation only requires single coaxial cable between stations.

□ For more information write 622 on the inquiry card. Or write: Aiphone Corp., 1700-130th Ave. N.E., Bellevue, WA 98005.

ACOUSTICAL BOUNDARY MIC

As an alternative to poly-microphone conference room set-ups, the MPC 50 Acoustical Boundary Microphone utilizes the increase in sound pressure on acoustically live surfaces without picking up reflections from those surfaces. A pressure microphone with a hemi-spherical directional characteristic, the unit is built into an oak panel with bevelled edges which measures 8¹/₁₆" long x 8¹/₁₆" wide x 7/8" high and also incorporates the preamplifier and 9V battery.



The MPC 50's frequency range of 20-20,000 Hz and signal-to-noise ratio of 67 dB insure a crisp, intelligible sound in any conference or meeting room application where several speakers are being miked in different parts of the room.

□ For more information write 623 on the inquiry card. Or write: Beyer Dynamic, 5-05 Burns Ave., Hicksville, NY 11801.

REAL TIME ANALYZER

A one-third octave real time analyzer, Model 30, uses microprocessor technology to achieve extreme accuracy and stability. Special quartz-crystal-controlled filtering provides filters that do not drift in bandwidth, center frequency or flatness. Switched capacitive filters withstand hard usage and do not require recalibration. The microprocessor that analyzes the spectrum operates at speeds better than 6 megahertz and processes filter information at a rate of more than 500 samples per second. The instrument incorporates a pseudo randomly generated pink noise source. The stable display of equal energy across the entire audio spectrum makes equalization adjustments easy. Precise pink noise gating is provided for future use with RT60 and other gating options. Accurate sound pressure level readings, to 154 dB, are displayed on the three-digit numeric display. Flat and A curves are selectable; an indicator LED under the

numeric display shows that the reading is Broadband SPL. All features of the digital RTA are accessed by keypad buttons.



□ For more information write 624 on the inquiry card. Or write: Gold Line, P.O. Box 115, West Redding, CT 06896.

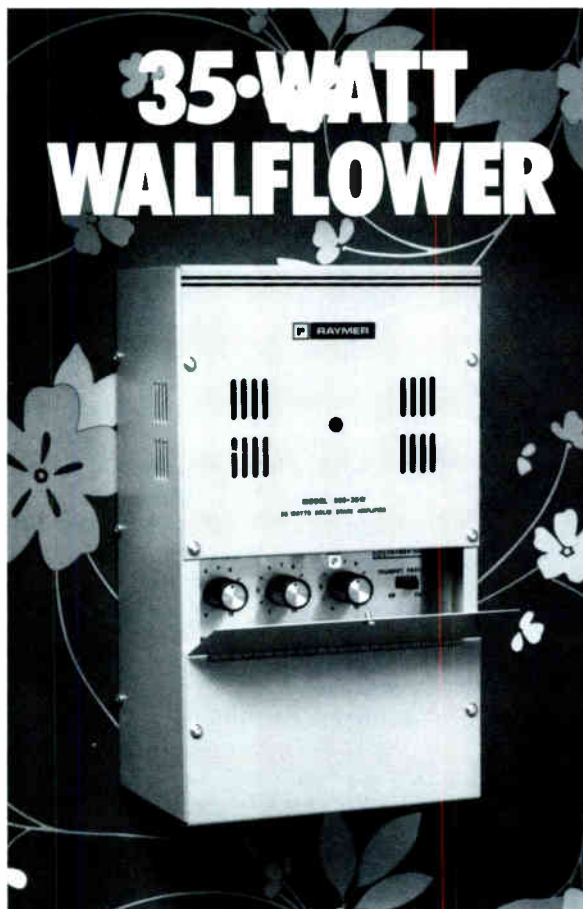
CABLE SEALANT

An extruded, electrical cable sealant that wraps like tape to permanently seal low-voltage tap, feeder and splice connections, in above or below-ground cable TV, telephone and mining cables, GS/4T Electrical Cable Waterproofing Sealant seals and protects against water and weather and provides a solid barrier against dust, ozone, soil chemicals and other corrosive chemicals.

Extremely pliable, it can be worked with the fingers to fill voids and cover sharp edges as it seals. Excellent adhesion provides a firm bond to metal, plastics, rubbers, and synthetics. It also bonds to itself. A bond is maintained even when the sealant is flexed, as expansion and contraction forces are taken up within the sealant. GS/4T is available in widths from 1/2" to 6" and thicknesses from 1/8" to 1/2". Effective temperature range is -40° to 150°F.



□ For more information write 625 on the inquiry card. Or write: General Sealants, Inc., P.O. Box 3855, City of Industry, CA 91745.



This sturdy Model 806 amplifier mounts on the wall and hides controls and connections from tamperers.

Two inputs: Hi-Z Mic and Aux. Mic is convertible to Lo-Z 150-ohm balanced (with MT-3 transformer) or 500-ohm balanced phone input (with TT-4A transformer).

Electronic circuit fades music for paging. And there's even an interlock for parallel 806-35A tie-ins.

It's from Raymer, so you know it's another All-American.



Raymer Division of Cetec Corp. 7315 Fulton Ave., No. Hollywood, CA 91605 (213) 875-0423
Distributed in Canada by Engineered Sound, Mississauga, Ontario

Coming in August

Sound & Communications' ANNUAL BLUE BOOK issue

The unique Purchasing Directory of products, services, sales representatives and brand names.

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The Blue Book alone will cost \$9.50 per copy. But YOUR copy will be part of your regular subscription.

LF DRIVERS

Three 16-inch professional loudspeakers are especially engineered to optimize the performance of low-frequency horn and vented horn enclosures. This Lansing 515-G series of low-frequency horn loudspeakers features 132-ounce ferrite magnets, edgewound aluminum flat-wire voice coils, light but durable cone assemblies, and low-distortion

cloth suspensions. Model 515-8G produces extended bass response (to 50 Hz, -3 dB), and extremely high linearity. Model 515-16G features 16-ohm impedance and increased sensitivity for applications in dual loudspeaker enclosures.



High-performance Model 515-8GHP combines efficiency and high power handling to create a speaker capable of high sound pressure levels and reliable performance under extended use. AES power ratings for the 515-8G, 515-16G and 515-8GHP are 75 watts (25 volts), 75 watts (35 volts) and 200 watts (40 volts), respectively.

For more information write 626 on the inquiry card. Or write: Altec Lansing, 1250 N. Red Gum St., Anaheim, CA 92803.

WIRELESS MIC SYSTEM

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MIC MIXER

The Voice-Matic Microphone Mixer, Model DE-4016, is an automatic four-channel unit with a remote control feature. The electronic circuitry providing the remote control capability is contained within the chassis of the mixer. The remote control function is provided by the DE-207 control box which passes only d.c. voltage signals. Channel sensitivity, master level, and standard/automatic mode are passed to the DE-207 when it is connected to the DE-4016 chassis and again are returned to the DE-4016 when the DE-207 is disconnected. The potential principle of dynamic threshold sensing allows this automatic microphone mixer to provide the gain, stability, low background noise and reverberation pickup of a single-microphone system and also offers the added feature of remote control.



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Model MDP-520 is a hand-held, low-impedance, dynamic mic with a built-in push-to-talk switch. It can be used for P.A. and paging systems and for mobile applications, such as police radios, amateur radio, CB and marine radios. Its AMS black plastic case is effective against rough use, and the coiled cord has strain relief for protection. The MDC-610 is a dynamic cardioid microphone that can be hand-held or used with a stand. Its unidirectional polar pattern makes it a good choice for public address or other applications in which background noise must be minimized. Impedance is 200 ohms, balanced. Frequency response of 50 to 15,000 Hz gives clear voice reproduction and shock mounting protects the components and prevents handling noise. Its die-cast metal housing incorporates an on/off switch. A stand adaptor and 15' cable are included.

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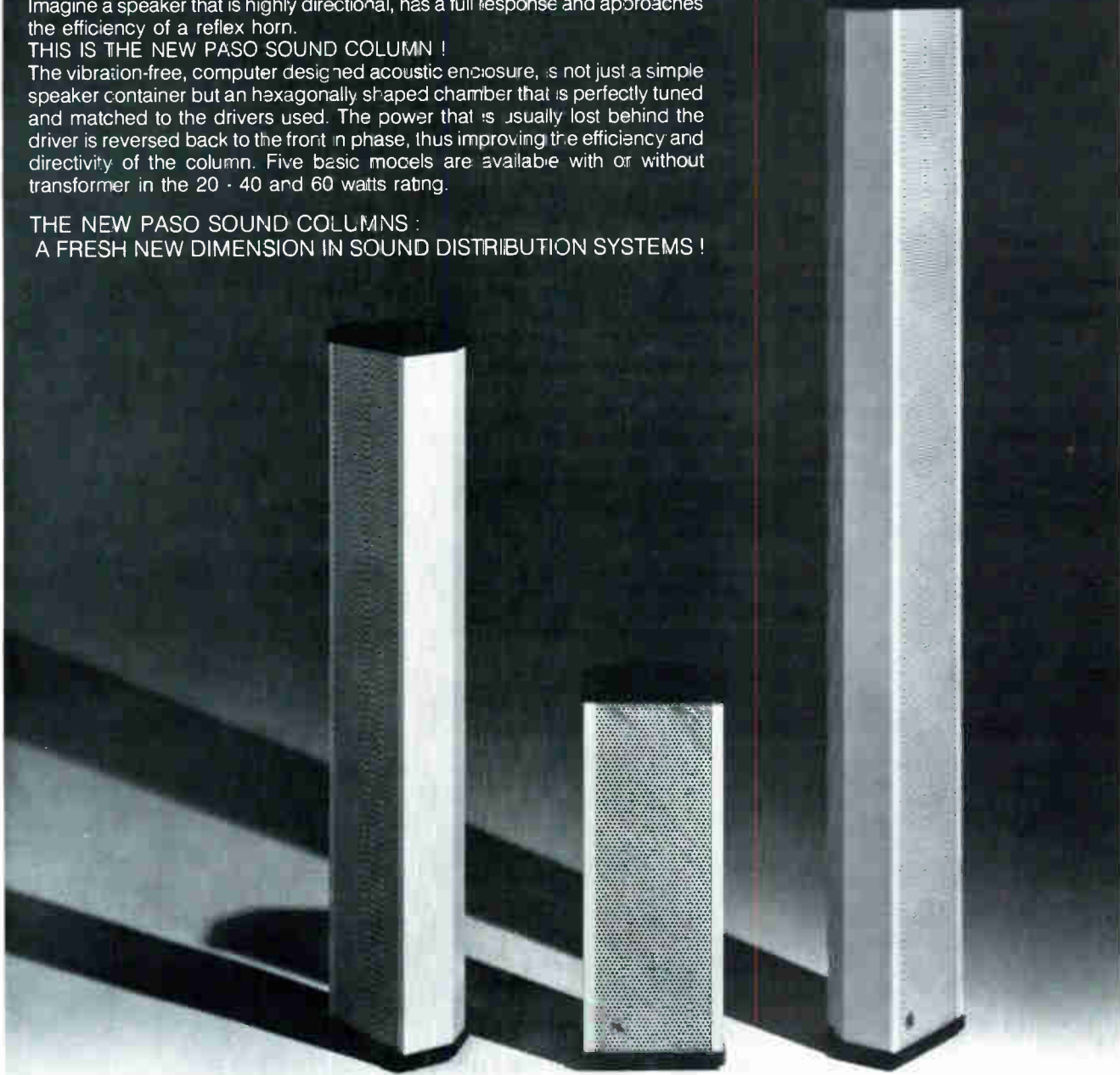
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ATLANTIC CITY—The name conjures up everything from a gambling casino to a top-notch show, from high rollers to the beach. Whether it be for business or pleasure, Atlantic City has become synonymous with excitement. The principal reason for this excitement, of course, is the casino.

There are presently nine hotel/casinos in Atlantic City; by mid-1985 the tenth and eleventh will have opened. Literally hundreds of thousands of people come to Atlantic City each year. Some come for the sun, some come for the fun, but most everyone comes for the sheer thrill and excitement of casino gambling, along with the luxurious accommodations offered by the hotels.

What does all this have to do with professional sound? As diverse as the hotel/casinos are, they all share the need to provide top-quality sound systems as part of their total package of services. This gives Atlantic City the distinction of having the largest and most diverse collection of sound equipment anywhere on the East Coast, second only to Las Vegas in the entire country.

for Harrah's, it is the hotel's feeling that the guest, who is already there, does not need to be subjected to a great deal of "hype" in order to stay. Conversely, Caesar's Boardwalk Regency seems to thrive on "hype." Taped music and messages are always going out over the paging system, and this, as Dennis Gorsky of Caesar's Public Relations explains, constantly promotes the hotel. Caesar's has adopted the idea of "overdoing events," and this is evidenced by the fanfare that accompanies their daily activities.

"When a microphone works, it makes me happy!" So states Karen Hirschberg, director of public relations at Bally's. This comment is typical of those people at the hotels who use the sound equipment on occasion, but who are not trained operators. They rely heavily on the technical people, either from the Entertainment or Audio-Visual Departments, to keep the equipment functioning properly and to have what they want when they want it. Public Relations and Convention Services people don't have time to worry about *how* the equipment operates; their concern is when they

sitates the use of a portable sound system outdoors. Also of note in the Golden Nuggett are the birds; not ordinary birds, these are mechanical devices that put on a music show every fifteen minutes all day long. They are absolutely unique on the boardwalk, and guaranteed to leave a lasting impression.

Naturally, the technology necessary to accomplish some of these "unforgettable" events gets complex, and once again the Entertainment and Audio-Visual people are called upon to keep the equipment working properly. Without exception, the public relations people this writer spoke to about using the sound equipment stated that they rely on the support of the technical crews to keep everything running smoothly.

Each casino obviously would like to think it has the best combination of events and accommodations to offer its patrons. However, since the public's idea of *best* varies so much, there are many different events going on in Atlantic City at any given moment, each one subject to different audio requirements. For instance, the Sands offers major boxing matches on a regular basis,

Sound You Can Bet On

by **David G. Meyer**

Although they share common interests and goals, each casino has very different philosophies on accommodating its patrons. For instance, Harrah's Marina has adopted a very low-key attitude towards its guests, directly evidenced by the lack of background music and unnecessary paging in most of the hotel. According to Alice Parker, director of public relations

turn something on that *it works*.

Each hotel/casino tries to attract as many patrons as it can, and some of them have rather unique attractions. For example, the Tropicana broadcasts a daily radio program from the *Top-of-the-Trop* lounge. Hosted by Pinky Kravitz, a 25-year veteran of the Atlantic City area, this two-hour program features interviews with local executives, celebrities and entertainers. The Golden Nuggett, on the other hand, sponsors a "sandcastle contest" on the beach each summer, and this neces-

and very often there will be network TV coverage provided as well. This calls for special people and special use of the sound reinforcement and recording system in the theater. In addition, the Sands is pursuing the idea of musical specials, taped in the Copa Room, for distribution to cable TV. This, according to Pam Sinderbrand, Sands Public Relations, will attract top-name talent to the room and therefore more customers to the hotel.

All of the equipment in the hotels needs service from time to time, an unfortunate yet realistic fact

Mr. Meyer is with the Audio Systems Division of Peirce-Phelps, Inc., Philadelphia



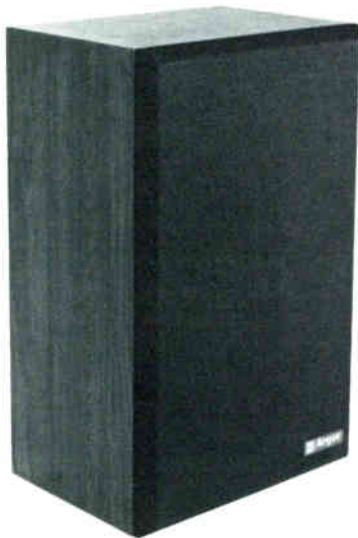
of life. Many send their equipment out for service. Bally's, on the other hand, has a rather unique approach to service; they do absolutely *all* service in house. In fact, they even have contracts with other casinos (such as the Sands) to service their communications beepers.

Fred Hauber, director of the Audio-Visual Department at Bally's, describes what they do as "hard-core maintenance," and backs that

statement up with a crew of eight technicians who provide service seven days a week, sixteen hours a day, with a shift on standby from midnight to eight A.M. This complete electrical and communications center, according to Hauber, not only keeps the equipment at Bally's functioning, but saves the hotel thousands of dollars a year by not having to depend on outside labor to do service work.

The different sound systems within the hotel/casinos are used in a variety of ways. Naturally, each venue has a theater, where either top-name entertainers or revues perform. There are also lounges for smaller groups to play in, and meeting rooms where businesses and corporations of all sizes gather to share information. A look at some sound systems common to all of the

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The Opera House at the Golden Nuggett.

hotel/casino venues in Atlantic city will offer a better understanding of the complexity of operations that the typical venue has to face.

Background Music and Paging

The basic background music and paging system is probably the most extensive system in the hotel, simply because it reaches into the most diverse number of places. Background music seems to play just about everywhere, and when present in public areas, it is almost always level-controlled. This can be done in a variety of ways; the most common method is to use either the Altec Noise-Operated Automatic Level Adjustment (NOALA) or the

UREI Ambient Noise Controlled Amplifier (ANCA). The paging system is considered part of the background music system, although it is treated as a functionally independent system. This system is "zoneable" to any number of different areas within the hotel, the most important area being the casino floor. The "high roller" must be able to be paged *anywhere* in the facility, so the paging system must be flexible enough to reach anybody anywhere. The background music system also sends music and messages along the escalators and even finds its way into the elevators. Some venues play different program music going up the elevator from that coming down.



The Copa Room at the Sands, set up for a boxing match.

All public toilets are on a separate feed because of casino restrictions as to what kind of information can be dispersed to the different areas of the hotel. In short, the paging system is zoned so that the wrong messages aren't sent to the wrong places.

All hotel/casino restaurants get music but no paging except for the areas known as "coffee shops." This makes the restaurant the one place you can "hide" to escape being paged. Instead of the standard background music which is fed to the other public areas, the restaurants have their own separate music systems, often running 6-12 hour programs of special "theme" music appropriate to the restaurant. This, interestingly enough, is more for the benefit of the employees than the patrons, since non-repetitive programming tends to keep the employees from getting sluggish and bored with their work.

There is a special system, known as the "back-of-house" music and paging system. This system is also designed with the employees in mind, as it sends special up-tempo programming out to the back-of-house areas to help keep the employees motivated. In addition, many of the venues are adding outdoor speakers to their paging systems, primarily for bus control. This system, although tied to the main system by means of a patch point, is separate; it gets a music and page feed from the casino, yet also has a microphone for local origination of paging.

Meeting Room Systems

As the name implies, these rooms are used for meetings, and as such, have some special sound requirements. These are fairly straightforward systems, capable of mixing several microphones in one room as well as providing audio-visual aids. All the equipment for the various meeting rooms is housed in one room, with all systems controlled from one or two master racks. All rooms tie together with a patch bay. There is little if any audio processing done on these systems, and they are made as simple as possible to operate, since they are used by a wide variety of people, many of whom may have never before had any hands-on experience with operating audio systems.

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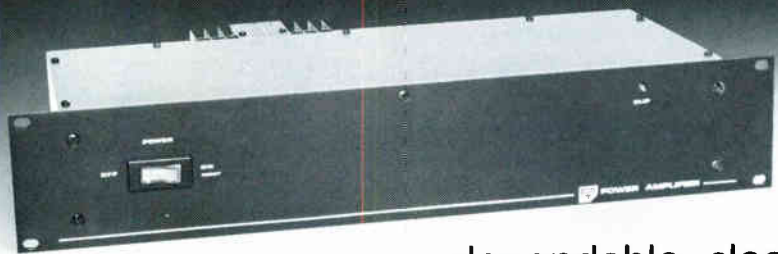
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The casino at the Golden Nugget.

Main Theater System

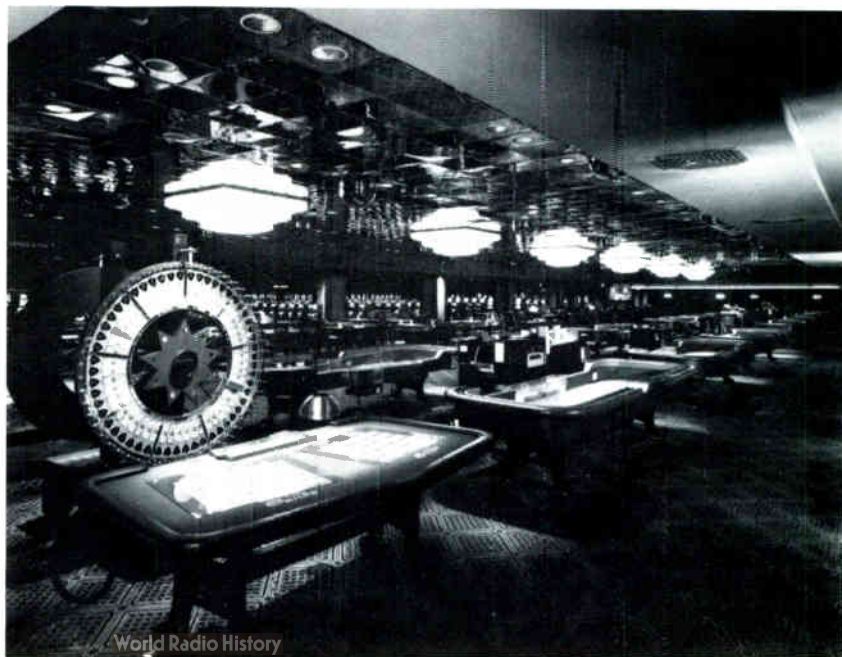
Perhaps the most interesting system in any hotel/casino, the main theater system has the widest variety of equipment and the widest range of applications. Asked to do a wide variety of jobs, this system must have the flexibility to perform not only standard P.A. functions, but be able to supply a broadcast mix and recording mix on occasion as well.

On the one hand, the system is quite straightforward in terms of signal flow. Microphones or other input sources are connected either directly to the main console or into an extensive audio snake, which then runs into a patch bay. From there the signal is subjected to

different kinds of processing, including EQ, reverb, and delay. Then the signal runs to the amplification necessary to drive whatever configuration of loudspeakers feeds the house. There is generally a separate console available to mix the performer monitor speakers, with their own processing and amplification packages. The patch bay in this system is worth a special mention, because it serves not only to patch signals in and out of the console for use in the theater, but it also allows the system to send signals to other parts of the hotel or even to locations outside of the hotel.

Although equipment tends to vary widely from venue to venue, all

The casino at the Sands Hotel.



Atlantic city hotel/casinos use a Yamaha PM2000-32 console as their main house mixer. The PM2000 has eight submaster outputs, and since the house mix is generally mono, only one of the eight submasters is necessary to create the house mix. This leaves Matrix 2-8 open to serve as intercom and dressing room feeds, to suit the individual needs of the particular venue. There is also a left-right (L-R) feed available on the console which easily becomes a recording feed for those times when a stereo recording of the event is required.

The music and paging systems from other parts of the hotel can be brought into the theater, and this is done in a rather interesting way. The maitre d' has a special control panel at the audio console. This panel gives him the ability to turn the background music system on and off at his discretion, and allows him the option of feeding background music into the theater. This is particularly helpful when there is a non-theatrical event going on in the theater, such as a luncheon, where background music would be appropriate. Obviously this system would be turned off during a show.

Another special feature of the theater system is the click-track for the musicians. As the name implies, this system provides a click-track (or metronome count) to the orchestra, more specifically to the conductor and the drummer. It is accomplished via a feed from a stereo tape deck: one channel is a continuous clicking, the other is actual show program. In fact, the program portion of the click-track is quite often show vocals, since it is easier to record vocal parts once and play them back via tape than it is to put wireless microphones on everybody on stage who sings. This also allows a performer with laryngitis to go out and do a show, without anyone knowing there is a problem. The conductor and the drummer both need this feed in order to keep the other musicians in sync with the tape, since the tape will go on its merry way no matter what else happens. The audience, on the other hand, hears *only* the show program. Aside from the obvious benefit of giving the singers in the show some relief, this click-track is also used to enhance or "sweeten" small orchestras, making them sound

"Once the show starts, I don't have time to worry about my mics."

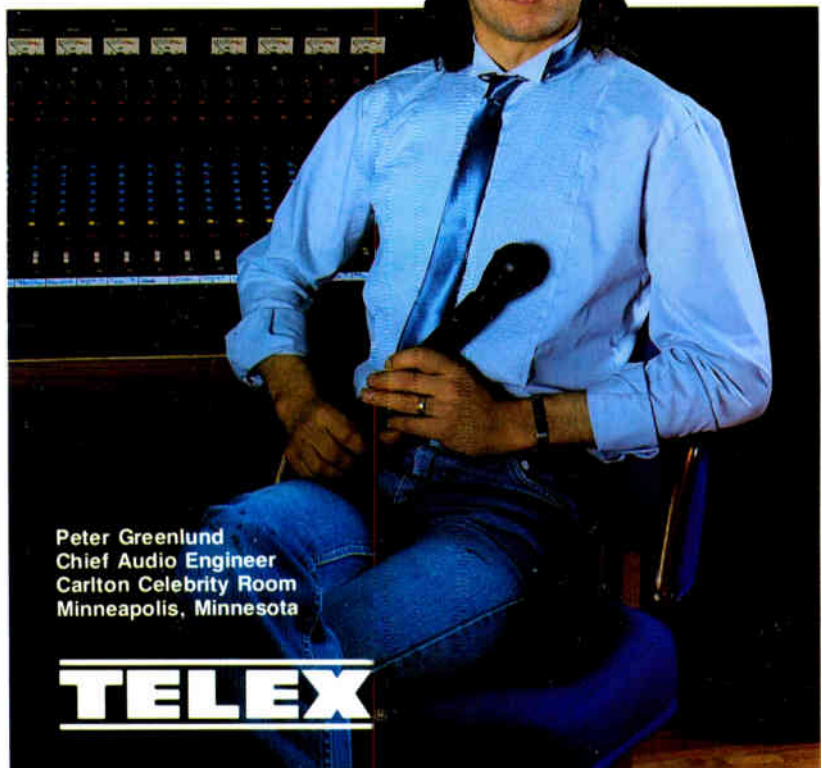
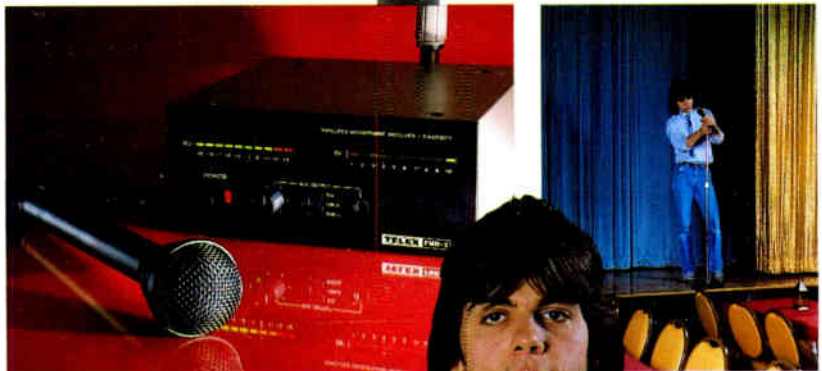
As Chief Audio Engineer for the Carlton Celebrity Room in Minneapolis, Peter Greenlund has miked the biggest names in show business. From the normal speaking voice of an emcee or comedian to the hard-hitting vocals of the rock, country or pop singer, Peter has had to balance his system for all levels of dynamic range and amplification. He knows that his entire sound system is only as good as his microphones, and once the show begins, it's too late to worry about mic failure. When a performer requires a wireless microphone, Peter chooses the dependable Telex dynamic cardioid mic with FMR receiver.

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much bigger than they really are.

All of the theaters in Atlantic City have the same *kind* of theater sound system, although the actual hardware used is quite different from venue to venue. Virtually every major (and a few not so major) manufacturer of audio products is represented somewhere in Atlantic City, although a few, such as Yamaha, Shure, Lexicon and Altec have probably more overall product in use than any of the others.

Lounge Systems

The lounge systems in Atlantic City hotels are somewhat smaller than the theater systems, but they are no less important, since each hotel has anywhere from 4 to 8 lounges. The equipment used in these lounges varies widely from hotel to hotel, although once again Yamaha consoles seem to be the most popular choice, along with some version of a JBL Studio Monitor loudspeaker for the main speaker system. It can be safely said that the overall quality of the lounge systems is just as good as the theater system in any given hotel, and this is for a very simple and "sound" reason: *consistency*. Once the management of the particular hotel has been shown the need for consistently good sound in the lounges as well as the theater, the funds necessary to outfit a lounge properly will become available. To further insure consistency and control over the sound in the lounges, the hotel typically owns *everything* in the lounge system, including the instrument amplifiers. The only things they don't own are the musician's instruments; they even own the drum sets.

Other Systems

There are several other systems worth a brief mention at this point. One of them is the production video system which is the system by which information is presented on video monitors in various locations in the hotel. This information can be live or videotaped programming of special events, or can be as simple as character-generated text information. Some hotels, including the Golden Nuggett, have the equipment in-house to do video production and editing, so they are able not only to present the information on the production monitor system, but to produce the programming as well.

Another system of note is the in-

house broadcast system. While not yet common to all casinos, this system is slowly making its way into some of them, most notably Bally's and the Playboy. This idea of a "broadcast" system consists mainly of the cabling necessary to provide broadcast feeds to TV and radio stations that come to the various hotels and want to broadcast special events. By providing the correct cabling to and from the correct locations, the remote broadcast is accomplished with a minimum of trouble. The Atlantic City hotels are quickly discovering that in order to remain competitive, they need to provide the TV people that come in an easy way to do remotes; therefore the hotels are beginning to install the proper cabling. Another primary consideration is the ability to transmit signals out of the building to AT&T Long Lines, since that is how most of the remote audio signals are fed back to the broadcaster's studio.

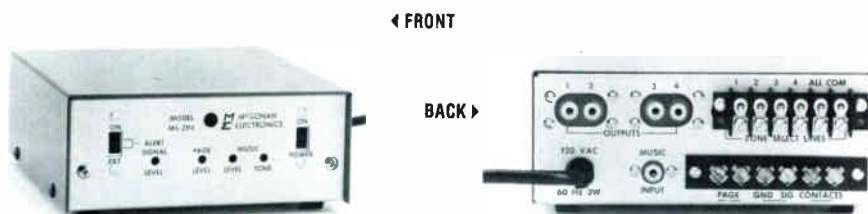
Another extremely important system common to all Atlantic City hotels is the production intercom system, which allows everybody on the technical crew of a show or other special event to communicate with one another. Usually used in, but not necessarily confined to the theater, this system typically consists of single-muff headset-microphone combinations used by the audio mixing person, the conductor, the stage manager, the director, the light control person and someone in the dressing room areas. All these people work together to keep whatever show or special event is being presented running smoothly and professionally. As previously stated, the intercom headsets are driven off one of the matrix networks of the PM-2000 console.

The End Result

Every hotel/casino in Atlantic City works towards a common goal: professionalism. They may arrive there by very different paths, but they all try to accomplish the same thing: to provide patrons with the most enjoyable time possible. This means professional equipment operated by professional people, and each hotel attempts to present itself in the best manner possible. □

Special thanks to Bill Perkins of the Playboy Hotel for his help in the preparation of this article.

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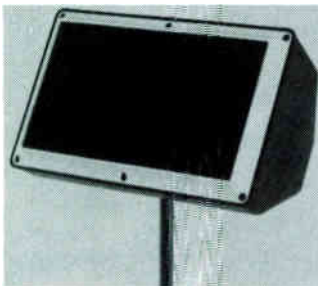
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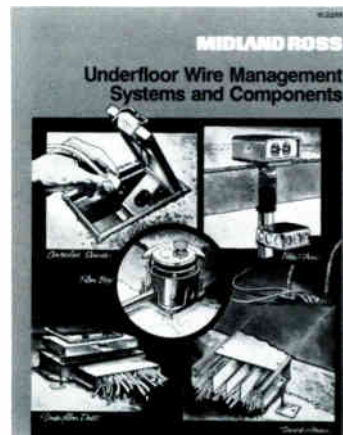
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New Literature

UNDERFLOOR WIRING: Current systems for providing floor-level power, telephone and electronic wire services are discussed in a brochure from Midland-Ross Corp., Pittsburgh. The setups include underfloor raceway systems, specialty floor boxes and many accessories. Featured is Mult-A-Cell, an infloor raceway system built around large-wire-capacity multiple compartment, galvanized steel duct, trench, access and junction boxes.

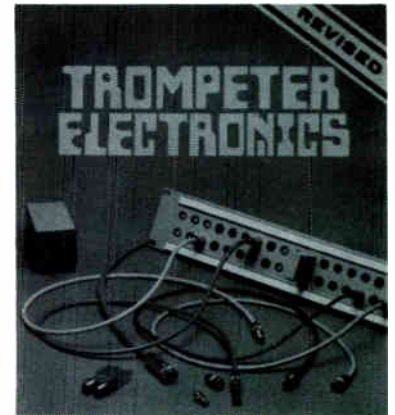


Designed for both new and retrofit applications, the system provides a modular zone layout, simplified installation and attractive, obstruction-free access for power, electronic and phone services in access boxes with openings up to 80 square inches in size. Boxes are covered with hinged, steel reinforced tops equipped with small, retractable wire exits to eliminate exposed, above floor service fittings. The hinged top is covered with carpet or tile to match the floor treatment, for an unobtrusive effect.

CABLE ASSEMBLIES/CONNECTORS:

Complete guidelines for selecting and installing coax, twinax/triax & quadrax cabling used in computer networks and data distribution systems are described in a 50-page booklet from Trompeter Electronics, Chatsworth, CA. It describes and illustrates thousands of items for installing and

distributing hardwired multi-terminal computer networks for compliance with recent fire prevention regulations. Over 30 families of plugs, jacks, panels,



looping plugs, cable assemblies and termination hardware in coax, twinax/triax or quadrax versions are included, for such related applications as telecommunications, telephone, TV broadcast, CATV, CCTV, and ETV, for information transmission and retrieval.

TOOLS & INSTRUMENTS: An extensive guide to technical accessories for assembling, testing and repairing electronic equipment is



offered by Contact East, Burlington, MA. Products include precision hand tools, test instruments, tool kits, soldering supplies, plus a full selection of static control products. All are fully illustrated with photographs and detailed descriptions.

Upcoming

August 6-11: National Professional Electronics Convention, Sheraton Hotel, St. Louis, MO. (National Electronics Sales & Service Dealers Assoc., 2708 W. Berry St., Fort Worth, TX 76109. 817 921-9061)

August 14-16: Professional Land Mobile Communications Showcase, Hilton Hotel, Las Vegas. (Electronic Industries Assoc., Telecommunications Group, 2001 Eye St. N.W., Washington, DC 20006. 202 457-4935)

September 11-13: Midcon/84 High Technology Electronic Exhibition and Convention, Dallas Convention Center, Dallas, TX. (Electronic Conventions, Inc., 8110 Airport Blvd., Los Angeles, CA 90045. 213 772-2965)

September 16-19: Intelligent Buildings & Information Systems (IBIS) Conference, Hilton Hotel, Boulder, CO. (Cross Information Co., 934 Pearl, Boulder, CO 80302. 303 499-8888)


September 18-19: Repcon '84, Terrace on the Park, Flushing Meadow Park, NY. (Electronic Representatives Assoc., New York Chapter, c/o A. D. Adams Advertising, 9 E. 38th St., NY, NY 10016. 212 685-9060)

September 19-21: 17th Annual Connector & Interconnection Technology Symposium, Disneyland Hotel, Anaheim, CA (Electronic Connector Study Group, Inc., P.O. Box 435, El Toro, CA 92630)

October 3-5: Communications Managers Association's Annual Conference & Telecommunications Exposition, Nassau Veterans Memorial Coliseum, Uniondale, NY. (Trade Associates, Inc., 4701 Willard Ave., Chevy Chase, MD 20815-4697. 301 656-6794)

October 14-17: International Background Music Association Convention, Mountain Shadows, Scottsdale, AZ. (IBMA, 4949 W. Belmont Ave, Chicago, IL 60641. 312 685-7850)

November 20-23: PRONIC '84, International Exhibition of Equipment and Products for Electronics, Porte de Versailles Exhibition Grounds, Paris, France. (S.D.S.A., 20, rue Hamelin, F75116, Paris, France)



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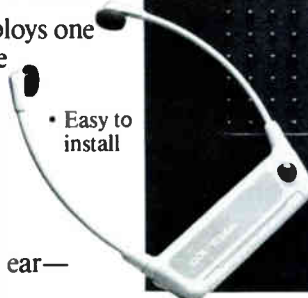


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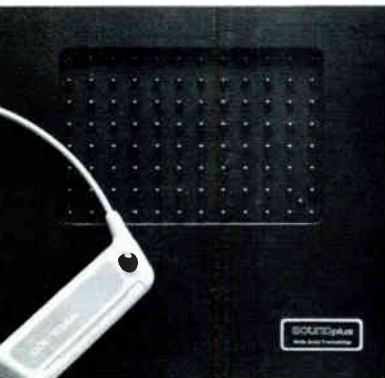
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• Easy to install



• Infrared technology for better clarity than RF, free from interference

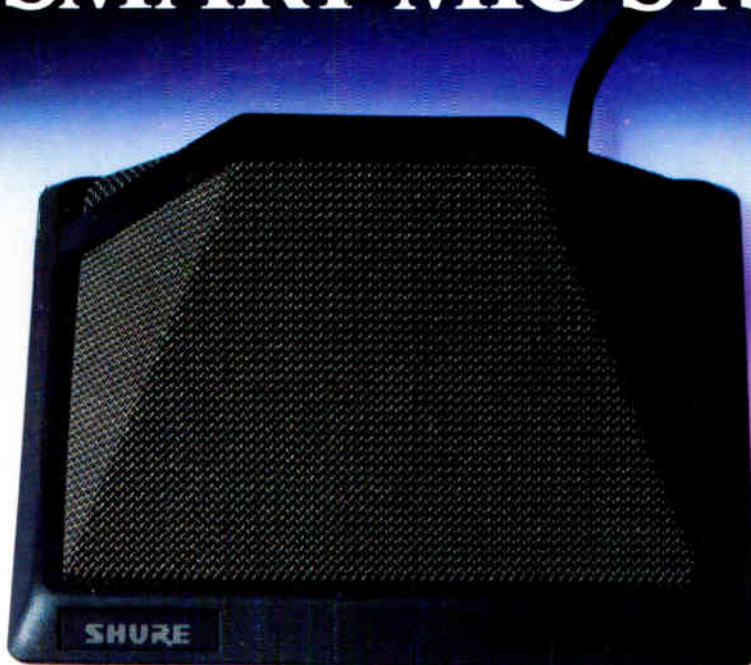
• Better sound quality at a lower cost

• Compatible with most sound systems

• No need for special seating sections

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The Shure AMS incorporates advanced signal processing circuitry—turning on to the sound source quickly, quietly, and automatically—and turning off with a smooth whisper. From

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