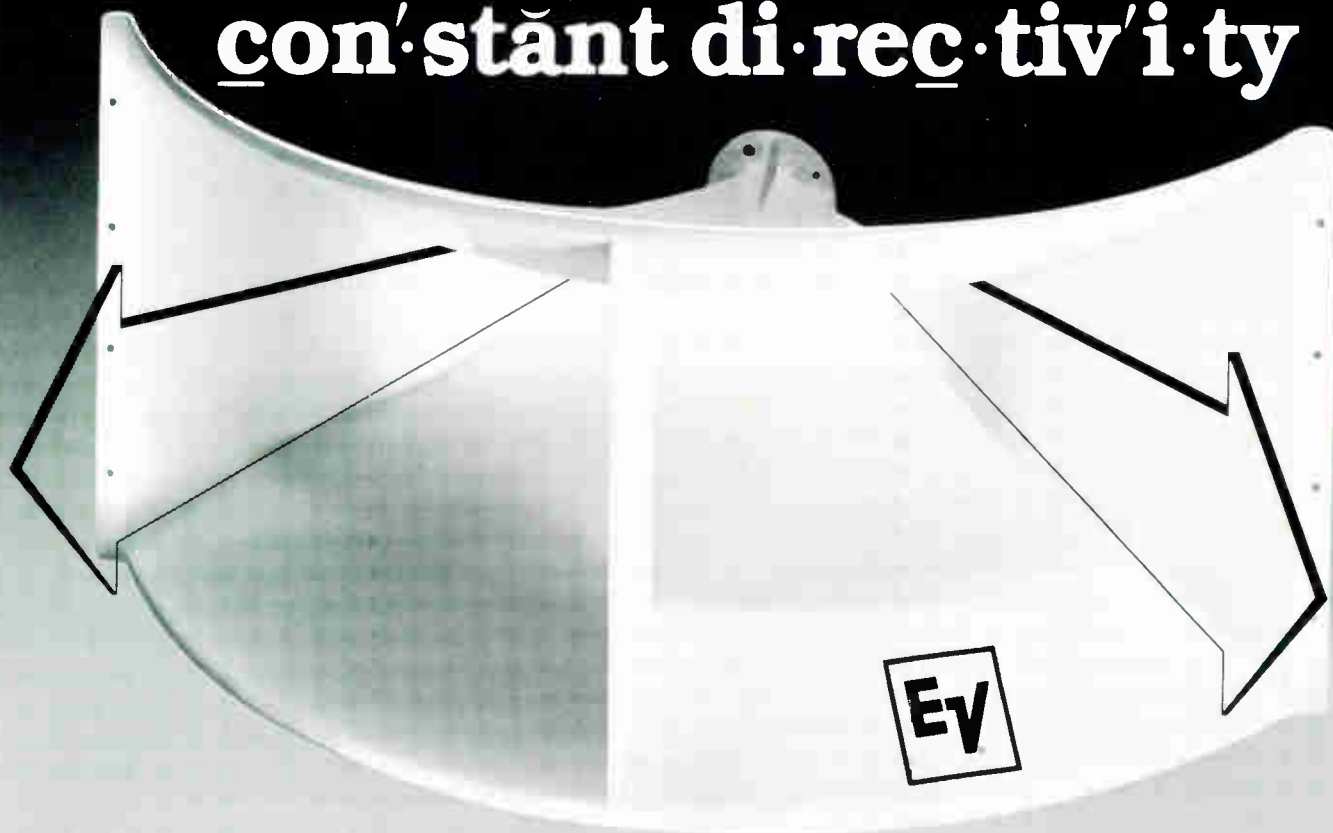


SOUND & COMMUNICATIONS

MAY 1980



con·stant di·rec·tiv·i·ty



The characteristic of a horn that directs all of the frequencies where you want them to go.

Most horns offer some control of the sound pattern they produce. The problem is that frequencies at the center of the pattern are different from those at the edges.

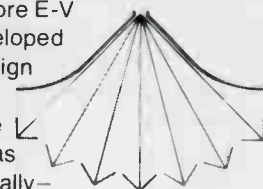
Unless you use HR Constant Directivity horns, that's the problem you'll have. To the audience this means unintelligible, too bright, too dull, and sometimes just plain bad sound at many seats.

These patented¹ HR Constant Directivity horns from Electro-Voice provide full-range frequency coverage and effectiveness of pattern control

unheard of before E-V engineers developed this unique design concept.

Demand for the "white horns" has grown dramatically—almost completely by word-of-mouth. Once a sound engineer, musician or facility owner hears the difference HR Constant Directivity makes, a new demand is created.

Ask someone who has used or heard them, or buy a pair and try them yourself. You'll probably hear that HR horns are so clearly superior that other choices are obsolete.



Write to Electro-Voice for more information. We'll send you a complete set of Engineering Data Sheets and a paper comparing the today performance of HR constant directivity horns with yesterday's promises. Include \$1 with your request, and we will put you on the mailing list for the E-V "PA Bible," a down-to-earth series of papers on the selection and application of professional PA products and concepts!

¹ U.S. Patent Number 4071112

E-V Electro-Voice
a gulton company

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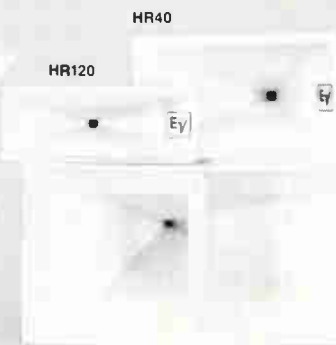


LF215

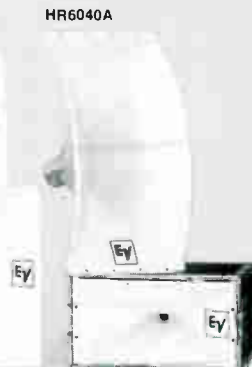
RC90
(includes case)



HR9040A



HR4020A



RC60 (includes case)

Tape-Athon Introduces An Automatic Modular Cassette Background Music System



MODEL 750

Designed to automatically mix programs for cocktail lounges, restaurants, specialty stores, arcades, shopping centers, industry, offices, hotel/motels, retailers and others wanting intermix of 2 taped music sources.



MODEL AM 301

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MODEL IN 303

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MAY 1980, VOLUME 26, NUMBER 1

Founded 1955

ARTICLES

- 10 Life Safety First
by Herbert M. Jaffe
- 15 Uncommon New Chief
- 20 Sounding the Horn
by Jim Morrison
- 22 Computerized Business Telecommunication
- 26 High Rolling Sound
by George deLucenay Leon
- 30 City-Wide Paging
by Alfred A. Menegus
- 34 Enhancing Conference Calls
- 51 Holding Down Supply Costs
by Ernest W. Fair

DEPARTMENTS

- | | | | |
|---------------|----------------|----|-----------------------|
| 4 | Late Lines | 48 | Interconnect Lines |
| 38 | New Products | 53 | NATA on the Line |
| 47 | New Literature | 55 | Mobile Communications |
| 56 Classified | | | |

combining SOUND MERCHANDISING & MODERN COMMUNICATIONS
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ADVERTISERS

Aiphone	41
AKG Acoustics	Cover 3
American Sound & Music Services	56
Atlas Sound	48
Benjamin Electroproducts Inc.	52
BGM International	56
Bogen	53
Buckeye Telephone & Supply Co.	44
C&M Products Ltd.	56
Cabletronix	56
dbx, Inc.	27
DeltaLab Research, Inc.	54
Direct Systems Company	37
Edcor	5
Electro-Voice	Cover 2
FanonCourier	29
Florence Corp.	22
Frasiers Communications Corp.	56
GBC CCTV Corp.	13
Gibb-Johnson Company, Inc.	42
HM Electronics, Inc.	46
Ideal Wire Products Inc.	56
L-C-A Sales Co.	36
Lexicon, Inc.	9
MacKenzie	33
Maris Equipment Company	51
McGohan Electronics, Inc.	56
McMartin Industries, Inc.	6
Mitel	56
Montgomery Mfg Co.	56
Music Theatre Network, Inc.	35
Newcomb Audio Products Co.	31
Opamp Labs Inc.	56
Oxford Transducer	49
Paso Sound Products, Inc.	23
Raytronics	55
The Rediffusion Organization	50
Rowe International, Inc.	30,36,46
Seeburg Music Library, Inc.	25
Sennheiser Electronic Corp.	32
Shure Brothers Inc.	Cover 4
Spectra Sonics	8
Talk-A-Phone	28
Tape-Athon	1
TekTone Sound & Signal Mfg.	56
Telex Communications, Inc./Turner	43,45
Toa Electronics, Inc.	14,16
Trutone Electronics, Inc.	24
University Sound	7
Utah	47
White Instruments, Inc.	52
Wissco	56

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LATE LINES

ADDRESS OF SENATOR HOWARD M. METZENBAUM TO THE COMPUTER & COMMUNICATIONS INDUSTRY ASSOCIATION

Tuesday, March 4, 1980

I am pleased to have the opportunity to meet with the representatives of an industry in which "Small Is Beautiful" is more than just a catchy phrase.

In the past two decades, our economy has been obsessed with bigness.

In the Sixties and Seventies, we saw the growth of giant conglomerates, great corporate octopi with tentacles reaching into dozens of unrelated industries.

We saw the growth of giant multinational corporations, some with annual incomes in excess of most member nations of the U.N.

And there were some who foresaw the day in the not-too-distant future when the small firm would become the economic equivalent of the snail darter or the furbish lousewort—endangered species surviving only on sufferance.

But today, many of us have come to see that bigger is not necessarily more efficient or more productive. It is just more powerful.

And we are beginning to realize that in businesses like yours, that are on the cutting edge of new technology, small is not just beautiful. It is also better.

Smaller firms have created fully fifty percent of recent technical innovations in our economy. And they have consistently done so at a quarter the development cost of big companies.

Small business accounts for fifty-five percent of private sector jobs in this country and produces forty-three percent of the GNP.

Smaller firms, in other words, are the kinds of companies for which this nation once was famous—flexible, efficient, productive and, above all, innovative. And those firms are the heart and soul of the free enterprise system.

I am not about to come to you today and say that the climate here in Washington has changed in favor of the smaller firm. It hasn't.

I'm not going to pretend that I expect vigorous anti-trust enforcement to be a part of the Administration's anti-inflation policy. The Administration has shown no signs of moving consistently in that direction.

Nor am I going to say that anti-trust action enjoys great support in Congress. It does not, as witness the recent FTC bill, which prohibited FTC action to open the private standards and certification process to small business participation.

But I can say that we have made at least some progress in the 96th Congress.

The Anti-trust Procedural Improvements Act, which I introduced, has passed the Senate and is moving in the House Judiciary Committee. It will enable small business to use the anti-trust laws against large offenders without having to face stall tactics and ruinously expensive legal wars of action.

And we have before the Judiciary Committee another bill that I sponsored, "The Small and Independent Business Protection Act."

That bill, which was endorsed by two-thirds of those responding to a poll

of the 570,000-member National Federation of Independent Business, is directed against the rash of mergers and acquisitions through which large corporations have absorbed other independent companies.

Twenty-five years ago, the top five hundred firms in this country controlled sixty-five percent of manufacturing and mining assets.

Today, that figure is eighty-three percent and two-thirds of the growth was brought about by mergers.

Obviously, some smaller firms have been bought out by the corporate giants. But many, many more have been extinguished over the years. They did not go under because they were inefficient, or because they failed to innovate—too often, smaller firms have lost out because, and only because, they could not compete with massive companies that are able to capture markets by subsidizing one operation with profits drawn from others.

That, I am afraid, is what your industry could soon face. As you well know, legislation has been proposed that would allow AT&T, by far the greatest of all the corporate elephants, to enter the data processing field without regulation or control.

I am sure that everyone here is aware that back in the late 1940s it became clear that the relationship between AT&T and Western Electric, its manufacturing arm, was keeping competition out of the largest market for terminal equipment—the Bell System.

The Justice Department filed suit and after years of litigation agreed in 1956 to a settlement with AT&T—a settlement so questionable that some of the lawyers on the case refused to sign the Consent Decree.

The essence of the agreement was this:

In return for the Justice Department's closing the case and dropping its demand for divestiture of Western Electric, AT&T agreed to stay out of any business that wasn't subject to regulation.

The reason for that provision is as obvious today as it was in 1956—AT&T

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was, and is, simply too huge to unleash without some regulatory checks and controls.

It is as true today as it was in 1956 that AT&T cannot be allowed to use its enormous monopoly telephone revenues against competitors who have no such massive and guaranteed financial cushion.

And it is worth noting that in spite of the enormous changes that have taken place in the communications and data processing industry in the past quarter century since the consent agreement was signed, AT&T has never asked the federal court to change that agreement.

Yet today there is great pressure to deregulate the communications field through a major rewrite of the Communications Act of 1934. AT&T would do legislatively—in the halls of Congress—that which it probably can't do through the court. It's obvious you can't hire a lobbyist in the court. You can hire the best and most expensive legal firms to lobby the Congress.

Many proposals have been introduced with Administration support. The most recent, and the one most likely to move, has already been adopted by a House Subcommittee. This proposal would legislatively remove the Consent Decree and allow AT&T to freely enter and set prices in any field it wanted, outside of the conventional message toll telephone business.

Obviously, competition is a good thing. As a private businessman and as a public official, I have fought to increase competition in our economy.

But competition must be fair, and competition between a company with assets of \$113 billion, 1 million employees, and net income of \$5.7 billion, on the one hand, and a group of smaller firms on the other, is hardly free and hardly fair.

And I will flatly predict here and now that unless the protections written into this bill are greatly strengthened, an unleashed AT&T will literally wipe up the floor with its smaller competitors.

Nothing in this legislation as drafted will inhibit AT&T in the slightest from using its huge resources, drawn primarily from regulated monopoly telephone service, to undercut its competitors' prices.

Can we legitimately rely on the bill's requirement that AT&T set up a

Intercoms



RC-M 12-24 station master

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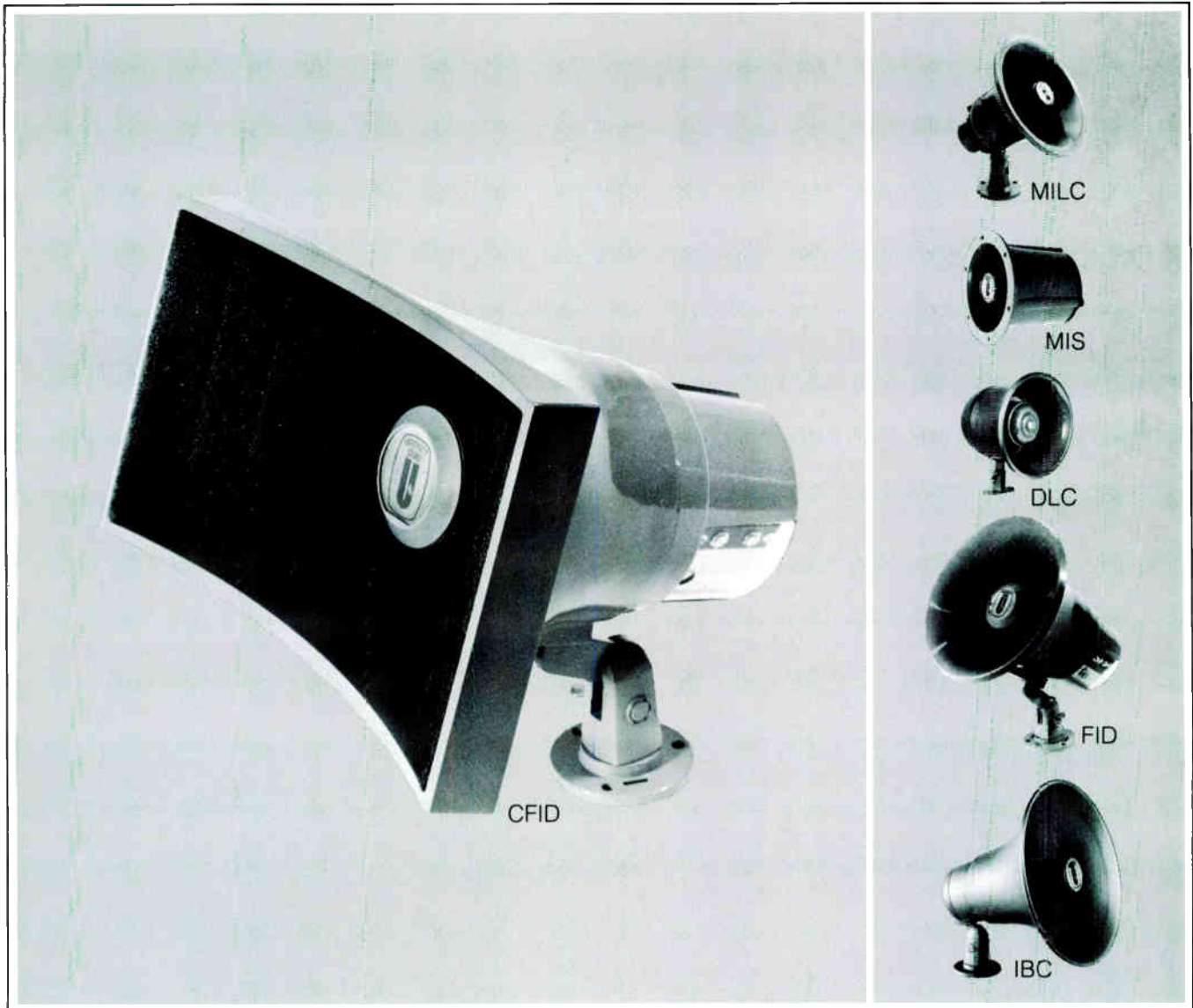
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University Sound Paging Loudspeakers



The Rule

THE RULE: CFID

As a rule, University Sound's CFID series paging-talkback loudspeakers are so versatile that they are ideal for just about any application. These rectangular horns feature unique reverse flare mouths which deliver extremely wide-angle dispersion (120°x80°). They can be flush, surface or console mounted; finished in white or metallic gray and used indoors or out.

Both 15 and 32 watt models are available with interchangeable, field replaceable diaphragms and voice coils and transformer models have built in 25 and 70 volt

selections. An accessory foam insert protects the mouth from intruders.

THE EXCEPTIONS: MILC, MIS, DLC, FID, IBC

But for those exceptional cases requiring direct, narrow dispersion or power penetration that only a round horn can give, University Sound offers the MIS, MILC, IBC, FID and DLC. Ranging from power levels of 7.5 watts to 32 watts, these loudspeakers offer variations in size, mounting configuration, impedance and frequency response to meet every specialized need.

The Exceptions

Whether your application requires the exception or the rule, University Sound loudspeakers provide the answer.

For more information on the complete line of University Sound products and the name of your nearest representative, contact Charles Round, Sales Manager.



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Altec Corporation

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separate subsidiary for its non-telephone business and keep careful books?

Let's face it. Nobody understands AT&T's accounting system—the FCC has unsuccessfully tried for 45 years to do so. And regardless of what may be done with the books, the separate subsidiary will still be an integral part of the AT&T empire.

Let me be clear on one point: I don't oppose AT&T moving into competitive areas, free from rate and profit regulation. But I think there ought to be some outside agency like the federal court where the Consent Decree was filed, or the FCC, to decide in which markets AT&T entry would be useful. Where IBM, for example, is the exclusive or prime competitor, AT&T competition could be beneficial. But where small companies are the primary competitors, that's a totally different matter. AT&T's entry into other business must be regulated—and on a case-by-case basis in order to increase competition and prevent monopoly control!

I have other problems with the competitive aspects of the bill. Will the courts decide there's no need for extensive relief if the government wins the pending AT&T and IBM anti-trust cases? Or will the courts decide that Congress has already acted to reshape the industry?

I am aware that efforts are under way by the bill's supporters and by the administration to avoid any implication that this legislation might affect the ongoing court proceedings. But, I must tell you, that's unrealistic. Almost certainly, the courts will take into account an action by Congress that so fundamentally reorganizes the industry.

The issues raised by this proposed legislation go far beyond the immediate question of your industry. Those issues touch upon the question of what kind of economy we are going to have in this country. And our response to those issues will be a good measure of our commitment to the reality, rather than just the rhetoric, of the free enterprise system.

The gauntlet has been thrown down! The fight is on. I welcome your support in the battle to make our anti-trust laws work even more effectively to stimulate competition—while at the same time protecting the small businessman from unfair competition. □

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World Radio History



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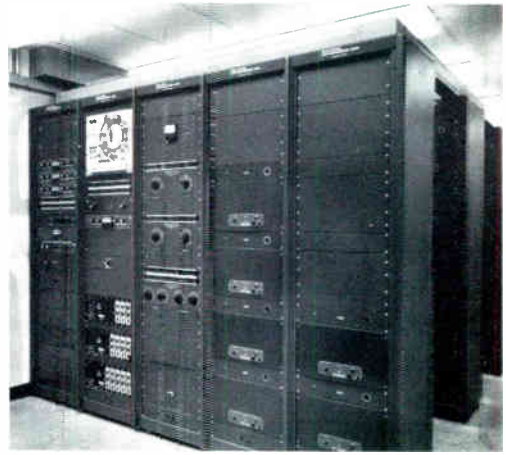
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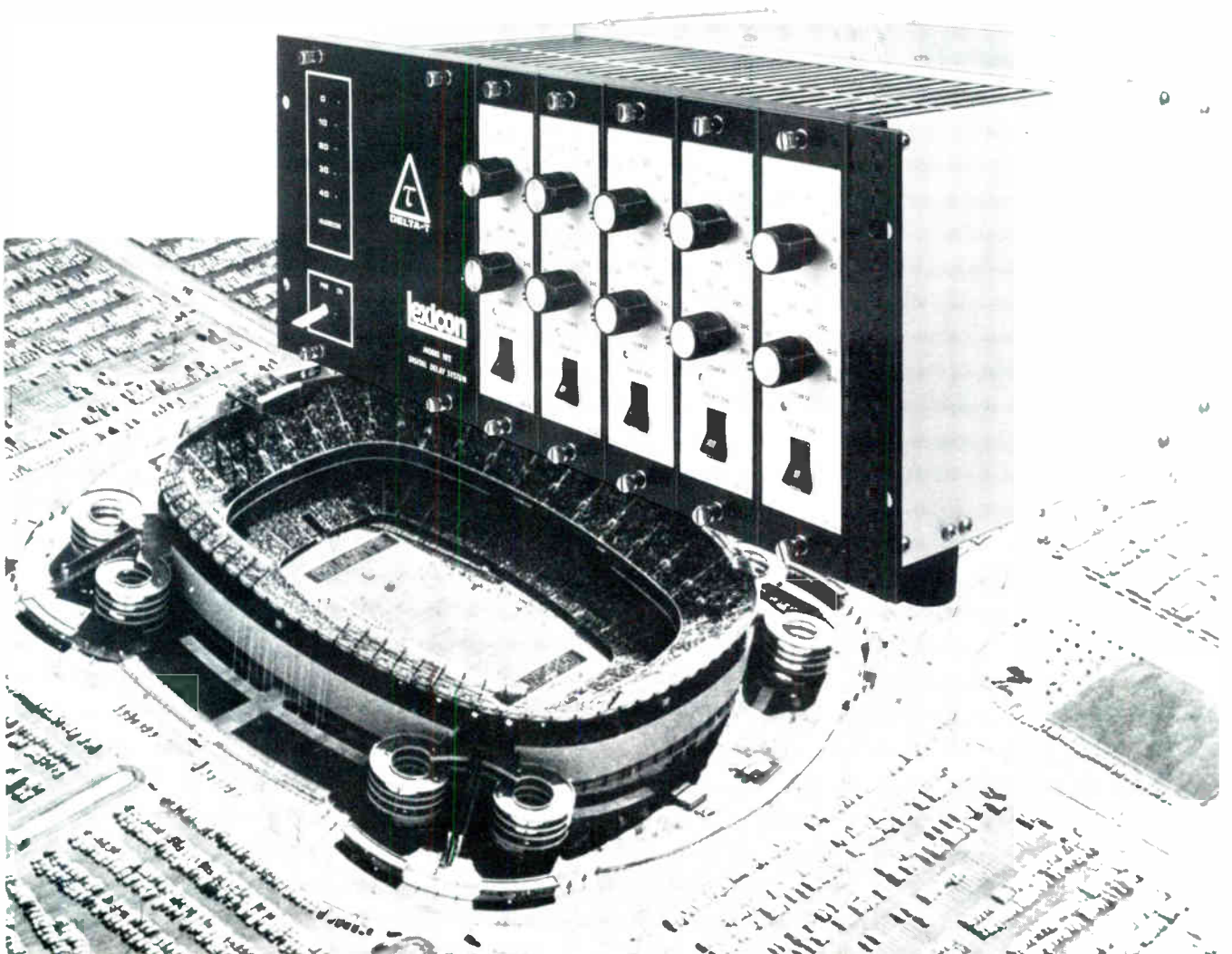
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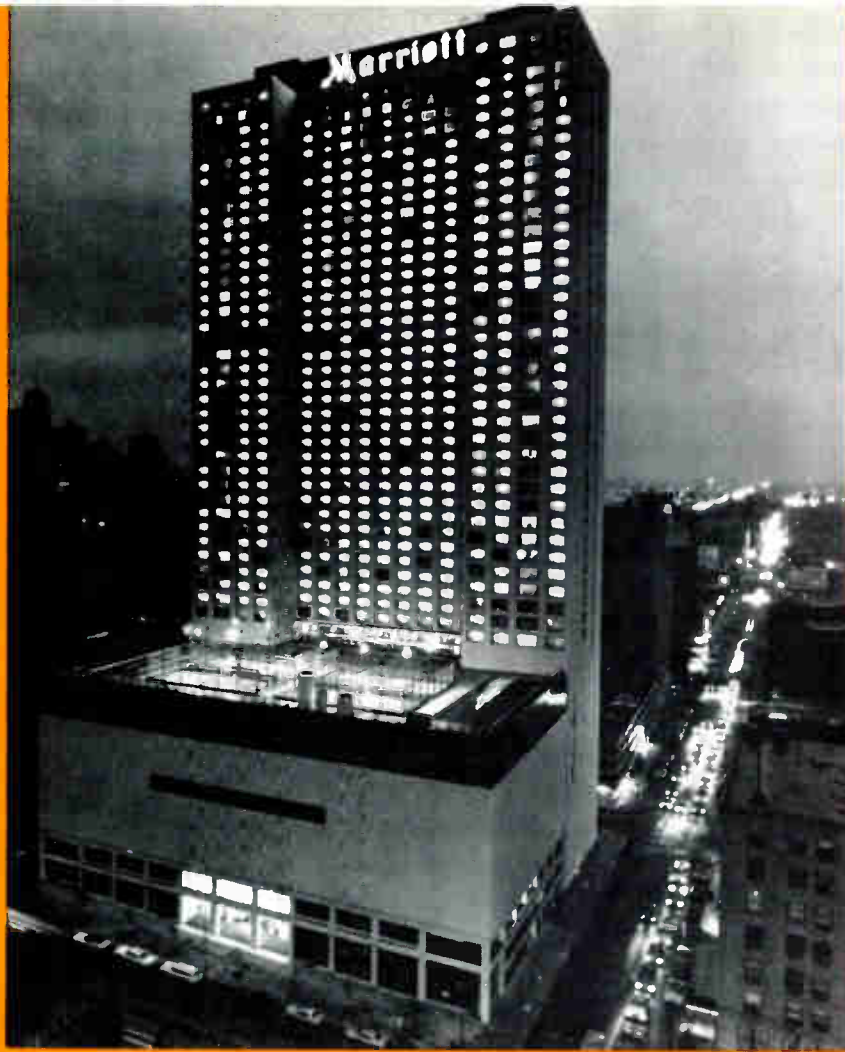


Delta-T system installed at Giants Stadium
Sound Contractor, New Jersey Communications, Inc.

Acoustics...

that put 76,800 Giants fans on the 50-yard line... Delta-T





LIFE SAFETY FIRST

by Herbert M. Jaffe

Soaring 46 stories above North Michigan Avenue in the heart of the Magnificent Mile, the new Chicago Marriott is not merely the tallest hotel in the Midwest—it's the first to fully comply with Chicago's tough new life safety code for new high rise structures.

Opened in May 1979, the 1214-room skyscraper towers above its neighbors, its sleek contemporary facade enclosing a complex multi-functional world with two separate functional blocks. Under the 37-story guest room tower are nine public floors, containing six lavish restaurants and lounges, over 46,000 sq. ft. of plush meeting and convention facilities, a platform ten-

nis health club, and a multi-level shopping mall surrounding the greenery of a four-story atrium lobby.

At any given moment, some 11,000 people may be shopping, dining, relaxing and working within the hotel's walls. While they may not be aware of it, their efficiency, comfort and safety are assured by an intricate technological network. Operating non-stop behind the scenes are the hotel's background music sound reinforcement system, support systems and status monitoring equipment for heat, ventilation, air conditioning and electricity, a CCTV security system, and a fire detection and sprinkler system supplemented by emergency voice-communication facilities integrated with fire safety procedures established by the City of Chicago.

Rich, Inc., the Franklin Park, Ill. electronics specialist company that designed and installed the life safety, sound reinforcement and master antenna systems, worked in close conjunction with the Marriott engineering department to mesh functional and architectural needs with the requirements of Chicago's new fire protection code.

Rich, Inc.'s life safety solution combines selective one-way and two-way voice communications systems interfaced with the monitoring control capabilities of the 120-watt FlexAlert emergency system manufactured by Gamewell, Inc. In accordance with code requirements, break-glass type telephone stations are installed throughout the building on every fifth hotel floor. These are in the wall-mounted FlexAlert emergency communications

Mr. Jaffe is Vice President, Marketing, at Atlas Sound

enters, which serve as permanent Fire Warden Stations, and provide communications with the Central Fire Command Panel located in the service elevator lobby.

Staffed around the clock by building security personnel, the Fire Command Center provides zoned indicator lights monitoring the status of all utility systems. In the event of emergency, it identifies the specific alarm condition sensed by sprinkler system or water-flow monitors, and pinpoints its source by individual lights and attention-getting audible indication. Another visual and oscillating sound annunciator at the Fire Command Panel is activated when anyone lifts one of the special red telephones located throughout the building.

Simultaneously, with any verified alarm condition, PBX operators in the hotel basement call the Chicago Fire Department Battalion Chief Office, located four blocks away in Fire Prevention Headquarters. Arriving in less than three minutes, in a small passenger vehicle specifically selected to avoid creating panic, the Fire Battalion Chief then evaluates the emergency and determines appropriate reactions based on complete building system status overview at the Fire Command Panel (to which only he has access). Properly trained professionals thus determine the nature and extent of the problem, summon supplementary manpower or apparatus as required, even while they direct local control activities—whether ordering buildup of the water pressure, activating of standby generators, or determining the exhaust mode of ventilating fans in specific sections of the building.

The emergency voice-communications system is then used to give specific and detailed authoritative information and instructions to the occupants of the hotel on afflicted or adjacent floors, to make a building-wide announcement, or to alert individual public areas. The same life-safety system loudspeakers are also available to communicate with fire-fighters once they reach and work in affected or surrounding areas of the emergency.

"An ultra-dependable environment-resistant communications system is particularly vital to protection and to reduce liability-exposure for the building-owners," says Jeff



One of the recess-mounted VTF-152U loudspeakers.

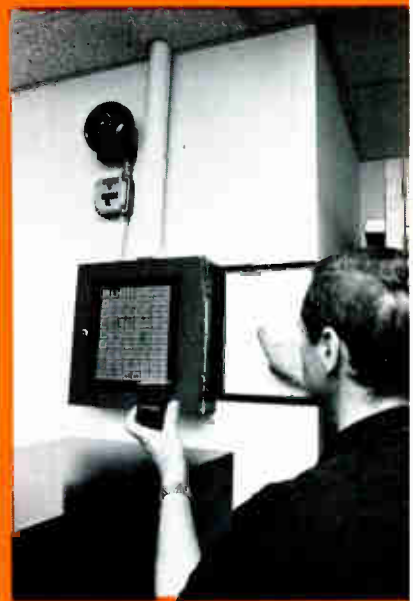
Tietz, engineering designer for Rich, Inc.'s Fire Life-Safety Systems Division. "In a multi-occupancy application like this, preventing panic is crucial. The traditional building-wide coded bells have actually caused hotel occupants to flee *into* danger, rather than away from it. Selective and authoritative emergency voice-transmission capabilities assure a directed response—preventing panic by the fact that easily understandable oral communications will transmit clear, calm instructions geared to the listeners' particular location and the nature of the problem involved, and can consider the psychological effects of the emergency announcement.

Over 400 U.L.-listed, compression-driver equipped loudspeakers provide emergency voice-transmission facilities throughout the hotel. Each H-shaped floor corridor has nine of these special temperature-rated, environment-resistant loudspeakers, recess-mounted in the suspended ceiling every 75 feet to provide total coverage in all public areas. In addition, emergency intercom communications centers (and safety-system loudspeakers) are located in each of the three elevator lobbies, within all twenty-two elevator cabs, and on every fifth floor in the emergency stairwells. Each floor and elevator constitutes its own zone for independent and direct

communication.

Selection of the loudspeakers was determined by a number of factors, says Jeff Tietz. Because of aesthetic considerations, they had to be as small and unobtrusive as possible. At the same time, they had to provide high optimum output and be cost efficient. "And naturally," he adds, "their specialized function required that they be certified for the intended application, able to maintain high intelligibility for a considerable time under extreme heat and continue to operate in such potentially adverse conditions as might be caused by water exposure from the hotel's sprinkler system."

To meet all these criteria, the system was equipped with Voice Tone Model VTF-152u loudspeakers



Don Dolan, a Marriott Corp. electronic engineer, at the auxiliary fire zone annunciator panel in the hotel's switchboard room

manufactured by Atlas Sound of Parsippany, N.J. Performance-rated over a +150 F to -30 F ambient temperature range, these all-metal units combine special protective design and components with complete water and corrosion-proofing to meet all N.F.P.A. technical and performance Standards for Protective Signaling Systems and Underwriter's Laboratories requirements for Audible Signal Appliances. Equipped with 15 watt compression-drivers, assuring intelligibility emphasis in the voice and alarm signal frequency-range, they

Here, abbreviated, are "instructions" from the Municipal Code of the City of Chicago, covering "Standard Fire Alarm Systems."

"The words 'standard fire alarm system,' where used in this code, are hereby defined to mean a manually operated fire alarm system equipped with automatic detectors, if required, as hereinafter defined. Such systems shall be installed in a building for the purpose of notifying the occupants and/or employees of said building of conditions due to fire or other causes which necessitate that the building be vacated immediately by the occupants. All equipment and devices used in the installation of such a system shall be tested by, and bear the label of approval of, a nationally recognized testing laboratory acceptable to the division marshal in charge of fire prevention and the Bureau of Electrical Inspection. The workmanship, equipment and quality of installation shall conform to the electrical requirements of (Chapter 88) of the Municipal Code of Chicago."

"Zoned type fire alarm system, when used in connection with fire alarm or fire detection systems, means a system having two or more separate, distinct, supervised alarm sending circuits serving separate areas of a building."

"All fire alarm fire detection systems shall be divided into two classes as follows:

Class I - non-coded, closed circuit, general alarm systems;

Class II - coded, closed circuit, pre-signal and general alarm systems.

Class I (system) shall be so installed and arranged that the operation of the alarm-sending station will automatically actuate all signalling devices and sound a continuous general alarm throughout the building until the alarm-sending station has been restored to its original condition.

"Class II (system) shall be so installed and arranged that the initial operation of an alarm-sending station will sound, at least four times, the code of that alarm-sending station on the pre-signal alarm-sounding devices only... Pre-signal alarm-sounding devices shall be located at the telephone switchboard, in the engine room, general offices and in such other places in the building where the members of the fire brigade,

employees or attendants work or assemble.... Every alarm-sending station of a Class II standard fire alarm system shall be equipped so that a coded, general alarm can be sounded by the use of keys, plugs or similar devices which shall, at all times, be available to persons with authority to sound a general alarm...."

"A Fire Command Panel shall be provided in a location approved by the Fire Department. It shall contain the following listed facilities:

a) Fire Detection System Panel...annunciated visually and audibly for each individual floor:

b) status indicators for air handling systems:

c) status indicators and controls for elevators, or where elevator control panel is provided containing proximity to the Fire Command Panel;

d) sprinkler valves and sprinkler water flow detector indicators annunciated for each individual zone;-

e) emergency power status indicator;

f) exit stairwell door unlocking system;

g) voice command system panels and equipment.

"An approved system, including products of combustion detectors, sounding devices and heat detectors shall be required. The systems are to be monitored by a U.L. listed Central Station U.L. 827-72 or as required by N.F.P.A. 72D."

"There shall be two voice communication systems as follows:

a) a 2-way Fire Department communication system providing emergency 2-way stations in each required stairwell and not less than every fifth floor and at the Fire Command panel;

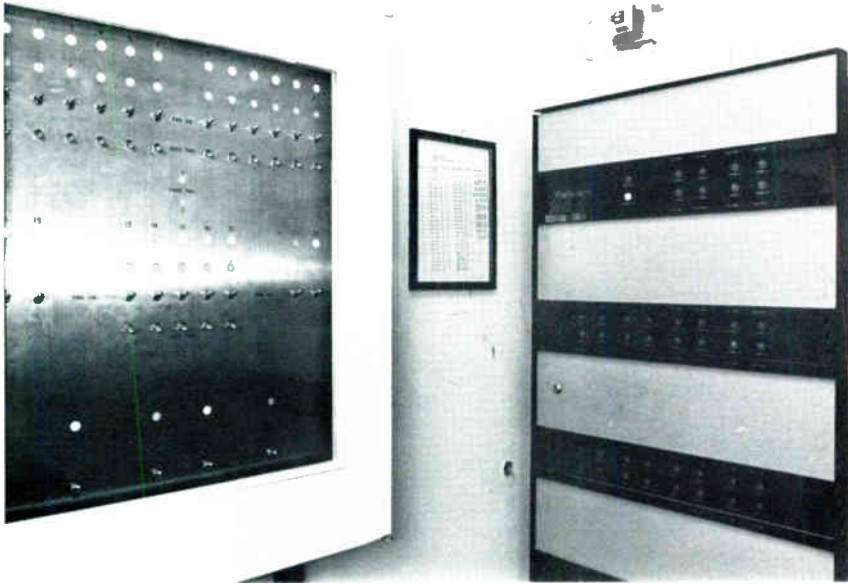
b) a selective 1-way communication system between the Fire Command Panel and the following areas:

1. Elevators, elevator lobbies and in all required stairwells; one speaker each fifth floor in stairwells;

2. Office areas exceeding 5000 square feet;

3. in corridors at intervals not to exceed 75 feet and at the exit stair doors.

The 2-way Fire Department Communication System may be combined with the 1-way system when approved by the Bureau of Fire Prevention."



The nerve center of the emergency communications system is in the Marriott basement.

provide as much as 109.5 dBA sound level output at 4 ft., and 88 dBA even at a 50-ft. distance from the loudspeaker!"

"The Atlas Sound loudspeakers were chosen because their quality in terms of audibility and power-handling is unique. They are the most

efficient units on the market, not only in sound projection, but also in size," comments Tietz. "And their small 4-inch dimension is far less obtrusive than the many additional round cone speakers which would have been needed otherwise to do the same job."

Echoing his approval of the life safety system and voice-transmission performance capabilities is Jack Anderson, Director of Engineering of the Chicago Marriott. He has heard the units under test conditions and says the system is clearly audible and "sounds fine."

Perhaps the most significant endorsement of this emergency voice communications system's effectiveness, however, lies in the fact that it has been selected for use in eleven more high-rise buildings now in or near the construction stage in the area. Together with the Chicago Marriott, they are proof that as the City of Chicago reaches for the sky, it is simultaneously reaching new heights in fire control standards and concern for the safety of its citizens and visitors. □

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- ③ **P-2122 Dual Power Amplifier** 120W RMS continuous power, both channels driven into 8 ohms, 20-20,000Hz, less than 0.25% THD.
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Uncommon New Chief

Cool...but pleasantly so. Young...but more experienced in telecommunications issues than many more "experienced." Pro-competition, anti-monopoly. But probing for a compromise fair to both David and Goliath.

Philip L. Verveer, 36, named Chief, Common Carrier Bureau of the Federal Communications Commission last June by Chairman Charles D. Ferris, who said at the time, "I regard Phil Verveer as one of the best regulatory lawyers it has been my privilege to know."



Also at that time, Verveer became the first in FCC history to be Chief of three major bureaus in three consecutive months; for one month before becoming Chief, CCB, he was Chief of the Broadcast Bureau and for thirteen months before that Chief of the Cable Television Bureau. He was the third CCB Chief in less than twelve months, succeeding the short reign of Larry Darby, an economist (see S&C, Feb. 1979), and Walter Hinchman, a physicist,

who retired. He was also the first lawyer to head CCB since the retirement of Bernard Strassberg in 1973.

Verveer is no newcomer to competition in the communications arena. Before joining the FCC he handled cases at the Federal Trade Commission's Bureau of Competition, and from 1974 to 1977 labored at the Justice Department, where he became team leader of the antitrust suit against AT&T (see S&C Nov. 1977, "AT&T vs. The People").

In the interest of the many manufacturers, distributors and installers who read **Sound & Communications** and whose business fortunes are affected by rulings of the CCB, our Washington Bureau Chief interviewed Verveer for his views on major issues facing the industry. Here is a summary, and some direct quotes on interconnect matters, the Consent Decree, the revision of the 1934 Communications Act, land mobile radio cellular systems, the splitting of AT&T services, and other current topics.

Interconnect: "On the question of terminal equipment interconnection, much has been resolved in that area. The registration program permits the Commission to assure that it will not cause physical harm to the network or to the people who use the equipment. It is now a well-established and well-accepted part of the telecommunications environment.

"We're now taking a look at extending the equipment registration to the private line services...There certainly remains some controversy: what kind of equipment should be put under tariff by established carriers, or should equipment overall be de-tariffed?"

Verveer pointed to the FCC conclusion of its six-year inquiry into the effects on telephone costs and

efficiency (Docket 20003), released January 9, which found that competition in terminal equipment and private line markets benefitted the public "by speeding innovation and meeting unsatisfied communications needs," while causing no harm to the network.

Home Wiring: "The N.Y. Public Service Commission entered an order that would require the telephone companies to make available for sale the inside wiring in a person's home and also permit consumers to do their own inside wiring...This is a pretty important decision, since in one sense this will permit a building contractor to provide telephone wire just as he provides inside electrical wiring..."

Competitive Pricing: "Many services of the regulated common carrier are facilities common to all (their divisions). This raises, in a very dramatic way, the necessity to work out some kind of cost allocation process that will obtain some sort of legitimacy in the eyes of the industry and the public...One of the principal policy questions is: How are we going to proceed into a more competitive environment from a situation that was characterized by monopoly in the not terribly distant past?"

"That raises questions of predatory pricing, cross-subsidy and questions about the appropriate methods for interconnection; questions of whether or not vertically-integrated entities are refusing to deal on equal terms and conditions. The cost allocation question is very, very important to them: So is the question of uniform system of accounts..."

Land Mobile Cellular Systems: The developmental phase to provide spectrum relief for the crowded land mobile radio by means of a proposed

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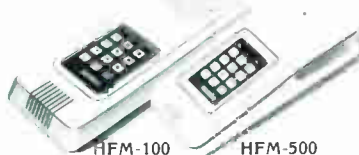


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nationwide cellular system—the reuse of a group of radio channels—is near rule-making at the FCC, based on two experimental systems: Illinois Bell in Chicago and American Radio Telephone Service in the Baltimore-Washington area.

According to Verveer, “The technology certainly appears to be workable...The cellular system is one that is spectrally more efficient than systems presently in place, at least in some locales. So there’s a lot of interest in it.”

In response to our question about possible domination of this market by common carriers and big equipment suppliers, Verveer said, “The Commission has a degree of control, in that they license radio carriers...and it can have considerable influence over the structure of the industry that may emerge in a cellular environment.

“The rule-making concentrates on how many such systems ought to be licensed in any community and whether or not there ought to be various kinds of resale requirements that may permit many people to be involved in the retail end of the thing...And it doesn’t shrink from the question of whether or not the wire-link carriers ought to be excluded altogether from offering this kind of service in their franchised areas. It also raises questions as to the number of licenses any one entity can hold.”

Revision of the 1934 Communications Act: Verveer predicts that the proposed bills now undergoing Congressional mark-up will come to a full vote and go to President Carter for signature before the end of this year. In contrast to earlier versions, the current bills (Hollings S-611 and Van Deerlin HR 6121) do not call for divestiture of AT&T from Western Electric or its operating Bell System companies, nor do they seek a dramatic reorganization of the FCC. But both bills do call for a modification of the 1956 Consent Decree which restricts AT&T to common carrier services.

The Consent Decree: Regarding this, Verveer said that the modifications were designed to allow AT&T to go into data transmission. But he admitted that it might also allow Bell System companies to supply intercom, apartment house and other systems now legally the pre-

serve of the private suppliers, presumably through creation of separate unregulated subsidiaries.

Verveer pointed out that “there is at the moment a provision attached to the Consent Decree proposal that will say to AT&T, ‘Well, you can get some relief from the Decree but...you will have to reconfigure your business so that you have exchange companies and inter-exchange companies, but don’t have any one company with both...that is, both a local telephone service and long distance business’...The phone companies in general do not think that’s a very good provision.”

Congress has the authority, Verveer believes, to modify the Consent Decree by amending the Communications Act or by amending the Sherman Act under which it was signed. Or it could be changed by the New Jersey court which granted it.

Expressing sympathy for some modification, Verveer told us, “I personally have believed ever since I had occasion to look at the Decree when I was back at Justice that vacating the substantive provisions would be a good thing. I don’t find the Decree, on balance, to be a desirable thing from the standpoint of society overall.”

Effect on the FCC. Although the current bills do not call for a drastic change at the FCC, Verveer said the revisions imply increased responsibilities for the CCB that may call for doubling or tripling of staff in order to possibly regulate intrastate tolls more in line with interstate, access charges, interconnect equipment that may be deregulated and other new areas.

“Holes” in the Legislation. “There may be some unintended consequences,” according to Verveer, in the current Communication Act revisions. “There are some provisions which seem sensible that are not presently in the legislation...the principal one of concern to me is the management of the spectrum and awarding of radio licenses.” He added that questions of the spectrum fee in both broadcasting and common carrier was also a matter that needed more definition.

New CCB Consumer Affairs Division: Verveer feels this newly-announced Division will help speed servicing of private suppliers and

contractors who may have questions or complaints but are uncertain how to proceed. Under Acting Chief Roy Steeley, the new Division will assist in guiding them to the right contacts and help with procedures in all informal complaints (formal complaints should go to the Enforcement Division). In addition to cutting paperwork and saving time for complainants, Verveer said this Division will also disseminate information and may use some of the agency’s research funds for inter-venor funding.

Streamlining the CCB: In Verveer’s opinion, the months-long reorganization of his Bureau has increased efficiency and improved morale. More responsibility and delegation of authority have been given to line organizations, instead of the former staff basis, for more direct action. He now has two Deputy Chiefs instead of one and a new Assistant Chief for international affairs.

Future Directions: Verveer believes the telecommunications industry has great potential and wants the Commission to help stimulate the introduction of new technology. In his view the CCB has a sound base for future accomplishment. “Since 1959,” he said, “the common carrier decisions made by the Commission have been among the very best that any regulatory agency has accomplished. The FCC’s record is an exceptionally good one.”

As a sign of things to come, Verveer said he hopes that “Congress will agree with us that we have some flexibility in terms of regulation—that we can forego regulation if we choose to do so”...and, “I would not object to a further statement of purpose that says we should rely on the marketplace wherever possible.”

Verveer, married and the father of three, is now in the top classification for federal bureaucrats—a GS-18—and is subject to the carrot-and-stick incentives of the new Senior Executive Service initiated by President Carter to improve individual performance. Similar to tough corporation policies of “produce or get out,” the SES plan will reward executive accomplishment with a bonus, but also will penalize the ineffective manager and make it easier to fire him. Our private opinion: Verveer will win a bonus. □

Sounding the Horn

by Jim Morrison

Since the first days of sound reinforcement, the horn has been the deciding factor in the quality of sound for most commercial low to medium-priced sound installations, particularly where higher sound pressure levels are required than would be available from a standard paging type speaker.

Beginning with the morning glory or straight horn, often ten feet long or more, there evolved a reflex or folded horn which sharply reduced the size and price, and greatly increased the practical usage. Until recently, these reflex horns were all very similar, with little change in technical characteristics.

Specifications were vague, often inaccurate, and in reality were certainly unreliable to a contractor laying out a medium-priced sound system. As a result, monetary limitations precluded the use of professional equipment with exacting and honest specifications.

University Sound was well aware of this continuing problem and took steps to fill a wide gap in the market, by using computer technology to create two new horns.

For the first time, with the introduction of the LH-1, a 55" air column reflex horn with a professional 1" throat (Figure 1), a contractor could install a system with precise knowledge that he would get a truly flat response throughout the specified 40-degree dispersion, an accurate low-end response, and re-

ceive complete specifications showing the response and dispersion at all angles, plus good useable re-



Figure 1. The LH-1

sponse from 100 to 20,000 cycles (see Figure 2). Used for short, medium and long-throw applications, the LH-1 can be designed into system layouts with predictable results.

Then University Sound followed

up with a Cobraflex III (Figure 3), successor to the world renowned Cobraflex II but with, again, accurate and controlled dispersion and response curves. The Cobraflex III, unlike other wide angle horns, has a very flat response throughout a 100-degree horizontal plane. This contrasts with the rather dramatic SPL and response loss at the sides of most wide angle horns. The Cobraflex III is down only 6 dB at 50 degrees off axis and thus, combined with a controlled 60% vertical dispersion, allows a layout to be made with much of the previous guesswork eliminated. Dispersion curves for the LH-1 and Cobra III (Figures 4 and 5) show graphically the smooth response through the specifically designed ranges of the horns (40 degrees and 100 degrees), but again show the total useable response, which is important in designing any system. Always remember that speech reproduction is invariably

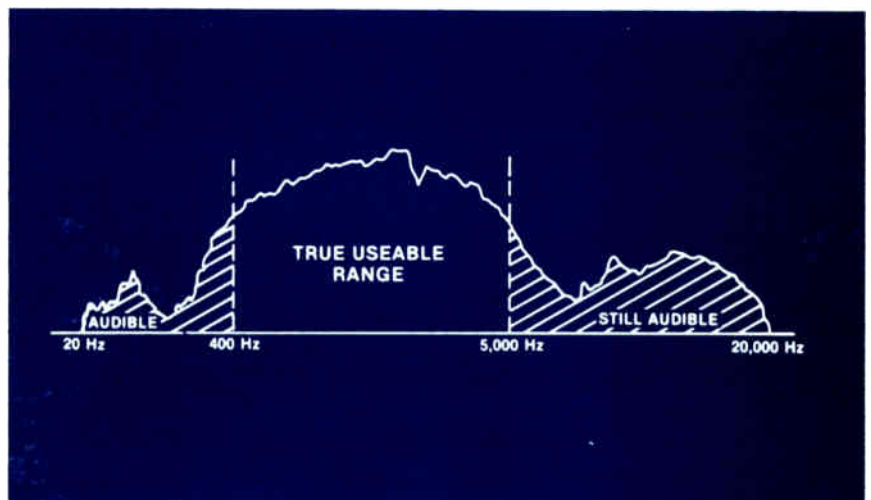


Figure 2. Typical Curve.

Mr. Morrison is Vice President Commercial Sales for Altec Lansing/University Sound.

the key to the success of any system using this type of horn. To further aid in system layout, the horn mounting brackets, exceedingly strong, can be positioned in six different angles to allow accurate coverage of a given area.

Each of the horns, with their professional 1" throats, team up perfectly with the new ID40B and ID60B (either with or without the transformer) 1" throat University Sound drivers to give the contractor what he long lacked — a professional approach to sound, using medium-priced equipment for the small stadium, ice rink, basketball arena, and similar installations. Sound equipment with less distortion, more efficiency and controlled characteristics — and both may be teamed with any 3/4" driver to still achieve proved efficiency and less distortion.

An excellent example of good LH-I usage would be a cluster, whereby a 120-degree coverage could be achieved using three horns, with a flat response throughout the optimum dispersion range and insuring an SPL level nearly constant over the entire 120 degrees. This is particularly applicable where a short, medium or long-throw situation occurs.

Another factor facing potential and current users of horns, most particularly outdoors, is a requirement by many local municipalities that sound be restricted to a given area. Spillage of high sound pressure levels is simply not tolerated. Again, knowing precisely what your horn does allows you to control the sound and direct it to the required area without creating excess "sound" in restricted locations. Problems like this can be found, for example, in car lots where a minimum SPL level must be maintained beyond the sidewalk and curb. The Cobra III, in the speech range, is well controlled in the horizontal at 60 degrees in this frequency range and, properly positioned, will cover a given area and not violate noise level requirements outside of the area. Today, more than ever, it is of absolute importance to the contractor laying out a sound system that he know not simply the sound pressure level of a given horn and driver. He must also know where that sound pressure level is directed and

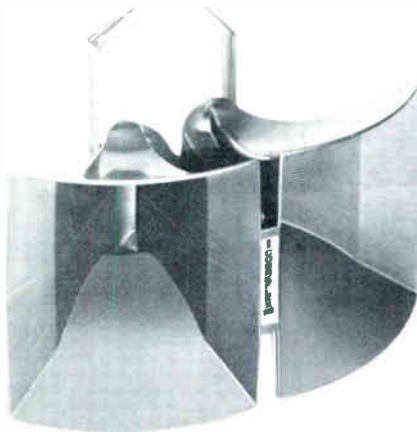


Figure 3. The Cobraflex III

how it can be controlled and guided. With the proper characteristics, as furnished with the LH-I and Cobra

III, this now becomes a practical reality.

The human ear, today, is attuned to quality sound, even in installations where past sound reinforcement was invariably poor. Now the equipment is available to make almost any installation one of quality. The degree of difference between a professional sound system and what we call a commercial sound system has certainly narrowed and will undoubtedly continue to narrow in the future. Your customer demands it, and we certainly intend to supply you with the equipment to achieve what is desired by that ever-important customer. □

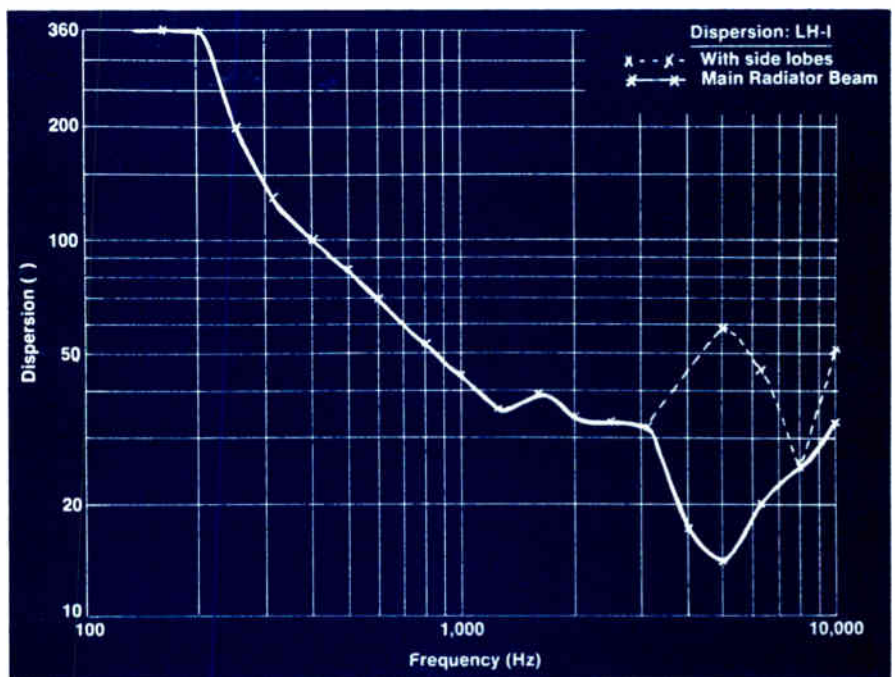


Figure 4.

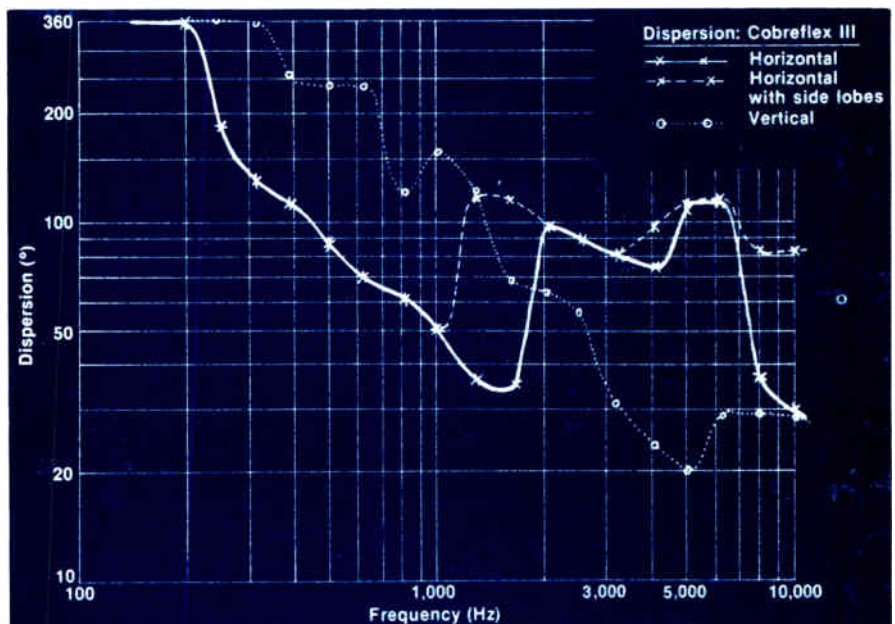


Figure 5.

Computerized Business Telecommunication

The Arizona Bank, Arizona's third largest, has installed its first Rolm computerized business telephone system (CBX). It is the first of up to 13 CBXs planned over a two-year program which will result in one of the banking industry's most sophisticated and cost-efficient regional telecommunications networks.

When completed, the all-Rolm system will greatly expand customer service, cut in-state toll charges up to 90 percent, allow for use of the bank's potential development of a proprietary microwave system for extra cost savings, and even enable customers to summon emergency "first aid" for "SIMON"—the bank's automatic teller machine network, according to Linda Van Kleeck, assistant vice president of the Arizona Bank in Phoenix.

The first Rolm CBX is in operation at the bank's Tempe operations center, and a minimum of four more CBXs are planned for installation at major locations in 1980, with four more in 1981. When completed, the bank will have a complete satellite operation tying together all 84 branches located throughout the state.

According to Ms. Van Kleeck, "The Rolm network will provide more than 150 advanced station and system features to help us reduce costs dramatically. With the installation of the first nine CBXs, all 86 bank locations, even our smaller outlying branches, will be served from the CBX closest to that branch via off-premise extensions." When completed in 1981, the Arizona Bank network will operate on

AC power with DC back-up and will have critical electronic and common control redundancy, thereby greatly reducing possibility of downtime—a major factor for a customer-intensive industry such as banking.

One of the key features of the system will be Route Optimization, which will substantially lower all toll charges for outgoing long distance calls from the bank's 84 branches. Customer savings will also result when compared to a planned switch by Mountain Bell to message unit pricing, because the CBX will route all calls within area 602 (Arizona) over the most economical route, usually a tie-line to the branch CBX nearest the call destination.

Calls from any branch destined for outside Arizona will automatically funnel through the Tucson, Tempe or Phoenix CBXs and utilize specialized carrier and WATS services, if necessary, to further minimize tolls.

Management control through call information will be provided by Rolm's Call Detail Recording feature, which enables the bank to analyze telephone usage. Information such as call starting time, elapsed time, and number dialed will be accumulated by extension at one central location and account for calls originating from three CBXs in Phoenix, Tempe and Tucson. The CDR feature also is capable of recording data on incoming calls from external trunks.

To save time and associated costs in reaching extensions within the network, Automatic Network Dialing and Route Optimization features will enable any extension to call any other point within the bank's network by dialing just four digits, eliminating unnecessary directory "researching," tie-line codes and dialing delays.

"Customer access is critically important to a commercial bank, particularly one with \$1.7999 billion in assets and 2000 employees. A banking question or inquiry is al-

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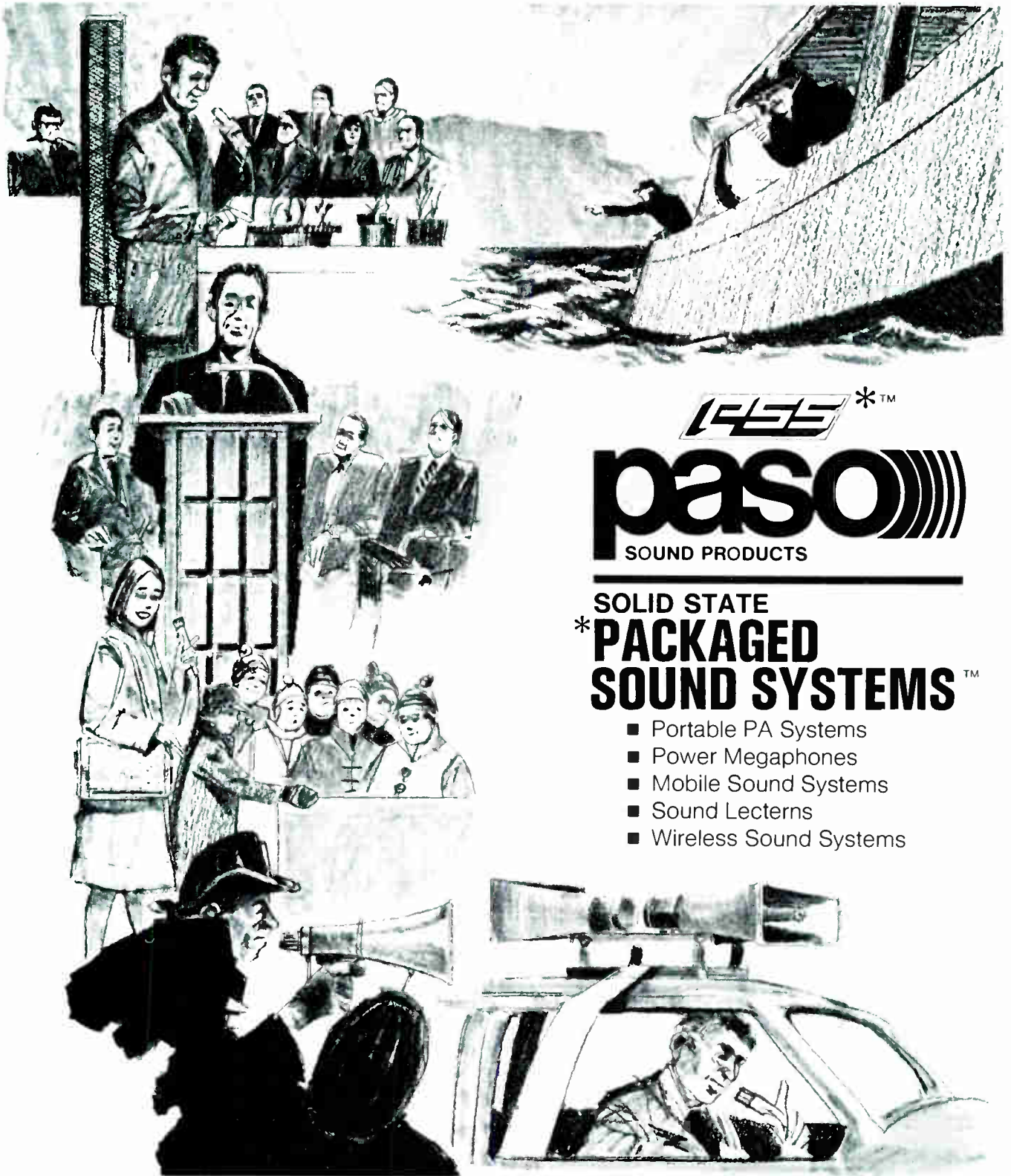




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Linda Van Kleeck and Richard Moley.

most always urgent enough for the customer to want an answer immediately, and that requires good telephone service. Our telecommunications network, therefore, must be fast, reliable, and efficient," said

Ms. Van Kleeck. To meet these objectives, Direct Inward Dialing at all CBX locations will enable callers seeking specific telephone extensions to call directly into all branches and departments. All in-

coming calls for branch information from suburban and outlying areas will be received in one of two attendant centers, made possible by the CBX's Centralized Attendant Service feature. The Phoenix center will consolidate calls from nine other CBX locations, and the Tucson center will serve two other CBX locations. "This will significantly reduce the time and staffing required for call handling. At the same time, it will provide customers with immediate access to information regarding either Phoenix or any other statewide branch—all for the cost of a local call," Ms. Van Kleeck said.

The Arizona Bank network will use Automatic Call Distribution in all CBX systems except Phoenix. This feature allows the bank to receive, concentrate, queue and uniformly distribute incoming inquiry calls. General inquiry callers can receive recorded information, such as current interest rates on certificates of deposit and, when further information is desired, the system automatically forwards the call to the appropriate department. Extensive CDR reporting on incoming calls provides bank management with data useful in tailoring customer service to specific needs.

For executive offices in Tucson, Tempe and Phoenix, the Rolm ETS 100 electronic telephone will provide a variety of additional time-saving management features. The ETS 100 has a microprocessor in the phone itself and 16 single-button-activated features as well as lighted alphanumeric readouts to show calls waiting, the origin and length of calls, and confirmation of called numbers. Calls can be transferred quickly to or answered by any telephone in the system.

Van Kleeck developed the network in conjunction with Clyde Maghan, a system's consultant with Communications Consultants, Inc., the Phoenix-based distributor of Rolm in Arizona.

According to Richard Moley, Rolm vice president of marketing, "The CBX is a flexible system, with many unique capabilities tailored to the banking industry. The Arizona Bank's network typifies how the CBX can be configured to meet the present and future needs of forward thinking and growing businesses." □

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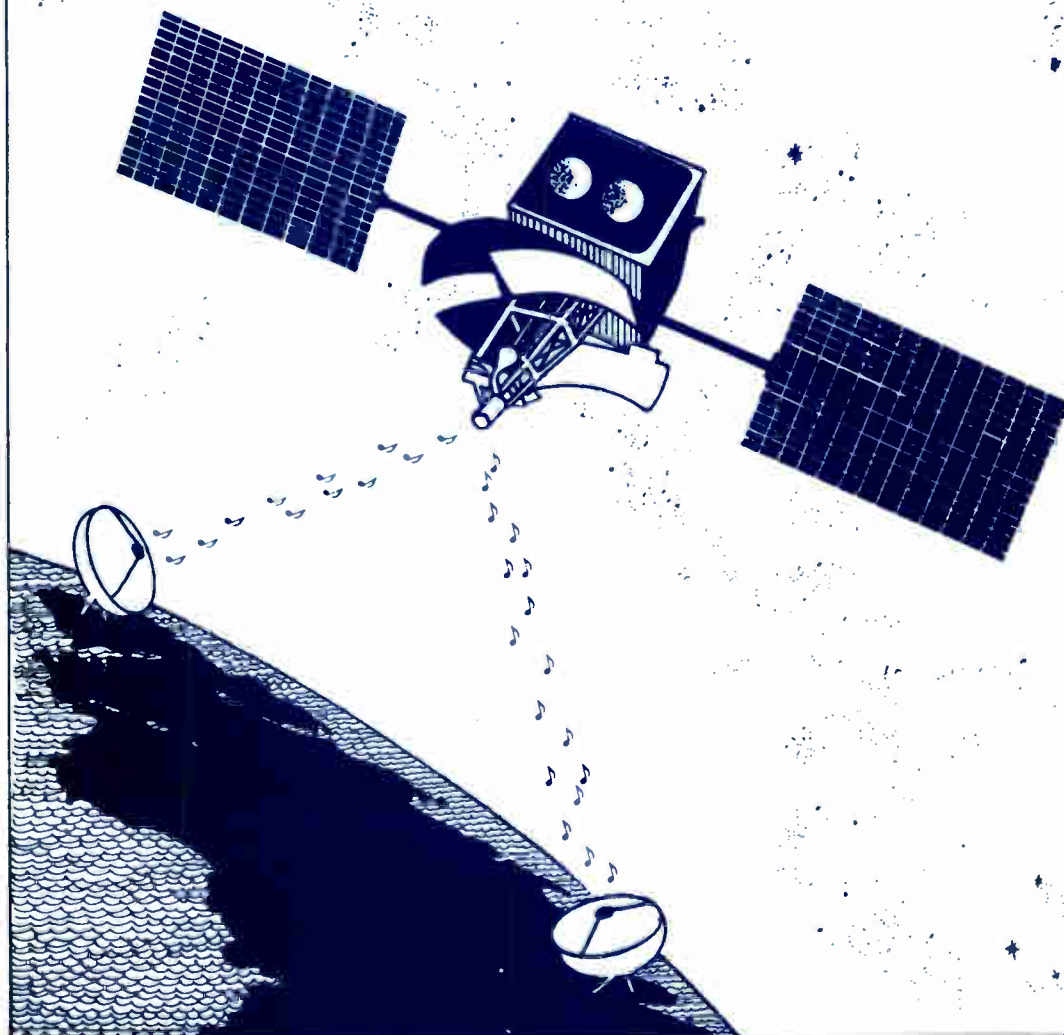
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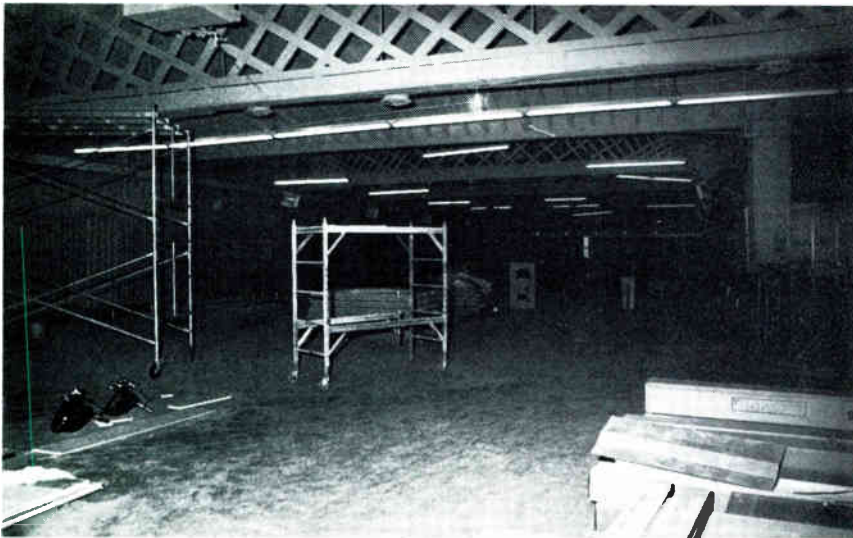
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High Rolling Sound

by George deLucenay Leon



The disco under construction.

In previous articles, we've mentioned that adding a good disco sound system has saved skating facilities from bankruptcy. Whereas skating was usually limited to youngsters, the addition of a DJ with the music system allows the rink to be occupied for more than four to six hours a day. Some operations, as we pointed out, are able to fill their rink and operate successfully for as much as twelve, and even fourteen hours a day.

This trend is continuing and faith in the new combination is demonstrated in the newest construction going on in New York City, on West 57th Street, "The High Roller."

While no figures are available as to the amount of money being spent on the installation, there is no doubt that the investors are spending lavishly to make this an up-to-the-minute disco/skating palace.

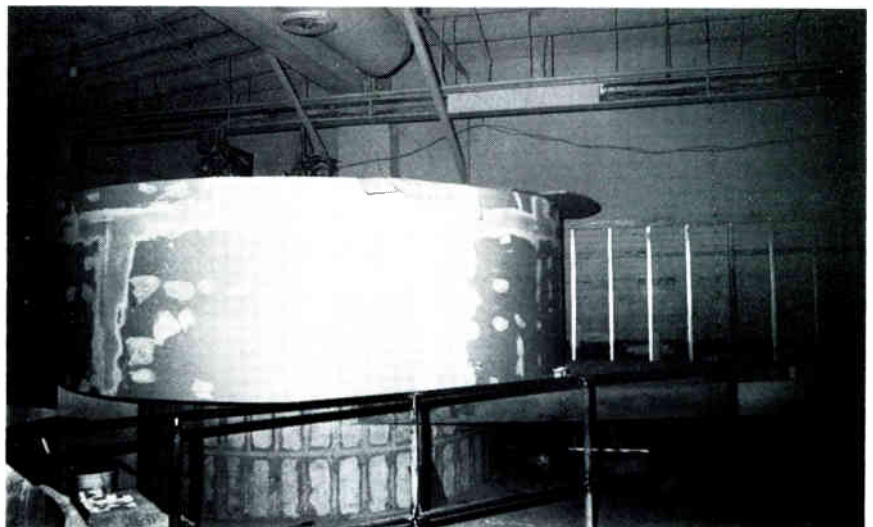
An innovation is a stand for an organ just to the right of the DJ's booth. The sound system, designed and now being installed by Richard

Trombitas of 21st Century Sound, will put out some 9,000 watts. The low tones should be able to propel the skaters without their having to move their legs.

The console is a Bozak CMA10-2DL. Ordinarily it has two high and two low magnetic inputs. Trombitas told us, however, that he had modified the unit to accommodate three stereo turntables.

All the speakers are Electro-Voice. The speaker array consists of the following:

The low frequencies are handled by 12 units of Model TL606D. Their normal low-frequency 3-dB down point is 50 Hz, but with the addition of the supplied port cover this lowers the box tuning down to 39 Hz. Maximum power handling capability is 400 watts with a maximum Sound Pressure Level (SPL) at four feet of 129 dB within the range from



This will be the DJ's booth.

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But that's not all. Because the 163 is an "Over Easy" compressor/limiter, too. Which means that as the signal level crosses the threshold, the 163 gradually adds the desired amount of gain change over the range of several dB. The result is the most natural-sounding compression you've ever heard.

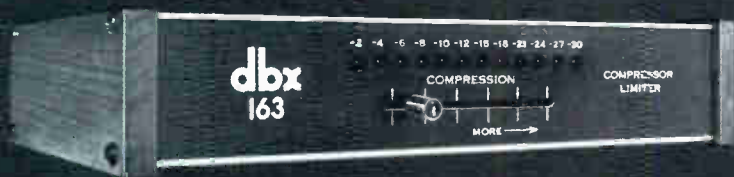
The 163 is as easy to install as it is to operate. It's light and compact—two may be rack mounted in a 1 $\frac{3}{4}$ " space—and it interfaces easily with phono connectors.

But the easiest part of this "Over Easy" limiter is its cost. The nationally advertised value of the 163 is \$200.* With the money you save on a pair of 163s, you can get two extra hands in the studio. You can hire yourself an assistant.

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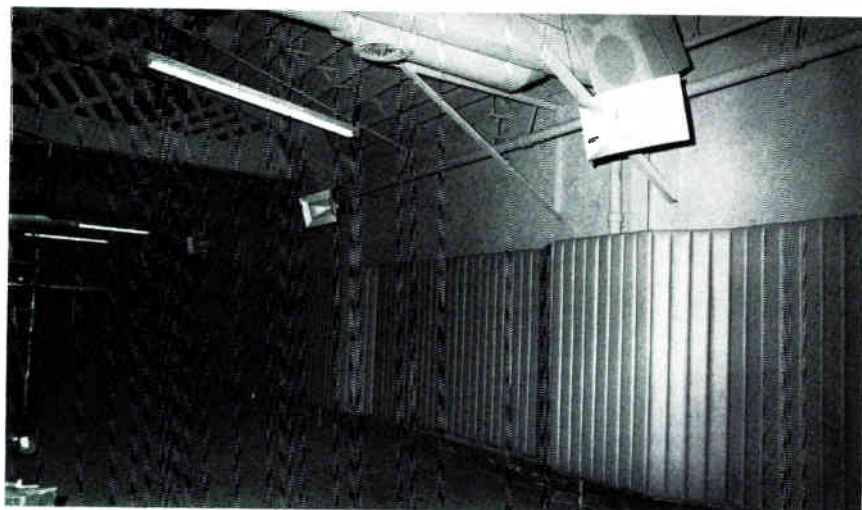
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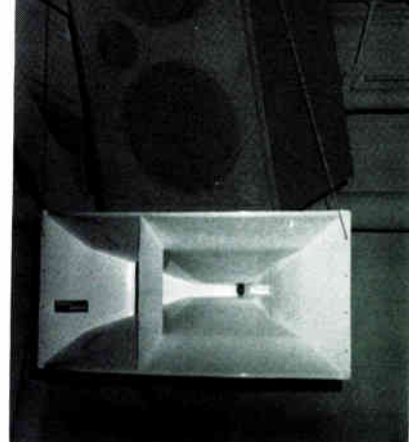
100 to 400 Hz.

Known as a permanent installation speaker, Model PL115-3 is usually utilized as a full range system without having to modify a touring system. In this installation they are employed for the mid-range frequencies—from 50 to 16,000 Hz. With 100 watts (full capacity) SPL is 116 dB. Two such units are being installed.

Model HR9040 is a high-frequency horn with a wide angle of dispersion—100° x 60° with a range from 400 to 16,000 Hz. Eight such units are employed in the system.

Model HR6040A is similar to the above in its range, but its angle of dispersion is 60° x 40°. Four units are used.

A combination of HR9040s and TL606Ds is hung along the length of



A close-up of one of the mountings.

The active equalizers are White Models 4001 and 4003. These units consist of one-third double-tuned octave bands from 40 Hz to 16 kHz \pm 10 dB control range, with a 12-dB-per-octave high-pass variable filter from 20 through 160 Hz. The two units differ from each other only in that the 4001 has a transformer isolated input with single-ended outputs; the 4003 has both inputs and outputs transformer isolated.

A White Sound Analyzer was used to determine the house curve and to adjust the equalizers to match this curve.

Very soon New Yorkers will have a new place to try out their latest dance steps on a skating floor, accompanied by the newest in sound reinforcement. □



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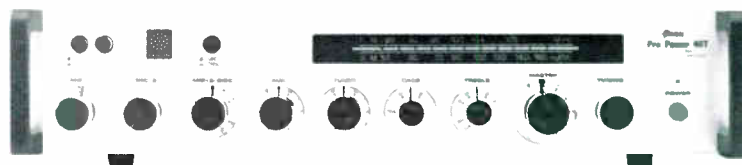
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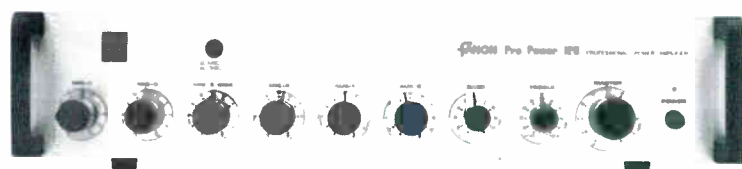
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City-Wide Paging

by Alfred A. Menegus

Great technological strides by major companies in the personal communications industry have resulted in vastly improved paging techniques for locating key personnel in the city-wide paging systems. One of the improvements is the employment of silent paging that can be used in high ambient noise environments. Motorola, for instance, is marketing its Metro-Pageboy binary digital radio pager with a vibrating dual function silent alert capability.

The silent alert binary digital pager permits its user to silently (or audibly) receive and distinguish messages from two different sources. With the switch in the center position, the user will be immediately notified and alerted by a vibration that he or she is wanted. The light-emitting diode (LED) on the top of the pager tells the user who wants him. For example, a

flashing light might mean "call your office." A steady light might mean "call your home." With the switch in the "on" position, the user will be audibly alerted by the familiar pulsating or steady tone, depending upon the message source. Thus, the user gets the versatility of dual function tone alerting, plus the added feature of dual function silent alerting.

Since radio air time is such a precious commodity as more and more paging systems are employed in this fast-moving business environment, where instant communications and location of personnel in the field are a must, more people use pagers on the RF channel. It is essential that the message length be kept as short as possible while still providing the user with the vital information needed. Hence the growing need for paging encoders

that generate a set of radio tones which are received by a tone and voice pager configured to respond to this unique combination of tones sent by the encoder. Each pager in the system is assigned a three-digit "pager code," commonly referred to as a cap code. The first digit signifies what tone group or what series of frequencies can be used in encoding the receivers in the system. A Motorola Modem 6 encoder can contain up to six tone frequencies, while a Modem 100 encoder can contain up to ten tone frequencies.

Since many paging systems share the same RF channel, a pure tone group cannot always be used for any given system. In these cases, an X code plan can be assigned. In these systems, the cap code of each receiver will be preceded by an X, followed by the three numerical digits. The encoder will also be coded X. In these systems, the encoder will still contain its normal number of tone frequencies, but randomly selected from various tone groups to prevent multiple users from having the same coded pagers.

Motorola has an exclusive feature, Mem-O-Lert, which is a deferred paging memory that permits the user to receive a page without an alert tone when it might disrupt others. The center "line" position on the top switch provides this function. When the switch is in this position, either or both paging tones (pulsating or steady) may be silently received and stored. At a later time, depressing this switch enables the user to receive the stored message(s). One or the other alert tones will sound if a user is paged. If the user had received both pages, the pager will emit a distinct third tone.

To effectively cover a widely scattered area of a medium city requires the use of a repeater station. Simply put, a repeater is a 1 or 2-way combination of apparatus for receiving signals from either one or both

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directions and delivering corresponding signals which have been amplified, reshaped or both. A repeater station is so called only if the relay transmitter employs a composite signal. The specific assembly of apparatus accepts a sound-relay input from the relay receiver and retransmits it to another station outside the range of the operating station. An advanced technique of radio paging uses a binary digital signaling mode for city-wide paging systems that transmit and receive signals via repeater stations. In the binary system there are only two digits, -1 and 0.2. In digital communications, the system employs a nominally discontinuous signal that changes in frequency, amplitude, or polarity.

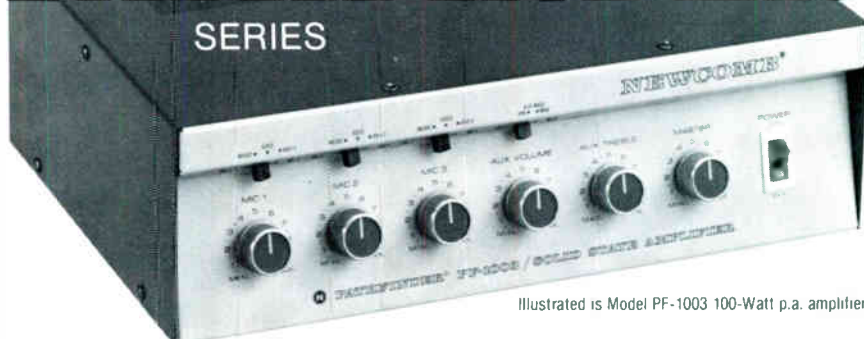
Motorola has perfected high-capacity paging by use of their Metro-Page 10 and 100 radio paging terminals. These are computerized, high-speed, high-capacity binary digital systems. Many years of paging experience and over four years of research have resulted in the design of an optimum system with proven reliability. With binary digital signaling, the call rate is five calls per second, compared to one call every two and one-half seconds with older two-tone sequential systems.

The binary digital system is designed to work exceptionally well in the harsh radio environment of an urban area, where the incidence of ignition noise, multipath, and other interference phenomena is high. While most binary digital systems operating within the constraints of the paging channel assignments degrade in performance as high capacity system design is required, a unique patented code pattern recognition and error correction system makes the Motorola binary digital system equal in performance to equivalent high-speed tone systems. Up to 10,000 subscribers can be handled by the Metro-Page 10 terminal and up to 100,000 subscribers by the Metro-Page 100 terminal, all on one RF channel.

A standard output option is the capability of time-sequencing transmissions from various transmitter subsets within a total coverage area. Clusters of pages are transmitted once via each transmitter subset, providing a form of combined space and time diversity signaling. Therefore, in systems of less than 20,000

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Most units can be interconnected through output and input bridging jacks. When two p.a. amplifiers are added together, all inputs feed both outputs with independent master volume controls for each output. A simple stacking module provides ventilation space and heat diversion. It is useful for interconnected amplifiers, or for a p.a. amplifier and a booster, and is especially useful for two discrete amplifiers used for stereo reproduction.

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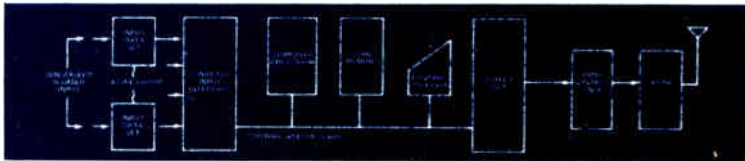


Figure 1.

subscribers, it is not necessary to utilize delay-equalized paging transmitters. In simultaneous transmission systems, a standard output option is the capability of sending individual pages once or twice. In order to avoid having to busy out larger systems because of a building of repeat calls in the output equipment, repeats are automatically cut back or dropped when traffic is too high to permit them.

The basic Metro-Page 10 paging terminal is capable of serving 1000 subscribers on one RF channel. The unit can easily be expanded to include 24 touch-tone or selector level inputs (in blocks of four), five core memory units (2000 subscribers per unit), two output units, and 50 transmitter control units per output unit, to obtain service for 10,000 subscribers. While the addition of core memories is indepen-

dent of input expansion, increasing the number of inputs is necessary to maintain a certain grade of service as subscribers increase (see Figure 1).

The terminal system can be configured for redundant operation at any subscriber level. This is accomplished by simply adding a second terminal plus a transfer module kit. Each terminal would have a complete subscriber list. The terminals alternately process and store calls entering the input units. Changes in call count and modifications in subscriber lists are transferred from one terminal to the other via the data transfer modules, assuring automatic updating of the subscriber lists in each terminal. When transmitting paging calls, one terminal is locked out by the other so that there is no interruption in output processing. In the event of a terminal failure, that particular terminal is busied out and the traffic is routed to the operating half of the system, which assumes the entire system burden and sends calls which were waiting for transmission in the faulty half.

The basic Metro-Page 100 paging system is capable of serving 10,000 subscribers. Up to 75,000 subscribers can be served by simple expansion of input lines to the basic Metro-Page 100 terminal. Use of an alternate large disc memory will increase capacity to over 100,000 subscribers. Expansion from a Metro-Page 10 redundant system to a Metro-Page 100 terminal simply requires the addition of the appropriate disc memories (see Figure 2).

Paging calls may be divided between coverage areas by selecting transmitters or groups of transmitters on the basis of pager codes. The basic paging terminals can accommodate three areas. Groups of 100 pagers can be assigned to specific areas in blocks of 100 numbers. When a call is placed into the terminal, the steering adapter routes the page transmission to one or more of the proper transmitters. For example, transmitter "A" might be located on the north side of the paging area zone, transmitter "B" on the south side sector. All 100 series calls (paper codes 100-199) could be steered to transmitter "A," 200 series calls (codes 200-299) can be routed to transmitter "B," and all 300 series calls to both

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areas, covering the entire city.

Multiple coding is achieved by the paging terminal which features two-tone sequential tone-only paging. It has the capability of signaling two different types of coding from the single terminal. Other selections include decimal digital five-tone, two-tone sequential tone-and-voice or sub-audible codes.

The CRT/keyboard option in the Motorola system features visual display of all the subscriber list data and provides universal number interchange, individual user call count and valid/invalid status, formation of an unlimited number of tone-only groups, and reliable Floppy Disk memory back-up. Programming of the paging terminal can be entirely accomplished from the desk-top console. An optional line printer permits hard copy print-out of all subscriber list information. PABX options may also be combined to a city-wide paging terminal.

In tone-only or mixed tone-only and tone-and-voice systems, up to 80 tone-only messages can be stored in memory. This enables the use of a shared channel with mobiles or enables storing tone-only calls when tone-and-voice messages are being handled.

In Motorola's new radio paging terminals, the subscriber's pager number is dial-pulsed or touch-toned into the system. Each input line enters the terminal by an input data set. The input data set performs the function of answering the line by detecting incoming signals, decoding the signal and transferring it to the computer. The input register of the computer holds the number, while the number is being checked for validity by the computer processor. After positive identification, the pager code is transferred to the output section of the computer and from there to the tone generator. After this, the signal is sent out to the paging receiver being called. The coding cycle consists of 23-bit words and 14-bit reset, sent at a 300-bit-per-second rate for a complete coding time of 200 milliseconds. When a particular pager receives a correct code, it emits an audible tone or stores the tone for interrogation later. Invalid calls are announced to the dialing party and he is asked to hang up and dial again. □

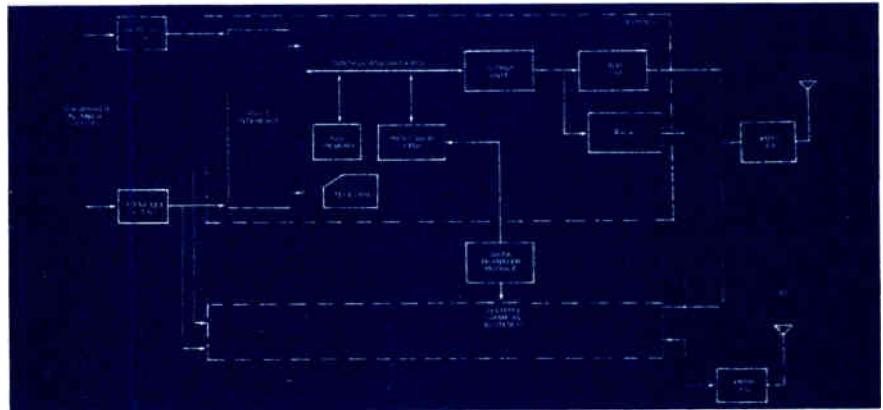
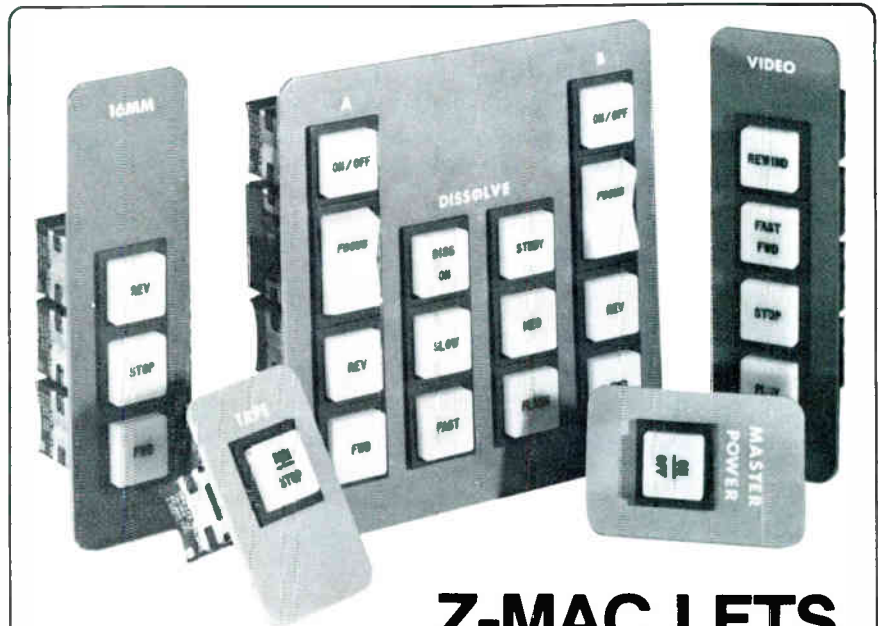


Figure 2.



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ENHANCING CONFERENCE CALLS

With the rising costs of time and transportation, the most economical way for widely separated businessmen to meet is through a conference call. Just the thought of attempting such a call, however, often brings groans from those executives who must frequently use this communications procedure.

The objections may vary, but most often they add up to the fact that people on either end cannot understand what is being said.

"Conference calling can be a real problem, because many call systems are unable to compensate for the different levels of people's voices, or their distance from the microphone," explains Michael Pettersen, sales engineer for Shure Brothers Inc., Evanston, Ill. "If the speaker's head is turned, for example, or if he is too far from the microphone, the audio level can drop substantially."

Shure was recently contacted by

Bell and Howell in Lincolnwood, Ill., and Teletype, Inc., in Skokie, Ill., for help in solving these problems in their conference calling systems.

"Bell and Howell had three objectives," Pettersen said. "The company wanted people to be able to speak from anywhere in the board room and be easily heard on the receiving end; the equipment had to be unobtrusive, attractive, reliable, easy to operate and set-up; and, finally, it had to cost less than \$1,000."

Pettersen decided to try a setup using three Shure SM18 microphones plus a Shure SE30 compressor/mixer. The new SM18 is a palm-sized, low-profile, unidirectional unit especially designed for optimum voice pick-up when positioned on a reflective surface, such as a table top, altar, lectern, etc. These unique units do not need stands, for each is completely encased in a foam "envelope" that angles its cartridge less than 1/8th of an inch from any supporting surface. This feature eliminates the visual distraction common to stand-mounted microphones and also eliminates the artificially "hollow" sound (surface reflection effect) common when stand-mounted microphones are used on reflective surfaces.

"We placed the three SM18 units in the middle of the conference room's ten-foot circular oak table, 120 degrees apart," Pettersen explains (see Figure 1).

The microphones fed the SE30, which was operated with the compressor and gated memory activated. Finally, the telephone conference set was fed by the

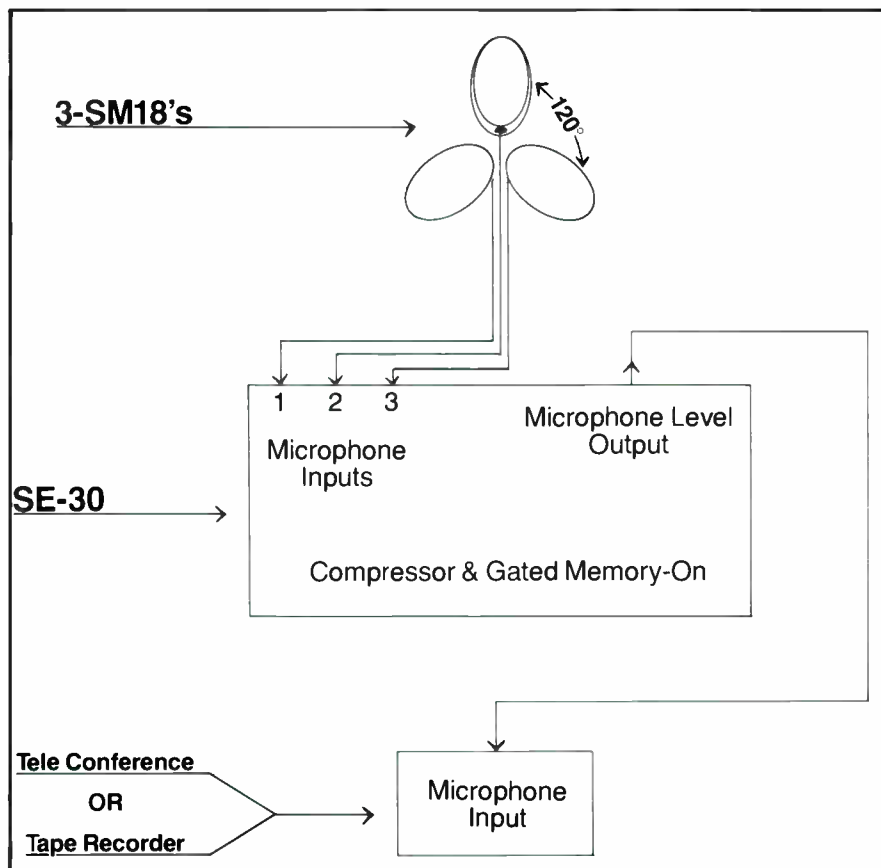
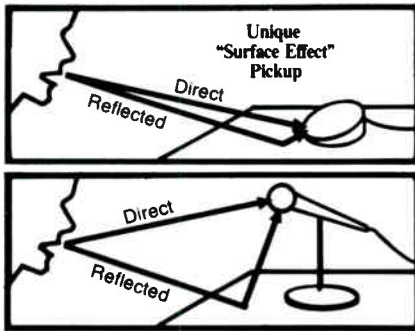


Figure 1. This diagram shows how three SM18 mics feed into an SE30 gated compression/mixer, which in turn feeds a Bell System Tele Conference Unit.



A depiction of the SM18's "Surface Reflection Effect" configuration. Both the reflected and direct sound waves reach the mic at practically the same time, reducing cancellation and increasing output. This concept eliminates the hollow sound caused by reflected sounds bouncing off table surfaces.

microphone level output from the SE30.

The SE30 was added because it provides a 40-dB compression range—adjustable to input requirements, with a compression ratio of approximately 10 to 1. Once set, it rides gain automatically, increasing or decreasing the system gain to maintain constant output level. And because the compression is properly achieved in the mixer itself, the signal-to-noise ratio is optimized for better telephone line transmission.

Donn Carter, Director, Communications and Design, tested the new system by calling the conference room from his office. After a few minor adjustments, Petterson was able to talk to him from anywhere in the room, in a loud or soft voice, and be easily understood.

"That day, we sketched out an installation plan, and Bell and Howell engineers began wiring as soon as the plan was completed," Petterson explained.

At Teletype, the company holds a twice-weekly cost reduction and production meeting via telephone between their Skokie and Little Rock, Arkansas, offices, with anywhere from 10 to 30 people involved.

"The calls from Skokie were difficult to understand," says Petterson.

Teletype engineers had tried several different ways to remedy the situation, but none seemed to work. Some of the solutions included rewiring the system for low imped-

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Now, at long last, on-premise background music's biggest HEAD-ache is gone! MTN's playback head is built directly into the tape cartridge itself for virtually maintenance free performance. This is but one of many innovative features of the revolutionary MTN-10 system. Other features include:

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With the three SM18 microphones positioned in the center of Bell & Howell's huge board room table, voice pickup is excellent from anywhere in the room. The microphones are connected to an input box located under the table. From there, shielded output cable runs under the room's parquet flooring to microphone inputs of the SE30 Compressor Mixer, located on the lower shelf of the built-in wall cabinet in the background. The telephone conference unit next to the SE30 is fed by a microphone level output from the SE30.

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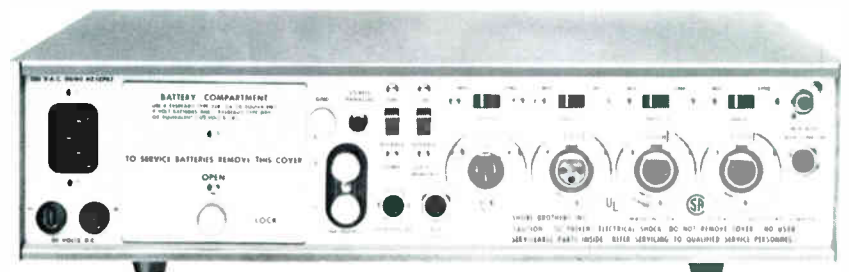
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The SE30 Gated Compressor/Mixer (front and back views).

ance, adding additional microphones, and even adding a booster amplifier. Nothing seemed to help.

The system they were using consisted of 12 Shure 545D microphones on a 15-foot rectangular hardwood meeting table. All the microphones were fed into two 6-channel mixers that were bussed together. One mixer's output fed the phone line and the other fed a separate PA system.

When Teletype engineer Jim Beall demonstrated the system to Pettersen, it was difficult to hear or understand him whenever he turned his head.

Here, the addition of an SE30 gated compressor/mixer and two M67 microphone mixers solved the problem. In the new setup, four stand-mounted microphones were eliminated. The remaining eight 545 microphones were fed into the M67 mixers, which replaced the previous mixers used. The two M67s were bussed together, and the output of one M67 fed the SE30. The compressor and gated memory of the SE30 are used to even out the audio signal from the microphones. In turn, the SE30 feeds the telephone conference unit.

After a few minor adjustments, Pettersen and Beall tested the system by calling the Little Rock plant. As Beall talked, he walked around the room speaking softly, and even whispering at times.

"The vice president in Little Rock was able to hear everything," Pettersen stated, "even when Beall whispered."

Several different solutions for solving similar conference call problems were recently discussed at the Telesystems Conference in Boston. Equipment costs ranged from \$3,000 to \$7,000. By comparison, cost of the three SM18 microphones and one SE30 gated compressor used to solve Bell and Howell's problems was approximately \$700.

The Shure system, incidentally, interfaces with the popular Bell Tele Conference unit that is used in many companies worldwide. Judging from the success of the Bell and Howell and Teletype installations, Shure appears to have a totally reliable answer to conference call problems that may be nagging a large number of other companies. □

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NEW PRODUCTS

MONITOR SPEAKER

The Sentry 100 is an efficient monitor speaker which lowers distortion but allows production of sound pressure levels comparable to those of units with far greater amplifier power. The Sentry 100 assures the sonic accuracy essential in critical monitoring. An optional kit for rack and wall mounting is available.



□ For more information write 781 on the inquiry card. Or write: Electro-Voice, Inc., 610 Cecil St., Buchanan, Mich. 49107.

COMMUNICATIONS ACCESSORIES

The C35-15 push-to-talk switch assembly allows greater hand freedom, more mobility and flexibility,



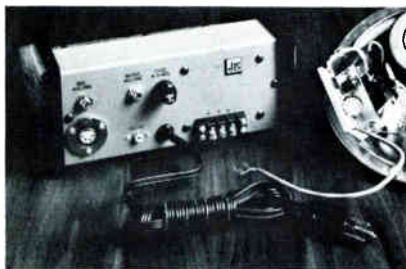
and prevents accidental disconnection. It clips to a belt for easy connection to the user's headset. The switch can be used for momentary conversation or locked in the "talk" position for uninterrupted communications. It is housed in a high-impact

resistant case. The device comes with a shielded, oil-resistant coiled cord with a locking connector that eliminates accidental disconnection from permanent wall stations or the C36-12 extension cord. The 12-foot extension cord features the same locking connectors, is oil resistant, and is completely shielded to prevent interference from fluorescent lights, motors and other electrical devices.

□ For more information write 782 on the inquiry card. Or write: David Clark Co. Inc., 360 Franklin St., Worcester, Mass. 01604

SOUND SYSTEM

The SBA Distributed Sound System has been specially designed for the particular requirements of background music and paging. The unique Signal Biased Amplification concept makes the system an infinitely expandable, interrelated network. It consists of a master, a loudspeaker remote with built-in volume control and a supplementary power unit (when needed in larger installations). The 3-wire system is colored-coded and simple to install.



It employs a special signal, containing the audio program plus a precisely generated bias voltage, determined directly from the program signal and varying continuously with the level of the audio program. High fidelity of 10 - 20,000 Hz is achieved by elimination of line transformers through direct coupled amplification.

□ For more information write 783 on the inquiry card. Or write: J. W. Davis & Co., P.O. Box 26177, Dallas, Texas 75226.

CONTROL CONSOLE

A desk-top control console, Model CE-600-W, combined with the supplier's Mini-Line control system, provides a complete security control center in a compact setup. The user may select the specific controls for each individual requirement, including switchers, time/date generators and other video signal equipment.



The attractive cabinet design features contrasting satin-walnut and beige finishes. Compatible with all 19-inch rack mount monitors, the console allows for 15-1/4 inches of rack space.

□ For more information write 784 on the inquiry card. Or write: Pelco, 351 E. Alondra Blvd., Gardena, Cal. 90248.

MOBILE AMPLIFIER/CHARGERS

To convert hand-held portables into powerful FM mobile or base 2-way radios, the MAC line of mobile amplifierchargers includes a VHF unit with 40 or 80-watt output, a UHF model with a 50-watt output, and an economical charger-only version. The units mount easily under the dash or on the transmission hump. Convenient plastic console mounts are also available. Mobile conversion is accomplished by simply sliding the portable into the MAC drawer, locking it in place and connecting the antenna and speaker/mic connectors. Base operation is accomplished with an external AC to DC power supply. Features include broadband design to eliminate tuning, automatic Fast/Trickle battery charger, easy-to-attach an-

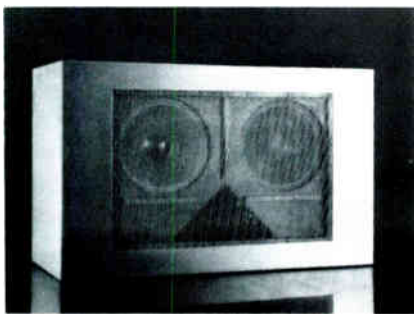
tenna and mic cords, a built-in 5-watt audio amplifier, external speaker connection, a key lock for added security, locking power connectors and an easily reached external fuse. All MACs may be additionally equipped with optional Touch-Tone Encoder for selective calling capability.



□ For more information write 785 on the inquiry card. Or write: Wilson Electronics, Inc., 4288 S. Polaris Ave., Las Vegas, Nev. 89119.

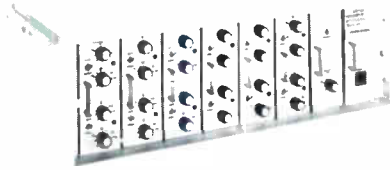
SUBWOOFER SYSTEM

A totally integrated subwoofer system, Model 510, has a special speaker sensing circuit that provides complete overtravel and thermal protection for drivers. Protection is accomplished by reduction of input signal, for minimum disruption of outputs. The system features 4th order Butterworth alignment, utilizing vented box and internal electronic equalization; a 500-watt power amplifier; selectable high pass and low pass filters; RMS and peak level limiters. With all components designed to complement each other, the system provides up to 120 dB S.P.L. at 23 Hz. Additional features include: two custom-designed long-throw 15" drivers with 96-oz. ceramic magnet and vented pole-piece construction with high temperature voice coil on aluminum former. Unlike other systems which turn off completely under stress, the system temporarily reduces its volume level only as much as necessary to prevent damage.



□ For more information write 786 on the inquiry card. Or write: dbx, Inc., 71 Chapel St., Newton, Mass. 02195.

MIC MIXER



Multiple microphone sound systems often suffer from reduced gain to avoid feedback; the more mics in the system, the more volume or gain must be reduced. Model DE-4013, the Voice-matic Microphone Mixer, restores the lost gain by automatically attenuating any inactive mics.

Thus, as much gain is generated as in a single mic system, but without feedback. Background noise and other room ambient noises are also eliminated. The modular construction of the mixer allows a choice of 2, 4, 6, 8, 10 or 12-channel units; additional chassis may be tandem connected for larger requirements. Among the standard features are sensitivity and attenuation controls for each channel, an auxiliary output, chairman override, and front panel LED status indicators. The mixer fits into a standard 19-inch equipment rack.

□ For more information write 787 on the inquiry card. Or write: Industrial Research Products, Inc., 321 Bond St., Elk Grove Village, Ill. 60007.



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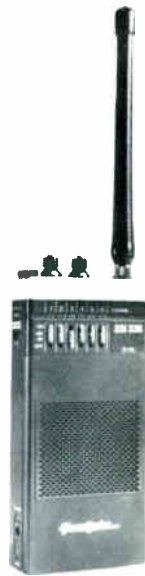
1700 130th Ave. N.E. Bellevue, WA 98005 206-455-0510 Telex 32-0288

FM MONITOR SCANNERS

Two FM portable monitor scanners, designed with slim lines, can listen to public safety, weather or other broadcasts on Lo-Band VHF (30 - 50 MHz), High-Band VHF (146 - 175 MHz), Lo-Band UHF (450 - 475 MHz), and "T" Band UHF (475 - 512 MHz). Available in 4-band, 6-channel and 2-band, 6-channel styles, these Slimscan scanners use multiple programmable sockets to pre-program any of the bands, at the same time selecting the channel frequency desired. An Automatic Peak Tuning Circuit adjusts the UHF front end to maximum

sensitivity across the entire UHF band. A special delay circuit holds the "live" channel for two seconds, permitting the monitoring of a two-way conversation without interruptions. Individual lock-out switches are provided for each of the six operating channels. Featuring good selectivity and adjacent channel rejection characteristics, the scanners use dual conversion superheterodyne circuitry with both high frequency crystal filters and ceramic IF filters. Protection against intermodulation is provided. A screw-mount flexible combination UHF-VHF antenna is provided as stan-

dard equipment, and the unit comes equipped with provisions for earphone, 6-volt power supply and external battery charger operation if an optional Nickel-Cadmium package is employed. Battery operation is 6-VDC with four size AAA cells.



At last. The amplifier designed by the people who have been there.



Plug in any microphone — balanced or unbalanced. It works.

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Controls include six-channel scan bypass switches, manual or automatic scanning of six channels, squelch, and volume. Carry case, auto lighter adapter and power supply/charger are offered as accessories. The units are housed in a high-impact case with textured surface and slender one-inch-deep construction for easy fit into a shirt pocket. Colors are chrome and blue/gray.

□ For more information write 788 on the inquiry card. Or write: Fanon/Courier Corp., 990 S. Fair Oaks Ave., Pasadena, Cal. 91105.

AUDIO TESTING

The RTS2 is a multi-purpose test set that can perform the full range of operating tests on audio amplifiers, preamplifiers, tape recorders and turntables. The set includes a low-distortion audio oscillator, a stepped attenuator with a 100-dB output range, a precision voltmeter, a distortion meter and a wow and flutter meter. Only a single input and output lead need be connected to the equipment being tested; setup is rapid with front panel pushbutton switches. Results are read-out directly in percentage or dB, without translation or calculation. In addition to standard production test and service bench operations, the RTS2

may be used for analysis along with an oscilloscope, distortion analyzer or other equipment; an output is provided for this purpose. On its own, the test set can perform checks on frequency response, signal-to-noise ratio, distortion, wow and flutter, drift, input sensitivity and gain. Lightweight and easily portable, the set has its own checking circuitry, and may be calibrated in the field without any auxiliary equipment. Test leads and a test tape containing NAB and CCIR test sequences are supplied as standard equipment.



□ For more information write 789 on the inquiry card. Or write: Neal Ferrograph U.S.A., Inc., 652 Glenbrook Rd., Stamford, Conn. 06906.

MEMORY PHONE

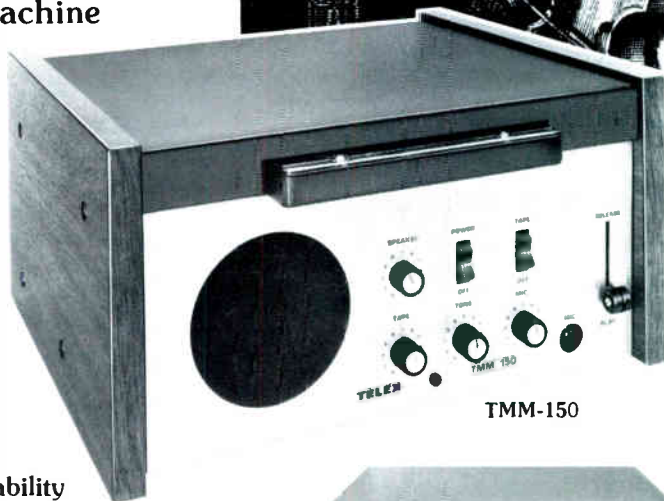
A 2-line, microprocessor-equipped memory telephone, Model 7800, offers programmable call forwarding. The user may select any number and have calls diverted or forwarded during a specific time period. The phone also includes a hold button, conference capability, 14-digit vacuum fluorescent display, switchable Touchtone or dial operation, 64-number memory, hands-free dialing and automatic redialing of a busy number up to 16 times.



□ For more information write 790 on the inquiry card. Or write: Superphone Corp., 750 N. Mary Ave., Sunnyvale, Cal. 94086.

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New Telex TMM-150 Programmed Music Machine



TMM-150

Solid Reliability

A Telex tape cartridge transport that's proven in thousands of broadcasting hours, programmed music installations, and display automation. Accepts standard N.A.B. tape cartridges. Solid state electronics deliver 20 watt power output.



INT-1 Interspersion

Versatile Operation

A paging mike with on-off switch may be added which automatically mutes the music while paging. A remote start-stop switch may also be connected.

Small or Large Installation

An integral monitor speaker and external speaker output make the TMM-150 suitable for retail shop, business lobby or doctor's office. A 25V and 70V line or preamp output fits larger installations in restaurants, banks, hotels or shopping centers.

Alternate Programming

Connect the optional Telex INT-1 intersperser between two TMM-150's or a TMM-150 and another source for alternate programming or insertion of commercial messages automatically or by manual operation.

A TMM-150 makes beautiful music—the kind that makes your cash register sing.

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DRIVE-THRU SYSTEM

Designed for easy installation and adaptability, the Apollo II Drive-Thru Communication System, is a voice activated two-way communication system which provides a power capacity of 12 watts, as compared with 5-8 watts power used in most drive-thru systems. The result is a clear, crisp sound with little or no vocal distortion.



Apollo II is totally modular in construction. Modules may be added to accommodate kitchen paging and/or dining room music page systems. The unit shown has a front panel mounted cardioid microphone for

hands-free, voice-gated operation. Other models are available with flush-mounted microphones and push-to-talk switches. A complete line of options is offered.

□ For more information write 791 on the inquiry card. Or write: Westpark Communications, 2205 W. Division St., Arlington, Texas 76012.

CABLE ASSEMBLIES

The Stripflex-II fully flexible cable assemblies come in three sizes: .125, .180 and .250 inches, each with two different construction techniques. The assemblies deliver lower losses (down to 38 dB/100 ft. at 18 GHz) and improved flexibility, while maintaining a change during flexure of less than 0.1 dB. All are manufactured to broadband swept performance specs from 2 to 18 GHz. Standard construction, designed for maximum flexibility, can replace .141" hardline in many applications, eliminating tooling expenses and facilitating assembly and repair. The assemblies will survive high concentrated loads and flexure without degradation in electrical performance. Typical specifications for a one foot Stripflex-II

assembly with .250" cable, SMA straight connectors, at sea level, in an ambient temperature and operating at 18 GHz include: VSWR of 1.35, maximum power of 100 watts, and an insertion loss of .38 dB.



□ For more information write 792 on the inquiry card. Or write: Times Wire & Cable, 358 Hall Ave., Wallingford, Conn. 06492.

SPOT ANNOUNCER



The TP-28 Spot Announcer is a tape cartridge record/playback unit designed for use with a separate amplifier/music system. Recorded messages can be broadcast through the system at pre-determined intervals. The machine is supplied initially with one cartridge, which provides 6 x 45-second recording spots, using tone sensing. The unit reverts to the amplifier/music system approximately seven seconds after a recorded announcement finishes broadcasting, obviating long silences if messages are shorter than the tape sections. The announcer automatically cues itself for the next announcement spot. An optional microphone is available, for use in live paging when the spots are not being broadcast. Both paging and spot announcements may be preceded by an electronic chime, if desired.

□ For more information write 793 on the inquiry card. Or write: Rediffusion Music Inc., 5142 Bolsa Ave., Huntington Beach, Cal. 92647.

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LOUDSPEAKER

An 8-inch coaxial loudspeaker, Model 8C10C0, uses a piezo ceramic element tweeter which rejects low frequency power, doing away with the need for a crossover capacitor. This eliminates problems caused by leads breaking, opening or shorting. The low dynamic mass of the driver mechanism gives the piezo ceramic tweeter a better transient response than can be obtained with conventional dynamic tweeters.



Long term stability under adverse environmental conditions is characteristic of this tweeter. Electrically, the piezo ceramic tweeter appears as a capacitor rather than an inductive load. Efficiency ranges from 40-50% and the frequency response generally from 4 KHz to 40 KHz. The speaker offers rugged construction, trouble-free operation and good sound reproduction. The woofer utilizes a Barium ferrite ceramic magnet, which allows shallower construction and more magnetic energy per dollar. The voice coil is precision centered. A heavy gauge steel basket and double bolt and cement magnet structure offer protection against shock and vibration superior to that of cement alone. A universal transformer mounting bracket is also provided.

☐ For more information write 794 on the inquiry card. Or write: Quam-Nichols Co., 234 E. Marquette Rd., Chicago, Ill. 60637.

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Turner sound reinforcement microphones allow the audio professional the wide selection he needs to find just the right microphone for each installation. Whether the selection is based on styling, size, mounting, directional pattern or cost there is a Turner microphone to fit any application. And it doesn't stop there. Turner offers a complete selection of stands, transformers, replacement transducers and microphone cables. There is a quality Turner sound reinforcement microphone with features to meet the following application requirements:

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Quality Products for The Audio Professional.

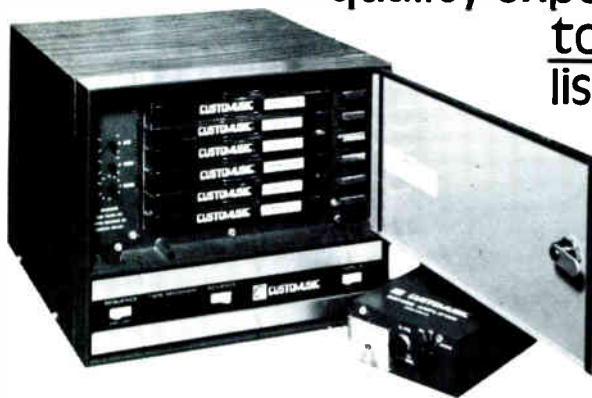


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LOUDSPEAKER INTERCOM

The LAF loudspeaker intercom offers three, five or ten-station masters and five different substations. Features include individual volume controls, voice or tone and LED annunciation, a privacy button to prevent monitoring, and optional handsets (for the five and ten-station master units). Both masters and substations can be desk-type or wall-mounted.



□ For more information write 795 on the inquiry card. Or write: Aiphone, 1700 130th N.E., Bellevue, Wash. 98005.

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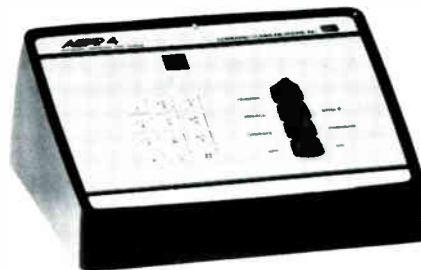
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MESSAGE ALERTING

Model ASAP 4 is a totally self-contained system that plugs into the same telephone line as an answering machine and monitors only the voice going into the answering machine. The device will then call any pre-programmed number, such as a pager, immediately after the caller has finished leaving his message.



The system continues to remind the user, every eight minutes, until the message is remotely retrieved from the answering machine. Keyboard entry of up to 15 digits is possible; the system will transmit a series of identifying tones to the person it calls.

□ For more information write 796 on the inquiry card. Or write: Command Communications, Inc., 8000 E. Girard, Denver, Col. 80231.

NEW LITERATURE

For free copies, write company names on the inquiry card.



CABLE ASSEMBLIES: Products and services for the custom design and development of flat cable assemblies, connectorized flexible circuits, transmission line assemblies and printed circuit boards are described in a 40-page catalog from T&B/Ansley, Los Angeles. To aid in determining the requirement for bulk cable and custom-designed flat cable, there is a special Flat Cable Guide. Details are provided on pin arrangements and methods for jumpering for board-to-connector and connector-to-connector applications.

PHONE COUPLING TRANSFORMERS: A bulletin from Microtran Co., Valley Stream, N.Y., lists a broad line of telephone coupling transformers and holding coils, for use in FCC-registered equipment for interconnection to the nationwide telephone network. Electrical ratings, schematic diagrams, outline drawings and typical applications are included.

SOUND SYSTEMS: A range of equipment from which various types of sound systems can be engineered is shown in a leaflet from Millbank Electronics Group Ltd., Sussex, England. Useful descriptions are provided on some recently created systems for life safety, conference speech reinforcement, teleconferencing, factory paging and hotel guest room communications.

**Did You Miss
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Marking our 25th year of continuous publication, the April 1980 issue featured a special section tracing the history of this industry—the events, product developments and personalities that have shaped the sound & communications business.

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INTERCONNECT LINES

THE FCC HAS AMENDED PART 68 TO PERMIT TELEPHONE EQUIPMENT, SYSTEMS AND PROTECTIVE APPARATUS TO BE REGISTERED AND DIRECTLY CONNECTED TO CERTAIN PRIVATE LINE SERVICES (DOCKET CC-79-143).

This proceeding arose out of petitions for rule-making filed by AT&T and Communications Certification Laboratory (CCL). AT&T's petition was filed in response to a June 1978 letter from the chief of the Common Carrier Bureau. The letter pointed out certain inconsistencies between telephone company policies regarding direct interconnection of customer owned equipment to private line services and the FCC's Part 68 program.

Public meetings were held during July 1979 to discuss and debate the various petitions. Some 30 interested parties, representing telephone companies, users and manufacturers, participated. The meetings resulted in a general consensus on many of the issues raised by the petitions.

These issues, as well as those not agreed upon, are presented in the FCC's decision, with one exception. The Commission determined that the record is incomplete as to the proposed configurations of plugs and jacks. It therefore delegated authority to the Common Carrier Bureau to order the telephone companies to file tariffs within 30 days of conclusion of public meetings to be held under Bureau supervision, reflecting the plug and jack configurations generally accepted during those meetings. The FCC adopted the many technical and procedural rules proposed in the item.

REP. CLARENCE D. LONG (D/MD.) HAS PROPOSED LEGISLATION AMENDING THE COMMUNICATIONS ACT OF 1934, TO PROVIDE TELEPHONE RECEIVERS THAT WORK WITH HEARING AID TELEPHONE PICKUPS. More than 52 percent of the nation's hearing-impaired persons are over 60 years of age, according to the Organization for Use of the Telephone, Inc. More than 2 million people in the nation use hearing aids with built-in telephone devices. All telephone companies use some receivers that are incompatible with the telephone switches. These phones are most common, however, in areas served by independent companies. The proposed legislation, HR5022, has been referred to the communications subcommittee of the House Commerce Committee, which has not scheduled any hearings.

UNITED TELECOMMUNICATIONS CORP., Latham, N.Y. interconnect dealer serving New York and New Jersey, announced record revenues and earnings for the year ended Dec 31/79. Stanley Ringle, Chairman and Chief Executive Officer, said that gross sales amounted to \$20,816,101; net income increased 23% to \$802,735. United Telecommunications Corporation is a public company whose shares are traded over the counter. The firm has installed over 1700 private telephone systems in New York and New Jersey. During '79, UTC introduced TRAC Service, which provides management reports of call detail records, to aid in the reduction or maintenance of phone costs and usage. Also developed during the year was the Flexifone, a proprietary feature telephone used within the computerized phone systems marketed by the company.

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TIP & RING: In a letter to the Editor/Washington Post, Richard Long/President of NATA, complained that the VanDeerlin Bill/Communications Act of 1979 "did not represent real progress." Long wrote (in part), "The bill does not pave the road to legitimate competition in telecommunications. Even with certain restraints on it, we know firsthand how AT&T deals with competition. It tries to blast it into oblivion by mobilizing massive attacks with legal, lobbying and advertising artillery."

One week later, the Washington Post printed a response from Edward M. Block/Vice President, Public Relations, AT&T (quoted in part): "NATA complains...that the bill now under consideration in the House won't bring about 'real competition'....that is an interesting observation for someone who only last April asked the same House communications sub-committee for a guarantee of protection for NATA members against competition until 'we can gain some portion of the market.' The fact is, NATA, which has been characterized as the American marketing arm for Japanese communications equipment manufacturers, is afraid to compete."

THE FCC NOTED IN DOCKET 20003 THAT ITS POLICIES ENCOURAGING COMPETITION IN TELEPHONE PRIVATE LINE AND TERMINAL EQUIPMENT MARKETS CONTINUED TO BENEFIT THE PUBLIC by speeding innovation and meeting unsatisfied communications needs. The FCC found that there was very little evidence that competition by Other Common Carriers (OCCs) caused any potential adverse impact on the established carriers. It said allegations of extensive inroads by these other carriers into the traffic of the established carriers was based on gross exaggerations of the size and potential growth rate of the OCCs. The FCC noted that the total operating revenues in the domestic telecommunications industry grew at an annual average rate of roughly 12% since 1975, to an estimated \$46 billion in 1977 and to about \$52 billion in 1978. For the same period, total plant in the industry grew by an average annual rate of approximately 8.3%, with values of about \$132 billion in 1977 and \$144 billion in 1978.

UNITED TELECOMMUNICATIONS INC., KANSAS CITY, MO., IS SEEKING AN INJUNCTION BARRING UNITED TELECOMMUNICATIONS CORP., LATHAM, N.Y., from the use of the term "United Tel." The complaint filed in Federal Court in New York charges that United Telecommunications Corp.'s use of the term "United Tel" infringes on their registered service mark, United Telephone Systems. More, that the firm's use of the term has confused the financial and investment communities since 1979, when "United Telecommunications" securities were first offered.

ITT BUSINESS COMMUNICATIONS DIVISION HAS CUT BACK ON PERSONNEL AND SHIFTED SOME PRODUCT ENGINEERING FUNCTIONS TO ITT TERRYPHONE, Harrisburg, Pa. The Business Communications division represents a consolidation of activities in Des Plaines, Ill. and the interconnect arm in Hartford, Ct. ITT Terryphone has 77 offices throughout the country and is involved in the interconnect, PBX and keyphone business. New product capabilities are being established at ITT Terryphone, according to the company, and product development and engineering are believed to be involved with a new generation of keyphones.

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ROLM CORP. SANTA CLARA, CA., HAS MOVED TO ACQUIRE JARVIS CORP., RICHMOND, VA. distributor, in a stock transaction. Jarvis said its anticipated revenues for the fiscal year ending March 31 would be "at least \$18 million" with a net income of at least \$1 million. The merger is expected to be completed in May or June.

LM ERICSSON AND ANACONDA TELECOMMUNICATIONS have established a joint venture to make and market telecommunications equipment, including wire and cable, in the domestic and international markets. The proposed 50-50 joint venture, to be known as Anaconda-Ericsson Inc., will incorporate Ericsson's telecommunications marketing operations in the U.S. and Canada, as well as Anaconda's existing facilities in Anaheim and Garden Grove, Cal., and the power and telephone cable activities of the Greenwich Conn.-based cable and wire division.

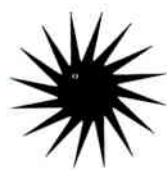
MITEL HAS SIGNED CENTEL COMMUNICATIONS SUPPLY DIVISION, Lincoln, Neb., to a distributorship for their full line of telecom products. Centel has sales offices located in La Canada, Cal., Tampa, Fla., Charlotte, N.C., Pinesville, N.C., and Snohomish, Wash.

ROCKWELL INTERNATIONAL HAS ACQUIRED WESCOM, INC., Downers Grove, Ill. through the purchase of all outstanding stock of privately-held

Wescom. Terms of the deal were not disclosed. As a wholly-owned subsidiary of Rockwell, Wescom will become part of the Electronics Operations Group under D.J. Yockey, its president. As a result of the deal, Rockwell adds digital PBX and transmission equipment to its Collins product line.

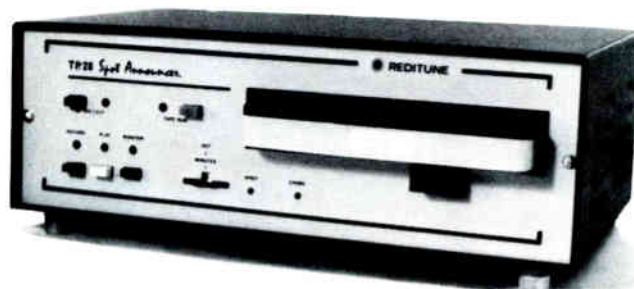
GENERAL DYNAMICS COMMUNICATIONS CORP., ST. LOUIS, MO., HAS PURCHASED ALL OF THE SHARES OF THE PRIVATELY-HELD COM-DEV, SARASOTA, FL., for undisclosed terms. General Dynamics said that cash was paid for all Com-Dev shares. Com-Dev reported sales of \$3 million in 1979. Com-Dev's major product line is the Accountant auxiliary PBX system that collects, formats and stores data on telephone traffic and costs. The firm also markets station-message detail recording translators, among other products. General Dynamics Communications Co. has been a distributor of the Com-Dev Accountant system.

MITEL CORP./CANADA HAS AGREED IN PRINCIPLE TO ACQUIRE A 20% STOCK INTEREST IN TECHNOLOGY APPLICATIONS CORP., MOUNTAIN VIEW, CAL., for about \$1 million in cash. TAC is a supplier of station sets and other telephone equipment.



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Holding Down Supply Costs

by Ernest W. Fair

One of the surest methods for protecting the earnings of any sound systems business is to exercise better control at holding down supply costs, with each individual on the staff joining in the project.

Holding down supply costs cannot be accomplished with a generalized approach. It takes application of specific steps, such as the following:

Teach employees how to use each supply item correctly; there should be no exception because of low cost. Improper use contributes to increased costs.

Begin this education from the first day on the job and continue it as a day-to-day procedure.

Learn the proper storage procedures for each item. If this data is not on the container, or in accompanying folders, ask the salesman from whom it was purchased for the information. File this in a convenient spot where it will be available for checking.

See to it that no employee develops habits of carelessness, not only in proper storage but in handling of the item to and from the area of use.

A major share of losses in supply item usage centers on lack of proper storage and care of items after being placed therein.

Make certain that the proper amount of each item is used...no more, no less. In some cases, too much in use adds nothing whatever to results. In others it creates negative situations. There should be no excuse for guesswork in determining the quantity of any item to be used at any time.

Where choices are involved in use of a supply item, make certain that the right one is selected each time. Seldom are those choices at the same price levels. Using an expensive supply item where a less costly one will do as efficient a job is invariably wasteful.

Move carefully whenever the urge to hunt for bargains while purchasing supply items arises. Pick up bargains when they are genuine, of course, but never forget that many "bargains" turn out to be more

costly in actual use.

No matter how attractive a "deal" is offered, be cautious about purchasing any supply item in larger quantities than normal. Deterioration over a long period of time can make doing so costly. Usually, the savings involved are insufficient to cover even a small percentage of the amount lost as a result.

Make it a rule that "the last drop" is to be used from each container of a supply item. Throwing aside a small remaining amount in a bottle, can, or package, because it is an insufficient quantity for a given task, can add up to considerable dollar waste over a period of time.

Test a new item before buying in quantity. Any given item could be

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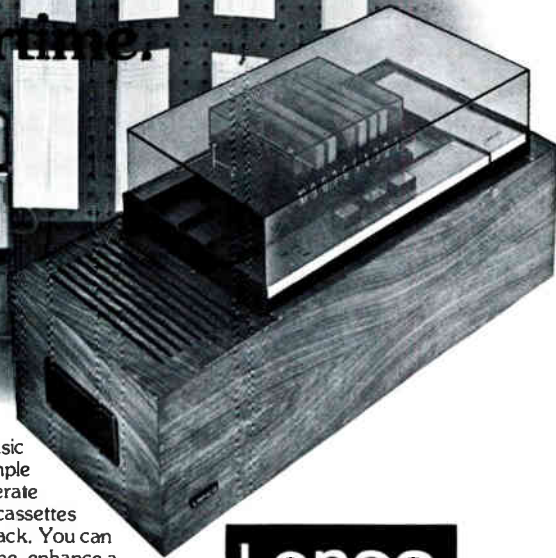
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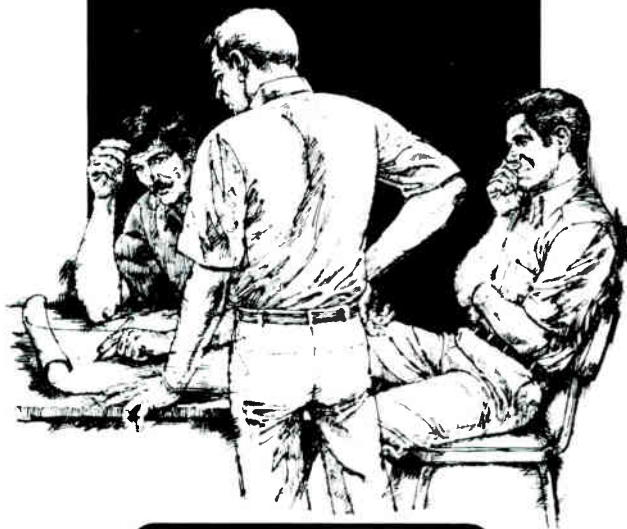
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perfect for some other business, but uneconomical for one's own. This is also a good precaution to take in order to protect against being "stuck" with a sizable quantity of some supply item that appears to have value but then turns out to be worthless.

Make certain not to overlook what is being spent for shipping costs on supplies. Consolidating a number of small orders into a single large one can make a difference. Freight charges paid on orders may have a different accounting tag, but they are as pertinent to supply costs as the items themselves.

Keep supply items only for the intended purposes. Using business forms as scratch pads, for example, is expensive when done regularly. The same precaution applies to other supply items.

Another good rule for everyone to follow is in making sure that each supply item is returned to its storage spot immediately after use. Doing so eliminates waste, spillage and, sometimes, pilferage. It also eliminates such items being discarded in the trash by the individual doing the clean-up procedures.

Review methods of purchasing supplies, and sources, at least once each six months. Doing so keeps suppliers on their toes. It also assures having an excellent chance of obtaining better buys through more widespread and up-to-the-minute knowledge of the market.

Let every person on the staff know exactly what each supply item costs. There is certain to be more care exercised in its use when that is done. The average employee has mistaken ideas about supply item costs.

Would it be possible to develop co-operation with other business firms in the immediate area for purchasing some supply items? The savings that could result would be sufficiently worthwhile to justify the effort.

Know what supply costs are in each area of the business; not just the total sum. When they can be pinpointed, it is easier to discover methods for more economical use.

Lastly, when things go wrong, or abnormal situations are temporarily present, then is when and where carelessness in supply use abounds — extra precautions are advisable. □

NATA on the line



In a recent speech before USITA, Congressman Lionel Van Deerlin lashed out at Congressman Wirth (D-Colo) whom he views as an obstructionist to his legislation H.R. 6121, Senator Metzenbaum, whom he views as unenlightened, the Independent Data Communications Manufacturers Association (IDMCA), whom he views as a foreign conspiracy, the FCC, for their controversial decisions on competition, NATA, as a lobbying group for Japan, Inc., and finally, the free enterprise system. The only things he left out were Apple Pie and Motherhood, and that was probably because he didn't think of them. He took pity on Western Electric, because its total sales were only nine and a half billion dollars last year, and he appears to "yearn for the good old days when a single telephone industry served a manageable and well-defined domestic market."

It was one of those real barn-burning "I" type speeches—you know, incoherent, inconsistent, inaccurate, incongruous, and filled with innuendoes...incredible!

Contrary to Mr. Van Deerlin's continuing insistence, there is no demonstrable need for H.R. 6121. Everybody is doing business. The market is growing at an unprecedented rate, stimulated by competition. Bell and the independent carriers are prospering, and it would appear that the competition is beginning to turn the corner towards more adequate profits. While I accept the fact that there is still a lot of litigation going on that's unnecessary, it's nothing compared to what H.R. 6121 will produce. This will be the Lawyer's Relief Act of the 80s. The bottom line of all this is, of course, that Bell needs this legislation; they must have Congressionally mandated antitrust immunity. Not only do they need it for their past behavior, but they'll

need it for the future, because H.R. 6121 will impose so many burdens upon their operation that they will find it impossible to function, legally, in the madhouse business arena created by this bill. This antitrust immunity, coupled with a lifting of the 1956 Consent Decree is the sole thrust and purpose of this legislation.

If Congressman Van Deerlin and his ambitious, glib General Counsel, Chip Shooshan, would allow representatives of competition as much time in front of them as they do the carrier representatives, they might get some insight into what our problems are. I am sick and tired of

the argument that Bell has the "right"—based on their track record—to enter new markets and continue in their traditional markets on a completely unregulated basis. If you're talking about their behavior track record, it stinks! That statement has the support of forty-some-odd antitrust actions against them now. If you talk about their economic track record, it stinks! Their earnings and assets have been paid for by the American rate-payer.

Moreover, there is no demonstrated need for them to be in the data business. Free enterprise is taking care of that very well, thank you. I am further incensed by the



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continuing implications that Bell Labs have some edge on technological advancement. While their contributions to science have been many and varied, their ability to bring this scientific discovery to the marketplace has been nonexistent. The fact of the matter is Bell and Western Electric are "me too" companies that respond to the advanced product developments of companies outside the Bell system.

If you get the impression that I'm mad as hell, you're right! I have challenged Chuck Jackson, the Communications Subcommittee staff engineer and his silver-tongued companion, Shooshan, to a week in the trenches with you people, to see what the conditions are really like. I'd like for them to spend a few sleepless nights trying to get Bell and the carriers to cooperate or, better still, just to get them to show up. I'd further like for them to try to deal with Gen Tel, whose behavior is scandalous and arrogant. Or maybe they'd like to go with the salesman who has to compete with Gen Tel, as he sees that carrier illegally change hats in midstream to accommodate whatever the situation calls for. I wonder if they'd like to pay a technician \$10.00 an hour for days on end to get a tie line not only installed, but balanced properly. I wonder if they could stand the agony of having the carrier tell them there are no facilities available after the order's been in place for a year. I doubt it. Otherwise, they'd be gainfully employed.

Congressman Van Deerlin's allusion to a conspiracy with Madame Butterfly is incredulous. Here's a man who comes from the port city of San Diego, through which come thousands of Japanese automobiles every year, whose county has a Sony factory employing somewhere between a thousand and two thousand people, a Sanyo factory employing five hundred, a Fujitsu factory under construction which will employ a thousand. As I said before—incredible! But then again, I should have known the speech was going to be a fairy tale because it started off, "Once upon a time..."

*Richard Long,
President & Executive Director,
North American Telephone Assoc.*

MOBILE COMMUNICATIONS

PAGING FREQUENCIES FOR SPECIAL EMERGENCY RADIO SERVICE HAVE BEEN REALLOCATED (PR DOCKET 79-192).

Specifically, the FCC has:
—reallocated the 4 highway call box frequencies, 453.025, 453.075, 453.125 and 453.175 MHz, from the Local Government Radio Service to the SERS, to be used only for paging in medical radio services operations; and
—extended the deadlines for conversion of paging systems to page-only frequencies in the SERS from Jan 1/80 for one year for areas within 75 miles of the center of the top 25 urban areas, and indefinitely elsewhere.

On Aug 1/79, the FCC proposed these rule changes in part to respond to the tremendous growth in private medical paging operations in recent years. It said the addition of four 450 MHz band frequencies was necessary to accommodate the paging systems, primarily in the urbanized areas. For these areas, the extension of the 1980 conversion date to 1981 would provide the time necessary to access the new frequencies.

The Commission noted that in the non-urban areas interference was not generally a significant problem and the manner in which medical systems operated did not appear to require the conversion to paging-only channels at this time. Hence, the FCC said, it would extend the compliance date indefinitely in these cases.

The action, which amends Part 90, became effective Mar 31/80.

FCC BAN ON LINEAR AMPLIFIERS UPHELD BY U.S. APPEALS COURT FOR THE DISTRICT OF COLUMBIA CIRCUIT.

The ban prohibited the manufacture and sale of any external amplifier capable of operating between 24 and 35 MHz, regardless of whether it can also be used on other frequencies. The American Radio Relay League (ARRL), a nonprofit association of ham radio operators, brought suit, saying that the rules infringed on the ability of ham operators to engage in their pastime, and claimed that they were arbitrary, capricious and unreasonable.

The FCC responded that external amplifiers capable of use between 24 and 35 MHz, no matter whether used in CB or ham operations, were the cause of much interference. Many of the "broad-band linear amplifiers" were marketed in evasion of the strictures placed on them by the FCC for CB use, yet were purchased by CBers for use on the 27 MHz band—illegally.

The ARRL said that the FCC was authorized by Congress to make "reasonable regulations governing the interference potential of (radio) devices." However, the court said it found nothing significant in the word "reasonable" and said use of the word in this context was superfluous.

The court said that its standard for reviewing a rule was to defer to the agency rulemakers, unless the challenger showed that the agency has "abused the broad policy-making discretion granted it by Congress" and acted "beyond the scope of its rule-making authority."

The court acknowledged that the FCC has a lot of discretion in making policy decisions through the enactment of rules. It said in this case it was conceivable that the FCC could have drawn its rules a little narrower without reducing their effectiveness.

COMMERCE DEPARTMENT/INTERNATIONAL TRADE ADMINISTRATION REPORTED A SHARP DECLINE IN IMPORTED ELECTRONIC PRODUCTS.

The report, covering January-September 1979, said that the 9-month imports totalled \$3.079 billion, an 8.6 percent decline from the \$3.369 billion registered during the comparable period last year.

Leading the unit import declines were CB transceivers—down 55.8 percent to 2.3 million units.



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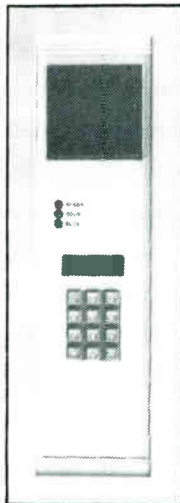
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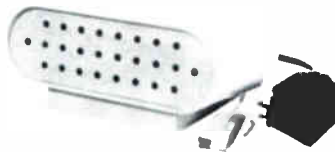
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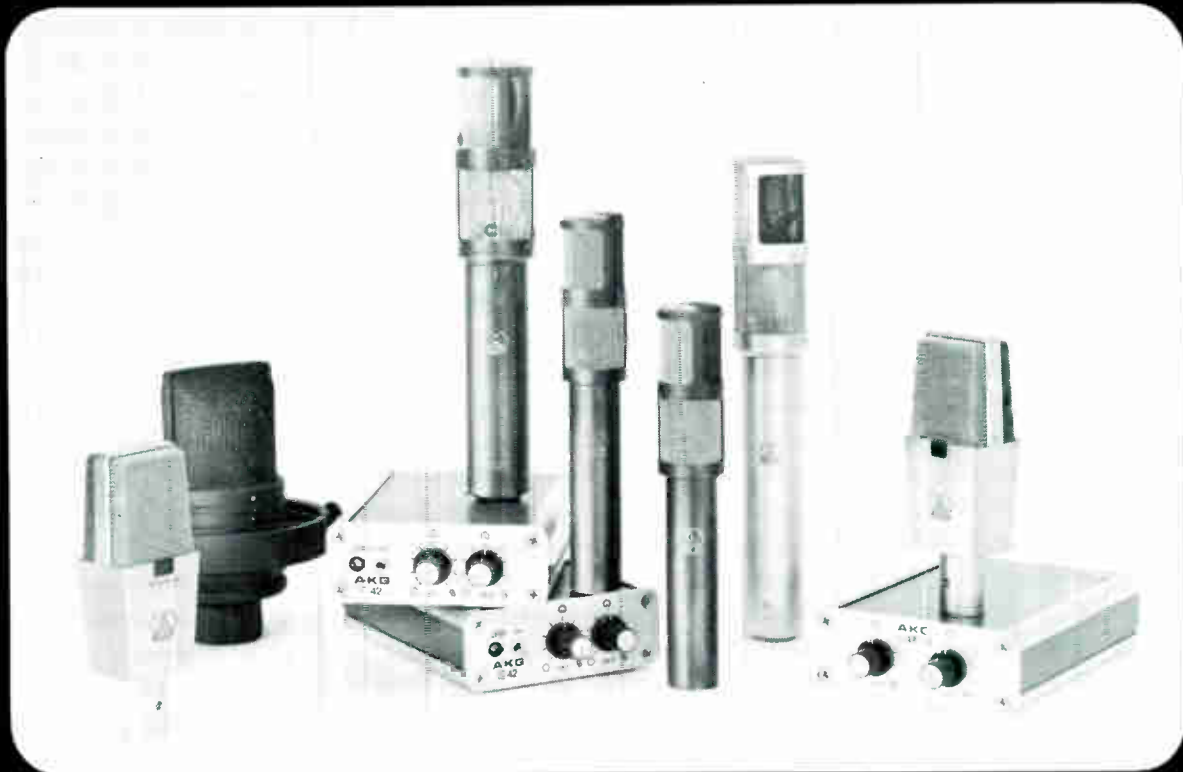
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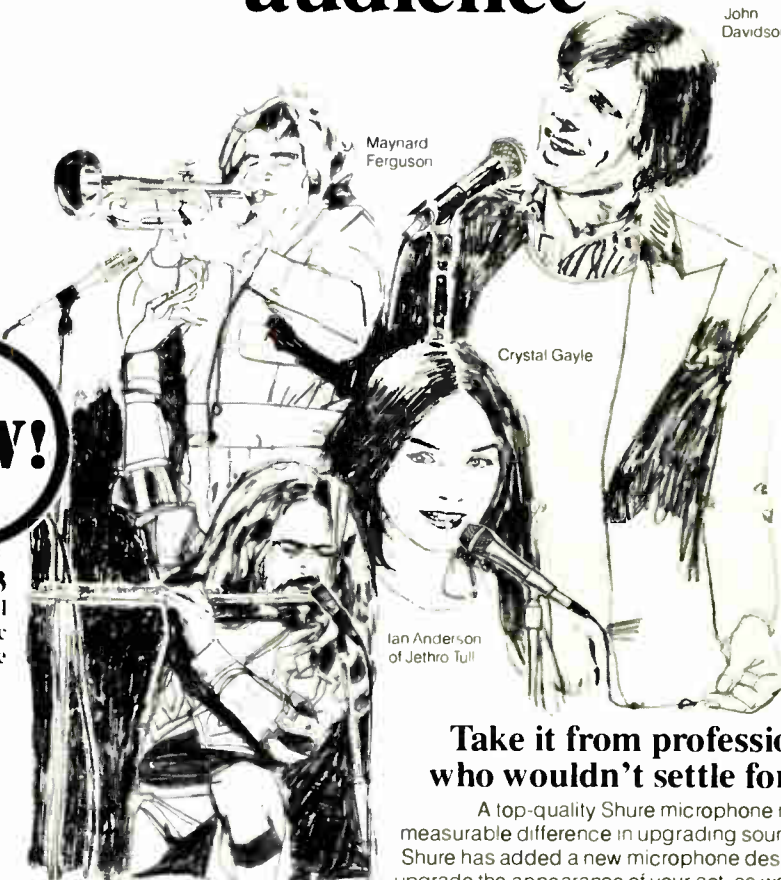
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