

RADIO TODAY

Selling Sound

Caldwell-Clements, Inc., 480 Lexington Ave., New York, N. Y.

Tell 'em about Sound!

THOUSANDS of businesses today need sound! Thousands of buildings, halls, and entertainment places need sound installations! Tens of thousands of offices and plants need intercommunicating systems!

Yet because, in each case, *some responsible person does not know* about sound reinforcement, or *does not understand* how sound can be applied in that special instance, such sound sales are delayed.

True, the sound sales story is spreading rapidly. Tremendous progress has been made in the last three years. But the missionary work must be speeded up, if sound is to fulfill its destiny.

Every sound man, every radio man interested, every distributor, is needed to *help tell the sound story* by *personal contact and verbal selling* in his own town and circle. Even if a particular prospect does not yet

seem quite ready, explain to him nevertheless the merits of sound, the advantages that would result from a proper sound job—and note how the period of waiting is thereby shortened before that sale is actually made!

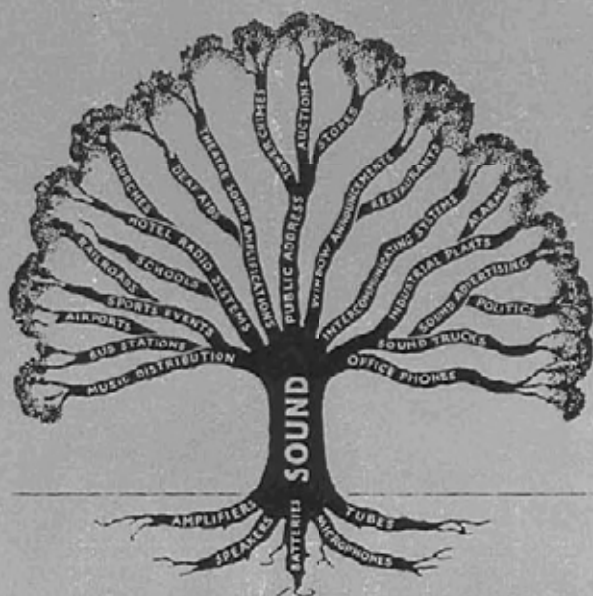
For even running as it does, into tens of millions of dollars in yearly volume, the sound business is not yet big enough to enable manufacturers to do national advertising to reach the widely-scattered prospects for sound jobs.

So sound men themselves must take up this educational and publicity work for sound. Morning, afternoon and night, the effort must go on—“talking sound.” By personal calls, by telephone,

by letters, by circulars, every possible prospect must be told what sound can do for him.

Tell 'em about Sound! And ask them to Buy!

O. H. CALDWELL,
Editor



Twenty-one thousand business men interested in sound will receive this magazine. Including the pass-on circulation to the members of their organizations, nearly 100,000 potential missionaries for sound can be counted on to see this message. This 100,000—already familiar with sound in one way or another—can be a mighty and effective force to “Sell sound” to every possible prospect.

FINEST IN QUALITY ... yet COMPETITIVE in price ...

The
AMPERITE

VELOCITY



PREFERRED by leading P.A. Men the world over!

FEATURES

Compact, streamline, modern, the Amperite Velocity now features ...

1. Output increased 6 DB.
2. Triple Shielded—against all RF or magnetic fields, entirely eliminating hum pickup.
3. Eliminates feedback troubles.
4. Excellent for close talking and distant pickup.
5. Acoustically designed to eliminate any possibility of cavity resonance.

The remarkable success of the Amperite Velocity is the result of Amperite's P.A. Policy—to give P.A. Men the finest possible microphones at prices no higher than what they would pay for other mikes. A letter from Ridley's P.A. Systems is typical of the general response of the P.A. industry. It says: "Your Velocity is the finest type of microphone I have ever used. . . . Please duplicate my order."

You, too, will duplicate orders . . . improve installations . . . and enjoy better quality at a competitive price by using Amperite Velocity Microphones. There's a model for every type of installation.

CONSULT YOUR JOBBER NOW!

LEADING MODELS

MODELS RBHn (High Impedance); RBMn (200 ohms); with Cable Connector and Switch.
\$42.00 LIST

MODELS RBSn, RSHn, streamline design, slightly lower output than above, with switch only.
\$32.00 LIST

With Cable Connector
\$34.00 LIST

FINISHES: All microphones have the new standard gunmetal finish, Chrome or Egg Shell,
Extra \$1.00 LIST

Other pastel shades
Extra \$2.00 LIST

NEW! Desk Stand

New and novel! Ideal for desk, pulpit, footlights, banquets. Microphone can be rotated in the horizontal plane, and used in various positions, as desired. LEAF SPRING SUSPENSION ACTS AS AN EXTRA SHOCK ABSORBER. Unusually stable. **STAND ONLY. \$4.00 LIST.** Name plate with maximum of 10 letters. **\$2.00 LIST.**



NEW! "Ham Mike"

No peaks! No splashing! Real broadcast quality. Output, —68 db. RF Cooke Circuit included in microphone. Operates directly into grid of tube. Rugged. Not affected by temperature or pressure changes. **MODEL HAM (high impedance); MODEL HAL (200 ohms) . . .**

\$22.00 LIST

Price includes new special Ham Desk Stand, call letters, and 6 feet of cable.



AMPERITE JUNIOR

A "lapel" Velocity of surpassing quality. Size of a match box. Ideal for lectures and specialty acts. Can be hidden under coat. Output constant with any position of the head. Transformer included in microphone case. **MODEL 7J (200 ohms) or MODEL 7J H (2000 ohms) \$30.00 LIST**



FREE

WINDOW DECAL advertising your Sound Service. Size 5 1/2 x 3 1/4, finished in 4 striking colors.
WINDOW DISPLAY. 11 x 17, and
New illustrated bulletins. Write for these valuable sales helps today.

A POPULAR AMPERITE VELOCITY \$22.00 LIST

A Velocity Microphone of very high excellence. Built to Amperite standards. Used for both speech and music with great success. No peaks. Flat response over audible range. Output, —68 db; Triple shielded. Fitted with shock absorber and swivel bracket. **Model RAL (200 ohms) with 8 ft. of cable; Model RAH (2000 ohms) high impedance, with 12 ft. of cable.**



AMPERITE © 561 BROADWAY, N. Y. U.S.A.

Cable Address: Alkem, New York

VELOCITY

AMPERITE

MICROPHONES



BIGGER SOUND PROFITS

ANOTHER FIRST

SELECTIVE PAGING SYSTEM WITH TALK-BACK FEATURES



MODEL PC-7-R

- 7 Watts of Power
- Talk to any Station
- Talk back from remote position through speaker

• Again Webster-Chicago blazes the trail of Sound Progress, opening a vast new market for the Sound Dealer. Previously a paging or call system consisted of an amplifier, microphone, and the required number of speaker stations. Now for smaller factories, hotels, auto stations, departmental installation in larger factories . . . a new low priced design having in addition a selective switch so that the operator can talk to any one station only, or can throw the switch so as to talk to all stations. Transmitter shown will handle up to 5 stations.

COMPARE THIS 20-WATTER

Model PA-20-A



A complete 20 watt, two speaker system having a twin sound cell crystal microphone and a full length floor stand; all stowed in two easily handled portable cases. A sound system of wide appeal; very economically priced.

~With the very latest in Sound Equipment... Built to give Satisfaction... Priced to SELL.

WEBSTER-CHICAGO, the fastest selling sound line.

Everything in Sound. Amplifiers, speakers, microphone P.A. Systems of all sizes, fixed and portable, interoffice systems, School Systems, Factory Systems, Hotel installations, Marine installations, etc.

Designed by Specialists. Webster-Chicago have been popular priced leaders in the Sound Field for more than 12 years. All engineering personnel have had long experience with actual Field problems.

Technical Help and Information. Special service is rendered to the trade on sound problems. Dealers with Webster-Chicago can approach any size installation with confidence.

Extensive and sustained advertising to Consumers. All inquiries are referred back to the dealer. Hundreds of sales each month result from these direct leads furnished to dealers.

Dealer Helps that definitely open doors. Folders, displays, signs; special letters, etc., make it easy for the dealer to go after business.

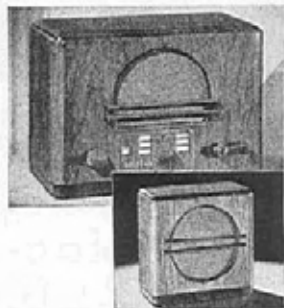
See Your Jobber—Write for Catalog

WEBSTER-CHICAGO

WEBSTER-CHICAGO,
5622 Bloomingdale Ave., Chicago, Ill.
Without obligation please send me complete catalog.

Investigate
"Sound"
OPPORTUNITIES

I am particularly interested in.....
.....
Name
Street
City State



A New Model Teletalk

Webster Electric announces a new low priced Teletalk! This model consists of a master unit that is selective and up to five speaker stations. The cabinets are solid walnut with a hand-rubbed finish. Master unit, \$39.50; Speaker units, \$9.50. Send for new book.



There's a New Pick-Up Coming

Webster Electric announces a new electric phonograph Pick-up that will be unlike any other ever developed. New in design. New in principle. New in performance characteristics. Write for information as to how you can profit by the increasing replacement demand.

IF EVERY EAR KNEW *Perfect*
Tone Pitch YOU WOULD SELL
ONLY WEBSTER ELECTRIC

• When you sell sound you sell an intangible thing. Few people can recognize true tone pitch. Therefore, it is highly important that you choose only the finest sound equipment—the World's finest—Webster Electric.

Webster Electric Sound Equipment was voted the best at the last Radio Parts Show. It is the result of skilled engineering. It is checked and tested by men who know. Its exterior design is the product of an outstanding industrial designer. Its component parts assure flawless performance and a wide margin of safety.

Many of the better distributors are now stocking this fine Sound Equipment. You can get it quickly—with little investment.

WEBSTER ELECTRIC COMPANY • RACINE, WISCONSIN, U. S. A.
Established 1909

Export Department—100 Varick Street, New York City Cable Address "ARLAB" New York

FROM 5 TO 50 WATTS

In addition to this range of sizes, the line also includes a 4-Position Mixer, a new Mobile Unit and all the usual accessories. The line is streamlined and finished in three tones—red, silver and black.

Webster Electric Sound Systems are licensed by agreement with Electric Research Products, Inc., under patents owned by Western Electric Company, Inc., and American Telephone and Telegraph Company, Inc.



Webster Electric

PORTABLE AND SEMI-PORTABLE SOUND SYSTEMS • ELECTRONIC INTER-COMMUNICATING SYSTEMS • ELECTRIC PHONOGRAPH PICK-UPS • TRANSFORMERS AND FUEL UNITS FOR OIL BURNERS

Staff—

DARRELL BARTER
FOWLER DURST
M. H. NEWTON
B. V. SPINETTA
VINTON K. ULRICH

LEE ROBINSON
Sales Manager

Selling Sound

SECTION

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RADIO TODAY FOR SEPTEMBER, 1937. IN TWO PARTS, PART TWO

WHEREVER PEOPLE GATHER

★ "If I were a dealer, a service-man, or a sound specialist, this is what I would do at the outset of selling sound," says Electro-Acoustic's L. M. Sandwick, who used to sell at retail himself. "I would say to myself 'Here is a product I can sell wherever a group of people gathers. Now, how many gathering places are there in my natural territory?'"

"Then I would systematically list the food stores, garages, parking lots, churches, schools, material yards, ball rooms, theatres, industrial plants, taverns, hotels, lodge halls, and warehouses within easy access of my place of business.

"The number of prospects will be astonishing. In fact, it will be necessary in most cases for the city dealer to pick particular types of prospects on which to concentrate at the outset. For profitable sales in the next twelve months, my personal choice would be industrial plants, stores and markets, churches!"

SPONSORED SOUND FOR FOOTBALL GAMES

★ Have you ever tried to put on a PA show for your local football games—only to find that the top price obtainable wouldn't begin to cover the costs?

Well, here's how one sound company has made good returns over a period of years, not only for portable work, but for semi-portable and permanent installations as well. This sound specialist gets an advertising "sponsor" to pay the costs, and gives this sponsor verbal advertising between quarters.

"Dress the whole job up," says he. "Get a good sports announcer—furnish the music from records. And maybe you can throw in a small field system for the cheer leaders and game officials to use.

"Do it right—put on a good show and you won't have much trouble finding sponsors who will pay you a fair price for your work.

"But don't stop with portables," adds this sound man, "this same idea has been expanded by us in many other directions, even to instances where wealthy members donate installations for churches and schools."

REVAMPING OLD "SOUND" JOBS

★ Plenty of old sound systems can stand revamping these days. And now that there are good permanent-magnet loudspeakers on the market, one of the quickest means of demonstrating the sound man's ability to a customer is to take one of these new speaker units for test at some school job where the old magnetic-type cones are still in use.

Substitute the new unit in some classroom where one can step across the hall and compare it with an old type speaker. Or rig it up with the replaced unit for a comparison test.

Most of these new speakers can be obtained with adjustable transformers so that the impedance relations need not be disturbed. It is quite convincing, too, to find that the new type speakers are more efficient than the old ones. In a lot of cases they will fit into the same boxes the old one did. Sometimes in the case of a

school it will help to keep the costs down, if the sound man suggests that the woodworking classes make new face plates for the speaker cabinets where they are necessary.

REAL OPPORTUNITIES

★ "The editors of *Selling Sound* are to be congratulated on the comprehensive effort they are making for the sound industry," comments John Erwood, vice-president of Webster-Chicago.

"The very nature of sound makes each installation to some extent individual. Thus the aggressive dealer and high-class technician—those radio men who are interested in engineering as well as sales—are finding the sound field a business of real opportunities.

"That a publication like *Selling Sound* has come into the field to give up-to-date knowledge on the industry and to help solve the difficulties of merchandising a specialized product, is bound to be a great aid and a wonderful incentive."

UNDERTAKERS USE 'PHONES FOR HOME SERVICES

★ Undertakers have proven to be unexpected prospects for intercommunicator systems.

When funeral services are held in a private home, the members of the immediate family usually prefer not to come downstairs to the ceremonies, but to remain secluded in their own rooms while the services are going on. With a set of intercommunicators, explains S. R. Hurt, of the American Carrier-Call Corporation, one unit can be plugged in downstairs and turned on as a microphone, while other units are plugged in in the upstairs bedrooms so that the bereaved family can hear every word of the services without exposing their grief to outsiders present.

Undertakers who have introduced this plan find it a great selling point for their services, as against undertakers not offering interphone privacy.

"ALL ABOARD" WITH SOUND



"Plaster your name on all jobs," says Pioneer, Wichita, Kan., sound specialist.



Wisconsin politics; PA job by Madison Radio Shops.



Night clubs are starting their winter pace, sound-equipped.

THE MARKET FOR MODERN SOUND

Industry's complete list of prospects, with reasons why they will buy

ADVERTISING AGENCIES

can demonstrate the nature of amplified voices
arrange convincing auditions

ADVERTISING TRUCKS

broadcast effective messages
can keep within city ordinances

AIRPORTS

can talk up the safety angle
will handle more passengers

ALARM SYSTEMS

can cut burglar-insurance costs
complete house modernization

AMUSEMENT PARKS

can widen their concession grounds
govern crowds more readily

ARENAS

can increase seating capacity
hike box office receipts

ARMORIES

can communicate house bulletins
improve social relations

ATHLETIC FIELDS

can communicate instructions accurately
hike staff efficiency

AUCTION ROOMS

will save time in bidding
cut the number of complaints

AUDITION STUDIOS

can conduct several hearings at once
contact more artists and sponsors

AUDITORIUMS

can stage more varied events
must correct their acoustics anyway

BAND STANDS

can attract greater audiences
increase popular value of music

BANQUET HALLS

can improve table and dining arrangements
offer faster service

BASEBALL PARKS

can report scores promptly
attract more clubs and fans

BATHING BEACHES

can establish atmosphere of safety
cut life-guard costs

BEER GARDENS

can widen entertainment scope
publicize improved service

BUS TERMINALS

can cut porter costs
reach passengers in all depot rooms

CABARETS

can make appropriate recordings
keep all guests within range

CHAIN STORES

can stage more special sales
increase clerk efficiency

CHURCHES

can do dignified broadcasting
emphasize large social gatherings

CIVIC CENTERS

can improve local business relations
sponsor more varied events

COLLEGES

can issue rapid campus bulletins
improve student-faculty relations

CONVENTIONS

can contact the "last-row" audience
increase power of speaker

COOKING SCHOOLS

can demonstrate more equipment
get more novelty in exhibitions

DANCE HALLS

can distribute music properly
conduct detailed supervision

DINING ROOMS

can speed up service
add appropriate music

EXHIBITIONS

can explain complicated displays
add speaking specialties

ELOCUTION SCHOOLS

can handle more students
use recordings effectively

FACTORIES

can improve labor relations
create pleasant working atmosphere

FAIRS

can increase entertainment area
broadcast ads and announcements

FOOTBALL FIELDS

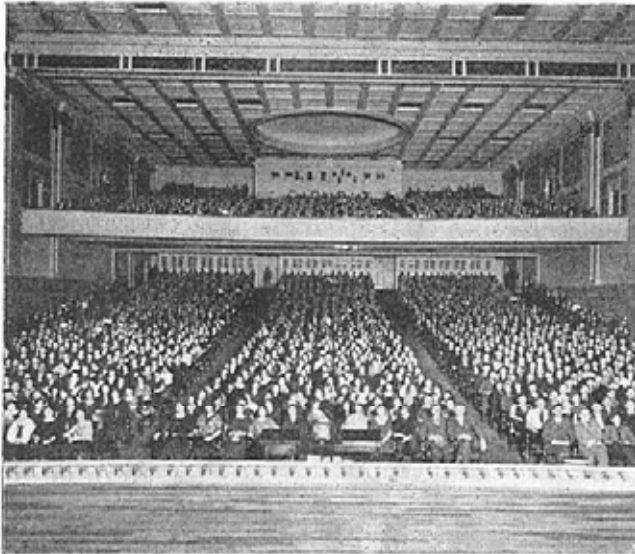
can simplify the coaching job
report what spectators miss

GOLF CLUBS

can stage more tourneys
publicize modern facilities

GYMNASIUMS

can increase general capacity
broadcast instructions at right moment



PA-tailored by Electro-Acoustics, a Dayton, O., auditorium.



St. Mary's church, Cicero, Ill., successfully sound-treated.

HOSPITALS

can circulate important bulletins
save time when split seconds count

HOTELS

can distribute news flashes and music
make a point of house communication

LAWN FETES

can simplify the hostess' job
knit guest groups together

LECTURE ROOMS

can advertise perfect acoustics
increase room drawing power

LODGES

can meet emergencies
distribute more music

MARKETS

can spot necessary price changes
stop thieving

MEMORIAL PARKS

can offer impressive outdoor music

MUSIC SCHOOLS

can stage more and bigger recitals
amplify juvenile voices

NEWSPAPERS

can circulate flash instructions
operate the organization as a unit

ORCHESTRAS

can sponsor new sound effects
depend on light touches being appreciated

PAGING SYSTEMS

can increase coverage and fees
advertise dependability and clarity

PARKS

can organize 100 per cent supervision
accent larger social events

PICNICS

can control wandering crowds
simplify work of entertainment

PLAYGROUNDS

can enforce new safety measures

POLITICAL GATHERINGS

can offer front and last rows equal clarity
making more lasting impressions

PRISONS

can regulate matters of discipline
relieve tension within walls

RACE TRACKS

can connect judges with attendants
offer spectators flash bulletins

RAILROAD STATIONS

can reach all rooms simultaneously
improve general passenger well-being

RAILROAD YARDS

can handle emergency situations
connect dispatchers with operators

RESTAURANTS

can advertise speedy service

SALES MEETINGS

can explain plans to large groups
assist the process of note-taking

SANITARIUMS

can pleasantly connect all wards
arrange quiet distribution of voices

SCHOOLS

can enlarge recreational activity
improve staff operation

SHIPS

can quicken action of crew
proceed with more safety

SOAP BOX DERBIES

can keep spectators informed
instruct all scattered entries

STADIUMS

can widen the scope of events
instruct crowds arriving and leaving

STEAMSHIP PIERS

can organize scattered workmen
distribute docking bulletins

STREET DANCES

can keep standers pacified
offer notes of explanation

STOCK EXCHANGES

can avoid sending messengers through crowds

STOCKYARDS

can reach scattered attendants
assist auctioneers

STORES

can improve staff efficiency
reach all sections quickly
halt shoplifters

SUMMER RESORTS

can announce social and sports schedules
accommodate additional guests

SWIMMING POOLS

can broadcast warnings
advertise complete safety

TALKING SIGNS

can get novel and mysterious effects
advertise more types of goods

THEATRES

can expand entertainment schedules
reduce balcony complaints

UNDERTAKERS

can eliminate noisy messengers
avoid interruptions of privacy

VAUDEVILLE

can experiment with freak effects
play to bigger houses

WEIGHING STATIONS

can save time for patrons

WINDOW DEMONSTRATIONS

can furnish striking "stoppers"
bring models to life

YACHTS AND STEAMSHIPS

can broadcast lifeboat drill instructions
save passengers climbing narrow stairs

THE OUTLOOK FOR SOUND SALES

Manufacturers' optimistic views on 1937-38 prospects
Counsel distributors and dealers on going after business

★ TO GIVE readers of "Selling Sound" a general picture of the present situation, the editors sent invitations to a number of sound-industry leaders, asking their views regarding the most important problems in the sound-equipment field.

What, we asked is the general outlook for the development of sales in the sound-equipment field for the next twelve months? What types of markets can be most profitably developed by dealers, servicemen, and sound specialists? How can the jobber best cooperate with his dealers in stimulating the demand for sound equipment?

Thousands of prospects ready

A combination of good business conditions generally—plus the rapidly growing public acceptance of sound-reinforcing systems as a positive necessity wherever groups gather—makes the sales outlook for the next year extremely bright, declares L. M. Sandwick, sales manager, Electro-Acoustic Products Co., Fort Wayne, Ind.

As a result of the improvement in general business, numerous institutions, such as churches, schools, hotels and stores, are now in position to pro-

ceed with sound installations which they recognize the need for, but which, a year and two years ago, they were unable to finance.

The growth of public acceptance of sound equipment has resulted from three major factors. First, radio. Second, sound pictures. Third, successful sound reinforcing installations. The first two factors, while indirect, have focused public attention on sound reproduction and have created an acceptance by people in general of hearing and enjoying reproductions of speech and music.

The third factor—the successful sound installation itself—is the key to the present intense interest. Beginning with Chicago's "A Century of Progress" in 1933, millions of the public have heard and reacted favorably to sound equipment at the great fairs and expositions throughout the country. Countless others have realized increased enjoyment at sports events in ball parks, race tracks, gymnasiums, stadiums and arenas, through timely announcements or running accounts of the play or action.

How to sell sound

Surprisingly enough—for sound equipment manufacturers almost without exception have failed to capitalize these favorable openings—the public itself has begun to reduce these spectacular installations to everyday requirements.

The time has now come to consider "sound" selling less as an engineering exercise and more as specialty merchandising.

Viewed in this light, there are three easy ways for the dealer to win the confidence of his prospect.

First, by visiting the job during working hours and making an actual survey of the requirements. This shows his interest.

Second, by asking questions regarding the uses and applications which the prospect may have in mind. This goes a long way to convince the prospect that the dealer has a service to render, and that he wants to render it honestly and conscientiously.

Third, by a straightforward presentation which avoids technical discussion as much as possible, makes no extravagant claims for the equipment and leaves the prospect to expect a good, workmanlike job, at a fair price—but not a cutthroat price.

Remember, the dealer in sound equipment—more than in any other business—is advertised by his own good works. The prospect who has been sold by conservative claims and reasonable premises will be the finest possible advertisement for the dealer whose performance exceeds his sales talk.

Bumper crops, bright outlook

We feel that the general outlook for the development of sales in the sound equipment field for the next twelve months is probably the best it has ever been, particularly so in the Middle West and Southwestern states, declares Laurence A. King, sales manager, Operadio Manufacturing Co., St. Charles, Ill. This, of course, is due to the bumper crop of small grains and corn which they will have this fall. Also we feel that more and more people are realizing the necessity of sound—this being particularly true in the industrial field. Therefore, because of these factors, the general outlook for the next twelve months is probably as good if not better than at any previous time.

As to how the jobber can best cooperate with his dealers in stimulating the demand for sound equipment, we feel that this is not primarily a problem of the jobber but one that is a dual responsibility between the jobber and the manufacturer. It is the

At the left is the center of a sound job in Texas, which handles 10,000 spectators strung along 4 city blocks watching a Soap Box Derby. Chap with the goggles is Elliott Wilkinson.



duty of the manufacturer and the jobber, from a selling standpoint, to develop as many leads as they possibly can for dealers and then to pass these leads on to the dealers. In addition to this, of course, the jobber as well as the manufacturer must have the product available for the dealer when he makes a sale so the dealer's customer will be able to obtain his sound material a reasonable length of time after he has ordered it.

By adhering to these two policies, plus the aggressive selling every dealer must do, a nice volume of sales should result for all concerned.

Must know product

In order for a dealer or sound specialist to make a proper estimate and solicit business which will ultimately result in the satisfactory installation, it requires a very thorough knowledge of the product he is selling. Therefore, one of the first duties of the dealer or sound specialist is to become absolutely familiar in every detail with his product. He can do this by consulting his jobber or the factory men. Of course, the average sale, such as of "package merchandise," should then be a very simple problem for him to handle.

In larger installations, he should gather together complete data pertaining to the particular job and then from his own experience make his recommendations and submit these back through the jobber to the manufacturer for their okay and approval.

Quality, reliability essential

One of the fundamental differences that should be understood about P.A. is that it is used for business purposes and not for home use, points out S. Ruttenburg of the Amperite Corporation, New York. Since such sound apparatus is being used for business purposes, its quality and reliability must necessarily be greater. The equipment is expected to stand hard usage and continuous service. Replacement after approximately three years is not objectionable.

It is, therefore, of paramount importance to use equipment that will stand up, hence the sound man can charge a little more because of the service that is usually demanded, and the fact that the number of jobs are at best limited.

Because the jobber himself knew very little about sound and the sound business, the P.A. man received very little cooperation. Most P.A. men carried as large a stock of equipment as his jobber, and often larger. By giving a P.A. man fast service on his requirements as well as a little help on financing jobs, the jobber could put himself in an enviable position and increase his business on sound equipment tremendously.

For the money invested, sound business is much more profitable to a jobber than other small parts businesses. The number of items are few, the unit of sales is large and the possibilities of equipment becoming obsolete are practically negligible.

At the right, entertainers test their "sound" personalities for outdoor presentation to the mob.

It has taken even the larger jobber a long time to "get wise" to the possibilities in sound and, in fact, they are just about "catching on."

Selling "sound re-enforcement"

Sound as we know it today is a new entity. No longer is "public address" or more properly "sound re-enforcement" considered either a novelty or form of ballyhoo. Sound re-enforcement and acoustical treatment are man's method of controlling his most important means of inter-relationship, comments A. Pletzman, president, Wholesale Radio Service Co., Inc.

Ten years ago public-address amplifiers were considered as merely "chopped off" portions of radio receivers. The idea of having a person speak to a gathering through the medium of a microphone and amplifier was considered more a novelty than a necessity. Sound equipment was then being bought as a luxury item for the purpose of either imitating radio broadcasting or providing very loud phonograph music.

But now we find sound re-enforcement a part of the modern technique of music. Mr. Average Man realizes that radio has brought about a new style of orchestration, tone blending and relationship of individual instruments. What were formerly simple accompaniment devices have now been transformed into solo instruments. Sounds formerly lost to the normal ear have now become integral parts of modern rhythm and style. Orchestra leaders, without sound equipment, have found themselves in the embarrassing position of not being able to duplicate their radio programs to "flesh" audiences. Their patrons were overheard remarking, "This orchestra does not sound as well here as on the radio." This condition has resulted in the development of one of the richest sections of the vast sound re-enforcement market. Today every or-

chestra leader, however small, is a sound prospect.

Today sound systems are being sold for use in locations where sound re-enforcement is most certainly not required when considered entirely from the standpoint of loudness. Neither are they being obtained as novelties. These systems are being used to improve the quality of certain portions of the sounds occurring at that point. When selling sound to music groups, quality and special effects should be stressed.

Standardize selling methods

"The modern methods of introducing articles for public use are now found in the sale of sound equipment," states S. A. Loeb, president, Webster Electric Co., Racine, Wis. "Amplification of sound now finds a definite use in our industrial and social life. Better merchandise soundly merchandised, unit packages and standardization of selling methods will result in a tremendous sales volume for all manufacturers."

Henry G. Kobick, also of Webster Electric, Racine, adds that "applications for the use of sound systems have become so universal that the business of their sale finds that its volume is only limited by the outlets offering it to the public. The same principles of sales and application which are found in other commodities are equally as fundamental in the sale of sound.

"Amplification now finds new avenues of selling, new methods of use and foremost of all the educational and recreation features which sound makes available will result in increased sales.

"Industrial and commercial uses for amplification of sound and its use as an aid to reducing operating costs in almost every type of business will," concludes Mr. Kobick, "result in a large sales volume."



DISTRIBUTOR-DEALER PROBLEMS

Candid discussion from those in middle of sound sales

★ TO PRESENT the low-down on the distribution situation in sound equipment, RADIO TODAY's editors asked jobbers and dealers to give us their candid comments on present sales methods and how they can be improved—and what sound offers to distributors and dealers during the next 12 months.

Planning for big future

We feel there is everything to be done in the selling of sound equipment, declares Lew J. Bonn, Lew Bonn Company, distributors, Minneapolis, Minn. By "selling sound equipment" we mean creating a demand or a desire to have. As soon as some conscientious effort is made by distributors to sell sound and sell good equipment, the manufacturers will take more interest in its development. I claim it is principally a selling job.

Sound should be the dealer's and serviceman's business, but many purchasers have found it necessary to go direct in order to get satisfaction, and that has encouraged every manufacturer of sound equipment, especially the small independent company, and also mail order houses from all parts of the country, to "quote direct." This evil should be overcome, and this we have been trying to accomplish, but we find invariably we lose a sale because of direct quotations by some Eastern mail order house.

Every institution of any size is a potential prospect for some sort of sound, from the large amplifier down to interoffice communication. As it requires quite an investment, naturally the buyer wants to know what he is getting, and it is a semi-engineering and salesman's job to produce this

business. Even the small amplifiers sold to orchestra leaders, night clubs, and so-called "beer parlors," require sales talent and technical knowledge.

We are setting ourselves up for the future of sound business and believe it is going to be large. Practically every hotel is inadequately equipped, and lots of money is paid every month for telephone interoffice communication, which can be much more economically administered through intercommunicating mediums.

Greatest opportunity in sound

I think there is more opportunity for increased sales in the sound-equipment field for the next twelve months than any other field, writes Robert Henry, radio distributor, Butler, Mo.

The market that has the greatest possibility for development is the market among those prospects which are best financially able to buy new equipment of any sort that they are convinced will be of use to them. All you have to do to make profitable sales is to show them how they can use sound-equipment. Sound-equipment sales should be handled by a department that devotes the greater part of its time to this work and whose members can become specialists in sound-equipment.

Jobber cooperation vital

My frank but humble opinion is that selling sound along the lines sold in the past has none too bright a future. But this practice of manufacturers selling anyone and everyone that comes along will now yield benefits to the jobber who gets out and makes personal contacts, for the public is

loaded down with obsolete and discredited sound equipment. Therefore, they are in the market for reputable equipment, backed by companies financially and ethically sound and having an intelligent sales policy, concludes W. H. Edwards, wholesale radio supplier, Providence, R. I.

The market is business houses, advertising firms, amusement places and specialty sound men. Schools, state and public buildings will also have to be sold. But again, only good equipment, backed by intelligent salesmanship, will have a chance.

Cooperation of the jobber with the retail dealer is absolutely essential. Three hundred dealers out selling sound are better than one expensive jobber salesman. Also cooperation creates good-will for the jobber for his other lines. This part of the program is up to the jobber. His personal contacts with the dealer must be utilized to the fullest in explaining the "sound" business and the methods of selling, also the different types of installations. But, as for selling the public buildings, the jobber must do that himself. The primary reason for this is that public officials insist upon discounts.

Make "sound conscious"

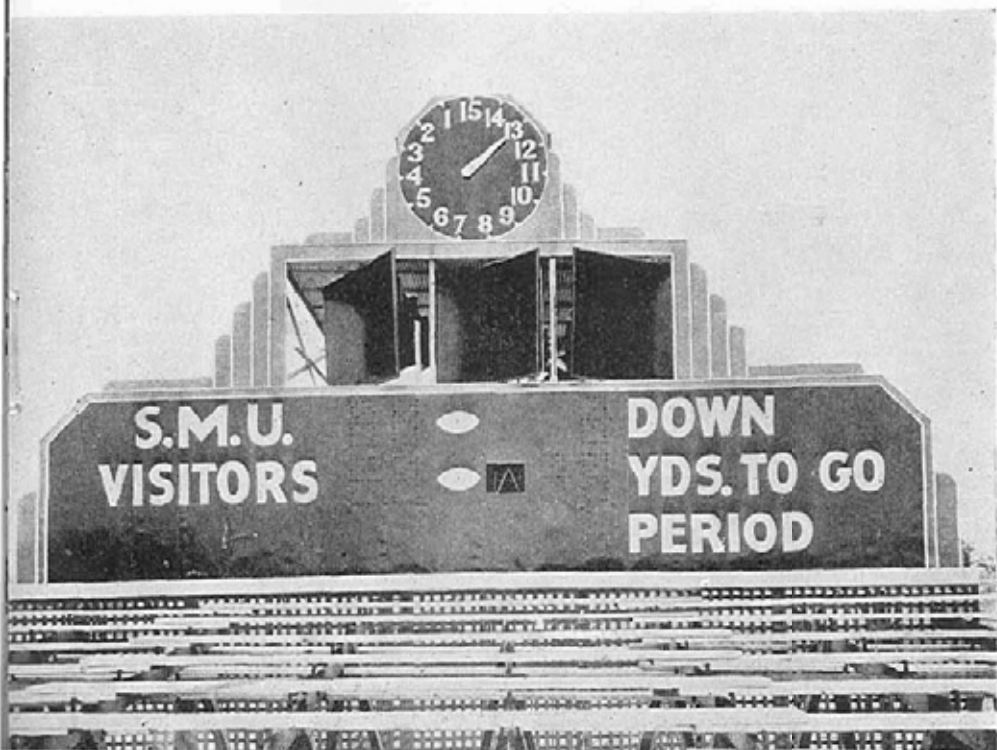
The immediate outlook for sales is slow unless manufacturers do enough advertising to make America "sound conscious," thinks E. L. Grimm, of Radio Television Co., Washington, D. C. Some people think an amplifier is a converted radio set, some other people think it falls in the price range of the cheapest radio sets.

The dealer and serviceman seem in the best position for supplying and installing inter-communication systems for business and homes, but haven't the necessary training for engineering the problems of high-powered amplifiers, which should be covered by sound specialists.

The jobber stays in the background as a supply depot for the dealer. It is up to the manufacturer to stimulate the demand for sound equipment through advertising to reach all types of consumers.

In soliciting new business and giving estimates the most important thing is to break down any wrong impressions the customer has regarding sound systems. And, above all, to keep "Sound" out of the classification that surrounds cheap radio sets and cheap radio service—also the peculiar idea of the customer that a sound system can be tailored to fit and installed in a few minutes. It would be best to

At the left, sound equipment becomes an important part of the scoreboard on the football field at Southern Methodist University, Dallas, Tex.



SELLING SOUND

lose the job rather than have to skimp on it in any way—therefore, you would have to charge them for what they get and give them what they pay for.

One should also advise all dealers not to try to take a \$20-per-week radio man and call him a "sound engineer." To do so will mean customer dissatisfaction and a black eye for sound in general, unless the sound outfit is of the simplest low-powered type.

Too much inexperience

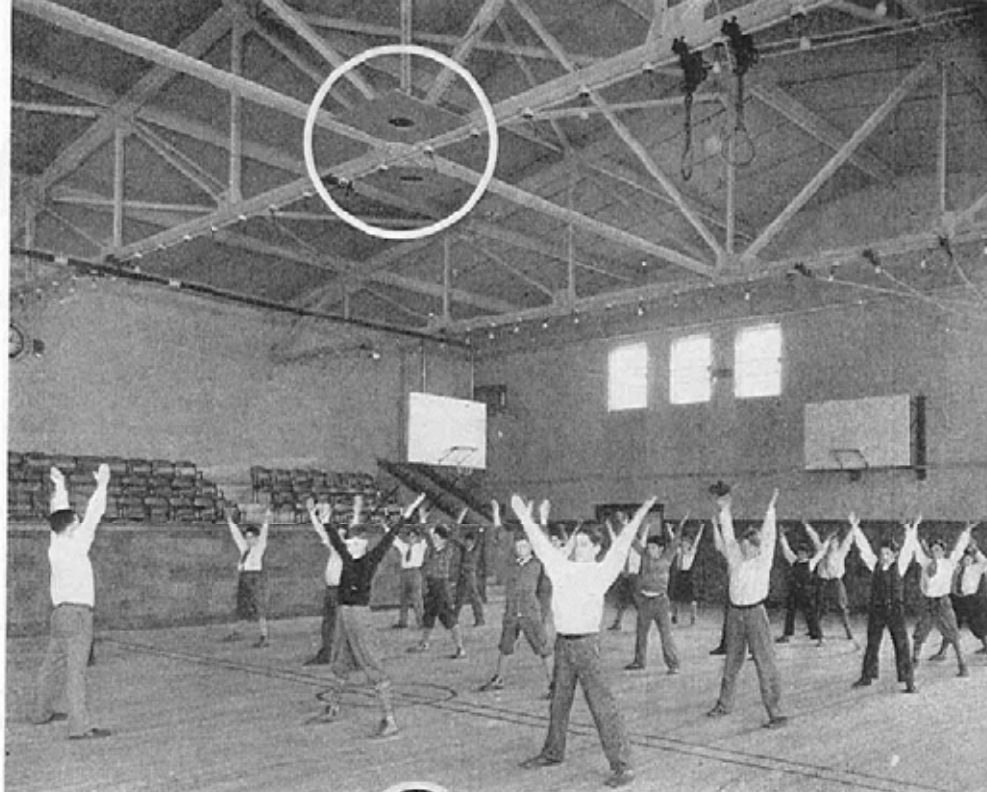
I find that in the amplifier field there have been too many inexperienced people. First, there are too many manufacturers who do not make quality amplifiers, and who do not use the proper microphones and speakers because the amplifier is a price proposition, comments Perry S. Graffam, treasurer, Stern Wholesale Parts, Hartford, Conn. However, for all those who are not qualified to manufacture sound equipment, there are plenty of responsible manufacturers who are qualified. But, as the old saying goes, you only get what you pay for; naturally, the prices of the better systems are higher, and the equipment is consequently harder to sell to the average buyer.

Now, as far as the jobber is concerned, most any jobber with a sound sales engineer would be qualified to sell amplifiers. But the biggest problem is the buyer. There are several types of buyers. First, there are those who know nothing of what they are buying; they are part-time musicians who also work, we will say, during the day for the city water department, perhaps as a machinist in a typewriter factory, or maybe as a barber. They get together small orchestras and look for work in small taverns, restaurants or clubs for a night or two a week. Most restaurants require that the orchestra furnish its own sound equipment. So consequently the orchestra leader goes out shopping and buys something low priced that looks as if it would qualify him for the job. Usually the sound systems are not very good, and the orchestra may not be much better, so they don't hold the job very long.

Sound technician

Every good sized city should support at least one high-class sound technician, continues Mr. Graffam. These men usually get good prices for their time and equipment. They can take care of any type installation, such as places remote from a.c. lines, motorcycle races, carnivals, and so forth. My idea is to work through such people, letting them make the sales and allowing them to make the profit between the wholesale and retail prices. They are also in a position to go out and find out what the customer requires, and to make proper recommendations. When the sale is completed, the sound engineer should make the installation. There are so many tricks to a proper installation that even the best equipment will not perform properly unless correctly installed.

Such a sound technician can make a substantial living. A truck properly equipped to handle a.c. or battery-operated equipment, and capable of



Above, PA invades the physical education field. A Gym class at Oyster Bay, N. Y., High School gets its directions from a ceiling speaker.

taking care of a ball park, should net the owner not less than fifty dollars per day of operation. For contract jobs, such as two evenings a week at the motorcycle races, equipment permanently installed should net the owner about ten dollars per evening for only a few hours' work. I have one such operator who told me last year his gross income was \$2,250.00 from this equipment—most of which was for rental.

Jobber bills customer

I believe the best market for the serviceman in the coming year will be inter-communication equipment. In this field the market is practically unlimited, explains G. W. Hudson, Hudson Radio Supply Co., Richmond, Va.

In most cases the serviceman's capital is limited and he is unable to finance a sound installation. I have found it the best policy for the distributor to make the installation and bill direct to the customer. The serviceman is then given the difference in the list price and his net price on the equipment. The serviceman is responsible for all service within the 90-day guarantee. In case the customer wishes to have the installation financed over a period of time we have found it best for the distributor to handle the financing. If the distributor can handle the time-payment it will work out much better than the various propositions offered by the manufacturers. The distributor is better able to get credit information in his section than either the serviceman or the manufacturer.

In soliciting new business it is always best, if possible, for the salesman to find out what type of equipment the customer can use. If the salesman goes to the customer with a definite proposition rather than "can you use an amplifier set or do you need communication in your plant?" he stands a much better chance of making the sale. If there is any doubt in the mind of the salesman as

to the price of equipment he should take the matter to the distributor. The sound distributor should have at least one man on his staff who is thoroughly capable of furnishing information on all types of equipment as well as estimates.

In closing, I would like to say that the sound field opens a market to the dealer and serviceman which in the next few years should prove as profitable as the set market was in the past.

Practical advice

Inasmuch as we have enjoyed an average gross on sound business of \$1,400 per month in a city of 80,000 population, I believe that we may be able to offer some sound suggestions which may be helpful to others, answers George Sharpnack, manager, Program Service Co., Lincoln, Neb.

1. Direct contact by a good man or sales force is the best way, by far, to get the rental and sales business.

2. Advertising in local papers is usually a failure because you do not strike when sound is needed.

3. If you must advertise—use the "gift" method. Paper weights with your ad on them, a miniature microphone or some such article will stay on the desk of your "potential" customer.

4. Free sound jobs to churches, Boy Scouts or other such groups cause more trouble than good. A better way is to offer your regular set-up at half the usual price—and then stick to it.

5. Most of your sales result from well planned demonstrations of new or latest type equipment. As an example, to show a prospect how much better a new velocity microphone will operate will very frequently result in a sale of complete new equipment.

(To page 31)

FOOT-WORK IN SELLING 'PHONES

Ways to tap today's big market in intercommunicating systems

* GENTLEMEN carrying small traveling cases are all over town.

They're plying briskly between the radio store and its hundreds of prospects for intercommunicating systems. The luggage contains one master station and one remote speaker—or pairs of intercommunicators—all polished and neatly packed. In the side pocket of the bag is a complete supply of circulars, instruction books, price lists, etc.

Salesmen know that office bosses are beginning to get back from vacations. On the salesman's side also is the fact that the public is now better educated to the conveniences of modern inter-phones. Effects of the first promotions of the equipment are now being felt—business executives are definitely 'phone conscious. Time-payment plans have been adjusted.

Offers to demonstrate

Some of the shoe leather is being spent as a result of letters written by dealers to a selected list of prospects. These were personal in nature, and were essentially offers to demonstrate the intercommunicators. Only very brief attempts were made in the mailing pieces to outline the features of the merchandise—the point was

chiefly a friendly request for a chance to show the phones and let them sell themselves.

In other cases the outside selling is being done "cold." Then's when the salesmen must pick up some knowledge of the profession in which he circulates, with a view of filling, with his inter-room gadgets, the particular needs involved in that branch of business.

For instance, if he calls at a publishing office, it will help him to know how and in what way the editorial department needs to communicate with the advertising department.

Selling modern business

(It has been found that offices or organizations which are involved in the production or distribution of electrical products, are particularly easy to approach. Executives in such places are naturally interested in the operation of the inter-phones, and will allow themselves to be shown the instruments for that reason at first.)

Retailers of this equipment have the "be modern" angle on their side. If the prospect is advised that modern business certainly includes the use of the intercommunicators, he will begin to think that his competi-

tors are using the equipment to advantage.

Executive persons are just as unwilling to be outclassed by neighbors or competitors as anyone else. This is presented not as a sweeping sales argument, but as an important undercurrent.

Sales demonstrators can be fairly sure that female office workers are generally more anxious to save steps than the men in the office. So it turns out that one of the tricks is to sell the receptionist first. She can't do the actual buying, but she can have a whale of an influence on it.

If tactfully demonstrated to while the salesman is waiting to see her boss, the receptionist will be pleased to discover that she is important, and will be in the mood and in position to cooperate if the demonstration occurs between her desk and that of her boss.

Busy spots

Since interphones are sold to deliver instant communication, a salesman with confidence in his instrument will offer to demonstrate in the "rush-spots" of an organization. It seems the best way to show instantly how the phones will hike efficiency and save money for the outfit.

Obviously a salesman cannot do this in a few minutes; he should be willing to spend considerable time to allow the equipment to prove its value. Unless company executives exhibit some special interest in watching the demonstrator being set up, the salesman may excuse himself during the process. This is done out of respect for the prospect's time.

If the demonstration does occur in a rush spot, salesmen must take care to keep themselves and their gadgets out of the way until the inter-phone goes into action.

Training angle

Naturally, prospects will wonder whether it will be difficult to train employees to operate the intercommunicating units. Some of them may feel that their office workers, particularly the women, will be mystified when confronted by a series of switches and levers.



Webster Racine's 2-way, no-switch, loud-speaking intercommunicator.

The "education to operate" becomes simple when the salesman picks out the brighter persons to teach, when possible, and operates the 'phones himself several times under their very noses. The trade itself knows that modern equipment is simple and fool-proof, but from the viewpoint of the consumer who finds his organization routine changed, operation of the equipment may seem at first confusing.

The more tricky aspects of using the 'phones are left until the essentials are mastered. In some cases a file clerk can report the contents of a file into an interphone located half-way across a room, when time is valuable. A novice might bungle this stunt until he has had some experience with how the voice is carried.

Argument for secrecy

Some organizations will get the idea that the minute they install a sensitive intercommunicating system, that the private affairs of a single executive will become a public broadcast. Actually, there is no necessity for private and confidential matters to be aired around the premises, when the inter-phones are used.

Some of the newest intercommunicators are built so that an earphone may be used for listening to reports which the listener's companions shouldn't know about. Other systems may be adapted for the same kind of situation, if in no other way than by placing the instruments at strategic positions.



Here's a demonstration of Central-Call equipment to an interested office prospect.

In organizations where calling or paging systems are needed, a multiple station inter-phone system will often fill the need exactly. The only other way to do the trick is to use a central PA speaker which covers a whole room rather than sections. This is often unsatisfactory because the person called can only be paged, since the whole room is listening. To tell him why he is wanted and what to do would be undesirable when large groups are also held at attention.

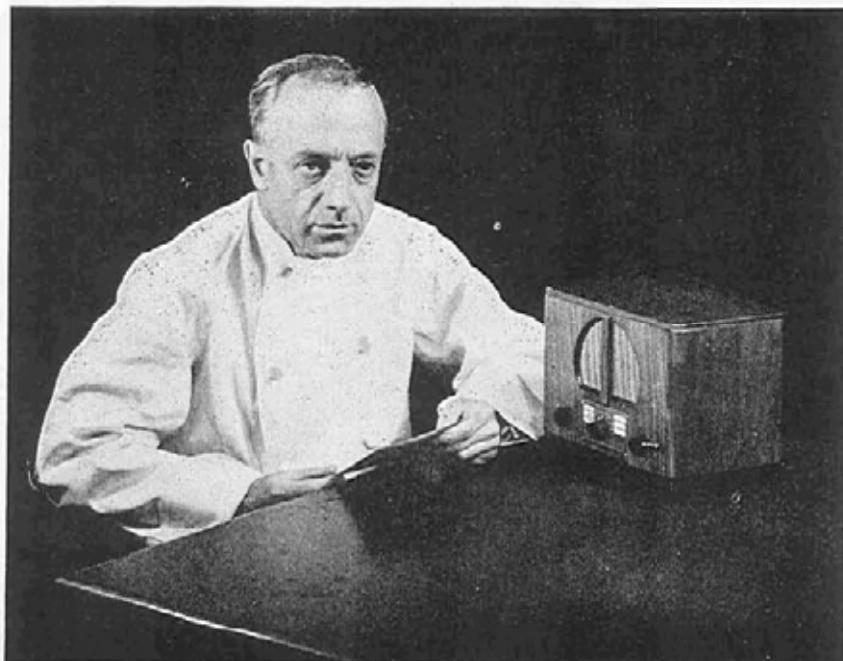
Intercommunicators used as paging systems allow the persons called to be addressed in a semi-private fashion. More details may be communicated without creating a disturbance. This is particularly true in factories, where an interruption of large groups of workers represents a definite loss of time and money.

While the emphasis continues on the outside work in merchandising the equipment, dealers figure out new methods of display and demonstration in the store.

In many stores it is no longer enough to have a demonstrator system which connects the front of the store with the back. One of the greatest appeals is that the gadgets save the effort and the time involved in going up and down stairs. Hence, dealers want to be sure that their model installations in the store run vertically as well as horizontally. They make special arrangements with tenants upstairs if there is no department in the basement.

Some radio stores are hooking themselves up to neighbors on either side, for demonstration purposes. This stunt has more novelty appeal than anything else, as it in no way demonstrates the intra-organization need for inter-phones.

An effective method of display is the use of two small desks in windows—one on each side of the entrance if the store front is arranged in that way. On one desk is displayed a master unit; on the other a remote speaker.



Dentists are among the hundreds of prospects for General Electric's Handy-Phone.

RADIO-MUSICAL INSTRUMENTS

New artistic possibilities achieved by tube outfits

★ "MUSIC is an art, indeed a fine art, a *very* fine art.

"But music is not *all* art. Behind every art lies a vast accumulation of scientific knowledge and experience, and considerable in the way even of engineering practice.

"But when we compare music with the other arts, and particularly with other fields of human endeavor, we find *tradition* enthroned, instead of *progress!*" declares B. F. Miessner, radio and musical inventor of Millburn, N. J., before the recent New York Convention of Music Merchants.

Age of progress

"The graphic arts have evolved photography and moving pictures, even in color—and television. The drama has availed itself of every conceivable device to intensify the arts of make-believe. Communication has made tremendously great strides by telegraph, telephone and radio. Transportation, likewise, has tremendously accelerated the pace of human movement, with steamships, railroads, automobiles and airplanes. Illumination today is very far ahead of the oil lamp of the dark ages. Agriculture

and industry leave no stone unturned to press improved machinery into service.

"But what of music? In this age of progress in every conceivable field, music and musicians still use the traditional instruments and apparatus of hundreds of years ago.

Aborigine music

"One musician scrapes the tail of a horse across the intestines of a cat—and the older his instrument is, the more he prizes it. Another blows lividly through a brass tube or a wooden pipe. Another hammers on the drum of the aborigines made from the hide of a cow. Another, sometimes with terrific physical exertion, pounds on a keyboard to rouse his audience through the physical vibrations of struck strings and huge soundboards. Another with aggregations exceeding 10,000 pipes—some as long and large as a forest log—and with hundreds of other complicated and bulky appurtenances, produces the sounds of the organ.

"That most of these have reached the limit of their development is amply supported by their almost fixed

design for hundreds of years. The principles upon which they are based have been carried through all these years of development, to the end of their capabilities.

"Electrical methods have revolutionized many other industries, and the music-instrument industry is next!

Guitars and ukuleles

"Electrically amplified fretted instruments, particularly guitars and ukuleles, are rapidly supplanting the old types. Bowed string instruments are also coming on the market with the same effect. In carillons, huge bells are now being supplanted by tiny ones, electrically amplified. New solo instruments, fingered like a violin, but requiring no bowing, and with a wide tonal range, electrically generated, are being developed. The latest addition to the electrical instruments are the electronic pianos. Music of rare new beauty is being produced. Tools of marvelous facility and power are given the composer and artist.

Change tone colors

"Pianos in the last few years have trended towards smaller, cuter and cheaper types. But tone has steadily been sacrificed more and more. Now with the new electronic-amplified pianos we have not only recaptured the lost tone, but we have, even in these smallest instruments, exceeded the performance of the largest grands, and at a far lower cost.

"These pianos are not nearly so complicated electrically as modern radio receivers, and they are well within the service knowledge and facilities of the average radio servicemen.

"The advantage in using electrical amplification instead of mechanical principles for tone production lies not alone in the ability to produce bigger, louder, or more sustained tones—although these are important.

"But the ability to change these tones in color, in power and in other ways, gives to the artist a control over his instrument never before experienced and thus greatly extends and enriches his performance."

"At the same time for present radio men, this new expansion of the radio-tube art opens up a new volume of sales and maintenance business. If the standard music store is to hold its place in this new advance of musical instruments, it will have to take on qualified radio men or join forces with now established radio-service organizations, familiar with the radio and 'sound' arts."



Lew Green and Ferde Grofe, well known orchestra leaders, follow the trend to electrically amplified music. Here, it's Epiphone's new electric guitar.

ELECTRO-ACOUSTIC SOUND SYSTEMS

Every Job Sells Another One!

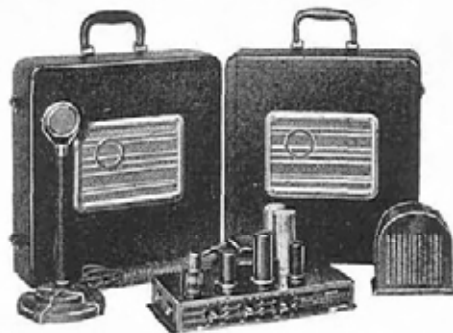


You have a right to expect perfect performance in the sound equipment you sell. Electro-Acoustic Systems give it to you because they're carefully engineered and built of the highest quality materials in the finest plant in the industry. They're built by people who "know how"—backed by twenty-six years of experience and leadership in this field.

That's why the "Electro-Acoustic" label is your customer's guarantee of a perfect installation.

NO SATURATION IN THIS MARKET HERE'S HALF A MILLION PROSPECTS

290,000 STORES AND MARKETS • 80,000 LARGE INDUSTRIES • 50,000 CHURCHES • 33,000 COAL AND MATERIAL YARDS • 25,000 HIGH SCHOOLS • 22,000 THEATRES AND HOTELS—are going to be busy this winter. They're going to need Electro-Acoustic Sound Equipment—the modern necessity wherever people must hear. They have the money to pay for it



THE LINE IS COMPLETE

Electro-Acoustic is the line with which you can get your share of this mighty untouched market.

It's the line with systems, amplifiers, power stages, microphones, baffles and all accessories for every permanent and portable installation requirement.

It's the line that features advanced design—matchless flexibility—modern appearance—perfect performance.

Complete systems from \$53.00 up, with adequate discounts to qualified distributors and dealers.

ELECTRO-ACOUSTIC SYSTEMS ARE FULLY LICENSED

MAGNAVOX SPEAKERS



An outstanding new line of Magnavox Speakers for every application of sound distribution. The latest in radio replacement models too. All types and sizes—electro-dynamics and permanent magnet dynamics—5" to 15"—distinctively labeled and packaged. Built to satisfy every requirement of high fidelity voice and music reproduction.

MAIL THIS COUPON

ELECTRO-ACOUSTIC PRODUCTS COMPANY
Dept. 55, Fort Wayne, Indiana

Please send me catalog on Electro-Acoustic Sound Systems and the name of my nearest distributor. I am also interested in receiving complete information on
 Electro-Acoustic Portable Systems. Electro-Acoustic Amplifiers.
 Magnavox "EA Special" Speakers.

Name

Address

City State

ELECTRO-ACOUSTIC
SUBSIDIARY OF THE MAGNAVOX COMPANY

PRODUCTS COMPANY
FORT WAYNE, INDIANA

STEREOPHONIC SOUND

— "Acoustic perspective" with distant actors, at Dallas Fair

— C. C. Langevin devises new methods to sell novel sound effects

★ WHEN the San Diego fair was opened, three years ago, Carl C. Langevin sold the Associated Oil Company the idea of *sponsoring* public-address and radio-pickup facilities for the fair. He put in a wide-range system for outdoors reproduction. It was the hit of the exposition. It soothed the nerves of foot-sore spectators. Only wide-range vertical-cut records were used for reproduced music. People went away talking about the quality of the music which covered every square foot of the exposition grounds.

Cavalcade of Texas

In addition to the public-address equipment Langevin installed remote radio pick-ups all over the grounds. The fair ran a second year, and a delegation of Texans came to hear and see the sound equipment. They were planning an exposition of their own at Dallas.

Naturally Langevin got this business, too. This time he persuaded the Gulf Oil Corporation to sponsor the public-address facilities. In addition he made the installation of sound at the feature attraction, "The Cavalcade of Texas."

"There was a show, the like of which no one had ever seen before," comments Walt Whitmore of the Western Electric Company. Hundreds of actors re-enacted memorable

events in Texas history on a great outdoor setting 300 feet wide. Capacity crowds of 3,000 persons witnessed almost every performance, and everyone heard each word of dialogue in the mighty pageant. Few realized that the actors did not speak their lines, so cleverly had the dialogue, spoken into microphones by unseen performers, been cued to the action and pantomime of the actors on the set. The recorded music used as background and dramatic embellishment to the action of the pageant was a thing of beauty not soon forgot. It was the sound reproduction which made the pageant. For the first time on a large scale, dialogue spoken offstage had been cued to the action of actors on stage. Truly it was a sensation.

Remote actors

This year, 1937, "The Cavalcade of Texas" has grown into "The Cavalcade of the Americas," and sound equipment installed by Langevin is again the sensation of the show. Langevin has again introduced a new feature in sound reproduction. It is the first time that "stereophonic sound" has ever been used for a show of this kind. Again as last year unseen performers speak the lines for the actors on the set, but unlike last year's performance, the voices produce a perfect illusion in that they

seem to be coming from the lips of the actors no matter where they may be on the giant stage. It is a realism never before achieved.

In one scene, a member of the cast walks from one end of the set to the other, and his voice follows him with complete illusion of coming from his lips, although his lines are being spoken by another person into a microphone in a soundproof booth 300 feet distant.

Loud enough

Langevin's success is based on one thing—his insistence upon quality of reproduction. By quality, he means three things: The sound coming out of the loudspeaker must be an exact copy of that going into the microphone; the volume must not be too great, but loud enough for every listener to hear, without straining, each word or sound clearly and distinctly above all extraneous noise and third the illusion that the reproduced sound is coming from its original source must be perfect. These are requirements difficult and costly to meet.

"Failure to meet these requirements is the reason why so many men fail in public-address business," says Langevin. "Others are too afraid of their competitors. They haven't the courage to charge enough to make a legitimate profit, for fear a competitor will underbid them. We never think about competitors. We charge what we know the job is worth to do it right, and trust to our ability to sell them on the idea that they must have a quality system.

"In all our experience we have never sacrificed quality to meet a price. The best is none too good."



These actors in their sound-proof booth, supply all voices heard from the 300-ft. stage, through the mixing panels above.

CARRIER-CALL

WIRELESS-PORTABLE

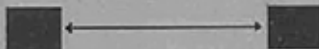
T. M. REG. APP. U. S. PAT. OFF.

The SYSTEM
that made a new
INDUSTRY!

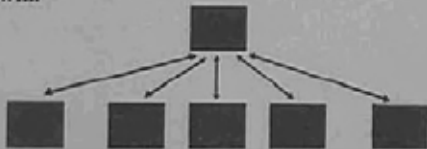


The new Carrier-Call-Radio, consisting of a radio receiver and Carrier-Call inter-communicating station, combined in one unit.

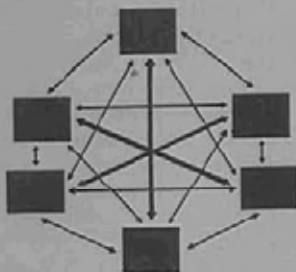
CARRIER-CALL STANDARD SYSTEMS



Carrier-Call Two-Way System. The original wireless system. Simplest type of equipment. Instant two-way conversation between any two points on the house or office wiring system. Merely plug in and operate. Portable. Movable at will.



MONITORS AND CUBS—Wireless system of master station and five outlying stations. Private two-way conversation from master to any outlying station and vice versa but not between outlying stations themselves.



MULTIPLE-SELECTIVE SYSTEM—Composed of six master stations permitting secret two-way conversation between any two stations and simultaneous conversation between any three pairs of stations. Heavy lines show typical simultaneous conversation between three pairs of stations. Light lines show other possible conversations.

If a desired station is busy, signal is given by Carrier-Eye on each unit. Wireless. Movable anywhere at a moment's notice. For privacy, can be equipped with earphone.

Again leads the way with a startling new feature in inter-communicating equipment

CARRIER-CALL-RADIO

... a RADIO RECEIVER and CARRIER-CALL combined in a single unit!

NOW, in addition to the standard Carrier-Call Systems, you can offer your customers a totally new type of instrument—a system that gives complete radio and communication facilities in any room of the house, any part of the office, without wiring or installation cost—ALL at a SINGLE LOW PRICE.

Plug into any lighting socket, AC and DC.

No wires; no batteries; no installation cost.

Portable—move it anywhere in a jiffy.

Radio reception can be transmitted from master station to outlying stations.

Radio cuts out automatically when unit is used as a communicator by any station. Resumes automatically and immediately conversation is through.

Can be sold where other types are unsalable.

Widens the inter-communication market enormously.

Perfect for executives needing market reports and other broadcasting receptions.

Ideal for homes; the residence market now wide open to Carrier-Call dealers.

Surest opportunity for profitable selling.

Complete merchandising and technical cooperation.

The Carrier-Call-Radio is a NATURAL for dealers. So, get the Carrier-Call franchise for your territory before it is too late. Distributors and dealers are urged to wire or write for complete details.

Licensed by Electrical Research Products, Inc., under patents owned or controlled by American Telephone and Telegraph Co. and Western Electric Company, Inc.

AMERICAN CARRIER-CALL CORPORATION

39 WEST 60th STREET

NEW YORK, N. Y.

SELLING AN AUDITORIUM SOUND JOB

Tips which will help figuring any large sound system and will simplify the installation

★ ARE you making a bid on that auditorium P.A. system? If so, here are a few suggestions which will help you—not only in figuring the job to make your price right, but also in producing results that will give your “sound” business prestige and favorable advertising for the future.

In planning such a system there are two definite steps to be taken:— 1. Get clearly the customer's requirements, and 2. Make a careful survey. Here's why!

First of all, the requirements determine what equipment is necessary. That sounds simple doesn't it. But do you know that probably *half your competitors won't figure on the proper equipment* and as a result their prices will be out of line. You don't want either to lose your shirt or to be too high, so get the story *straight*.

If just speech reinforcement is needed a better system will result if the low frequency end is chopped off completely. However, if the system is used for music reproduction, it will need some “low-frequency response” or power depending upon the fre-

quency absorption characteristic of the auditorium.

The ideal P.A. system should have a characteristic which is the converse or opposite of the auditorium's natural characteristic. It's not so easy to get a curve like that and it would cost a lot of money for equipment if done completely and scientifically. Herein lies the need for making a careful survey.

Speaker location

But before getting into the subject of acoustics let's see what else the survey should accomplish. A set of drawings from the architect will be of aid in determining the power output and speaker requirements. A side elevation drawing and a floor plan are sufficient. (The architect is a good man to know—he can help you a lot, and he will usually do so if he sees you are going about your job in the right way.) If the drawings aren't available, take measurements and make sketches to *scale*.

It used to be a standard method to group all the loudspeakers in one

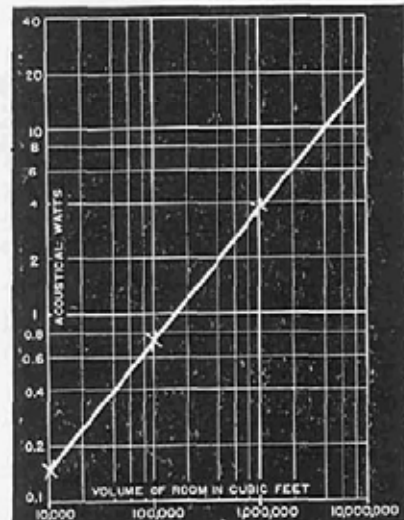


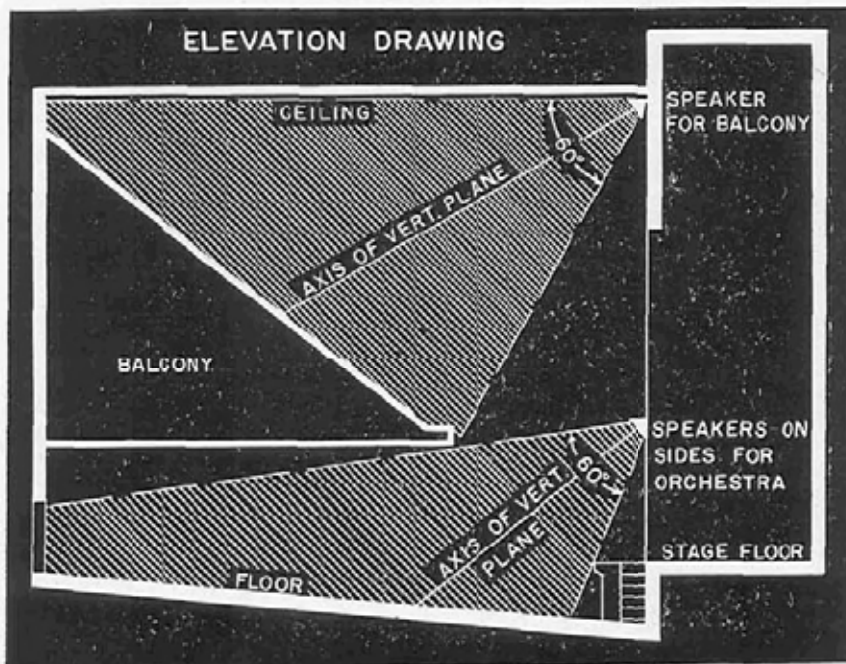
Chart showing the amount of acoustical power required by rooms of various size. Values are approximate only.

central spot just forward of the stage, on the center line of the building. That's still good practice in churches or where there is a speaker's stand and only one microphone location. If there are going to be microphones all along the foot lights, it makes a better job to spread your loudspeakers across the top of the proscenium arch.

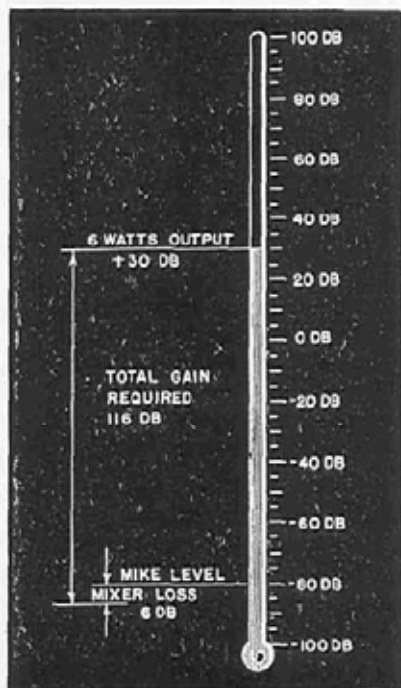
By using the floor plan and knowing the distribution angle of the loudspeakers, they can be laid out so as to give even coverage. Remember that with dynamic speakers, the low-frequency spread is very wide and the high-frequency output is not much more than a beam. If it is a speech reinforcement job, the lows should not get through anyhow, therefore not any more than a 60° spread should be figured unless your loudspeaker manufacturer specifies differently.

If there is a balcony, the loudspeakers across the top of the proscenium arch should be used for reinforcement in the balcony only. Don't try to bend the sound waves down under the balcony to the rear orchestra seats. Sound waves won't bend. Cover the back of the orchestra with loudspeakers located on each side of the proscenium.

The elevation drawing comes in handy in determining the right height



Elevation of an auditorium having a balcony. Separate speakers are used for coverage up and downstairs. Note how the sound envelope is parallelled to the ceiling to avoid reflections.



DB gain required is dependent upon power output and the mike level.

for these side speakers. Aim them so that the upper envelope of the distribution angle parallels or coincides with the ceiling under the balcony.

Use of absorption material

If with this layout there is too much sound on the front wall of the balcony, it is desirable to put on some heavy absorption material such as velour hung in deep folds across the front of the balcony. When installing the loudspeakers for balcony coverage, use the same theory—that is let the upper envelope parallel the ceiling line as nearly as possible. The axis of the speaker in the vertical plane should be aimed near the middle of the balcony seats.

Keep sound off walls

The ideal sound system may be described as one where everyone hears perfectly without having the slightest idea that any electrical or "sound" apparatus aid is being used. If the audience doesn't realize there is a sound system, it must be right in sound quality and distribution. For that reason, the back rows should not get as much sound as the seats further front. And remember the people in the front seats don't want to be knocked over either.

Direct the speakers about three quarter ways back; and if the sound waves are kept off the side and back walls, they won't bounce off and stir up a lot of reverberation troubles. Half of this business about "poor

acoustics" in walls can be overcome by using some good old horse sense in placing and aiming the loudspeakers.

While a sound level meter is an ideal tool for figuring out the power requirements for an auditorium, because of expense it is usually out of the question for most sound men. However, the cubical content of the room gives fairly good results for figuring in most cases. First of all the cubical content of the hall must be calculated—deducting the mass of balconies and sloping floors.

Dividing power between speakers

The accompanying chart shows the number of acoustical watts required for various size installations. The efficiency in per cent and also the power handling capacities should be obtained from the manufacturer of the loudspeakers. If the efficiency is 20 per cent you must multiply the acoustical power by 5 to get the audio output power of the amplifiers (20 per cent is $\frac{1}{5}$) or if only 8 per cent efficient multiply acoustical power by $12\frac{1}{2}$, etc.

If only one loudspeaker is used, its power capacity must be great enough to handle all the soup the amplifier puts out. If two are used, each one will get 3 db less than the maximum, and so on. Each time the load is doubled, half the power is applied to

each unit. When the electrical power is converted to acoustical power these are going to add again in the same ratios so don't worry about that.

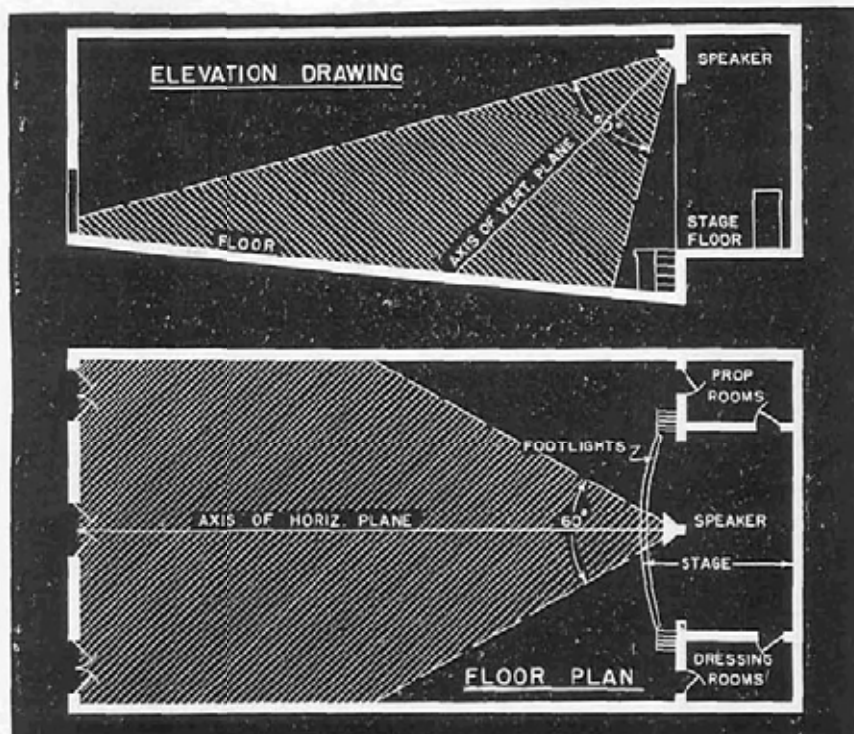
One must remember, however, that the same amount of sound energy may not be wanted from each speaker. In this case the level differences may be adjusted by working from different taps on an auto transformer. Or if the maximum in quality is desired and power dissipation is not a factor, T type attenuators in the individual loudspeaker circuits can be used. Make sure, though, that the amplifier output is matched into the impedance of your combined load.

Gain requirements

The overall gain of the amplifier system depends upon the efficiency of the microphones and the insertion loss of your mixer circuits. Microphone manufacturers will furnish the necessary data on output levels at various distances and angles of incidence. This will aid in determining the spacing required between microphones if they are to be arranged along the footlights and also allow calculations of the total system gain.

If the microphone output is -80 db, and your electrical power required is 6 watts or +30 db, and the insertion loss of your mixers 6 db, your gain must be the algebraic sum or

(To page 31)



Above—by keeping the sound beam off the walls much reflection is eliminated. Below—horizontal sound coverage provided by a single speaker.

SERVICING PA SYSTEMS

* Without question there is a lot of "sound" servicing business to be had these days for the alert serviceman.

School installations which are idle all summer need to be tested out thoroughly at the beginning of every fall term. Auditoria systems which are only used two or three times a year should be carefully inspected and tried out prior to each time it is used as these events are apt to be of considerable importance.

Systems need attention

Some of the larger companies have sold inspection service with their installations but there are today probably thousands of systems which have not had any expert attention since they were installed. In some cases it will be found that it is just as easy to sell a combined servicing and operating contract, particularly where the system is only used a few times a year. Churches offer a very good field for both servicing and operating contracts.

In attempting to sell service, one should have a fair idea of the magnitude of the installation. With this in mind, an itemized statement of what you will do and how often is an excellent approach to a prospective customer. Be specific but make your story complete. The following lists some of the more important items which should be covered particularly with the older installations:

Check batteries (or rectifiers) recharge if necessary.

Check AC line voltage.

Inspect and test *all* fuses—replace corroded or defective ones.

Clean and lubricate all mixers and other step type controls.

Test all vacuum tubes and replace faulty or border line tubes.

Test microphones—if double button carbon type see that units are well balanced and that button currents are normal.

Test all loud speakers—if electrodynamic, make sure that the fields have normal currents. If the diaphragms of cone type units have been subject to high humidity, see that they are thoroughly dried out (damp diaphragms not only cause loss of efficiency but create abnormal frequency response patterns). Be sure that the speakers are properly matched to the output of the amplifier.

Test all accessories such as phonographs for correct speed and flutter, radio tuners for good reception, cable connectors for good contacts, etc.

Noise and hum

Test system overall for noise level—electrolytic condensers almost always need to be reformed, particularly after long periods of idleness. This is also the time to check mixer noise—key clicks—transmitter hiss if carbon button units are used. In testing for noise, it is well to terminate the input ahead of all mixer controls, and monitor the output increasing the amplifier gain to its maximum.

It may sometimes be found that the loud speakers are of a type which have a low frequency cut-off well above the AC hum region. In such cases it is important to monitor with a speaker which will reproduce this noise, as sometimes through a fault in the filter circuits, this hum may be of such proportion to modulate part of the speech signals.

Test the overall system response using a frequency record or a piano

or other musical instruments. A portable audio frequency oscillator is, of course, the most desirable test instrument for measuring the system characteristic.

Finally, make an actual talking test, checking the range of pick-up of the microphones and the coverage of the loud speakers. Make this test having someone read as this generally produces the most constant level. Check all parts of the auditorium for loudness and naturalness of sound, noting any discrepancies which might be remedied by better angling of or distribution of energy from the loud speakers. Also include the singing test—that is, advance the gain to a point where singing occurs and then decrease it until it stops. This point should be marked so that the operator will never exceed it. Determine the best setting for operation where the sound is most natural and compare this with the one used when the auditorium is full of people. The difference will give you an indication of the absorption value of the audience.

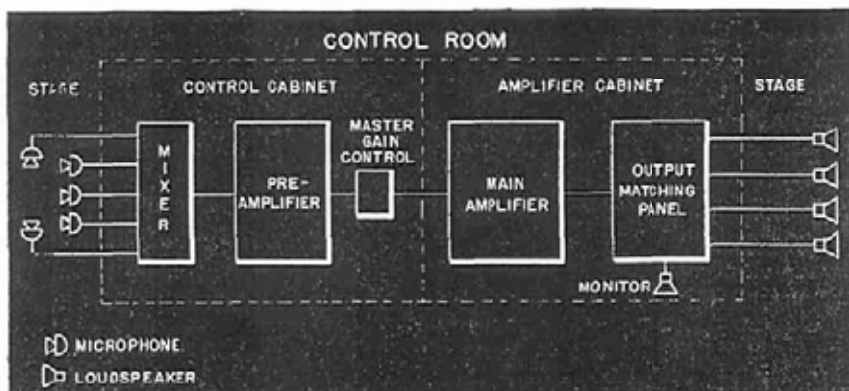
Above all—*keep a record* of conditions as you find them and whatever changes were made. Send a nicely prepared report to your customer—it is impressive and accomplishes two things—it helps to justify the money he has paid you and shows him the necessity for a periodic service of this type. And besides, you will find these records keep increasing in value. They are time savers for you, and they help you sell new replacement parts or a modernization job.

CLEANING ATTENUATOR CONTACTS

* While the procedure for cleaning mixers and other step type gain controls is very simple, the *Don'ts* are extremely important. Briefly the procedure is as follows:—

1. Wipe the contacts clean with a *clean soft cloth*. *Never* use any form of abrasive or cleaning fluids. Carbona, carbon tetrachloride or the like are *all harmful*. If you find that someone has previously used vaseline or some other grease or gummy oil—remove as much as possible with your cloth.
2. Put a few drops of a high-grade light oil which is *non-corrosive* and will *not gum* on the contacts. Rotate the switch arm until the old dirt is loosened up.
3. Wipe clean with clean soft cloth and lubricate with the same oil using only enough to give smooth operation.

Repeat No. 2 as often as necessary to properly clean all contacts and keep the rest of the unit, particularly the contact plate and the resistance units, free from oil and dirt.

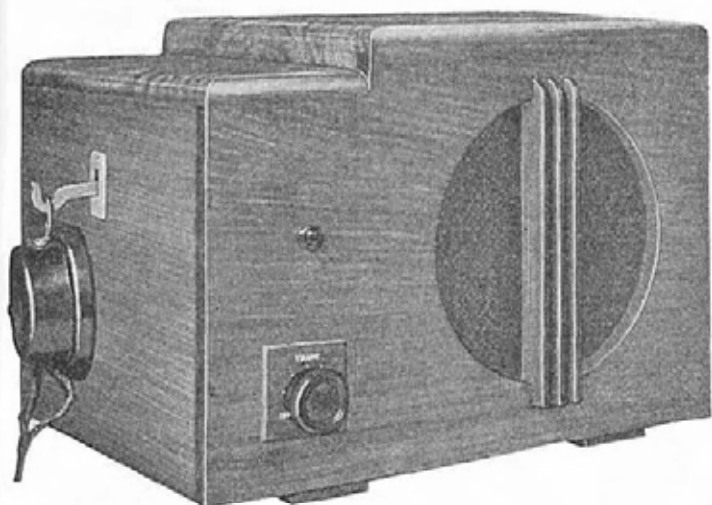


Block diagram showing various components of a sound system.

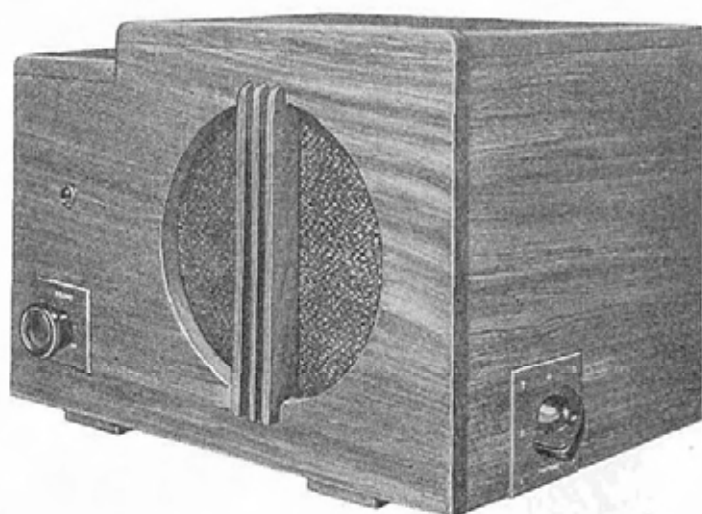
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Substations, like master system, plug in anywhere without special wiring. Can be moved at will. Absolute privacy for every conversation.



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GLOSSARY OF SOUND

- Tweeter**—A loudspeaker unit designed to reproduce high frequencies only (above approximately 3,000 cycles).
- Woofers**—A loudspeaker unit designed to reproduce low frequencies only.
- Baffle**—A partition physically increasing the distance for sound traveling from the front to the back of a loudspeaker diaphragm.
- Acoustic watt**—Unit of sound energy (based on a reference level of 10^{-16} watt per sq. centimeter).
- Mixer**—Adjustable microphone volume controls used to mix one microphone output with others.
- Beam power**—(Tubes)—Flow of electrons directed in beam formation to increase efficiency otherwise lost in secondary emission.
- Turret speaker**—Speaker with dome-shaped metallic housing—"turret top."
- Harmonic content**—Percentage of harmonics present in signal based on ratio to fundamental frequencies.
- Db. gain**—Amount of voltage or power (or combination of both) amplification calibrated in decibels.
- Response**—Reaction of any equipment unit to applied signal energy.
- Response characteristic**—Contraction for "response frequency characteristic"—relative measurement of equipment's response at various frequencies.
- Low-pass filter**—A combination of elements which excludes high frequencies but not lows (passes the lows).
- High-pass filter**—A combination of elements which excludes low frequencies but not highs (passes the highs).
- Band-pass filter**—A combination of a low and a high pass filter which passes a single band of frequencies.
- Phase shift**—A change in signal polarity.
- Dividing network**—Combination of elements intended to divide signals into two or more frequency channels.
- Angle of incidence**—Angle from perpendicular at which sound waves impinge upon a given surface.
- Reverberation**—Persistence of sound energy in an enclosure through repeated reflections.
- Rate of decay**—Time involved in absorption of sound energy.
- Insertion loss**—Attenuation caused by the introduction of elements, combination of elements, or equipment units in any circuit.
- Power loss**—When the attenuated energy is actually dissipated.
- Transmission loss**—When input signal is greater than the output signal—may include insertion, power, reflection or transition losses.
- Transmission gain**—When output signal is greater than input signal.
- Optimum reverberation**—Desirable average for overall frequency range and various size and shape of enclosure.
- Reverberation time**—Time required for sound energy to decay to one millionth of its starting value.
- Echo**—Concentrated sound reflections where noticeable time interval occurs.
- Interference patterns**—Resultant effect of two or more sound waves arriving simultaneously at same location.
- Acoustic feed-back**—Sound waves emanating from loudspeakers feeding back to the microphones.
- Phasing or polarizing loudspeakers**—Connecting speakers so that they will receive the same instantaneous polarity of signals so that their diaphragms will vibrate in unison.
- Boomy**—Term to describe lack of high frequency response or over-emphasis of low frequency.
- Thin**—Term describing sound lacking in low frequency response.
- Lows**—Low frequency energy, either acoustic or electrical.
- Highs**—High frequency energy, either acoustic or electrical.
- Loss**—Loss of power.
- Wow**—Effect of pitch change due to variation of speed in recording or reproducing machine.
- Beating**—A phenomenon in which two or more period quantities react to produce a resultant having pulsations of amplitude.

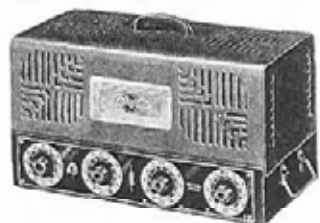
NEW SOUND EQUIPMENT

Electro-Acoustic sound system



★ 18-watt portable type sound system. Twin speaker carrying case with dual 10-inch units. Crystal microphone with adjustable floor stand. Input channel for 2 mikes and phonograph. Harmonic content of 2 per cent at rated output. Complete with speaker and mike cables. Model AP-1832B. Electro Acoustic Products Co., Beuter Rd., Fort Wayne, Ind.—SELLING SOUND—see also advt. p. 13.

Lafayette amplifiers



★ Streamline styled amplifiers with advanced circuit design. Reverse feed-back, automatic volume expansion, separate bass and treble tone controls, glow-lighted neo-dials, variable automatic volume control. Outputs range from 5 to 90 watts for all applications. Wholesale Radio Service Co., 100 Sixth Ave., New York, N. Y.—SELLING SOUND—see also advt. p. 20 and 21.

Selective paging system



★ 7-watt interphone system for factory paging, institutions, small hotels, etc. Handles up to 5 remote stations—will select any one or all. Talk back feature operates up to 20-40 feet from speakers. Sufficient power for factory floor spaces of 20 to 30 square feet at average noise level. Webster-Chicago model FC-7R. Webster Co., 5622 Bloomingdale Ave., Chicago, Ill.—SELLING SOUND—see also advt. p. 1.

Aircraft microphone

★ Single-button carbon type mike for use in aircraft and other communication services in noisy locations. All extraneous noises excluded. Held in

hollow of hand—push button contact to talk. Double contact switch operates transmitter relay. Molded bakelite case with shielded cable. Universal Microphone Co., Inglewood, Calif. SELLING SOUND—see also advt. p. 26.

RCA amplifier



★ 24-watt high fidelity amplifier. Flat within 2 DB 60-10,000 cycles. Gain of 107 DB. Distortion of 7 per cent at rated output. Beam power output tubes with inverse feedback, 4 input channels—remote mixing, either permanent or portable. Output impedances 4, 7½, 15, 60, 500 ohms. Speech-music switch. Continuously variable tone control. Ultra-modern housing. Model MI-4284. List \$133.50 less tubes and remote mixer. RCA Mfg. Co., Front & Cooper Sts., Camden, N. J.—SELLING SOUND—see also advt. back cover.

Velocity Hand-i-mike

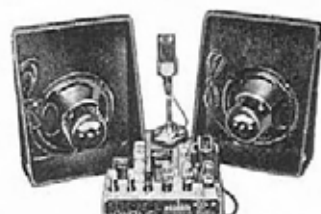


★ Smallest complete velocity mike ever made with a high or low impedance output, designed for use as a hand type, but also can be employed as a desk or mounted on regular floor stand. Flat response from 60 to 7,500 cycles. Output only 3 DB below standard type of velocity microphone. Head measures 2¼ x 1 x 1½ inches. Molded rubber case. List \$22. Amperite Corp., 561 Broadway, New York, N. Y.—SELLING SOUND—see also advt. inside front cover.

Oil-filled capacitors

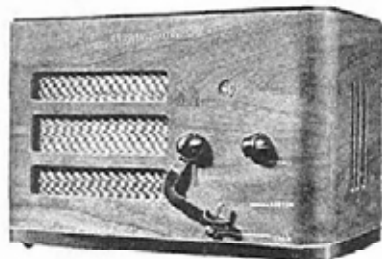
★ Round-can oil-filled condensers for inverted mounting in limited space. Hermetically sealed aluminum can with insulated center terminal. Fittings supplied for insulating can from chassis. Units available in 600, 1,000, 1,500 volts DC and capacities of .5 to 4 mfd. Aerovox Corp., 70 Washington St., Brooklyn, N. Y.—SELLING SOUND.

Ramco sound system



★ 15 watt deluxe amplifier system with split carrying cases. Dual input channels with mixing and fading controls. Variable impedance output. 114 DB gain with response from 30 cycles up. Velocity mike, banquet stand, speaker and microphone cables. Model 150. Regal Amplifier Corp., 14 W. 17th St., New York, N. Y.—SELLING SOUND—see also advt. p. 29.

Crosley interphone



★ Low-cost intercommunicating system for homes, offices, etc. 2-way loudspeaking communication. Uses power lines for transmission. Cabinet of walnut measuring 7½ x 11 x 6¼ inches. Crosley Chattabox—List \$19.99 per unit. Crosley Radio Corp., 1329 Arlington St., Cincinnati, Ohio—SELLING SOUND.

Mobile sound system



★ 6-volt and 110 AC amplifier for mobile use. Has phono and microphone inputs which can be mixed. Four speaker receptacles with change-over switch to match speaker load. Crystal pick-up. Modernistically styled base and hood. Webster Electric Co., Racine, Wis.—SELLING SOUND—see also advt. p. 2.

Crystal mike

★ Microphone with both velocity and pressure operated elements. Uni-directional response with both elements. Velocity element alone gives bi-directional response, while non-

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ALL-WAVE ANTENNA

*Eliminates "Man-Made"
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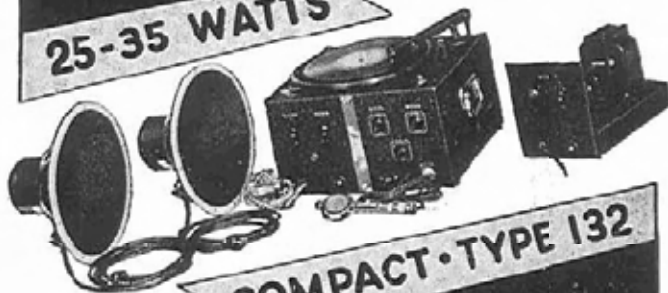
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Uses Beam Power Tubes . . . Electronically mixes one Microphone and one Phonograph . . . Includes Dual Diaphragm Crystal Microphone Hand Type . . . Two 12" Heavy Duty Permanent Magnet Speakers . . . Interchangeable Power Packs . . . can be used in conjunction with Radio Set by using a Model A-3960 Radio Matching Unit.



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Complete with Model 813 Amplifier, velotron microphone with combination hand and banquet stand, 10" Electrodynammic speaker and 3A00 tubes **\$83.00**

Model 813 Amplifier alone including 3A00 Tubes **\$38.00**

● Extremely rugged, compact and ready to go in every case where a temporary installation is required. A simple change of parts and it's ready for 110 Volt A. C. or 6 Volt D. C. Beautifully finished in baked black stipple, this unit never falls down on the job expected of it.

PRICE—Unit only, 6 Volt D.C. **\$142.50**
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Additional for two 12" Permanent Magnet Speakers and Crystal Micro- **\$75.00**
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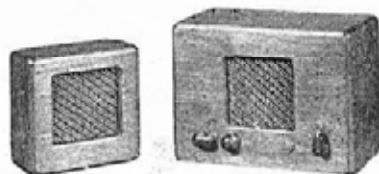
directional pick-up is obtained with the pressure element alone. A switch selects either one or both elements. Model 720A—list \$39.50. Shure Bros., 225 W. Huron St., Chicago, Ill.—SELLING SOUND—see also advt. p. 30.

Interphone paging system



★ High-powered interphone system for paging and 2-way communication. Master switch for calling all outlying stations simultaneously. Toggle switches for selecting outlying stations. Use of 1, 2, or 3 master stations possible. Unlimited number of outlying stations—can talk with master station. 8-15 watt output, Operadio Mfg. Co., St. Charles, Ill.—SELLING SOUND—see also advt. p. 24.

Espey intercommunicator



★ Master type interphone system accommodating up to 4 remote stations. 2-way conversation from any one of outlying points—or simultaneously with all. Uses ordinary twisted pair for interconnection. Attractive walnut cabinets. Master unit \$39.50—remote stations \$10. Espey Mfg. Co., Inc., 124 E. 25th St., New York, N. Y.—SELLING SOUND.

Portable sound system

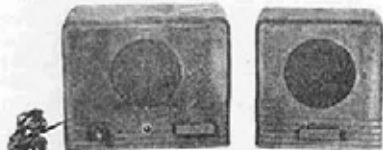


★ 10-watt P. A. system complete in one carrying case. 2 10-inch PM speakers with cables and plugs, Velotron hand mike with cable. Inputs for microphone and phonograph with electronic mixing. Has tone control. Model 610-VT—list \$89.50 with carrying case. David Bogen, Inc., 663 Broadway, New York, N. Y.—SELLING SOUND—see also advt. p. 30.

Intercall communicator

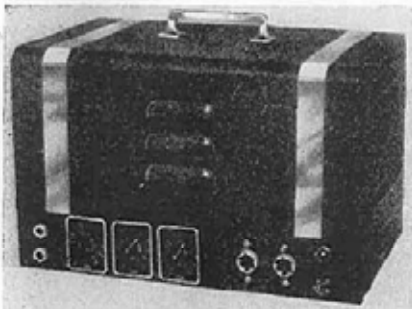
★ Wire and wireless type interphone systems for home and office uses. Office systems for 5 or stations with all-master units, permitting full intercommunication. Headphone for privacy use—speaker cuts out. Push-button connects with desired station or stations. Intercall Systems, Inc., Dayton, Ohio—SELLING SOUND.

Speech relay system



★ Master type interphone system handling up to 4 remote stations. 2-way conversation controlled at master station. Selector switch for any one or all of outlying stations. Model A permits party line operation whereby remote stations may talk among themselves. Aluminum cabinets with silk suede finish. AC-DC operation. Complete systems priced from \$39.50 up. Turner Co., Cedar Rapids, Iowa—SELLING SOUND.

30-watt amplifier



★ Four-stage amplifier with 30-watt output using push-pull 6L6 tubes, high and low-gain channels—master control—tone control. Field excitation supply of 30 watts. Sold assembled but unwired—model K-30 net \$17.75. Eastern Radio & Television Co., 136 Liberty St., New York, N. Y.—SELLING SOUND.

Audio oscillator



★ Beat-frequency type audio oscillator with frequency range up to 11,500 cycles and essentially constant output of 2 volts to 500 ohm load. Attenuation independent of output impedance. Walnut cabinet and German silver dial. Hand calibrated over 3-month period to insure against thermal unbalance. Net \$35. Televiso Co., 127 N. Dearborn St., Chicago, Ill.—SELLING SOUND.

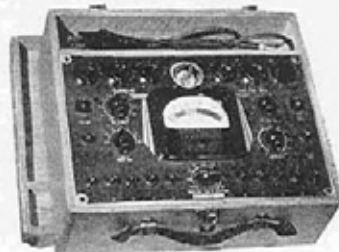
Remote mixer control

★ Two-channel remote mixer for newest RCA sound system. Mixer is



connected into circuits so that no signal circuits are taken out of amplifier. Provides same operation as mixer at amplifier—no hum or noise pick-up. Enables operator to monitor sound at a position in auditorium with consequently better sound reinforcement effects. List \$24.25 with 30-ft. cable. RCA Mfg. Co., Camden, N. J.—SELLING SOUND—see also advt. outside rear cover.

Supreme tube checkers



★ Tube tester with floating filament selector. Five tests possible—inter-element leakage, open element in each circuit, short check between any 2 elements, quality test of complete tube elements, separate sectional test of dual purpose tubes. Model 501 il-

VOCAGRAPH Thirty Watts "Hushed Power"

net only **\$39.90**



Compare these STARTLING Sound Values!

See what other leading manufacturers ask for a full thirty-watt, dual high gain input, beam power amplifier! Then ask your own parts supply house to demonstrate this amplifier. Here are a few of the many other VOCAGRAPH values he offers you:

Thirty-watt, fully portable system, Model 30-30FV complete with velocity microphones, three piece case, and two 12-inch p.m. speakers, only \$100.80.

Eighteen-watt, high gain amplifier, Model 30-18C for only \$29.70, or complete with velocity microphone, two 12-inch speakers, and three piece case, etc., only \$85.90.

Ten-watt, high gain amplifier, Model 30-10C for only \$17.70 or complete with crystal microphone and carrying case with 12-inch speaker, only \$47.40.

Whatever your sound needs may be, from ten to ninety watts, get the new VOCAGRAPH catalog. It shows you how to make bigger sound profits.

New 6-v and 110-v Mobile Amplifier

The lowest price combination 6-v battery 110-volt line operated amplifier ever built, with full rated 30 watts output from generator or a-c peak built in. Phono record player optional. Complete amplifier prices start at \$65.00. Write for full details.

FREE ENGINEERING BULLETIN

VOCAGRAPH SOUND SYSTEMS

Division of Electronic Design Corp.,
162-C N. May Street, Chicago, Ill.
Send at once complete data and prices.

Name.....
Address.....



FUNCTIONAL DESIGN "V" SERIES VELOCITY MICROPHONES

The smooth trim lines and screen housing are more than just style. They contribute to the top performance that typifies the "V" Series. No side-wall reflection. No Resonance.

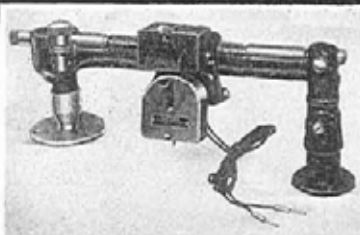
Priced from \$25 to \$75 list.

WRITE FOR CATALOG • SEE YOUR JOBBER

ELECTRO-VOICE MFG. CO.
338 E. COLFAX AVE. SOUTH BEND, IND.

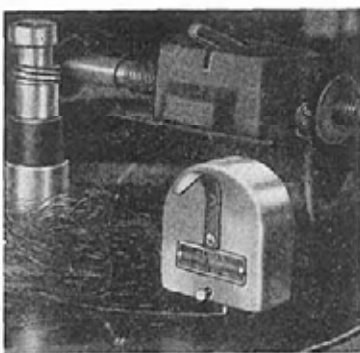
Export Office: 100 Varick St., New York, N. Y.

New Business for SOUND ENGINEERS



• You can attach the Presto 112-D recording mechanism to any radio-phonograph combination to record radio programs off the air. No pre-grooved records needed. The Presto mechanism cuts the groove as it records the sound—makes permanent high quality records that can be played 50 times or more.

Net price to P.A. and service men complete with installation data \$64.00



PRESTO

RECORDING CORPORATION
137 West 19th St., N. Y. C.

RECORDERS



Professional and portable models for acetate, aluminum or wax recording. Scientific. Rugged. Efficient. Modern. Discs, needles, styli and accessories.

(Recording Division)

UNIVERSAL MICROPHONE CO., Ltd.

424 Warren Lane

Inglewood, Calif., U. S. A.

MICROPHONES

New dynamic. An amazing sound development. Also crystals, carbons, condensers, velocity, ribbons, stands and accessories.

(Microphone Division)



Illustrated—net \$36.95. Model 502 same as 501 but with 19-range AC-DC multi-meter—net \$49.95. Supreme Instruments Co., Greenwood, Miss.—SELLING SOUND.

Universal type sound system



★ AC and 6-volt amplifier with 26-watt output. Built-in genemotor and AC power supplies. Gain of 115 DB. Output impedance to match line or voice coils. 2 channel mixer for mike and phonograph. Genemotor stand-by switch saves battery. Net \$36.50 less tubes. Amplitone Products Co., 152 Washington St., New York, N. Y.—SELLING SOUND.

8-watt portable PA system



★ High-gain portable sound system using crystal microphone. 6L6 beam power output stage, 8½-inch dynamic speaker with 25-foot cable and polarized plug. Banquet mike stand. Housed in case 8½ x 12¾ x 16¾. Model 8. Autocrat Radio Co., 3855 N. Hamilton Ave., Chicago, Ill.—SELLING SOUND.

Communications microphone

★ Combination microphone and desk stand with "Grip to talk" switch. Frequency response especially appropriate for communication in all types of commercial applications. Crystal type unit. Complete with 8 feet of cable. Astatic Microphone Lab., Inc., Youngstown, Ohio—SELLING SOUND.

Master Communo-phone



★ Intercommunicating system consisting of any number of master stations up to 19. Two-way conversation without depressing switches. Any station can call any other station. Optional headphone for privacy. Model 19C—list \$45 per station. David Boger Co., Inc., 636 Broadway, New York, N. Y.—SELLING SOUND—see also advt. p. 30.

Sunco sound system



★ 12-watt portable system with self-contained microphone, amplifier and speaker. Gain of 126 DB. Powerful enough to cover indoor audiences up to 3,000 and outdoor areas of 25,000 sq. ft. 3 input channels for mike or phono. Operates from 110 AC. Sundt Engineering Co., 4238 Lincoln Ave., Chicago, Ill.—SELLING SOUND.

Set tester



★ High-sensitivity multi-range meter for set testing. DC ranges 0/10/50/250/500/1000/2000 at 25,000 ohms per volt. AC voltages same as DC at 1000 ohms per volt. DC mills 0/¼/1/10/50/250/500/1M/2M/20M. Resistance 0/500/20M/200M/2meg/20meg. Capacitance and decibel calibrations. Free point tester makes all series and parallel meter connections. Triplett Electrical Instrument Co., Bluffton, Ohio—SELLING SOUND.

Speaker and amplifier cases

★ Complete line of portable carrying cases for speakers, amplifiers, phonographs, etc. Made of heavy plywood covered with black fabricoid. Reinforced corners, rust-proof hardware. Custom Auto Trunk Co., 300 W. 19th St., New York, N. Y.—SELLING SOUND.

Portable amplifier system

★ 30-watt sound system employing beam power output tubes. Electronic mixing on 2 input channels. Cathode

ray eye monitor. Bass booster and high frequency controls. Dual 12-inch PM speakers, velocity mike, amplifier and split speaker cases. Model HFP30 complete with tubes and cables—list \$203.60. Radio Amplifier Labs., 59 Walker St., New York, N. Y.—SELLING SOUND.

Central-call interphones



★ Master office intercommunicating set allowing speech without talk-listen switch. Has headphone for privacy of operation. Operates on AC or DC. Handles up to 5 sub-stations. Metal-glass tubes and 6-inch speaker unit. Cabinet of walnut. Requires no special wiring—plug in on light circuit. Central Communications Devices, Inc., 140 W. 22nd St., New York, N. Y.—SELLING SOUND—see also advt. p. 19.

High-sensitivity multi-meter



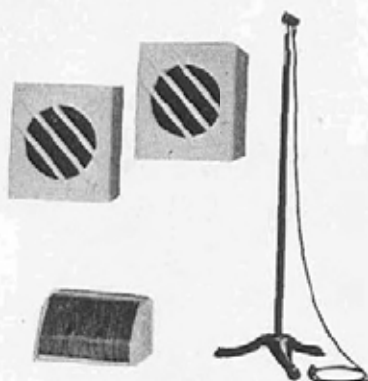
★ AC-DC multi-range meter using rotary range selectors. Ranges chosen so that commonly measured values fall on upper section of meter scale. Ranges—AC and DC volts 0/3/15/30/150/300/600—DC at 20,000 ohms per volt—AC at 2,000 ohms per volt. DC mills 0/30/300/3M. Resistance ranges 0/500/50M/20meg with self-contained battery. Model 320—net \$38.50. Triumph Mfg. Co., 4017 W. Lake St., Chicago, Ill.—SELLING SOUND.

Vocagraph amplifiers



★ Low-priced line of amplifiers with many features. Series thirty available in 10 watts at \$32.90, 18 watts at \$49.50, 30 watts at \$66.50. Electronic Design Co., 164 N. May St., Chicago, Ill.—SELLING SOUND—see also advt. p. 25.

20-watt sound system



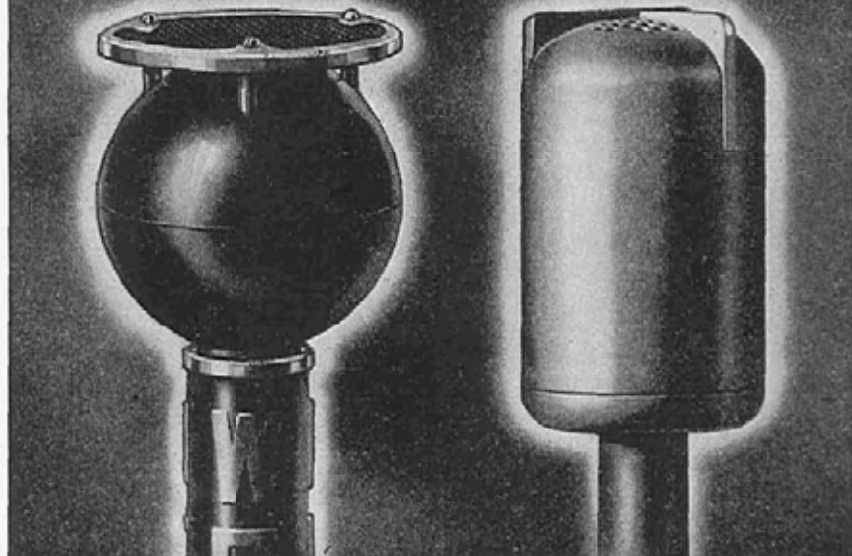
★ Beam power amplifier with 20

watts output. Dynamic microphone with floor stand. Dual 10-inch PM dynamic speakers with baffle boxes. Sound Products Co., 704 N. Curson Ave., Hollywood, Calif.—SELLING SOUND—see also advt. p. 31.

Microphone stands

★ Line of "select-your-own" mike stands. Base and tubing for stands available separately so that any desired combination may be had. Bases available with 1/2, 3/4, 1, and 1 1/2-inch pipe threads to fit all tubing sections. Gun-metal, bronze, chrome, black or silver wrinkle finishes on bases. 77 distinct combinations possible. Eastern Mike-Stand Co., 56 Christopher St., Brooklyn, N. Y.—SELLING SOUND—see also advt. p. 28.

A pair of Aces for P.A. pick-ups!



BETWEEN them, Western Electric's famous "8-Ball" and "Salt-Shaker" mikes meet every Public Address need. Both can be used for non-directional work—both can be transformed quickly for directional work by simply putting on their acoustic baffles. Both are popular

with P.A. engineers and dealers all over the country. At their low prices, you can't afford anything less than the true Western Electric quality these mikes give you! For full details: Graybar Electric Co., Graybar Building, New York.



Western Electric

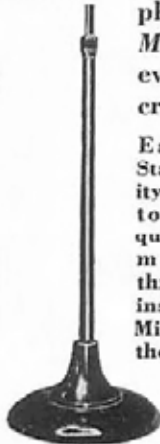
Distributed by GRAYBAR Electric Co. In Canada: Northern Electric Co., Ltd.

We do not

manufacture amplifiers,
horns or microphones . . .

but! we do

manufacture the largest and
most complete line of Micro-
phone *Stands* and
Mountings for
every type of mi-
crophone.



Eastern "Mike"
Stands are high qual-
ity products designed
to meet every re-
quirement. Oversized
material used
throughout, thereby
insuring the Best
Mike Stand Value for
the Money.

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EASTERN MIKE-STAND CO.

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Phone Dickens 2-3538

Factory Representatives—Territory Open

NEW THINGS

Combination interphone
and radio



★ Midget type broadcast receiver incorporated in a new inter-communicating unit. Two-way conversation may be carried on between a monitor station and five outlying stations. Radio reception at the monitor may be transmitted to any outlying station. Radio cuts out automatically when system is used for communication by any one of the stations. Resumes instantly when conversation is completed. Manufacturers expect new unit to widen interphone market and open up new channels of distribution. American Carrier-Call Corporation, 39 West 60th Street, New York—SELLING SOUND—see also advt. p. 15.

★ Extensive alterations are being made at the big electrical store, McCoy's, at Norristown, Pa. Head man at the place is Earl L. McCoy.

METALEX HORNS

A Boon to the
Sound Engineer



Model 2800

• "EX" for Objectionable Resonances

The enthusiastic expression we are receiving regarding the Metalex Horn makes us want everyone interested in public address work, to try one.

These efficient exponential horns should not be confused with the so-called parabolic units. Spun from steel and coated with the material "Ex," these Metalex horns give almost unlimited wear and have no objectionable resonances. Stocked in 3 sizes.

The Model NM2000—12" Nekoil speaker installed in a Metalex Horn gives almost unbelievable reproduction.

Write for interesting literature.

Wright-DeCoster Distributors are
always anxious to cooperate.

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2271 University Ave. St. Paul, Minn.

Export Dept.: M. Simons & Son Co., New York
Wm. F. Kelly Co., Toronto, Ont., Canada
Taylor & Pearson, Ltd., Edmonton, Alta., Canada

SOURCES OF SOUND SUPPLIES

An alphabetical list of sound manufacturers whose advertisements have appeared in RADIO TODAY or SELLING SOUND. Companies having advertisements in this issue are listed in the ADVERTISERS' INDEX, P. 23.

Amplifiers AMP
Inter-Communicating Systems INT
Kits (Amplifier) K
Microphones M
Record Playing & Recording Equip. RP
Speakers S

ALLIED RADIO CORP., 838 W. Jackson Blvd., Chicago, Ill.—AMP, INT
AMERICAN CARRIER-CALL CORP., 39 W. 60th St., New York, N. Y.—INT
AMERICAN MICROPHONE CO., INC., 1915 South Western Ave., Los Angeles, Calif.—M
AMPERITE CORP., 361 Broadway, New York, N. Y.—M
ANSLEY RADIO CORP., 240 W. 23rd St., New York, N. Y.—RP
ARISTON MFG. CORP., 4045 Diversey Ave., Chicago, Ill.—S
ASTATIC MICROPHONE LABORATORY, INC., 40 Hubbard Rd., Youngstown, Ohio—M, RP
ATLAS SOUND CORP., 1451 35th St., Brooklyn, N. Y.—AMP, INT, K, M, S
BOGEN CO., INC., DAVID, 663 Broadway, New York, N. Y.—AMP, INT
BRUSH DEVELOPMENT CO., 33rd & Perkins Ave., Cleveland, Ohio—M, S
CENTRAL COMMUNICATIONS DEVICES, INC., 140 W. 22nd St., New York, N. Y.—INT
CINAUDAGRAPH CORP., 110 Davenport St., Stamford, Conn.—S
CONSOLIDATED RADIO PRODUCTS CO., 618 W. Elm St., Chicago, Ill.—S
CONTINENTAL CARBON, INC., 13900 Lorain Ave., Cleveland, Ohio—M
CONTINENTAL MOTORS CORP., 12801 E. Jefferson St., Detroit, Mich.—S
CORNISH WIRE CO., INC., 30 Church St., New York, N. Y.—Hook-up wire
DICTOGRAPH PRODUCTS CO., INC., 580 Fifth Ave., New York, N. Y.—INT, M

EASTERN MIKE-STAND CO., 56 Christopher Ave., Brooklyn, N. Y.—Mike stands
ELECTRO-AcouSTIC PRODUCTS CO., 2131 Buxter Rd., Port Wayne, Ind.—AMP, INT, K, RP
ELECTRO-VOICE MFG. CO., 324 Colfax Ave., South Fond, Ind.—M
ELECTRONIC DESIGN CORP., 164 N. May St., Chicago, Ill.—AMP
GENERAL INDUSTRIES CO., 3537 Taylor St., Elyria, Ohio—RP
INSULIVE CORP. OF AMERICA, 28 Park Pl., New York, N. Y.—M
JERSEN RADIO MFG. CO., 6001 S. Laramie Ave., Chicago, Ill.—S
KREISLER COMMUNICATIONS, INC., 250 W. 57th St., New York, N. Y.—INT
LESTONE RADIO CO., 63 Dey St., New York, N. Y.—S
MARCONIPHONE, INC., 679 Madison Ave., New York, N. Y.—RP
MILES REPRODUCER CO., INC., 812 Broadway, New York, N. Y.—INT, K, M, RP, S
OPERADIO MFG. CO., 13th & Indiana Sts., St. Charles, Ill.—AMP, INT, S
OXFORD-TARTAK RADIO CORP., 915 W. Van Buren St., Chicago, Ill.—S
PHILCO RADIO & TELEVISION CORP., Ontario & C sts., Philadelphia, Pa.—INT, S
PILGRIM ELECTRIC CORP., 44 W. 18th St., New York, N. Y.—M
PORTOMATIC CORP., THE, 1013 Madison Ave., New York, N. Y.—RP
PRESTO RECORDING CORP., 130 W. 16th St., New York, N. Y.—RP
QUAM-NICHOLS CO., 33rd Pl. & Cottage Grove Ave., Chicago, Ill.—S
RABOLEK CO., 601 W. Randolph St., Chicago, Ill.—AMP, INT
RADIO RECEPTOR CO., INC., 251 W. 14th St., New York, N. Y.—AMP, M, S
RADIO SPEAKERS, INC., 1338 S. Michigan Ave., Chicago, Ill.—S

RCA MANUFACTURING CO., INC., Front & Cooper Sts., Camden, N. J.—AMP, M, RP, S
REGAL AMPLIFIER MFG. CO., 14 W. 17th St., New York, N. Y.—INT
REMLER CO., LTD., 2101 Bryant St., San Francisco, Calif.—AMP, INT, M, RP
SHURE BROS., 251 W. Huron St., Chicago, Ill.—M
SILVER, INC., McMURDO, 2900 S. Michigan Blvd., Chicago, Ill.—AMP, S
SIMPLEX RADIO CO., THE, Sandusky, Ohio—INT
SONORA ELECTRIC PHONOGRAPH CO., INC., 160 Varick St., New York, N. Y.—RP
SOUND PRODUCTS, 704 N. Carson Ave., Hollywood, Calif.—AMP, M, S
STANDARD SOUND PRODUCTS CO., 19 Rector St., New York, N. Y.—INT
STANDARD TRANSFORMER CORP., 850 Blackhawk St., Chicago, Ill.—K
STROMBERG-CARLSON TELEPHONE MFG. CO., 100 Carlson Rd., Rochester, N. Y.—AMP, INT, M, RP, S
THORDARSON ELECTRIC MFG. CO., 509 W. Huron St., Chicago, Ill.—K
TRANSDUCER CORP., 30 Rockefeller Plaza, New York, N. Y.—INT, M
TRANSFORMER CORP. OF AMERICA, 69 Wooster St., New York, N. Y.—AMP, INT, M, RP, S
TROY RADIO MFG. CO., 1142 S. Olive St., Los Angeles, Calif.—RP
UNITED SCIENTIFIC LABS., 62 W. 14th St., New York, N. Y.—INT
UNITED SOUND ENGINEERING CO., 2233 University Ave., St. Paul, Minn.—AMP, INT, M
UNIVERSAL PHONOGRAPH CO., LTD., P. O. Box 209, Inglewood, Calif.—AMP, INT, M, RP
UTAH RADIO PRODUCTS CO., 820 Orleans St., Chicago, Ill.—K, S
WARD & CO., MONTGOMERY, W. Chicago & N. Larr Sts., Chicago, Ill.—AMP
WARD PRODUCTS CORP., 1523 E. 45th St., Cleveland, Ohio—AMP
WEBSTER-CHICAGO, 5622 Bloomingdale Ave., Chicago, Ill.—AMP, INT, M, RP, S
WEBSTER ELECTRIC CO., Racine, Wis.—AMP, INT, RP, S
WESTERN ELECTRIC CO. (Graybar Elec. Co.), 105 Broadway, New York, N. Y.—AMP, M, S
WHOLESALE RADIO SERVICE, INC., 100 85th Ave., New York, N. Y.—AMP, INT, K
WRIGHT-DeCOSTER, INC., 2233 University Ave., St. Paul, Minn.—S



David Bogen, maker of sound equipment, uses new Bogen Commun o-phone.

★ One of the season's biggest public address jobs in New York City went into the Metropolitan Hospital, Welfare Island, when Wholesale Radio Service Co. recently installed a new Lafayette centralized system for the institution. The set-up handles 70 loudspeakers distributed throughout wards and departments for radio programs and announcements. Equipment also supplies the P.A. requirements for the main auditorium.

★ Central Communications Development Corp. now have new headquarters at 140 W. 22nd St., New York City. The layout includes space for offices, factory and laboratories; the firm manufactures Central-Call intercommunicators for national distribution.

★ Regal Amplifier Mfg. Corp., 14 W. 17th St., New York City, have completed an agreement with Electrical Research Products, Inc., whereby they are licensed to make and sell public address and intercommunication equipment under patents owned or controlled by Western Electric and American Telephone & Telegraph Co. Regal products will be merchandised under the trade name of Ramco.

The company makes a complete line of amplifiers, 5 to 100 w., portable and fixed, and also produces intercommunicating systems of both the wireless and wired types. Walter Spiegel is sales and advertising manager.

★ American Carrier-Call Corporation, makers of intercommunicator systems, have moved to larger quarters on the eighth floor of 39 W. 60th St., New York City, where the company's research laboratories and its plant for the manufacture and assembly of systems are now combined under one roof. A new operating head of the Carrier-Call organization was announced by President Gatter at a recent meeting at which changes were voted by the board. T. Stockton Gaines was elected executive vice-president. There will be no successor to former sales manager Gottschall, who died soon after his withdrawal from the company.

★ Leaflets describing microphone floor stands, bases, shock absorbers, etc., as well as new desk and banquet stands, have been released by Eastern Mike-Stand Co., 56 Christopher Ave., Brooklyn, N. Y.

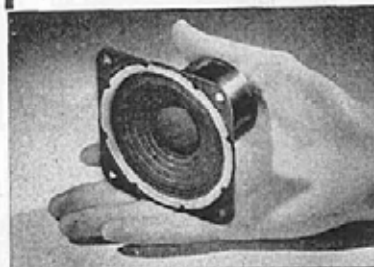
★ Amplitone Products Co., 152 Washington St., New York, N. Y., will send on request a new catalog on Amplitone amplifiers.

★ "The Brightest Star on the Intercommunicating Horizon" is the name of a new booklet published by Operadio Mfg. Co., St. Charles, Ill.

**SOUND
VALUE**



★
OXFORD SPEAKERS



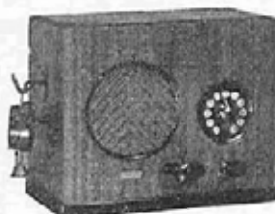
ELECTRO-DYNAMIC and "PERMAG" Speakers by Oxford, in a wide range of sizes and models for modern Receivers and Public Address systems. Write today for full details!

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OXFORD-TARTAK
RADIO CORPORATION
115 W. VAN BUREN ST. • CHICAGO, U. S. A.

Cash in **ON A WINNER**



TOKFONE Master Unit

Tokfone—adaptable to meet all requirements—from 2 to 40 stations—Systems are Wired or Wireless—Two-way communication can be carried on without the use of a talk-listen switch. . . . No Fancy Prices—All Net—All New Merchandise—No Preferences—No Tricks—No Makeshifts—Special Units If Necessary—No Quotas—No Contracts—Buy Them As You Need Them—Manufactured in Our Own Factory—We Stock Them—Beautifully Hand Rubbed Cabinets.

Communication between master station and any remote station in which any remote station can call the master, and the master is the only one that can call all remote stations separately, or altogether. Master comes equipped with Earphone. Works on AC-DC current. List Price \$47.50 for 1 master and 1 Remote and 50 ft. wire.

\$12.95 Net

Master to Master selective system which enables any outlying master to call any other master station; up to 18 separate stations and 9 separate and distinct conversations between station to station or any group of stations while any two or three, or more, stations are talking. Are equipped with earphone also without the use of the Talk-Listen switch. Works on AC-DC current. List Price \$45 each.

\$12.00 Net



TOKFONE Remote Unit

Wireless communication two way station to station only without the use of wires. Ideal for the home, office, shipping department, doctors, factory or any place requiring station to station communication. Works on AC-DC current. List Price \$69.50 per pair.

\$17.50 Net

We also manufacture P.A. Equipment in the following sizes: 6, 12, 15, 30, 60 Watt—Amplifiers—Parts used are: Aerovox-Thordarson—I.R.C.—Parmel-Rola-Claro-stat-Eby and Holyoke—Nothing but the best.

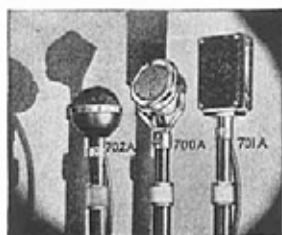
CATALOG NOW ON PRESS **VISIT OUR SHOW ROOM DISPLAY**
Licensed, By Agreement with Electrical Research Products, Inc., Under Patents Owned or Controlled By Western Electric Co. and American Telephone and Telegraph Company.

REGAL AMPLIFIER MANUFACTURING CORP.

14-16 WEST 17th STREET

NEW YORK CITY

—and HOW THEY PERFORM



Shure "ULTRA" offers you the highest performance available today in general purpose microphones. 8 exclusive built-in features give thrilling life-like reproduction and sturdy dependable service . . . yet "ULTRA" is unusually low in price. Because of this, "Ultra" Crystal Microphones are standard equipment with nationally-known sound-equipment manufacturers and eminent sound engineers everywhere. Available in Swivel, Grille, and Spherical models. **List Price, complete with 7 ft. cable, \$25**



★ SHURE "TRI-POLAR"

3 IN 1

Uni-Directional
Bi-Directional
Non-Directional

All in ONE Crystal Microphone

Here, for the first time, is one microphone that does everything! Gives you all three directional characteristics (1) Uni-Directional (2) Bi-Directional (3) Non-Directional—in one unit, each instantly available through a 3-point selector switch.

The Shure "TRI-POLAR" is the most advanced microphone available anywhere at any price! It enables you to select just the sound you want . . . gives you better results under adverse acoustic conditions.

Model 720A, complete with 25 ft. of cable, **List Price, only \$39.50**



ZEPHYR CRYSTAL PICKUP

The Shure ZEPHYR "Balanced-Tracking" Crystal Pickup reduces record wear . . . increases record life. Improved wide-range response gives finer reproduction. **Model 99B, List Price . . . \$12**

Specially designed Arm-Rest available at 50c. Not additional. Press arm down on post to lock. Releases when lifted.

For complete details ask your jobber, or write for Bulletin 144P today!

Shure patents pending. Licensed under patents of the Brush Development Company.



SOUND NEWS



Sales Mgr. D. P. O'Brien of Cinaudagraph.

★ Winners of the Clarion Amplifier contest sponsored by Transformer Corp. of America at the National Radio Parts Trade Show in Chicago have been announced: first prize, a \$62.95 portable sound system, Charles C. Tyler, chief electrician of the Chicago Opera House; second prize, a \$49.10 amplifier, Arthur G. Mohaupt, Devon Radio Labs., Chicago; third prize, a \$31.50 amplifier, W. M. Emery, radio service engineer, Coon Rapids, Iowa. More than 2,000 persons were in the competition.

★ Fowler Durst, long associated with the sound and communication industries, has resigned as vice-president and chief engineer of Guided Radio, Inc., where he also was in charge of commercial applications. Mr. Durst is a graduate of Bucknell University and the A.T.&T. courses in transmission engineering and accounting practices. For fifteen years he was with the Bell System, serving from 1920 to 1928 in the long-lines department of the American Telephone and Telegraph Company, and later as transmission engineer at Washington, D. C., and in 1928 transferring to Electrical Research Products, Inc., New York City, in design and commercial engineering capacities. Mr. Durst's home is at 29 Colgate Road, Great Neck, L. I., N. Y.

★ Universal Microphone Co., Inglewood, Calif., is under way with the production and distribution of a line of crystal microphones, incorporating the crystals of the Brush Development Co. First model is called the Handi-Mike and others will follow.

★ Epiphone, Inc., 142 West 14th St., New York City, makers of tube-amplifier musical instruments, have announced their exclusive national distributorship for DuMont Laboratories' new Resonoscope, an instru-

ment for determining the pitch of musical instruments or the voice.

★ A carbon microphone is offered by the Electro-Voice Mfg. Co., 338 E. Collax Ave., South Bend, Ind., as a prize for suitable questions for the newly published Electro-Voice fun department. First volume of this new publication carries a list of 20 questions with the multiple-choice type of answers.

★ H. A. Kapit, president of Atlas Projector Corp., and also head of W. O. Gutlohn, Inc., jobbers of 16 mm. sound-on-film, has announced that early this Fall, they will market a popular priced portable 16 mm. sound projector. The equipment is described as ideal for home and classroom use.

BOGEN SOUND SYSTEMS

ALWAYS FIRST WITH THE LATEST

This organization has not been content merely with keeping abreast of modern trends and developments. Repeatedly we have been

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In keeping with this policy, we will present for the first time in commercial sound equipment . . .

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PIONEERS IN PUBLIC ADDRESS DEVELOPMENT

SELLING SOUND

DISTRIBUTOR-DEALER PROBLEMS

(From page 9)

6. By all means, never "build your own"—at least for sales purposes. You are a thousand per cent better off to offer a factory-made outfit, for several good reasons. Such a product has a resale value. It offers good design, which the average man cannot possibly give. This may hurt the average sound man's ego, but if he is after profit, he had better heed this.

7. Sound equipment has a rather rapid depreciation. For this reason at intervals sell your obsolete equipment, or even junk it—you will be money ahead to "keep up with the parade."

8. Price your service and equipment properly, and then if some other firm wants to underbid you, let them have the job. Underbidding them will only cause them or you to lose money. Better let the other fellow be a victim to his folly.

9. Watch your accounts. Credit only those whom you know to be "good." Service to a dead beat means your time and money thrown away.

Jobbers see rapid growth

"Our own opinion is that unit sales of sound equipment are perhaps 100 per cent larger now than they were last year," says Seattle Radio Supply Co., Inc., Seattle, Wash. "We notice that the over-all dollar volume in the business is increasing rapidly."

"Out here in Wisconsin, sales of sound equipment look to us about 100 per cent better than they were last year," reports Valley Radio Distributors, Appleton, Wis. "The over-all volume done in the business is definitely on the increase."

"We will say that sales of sound equipment are about twice as good as a year ago," writes J. H. Larson, Hudson, Wis. "And the activity is such that total dollar volume done in the business here is certainly increasing."

SELLING AN AUDITORIUM JOB

(From page 17)

116 db. (80+30+6), as shown in accompanying chart.

In earlier paragraphs mention was made about absorption characteristics and acoustics. As a general rule most auditoria which haven't been treated acoustically have a high reverberation time at the low frequency end. That's why when a flat system is used it sounds boomy and unnatural.

Too much bass objectionable

One of the most recent P.A. jobs that is really good, used horns that didn't have any response below about 400 cycles. You may recall some of the older type horns that didn't sound so natural. One of the reasons was that a lot of people tried to make low frequencies come out of those

horns and others tried to squeeze too much power out of them.

It is surprising what improvement can be made both in the singing point of a system and the naturalness of the sound if an equalizer (adjustable if possible) is used to attenuate the lows. It is preferable to insert it in near the input stages or right after the mixers. Sound picture recording engineers use them most all the time and they call them—dialogue equalizers. By taking the auditorium characteristics into consideration, one will save a lot of trouble and save the customer a lot of expensive acoustical treatment.

One of the most practical ways to determine what equalizing is needed is to turn up the gain until the system sings. The frequency it sings at is the natural peak of the auditorium characteristic if a substantially "flat" sound system is employed. With a set of tuning forks (can be borrowed from local high school) or a frequency record or piano the value of the frequency can be determined. Then attenuate that part of the frequency band with a resonant circuit if necessary. Put in just enough attenuation to make the system sound natural and the singing frequency will be high enough to avoid low frequency difficulties.

5 MINUTE TONE TEST

Try it with a "Bullet" Microphone!

• Believe your own ears! Try the five minute tone test. Here's what you do. Listen to sound reproduction using any velocity or crystal mike comparable in price to a "Bullet" model. Listen to it for a full five minutes. Then disconnect it and immediately hook up a "Bullet" mike . . . and listen. You'll be amazed at "Bullet" superiority! Nothing we could say would be as convincing as this testimony of your own ears. Try the tone test and you'll agree that "Bullet" is the big buy in mikes.

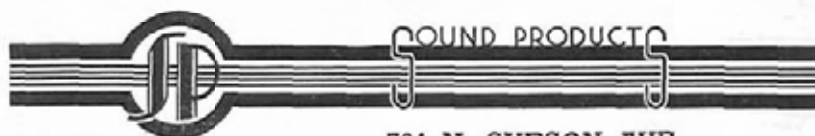
When our engineers created the new 1938 "Bullet" dynamic microphones they built a line unsurpassed in quality and performance. "Bullet" mikes are remarkably sensitive, rugged and dependable. You who appreciate fine quality in sound reproduction will do well to get complete data on the new "Bullet" line, Models TR-5, 6, 7, 8 and 9 range in list price from \$27.50 to \$90.00. There's a model to fill your need. For complete data and prices, write now to Dept. 88.



"BULLET" MICROPHONES

Made only by

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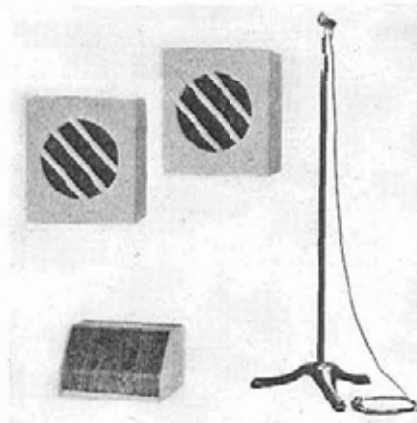
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BEAM POWER ULTRA
MODERN SYSTEM

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- 1—Floor stand
- 2—10" P.M. Speakers
- 2—Speaker boxes
- 1—P.A. 20 amplifier

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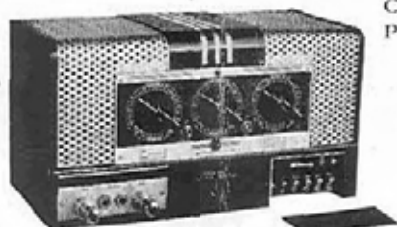
REMOTE ELECTRIC MIXING



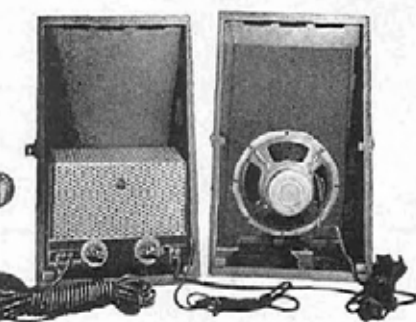
● (at left) The most important and valuable item ever developed for use in connection with PA equipment. Permits mixing of input circuits at any desired point remote from the amplifier. Shielded signal circuits not required. An absolute requisite for ball park, auditorium and similar installations.



● (above) A new high gain, general purpose, quality amplifier at low cost. Beam power output. Excellent frequency response...continuously variable tone control, reverse feed back circuit...microphone and phonograph inputs...wide variety output impedances... attractively finished in silver gray and aluminum. MI-4264, Price \$36.50 (Less Tubes).



● (above) A de luxe, 24-watt amplifier with remote electric mixer. Splendidly shielded and cushioned input circuits insure quiet operation. Inverse feed back circuit... continuously variable tone control... automatic bass compensation for phonograph reproduction... two 250 ohm and two 0-5600 inputs... variable output impedance 4 to 250 ohms... finish, silver gray and aluminum. MI-4284, Price \$133.50 (Less Tubes and remote electric mixer unit).



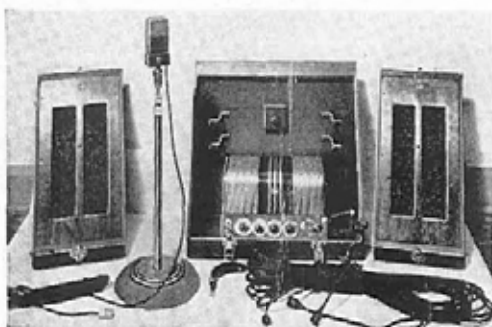
● (above) RCA quality at low cost. Here's a portable RCA unit that will find numerous ready buyers because of its highly efficient, general purpose amplifier. Record reproduction alone, or as a background to voice. Complete in every respect, as illustrated. PG-111, Price \$99.50.



● (above) A remarkably efficient 12-watt amplifier. Operates from either 110 volts AC or 6-volt dynamotor. Excellent mobile unit for sound trucks, buses, etc. 250 or 500,000 ohm inputs. Finished in silver gray and aluminum. MI-4274, Price \$78.60 (Less Tubes).



● (above) Two ace microphones for PA use. Left, RCA Junior Velocity "Mike." Provides real reliability and long life. New alnico magnets—marked increase in sensitivity, much higher signal to noise ratio. High, intermediate, or low output impedance. Adjustable mount, highly flexible. Unaffected by temperature or pressure changes. Bi-directional with null plane. MI-4036, Price \$43.50. Right, RCA Aerodynamic "Mike." Small enough to fit the hand. Excellent frequency response. High sensitivity. Excellent for close talking. No external excitation or power required. MI-6226, Price \$26.50.



● (above) A universally adaptable PA System. Operates from 110-AC or 6-volt storage battery and dynamotor. Permanent or mobile installation. 12 watts output, two powerful dynamic speakers with RCA velocity microphone. Provides a highly efficient PA System for numerous locations where good sound is paramount. PG-112, Price \$199.50.



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