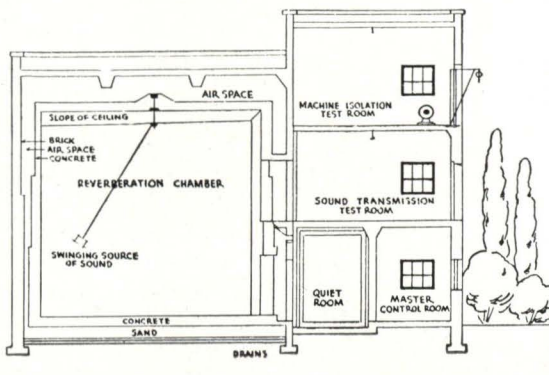

Johns-Manville
SOUND CONTROL
JOHNS-MANVILLE
JM
PRODUCTS

Where the control of Sound became an exact science—
The J-M Acoustical Research Laboratory

Birthplace of many important contributions to better, more exact control of sound, the J-M Acoustical Research Laboratory is equipped with every modern device to assist the scientist in his work. Above is a scene inside the "Reverberation Chamber" where the sound absorption efficiencies of different materials are carefully determined. At right is shown a cross section of the laboratory.



More than a quarter century of experience and the facilities of one of the world's finest Acoustical Research Laboratories are at your service when you submit your Sound Control Problems to

JOHNS-MANVILLE

PIONEERS IN SOUND CONTROL

LIKE any exact science, the science of sound control is founded on facts. For more than 25 years, Johns-Manville has been gathering facts about sound and the most effective way to control it. In the Johns-Manville Acoustical Laboratory, one of the finest and most completely equipped of its kind, tests are constantly being made which discloses the behavior of sound under all conditions. Here materials have been developed which absorb sound to any desired degree. Methods have been perfected for reducing noise and for controlling and isolating sound within closely prescribed limits.

As a result of this quarter-century program of research and development and an equally broad practical experience, Johns-Manville has been able to eliminate cut and try methods and to provide the scientifically correct solution to virtually any problem involving the control of sound. Some idea of the many distinct acoustical services which J-M is prepared to render may be gained from the two following pages.

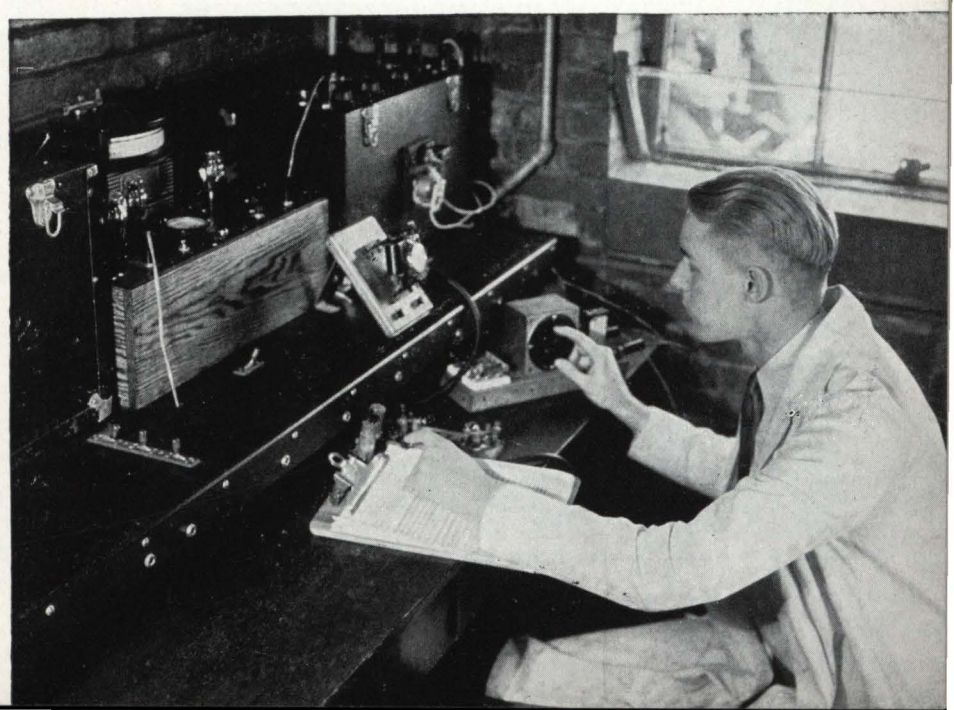
To assist the architect in an advisory capacity, Johns-Manville maintains a staff of trained acoustical engineers in the principal cities of the United States and Canada. These men are prepared to make analyses of acoustical conditions in buildings of all types, with specific recommendations for each particular problem, including the selection of the J-M material or method best suited to the job. Their services are available to the architect on this basis at all times, without cost or obligation.

The practical application of J-M Sound Control Materials is handled by a nation-wide organization of J-M Acoustical Construction experts. These men, thoroughly trained in Johns-Manville methods, are equipped to furnish prompt estimates and to handle all details of application.

See back cover for list of offices at which J-M Acoustical Engineers are located.

Member of

ACOUSTICAL MATERIALS ASSOCIATION

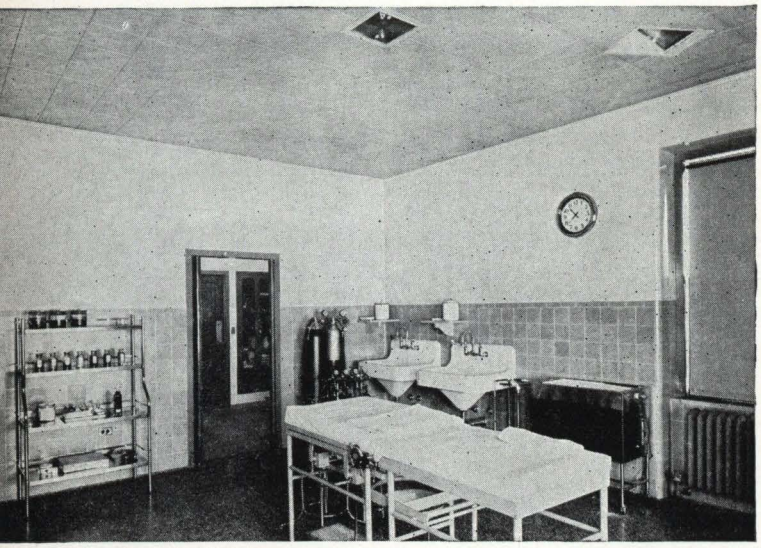


Right: A Johns-Manville Engineer records, by remote control, the result of one of the daily tests made in the "Reverberation Chamber" (shown at left) at the J-M Acoustical Research Laboratory. The technical knowledge gained as a result of this research program is available to architects through a nation-wide organization of J-M Field Engineers.

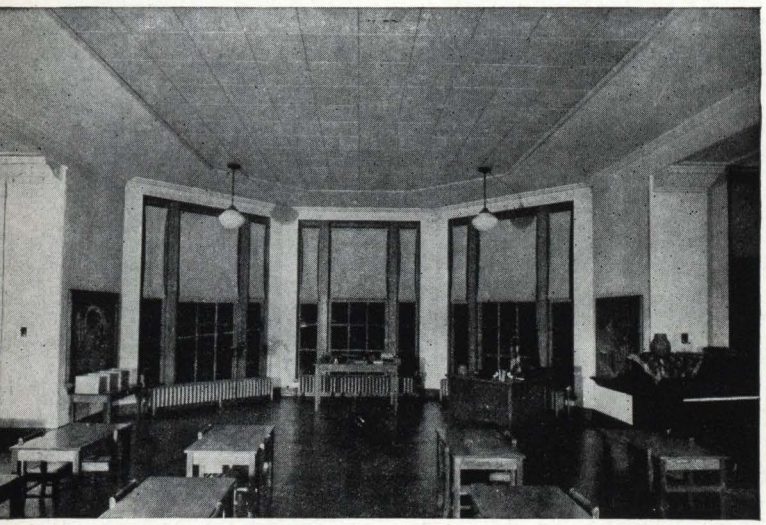
JOHNS-MANVILLE SOUND CONTROL



In the main office of the Prudential Insurance Co., Newark, N. J., J-M Sound Control has brought welcome relief from distracting noise to hundreds of workers.



A ceiling of J-M Sanacoustic Units meets sanitary requirements and assures restful quiet in the delivery room of the Allegheny Hospital, Pittsburgh, Pa.



This modern kindergarten in the Christian Park School, Indianapolis, Ind., like hundreds of other schools, has been quieted with J-M Sound Control treatment.

Offering the Architect a complete for meeting today's complex

OFFICE QUIETING

Noise is Public Enemy No. 1 of American Business. To get rid of this costly—and unnecessary—nuisance that levies untold tribute in time lost, energy wasted and production slowed up, Johns-Manville offers time-tried materials and methods for overcoming the noise problems of the modern business office. In thousands of busy offices, J-M Sound Control has brought noise completely under control, providing better working conditions and assuring profit-paying quiet. Architects interested in obtaining these advantages for their clients are cordially invited to consult with J-M Engineers.

SOUND CONTROL for HOSPITALS

Hand in hand with the problem of eliminating noise in the modern hospital is the problem of sanitation. J-M Engineers early recognized this two-fold problem, and in developing a system of Sound Control for hospitals, have perfected materials that not only provide effective sound absorbing qualities, but are custom-made for hospital usage from the standpoint of meeting sanitary requirements as well. Readily cleaned and painted, dirt-repelling, and both rot and vermin-proof, these materials are ideal for use in wards, corridors, kitchens, dining rooms, utility rooms, delivery rooms, nurseries and all other locations where the noise generated reaches a disturbing level.

SOUND CONTROL for SCHOOLS

In the modern school with its greatly broadened activities, noise is one of the most serious handicaps with which both student and teacher have to contend. Here again, Johns-Manville, through a careful study of the many problems involved, has developed a complete system of Sound Control. Wherever unwanted noise occurs—in the classroom, the auditorium, the cafeteria or in any one of a score of other locations—it can be effectively wiped out with J-M Sound Control Materials, applied in accordance with the proved methods developed through J-M's quarter century of acoustical experience.

Acoustical Engineering Service
Sound Control Problems

AUDITORIUM ACOUSTICS

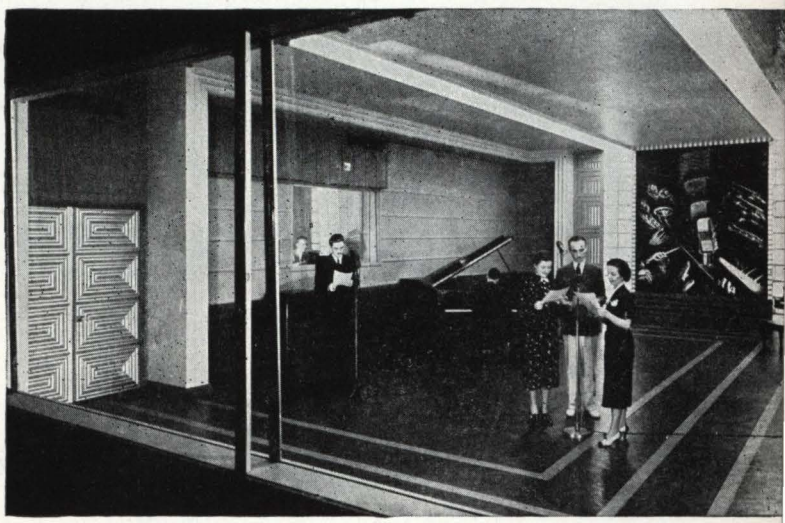
More than any other form of Sound Control, auditorium acoustics require a highly specialized treatment. Many factors requiring consideration are usually present and each particular auditorium presents an individual problem. How can "dead spots" be avoided and uniform distribution of sound be assured? Shall the absorbing material be applied to the ceiling alone —or to ceiling, sidewalls and backwall? These and similar questions that confront the architect are readily answered by J-M Engineers, who have provided proper hearing conditions in many thousands of theatres, churches, music and concert halls and other types of auditoriums throughout the country. This broad experience is freely available to architects who are faced with the problem of meeting both acoustical and architectural requirements in their design.



A J-M acoustically treated ceiling assures correct hearing conditions without sacrificing architectural beauty in this University of Rochester auditorium.

BROADCASTING STUDIOS

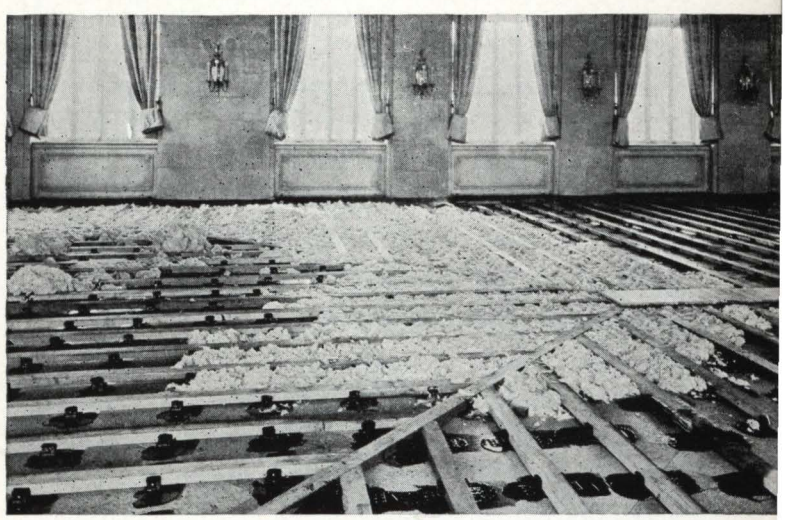
As pioneers in sound control, Johns-Manville has been in a unique position to meet the exacting acoustical requirements of the broadcasting industry. Such problems as the elimination of reverberation and distortion, the absorption of sound at all frequencies, and the proper designing of the studio to keep out extraneous noise, have yielded readily to the research of J-M Engineers. As a result, J-M Sound Control Materials and Methods today play a major part in creating and safeguarding high-fidelity broadcasting. An illustrated brochure "Studios by Johns-Manville" is available to architects on request. (See also page 11.)



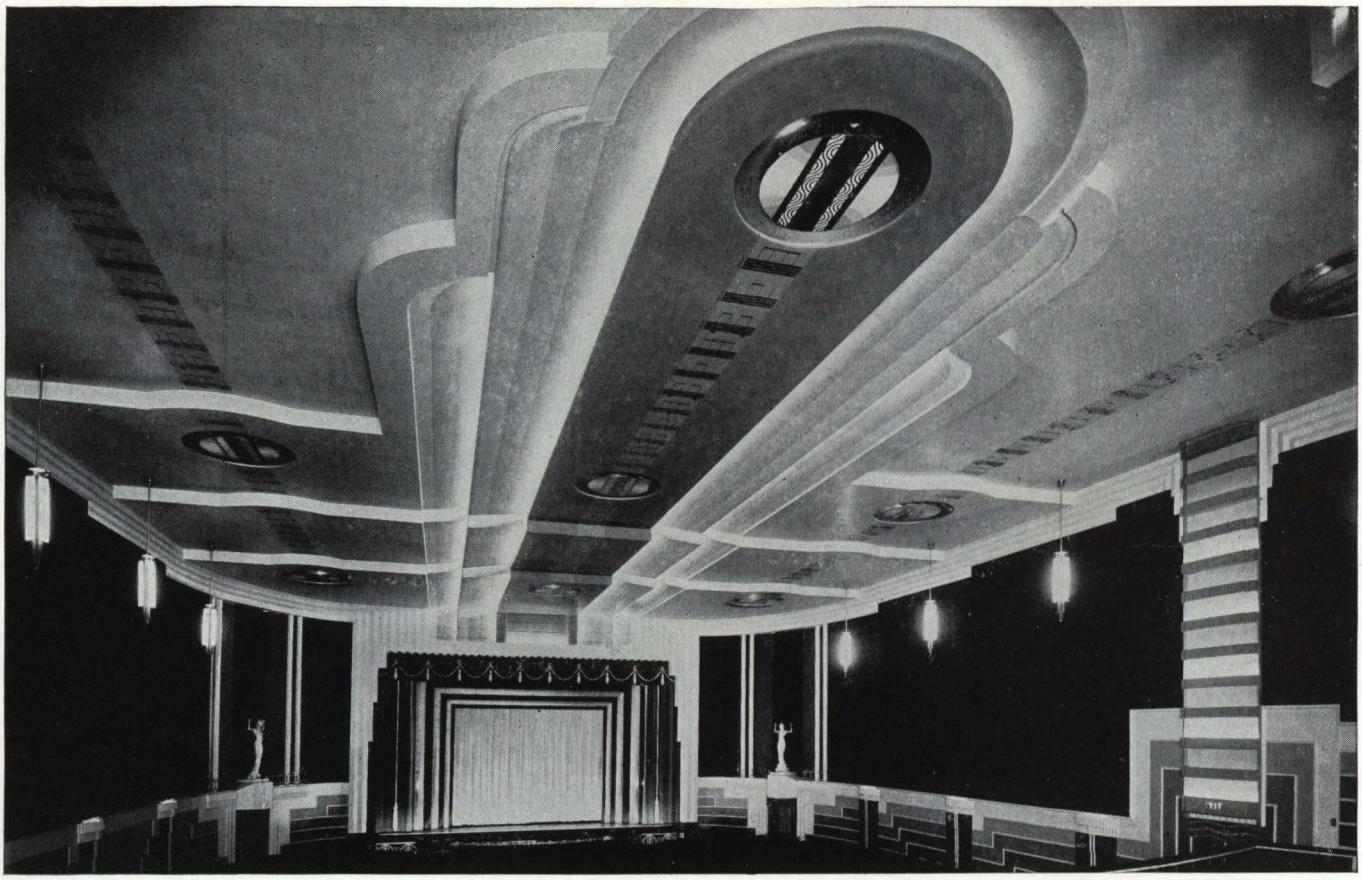
One of many broadcasting studios with Sound Control by Johns-Manville— Station WOWO—WGL, Fort Wayne, Ind. Note the effective modern design.

SOUND ISOLATION

The J-M system of Sound Isolation is an ingenious method of isolating sound and vibration at its source by preventing sounds from traveling from one space to another through partition, floor and ceiling structures. It is particularly adapted for the isolation of sounds generated in machine shops, ventilating equipment and similar noisy areas within the building and is extensively used in the construction of music practice rooms, band and orchestra rooms, broadcasting studios, motion picture studios, ballrooms, etc. (See also page 10.)



A J-M sound-isolated floor under construction. Cushioned floor chairs are a part of the "floating" construction which effectively isolates sound and vibration.



The variety and flexibility of J-M Acoustical Materials make possible the fulfillment of all architectural requirements, as is evidenced by the striking beauty of this interior. Eglinton Theatre, Toronto, Ontario. Kaplan & Sprachman, Architects.

There is a Johns-Manville Acoustical Material for every type of Sound Control Requirement

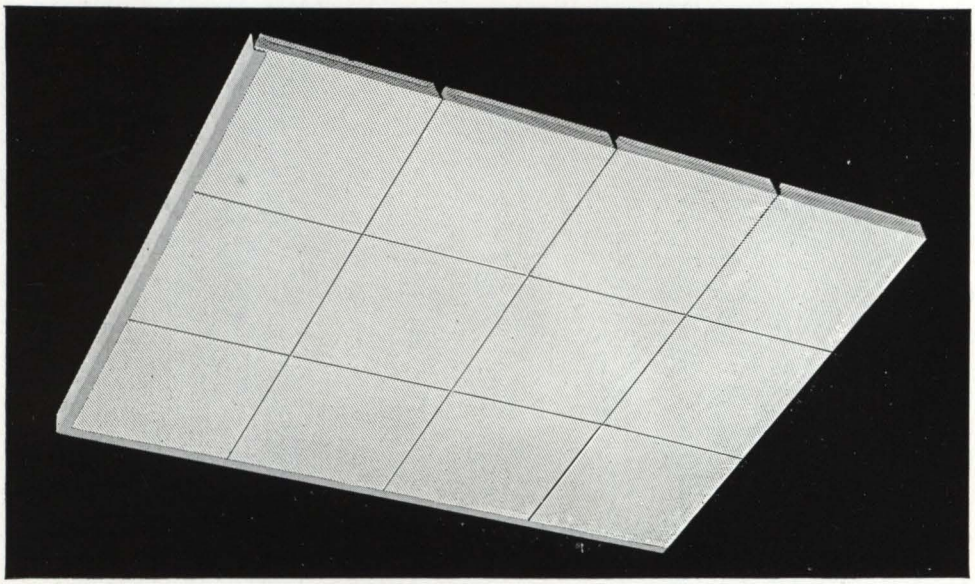
BECAUSE acoustical problems are so diverse in their nature, no one type of sound control material can provide the most effective corrective measures in all cases. For this reason, and to meet practical and decorative requirements as well, Johns-Manville offers the architect a wide choice of materials, as described on the following pages.

Each of these materials has been designed to provide a certain required degree of sound absorption; its performance in this respect has been carefully predetermined at the J-M Acoustical Laboratory. In addition, each has been put through the most rigid tests for applicability, paintability, moisture-resistance, strength and other important physical properties. No J-M Sound Control Material is approved for commercial use that has not successfully passed these exacting requirements.

And once approved, strict adherence to these specifications is insured by frequent control tests made with samples taken from production before shipment is made.

By thus providing materials to meet all conditions—materials whose performance is definitely known in advance — Johns-Manville is equipped to make a completely unbiased recommendation for the most effective and economical solution to every type of problem in sound control.

JOHNS-MANVILLE SOUND CONTROL



A typical Sanacoustic ceiling panel. Note the perfect alignment of the units.

SANACOUSTIC UNITS

Sanacoustic Units, because of their exceptionally high sound absorbing efficiency, low maintenance cost and permanence, are probably the most widely used of any acoustical material available today.

Composed entirely of metal, mineral wool and asbestos, such a ceiling cannot rot, disintegrate or burn. Each unit consists of a perforated sheet metal casing, finished with baked enamel and containing a special rock wool pad—the sound absorbing medium. The units lock into tee bars mechanically fastened to the surface to be treated—a method of installation which permits any part of the ceiling to be taken down and relocated without loss of materials.

To assure the maximum absorption of sound, the face of the rock wool pad is left exposed behind the perforated metal casing. The back and edges of the pad, however, are covered with asbestos paper to prevent the infiltration of air.

The baked enamel surface of Sanacoustic Units may be washed repeatedly without injury to the finish or painted without loss of sound absorbing efficiency, although painting is unnecessary unless a change of color is desired. The permanence of the surface and the ease of cleaning assure low maintenance costs.

Sanacoustic Units are available in white or cream enamel, in wood grain finish, and in polished or enameled aluminum. Standard sizes are 12" x 12", 16" x 16", and 24" x 24".

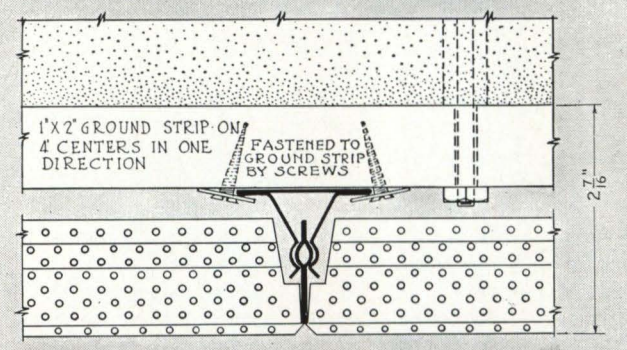
SANACOUSTIC VENTILATING CEILINGS

Besides quieting room noise, Sanacoustic Ventilating Ceilings also afford uniform distribution of air. Consisting of 12" x 24" Sanacoustic Units hung as a suspended ceiling, each unit is so installed that the furred space becomes a plenum chamber for the air conditioning system. The thousands of perforations in each unit serve as supply openings, through which air flows slowly and noiselessly into the room.

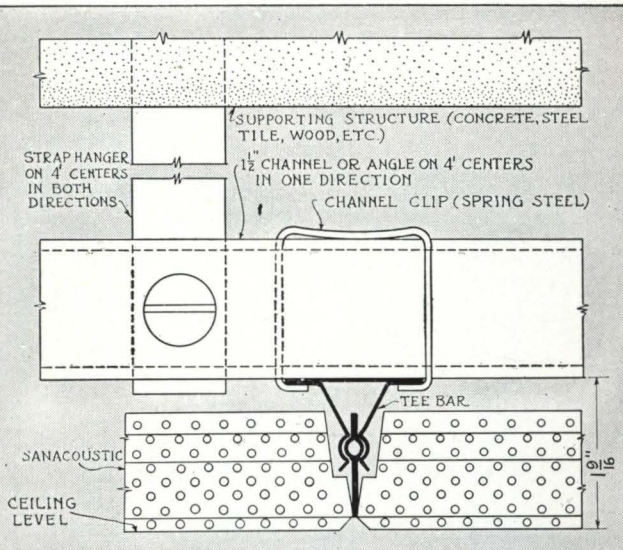
SOUND ABSORPTION COEFFICIENTS

Tests by the official laboratory of the Acoustical Materials Assn.

Material	Thickness	128 Cycles	256 Cycles	512 Cycles	1024 Cycles	2048 Cycles	Noise Red. Coefficient
Sanacoustic Units	1-9/16"	.43	.65	.95	.93	.80	.85

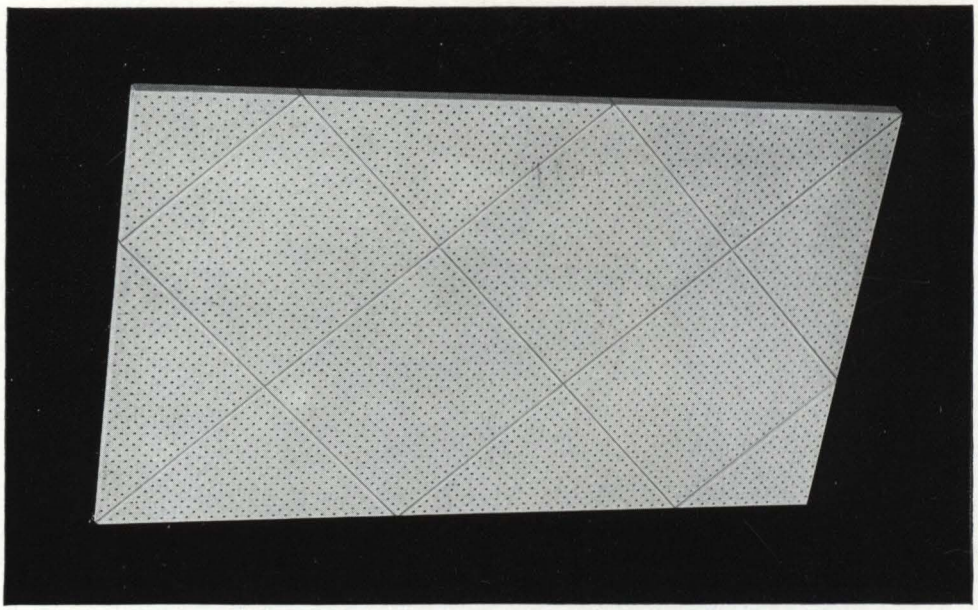


METHOD OF ATTACHING SANACOUSTIC TO EXISTING CEILING



METHOD OF SUSPENDING SANACOUSTIC FROM SLAB

JOHNS-MANVILLE SOUND CONTROL



This ceiling panel of Transite Acoustical Units illustrates one of several designs possible.

TRANSITE ACOUSTICAL UNITS

This material offers the ultimate in fire-resistance and permanence in an acoustical ceiling. Its surface is a perforated sheet of Johns-Manville Transite, an asbestos-cement product, which because it is fireproof as well as highly resistant to moisture and corrosive fumes, has for many years served as a highly satisfactory building material for industrial building exteriors. In Transite Acoustical Units, this rugged material is backed by a rock wool sound-absorbing element, forming an all-mineral ceiling which is ideal for such locations as chemical laboratories, gymnasiums, swimming pools, etc., as well as offices and auditoriums.

Because of their sound-absorbing characteristics, Transite Acoustical Units also insure the acoustical brilliancy so desirable in music rooms, band and orchestra halls and theatres.

Brass grommets, inserted in the corners of each unit, fasten the sound-absorbing element and the facing together, and also provide openings for nailing through the unit to the furring strips.

The units are furnished in the natural buff finish of Transite and in a cream white finish, in 12" x 12" squares of 1⅛" thickness.

TRANSITE ACOUSTICAL PANELS

Transite Acoustical Panels are similar in appearance to Transite Acoustical Units. The panels, however, are available in larger sizes and with a choice of sound-absorbing elements. They are furnished in the natural buff finish of Transite and in a cream white finish in sizes of 12" x 12", 12" x 24", 24" x 24" and 24" x 48".

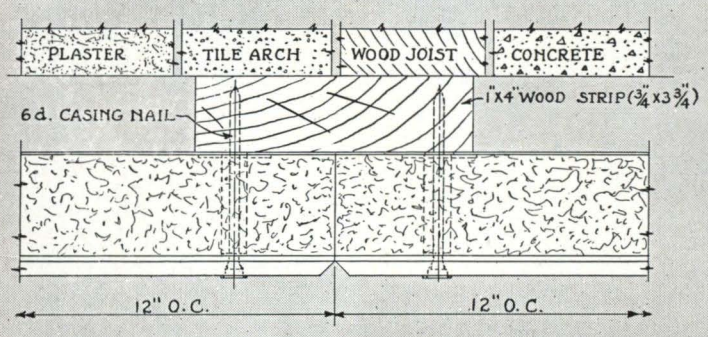
In using Transite Acoustical Panels, the sound absorbing element must first be installed between wood furring strips, after which the perforated Transite panels are secured to the face of the furring strips.

The sound absorbing coefficients of Transite Acoustical Panels are governed by the type and thickness of the sound absorbing element used in the construction.

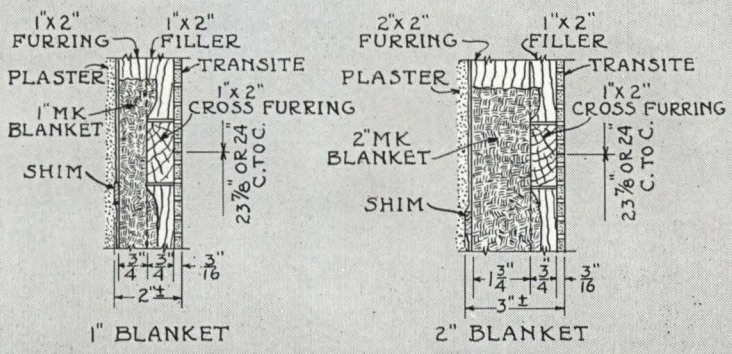
SOUND ABSORPTION COEFFICIENTS

Tests by the official laboratory of the Acoustical Materials Assn.

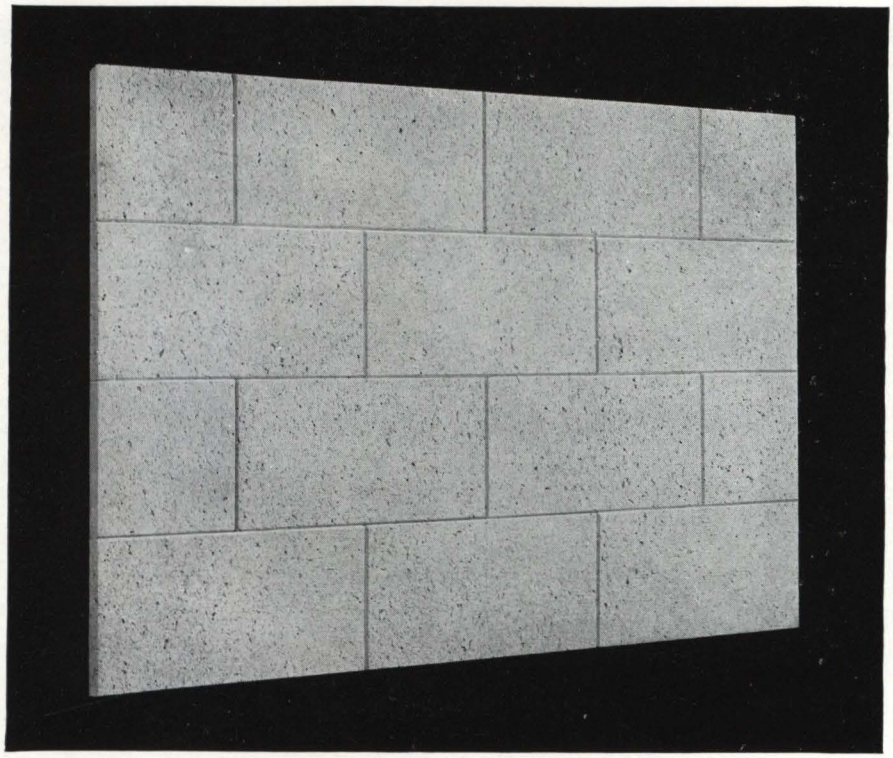
Material	Thickness	128 Cycles	256 Cycles	512 Cycles	1024 Cycles	2048 Cycles	Noise Red. Coefficient
Transite Acoustical Units	1⅛"	.47	.65	.69	.77	.70	.70



SECTION SHOWING INSTALLATION OF TRANSITE UNITS



SECTION DETAILS OF TRANSITE ACOUSTICAL PANELS WITH SOUND ISOLATION BLANKET



A beautiful wall panel of Permacoustic—an ideal acoustical material for both walls and ceilings.

PERMACOUSTIC

This new J-M Acoustical Material is a ceramic product formed by baking rock wool and clay under extremely high temperatures. The resultant material has a warm, pleasing, light cream color with an interesting, rather fine surface texture providing a character and appearance not found in most acoustical products. Light in weight, it is easily handled and may be cut with an ordinary carpenter's handsaw.

Although a utilitarian material, Permacoustic is especially adaptable to monumental type buildings where high sound absorption is required. Its stone-like appearance harmonizes splendidly with the masonry surfaces that are so frequently used in churches, school lobbies, theatres, libraries, courtrooms and similar interiors as well as in offices.

Permacoustic may be painted if desired and is easily cleaned with soap and water without affecting its sound-absorbing qualities or in any way altering its attractive texture or its basic composition. It is furnished in sizes of 12" x 12", 9" x 9" and 9" x 18" with a ⅛" bevel on all sides and in 1" thickness.

FIBRETEX

Fibretex is a fire and moisture-resistant acoustical material made of wood fibre. It is particularly applicable in offices, schools, churches and gymnasiums where a sound-absorbing material giving a tile pattern or plank effect in harmonizing colors is desired. Fibretex is available in standard colors of white, light buff, medium buff, dark buff, light gray and apple green. Fibretex is supplied in sizes of 6" x 12", 12" x 12", 6" x 24", 12" x 24" and 24" x 24", in thicknesses of ⅝", ¾", ⅞", 1" and 1⅛" and is also available in planks of 6", 12", and 24" widths, in lengths up to 96".

NASHKOTE

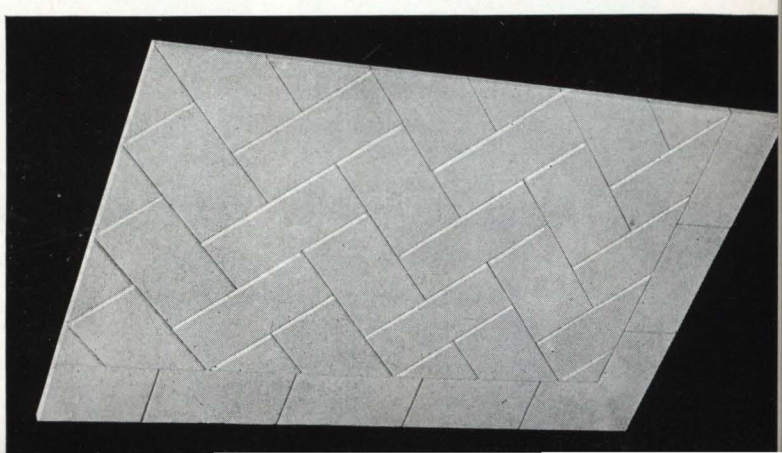
Nashkote is recommended for installations where an unbroken finish rather than tile lines are desired. It consists of Akoustikos Felt covered with a membrane. Three types are available: Nashkote A—muslin membrane painted with flat interior paint; Nashkote S—muslin membrane with sand finish; and Nashkote B—perforated Sanitas membrane.

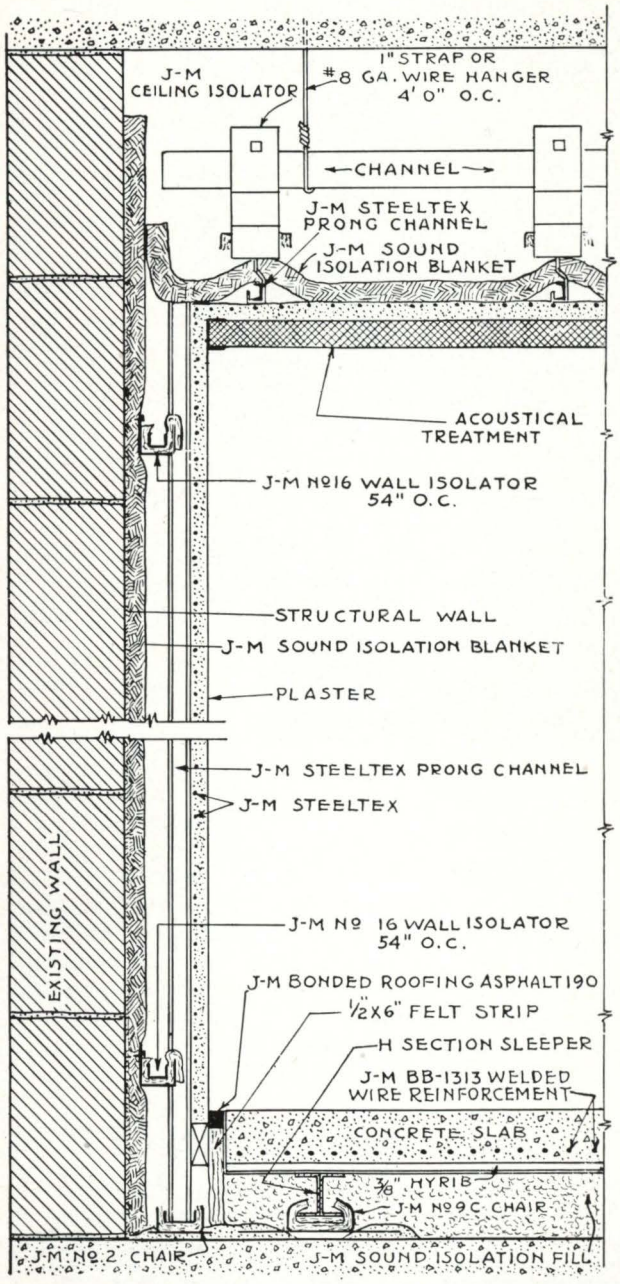
SOUND ABSORPTION COEFFICIENTS

Tests by the official laboratory of the Acoustical Materials Assn.

Material	Thickness	128 Cycles	256 Cycles	512 Cycles	1024 Cycles	2048 Cycles	Noise Red. Coefficient
Permacoustic	1"	.21	.47	.74	.72	.75	.65
Fibretex	⅞"	.24	.40	.82	.90	.72	.70

A Fibretex ceiling panel in Herringbone design.





J-M SYSTEM OF SOUND ISOLATION

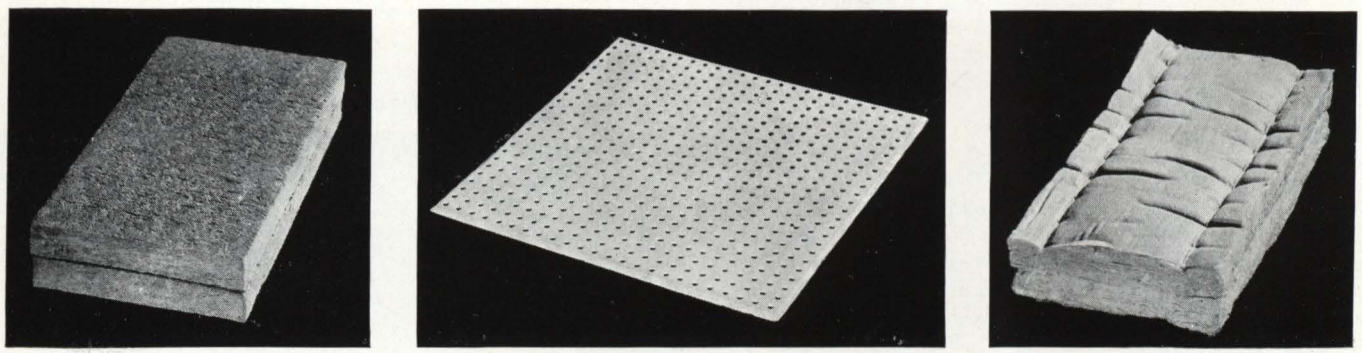
The principle of the J-M System of Sound Isolation is based on the erection of a light weight interior which is within, yet completely separated from, the rest of the structure. This is accomplished by means of shock-absorbing isolators. No solid, through-connections are used.

Sound Isolation treatments are advantageously installed in clubs or lodge buildings, in hotels, hospitals, libraries and in individual buildings where light manufacturing is conducted adjacent to office spaces. Where mass drills and games are in continuous session, the isolation of school gymnasiums makes possible the use of nearby classrooms for lectures, recitation and study. Music instruction, band or orchestra practice rooms particularly require a sound isolation treatment.

Radio broadcasting studios must be completely isolated in order to permit accurate reproduction of music and speech. It is imperative that extraneous sounds originating in corridors, control rooms or other studios be kept from the microphone. Guarding against these noises necessitates studio isolation which actually constitutes a "room within a room."

Sound Isolation also permits many economies in design and construction such as locating ventilating fans and motor generator sets where they are needed. These as well as other noise-producing service activities may be conveniently placed and sound isolated instead of grouped in out-of-the-way places. Theatres may be built next to bowling alleys, and billiard rooms next to ballrooms if measures are taken to prevent the transmission of sound between them.

Left: Johns-Manville System of Sound Isolation as applied to walls, ceilings and floors in fireproof construction.

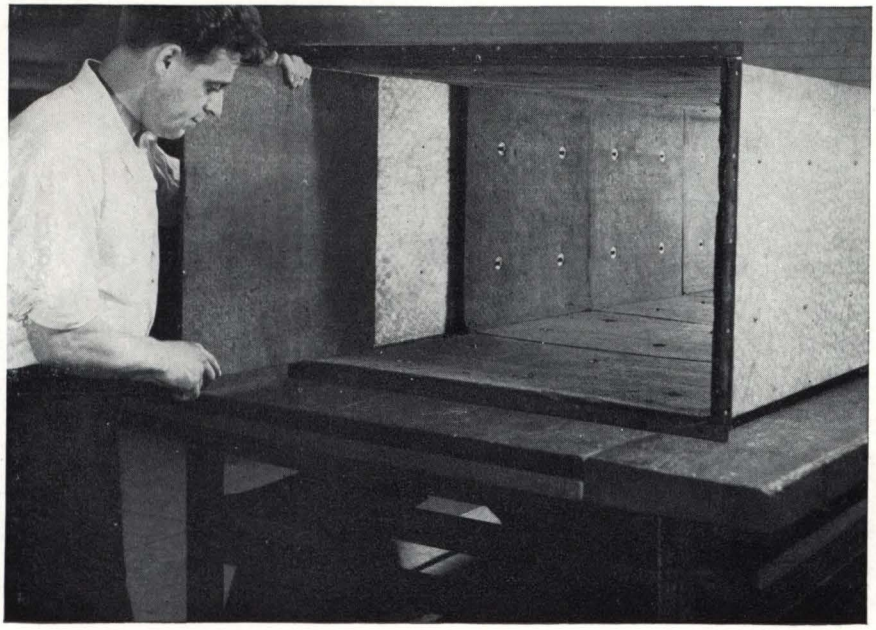


J-M SOUND CONTROL MATERIALS FOR BROADCASTING STUDIOS

The Transite Acoustical Panel, center, is used over the rigid Studio Element, left, or Sound Isolation Blanket, right, to achieve the correct acoustical balance.

J-M AIRACOUSTIC SHEETS FOR DUCT LINING

J-M Airacoustic Sheets, primarily designed for duct lining in air-conditioning systems, are a sound-absorbing material in rigid block form composed of rock wool and a suitable binder. Because they will not smolder or support combustion, their use is recommended for all installations where combustible or merely "fire-resisting" materials would contribute to the fire hazard. The sheets are also easy to handle, cut and apply.



Light in weight, Airacoustic Sheets are easy to handle and install in the duct.

The extent of the fire hazard in air-conditioning systems is evidenced by the report of the National Board of Fire Underwriters (Bulletin No. 10, issued Jan. 22, 1935, entitled "The Hazard of Combustible Linings in Air Ducts"). The bulletin reports on two serious fires which were the direct result of the combustible nature of the material used as a sound-absorbing lining of the ducts in air conditioning systems.

Possessing a high degree of sound absorption, Airacoustic Sheets are also extremely resistant to moisture, an especially important advantage in a duct lining material. The sheets, 24" x 36" in size, are furnished in standard thicknesses of ½", 1" and 1½".

SOUND ABSORPTION COEFFICIENTS

Tests by the official laboratory of the Acoustical Materials Assn.

Material	Thickness	128 Cycles	256 Cycles	512 Cycles	1024 Cycles	2048 Cycles	Noise Red. Coefficient
Airacoustic Sheets	½"	.24	.46	.50	.57	.63	.55
	1"	.46	.60	.63	.66	.73	.65

BROADCASTING STUDIO ACOUSTICS

There is no sound control problem as critical as that encountered in broadcasting studios. Not only must proper balance be maintained between the fundamentals, harmonics and over-tones of speech and music, as generated within the studios, but the isolation of extraneous sound from the studios and control rooms must also be carefully considered. (See detail of J-M System of Sound Isolation on preceding page).

Johns-Manville specializes in the design and construction of broadcasting studios, maintaining a consulting service for the assistance of architects engaged on such projects. This service embraces all phases of the problem, including a study of the proposed site with relation to potential noise problems, planning the studio group, relationship of studios and control rooms, studio proportions and size, acoustical correction by the use of materials with the proper characteristics and distribution, together with the all-important consideration of adequate sound isolation.

"STUDIOS BY JOHNS-MANVILLE"

The following list includes some of the recent studio installations of Johns-Manville Sound Control:

KDKA,	Pittsburgh, Pa.	**WCOU,**	Lewiston, Me.
KRLD,	Dallas, Texas	**WEBC,**	Duluth, Minn.
WABC,	New York, N. Y.	**WGN,**	Chicago, Ill.
WBBM,	Chicago, Ill.	**WJSV,**	Washington, D. C.
WDBJ,	Roanoke, Va.	**WJZ,**	New York, N. Y.
WEAF,	New York, N. Y.	**WKY,**	Oklahoma City, Okla.
WENR,	Chicago, Ill.	**WLS,**	Chicago, Ill.
KNX,	Los Angeles, Cal.	**WMAQ,**	Chicago, Ill.
KFI,	Los Angeles, Cal.	**WOR,**	New York, N. Y.
WRNL,	Richmond, Va.	**WOW,**	Omaha, Nebr.
WGY,	Schenectady, N. Y.	**WWJ,**	Detroit, Mich.
KYW,	Philadelphia, Pa.	**WRC,**	Washington, D. C.
KGKO,	Ft. Worth, Texas	**WICA,**	Ashtabula, O.
CKTB,	St. Catherines, Ont.	**WOWO,**	Ft. Wayne, Ind.
WDAN,	Danville, Ill.	**WHAS,**	Louisville, Ky.
WOAL,	San Antonio, Texas	**KGNC,**	Amarillo, Texas

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Robert Vail Cole Jr, AIA
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Johns-Manville

SOUND CONTROL

At each of the J-M Offices listed below, there is a Johns-Manville Acoustical Engineer whose services are available to architects at all times in an advisory capacity, without cost or obligation.

Albany, N. Y. . . . . 1039 Broadway
Atlanta, Ga. . . . . 101 Marietta Street Bldg.
Baltimore, Md. . . . . 1312 Standard Oil Bldg.
Boston, Mass. . . . . 49 Federal Street
Buffalo, N. Y. . . . . 220 Delaware Avenue
Chicago, Ill. . . . . 222 North Bank Drive
Cincinnati, Ohio . . Central Parkway at Walnut St.
Cleveland, Ohio . . 45 Prospect Avenue, N.W.
Dallas, Texas . . . . . 2107 Griffin Street
Denver, Col. . . . . 17th & Glenarm Place
Detroit, Mich. . . . . West Grand Blvd. at Second
Hartford, Conn. . . . 29 Bartholomew Avenue
Houston, Texas . . . . 2212 Polk Avenue
Indianapolis, Ind. . . 1503 Merchants Bank Bldg.
Kansas City, Mo. . . 2030 Walnut Street
Los Angeles, Cal. . . 816 West 5th Street
Milwaukee, Wis. . . . . 757 North Broadway
Minneapolis, Minn. . . . 732 Baker Building
New Orleans, La. . . . . 200 Carondelet Street
New York, N. Y. . . . . 22 East 40th Street
Philadelphia, Penn. . . . . 1617 Penna. Blvd.
Pittsburgh, Penn. . . . . Liberty Ave. at 7th St.
Portland, Ore. . . . . 319 S.W. Washington St.
Rochester, N. Y. . . . . 999 East Main Street
St. Louis, Mo. . . . . 1000 Market Street
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