

The Architectural

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Roger Sturtevant, Photos

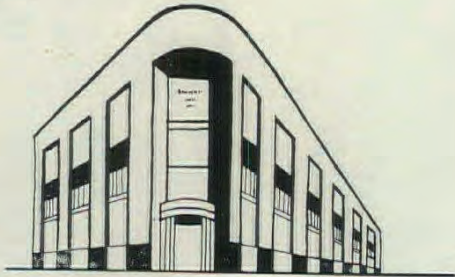


A LONG OVERDUE
CRYSTAL AND METAL TOWER"
CATCHES THE LIGHTNESS
OF THE MULTI-STORY CAGE

EQUITABLE BUILDS A LEADER



Roger Sturtevant

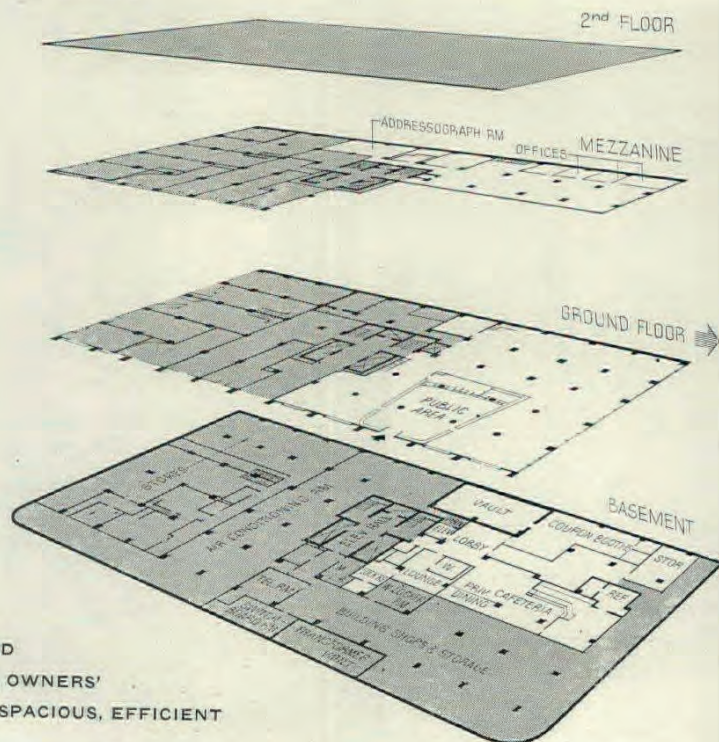
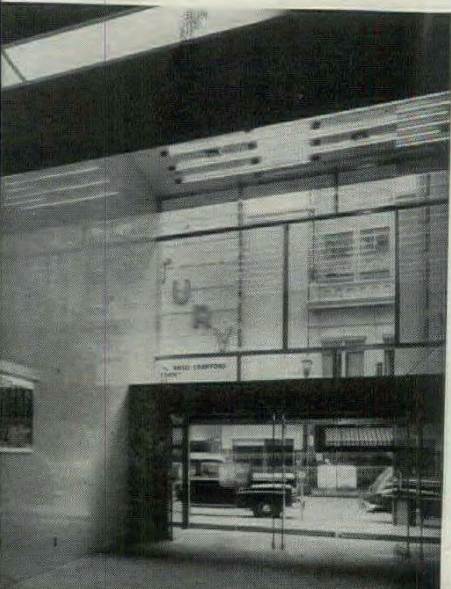
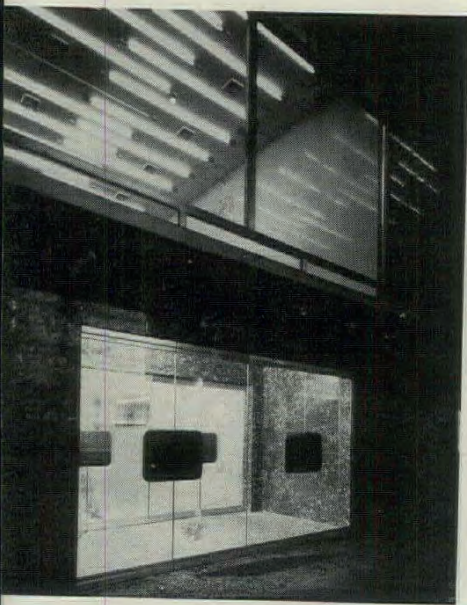


PIETRO BELLUSCHI, Architect
 J. DONALD KROEKER, Mechanical Engineer
 ROSS B. HAMMOND, General Contractor

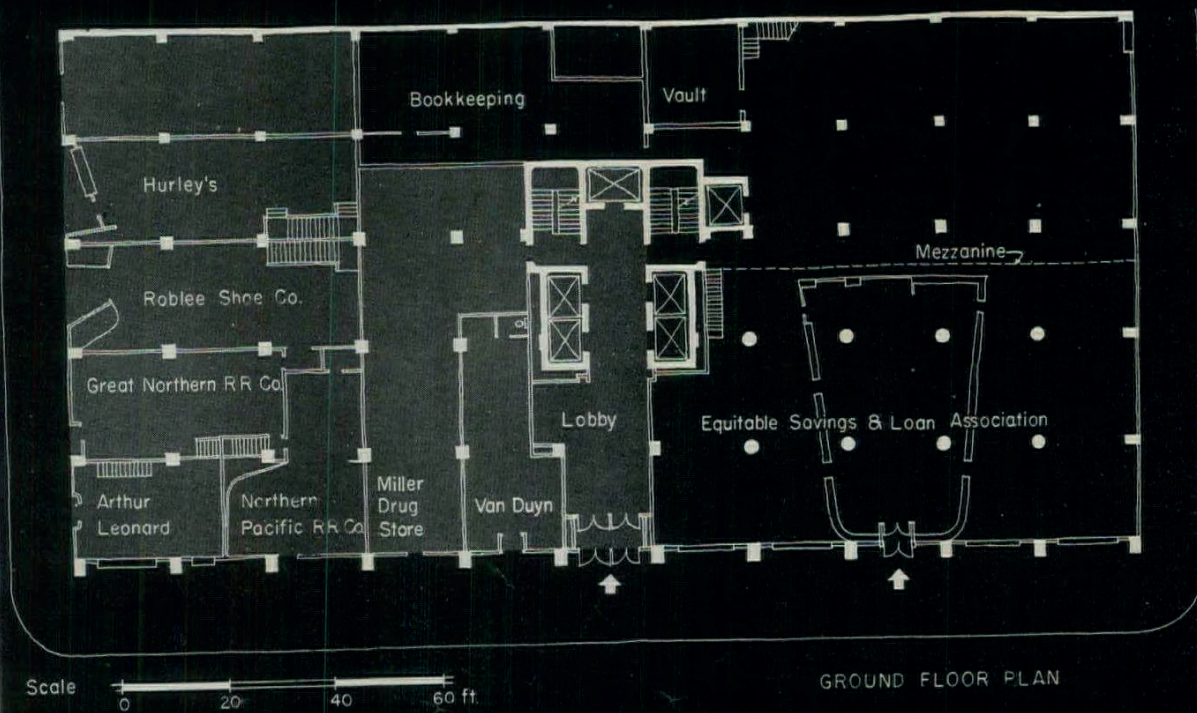
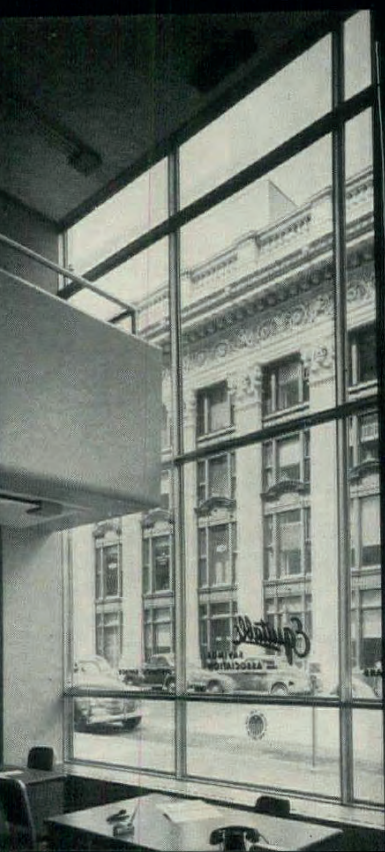
If the new home of Equitable Savings & Loan in Portland, Oreg., sets a benchmark for office building design, a large share of the credit goes to the owners themselves. Forced into the role of commercial landlord by their own need for space, Equitable decided to put up the best building in the northwest while they were at it. Once that decision was made, another equally smart one followed: they called in Portland's own Pietro Belluschi, told him in general terms what they wanted and then left him alone. The happy results are shown on these pages.

As one of the fastest growing building and loan outfits in the region, Equitable owned a two-story, 50 x 100 ft. corner building in the financial district which the same architect had remodeled for them in 1931. They couldn't rent additional space and—with three of the city's big banks on the other corners—didn't want to move away. A new building of their own seemed the only answer. They bought the rest of the half-block (giving them a plot 100 x 200 ft.), wrecked the old building and started over.

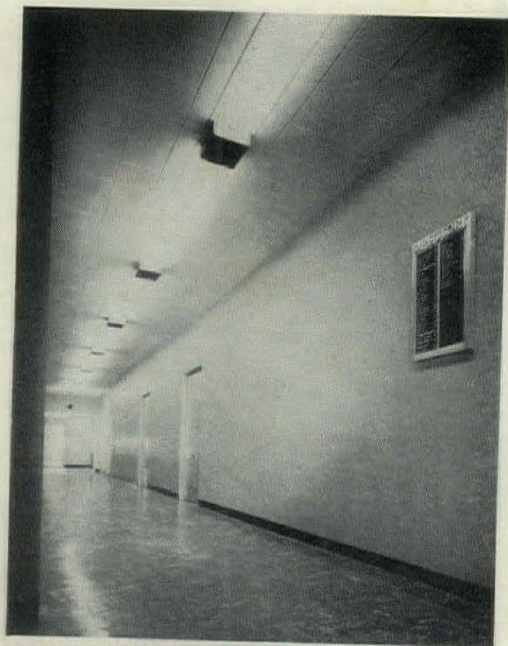
Economically, the layout of the new building was obvious from the start: Equitable's own banking rooms on part of the street floor, stores on the rest and offices above. But this has been the planning formula for office buildings for decades. To guarantee a successful building involved more than the mere repetition of a tried and trusted plan. In postwar Portland, as in most cities, there was a critical shortage of office space. But that alone was no guarantee that a new building would be as successful during bad times as good; what was obviously implied was office space so much better than the rest that it would always be in good demand. Such a building was implicit in the prototype designed by Belluschi for FORUM (May, 1943, p. 108). Here was a proposal for the same glass-and-metal sheathing, for vastly increased daylight, year-round air conditioning, distinguished interiors. Equitable's officers (who, as the architect puts it, had "the power and intelligence to make quick, enlightened decisions") saw the merits of the idea, gave the architect a green light. Equitable's own handsome banking room (facing page) shows wisdom of their decision.



NEATLY ORGANIZED
 ON THREE LEVELS, OWNERS'
 OWN OFFICES ARE SPACIOUS, EFFICIENT



Overdue since Sullivan, this structure looks the way all skyscrapers are really built—but few adm

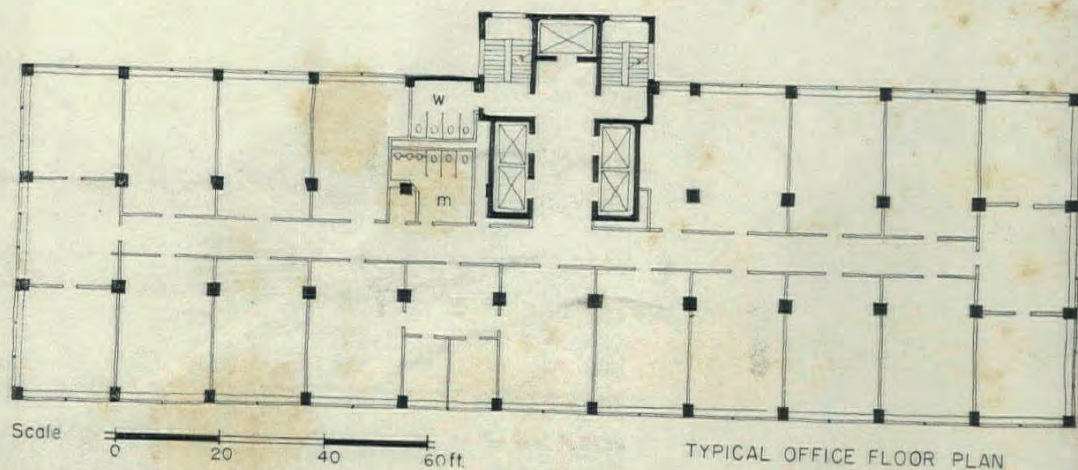


TYPICAL CORRIDOR: BRIGHT, AIRY, CLEAN

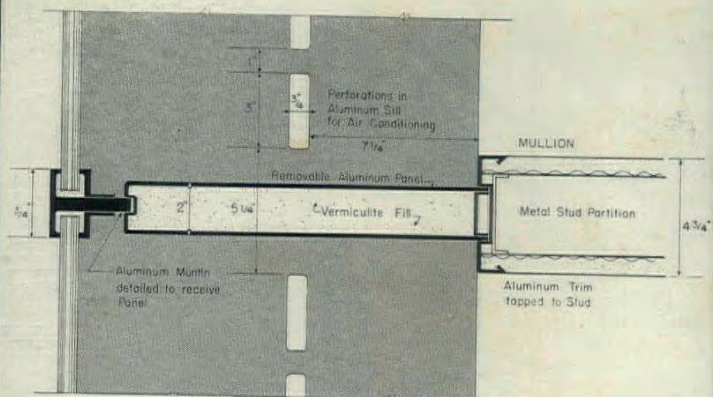
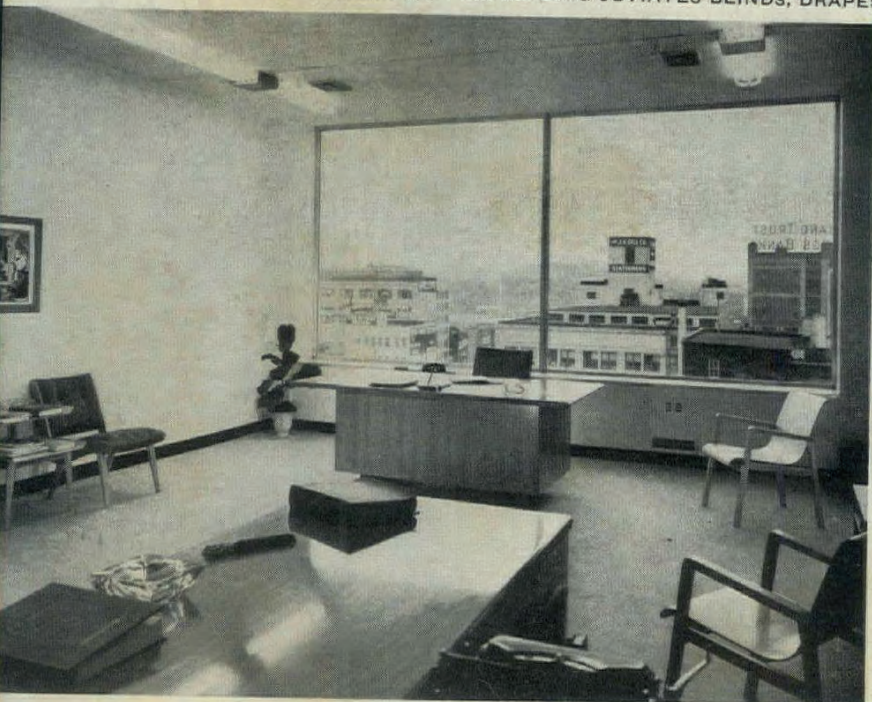
Poetic license has, for a long time now, permitted us to refer to skyscrapers as "crystal and metal towers." The concept has of course been implicit in skeletal construction since the days of Louis Sullivan but no skyscraper has really warranted such a description until the appearance of the Equitable. Here, some 60 years after its perfection, the multi-story frame appears without a square inch of masonry surfacing above the first floor. The architect, working with aluminum and glass, has deliberately emphasized this fact with a glittering sheath—detailed with such exquisite precision that the greatest projection on the facade is $\frac{7}{8}$ in.

The plan of the building is as candid as its elevations. Above the street floor, there are ten floors of office space (the penthouse is occupied by Equitable officers) which incorporate just about every characteristic demanded by postwar tenants: year-round air conditioning; good natural illumination and artificial light sources; sound control; attractive, durable finishes; and a structure and utilities which permit changes in office partitioning with a minimum of fuss and bother.

The striking color of the exterior springs from use of two finishes on aluminum to frame huge blue-green panels of heat-absorbing glass



ABSORBING HEAT AND GLARE, OFFICE GLAZING OBVIATES BLINDS, DRAPES



MODULAR SUBDIVISION OF OFFICE SPACE on 8 ft. centers is made possible by a central mullion in each glass panel. It receives a special spline the width of window sill (above) which in turn receives a lightweight metal and plaster partition. Continuous ducts in ceiling permit electrical, communication or air conditioning outlets at any desired point. Air is exhausted through slotted window sills.



SEATTLE
VANCOUVER
ROUTE 30

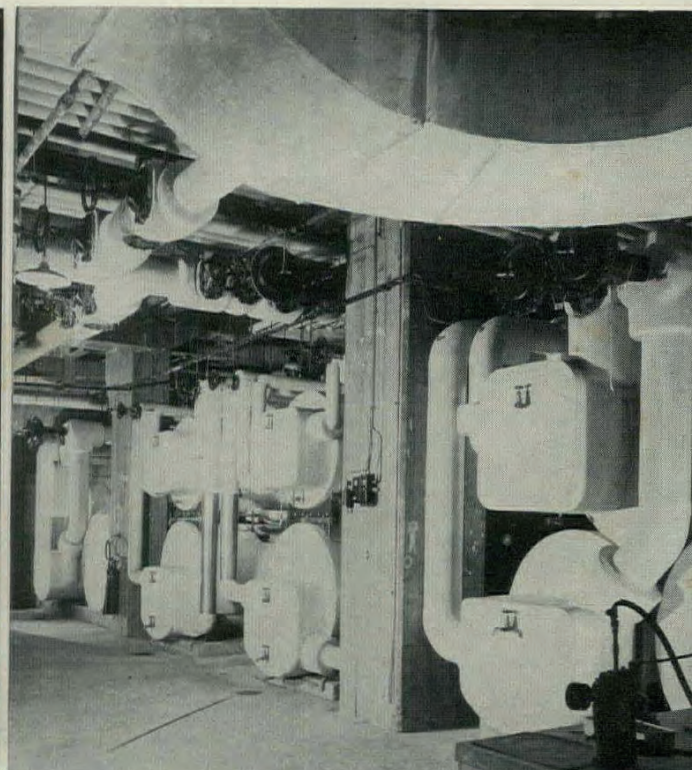
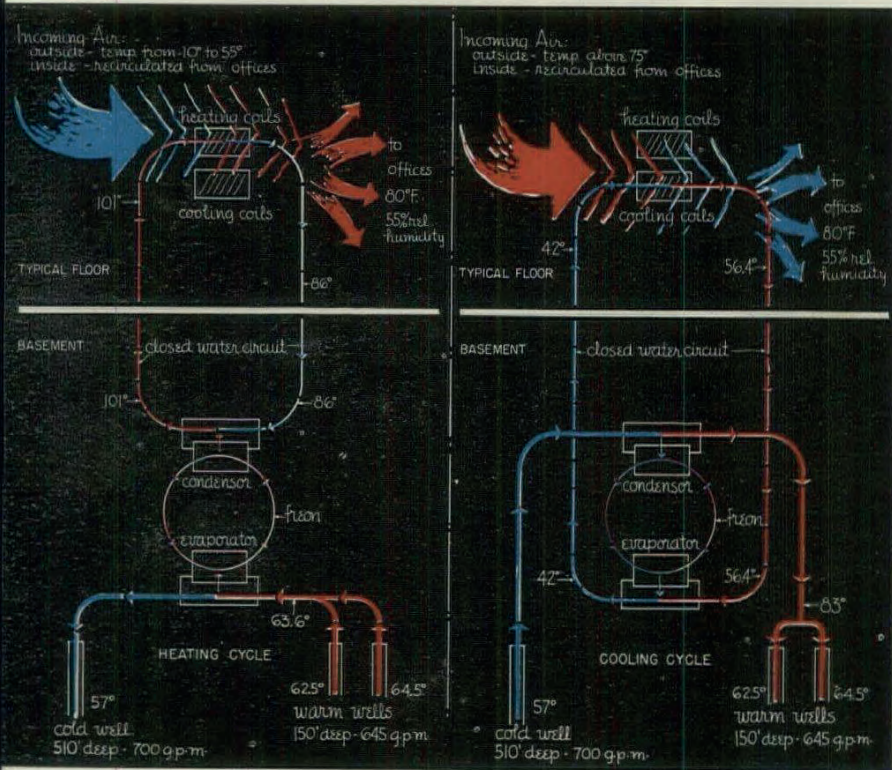
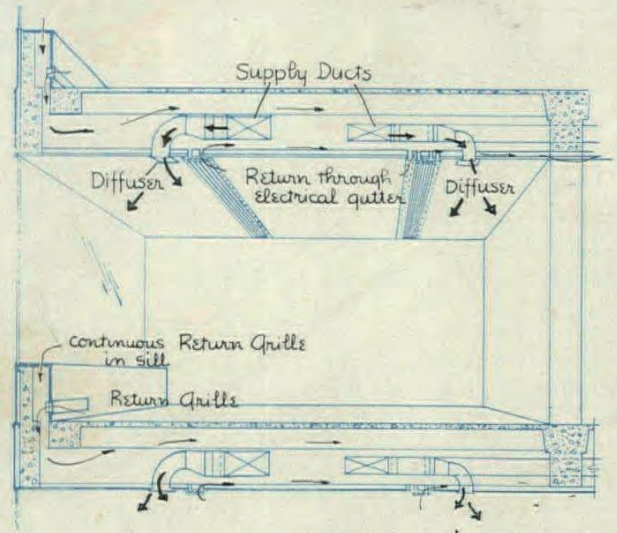
S RY
NORTHERN PACIFIC

DRUGS

THE UNITED STATES NATIONAL BANK

Heat Pumps cool and heat the Equitable in a large, flexible, automatic installation

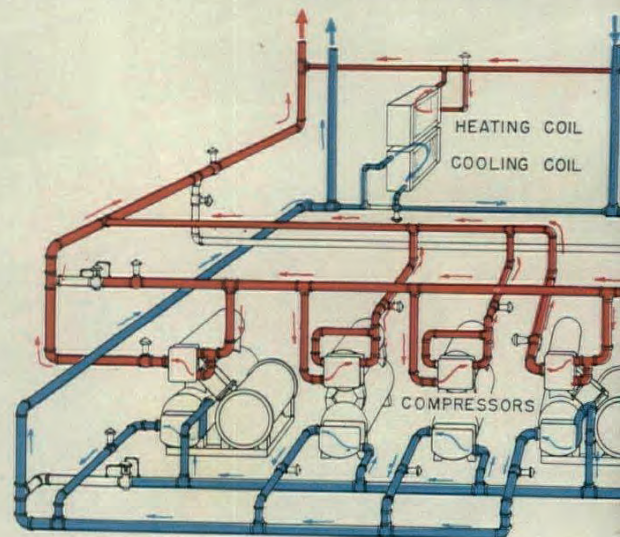
Portland's balmy winters and warm, humid summers made the heat pump attractive: low public power rates made it economically feasible. But as far as an Equitable tenant is concerned, his office space is completely air-conditioned by "conventional" means. (right) Actual distribution of air is handled by ducts in suspended ceiling. These lead to central fan rooms on each floor, cannily tucked in to ceiling space over elevator lobby and toilets. Thus the only element circulated throughout the building is hot and chilled water for heating, cooling and dehumidification. The really novel part of the installation is in the basement. Here a complex yet extremely flexible system of heat pumps extracts heat and cold from well water, electricity being the only "fuel." Designed to maintain year-round conditions of 80° F. with 55 per cent relative humidity, the system is divided into two substantially independent circuits—one for heating, one for cooling. These operate at three different levels. (diagrams below)

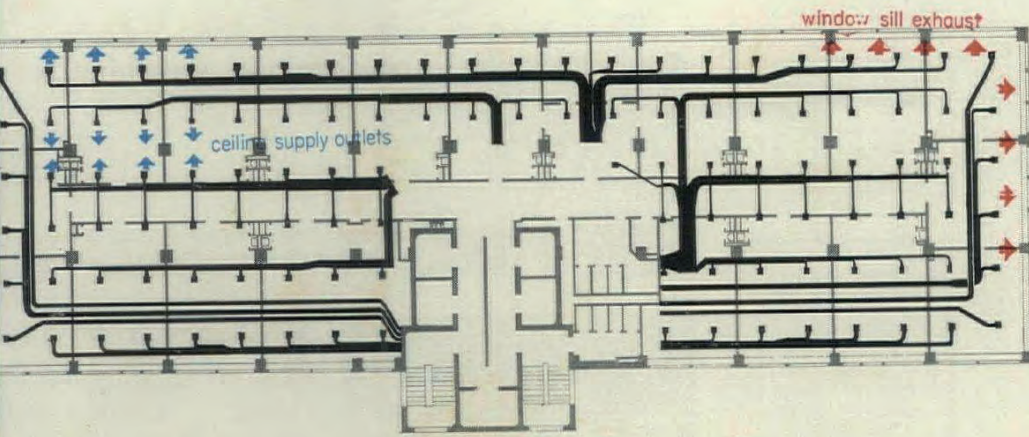


HEATING CYCLE is used when outside air is 50° F. or below. Compressor packs heat from warm well water into heating circuit proper, whose temperature is sharply raised. Then, robbed of much of its heat, this water is pumped down into cold well. Difference in depths of cold and warm wells maintains temperature differentials.

COOLING CYCLE begins operation only when outside air is above 75° F. Then evaporator removes heat from cooling circuit, packs it into water from cold well and then pumps that water into warm well. Cooling circuit is used both to cool air and to dehumidify it. On its return trip, this circuit is also made to precool fresh air.

INTERIM CYCLE, when outside air is between 50 and 75° F., requires both heating and cooling. But because summer cooling load is the greater, the four compressors are grouped in two pairs of different capacity—400 tons for cooling, 140 for heating. Although each pair serves a separate circuit with its own controls, they are integrated to yield smooth transition between heating and cooling. Heat source consists of two warm wells (62.5 and 64.5° F.) and a deeper cold well (57° F.). Depending upon building's demands, these wells serve either as the source, or means of disposing of, heat and cold.





IS COMPLETELY CONDITIONED by a separate system on each floor, so that
 y heated and chilled water is moved up from heat pumps in basement.
 oming air is distributed through four ceiling outlets in each bay, while
 urn air is pulled through slotted window sills down into plenum formed by

suspended ceiling of floor below. Fan "rooms" at each level are tucked into
 dropped ceilings above toilets and elevator lobbies. Louvered fresh air intakes
 —slanted to fit snugly under stairs—are painted a brilliant coral red to con-
 trast with blue of stair tower proper (below).

WHAT THE SYSTEM DOES:

For "occupants," it offers:

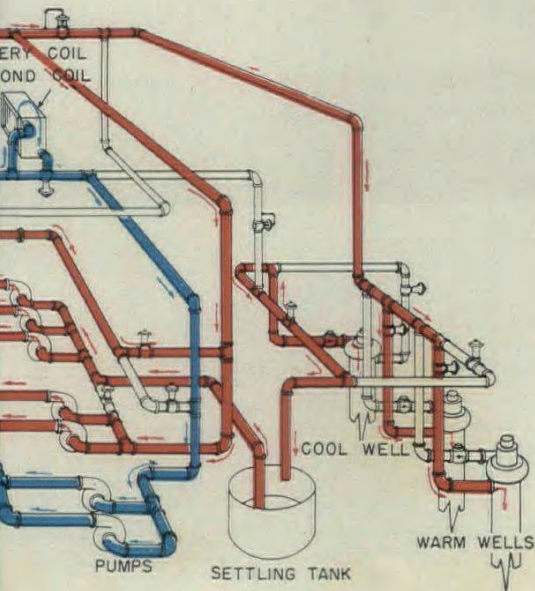
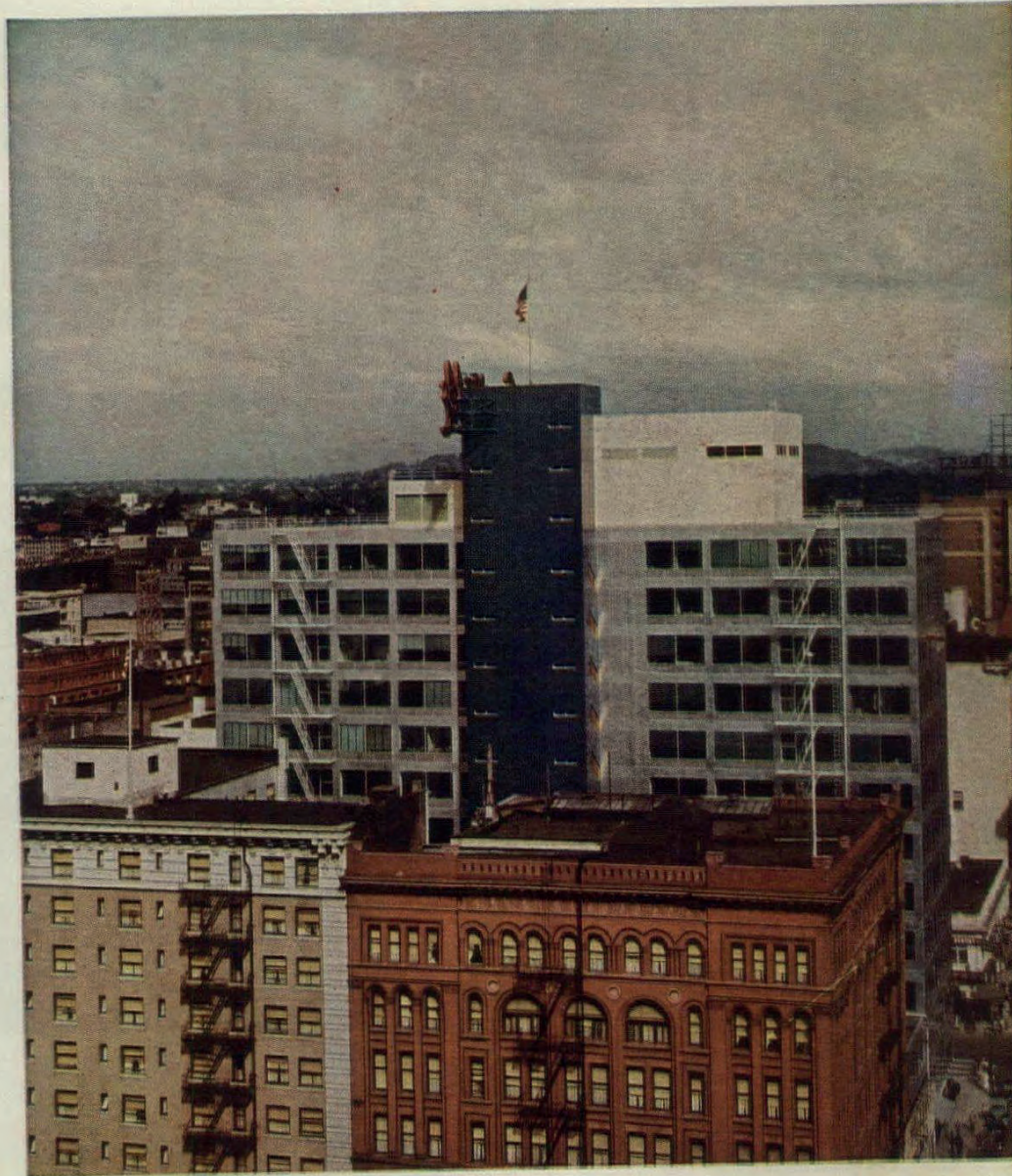
- Full air conditioning, constant ventilation.
- Full automatic room temperature and humidity control.
- No room units requiring floor space.
- Silent operation.

For the "owners," it offers:

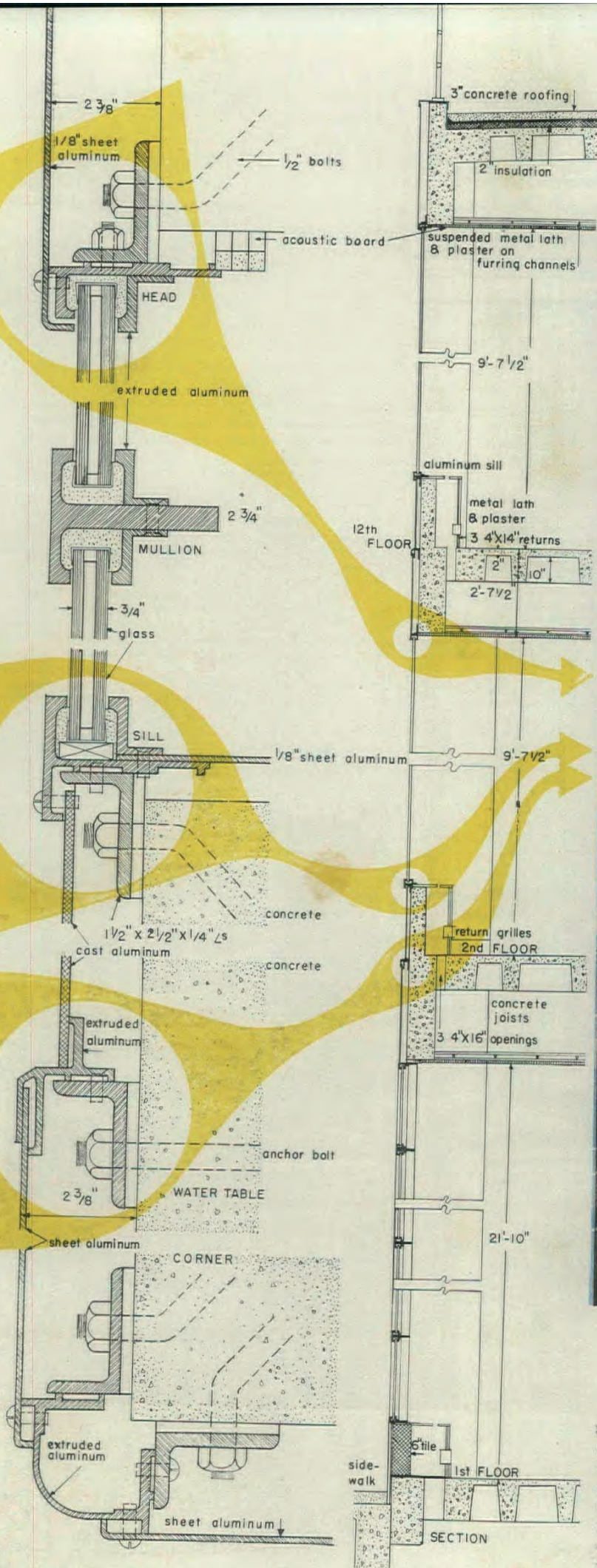
- Flexibility in partition location or relocation.
- Maximum rentable floor space—air conditioning equipment and ducts occupy no floor space whatever.

For "building engineer," it permits:

- Fully automatic change-overs.
- No servicing in occupied spaces.
- Complete operation from basement machinery room.
 - (a) Temperature readings at 7 points, each floor.
 - (b) Humidity readings at 2 points, each floor.
 - (c) Possibility of resetting both temperature and humidity controls on some 180 control units from basement.
 - (d) Automatic record of temperature and humidity.
- Use at will of 100 per cent outside air for flushing or freshening.
- Minimum number of operators.
- Operating cost (for comparable heating and ventilation only) between 10 and 25 per cent less.



Equitable's glass-and-aluminum sheathing is fir



SINCE SHOP-FABRICATED PANELS WERE PROHIBITED, the surfacing system was assembled in place. It employed (1) extruded aluminum channels bolted to the concrete frame; (2) rolled aluminum sheets to cover the frame; (3) cast aluminum panels for the spandrels. Fourth and last element to be installed was the glass itself, two sheets to each bay. The light weight and precise dimensioning of all elements permitted the use of small, movable painters' rigging instead of the convention sidewalk-to-coping scaffolding. Material was moved up inside the building to point of use by building's own elevators.

ak through blockade against the "curtain wall"

For all the luster of its glass-and-metal skin, the new Equitable Building in Portland has a skeleton of reinforced concrete. This type of frame was chosen both because it was economical for a 12-story building and because it required no fireproofing and thus permitted the "working ceiling" which the architect had in mind. But if the skeleton is more or less conventional, the skin is the curtain wall—long visualized as the logical surfacing for the multi-story building. Credit for breaking through the jungle of problems which has delayed its appearance so long, belongs about equally to owner and architect. With aluminum the Northwest's biggest new industry (five plants), Equitable officials felt it only proper to mark the occasion with a liberal use of it in the new building. And Belluschi was ready—like many another architect across the land—with a scheme for using it as a surfacing material. The arguments were familiar: lighter weight, quicker installation, low maintenance and "new look." They were effective with Equitable but ran into some granite resistance from local building code officials. As in most towns, Portland accepts glass without question, even when extended to cover the whole bay, as it does here. But the moment an opaque material is discussed, it has to meet quite different fire-resistance standards. In this case, the architect's plan to use a prefabricated spandrel with a light-weight concrete backing was ruled out. Instead, he had to use a 4 in. backing of regular concrete, assemble aluminum components on the site.

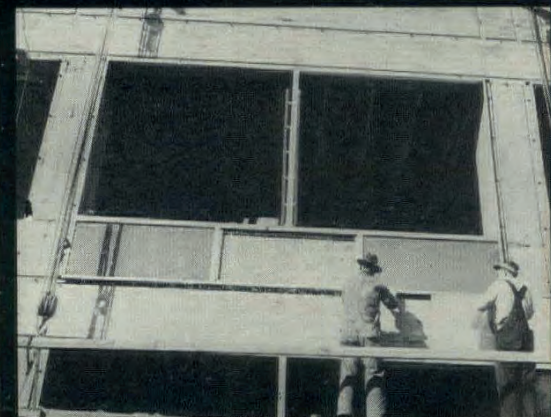
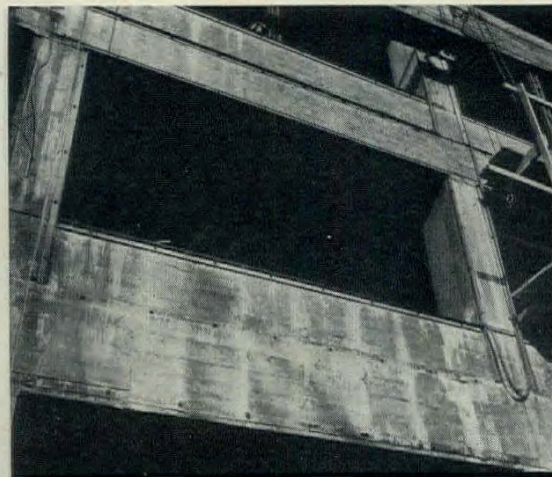
One of the most spectacular aspects of the new structure is its huge areas of sea-green glass. Unmatched by any U. S. office building of comparable size, Equitable uses 36,700 sq. ft. of sealed double glazing. (Glass insurance alone will run to \$2,600 annually). The outer sheet of the sandwich is $\frac{3}{4}$ in. heat-absorbing plate. Pleasant as its color is, however, the selection was based on more fundamental considerations. An air conditioned building in Portland's mild climate has a much bigger solar heat load in summer than "cold load" in winter. Since heat-absorbing glass is 40 per cent more opaque to solar heat

than ordinary plate, its use in a sandwich seemed very logical. However, this combination was selected only after the architect had satisfied himself that it would not only reduce solar heat load but also cut down sky glare to a point where blinds or shades would not be needed for comfort. Although some of the more timid tenants at first expressed alarm at this concept, conditions are so satisfactory that, after several months of occupancy, few of them have put up blinds.

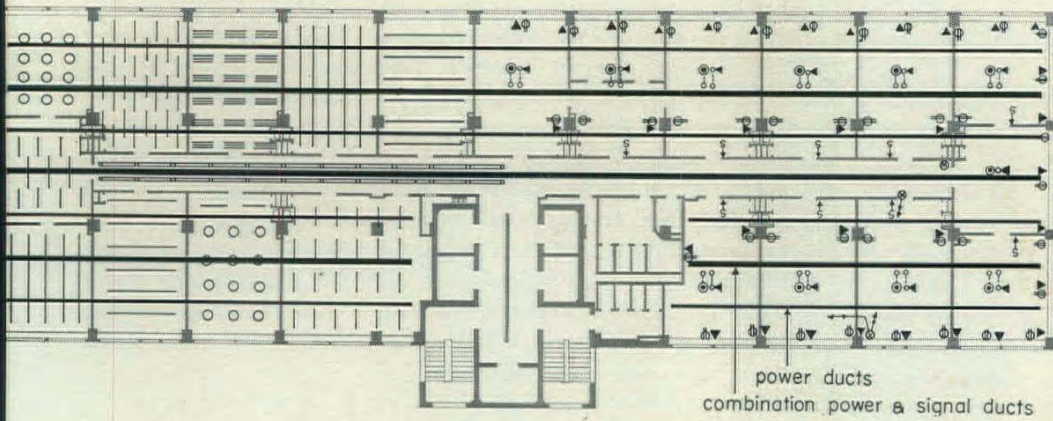
Maintenance of Equitable's smooth flanks should be simple. The outside of the glass areas will be regularly washed from a bosun's seat suspended from a crane which travels completely around the building on the edge of the roof parapet. Cleaning of the metal surfaces may be handled the same way. However, Equitable may find it politic to allow the aluminum to acquire a more decorous patina. Reason: at certain times during a sunny day, the neighbors across the street find the glitter quite annoying.

CONSTRUCTION OUTLINE: Foundations—reinforced concrete. Water-proofing—Philip Carey Co. **STRUCTURE:** Exterior walls— $\frac{1}{8}$ in. sheet aluminum with $\frac{3}{16}$ in. cast aluminum in extended aluminum frames bolted to reinforced concrete spandrels and columns. Interior partitions—gypsum plaster with Dantor light-weight aggregate, Dant & Russell, Inc., on metal lath and $\frac{3}{4}$ in. steel studs or hollow clay tile. Floors—reinforced concrete. **ROOFING**—concrete with Vermiculite fill Universal Zonolite Insulation Co. and built-up roofing. **SHEET METAL WORK:** Flashing and ducts—aluminum, Aluminum Co. of America. **INSULATION:** Fir-Tex Insulating Board Co. **WINDOWS:** Sash—Aluminum Co. of America. Glass—Pittsburgh Plate Glass Co. **TWINDOW, ELEVATORS:** Otis Elevator Co. **FLOOR COVERINGS:** Johns-Manville Corp., Armstrong Cork Co., American Tile & Rubber Co. **WALL COVERINGS (lobby):** Carrara structural glass, Pittsburgh Plate Glass Co. **FURNISHINGS:** Counter tops—Formica, Formica Insulation Co. **EXTERIOR DOOR**—Herculite, Pittsburgh Plate Glass Co. **HARDWARE:** Yale & Towne Mfg. Co., Stanley Works, Oscar C. Rixson Co., Ellison Bronze Co., Payson Mfg. Co. **PAINTS:** W. P. Fuller Co., General Paint Corp., Sherwin-Williams Co., National Lead Co. **ELECTRICAL INSTALLATION:** Switches—Harvey Hubbell, Inc. Fixtures—General Luminescent Corp. **PLUMBING FIXTURES:** American Radiator Standard Sanitary Corp. Valves—Sloan Valve Co. Water closet connections—J. A. Zurn Mfg. Co. **KITCHEN EQUIPMENT:** Dohrmann Hotel Supply Co. **HEATING AND AIR CONDITIONING:** Refrigeration compressors, heat pumps, fans and coils—The Trane Co. Electrostats and filters—The American Air Filter Co. Temperature controls—Johnson Service Co. Air diffusers—Agitair, Air Devices Co. Pumps—Peerless Pump Div., Floor Machinery Co. and Economy Pump Co. Recording and indicating instruments—C. J. Tagliabue Co.

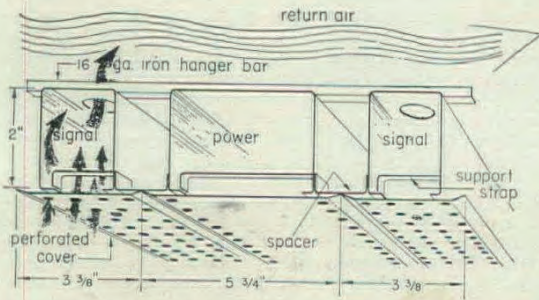
Leonard Delano



Old bugaboo of inflexible wiring and communication is whipped by Equitable's special ceiling system



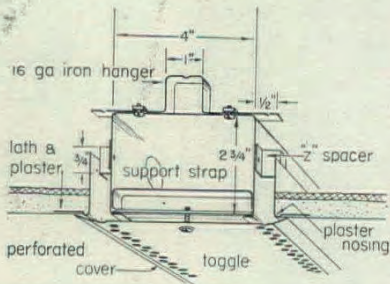
Consulting electrical engineers George Pettingell and Grand Kelley evolved a system of ducts which give the Equitable Building far more flexibility than the conduit and outlet boxes of conventional wiring. Part of the perforated suspended ceiling, these ducts carry all electrical, telephone and signal systems and run the entire length of the building on 8 ft. centers. Of two basic types (see diagrams, left), the ducts permit a wide variety of wiring hook-ups. They have knockouts at frequent intervals and come equipped with a variety of matching cover plates which (1) mask unused portions; (2) receive partitions; (3) support color cathode, fluorescent or slimline lamps or standard fluorescent or incandescent fixtures. The duct system thus permits any number of lamps or fixtures, arranged in any pattern. Additional floor outlets may be easily installed by drilling through the thin floor slab, fishing a short length of flexible conduit through a knockout in the duct immediately below and grouting a floor box in place. Ducts also permit insertion of fluorescent ballasts from below: since air is relatively cooler in the plenum, the life of the ballast is extended.



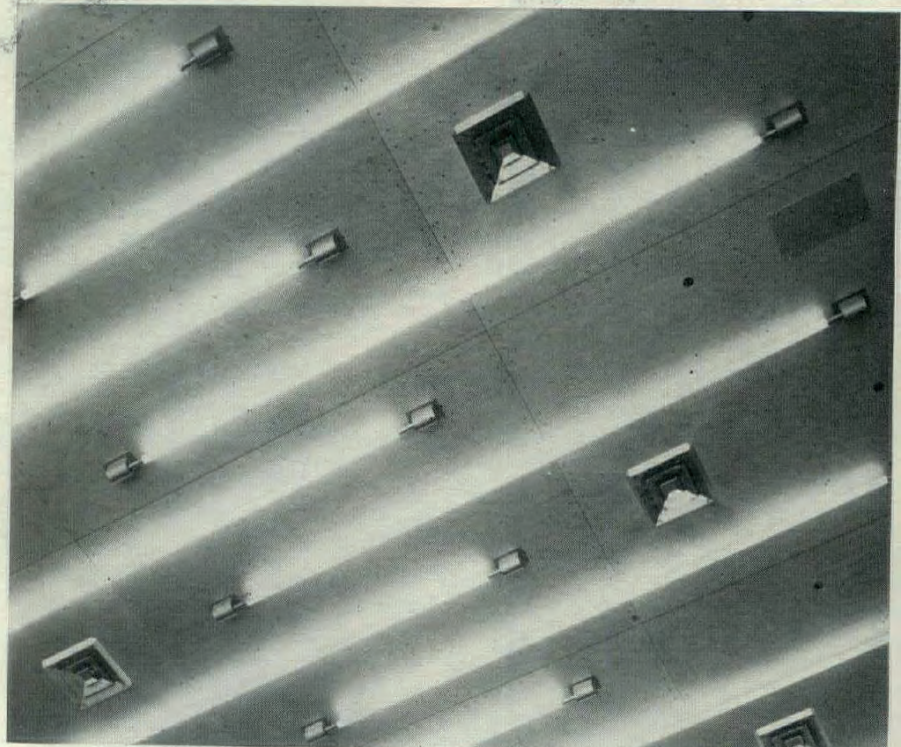
COMBINATION DUCTS for both electric power and communications permit outlets in floors or partitions above. All ducts have cover plates painted to match acoustic tile ceiling.



DUCT SYSTEM PERMITS LIGHTING FIXTURES OR LAMPS TO RUN PARALLEL TO DUCTS (ABOVE) OR AT RIGHT ANGLES (BELOW), SPACED AT ANY INTERVALS



LIGHTING DUCTS permit fixtures to be hung in a wide variety of patterns. Perforations in cover plate and knockouts in top serve to ventilate ducts into plenum, thus carrying off bulb heat and cooling fluorescent ballasts.



Erna Stoller