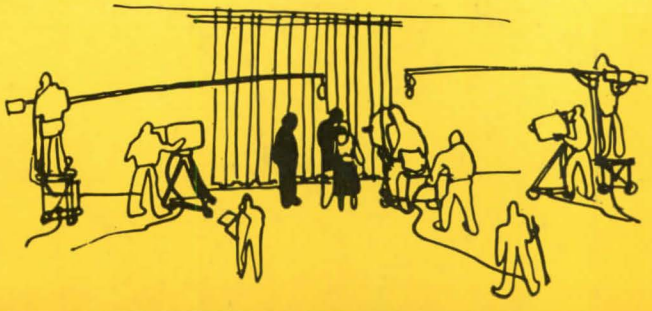
RO GRESSIVE ARCHITECTURE



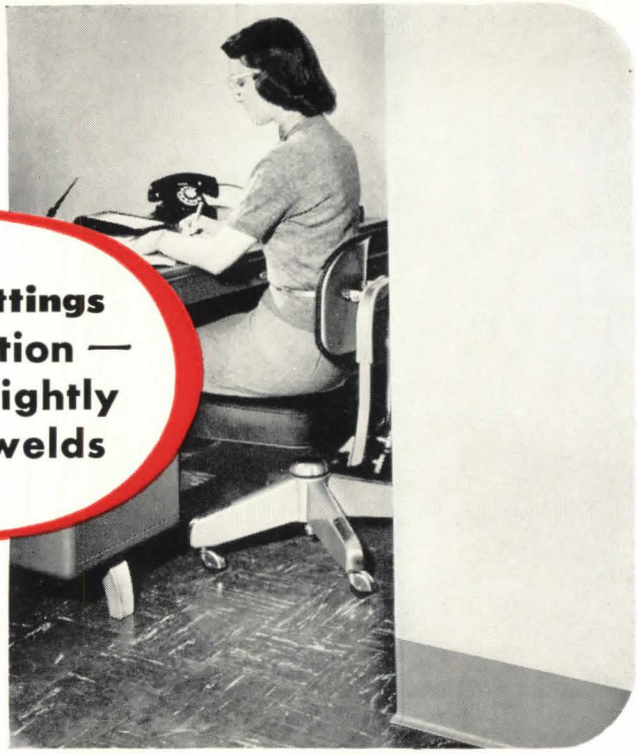
TV stations

(Special Issue – $2 a Copy)

9

eptember 1953

Friction-Fit Fittings speed installation — eliminate unsightly screws and welds



This is *MILCOR** 605 Metal Base

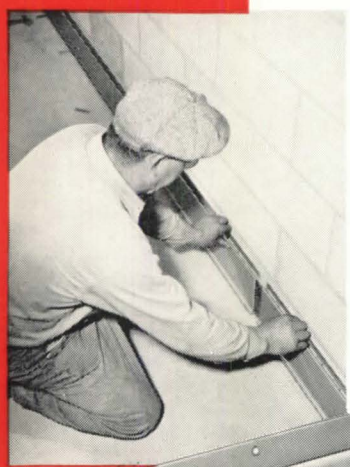
Tap It Together . . . It Lasts a Lifetime

Just tap it together — that's all there is to it! Thanks to friction-fit fittings, no punching or screws are needed. Installation is faster and you get a better looking job as well as a substantial savings in construction time. The illustration, at the lower right, shows how easy it is to use.

Sanitary, fire-safe, and durable, Milcor No. 605 Metal Base is ideal for use with asphalt, rubber tile, or linoleum floors. It has a prime coat for easy finishing to match or contrast with wall color. Moreover, it does not pull away from the wall — does not crack or splinter. That's why you find Milcor No. 605 Metal Base in your most modern buildings, such as hospitals, schools, hotels, apartments, office and industrial buildings.

No. 605 is representative of a complete line of Metal Base available for all types of installation. If you need further information, just write us and we'll take care of your request immediately.

Sections are neatly joined by use of a flat splice or aligning plate. No punching is required and there are no exposed screws.



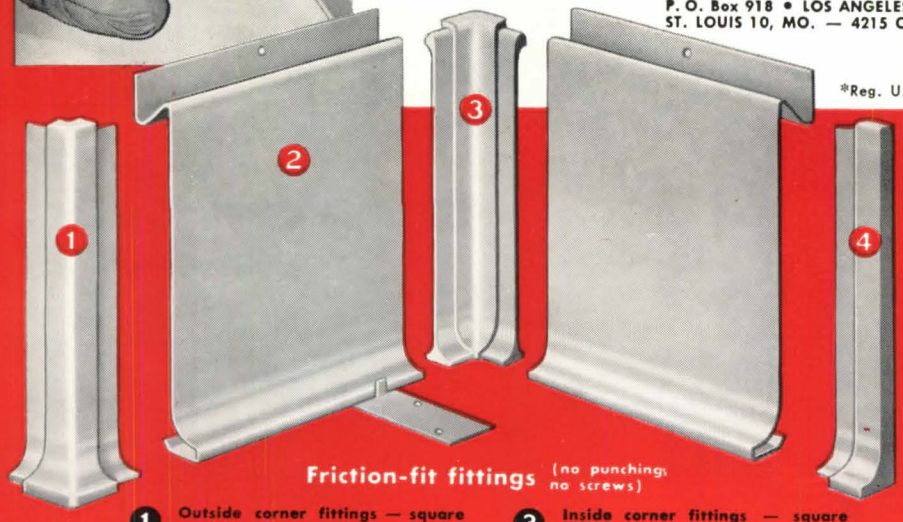
INLAND STEEL PRODUCTS COMPANY

4109 WEST BURNHAM STREET • MILWAUKEE 1, WISCONSIN

BALTIMORE 5, MD. — 5300 Pulaski Highway • BUFFALO 11, N. Y. — 64 Rapin St. • CHICAGO 9, ILL. — 4301 S. Western Avenue Blvd. • CINCINNATI 25, OHIO — 3240 Spring Grove Ave. • CLEVELAND 14, OHIO — 1541 E. 38th St. • DETROIT 2, MICH. — 690 Amsterdam Ave. • KANSAS CITY 41, MO. — P. O. Box 918 • LOS ANGELES 58, CALIF. — 4807 E. 49th St. • NEW YORK 17, N. Y. — 230 Park Ave. ST. LOUIS 10, MO. — 4215 Clayton Ave

*Reg. U. S. Pat. Off.

M-126

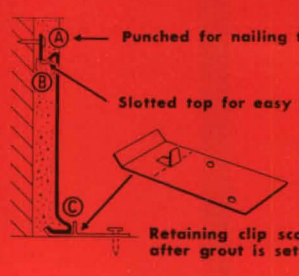


Friction-fit fittings (no punchings no screws)

1 Outside corner fittings — square or ¾" radius, cast.

3 Inside corner fittings — square or ¾" radius, cast.

Flush-type, plastered-in design



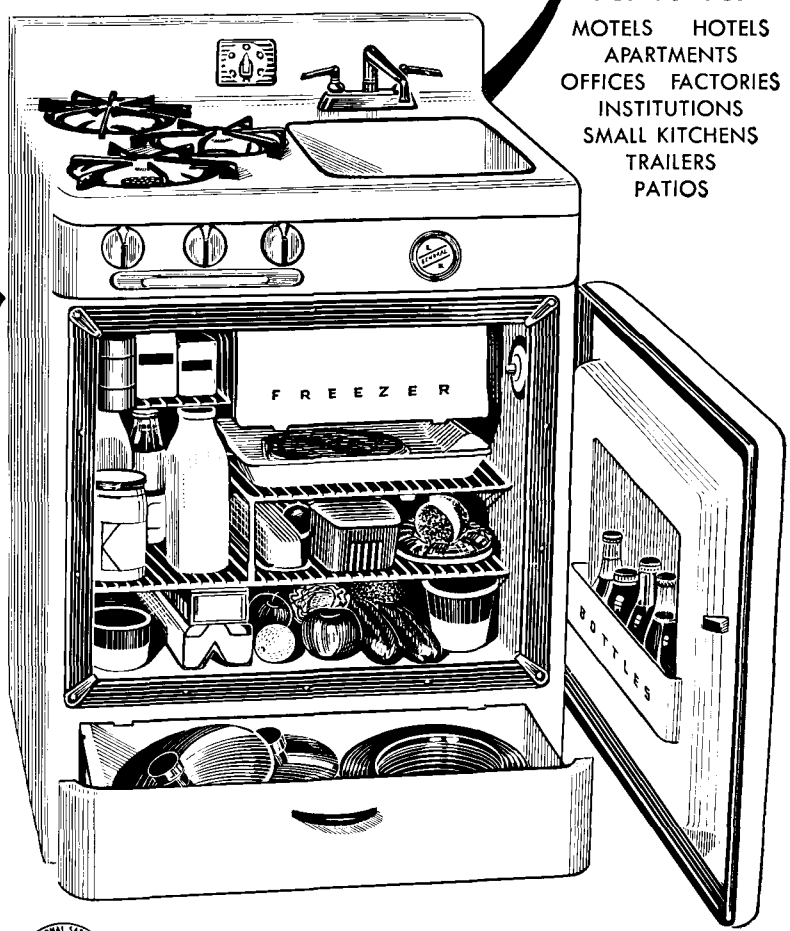
PROGRESSIVE ARCHITECTURE

September 1953

WORLD'S SMALLEST COMPLETE KITCHEN!

ONLY 27½ INCHES WIDE!

Perfect For
MOTELS HOTELS
APARTMENTS
OFFICES FACTORIES
INSTITUTIONS
SMALL KITCHENS
TRAILERS
PATIOS



General Chef complete kitchen units fit in 5.4 square feet.
The ideal solution wherever space and dollars are important.

SINK One-piece porcelain top of heavy gauge steel. Faucets and all hardware triple-chrome plated. Units also available without sink.

BURNERS Units come with 3 gas burners (easily adjusted for bottled, natural or manufactured [L. P.] gas), or 3 electric burners (220 V.) or 2 (110 V.).

REFRIGERATOR Four cubic feet of space. *Electric* (sealed, self-oiling Tecumseh unit). Owens-Corning Fiberglas insulation. Convenient bottle shelf in door.

FREEZER Holds 9 ice cube trays, or 12 standard frozen food packages.

STORAGE DRAWER Ample storage space for pots and pans.

5 YEAR GUARANTEE
Every General Chef Unit is guaranteed in writing to give trouble-free service for 5 years!

General Chef

NATIONWIDE SALES AND SERVICE
NEW YORK: Dept. F, Suite 762, 11 W. 42nd St.; LOS ANGELES: Dept. F, 4536 E. Dunham St.
CHICAGO: Dept. F, Room 1108, Merchandise Mart

WRITE for complete information and specifications if you are building, remodeling, designing — you will be interested in the space and money you can save with General Chef units. Several models are available. Fully guaranteed. WRITE TODAY for complete information and specifications on all General Chef units. We will also send you name and address of distributor nearest you.

GENERAL CHEF, Dept. F, 4536 E. Dunham Street, Los Angeles 23, Calif.
Please send me complete information and specifications on General Chef units, and name of nearest distributor.

NAME_____ STREET & NUMBER_____

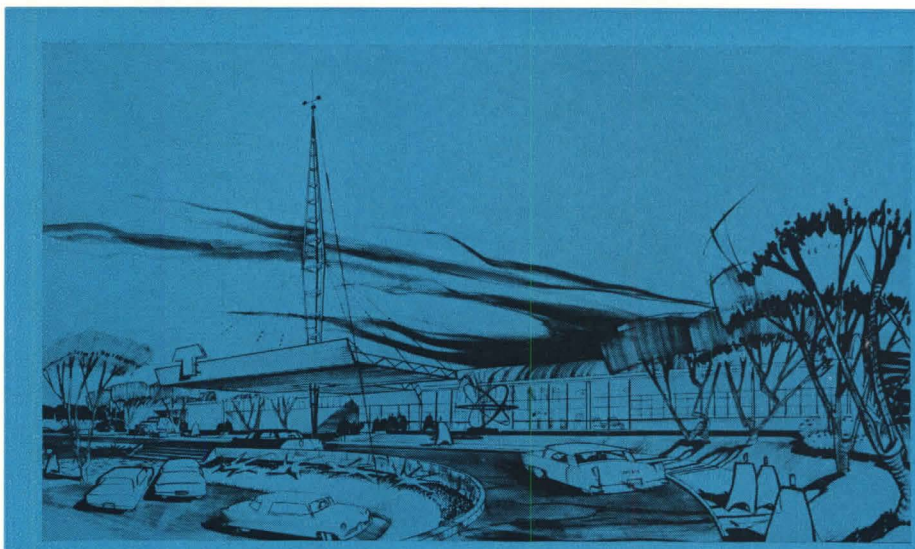
CITY_____ ZONE_____ STATE_____

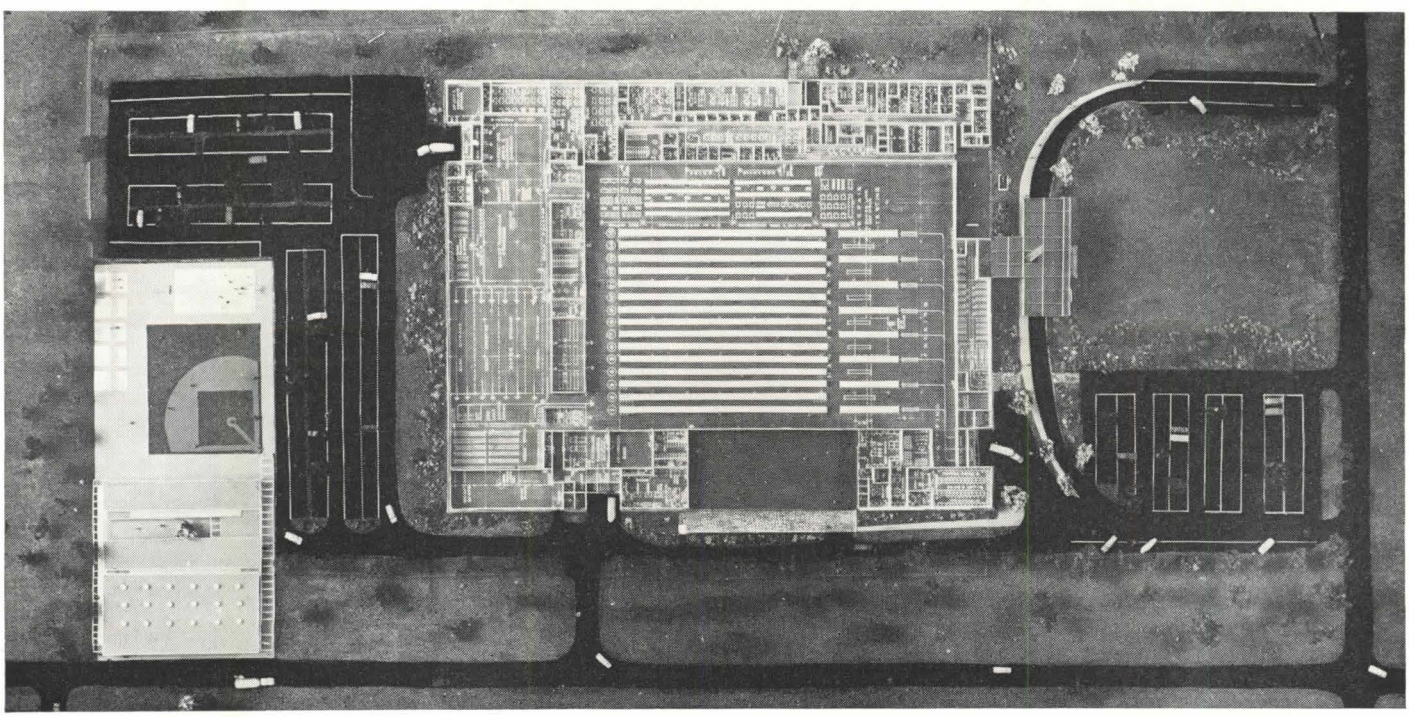
electronics equipment factory

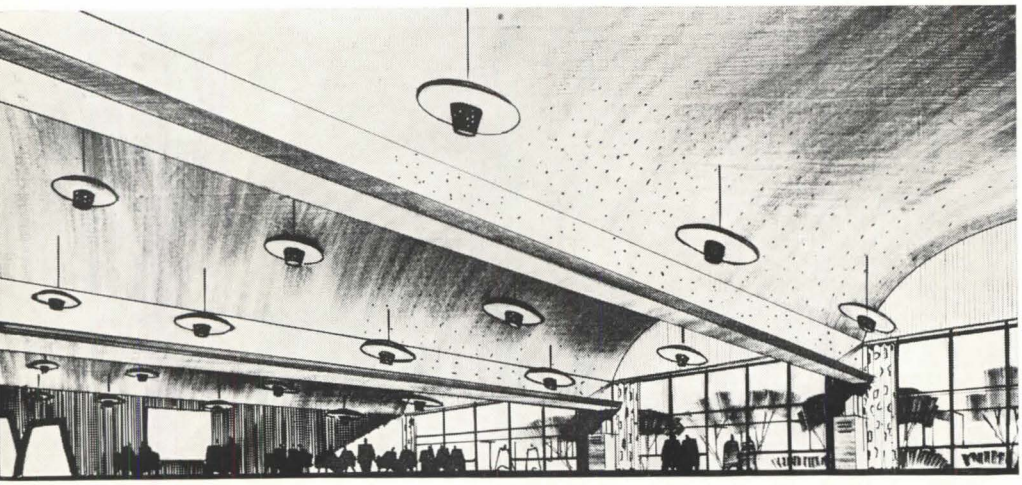
Under construction in Bloomington, Indiana, is this 250,000-sq-ft assembly plant, for which Architects Associated of New York (Katz-Waisman-Blumenkranz-Stein-Weber) were Architectural Consultants. The client is Sarkes Tarzian, whose Station WT-TV there has already attracted attention in the TV industry as a minimum-budget (under $500,000) achievement. The exterior of the plant *(right)* has been completed and the interior is being finished, with some departments already in operation.

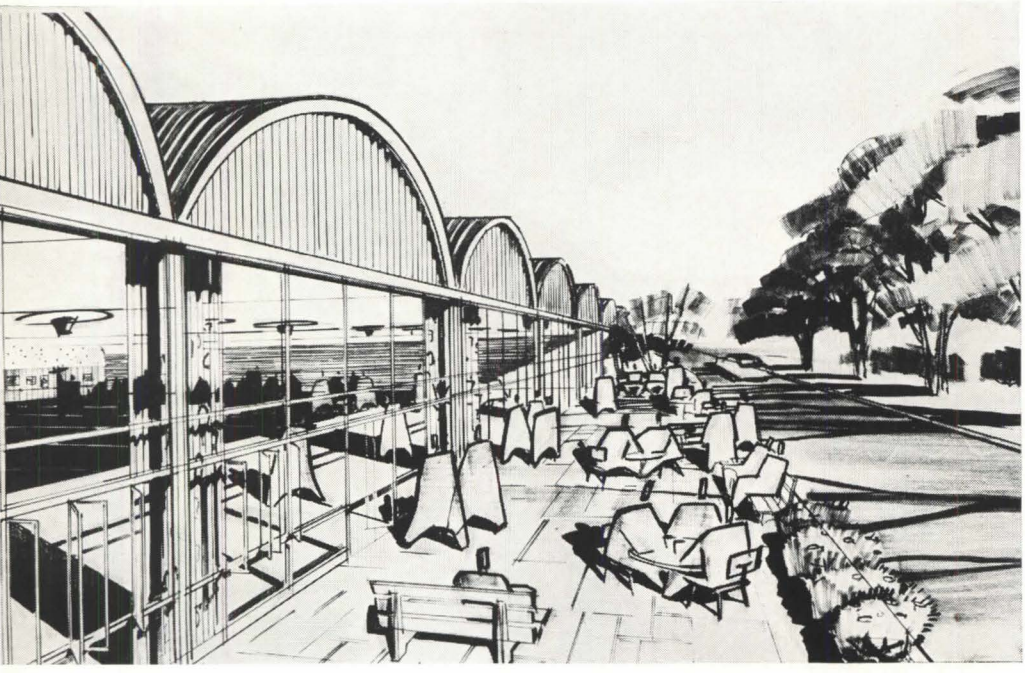
Tarzian's program for this plant emphasized model working conditions, exceptionally complete amenities for the employes (most of them women), and a low-cost construction system. In plan (*model below*) the plant comprises three related areas: the factory departments in which 3500 persons will be employed; the spacious cafeteria-recreation room (*dark rectangle in plan*) opening on a tree-shaded terrace; and the nursery school for younger children of the employed mothers, separated from the main building by the larger parking lot.

The factory. The production line of this TV tuner assembly plant is from the receiving door at rear, facing the larger parking lot; through inspection and storage areas; through metal-punching process rooms to









Interior view of cafeteria-recreation room shows hung ceiling beneath Quonset forms of roof, incandescent-light troughs, glass wall opening to terrace.

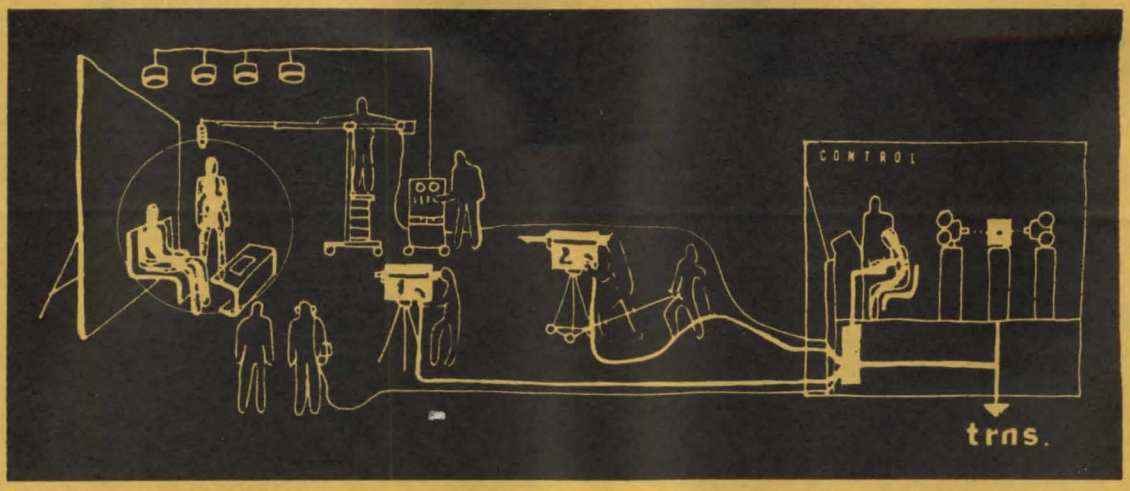
the 15 parallel work tables in center where TV sets are assembled, repaired as needed, tested, and packed (checking and repair rooms located along east side of main factory room); finally to the packing and shipping room located beside the main entrance on south front. Customers, executives, clerical and factory employes all use the main entrance—a special provision requested by Tarzian. The business and administrative offices are along the east wall of the main building.

The cafeteria-recreation room. This large area with adjacent terrace can readily be converted to a meeting hall, a movie theater *(as in sketch above)*, or an attractive place for social events.

The nursery school. Apart from the main building is the nursery school, with its enclosed play court, separated by the larger parking area from the factory activities. As many of the employes are working mothers, they bring their children of preschool age with them when they arrive at 7:00 a.m. The work day ends at 3:00 p.m. so that the women can return to domestic duties.

As one of the principal points of the planning program was to make working convenient for the employes—and to keep them satisfied with the jobs—efforts were made to convey a sense of the employe's importance. One refinement is a private corridor by which employes have ready access to the office of Mrs. Tarzian, who is a consulting psychologist, so that they can privately report or discuss grievances and personal problems.

The use of a symbolic TV antenna as a support for the entrance canopy is in the category of "advertising architecture." Primary curb on the designers was a demand for minimum cost of structure. A Stran-Steel system was chosen and the fabrication of the structure was carefully studied in the earliest design stage.

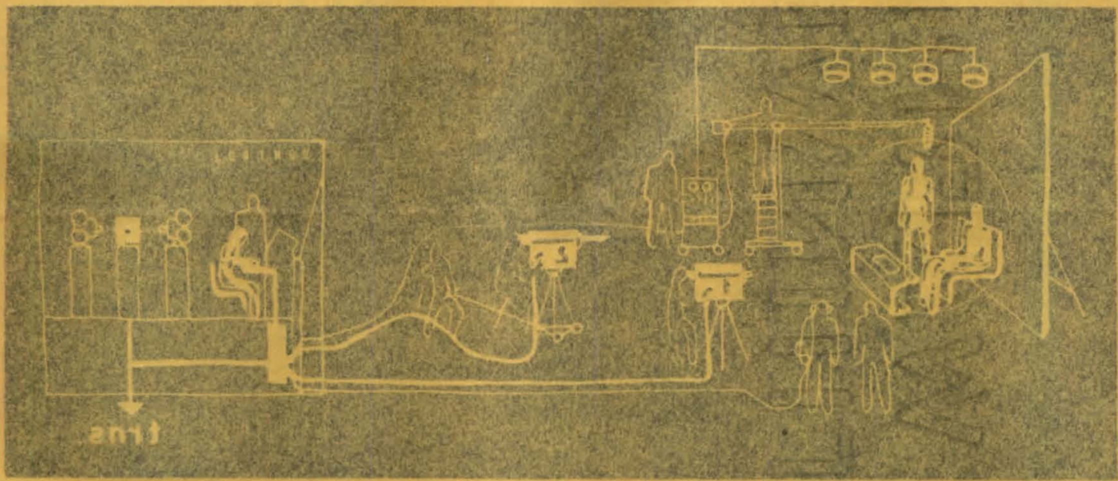


TWENTIETH CENTURY BUILDING TYPE

TV stations

a study
written and arranged
by

Editors of PROGRESSIVE ARCHITECTURE with advice of Dr. Walter J. Duschinsky, Vice-President of Unitel, Inc. (a telecommunication planning organization), and a Consultant on television station design.



TWENTIETH CENTURY BUILDING TYPE

TV stations

a study written and arranged by

Editors of PROGRESSIVE ARCHITECTURE with advice of Dr. Walter J. Duschinsky, Vice-President of Unitel, Inc. (a telecommunication planning organization), and a Consultant on television station design.

introduction

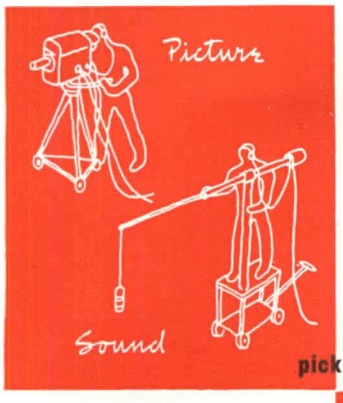
Within the studio, television creates its own world.

To some, it means animated shaving tubes and sedentary spectators. To others, it is a complex of electronics in a maze of highly-specialized operational and circulation areas. Producers, talent, and directors are all dependent upon split-second precision . . . all work within close limits of time . . . all depend upon each others' expert performance.

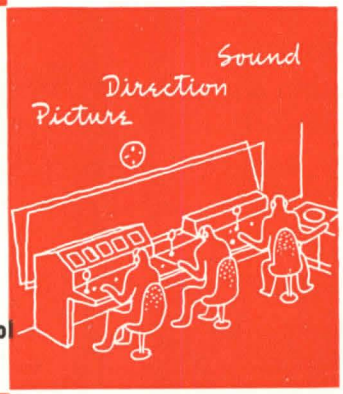
Commercial application of television had long been artificially restrained within the United States. Since April, 1953, when the "freeze" was lifted by the Federal Communications Commission, capital has been invested in every form of station from the rural film and newscasting set-up to the giant metropolitan originating studios. Each day the FCC receives new requests for licenses. Each day some are granted. In meeting these needs, architects are finding new and valuable commissions awaiting them, in what the Editors of PROGRESSIVE ARCHITECTURE recognize as a new building type. To date, the Commission reports 1100 new applications filed and predicts that within a decade more than 2000 stations will be in nationwide operation. By January, 1954, 80 percent of the nation will have TV coverage, primarily from the lower-income stations whose investments will range between $150,000 and $500,000.

Almost everyone is familiar with some of the elements of television production. Mobile units are seen at parades, special sports and news events. In the large cities, there are often several multitransmission originating studios . . . their microwave relay stations are the countryside connecting chains. Few architects, though, have considered how closely related (or removed) is the TV station from radio production and the film studio. And while every television station differs in programming, and equipment and facility needs, each will have the elements of sight and sound transmission. Architects will have to solve problems of superheated studios, the need for perfect sightlines, traffic circulation, mechanical cores, column-free areas, and floor loading and fireproofing for special equipment. With developments in acoustics, insulating and air-conditioning techniques, the aid of lightweight materials, and improved structural systems, leaders in the field believe that TV designs will not necessarily resemble radio stations or film studios. And with thoughtful planning and imaginative design, the *administration*, *production*, and *operational* areas . . . the elements of television studios . . . may be integrated in three dimensions and differentiated from other architectural forms.

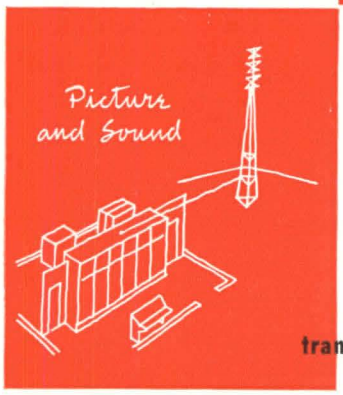
To those about to enter the field of television station design, the Editors of PROGRESSIVE ARCHITECTURE offer this study. Within this special issue, the answers to the problem are not given. Instead the reader will find some of the criteria for design. Perhaps then, structures which are expressive and freed from precedent may develop the unique quality of television.



pick-up



control



transmission

definitions

pickup

audio: refers to sound component of the TV signal.

kinescope recording: filming directly from the TV receiver.

microwave relay: network pick-up and transmission of waves less than one meter in length; transfer from studio to transmitter, or use of chains of transmitters to step up power and retransmit the signal.

mobile unit (remote): specially designed vehicle carrying TV pick-up, transmission, and relay equipment for remotely located productions.

video: refers to sight component of the TV signal.

control

control room: elevated area adjacent to the studio, housing equipment and personnel to control the video and audio transmission.

fading: a camera-control technique by which a scene is gradually brought into view or dimmed down to the black level.

monitoring: controlling the quality of the transmitted images.

shading: correcting the light distribution of the images produced by the TV camera.

transmission

coaxial cable: special hollow-metal conductor with a single wire centered along its axis by insulators.

market coverage: the areas into which the TV signal penetrates and can be received by sets in residential districts. It varies with channels, tower heights, and character of the terrain.

multitransmission: combination of the three types of transmission: remote, film, and studio.

network: an affiliation of stations to broadcast simultaneously a program received from an originating center.

UHF: ultra-high frequency; 300 megacycles and above.

VHF: very-high frequency; 30 to 300 megacycles.

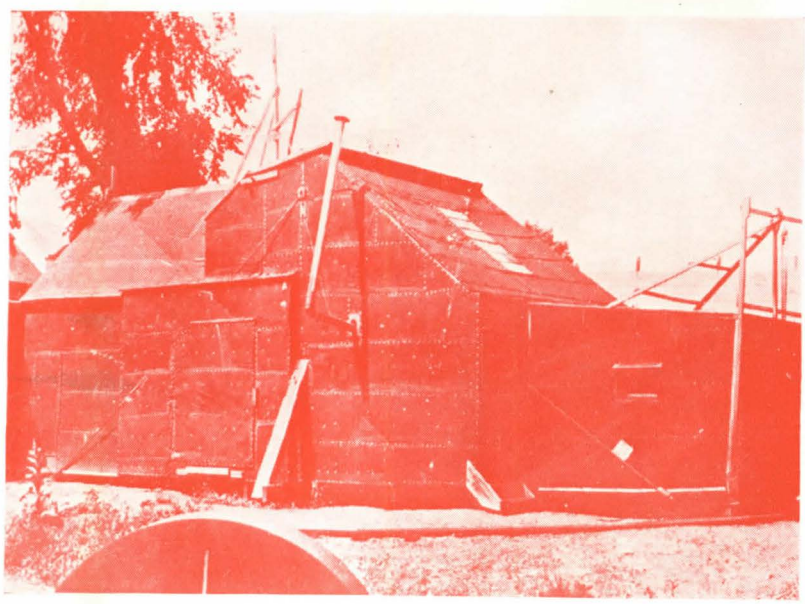
background

Television, by its co-ordination of audio and video transmission, realizes the most fundamental media of communication. Man's perception of the world is by means of the eye and the ear. Television experimentation actually dates back to the discovery of selenium in 1877 by Berzelius. Every generation since has been fascinated by this idea; at almost every turn it seemed a promise about to the realized.

Television was first effected in Great Britain. During the first half of the 20th Century, two systems of transmission were developed. One reproduced an image mechanically by a rotating disk; the other was electronic. Later, as electronics were further perfected and the 60-field 525-line system improved, television became adaptable for wide transmission and clear reception. Subsequently, the pattern for receiving sets in the United States was standardized. And in the past decade through mass production, it was made commercially feasible and soon became a commodity available on all income levels.

In the realm of mass communication, many of the industry's leaders believe that television is fast becoming the ideal medium. They recognize its enormous potential for education, entertainment, and communication of current events. As a source for spreading techniques and informative material, and helping to industrialize backward areas, it could strengthen any international development program. And by operating on a national or worldwide scale, it could encourage enlightenment as opposed to ignorance, harmony in place of chaos. Its social, political, and economic implications are far reaching. David Sarnoff, Chairman of the Board, Radio Corporation of America, cautioning against underestimation of the medium of television, has prophesied, " . . . it is destined to provide greater knowlege to larger groups. It may create a broader understanding of the significance of current events, a more accurate appraisal of the men in public life, and a truer perception of our own people."

The importance of television lies in its spontaneity and immediacy. It is these unique intrinsic elements—making it possible to transmit images and sound as they occur, without delay or editing—that lends dual qualities to television characteristic of no other medium. It affords more than visual images and descriptions. Unlike radio broadcasting, which makes the audience literally dependent upon the controlled and modulated sound to form impressions, telecasting permits every member of the living room audience to see for himself—and interpret what occurs.



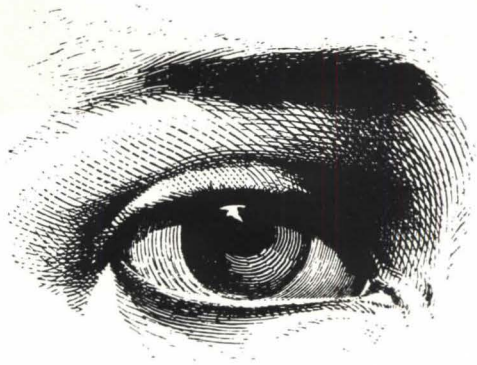
An early (1882) version of television conceived by Robida as a cultural medium. The sketch shows both sight and sound transmission projected in the home, using an elliptical screen with an amplifier in front of the listener (above).

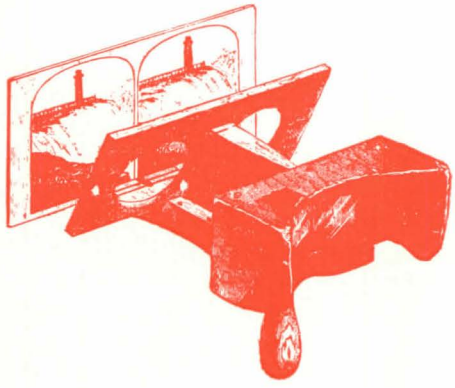
Thomas Edison's "Black Maria" (left) *the first successful motion-picture film studio (1891).*

Credits for Illustrations: page 162

Background

sight

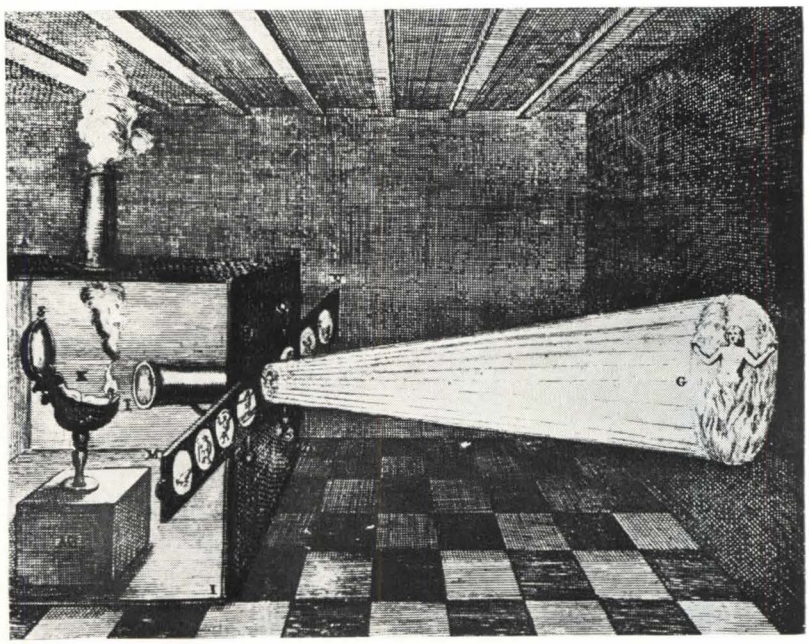




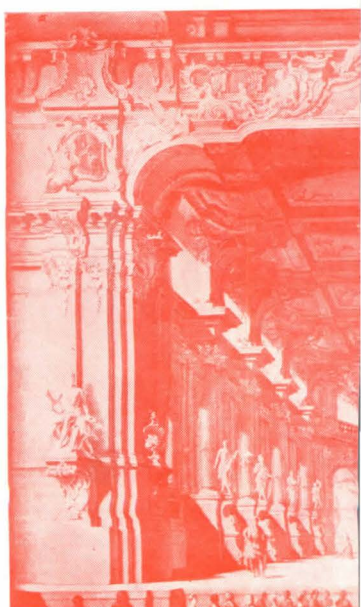
The concept and the techniques of television are not new. Various devices, from vibrating mirrors and walls of lenses, have been proposed for the rapid scanning of an image for the purpose of transmission. One of the earliest devices was the camera obscura. Within a darkened chamber, scenes in motion and landscapes were projected upon a screen for audiences to view and artists to sketch. It was perhaps the first type of "moving picture."

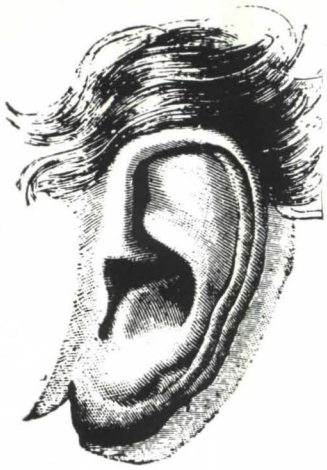
An early experiment first proposed by Nipkow in 1884 employed a flat, circular metal disk with a spiral pattern of holes, in front of which was a fixed lens (a system not unlike one used today in experiments in color television). By rotating the disk, each hole of the spiral passed in turn across the field of the object, so that upon a complete rotation, the entire image was transmitted.

Not only did the Nipkow disk scanner become well developed in 1884, but at the same time other experiments and theoretical schemes were sketched and sometimes built in England and the United States. Robida, a Leonardo-like engineer and designer of the 19th Century, visualized "a correspondent of the epoch" (*page 79*), a man astride a camel, whose broadcasting device would permit him to transmit the important events then occurring in the Far East. As early as 1882, Robida's visions of the modern world of science included a projection of television called the "telephonoscope." With the perfection of this, images and sound could be transmitted together. And in his sketch (*page 79*), a life-sized ballerina becomes visible on the screen "for the edification of the artist." Supposedly both the projection and the tone were to be faultlessly reproduced by such a device.

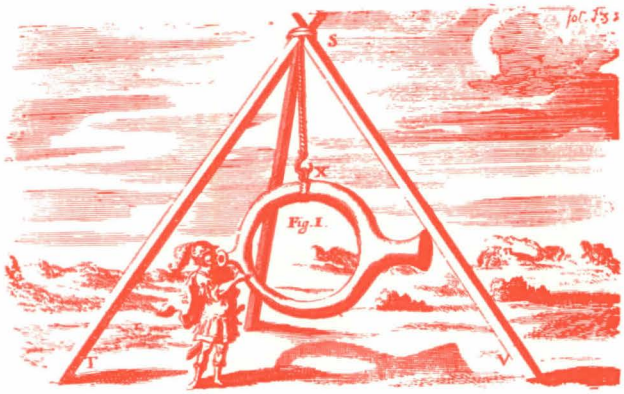


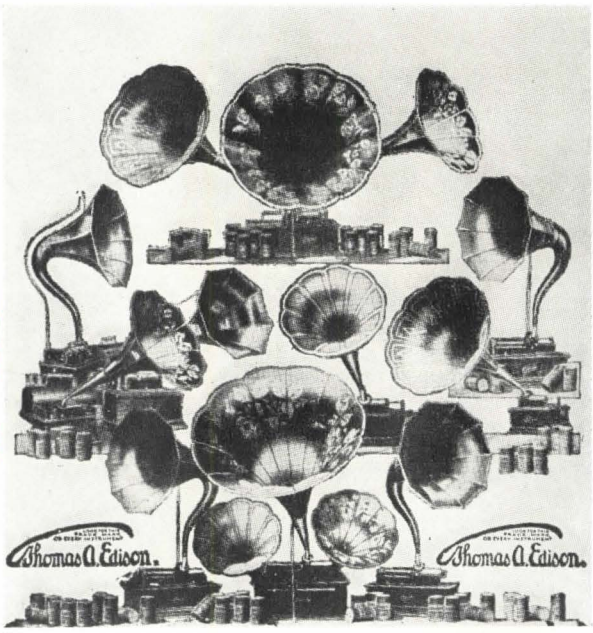
Some of the machines invented and developed by Athanasius Kircher, a famous Jesuit scholar, are marvels of science. As literal forerunners of the period, they are the genesis of many of our sight-sound projection machines. He has been credited with the invention of the "magic lantern," the predecessor of the motion-picture projector. By means of an oil lamp and a primitive reflector, in 1640, the aristocracy of Rome enjoyed a showing of slides. Everything from the mechanics of the lan-

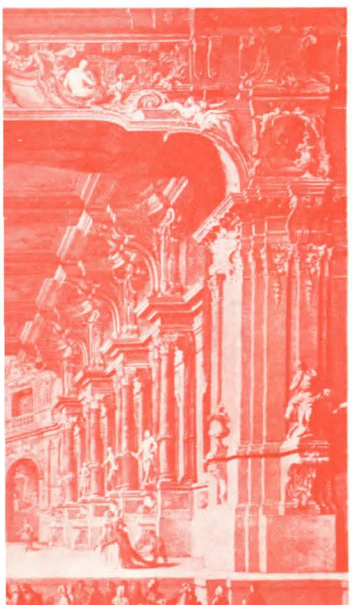




sound







tern to the slides (detailed studies in light and shade), were built or drawn by Father Kircher. Crude as they may appear, these included all of the essential elements for projection of an image upon a screen.

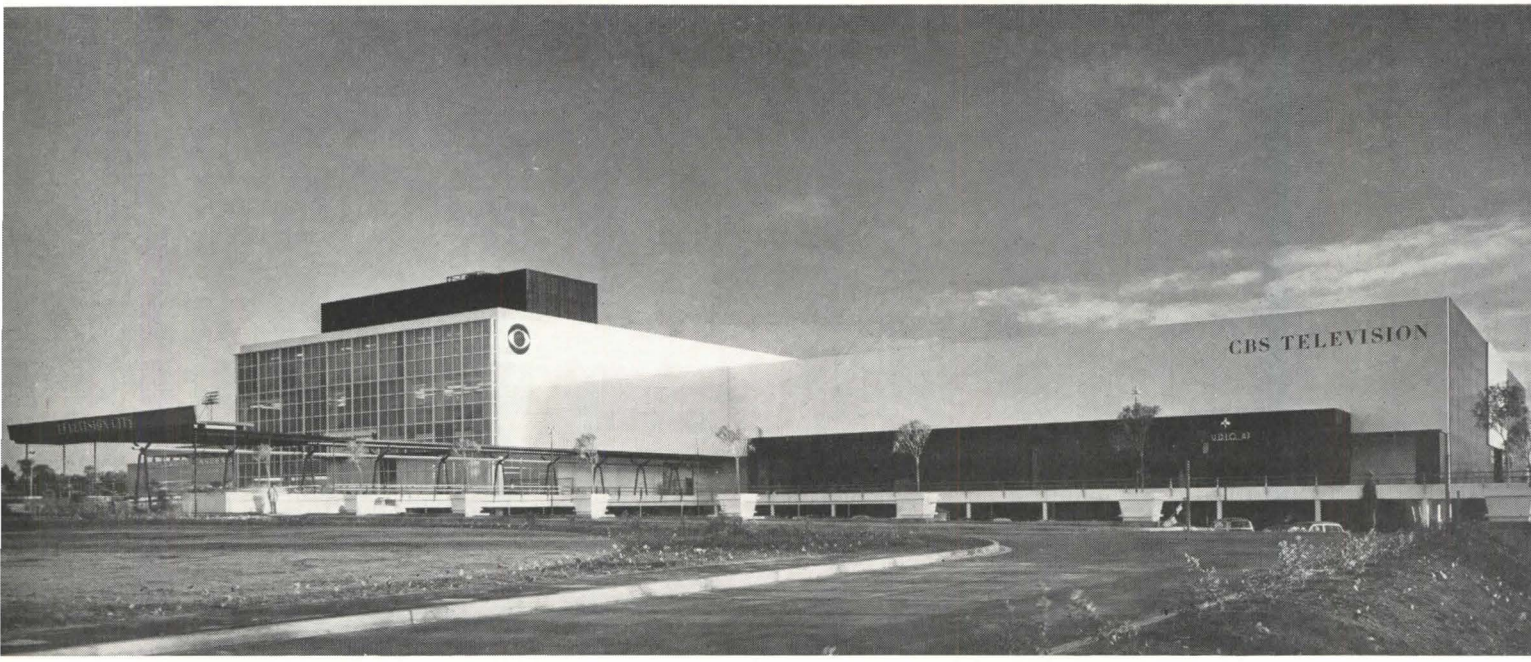
In sound development, Father Kircher was equally inventive. By means of the Horn of Alexander (*left*), he explained many of the properties and peculiarities of sound. The Greek conqueror of the Ancient World was said to have used this "magic" horn, which could carry his voice over a distance of three miles. By it, the general might command his troops and direct the course of battle from afar. According to Father Kircher (perhaps anticipating the "walkie-talkie"), it was to be the forerunner of modern sound devices to be used by armies.

•

Though having its roots in the theater, television is new as a performance medium. While the staging of productions in the theater sometimes takes months, and in radio often takes days, the majority of television shows must be produced within a very limited time (in the smaller stations sometimes only hours in advance). For the live-talent productions, there is often no editing, so that the effect of spontaneity (while occasionally capricious or embarrassing) is easily achieved.

As a medium, the simultaneous transmission of images and sound constitutes the ideal communication system. It is claimed that the criterion of the good television show is—the picture alone conveys the message or is entertaining, while the sound acts to reinforce it. Though it distantly relates to viewing slides in the stereopticon, looking through a telescope, reproducing pictures by "facsimile" (telephoto transmission), and to the production of motion pictures, TV's prime advantages are *spontaneity* and *immediacy*. Production can occur without interpretation or editing. Because of these qualities, TV may achieve subtleties difficult to attain on the stage or the screen. TV is a medium far more introverted, and its techniques should develop this emphasis. For the architect, the design of the production areas might reflect this difference . . . in architectural expression, perhaps as a new building type.

the design problem



CBS "Television City," Hollywood, Calif. (above) *is the completed nucleus of a 24-studio, multitransmission originating station. Architects: Pereira & Luckman.*

program and policies

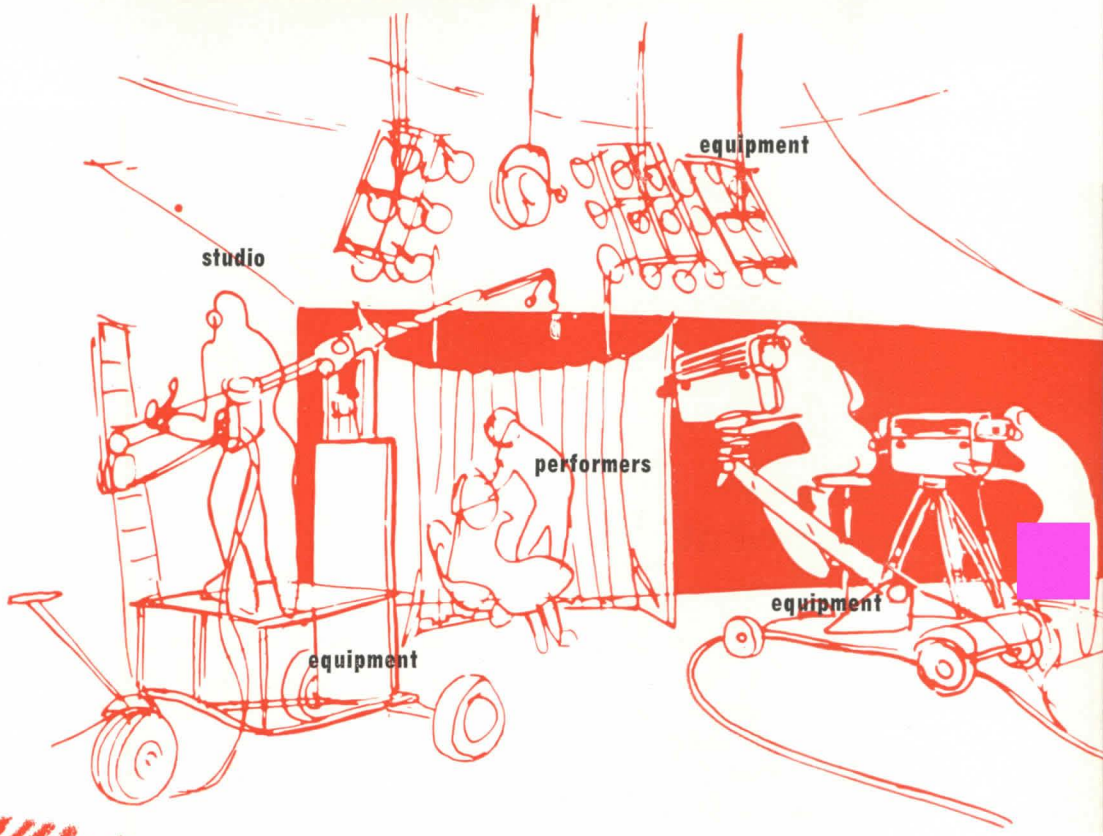
Master planning analyzes the relationship of all the elements of the design. It relates the engineer to production, personnel to programming, and the owners to their investment. It compounds the highest efficiency for the highest profits. An accurate analysis studies key figures, policies, and revenues. It affords answers to questions of programs to be offered, the scope of the market, and personnel costs. Master planning explains:

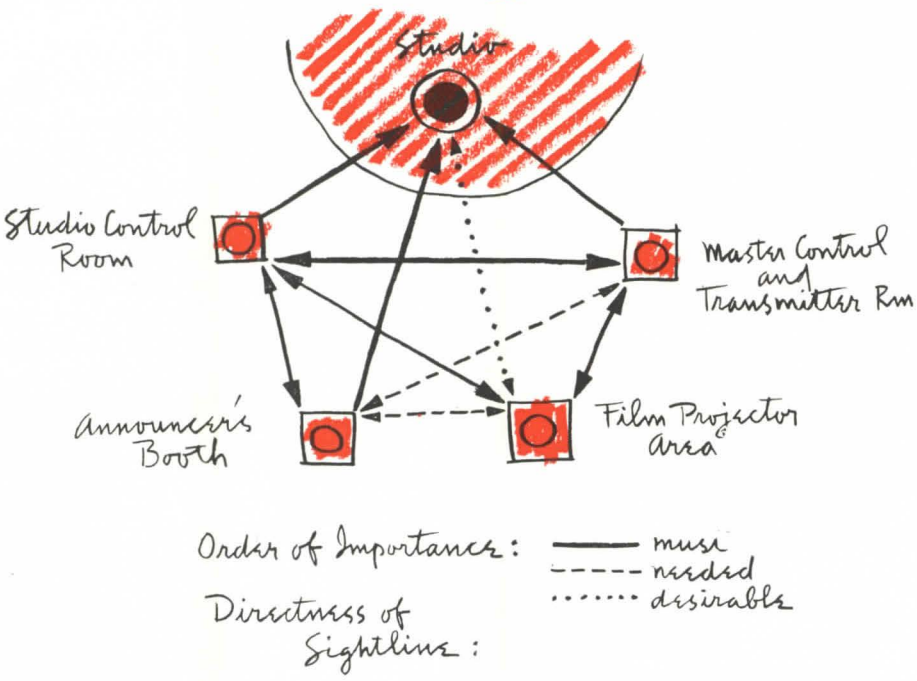
1. How the station may be designed: for the potential market, programming and management needs, and the anticipated technical developments for a projected 15-year period.
2. Co-ordinated operations and properly timed expansions.
3. Budgeting of costs and the periodic analysis of expenditures.
4. Advertising rates and time sales.

Since programming determines the character of the station, when the master plan is made it is logical to describe the pattern. Air time is established. Production types are evaluated and interview, educational, entertainment, or film programs are weighed against a market potential and the availability of talent and material. It is then possible to determine a budget ratio between network needs, local studio organization, film, kinescope, and remote-control production. Studies of employment figures, the areas and volumes of the station, studio type and location, the number of sponsors and divisional budget figures all will influence planning and programming. And finally, the comparative data on all television stations is assembled. Their relation to the development of the particular station will reveal:

1. Facts on policy of station and network.
2. Physical character of the station.
3. Time on the air and the breakdown of the programming in stages of planning.
4. Production, programming, and equipment.

Included in the surveys will be the answers to such problems as: Should the station be located in a suburban area (since horizontal space for expansion is more easily available)? To what degree are flexibility and expandability to be a part of the program? What will be the revenue and its sources? Who are the potential advertisers? Such answers on fundamental policy help to co-ordinate the master plan. With the master plan serving as guide, the program is then developed . . . the next step toward an architectural interpretation.





the design group

The planning group, directed by the architect, helps to formulate station policy. While some comparison with existing stations is possible, operations determine the exact facilities, equipment, and policy (the metropolitan station with unlimited sources of talent is obviously a vastly different problem from the rural news and film-review station). In long-range station planning, the project may be guided by market research studies. These take advantage of technological change, market fluctuations, and extra revenue sources to provide information on amortization requirements, earning capacity, and expenditures. With these at hand, the architect and the design team can evolve a broad development program to project their findings into station planning.

Included in such researches of policy and market analysis, would be equipment and facility design, personnel requirements, and budgeting systems. For this, surveys are made of:

1. The potential of the region to be served.
2. The anticipated growth of the community.
3. The level of business activity in relation to the national average.
4. Possibilities of noncompetition versus competitive broadcasting.

investment

The value of the master plan can be measured by economies in capital investment. It effects savings in operations and maintenance, it reduces unwarranted spaces, and it relocates less-valuable areas. Much may be saved by preparing area-traffic studies. By these studies, production expenses (important in long-term station operation) can be reduced to essentials.

The master plan, though, is a synthesis as well as an analysis. The architect and the design team in their studies should emphasize and co-ordinate:

Long-range Station Policy
Stages of Programming
Personnel Requirements
Location of the Station
Area and Volume Relationships
Equipment Needs.

While literally scores of market surveys produced by private sources are available, the most reliable are those of government agencies, including: *The Federal Reserve Bulletin;* the Department of Commerce bulletin, *Survey of Current Business;* the FCC bulletin, *Preliminary 1952 TV Financial Data;* and *Part III* of the FCC *Rules.*

Since last spring, when the FCC authorized permits for 351 new stations, leading executives in television have felt that a vast expansion is impending . . . perhaps as many as 600 stations by 1955. Television already reaches one half of the population of the country. More than 800 million have viewed programs since the Presidential Inauguration in January . . . more than 42 million comprise the weekly fireside audience for leading Monday-night features.

By the new FCC policy, coverage of the United States and territories is expanded; and because of it, regional networks seem most likely to develop. Such networks mean that expenditures of a small station are restricted, since income is always limited by the narrowly defined market areas. Many experienced in television planning, considering its future development, feel certain that, ". . . when the industry hits its stride, like the development of radio, most of the TV stations will be small . . . serving local markets, competing sharply for local audiences."

Perhaps if several stations co-operate in production, to cover an area from one point of origination, considerable operational economy would be effected. As such, the market area would be greatly enlarged. Small stations might band together into a network to become a major program source which few national advertisers could then afford to overlook.

Capital expenditures should be put down at the very beginning of the first planning stage. In order to estimate *investment* expenditures, the list should include: application for the construction permit; fees for technical experts; lawyers and planning specialists; cost of the site; financing costs; surveys; and costs of transmitter, studio, antenna, tower, electronic, and mechanical equipment. Those expenditures then generally considered *operational* are:

Technical
Program
Sales
General and Administrative
Insurance and Taxes
Property Rental.

In station financing, operational capital is the critical consideration . . . property is secondary. Cost breakdowns indicate that live-talent program expenses in television amount to over 50 percent of the total operational budget. Because of the growing stalemate due to high-priced talent, advertisers have begun to discontinue the "extravaganza" show, since they cannot get enough return on their investment. What happens, instead, is that clients are forced to use more film, produce different type shows, or use a source of talent less well-known to the public.

Since programming (at each development stage) is the controlling factor, studio equipment should be chosen only for immediate needs. Later, the station may be elaborated and expanded until all of the three types of transmission *(illustrated acrosspage)*. Included are:

Remote Unit
Studio
Film Projection.

This in turn determines the facilities needed to house the equipment and operating personnel. Capital investment becomes so dominant a factor that equipment must be: easy to operate, standardized, self-sufficient, interchangeable, and expandable.

In television operation the income for a station is derived from selling time to advertisers. To do this, revenue sources might include: national networks, regional coverage, and local programs. As an index (and an aid to the design team), current-time sales, spendings of local, regional and national advertisers, and trends of newspaper and radio advertising should all be investigated. Equally important are studies of the industrial and economic development of the region, and the potential market which may be (realistically) expected. In the chapters that follow, the elements of television-station planning . . . *the site, space requirements,* and *technical considerations* . . . are specifically developed and illustrated in terms of the "master plan."

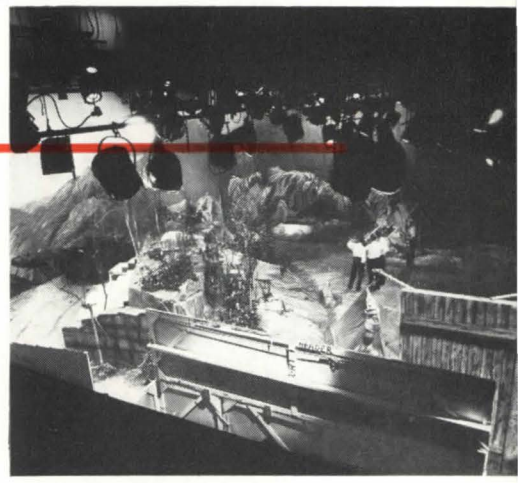
network origination

local station origination

by coxial cable

by radio relay

program flow into transmitter for distribution

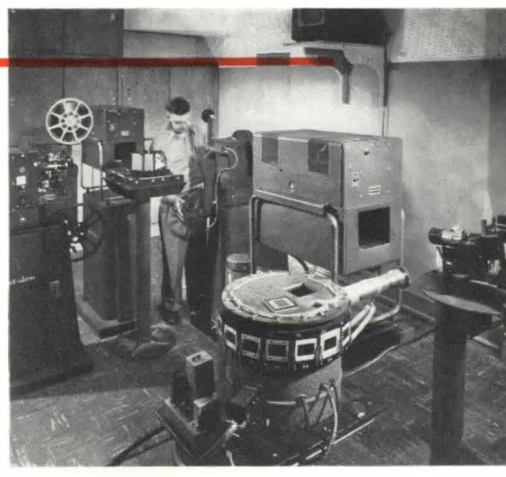


by studio production

by remote production

by film mailed

station pick-up and film equipment as program source



film or kinescope production

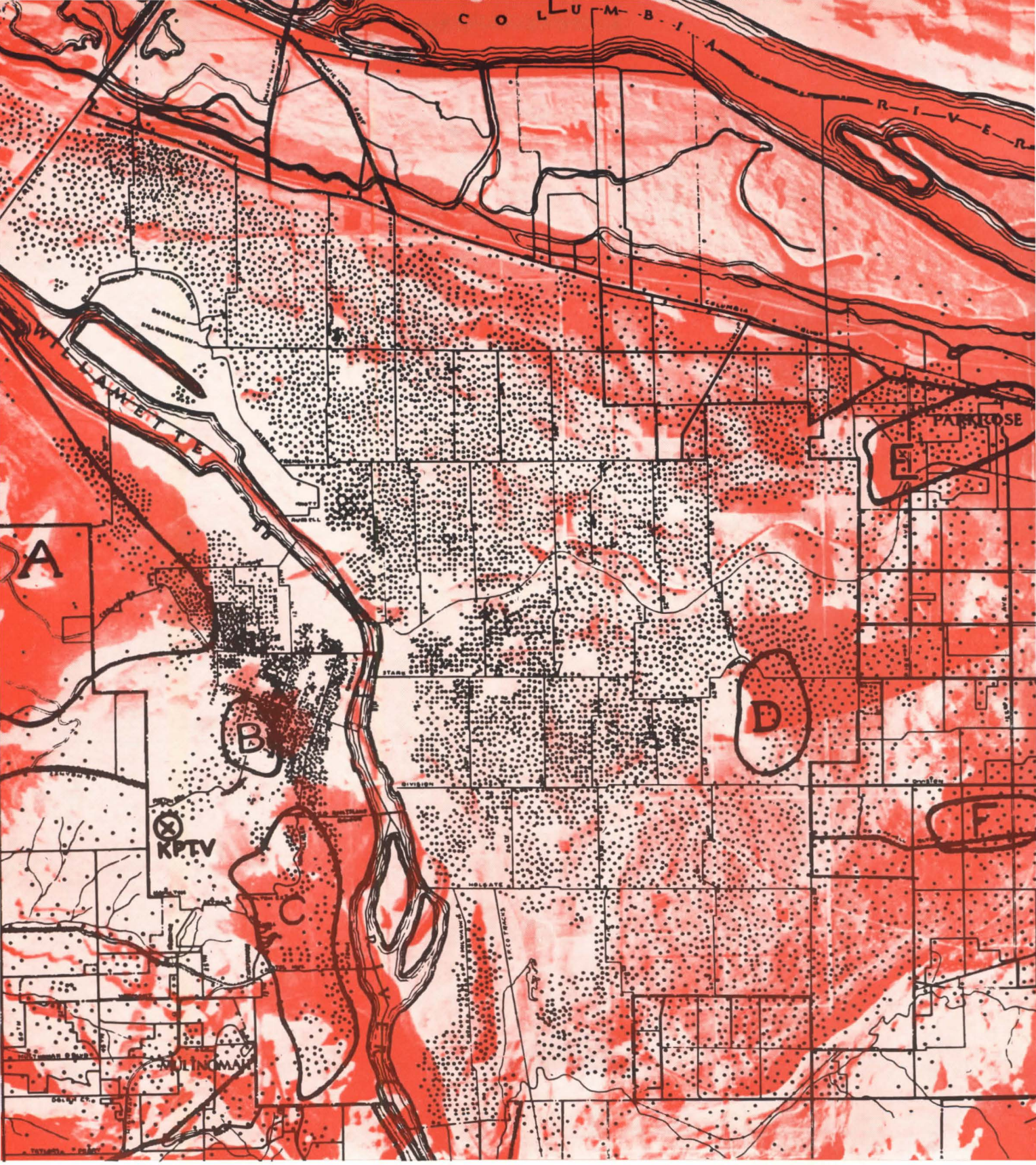
WCAU's new Philadelphia, Pa. station (above) fills one corner of a 10 acre suburban site. Vertical circulations are eliminated. Expansion needs are easily met for film, remote, and studio programming. Consulting Architects: George Howe and Robert Montgomery Brown. Designers-Engineers-Builders: The Austin Company.

location

Placing the television station in the right location is all-important and critical. It is the advantage most difficult to achieve, the one most subject to compromise. Site selection, at least for the transmitter, must be based upon the coverage of the market. Not only is widespread reception implied, but also there should be coverage directed to the concentration points of the existing market . . . later to be enlarged by technological development. Studies must be made of the "geographic" limitations of the area, including the topography and shadow areas, occupational and residential patterns, population distribution and movements. Ultimately, selection then becomes an evaluation of considerations of the site, including:

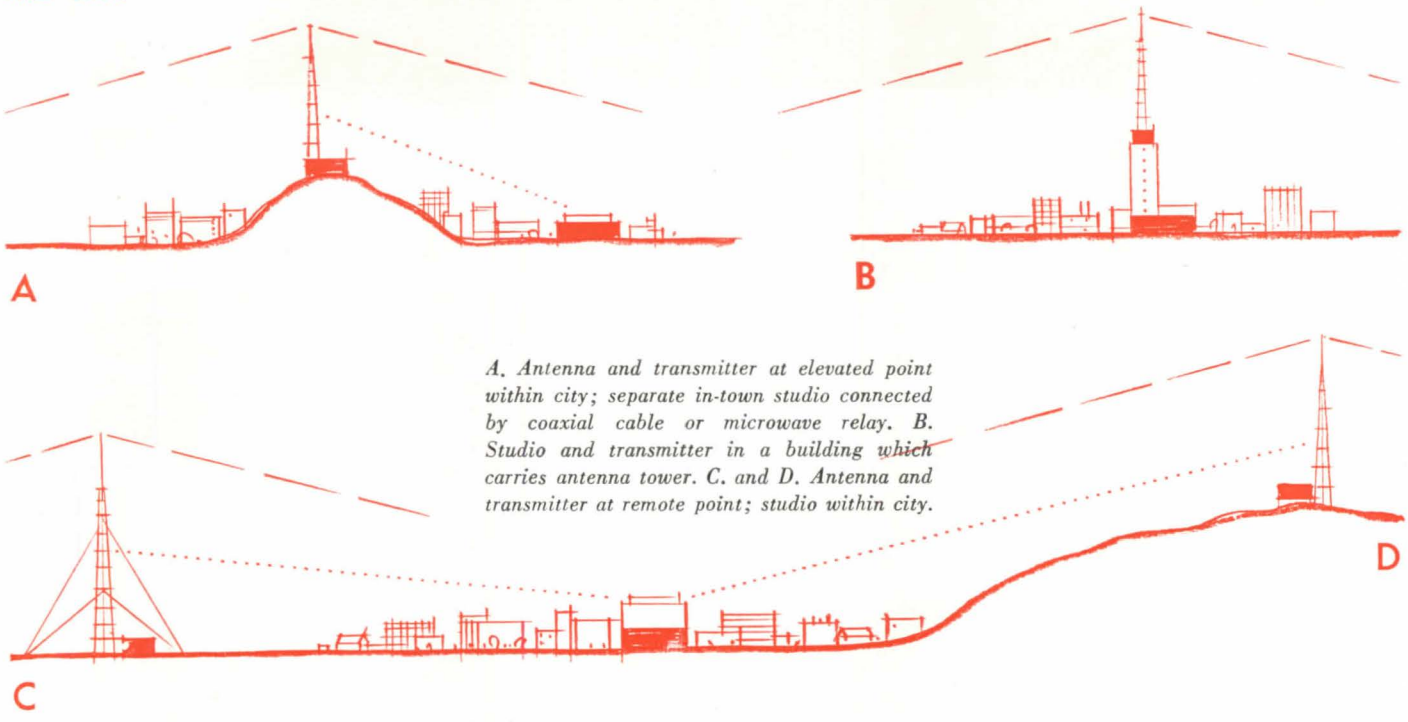
1. Availability of land;
2. Zoning restrictions;
3. Land and construction costs;
4. Accessibility to the site;
5. Soil, drainage, foundation characteristics;
6. Flatness of terrain, occurance of shadow areas;
7. Access to public utilities, power for studio, transmitter, and relay buildings;
8. Expansion potential;
9. Nearness to source of programs, center of coverage;
10. Distance between the buildings of the group.

Before the site is definitely selected, existing properties and facilities should be investigated to determine their continuing usefulness. Economical construction of a transmitter building and an antenna tower might be possible with the studio and administration areas located in an existing radio station. Consulting engineers should check the ground coverage and conductivity conditions. Since freedom from interference and noise is one determinant, tests should be made for signals and random audio distractions. The severity of weather conditions should be noted, including temperature range, winds, rain, and snowfalls. By means of a site evaluation list, all of the data for the several possible sites should be analyzed. With this as a guide, the transmitter can be located and a station planned which is flexible and expandable with the least investment of new capital.



In studying the placement of the KPTV antenna for the maximum coverage of Portland, Ore. a "shadowgraph" (above, color) *was made from a relief model and a small lamp was placed at the exact position of the antenna. After erection of the station, the lettered areas of a population distribution map* (above, black) *showed that poor reception corresponded directly to the shadow areas. By counting dots (each representing 40 people) it was possible to determine what percentage of the population could not receive the signal well. With a later increase in transmitter power, though, these areas will be substantially reduced.*

The Site



A. Antenna and transmitter at elevated point within city; separate in-town studio connected by coaxial cable or microwave relay. B. Studio and transmitter in a building which carries antenna tower. C. and D. Antenna and transmitter at remote point; studio within city.

studio-transmitter

After the site has been chosen, next consideration is whether to unite the studio building with the antenna tower and transmitter. Operational economy can be achieved by such unification. It is often posible in small communities, where few live-talent programs will originate, to combine all the facilities for origination and transmission within range of the center of the town. In planning, several alternatives are possible:

1. *Studio and Transmitter Together.* As the most desirable solution, the transmitter would be located to provide the shortest distance to the antenna tower, especially in UHF where transmission losses are great. Such planning is the most economical, since no duplication in facilities, personnel, and equipment occurs.

2. *Studio Separate from Transmitter.* While this arrangement is often found desirable, increased capital investment and operational costs would have to be considered since special crews, and additional equipment are needed. Within this fundamental division, three relationships are possible:

(a). The transmitter and antenna tower may be located on top of a high building in town, while the studio and associated facilities are at a nearby, convenient location. Connection between the two would be by microwave relay or coaxial cable. For relay linkage, though, unobstructed sightlines are required.

(b). A transmitting station may be included with a radio transmitter, and its antenna placed on top of the existing tower structure. Often even an existing radio studio may be expanded for TV use, although this is never completely satisfactory.

(c). A separate transmitter building and tower may be built at a remote spot, while the studio and its facilities may have urban location. In certain areas, film projection facilities may be at the transmitter site . . . reserving the in-town studio for live-talent shows, interviews, and forums.

Where high elevations are used for the transmitter, questions of transportation and available utilities become critical. Climatic conditions may be severe. At the higher elevation, capital expenditures may rise sharply. Special auxiliary equipment must be provided for emergency operation. Approach roads must be built and fuel tanks and other installations constructed, increasing the initial investment. This may prohibit the use of a site otherwise seemingly ideal.

•

An analysis of television-transmitting facilities, by J. P. Taylor for *Broadcast News*, outlines the following fundamentals, applicable elsewhere:

1. Antennas in UHF are more critical than in VHF. The height should be over 500 feet to reduce shadows, roughly half the length of "line of sight" shadows.

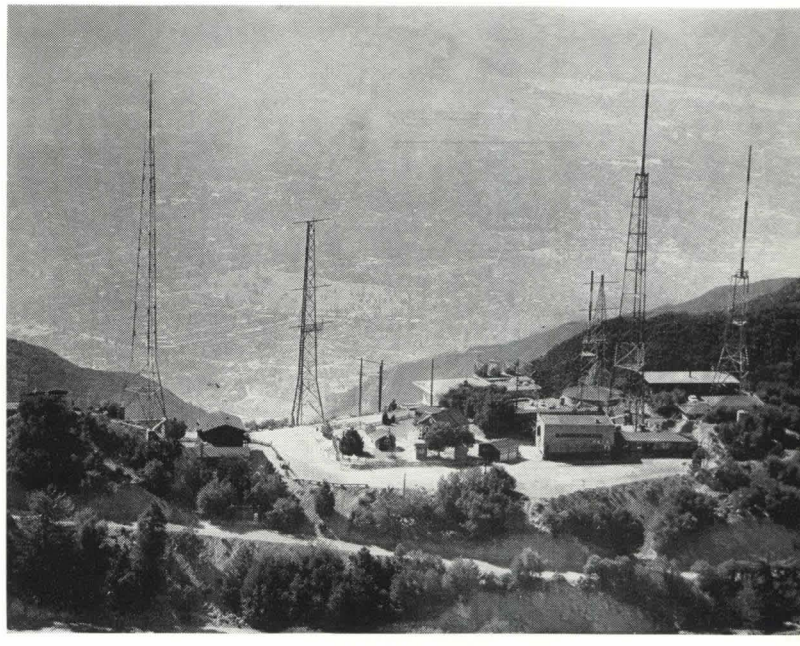
2. Hills and mountains produce shadow areas in transmission.

3. Population distribution must be studied before the antenna site is determined. Shadow areas (*see illustration*) should fall into thinly populated regions. *Coverage of the market* is most important in site selection; if possible, the center of the market should be chosen. Often such a location is unavailable due to zoning restrictions or real estate costs. Perhaps a building may be chosen whose structural system can be reinforced to carry the antenna tower.

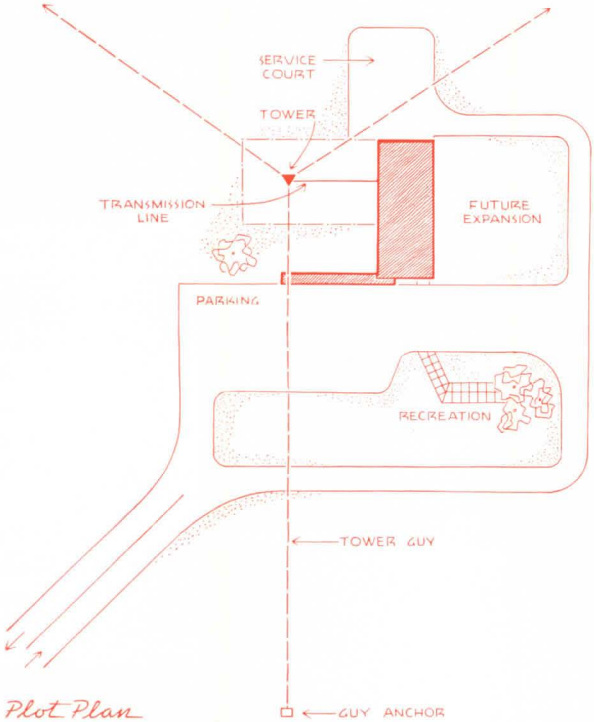
4. For operation at mountaintop stations, a remote-control system from a centrally located studio building might reduce operational procedure and costs significantly.

One of a chain of relay stations designed to beam London TV programs into the English Midlands (left). *The 100′ lattice-steel mast supports two dish-shaped aerial reflectors which focus waves into a narrow beam and direct them to the next station.*

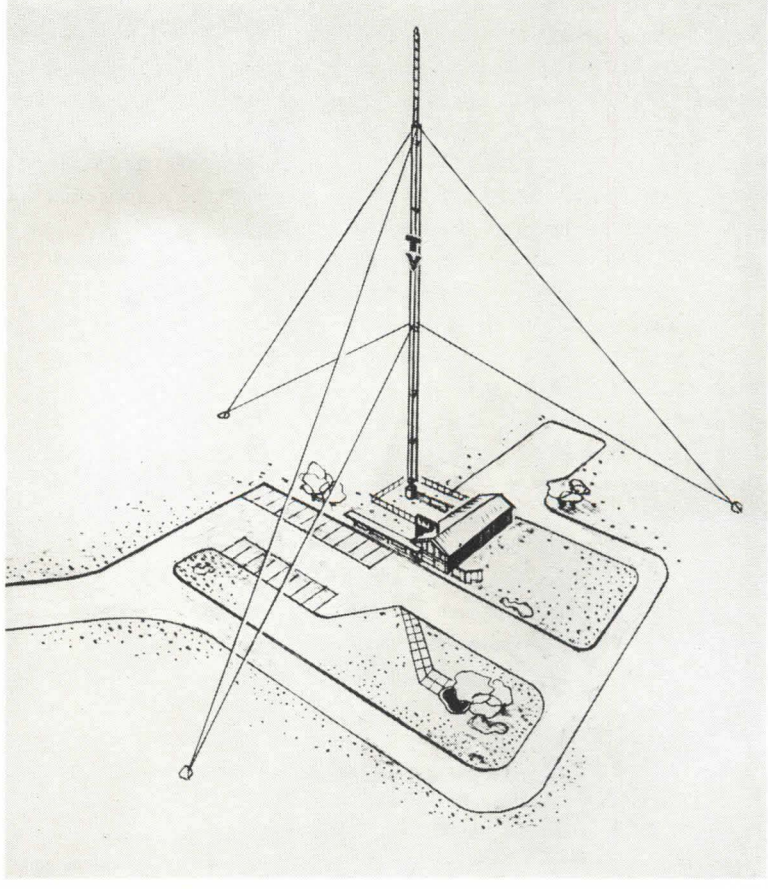
Airview of the television station atop Mt. Wilson, Calif. (below) *which is ideally located for full coverage of the Los Angeles market area.*



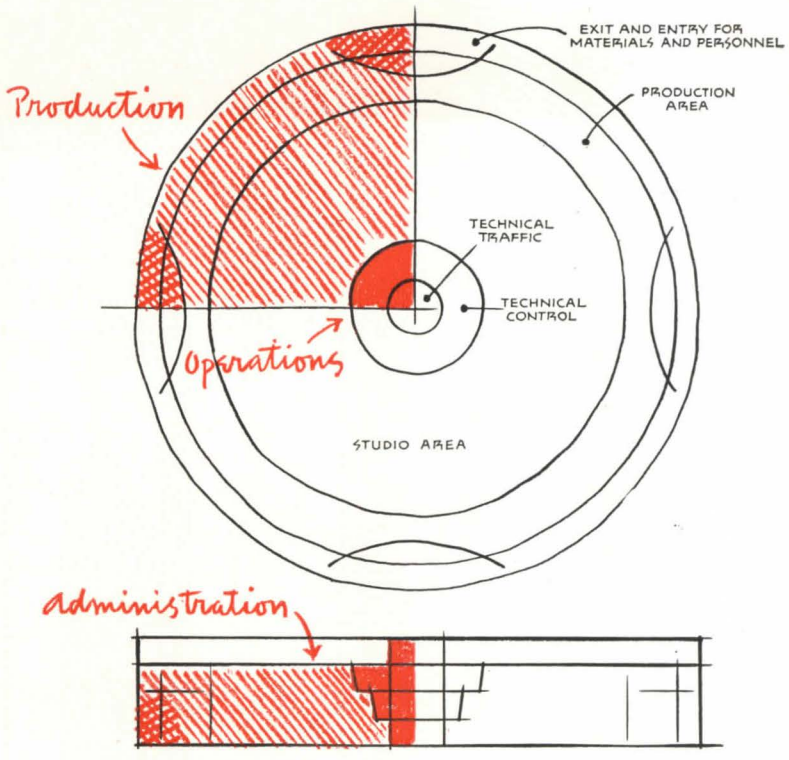
A basic TV station (right and below) *in which the studio, transmitter, and the guyed-antenna tower are closely related at the site.*



Plot Plan



Station Planning



general considerations

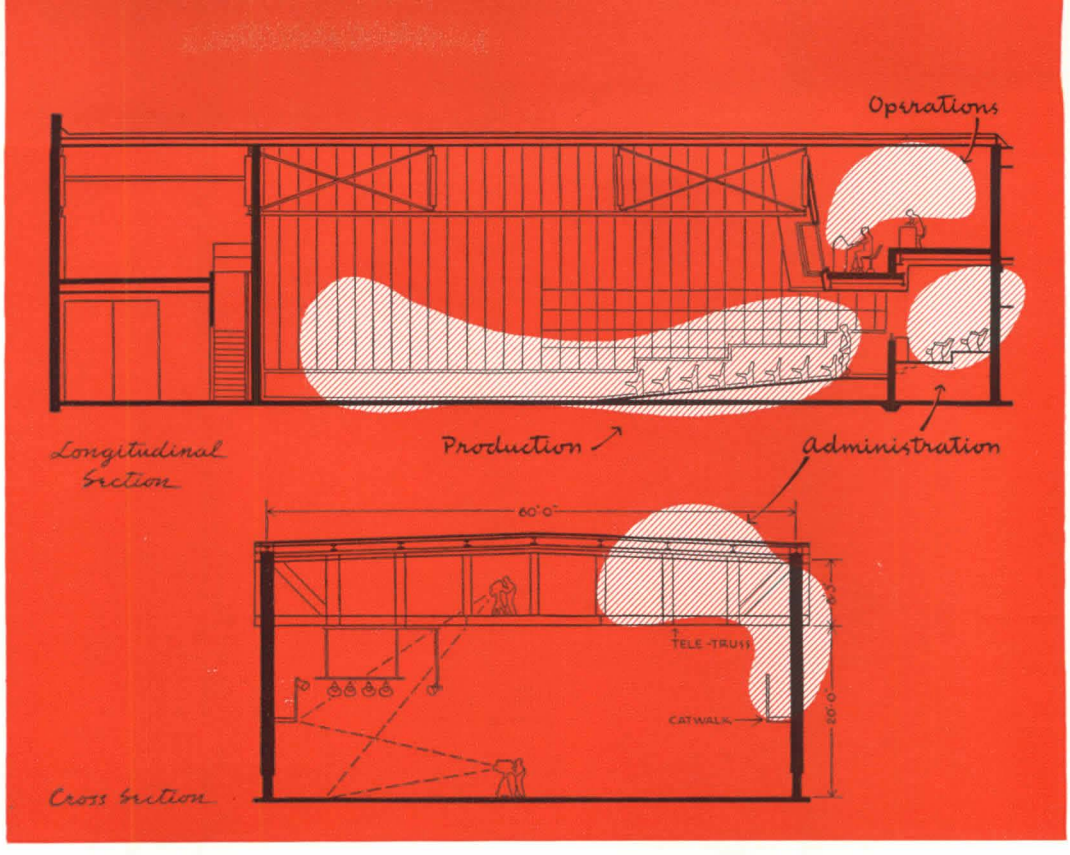
The most important planning aspect within the television station is the need for speed and split-second timing in production. Nothing must interfere with this; everything in the physical plant must recognize it. This basic criterion makes the following general considerations important:

Sufficient Space. Areas must be adequate not only for average, present broadcasting needs, but also to accommodate peaks of activity and possible expansion to serve future growth. Sight lines from control positions, camera movements (both horizontal and vertical): cross-traffic of equipment and personnel . . . all must be planned with sufficient space so that operation is unimpeded under either normal or peak conditions. In relation to future needs, the telecasting plant must be designed so that its physical structure can expand with potential-market programming stages and foreseeable technical developments for the 5- to 15-year planning period.

Undisturbed Traffic Flow. Because of the speed and complexity of production (true in all communications buildings, but especially in television) the smooth flow of traffic is a critical consideration. Specialized traffic circulation patterns must be studied in terms of the *administration*, *operation*, and *production* departments; equipment, scenery, and, at times, visitors. It is generally believed that a horizontal traffic pattern is most convenient. This is not always true however, for a multi-level scheme often proves best for smooth and co-ordinated traffic flow, thereby reducing intercommunication problems.

Space Relations. The arrangement of areas will be dictated by functional relationships, determined in turn by the character of the station and the type of broadcasting. Sight lines will control many room relationships; quick movement from one to another will determine others. A "railroad" arrangement of rooms will seldom meet the stringent requirements of a functional and utilitarian station. Once the purpose of each area is analyzed, and its co-use with others, the architect and the planning group may decide which areas are to be joined (to be integrated horizontally and/or vertically) and relationships of volumes, levels, and locations. The inter-relationship of spaces must be co-ordinated *three-dimensionally*. In a television station the easiest possible use of technical facilities is important, and clear sightlines for wide-camera angles and unobstructed control positions must be maintained. When one considers, with these needs, the demand for peripheral space and the advisability of a central control core, it becomes evident that intermediate areas must be woven together in three-dimensions, by setbacks, balconies, and shelves. All of these possibilities must be studied by the architect, again keeping in mind not only present needs, but also possible growth. A too-tightly interwoven scheme may be impossible to expand.

Flexibility and Expansion: Certain spaces such as rehearsal rooms, waiting areas, storage, and shops must provide maximum flexibility, as they are keyed to the program and the development stages of the television station. If the skeleton of the building is planned to provide long spans, proper column spacing, and walls free from mechanical attachments, such flexibility may be achieved. Storage facilities might be planned not only for scenery storage, but also to include assembly shops for scenery erection and production. And when expansion is contemplated, those areas needing it the most would include: studio, dressing rooms, rehearsal rooms storage areas, green rooms, and production areas. Above all, the potential of a studio depends upon a quick and easy conversion of spaces and volumes.



WCAU's Studio One affords clear sightlines to the stage from the two-level control room, the client's booth, and audience seating (above). *Deep trusses spanning the studio for filming and mechanical equipment, might also include administration areas* (right).

Typical requirements of a one-studio TV station, within the framework of an existing building, are solved to provide separation from administration areas and complete operational control (below).

the station

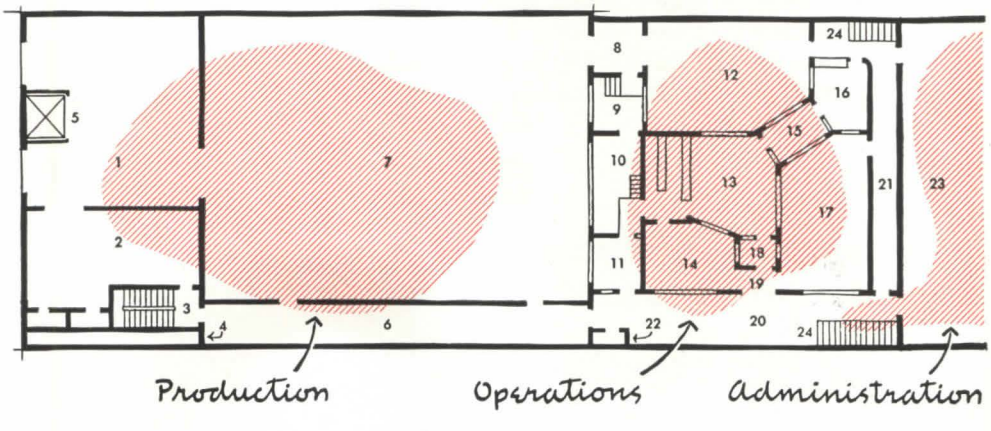
Television-station planning is categorized by its areas of *administration, production,* and *operation.* By their definition, circulation patterns and the inter-relation of functions are simplified. As such, it should provide the basis for an architecture which is expressive and utilitarian.

In the pages that follow, each of the major components is more fully developed . . . illustrated by selected examples.

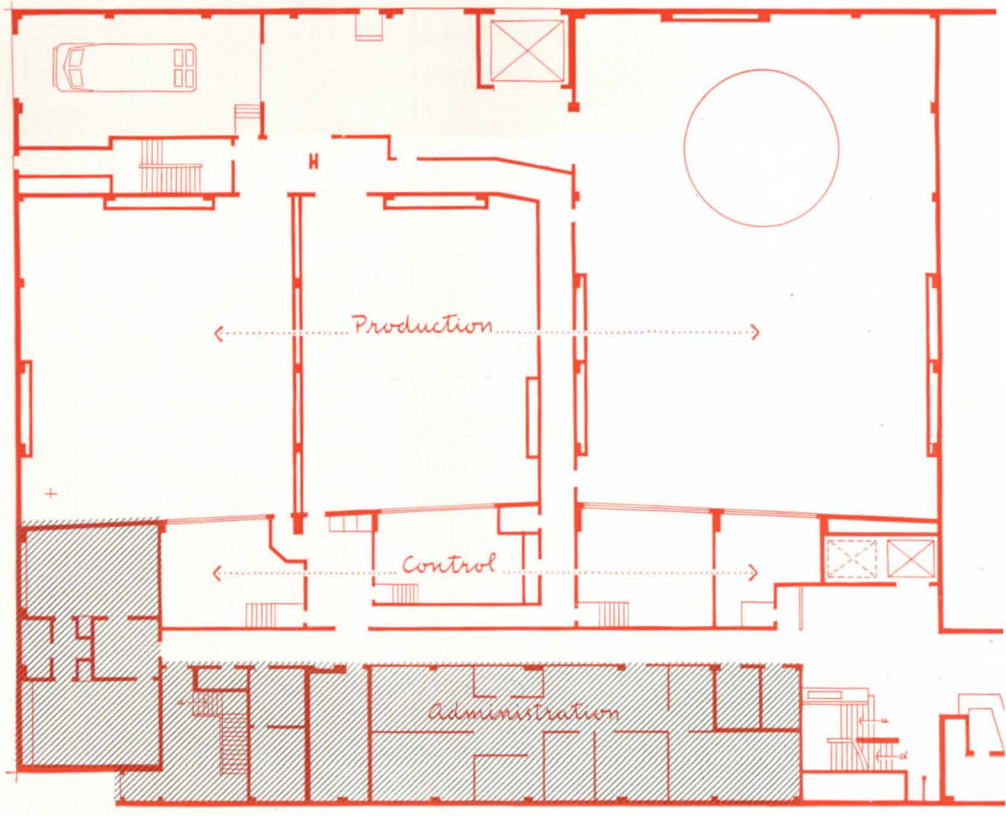
Administration areas, the technical and clerical offices, libraries, conference rooms, and public areas, may be grouped or subdivided. There will be private as well as public circulation to integrate them with elements of operation and production.

Production includes the large, column-free studios, workshops, dressing rooms, and the storage areas. Though independent in function, all operations are controlled by directive personnel, using video and audio technical aids. Free camera movement, superheated studio areas, and clear sightlines are the critical conditions.

Operational areas are for technical control and traffic. Emphasis is placed upon coordination and intercommunication. With its "technical core," there are studio control rooms, announcing booths, and film-projection rooms.



1. scenery, prop delivery, and storage
2. carpentry and model shop
3. stairs
4. duct space
5. elevator
6. corridor and sound lock
7. live-talent studio
8. sound lock
9. announcers room
10. studio-control room
11. observation room
12. radio studio and simulcast
13. master control room
14. studio (radio)
15. recording room
16. control room for radio studios 12 and 17
17. studio (radio)
18. announcers booth for radio studios 14 and 17
19. sound lock
20. green room—lounge
21. corridor
22. lavatory
23. entry from administration area
24. stairs to auxiliary facilities



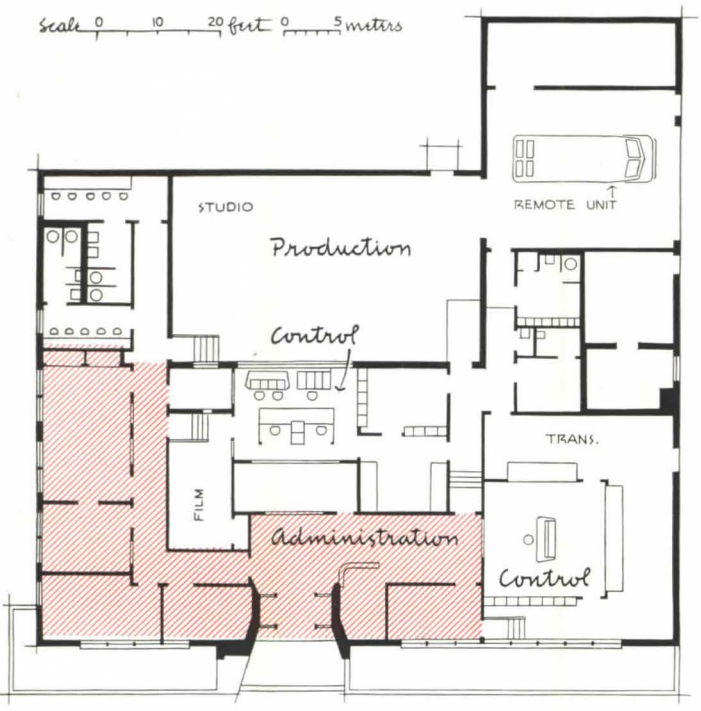
WWJ's TV station in Detroit, Mich. (above and left) *has separate areas of production, operations, and administration in a windowless building where technical and executive personnel intermingle freely. Architects: Giffels & Vallet, Inc., L. Rossetti.*

administrative areas

As one of the three major elements in planning the television station, the administration unit, probably located at the studio, includes areas for private offices, related conference rooms, and clerical files, general typing and accounting spaces. There may be, in addition, reference and record libraries, and lounges, reception and waiting rooms for the public and press. Good lighting, efficient arrangements, and flexibility are as important here as in any office layout. But rapid communication with the studios, control and production areas are the important demands in planning

Management in TV stations must be closely related to control booths, film-projection rooms, and areas of studio production. The use of peripheral space around the studios is the most common solution *(see above and acrosspage)*. To effect an even closer co-ordination, private circulation for the clerical and executive staff might be advisable. One location would be in the depth of the trusses spanning the studios, an area often wasted or relegated to mechanical equipment.

The offices . . . and their sometimes elaborately developed administration facilities . . . may vary in size and complexity. The design team in its planning analysis must

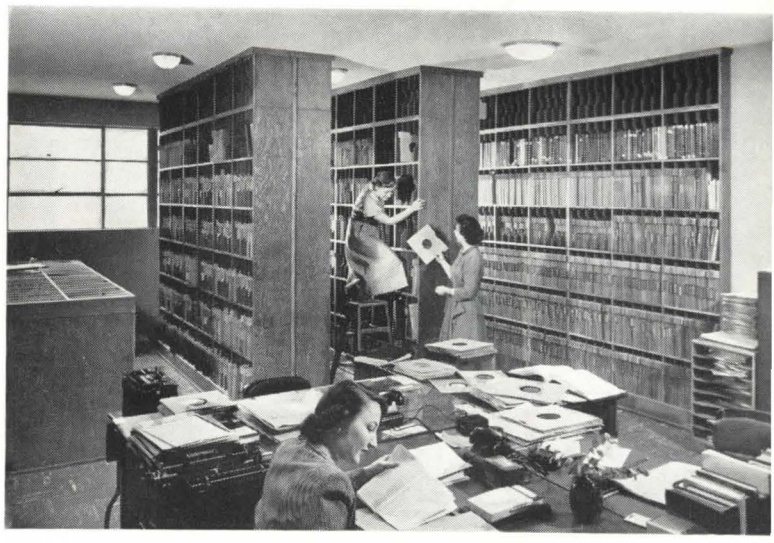


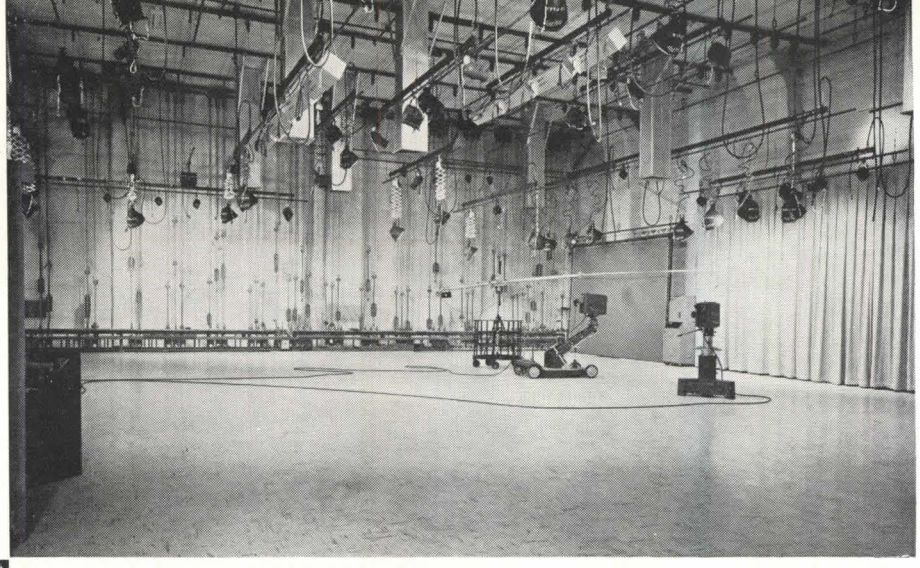
Miami Valley Broadcasting Corp., Dayton, Ohio (left) *is a multitransmission-type station with a private administrative circulation for direct contact with the areas of control and operations. Engineers-Builders: The Austin Company.*

consider the nature and extent of program facilities, as well as the character of the station in the regional network. In other words, exact requirements for the administration unit of the station become a function of the type and scale of broadcasting operations. Office and administration areas are usually best when joined directly to the studio and transmitter. There may be instances when it can be completely separate. If sales activity is found to be more efficient in another location (possibly closer to the center of town) at least part of the office space may be moved there. Operations may be combined if another business or activities exist under the same ownership. They may, too, share office space with other television networks.

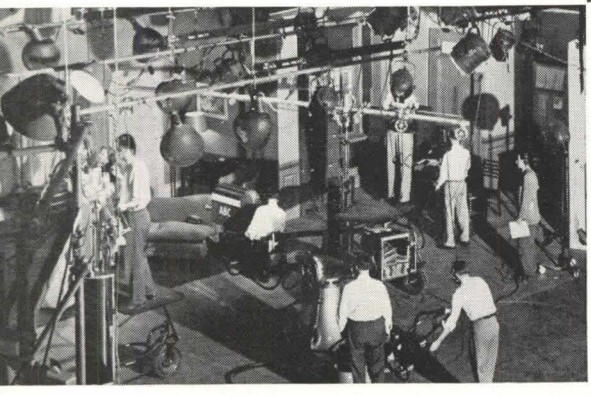
Whatever the location, well-planned office space . . . not just left-over areas . . . is a necessary basis for the efficiency of the station. Only by careful planning can management and the architect determine the precise needs. Only by planning can they evolve a well-integrated and workable solution.

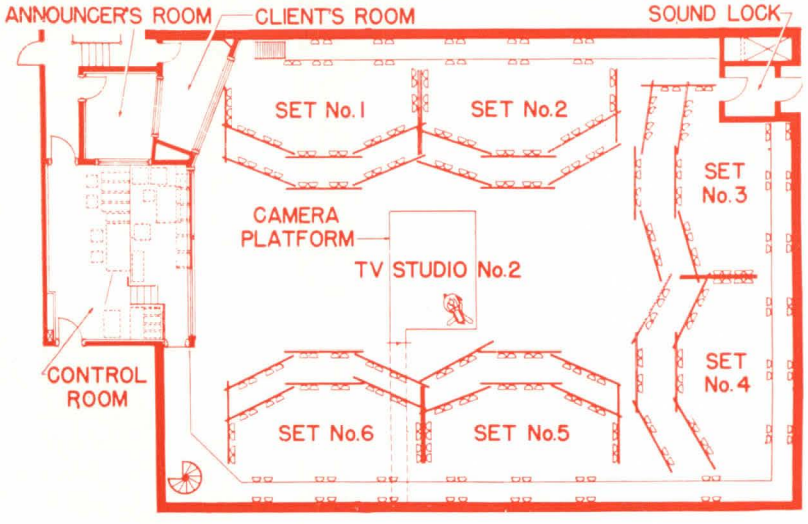
TV station KPIX, San Francisco, Calif. (right) *is literally a "workshop" for television production. In a design emphasizing traffic flow, a record-reference library becomes part of the administration unit to provide an economical, efficient use of space and co-ordinate technical operations. Architect: J. Lloyd Conrich.*





Production costs are often more than 50% of the station's operational budget. Contrast in the production set-ups of two stations is seen at WTVJ, Miami, Fla. (right), *Architect: A. Herbert Mathes; and at ABC-TV New York, N. Y.* (below), *Architects: Carson & Lundin.*





production areas

Production areas are planned for operational perfection. The keynote should be efficiency. These should be areas well coordinated and equipped . . . areas to discourage the use of high-dollar value studios for scenery, prop, and equipment storage.

Almost every studio building today is rectangular, more because of convention and preconception than realistic production needs. In this section we may see how the technical features determine the forms of walls and ceilings, while the elements of production determine the shape of the volume.

The Live-Talent Studio. All types of complex live-talent productions take place in this studio, often as large as 15,000 square feet and three stories high. There must be provisions to fly scenery, hang lights, and seat 300 to 500 spectators. Production proceeds in a clockwise (or counterclockwise) direction (*see plan above*), and often more than a dozen sets are used in sequence.

Until recently, many large stations used converted warehouses as substitutes for live-talent studios. Operations were sometimes limited, though more often compromised, since planning of the studios rarely included:

1. A close relationship of studio control booth to the scene of production.
2. Absence of obstructions between light-bridges, flys, and the ceiling.
3. A floor not confused with cables.
4. Depth of the trusses not a wasted volume.

The Interview Studio. Here a comparatively small area, not necessarily square or rectangular, provides production spaces for station personnel to conduct forums, newscasts, interviews, and commercial demonstrations. Since live-talent programs are the most inviting aspect of television shows, originating stations in their earliest development stage will usually have an "interview" studio.

Staging And Acting Area. Staging areas include spaces used for setting up scenery and acting. Sets can be put together on the studio floor or in the station workshops. To expedite camera movements and to speed production, the clockwise, counterclockwise, and "nesting" (sets within sets) systems have been found most adaptable. The area in front of the scenery should have side and rear aisles and space for general free movement. Passage for personnel should be unhindered. Television production might emphasize the simplicity of sets, not only in materials, but in line, form, and color.

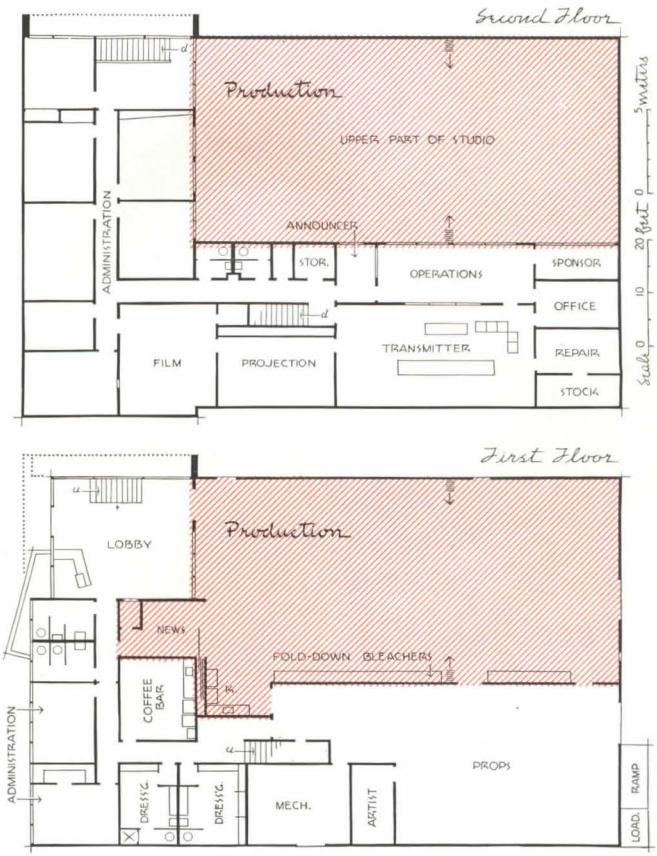
Camera-Movement Area. In front of the set is the camera-movement area. The electronic camera picks up the action and sends its impulses to the transmitter. Its movements (in all directions) are much the same as the camera cranes of the large film studios. At present the camera-movement floor area is not free, because of the heavy camera cables. In large studios, the use of overhead cables, supported by V-shaped rubber cords, is one workable solution. In the giant studios, though, the use of cable-free cameras, operated by batteries, sending signals to control equipment, probably will become a production necessity.

The Camera. The value of any camera is doubled by its flexibility. The movement of the camera inside the studio should be unrestricted by the height or the shape of the studio or by any floor obstructions. Many stations, often those with the best equipment, fail to exploit their potential to the fullest because of inflexible feeding lines or the inadequacy of dolly mechanisms.

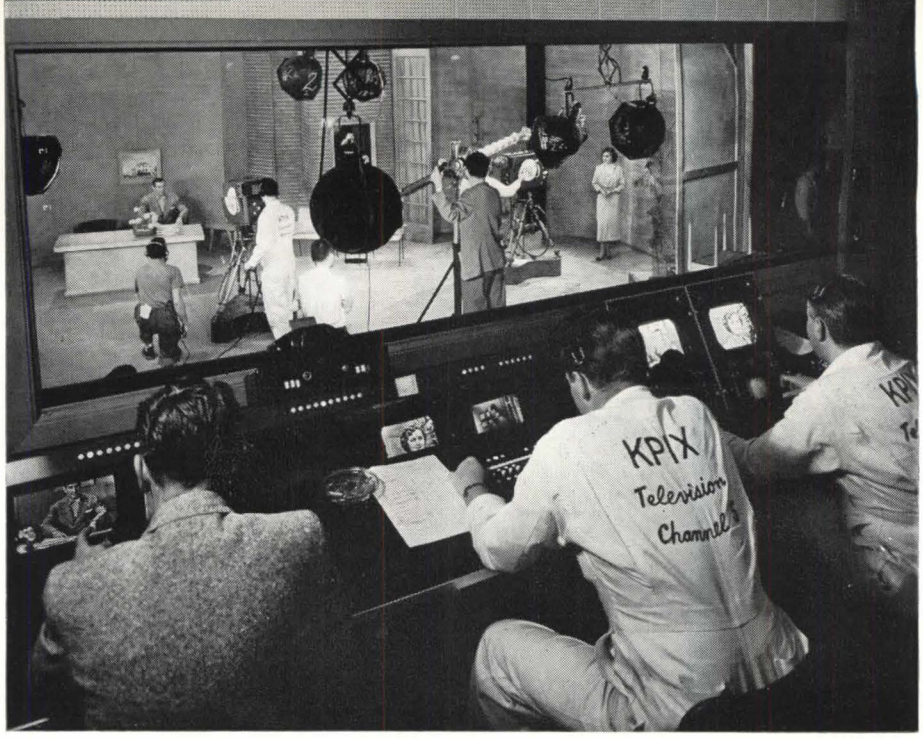
Film Equipment. The easiest way to provide programs in the first stage of station development is by motion-picture film. It often accounts for 80 percent of the total program time. Because of the staggering costs of live-talent production, it may see even greater use. One or two projectors, a film camera, a slide projector, and a film-control monitor comprise the greater part of the film "basic buy." And a projection room, film-projection areas, vaults, darkrooms, cutting and preview rooms later may extend the scope and complexity of the fully-developed studio.

Audience Participation. In order to stimulate the actors and also give the viewers a greater sense of movement, audience participation has been found desirable. For production in the interview-type studio, a movable-scaffold bleacher arrangement *(studio KNUZ, below)* utilizes the studio space without obstructing floor area permanently. Though opinion is divided on questions of viewing galleries, sponsor booths, and public areas, it is generally agreed that visitors should not be permitted to obstruct the operation and production efficiency of the studio within areas of studio control.

At NBC's new TV studios in Burbank, Calif. (above), *audience seating is above the stage level; lighting and sets are "flown," to free camera movement area.* *(See page 118.)*



KNUZ-TV Houston Texas (right), *is a station designed to be flexible and to operate with a minimum of technical personnel. Within its production area 500-600 persons may be accommodated. Here rehearsals and production occur simultaneously. One studio, 40′ x 80′, has a removable-bleacher arrangement in the side wall, and space is divided by an acoustically-treated folding partition. The more permanent sets . . . the newsroom and the demonstration kitchen . . . are centralized, in direct view of the public. Architect: Bailey A. Swenson.*



operational areas

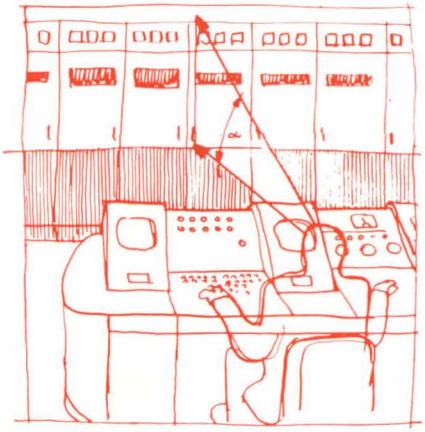
Centered in the technical-control rooms and the areas of technical traffic are the station operations. By a complete dissociation from production and the units of administration, often the most workable solution is provided. Within the "traffic core" technical traffic may be vertical as well as horizontal, but in order to eliminate bottlenecks and cross circulation, control areas should be accessible at all levels. Technical traffic spaces and cores should be designed to provide exits and entrances to their related areas. At the same time, they should be large enough to permit the movement of properties and personnel.

Technical-Core Planning. For the small station, the more compact and closely knit the technical core the more efficient will be the station. Close co-ordination of all technical facilities (*as Station,* KPIX *above)* reduces the number of operating personnel needed, since it affords direct sightlines to several positions of control. A close grouping allows a standard trench grid to be employed under the entire technical area. The circular scheme for a television station, designed for ideal circulation patterns and sightlines *(page 90)*, is planned for the shortest equipsible cable lengths and mechanical equipment runs. By technical-core planning, maintenance and operation are greatly simplified and co-ordinated, unnecessarily long corridors eliminated, and elements of the design concentrated. Through core planning, investment capital and general operational expenditures are often reduced.

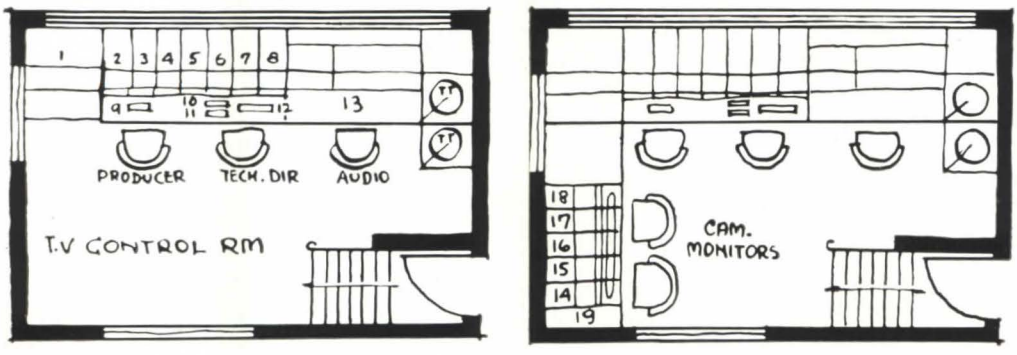
Video Control. Control equipment utilized throughout the studio is located mainly in the master-control rooms and the film-production areas. There are literally dozens of pieces of equipment, from preview monitors and switching units to devices for camera and film control. Architects have found that costs often can be reduced and production improved by the more simplified arrangement of units. *Clear sightlines are critical.* For long-term operation, the success or failure of a television station may hinge upon well-designed planning for visual intercommunication. Any design feature, any planning or technical co-ordination device which the architect can introduce (to relate the control room,

Control-room sightlines must be direct to production areas. Sketch shows how operators' vision may be obstructed by equipment hung from ceiling (left) ; *but if transmitter control console is as high as the studio console, all instruments may be easily seen* (right).

At Du Mont Tele-Center, New York, operations are further simplified by channeling audio and video transmission into separate control rooms.



The studio control room may be decentralized (below, left) *with camera monitoring and shading operations handled in a separate master control area. But for centralized operations* (below, right) *producer, director, and monitor operators are all grouped together.*



1. light-control panel
2. preview monitor
3. camera monitor
4. camera monitor
5. camera monitor
6. camera monitor
7. line monitor
8. preview monitor
9. director's panel
10. proj.-room remote control
11. tech. director's panel
12. switching and fading
13. audio console
14. camera monitor
15. camera monitor
16. camera monitor
17. camera monitor
18. film-camera monitor
19. patchfield

the announcer's booth, and the film- and master-control areas), strengthens the link.

Master-Control Room. The master-control room and the transmitter-control room should adjoin the studio control and the studio itself. They should, if possible, be accessible from the film-production area. For direct sightlines, architects have sometimes found it advisable to elevate the floor of the studio-control room slightly above that of the studio. Windows might be designed so that operators in charge of studio production also could see adjacent control rooms, studios, and the film-production unit. The importance of good visual communication cannot be over-emphasized. At Station KNUZ-TV, Houston, (*page 95*), the architect located the transmitter room adjacent to the control room so that, ". . . one engineer, trained in telecasting, could perform several duties."

Control Room for Interview Studio. All of the related equipment needed for video and audio control is located here. As such, it becomes the area for the directing and operating personnel, so that an unhindered view of the entire studio and its many related areas becomes a prerequisite. Sightlines should be provided to:

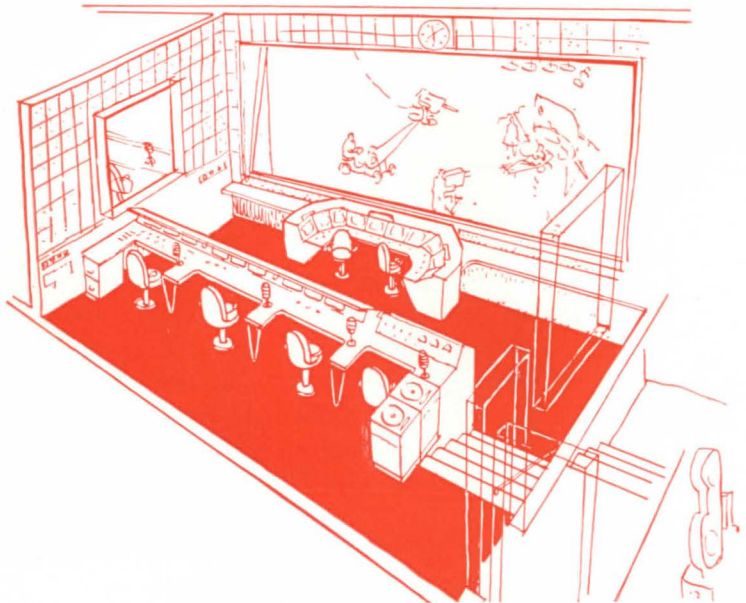
The staging area;

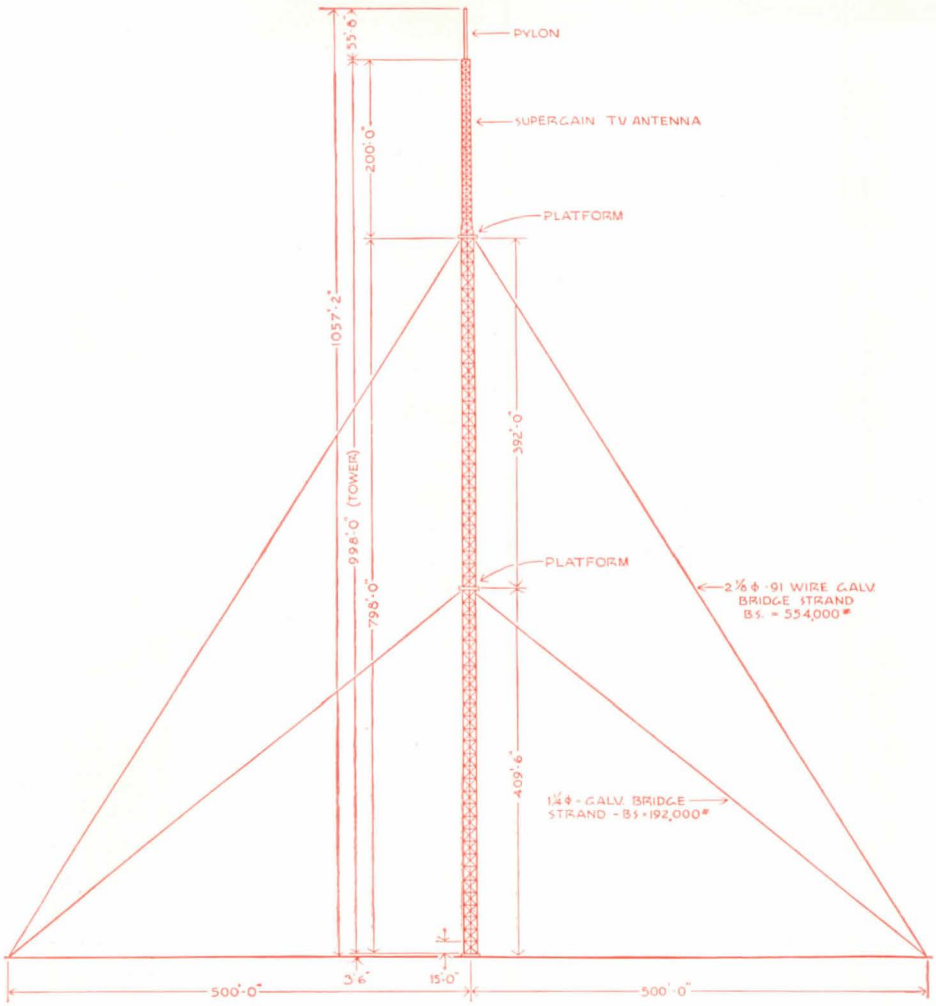
The camera-movement area;

The light-control board.

In the interview studio, too, are the specialized switching devices for the producer, the technical director, and audio-control positions with turntables for interview programs, newscasts, meetings, or forums.

Intercommunication Equipment. The master-control room is the nerve center of the TV station. It must communicate with the transmitter-control room and administration operations. If the station is part of a network, more direct contact (perhaps a telephone line) between the master-control room of the station and the network originating center seems advisable. The producer must at all times have direct audio contact with technical personnel on the studio floor. Often a loudspeaker system or earphones transmit instructions to staging personnel, while in the larger and more-elaborate stations designs include two-way communication between control room, studios, and workshops.





Locations of connection points for a 998' guyed tower topped with a 56' pylon are shown (left). *Towers cannot exceed 2000' in height over average terrain.*

Catwalk protects transmission lines from ice falling from this high, guyed tower (below). *Triangular tower is only 14' wide at base.*

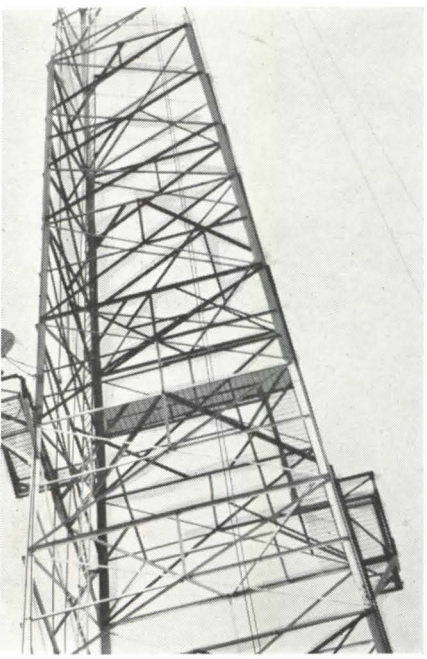
Self-supporting towers, though more costly, usually permit easier inspection of microwave relay equipment and general maintenance (right acrosspage).

antenna towers

From a structural point of view, towers erected to support TV antennas (whether VHF or UHF) are the same as AM and FM radio towers. These fall into two basic classifications: guyed and self-supporting.

guyed towers

As towers of this type are supported by wires that resist a large part of the stresses developed by wind load, their frames can be comparatively light. Their primary limitation is that they can only be used where an adequate amount of property is available. Approximate space and anchorage requirements for guyed towers can be determined by the following method: (1) with the base of the tower acting as a center describe a circle using half the tower height as the radius; (2) construct an equilateral triangle using the ground line between the intersections made by the circle as a base; (3) foundation points for the guys are at the ends of the triangle base; (4) upper connections for the guys will be located where the apex of the equilateral triangle meets the towers; (5) guys will also be connected at a point half way between the apex and the base. The highest guy will normally connect at a point that is approximately 80 percent of the total tower height. If it is necessary to connect the guys at a lower height, the center tower skeleton will have to be structurally stronger and consequently more expensive. Guyed towers are usually less costly to erect than self-supported towers. As the addition of other equipment such as micro-relay receiver dishes and transmitter studio links will require regular maintenance that is difficult to perform on a guyed tower, the smaller cost is not always the decisive factor in antenna-tower selection.



Transmitting facilities of this self-supporting TV tower atop the Empire State Building (above) *are shared by five New York stations.*

This relay station is part of a coast-to-coast network (right). *Cousins of the antenna tower, stations like this one pick up microwaves and direct them to successive relay stations located at 30-mile intervals across the U. S. Self-support is gained from slip-form concrete construction.*

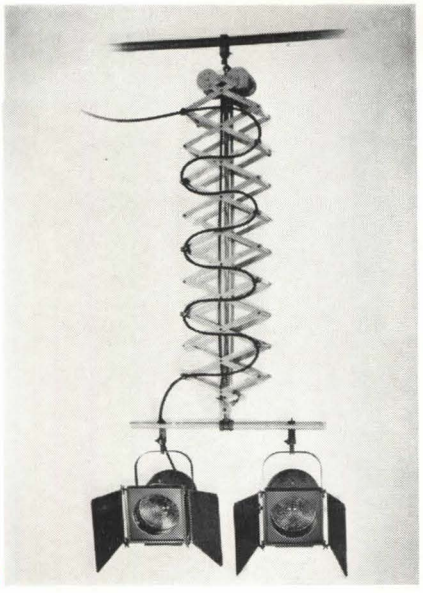
self-supporting towers

Where space is limited, this type of tower must be erected. A 600-ft tower structure, for example, requires an average of 6.25 acres for a self-supporting tower and 12.5 acres for a guyed tower. While self-supported towers are more expensive than guyed towers, they may have advantages in other respects. One advantage is the ease of inspection for the antenna installation and any microwave or other auxiliary equipment. Maintenance and equipment inspection can be done by a maintenance crew or the station engineer.

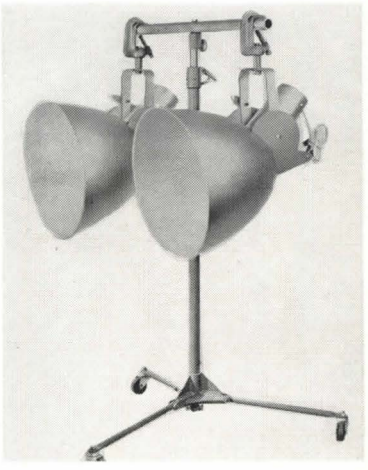
general notes

The station engineer and the company bidding for the antenna tower structure have ample opportunity to use standard structures with imagination. When mountain-top TV stations are desired, the building and tower structure may be integrated and the use of unit construction and prefabrication suggests a range of economical solutions. Where auxiliary power must be provided at the site, both the building and the tower should be fireproofed so that insurance rates may be held to a minimum.

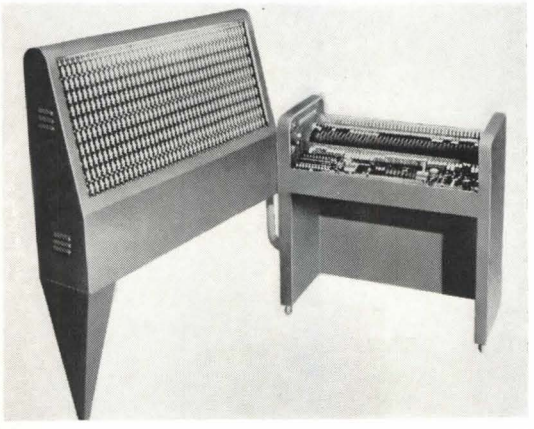
Whichever type of tower is selected, a qualified engineer should be consulted to determine the local meteorological conditions (wind velocities, icing, and snow conditions), soil pressures, and so on. When the height of the tower has been determined, the proposed height plus the tower's exact geographic co-ordinates must be submitted to the regional office of the CAA. Towers must be under 2000 ft over average terrain, must not infringe on established air lanes, and must not be in the approach pattern of an airfield. Towers must also be properly lighted and maintained in an established pattern.



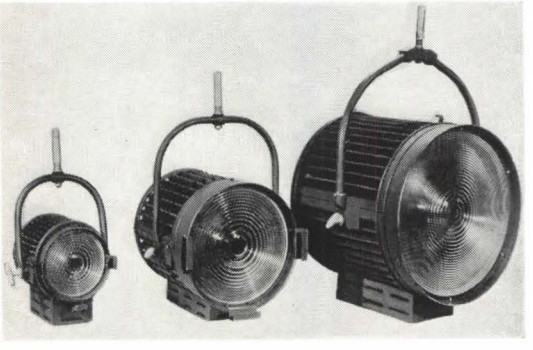
1



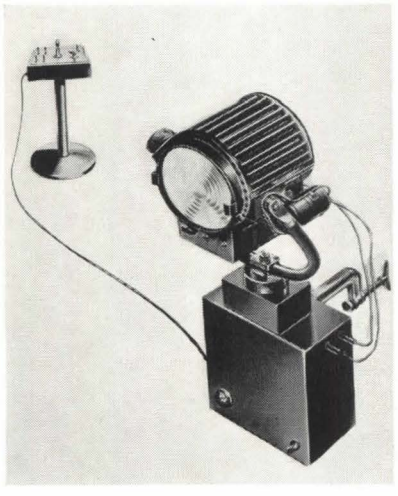
2



3



4



5

Items of equipment for television-studio lighting manufactured by Century Lighting Inc. are illustrated (below): *1—counterbalanced light-lift supporting two spotlights; 2—twin flood units and telescoping stand; 3—preset panel* (left) *and control desk* (right); *4—varying sizes of Fresnel lights; 5—remote-controlled spot.*

lighting

Although the architect must have some knowledge of the function of lighting in television production, a general knowledge will usually suffice as the design of suitable light bridges, controls for directing lights and intensities, etc., should be left to the specialist. In all planning it must be remembered that floor and ceiling lighting in studios will demand generous space allotments and that facilities for plug-in lights must be provided.

The eye's color response under varying illumination conditions must be considered. The light source will, to a certain extent, determine the design of the studio and some of the structural requirements. Lighting techniques must therefore be integrated with other planning at an early stage.

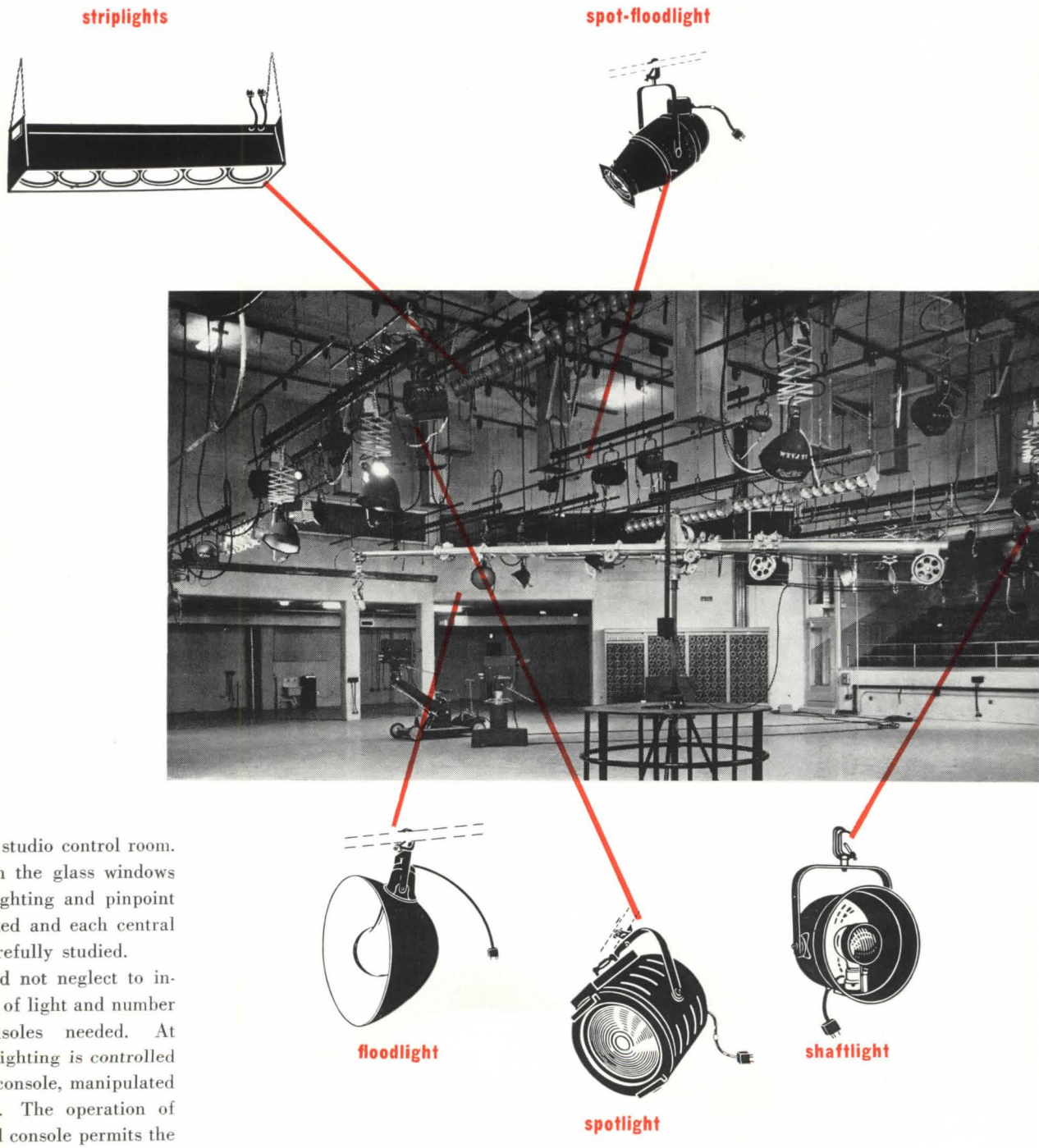
Both incandescent and fluorescent lighting are commonly used in TV production. Incandescent has certain definite advantages: maximum candle power, accurate beam control in distribution and pattern, and facility in color adjustment due to the wide range of the spectrum. Excessive heat radiation, however, results in considerable discomfort to the operating personnel during extended periods of use.

Fluorescent lighting is efficient and radiates little heat. By coating tubes with various mixtures, a wide range of color responses can be obtained. Certain disadvantages still exist in the undesirable length of tubes, the hum of ballasts, and the weight of transformers.

Spot arc-lamps are another source of light that have usefulness in specific installations. In any given situation, a combination of light sources will probably be the most desirable solution. Factors to consider are cost of installation, maintenance, length of useful life, facility of lamp replacement, and the role that each of these plays in successful performance.

The general types of lighting required by present-day sets are commonly divided into: foundation lighting, front lighting, background lighting, modeling, and display lighting. Electrified tracks for lighting, as currently installed in some studios, are saving valuable man hours in the mounting, adjusting, and maintenance of cables. Automatically-controlled movement of lights—up, down, and sideways—is a desirable feature for the large live-talent studio. For smaller studios a simply-designed cyclorama light frame should be used to provide the basic light intensity needed for proper camera pickup. Highlights and footlights can be added at will and all lighting cables should connect from the ceiling to provide the needed floor space.

Important but usually neglected is the

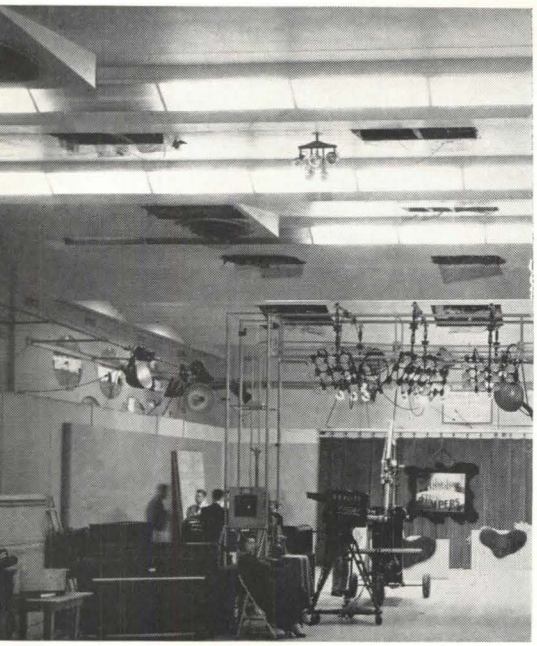


At WTVJ, Miami, all light cables connect from the ceiling to provide maximum usable floor space (above: photo). *Lighting equipment was manufactured by Kliegl Bros.*

proper lighting of the studio control room. Reflection problems in the glass windows are constant. Desk lighting and pinpoint lights should be utilized and each central position should be carefully studied.

The architect should not neglect to inquire into the amount of light and number of light-control consoles needed. At present, large studio lighting is controlled from a prewired wall console, manipulated by a single operator. The operation of lights from this control console permits the use of any light group and makes possible easy maintenance, repair, and part replacement of lights. Associated with the control console is a preset panel to allow for the cueing of lighting ahead of the production. As labor union regulations are stricter in the lighting field, lighting of the studio should be carefully planned to prevent future operational troubles.

acoustics



At WBAL-TV, Baltimore, the use of acoustical tiles on the ceiling plus the presence of reflecting flats and curtains provide adequate sound conditioning for the live-talent studio.

During the integration of acoustical design with the basic planning of television studios, there are certain general considerations which are of paramount importance. Prime factors effecting noise penetration into a building from the surrounding area are the location, layout of the building, grading, and landscaping—each may effectively help or hinder acoustical control. The problem is solved to a great extent, of course, if the chosen location has quiet surroundings. In any case, however, a survey of the existing noise level should be taken for use in future calculations which will be made in regard to design allowances and the choice of sound-conditioning materials. Such a survey should record the level of street noises during the hours of peak traffic as well as the average level. In contrast to radio broadcasts, television broadcasts are less sensitive to sound transmitted through the structure. Unless there is a serious vibration problem caused by the nearby location of railroad tracks, streetcar lines, or heavy operating machinery, special foundations and floating construction, used so extensively in the design of radio broadcasting studios, should not be necessary.

Within the building, an estimation of the noise level is also necessary at the preliminary design stage. If the sound pressure measures between 25 and 30 decibels, the noise level is considered acceptable for a television building. This survey provides useful information which should be taken into consideration in the arrangement of air-conditioning equipment, elevators, and other heavy machinery needing special attention in order to obtain good sound control. In solving the problem of sound transmission from one room to another, which occurs primarily through vibration, it has been found that the best insulation is obtained by the use of rigid, heavy-material walls made of porous material.

Within the individual production studios, acoustical control centers around the reduction of the noise level and the elimination of sound-focuses, dead spots, and room flutter. The shape and size of the studio area are important. For example, a design of square or rectangular rooms has two acoustical drawbacks—echo effect and reverberation. A small play in studio walls to prevent parallel alignment may correct basic mistakes in acoustical planning and prevent a later need for expensive corrective alteration. Similarly, large concave and hard-surfaced walls will exaggerate echo effect and poor design of auditoriums and room corners will cause dead spots. The most important areas as far as acoustical control is concerned are naturally the studio areas and the announcer's room. The production areas of the studios are less apt to produce the constant acoustical problems present in radio broadcasting studios since the large amount of miscellaneous scenery, props, and equipment necessary for live-talent productions provide an adequate amount of absorptive surfaces. If this is not sufficient, and it will vary with the production, the use of curtains or reflecting flats will provide corrective treatment.

The visual image seen by the TV audience reduces audial awareness and as a result sound control need not be emphasized to the extent that it is in radio broadcasting. Nevertheless, it is a good idea to consult an acoustical expert before the structure skeleton is frozen for detail design.

equipment

Typical arrangement of film camera (near left) *and 16 mm film projector* (far left). *A remote control box, as far as 1000' away, can govern lens selection, focus, pan, and tilt of this camera shown in downward tilt* (left below). *Remote controls can be operated manually or by push buttons for preset positions.*

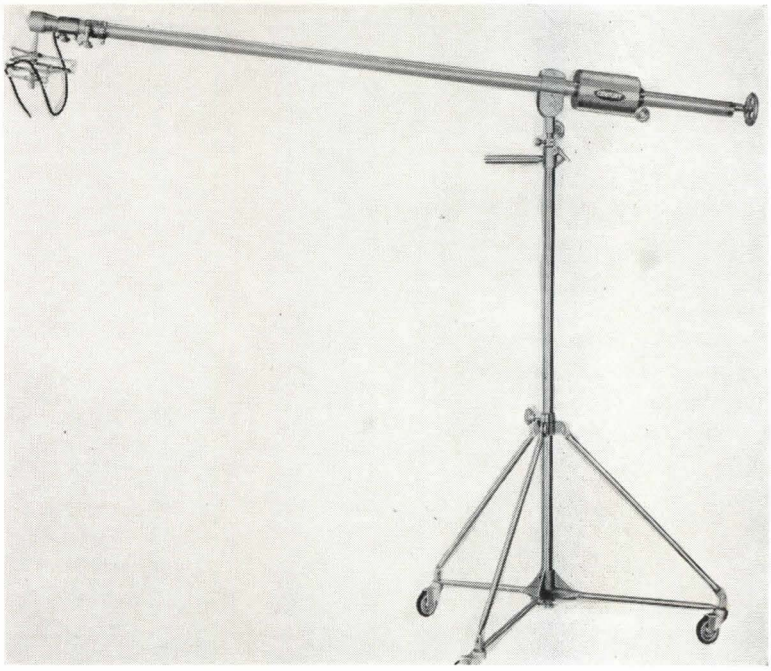
Based on the program requirements of the individual TV station—the proportion of network, film, live-talent, remote, and simulcast shows scheduled by the Master Plan—the necessary TV and auxiliary equipment in turn determines the facilities which will be needed to house the equipment and their operating personnel. For purposes of better visual planning of these facilities and the vertical and horizontal demands on space, it is necessary not only to be generally familiar with various types of equipment and their functions, but also to have a general idea of dimensions and assembly characteristics of the more important and decisive parts. In this regard, a small scale model of the equipment on hand or to be purchased is desirable.

In the large live-talent studio, at least four electronic TV cameras, either pedestal or dolly mounted, are used in a circular movement, following the action in often complex patterns. Thus, the movement of the cameras must be, within reasonable limits, unrestricted by the height or shape of the studio or by any floor obstruction. At present, the studio floor area is not a free one, due to the use of heavy coaxial camera cables but the use of overhead-supported cables (supported by V-shaped rubber cords) or cable-free cameras operated by batteries may soon overcome this difficulty in large studios. Video control equipment, which may be set up in such different locations as the studio control room, master control room, or film production area, includes camera control monitors, preview monitors, film camera control monitors, and switching units. Depending upon where this equipment is located, it is desirable to have clear sight lines from them to the studio, announcer's booth, film projection area, and sometimes the master control room. In the master control room racks contain video and audio master equipment, such as synchronizing generators, distribution equipment, phasing equipment, and switching units. There is also a master control console with outgoing and line monitors and a single switching panel. The choice between two systems of studio production can also effect space requirements—the decentralized system calls for camera control monitors, technical director, producer, audio control operator in the studio control room while a centralized operation demands that the camera control monitors for all studios and film cameras be in the master control room area with producer, technical director, and audio control operation in the studio control room.

Necessary audio equipment for a TV station handles sound pickup, control, recording, and reproduction. For pickup, microphones may be either table, suspended, or boom types. Today, boom microphones, like cameras, demand special operational care and create major floor obstructions—however, future improvements may include (for large studios) combined light-sound bridge arrangements with remote-control equipment. Reproduction units may include turntables or magnetic tape recorders. Sound output is regulated by an audio control desk while inputs may have studio, projection room, turntable, remote, or network origin and sound control in a simple station unit includes a number of input, output, or mixing positions.

Although there is variation in the amount of film equipment used in the individual stations, one or two projectors, a film

Microphone booms, which create major floor obstructions, demand special operational care.



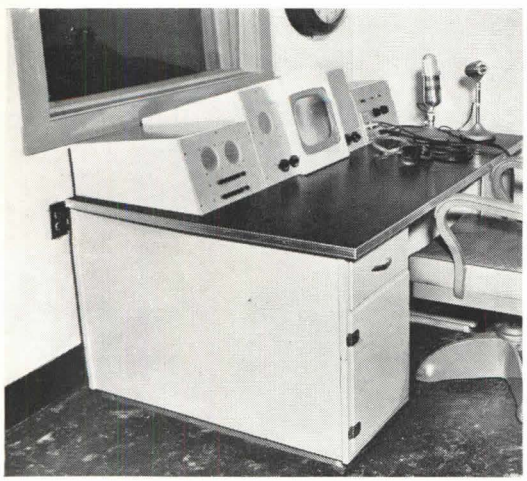
equipment

camera, an automatic slide projector and reflector (multiplex), and a film control monitor are basic. In a small station using 16 mm film it is possible to have only one control man handling a film operation with the projection equipment housed in the control area. However, in the case of larger stations, a special film projection room is more advantageous—and absolutely necessary if 35 mm flammable film is used. In larger stations, too, film vaults, dark rooms, and cutting and preview rooms are often required and necessary equipment would include tank developers, enlargers, driers, cutting and splicing equipment, turntables, dubbing equipment, and rewind units.

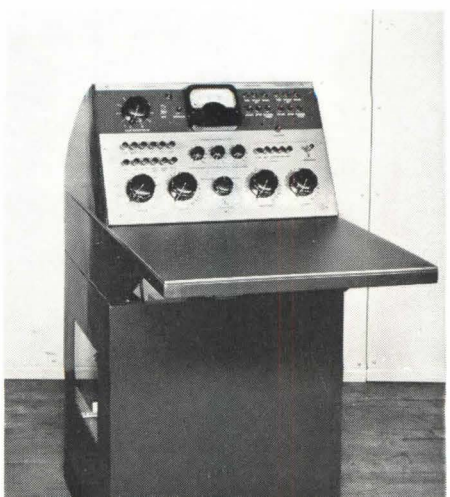
Intercommunication equipment in a TV studio, whether large or small, is extensive due to the necessity of having direct channels of communication between departments within the building and various personnel located in production, control, and auxiliary areas. For example, the master control room must be linked up with administrative, operation, and production areas as well as with the transmitter control room and any mobile equipment. There must also be direct communication between the studios and maintenance areas, workshops, and dressing rooms. During rehearsal periods a loudspeaker system may be used with earphones for the technical floor personnel and facilities for the production manager to enable him to speak back to the control room. The above examples do not by any means constitute all the situations in a TV station which demand intercommunication equipment.

Mobile or field equipment, designed to operate as self-contained units, generally include cameras, camera monitors, a master monitor, field control console, power pack, and lightweight mobile microwave relay transmitter. Since this equipment is often used for the station studio, the space relationship of studio and the mobile unit storage space and maintenance facilities must be carefully planned.

The nature of television broadcasting imposes fundamental requirements on ventilating, air-conditioning, and heating systems. Of basic importance is the allowance for maximum heat radiation in studios, control room, and associated production areas and the air-conditioning system should be made up of units supplying a series of areas rather than contained in one plant supplying the building as a whole. Air velocities in the main duct supply and return outlets will have to be calculated to handle maximum heat loads. One of the many other elements which must be borne in mind in installing air condition-



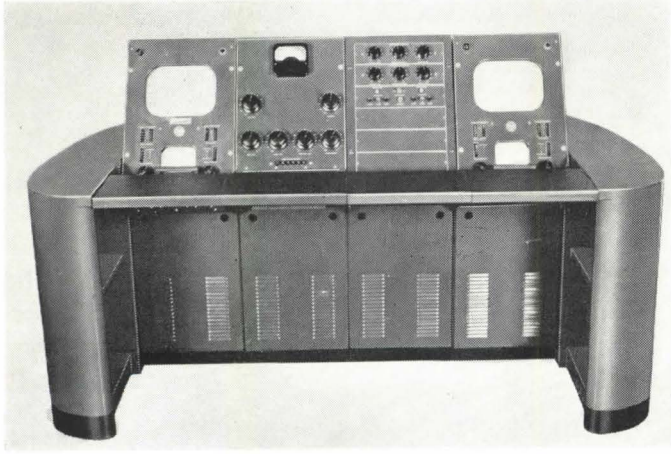
Announcer's console at WAAM, Baltimore (left); *switching unit of video-control equipment* (right).

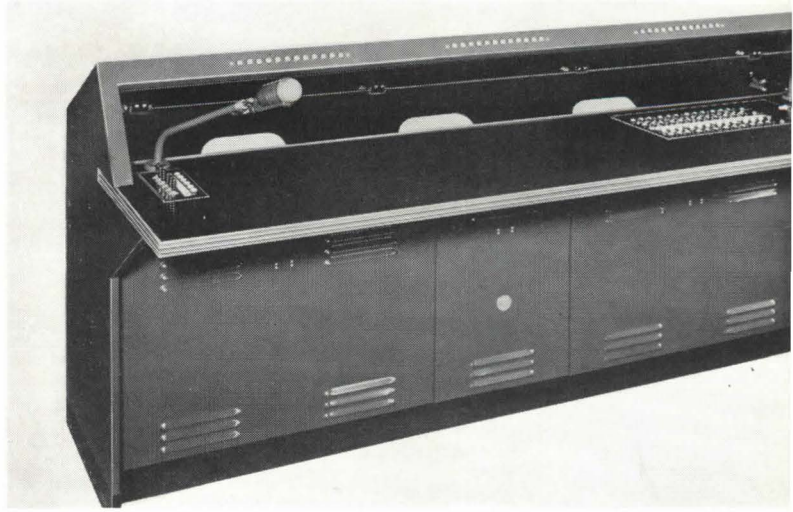


ing for a studio is the problem of noise control: possible sources of noise are fans producing a turbulent air stream, mechanical vibration of air friction noises in the ducts resulting from improper design of the duct itself, return or supply outlets, and rotating or reciprocating machinery causing vibration. In general, the number of factors involved in the installation of air conditioning for a studio makes it extremely advisable to employ the services of an air-conditioning expert. Dimensions of air-conditioning units for certain types and sizes of equipment should be supplied by this specialist.

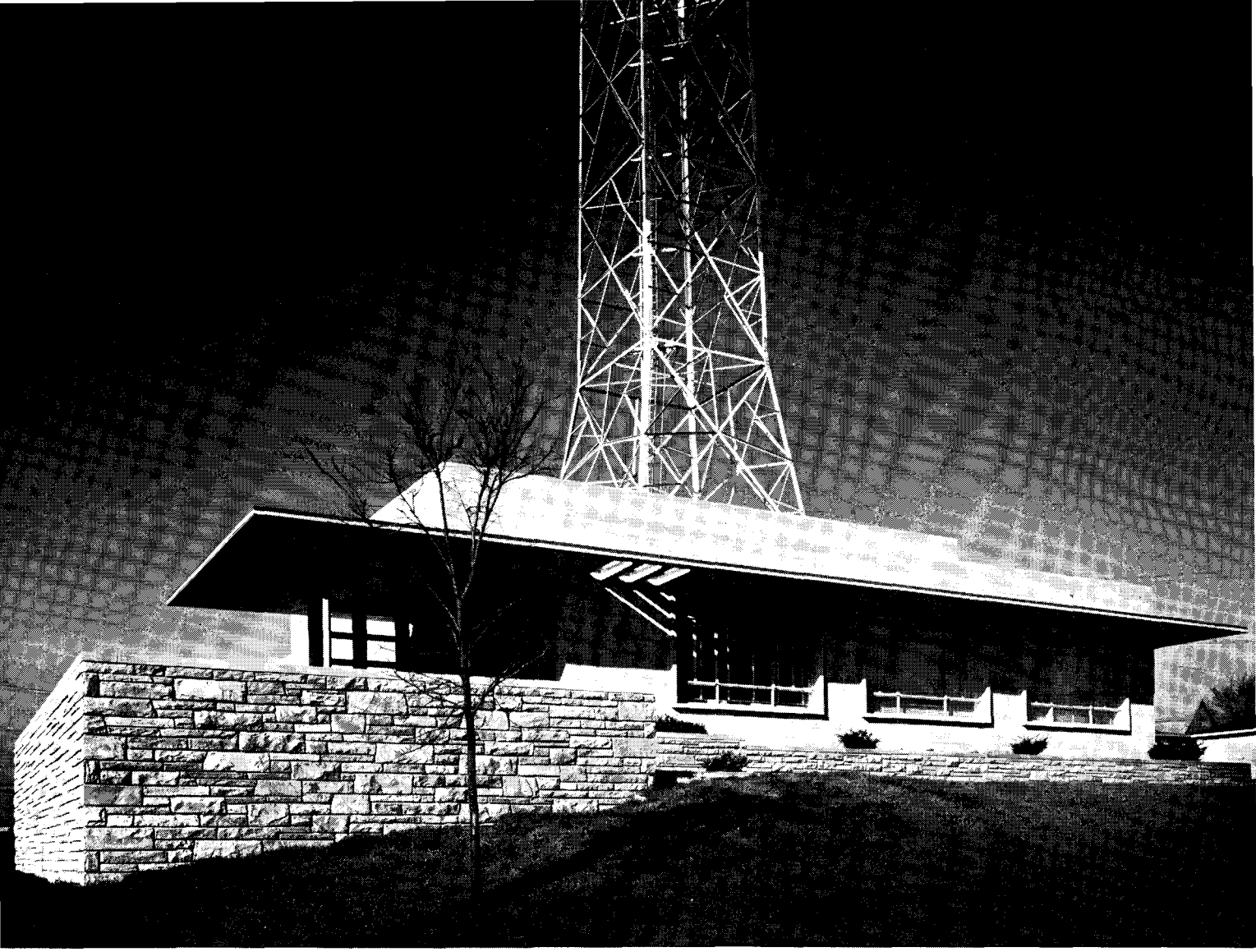
The selection of the TV transmitter, an expensive item in an equipment list, and its auxiliary equipment must be left to a specialist. Transmitters, either VHF or UHF types, generate an AM signal and operate in the 6 mc channel both for picture and sound. Their selection is governed by such special factors as the coverage demanded, the elevation of the antenna, and the type of antenna selected. In an installation associated transmitter equipment such as transformers, circuit breakers, and voltage regulators, should be housed behind the transmitter proper and the transmitter console should face the transmitter for purposes of easy supervision. The weight of the transmitter equipment is comparatively heavy and its effect on floor loads should be calculated. Another consideration to be borne in mind is the effect of procedure used in case of power failure on the relationship between the transmitter and all other areas. Emergency stand-by power would be by gasoline or diesel motor generators. For such a contingency, emergency studio facilities should be included in the planning of a separate transmitter.

In small television stations, where program resources consist of network programming, films, and some live-talent shows, what is called "basic buy" TV equipment will be used, permitting the control of the live studio by one or two operators. In such instances, the control room doubles also as a transmitter control room. The single control operator is used at times when simple programs are telecast which do not need complicated program production techniques. While the "basic buy" operation is a "basic buy" from the equipment point of view, it does fall short in connection with needed live-talent programming. Therefore, once large live-talent productions are planned, it is advisable to have a special control room which will allow the use of a producer's console, a technical director's position, and an auxiliary audio desk.





Basic control facilities for interview studio (above); *custom program console* (above right); *mirror-type producer's console* (right).



TV transmitter station

location	Washington, D. C.
architects	Berla & Abel
engineers	Otto Vogt; Wilberding Company
landscaping	Cary B. Millholland
general contractors	Davis Wick Rosengarten Co., Inc.

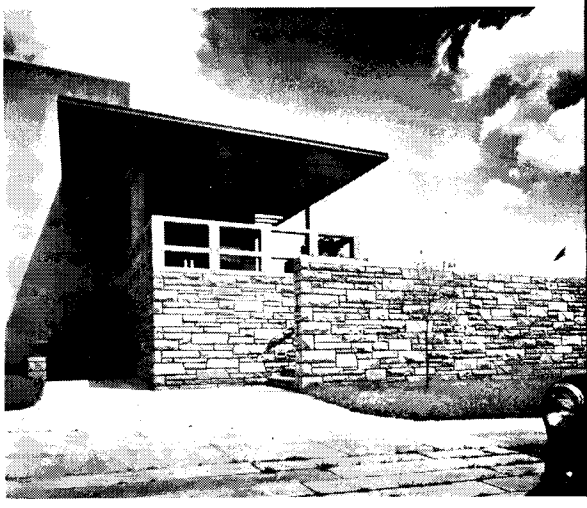
This transmitter station, WTOP-TV, is one of the early projects of its type. Although pressing demands since construction have required using portions of the building as makeshift studio space, the unit was designed solely for a television transmitter.

From a functioning standpoint, the site, nearly the highest elevation in the District of Columbia, is excellent. But since it is closely surrounded by a built-up area, the possibilities of site expansion are severely limited.

The structural system consists of a conventional formed-concrete basement story, with the main floor steel-framed. This latter floor system has a 6″ vermiculite fill, deep enough to contain the complex wiring systems; floor finish is asphalt tile, with trench covers of the wiring system easily removable for access.

Throughout, simplicity and freedom from maintenance were the guiding criteria in selection of materials. Exterior walls are limestone; interior walls, plaster, with tile used in rest rooms. Ceilings are surfaced with acoustic pans, and the lightweight gypsum roof decking is surfaced with 4-ply built-up roofing. Wool-batt-type insulation is used for thermal control. The sash are steel casements. A combined hot-water and forced-air heating system employing cast-iron convectors and aluminum ducts is automatically controlled. Air distribution is handled through air diffusers mounted flush in the ceilings.

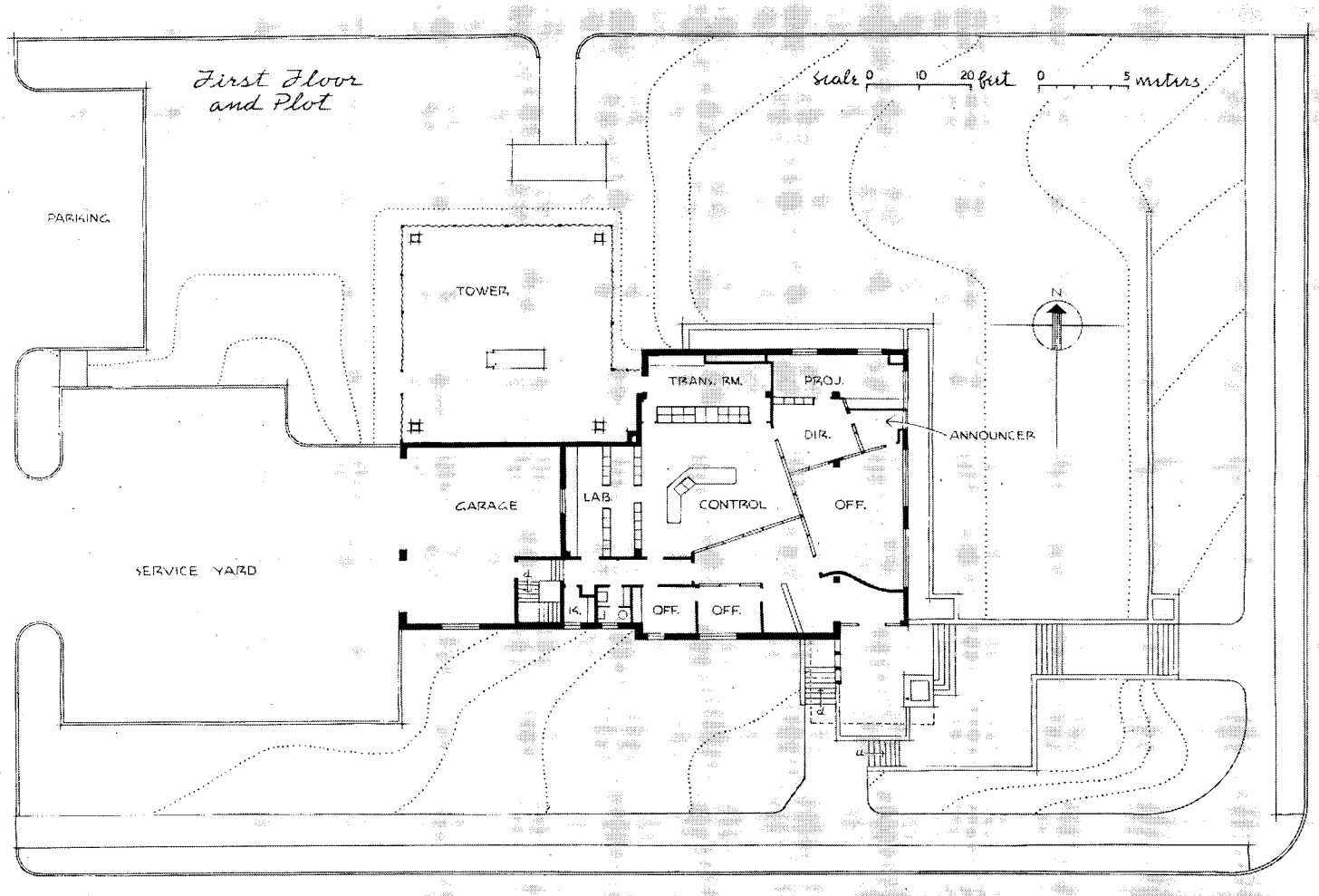
Photo: Robert C. Lautman

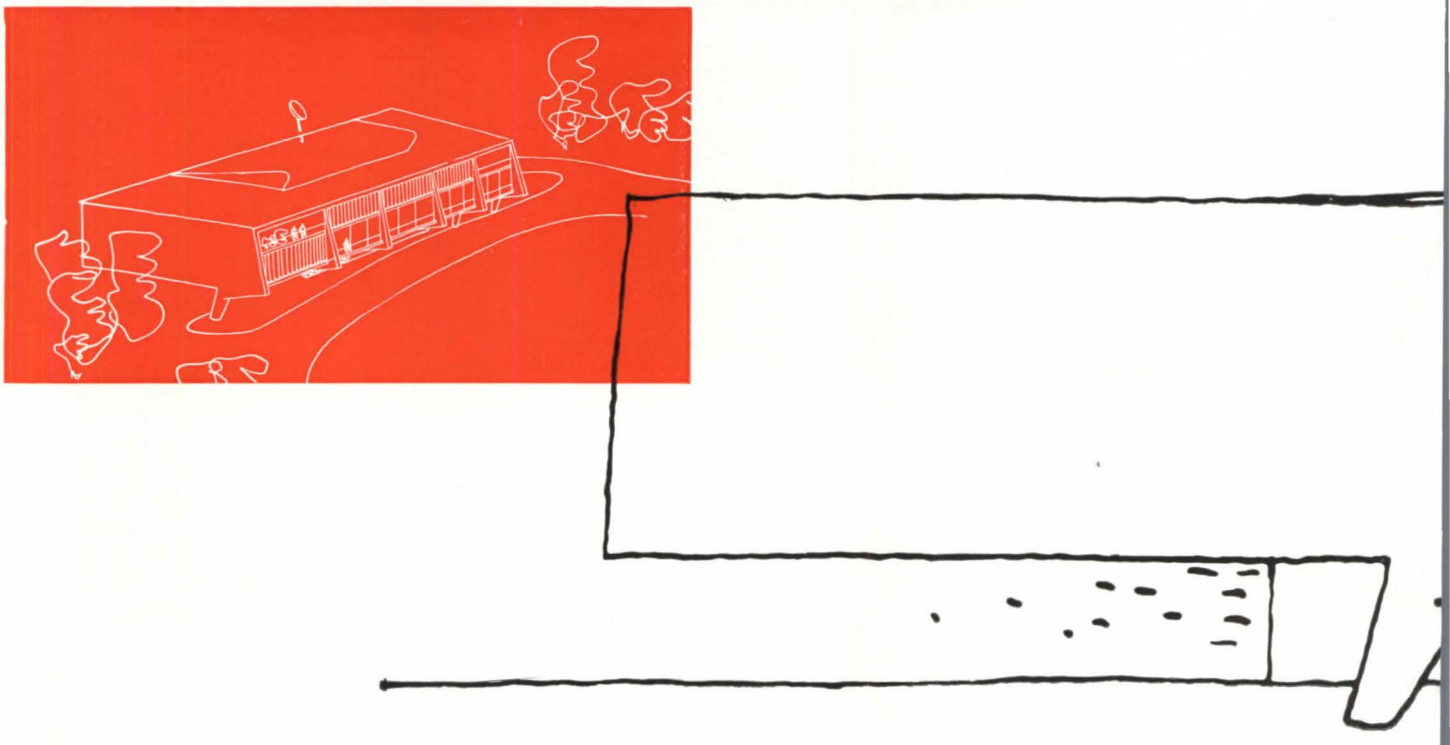


The control room (above) *is immediately behind the entry corridor, where visitors may observe operators seated at the L-shaped console, conditioning the quality of sight and sound.*

Beyond the reception desk (right, above) *may be glimpsed the windows through which visitors watch operations.*

Though an inside stairway leads down to the basement level (boiler and air-conditioning room; storage space; dark room; and toilets) a side entrance behind the entrance terrace (right) *allows direct access from outdoors.* Photos: Richard Garrison





TV station project

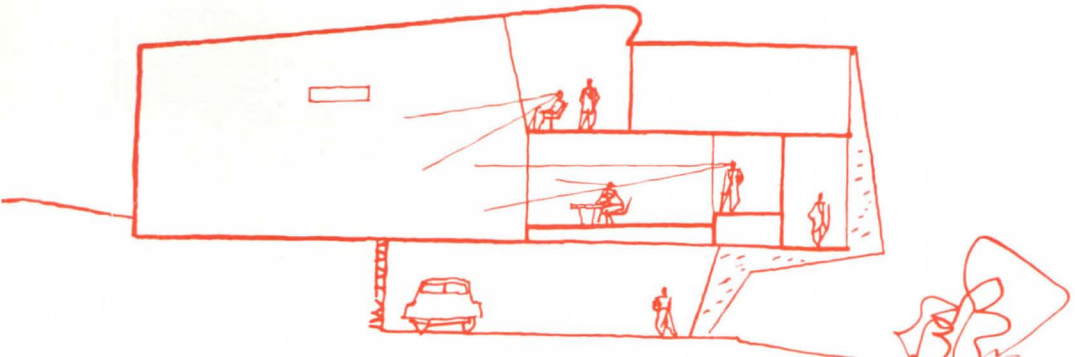
location	Rio de Janeiro, Brazil
architect	Oscar Niemeyer
engineers	Pamplona; Jack London

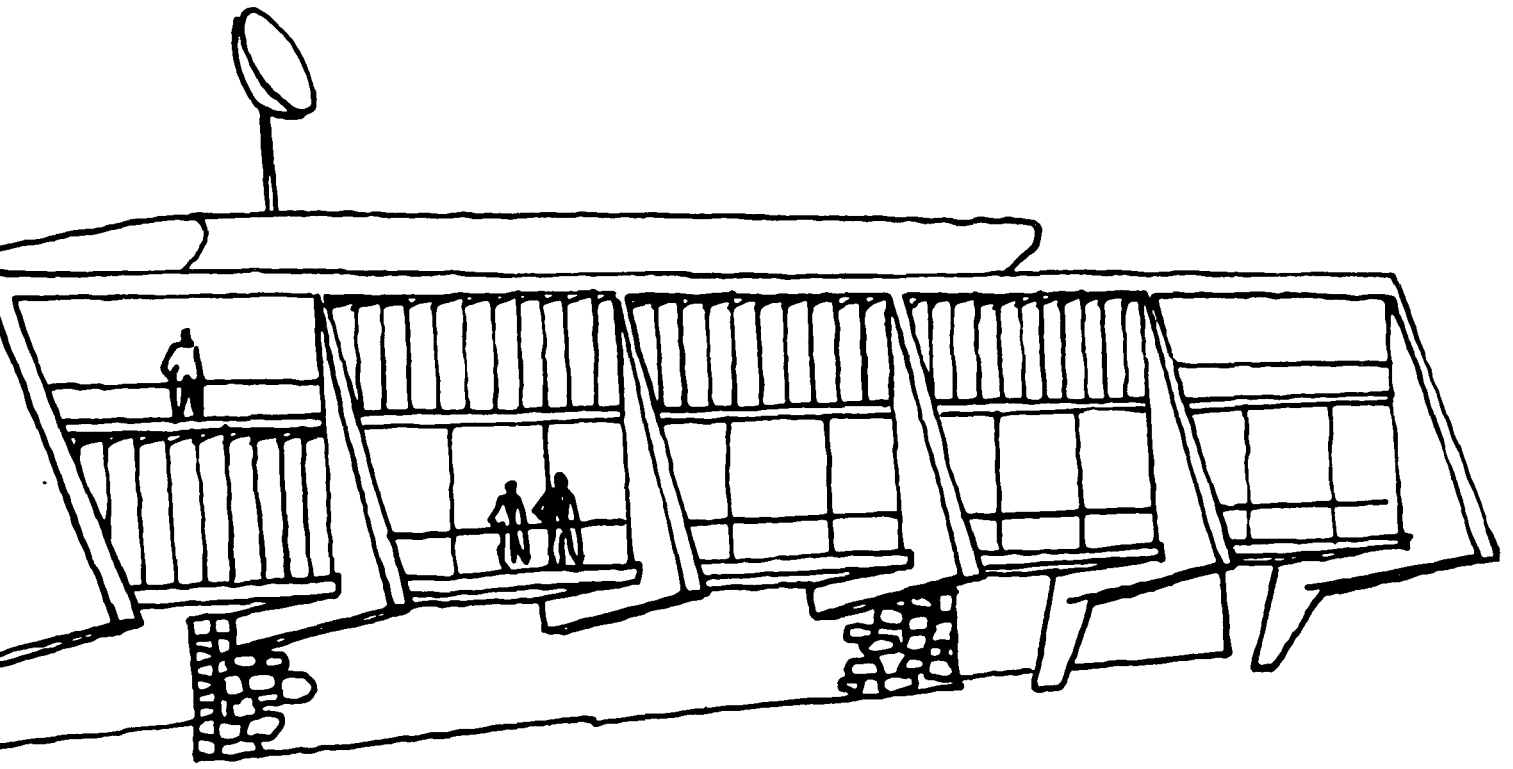
This provocative design, developed by one of the liveliest imaginations at work in the profession today, is to be constructed in Rio for the TV activities of an organization called *Diarios Associados.*

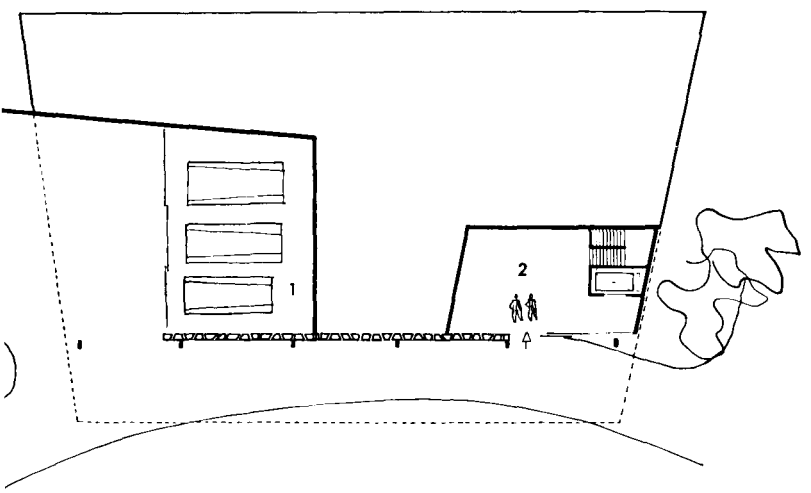
An intermediate-size facility, the station has a remarkably straightforward plan, although the technical facilities are not adequately provided, by present standards. Studios are ranged around a central control core; shops and dressing rooms border the staging area; offices are readily accessible, but placed at one side; guests invited to watch a production in the one large studio are accommodated in balcony seats on the upper floor, directly above the control area.

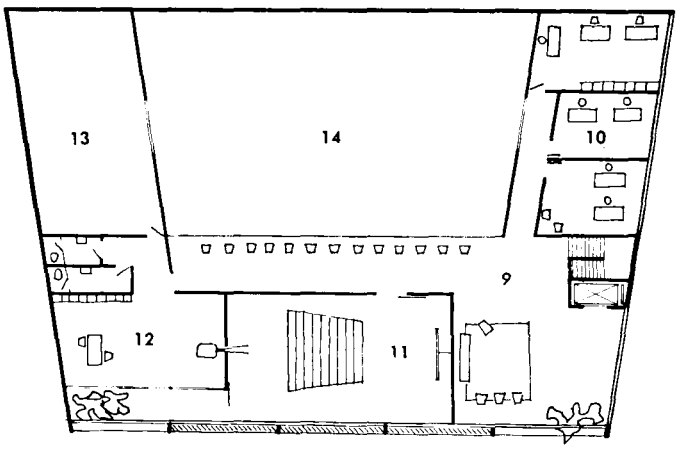
Dramatizing the edge-of-a-slope site, Niemeyer has projected the reinforced concrete superstructure over the crest and cantilevered its forward wall beyond the masonry and concrete supports. Vertical louvers are used for daylight control.

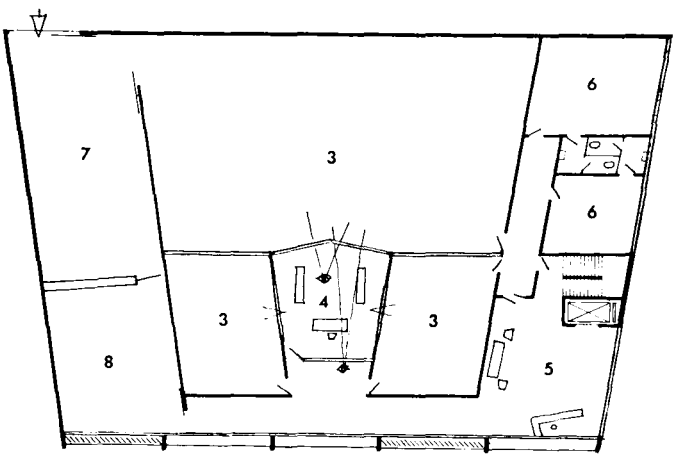
In looking over the dozens of buildings designed for TV that came to our attention for possible inclusion in this issue, editorial consensus was that very few had yet achieved any particular design character. In appearance, many might just as well have been warehouses or generator plants; and not a few appeared to have involved no design effort or conviction whatsoever. Though hardly to be considered as an item for the copybook artist's scrapbook, the Niemeyer design, we felt, had both a dash and dramatic quality that seem highly appropriate for buildings planned for TV.



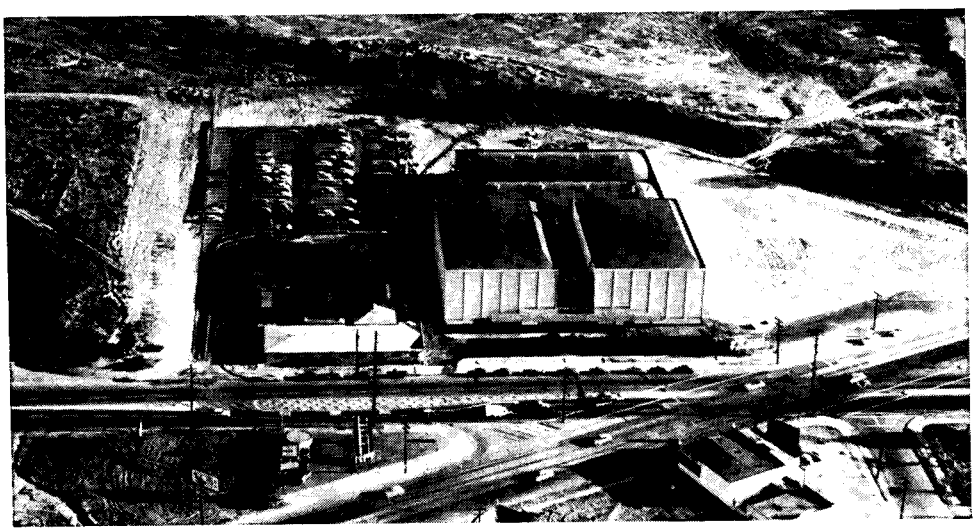








1. garage
2. entrance lobby
3. studio
4. control
5. reception room
6. dressing room
7. service-shops
8. administration
9. lounge and observation
10. offices
11. theater
12. projection room
13. laboratory
14. upper part of studio



The low unit between the two tall studio masses contains dressing rooms for stars, chorus rooms, control rooms, rack rooms, and light-control bridges, all desirably located immediately alongside the production areas.

Photos: Julius Shulman

NBC-TV studios

location	Burbank, California
designers-engineers-builders	The Austin Company
consultant architects-designers	Fordyce & Hamby (of the Raymond Loewy Corporation)
supervision of building design and construction, technical-equipment design and installation	O. B. Hanson, Vice-President and Chief Engineer, NBC NBC Staff Engineering Department

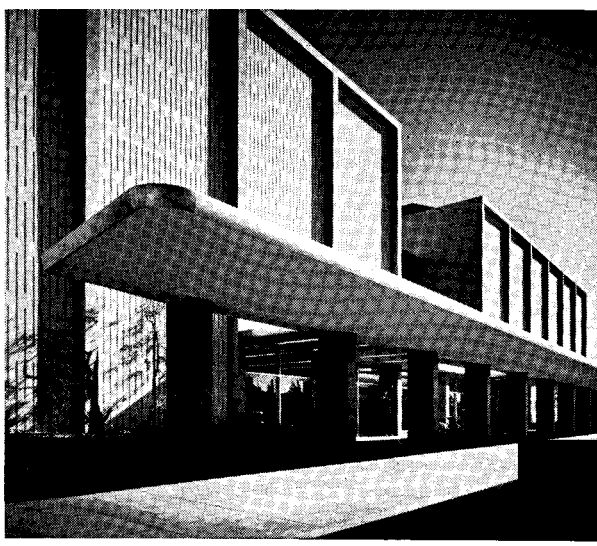
First two units of a major TV development . . . Flexible studios for multitype productions . . . Two distinct arrangements of audience seating . . . Ceiling heights to accommodate flown sets . . . Speedy, economical structure, employing precast elements.

Along with its swift demand for telecasting facilities, the burgeoning TV entertainment-advertising industry faces all manner of unresolved planning problems for which only tentative answers can yet be found. How many studios should there be in a major TV center? How large should they be? How much space should be provided for live audiences? What ceiling heights should occur in major production areas? These and numerous related questions seem to indicate that the best approach at the moment is to provide as much flexibility as possible, allowing for future change as new factors become known.

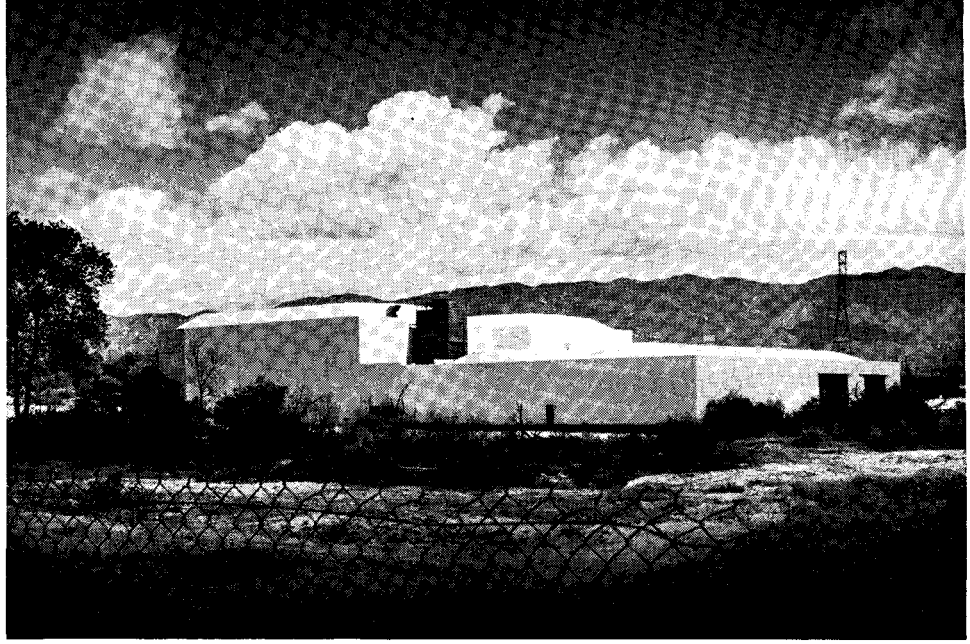
A good example is this first unit of NBC's new TV center in Burbank, California. Many exceptional things were done here, both to make the facilities as efficient as present knowledge makes possible and to anticipate future needs. While the initial project contains but two large studios and attendant facilities, a 48-acre site was acquired—large enough to accommodate twelve times as many studios. Whether the center will ever grow to this size will be answered only when the industry itself—and NBC in particular—eventually learns its full potential.

The first two studios were designed to provide for the multiple requirements needed for such varying productions as dramatic shows, variety shows, and moving pictures. The best reasoned guesses of NBC program, production, and technical operating personnel led to the adoption of studios (including audience seating) 90′ x 140′ in area, with the production areas being allotted a space approximately 90′ x 100′ in area, the remainder being assigned to audiences. Another basic decision was to limit audiences to from 450 to 500 spectators, on the theory that this size audience best provides the background reaction required for variety shows. From floor level to bottom chord of the steel roof trusses is a clear height of 42 ft, a dimension that was adopted (rather than the customary 20-to-30-ft height) to save time and money in handling scenery and sets. When not in use, scenery can be hoisted up out of the way and sets for the next show dropped in a matter of minutes. This overhead cubage also provides a generous amount of storage space, that otherwise might have been provided by construction of additional buildings.

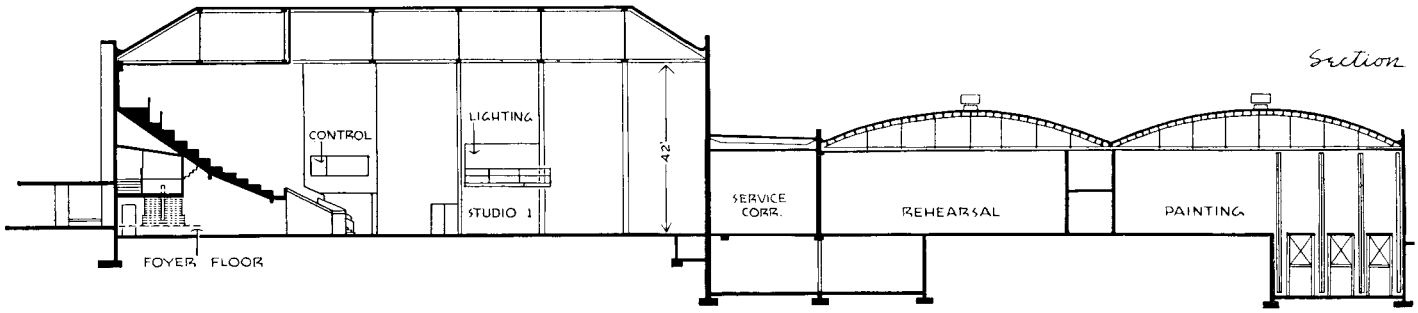
To cope with a quick construction deadline, the structural designers worked out a resourceful system *(see pages 114-115)* using precast concrete columns and wall panels hoisted in place by crane and connected in three weeks' time. The decorative scorings that appear on the exterior of the wall panels were cast in the slabs, by means of strips of wood attached to the plywood forms in which panels were cast. Forms were stripped while the concrete was slightly green, and any small imperfections were corrected by pointing up the details before the walls were put in place.

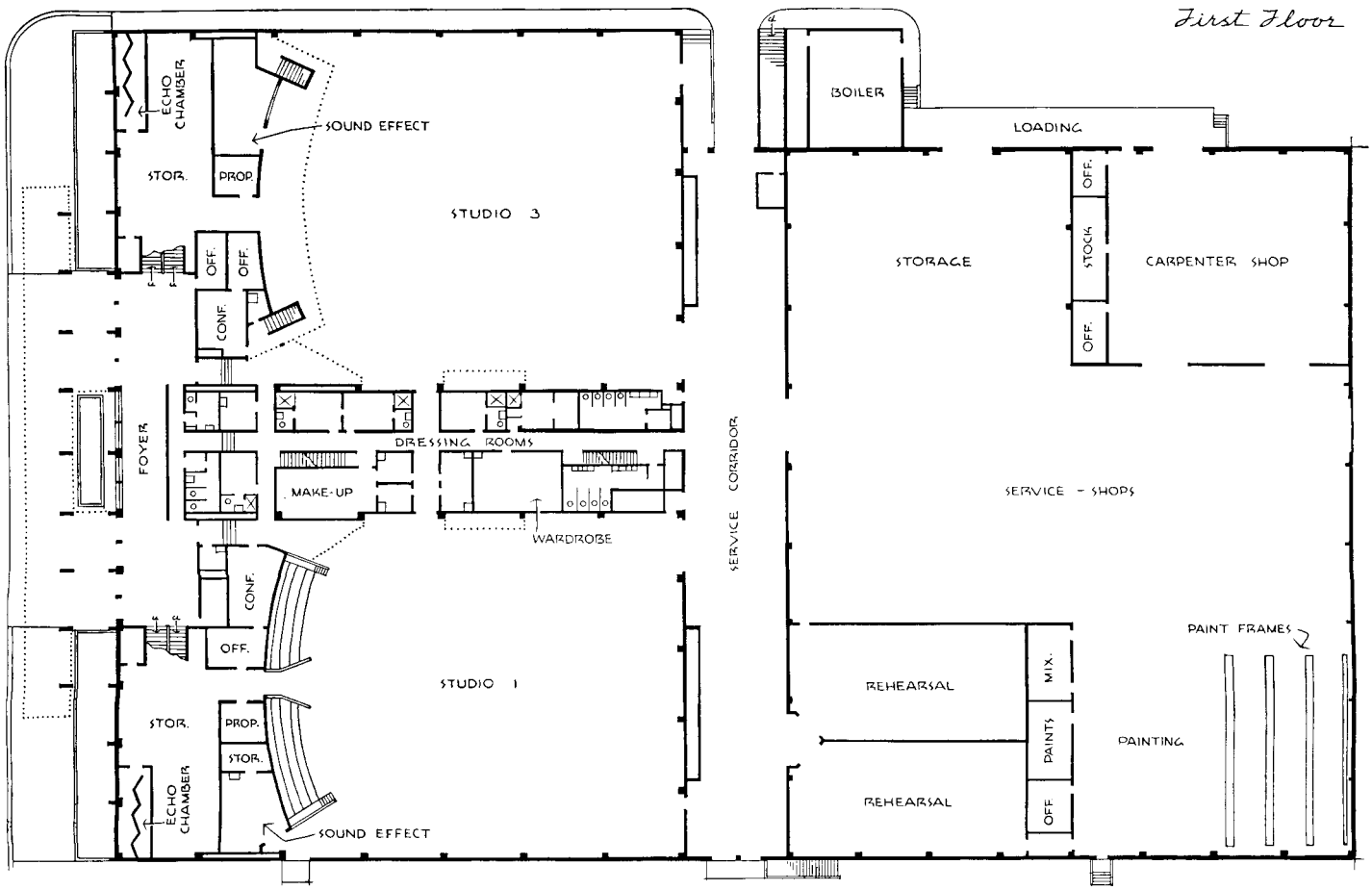


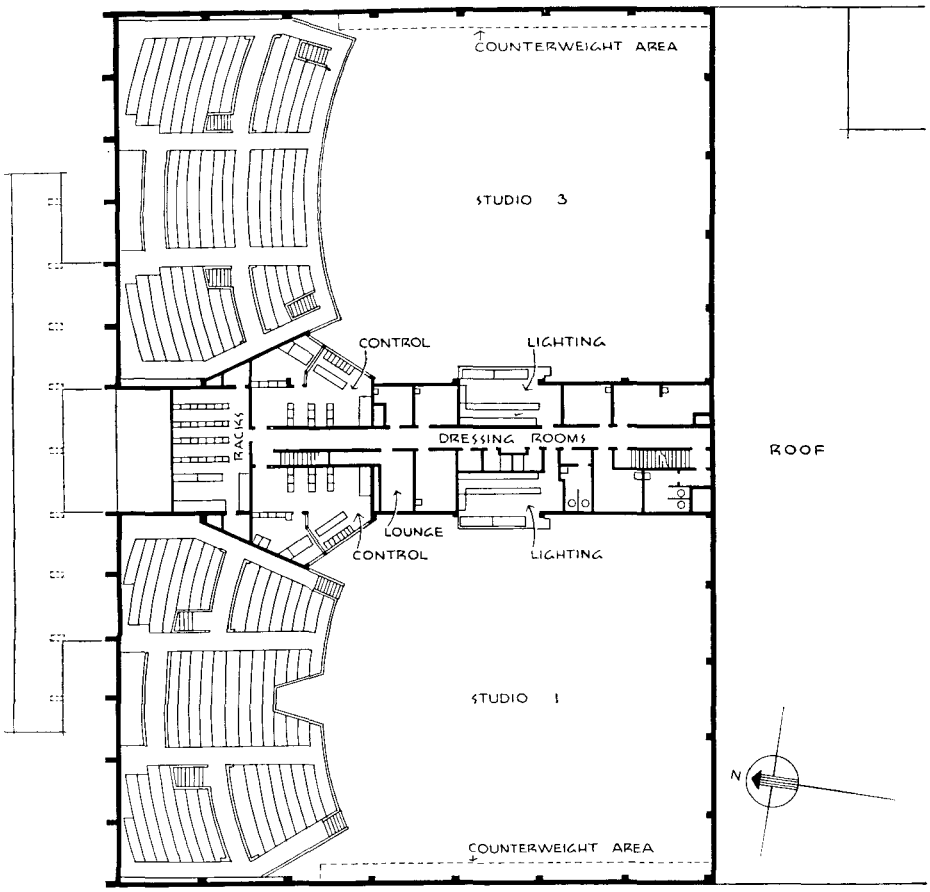
NBC-TV studios



At the rear of the studios (right and section below) *is a 25-ft-wide service corridor that penetrates the full width of the building; behind this is the 140′ x 180′ service-shops building, with a 20′ clearance. In this unit are carpentry, paint, scenic, and prop rooms, and rehearsal halls—allowing design, construction, and flow of scenery and props directly into rehearsal halls and studios with minimum motion. At the back of the paint shop is a 15-ft-deep pit with slots in the ground floor to accommodate six paint frames, which are raised or lowered by counterweighted hoists. Thus, artists may paint scenery working at ground floor level.*



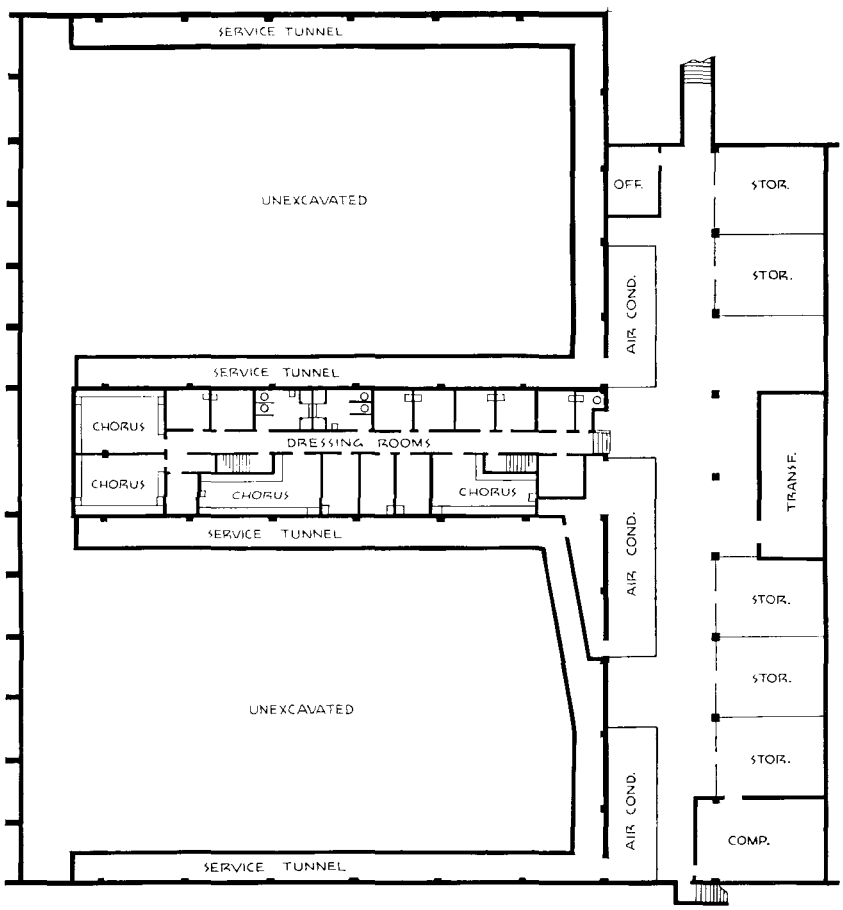




Second Floor

Scale 0 25 feet 0 5 meters

Basement

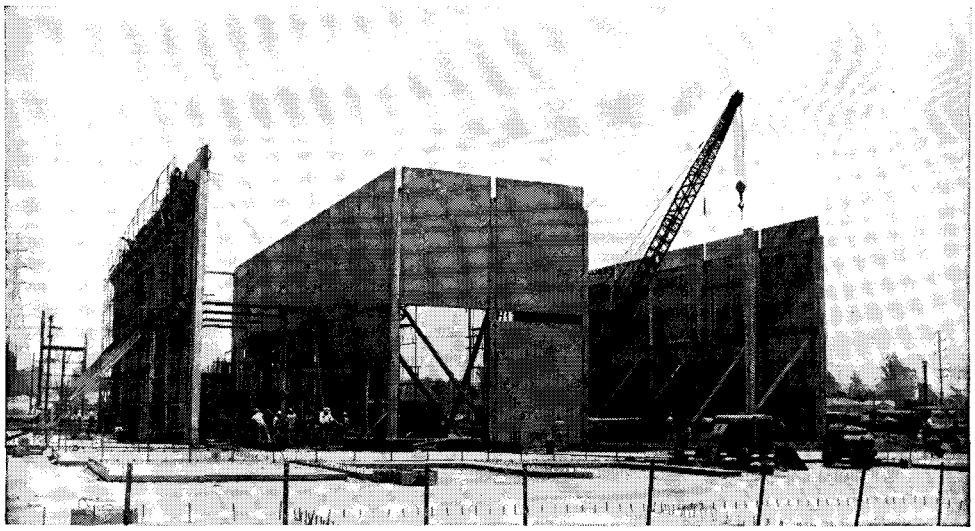


Primary organization of the plans is apparent—the two big studios at the front separated by the 30-ft-wide dressing-room-control-booth-lighting core that serves each studio directly; the service corridor in back of the studios; and the shops-service building at the rear. Of unusual interest are the two types of audience seating, provided chiefly for variety-type shows, when the production area is masked with a false proscenium to fit the particular show requirements.

In Studio 1, the seat bank comes right down to the stage floor; with wells back into the seating, for cameras. Studio 3 has seating arranged so that the lower rows of seats overhang the staging area; providing an area 11 ft deep and 8 ft high in which cameras can operate out of sight of the audience. Each scheme has its firm adherents, and design of future studios will be guided by whichever type (or possibly some variation) seems to work best.

While acoustical considerations appear to be less critical in TV studios than one might suspect (*see page 102*), considerable attention was given to them here. The production area was treated with absorbent material, varying from 1″ to 4″ in thickness, faced with muslin and secured with chicken wire to obtain maximum absorption with minimum reverberation, and to keep the frequency-vs-reverberation characteristic as flat as possible. In the audience section, more sound-reflectant surface was allowed, with only enough absorbent material used to reduce sound absorption and permit the most efficient use of a sound-reinforcing system for the audience. Fully upholstered seats were used, so that the over-all reverberation would remain relatively constant, whether with an audience or empty.

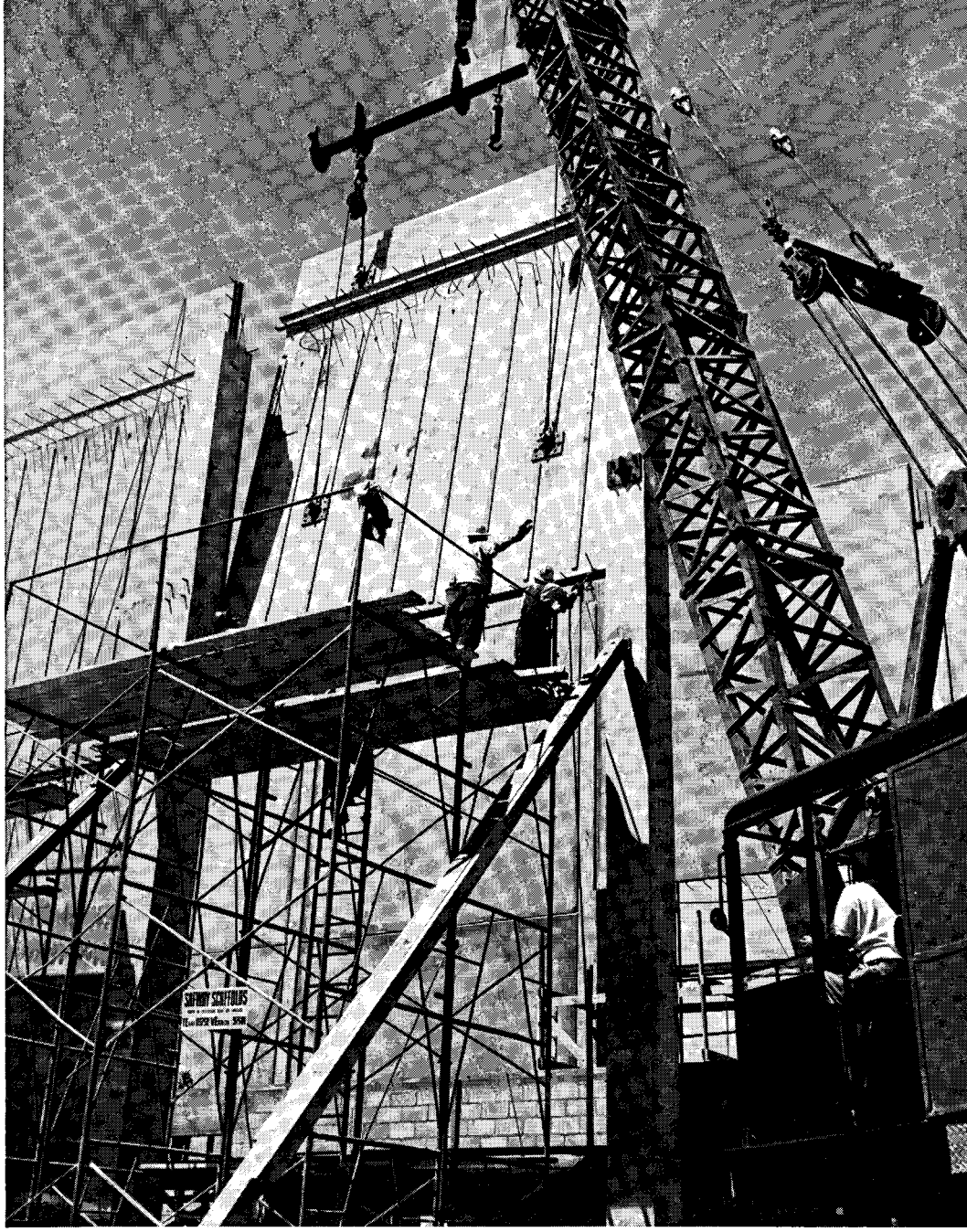
NBC-TV studios

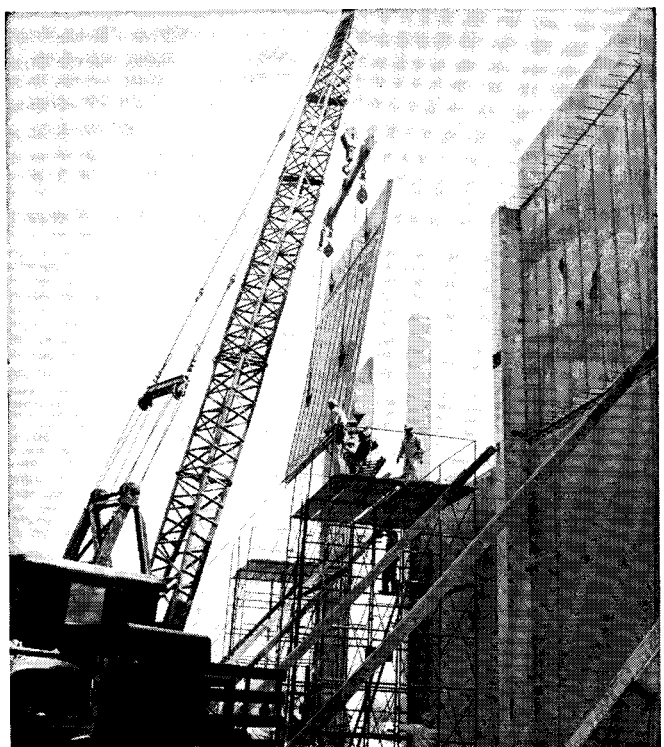


Since construction was delayed due to government restrictions on use of critical materials (especially structural steel), and since nearly four months were needed for processing through NPA, The Austin Company turned to its experience with the tilt-up type of construction to take advantage of the speed and cost savings.

The 42′-6″ reinforced concrete columns were all precast in a horizontal position in plywood forms located near the points where the columns would be used, and the nearly 100 reinforced-concrete wall panels (two to each bay) were poured flat, either on plywood forms on the ground alongside the panels' final position in the wall or directly on the concrete floor slabs. Anchorages were welded to the reinforcing steel of the panels to facilitate lifting.

Operating from within the building envelope, a special 45-ton crane lifted and placed the columns. Then each of the 16-ton wall panels was lifted, turned sideways, inserted between columns to the outside, then turned back and brought up flat into position for attachment. It is an almost unbelievable fact that all of the precast elements, except for a few units omitted to facilitate installation of the steel roof framing, went up in three weeks.

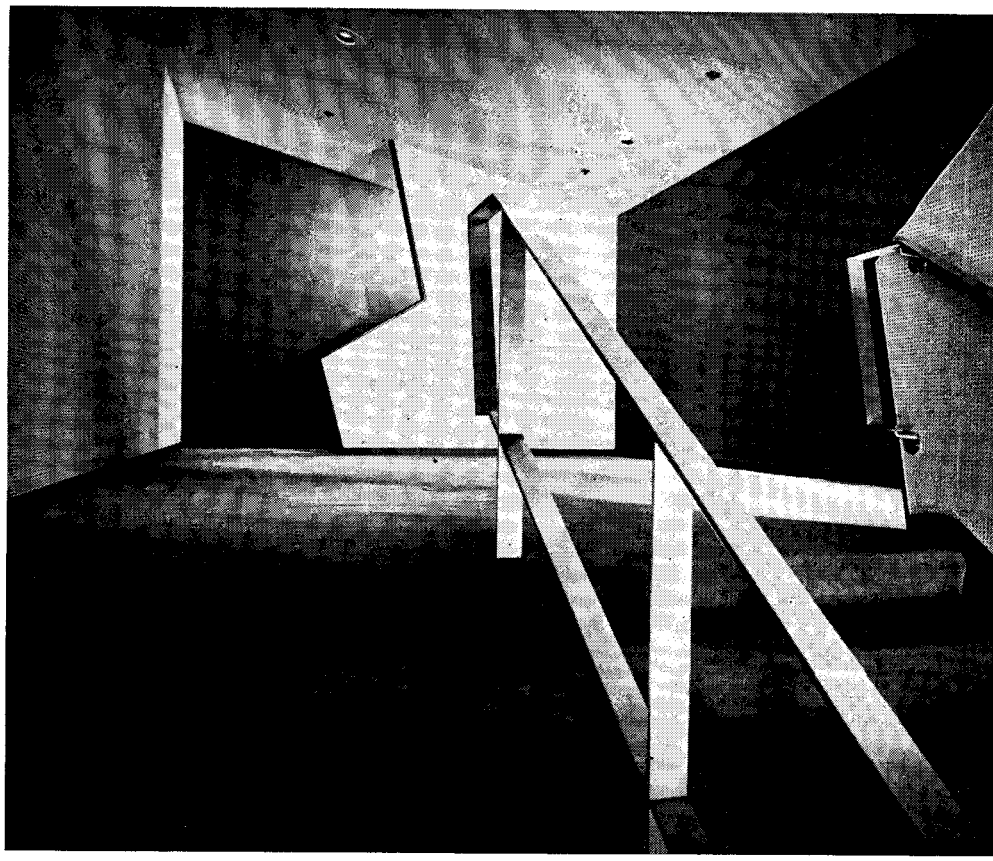




The huge precast members were all raised by means of lifting plates at the ends of cables that corresponded with anchorages welded to the reinforcing steel in the panels. The cables, in turn, were suspended from a special bridle attached to the 45-ton crane.

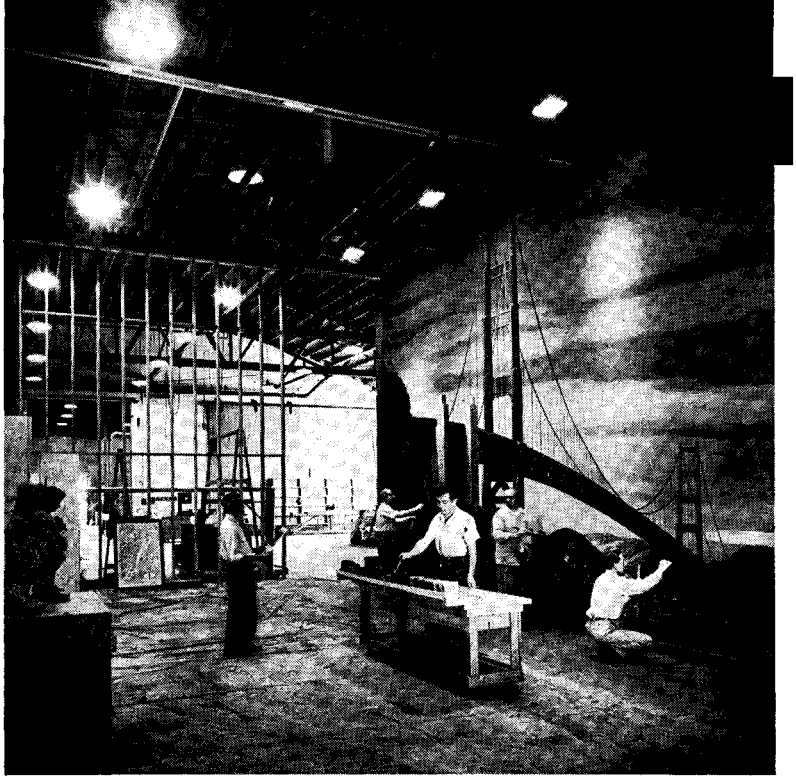
Construction photos: The Austin Company

NBC-TV studios



At either end of the public-entrance foyer, carpeted stairways (above) *lead up to the vomitories serving audience seating.*

The service corridor (left) *between the studios (tall, hinged doors, right) and scenery-shops and rehearsal halls (sliding doors, left) is 25 ft wide and 20 ft high, allows scenery and props to travel directly to rehearsal halls or studios with no need for elevators or hoists. Asphalt-tile flooring; acoustic-tile ceiling.*

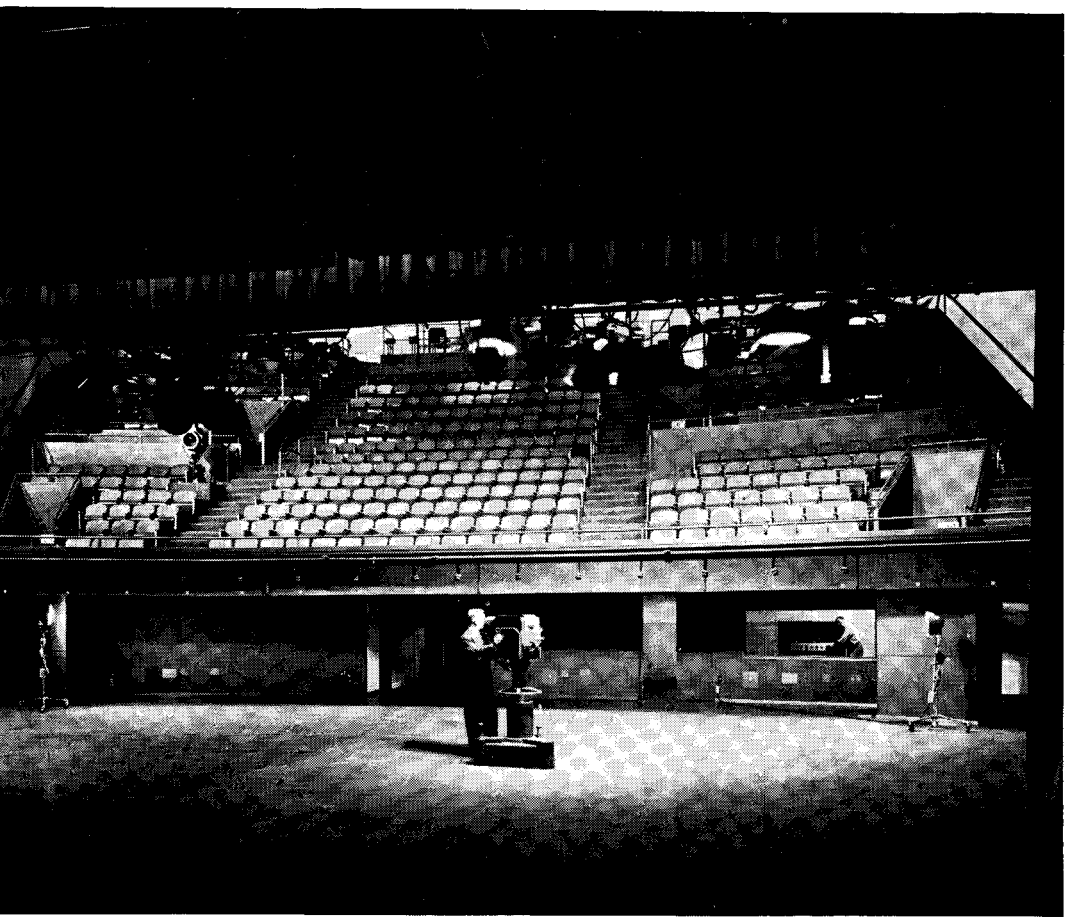


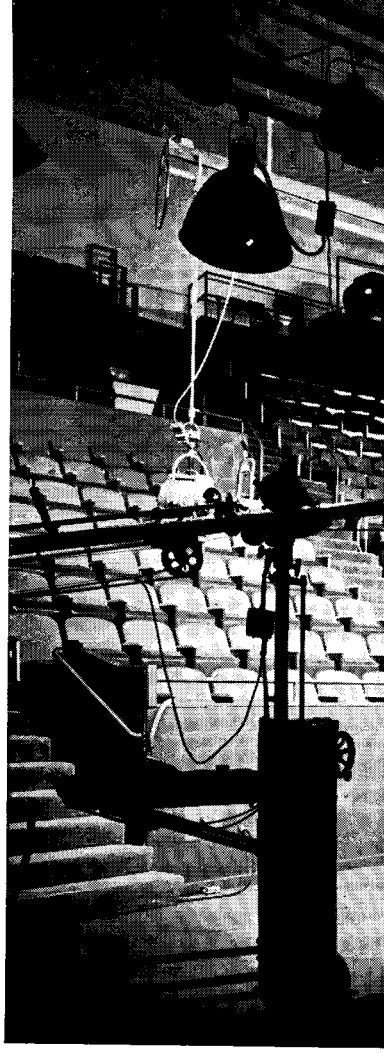
In the scenery-painting area of the shops-service building (right), *the huge paint frames may be raised or lowered through floor slots opening to a 15-ft-deep, under-floor pit, so that artists may always work at floor level. Arched, wood roof trusses span the area, providing a 20-foot ceiling clearance.*

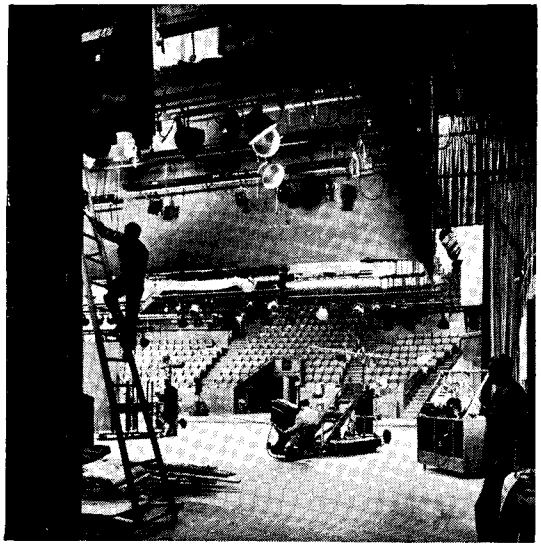
The public foyer (below) *has a floor of slate; walls and ceilings surfaced with acoustic tile. Artificial lighting derives from flush-mounted troffers with tubular lamps.*

NBC-TV studios

Studio 3—with audience seating raised 8 ft off the floor. T-section battens that hold overhead lights are guided by a side-wall counterweight system and are divided into thirds to permit flexible usage. In addition, there are rows of light battens along walls at either side of the staging area.







Studio 1—with audience seating coming right down to the floor. While cameras may operate from underneath the audience in Studio 3 for full-stage shots, in this studio they work from wells recessed into the seating bank. In both studios, the control booths and lighting-control docks occur along the inner wall of the studio at the second-floor level, with unhindered view of the total operating area.

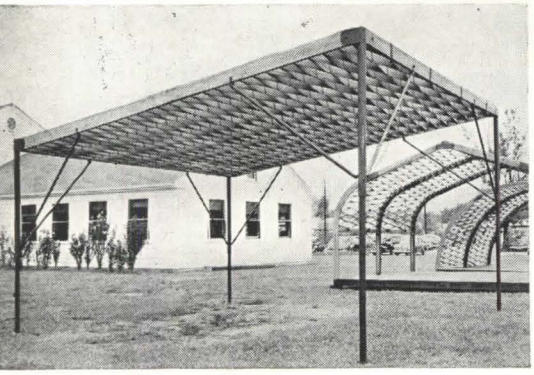
construction

Foundation, frame, floors, roof: reinforced concrete foundation, spread footings; framing: reinforced concrete and steel trusses (studios)—United States Steel Corporation; reinforced concrete and wood trusses (service building)—Arch Rib Truss Corporation; reinforced-concrete walls and floors; roof: wood purlins and deck. **Wall surfacing:** exterior: paint; interior: acoustical treatment and plaster (studios); rest rooms: plaster, ceramic tile—Gladding McBean & Company. **Floor surfacing:** asphalt tile (studios)—The Flintkote Company, The Tile-Tex Division. **Roof surfacing:** built-up composition roofing—Johns-Manville Corporation. **Waterproofing and damp-proofing:** integral compound in concrete. **Insulation:** acoustical tile—The Celotex Corporation; mineral-wool blankets and batts—Coast Insulating Products; perforated asbestos board—Keasbey & Mattison Company; wood-fiber cement board—Tectum Corporation. **Roof drainage:** galvanized-steel downspouts, cast-iron drains. **Partitions:** interior: concrete block, wood stud, and plaster; toilet: panel, flush. **Windows:** polished plate glass (studio front). **Doors:** interior: flush wood, Kalamein, rolling steel fire shutters; entrance: polished-plate glass—Libbey-Owens-Ford Glass Company. **Hardware:** lock sets—Schlage Lock Company. **Paint and stain:** exterior and interior—E. I. du Pont de Nemours & Co., (Inc.)

equipment

Seating: studio: International Seat Corporation. **Lighting fixtures:** slimline recessed troffers (front entrance and foyer), recessed incandescent fixtures (foyer mezzanine and seating area)—Century Lighting, Incorporated; low voltage control—Square D Company; ceiling mounted incandescent fixtures (dressing rooms) standard high-bay RLM fixtures (service building)—Smoot-Holman Company; silvered bowl lamps in surface-mounted and recessed fixtures (equipment and control rooms)—Silvray Lighting Company; supplementary lighting—Benjamin Electric Manufacturing Company; TV studio lighting equipment—Kliegl Bros. **Electric distribution:** lay-in duct and pull boxes—Square D Company; service and distribution panels, motor control centers, feeder bus 3-phase, 4-wire lighting panels—Square D Company. **Plumbing and sanitation:** water closets lavatories—Crane Company; toilet seats—C. F. Church Manufacturing Company; flush valves—Sloan Valve Company; shower cabinets—Fiat Metal Manufacturing Company; gas-fired booster-type water heaters—General Water Heater Corporation; sprinklers—Grinnell Company, Inc. **Heating and air conditioning:** Freon 12 refrigerant; reciprocating compressor, blowers—Westinghouse Electric Corporation, Inc.; grills and diffusers—Tuttle & Bailey, Inc. and Anemostat Corporation of America; washable filters—Farr Company; pneumatic controls—Minneapolis-Honeywell Regulator Company; coils—American Blower Corporation.

p/a products



portable roof structures

Gambella, a lightweight, collapsible, and portable roof structure, can be designed for any type of structure up to 100 ft clear span with continuous laminated three-hinge arches or bow-string trusses for straight side structural applications. No intermediate purlins are required between the arches and because of the continuous longitudinal support, arches of relatively thin section can be used to effect a reduction in the weight and cost of a structure. Capable of supporting any type of roofing material and costing 60 percent of conventional construction, these roof structures have been specified for hangars, field warehouses, and other military uses. Because of its flexibility, Gambella can also be used for cylindrical structures. This system was originally designed for farm structures as the components can be readily shipped in package form and erected with the hand tools available to every farmer. Gamble Brothers, Inc., 1600 Louisville Ave., Louisville, Ky.

air and temperature control

Dri-Aire: electric dehumidifier which, depending upon temperature and humidity, will draw from 2 to 3 gal of water every 24 hours in areas up to 10,000 cu ft. Removable drawer-type container (3-gal capacity); ½″ fitting for use with permanent drain. Mechanism permanently oiled and hermetically sealed. Available with timer. Berns Mfg. Corp., 3050 N. Rockwell St., Chicago 18, Ill.

Universal Baseboard: one of five available units in redesigned line of baseboard heating equipment for residential, institutional, commercial, or industrial heating (either steam or hot water). Full-height steel backplate aligns baseboard assembly, supports all elements, acts as barrier against loss of heated air into walls. Optional equipment includes line of accessories such as end enclosures with access panels, corners and joint covers, new damper and control. Kritzer Radiant Coils, Inc., 2901 Lawrence Ave., Chicago 25, Ill.

Marco V8 Fan: ventilating fan with squirrel-cage blower and axial flow blade. Blade propelled by floating-power motors. Standard finishes: chrome and white enamel. Motor specifications: 110 volts, 60/50c, 100 watts; discharge rating: 350 cfm, free air, 800 cfm. Marvin Mfg. Co., 3071 E. 12 St., Los Angeles 23, Calif.

Oilgas Generating Combustion Head: combustion head may be installed with any gun-type burner; adaptable to conversions. Flame temperatures of 1800 to 1900 F are attained. Flame burns 4 in. from spray nozzle at all times, preventing corrosion or carbonizing of 45° spray angle holocone nozzle. Adjustment of nozzle or other parts not required for installation. Special electrodes ignite flame automatically. Oilgas Generating Burner, Inc., 410 S. Jefferson St., New Castle, Pa.

Oran Shallo-Well: new gas-fired floor furnace with 90,000 Btu input rating designed for heating small homes with or without basements. New built-in air circulation fan; auxiliary cold air returns; all-steel burner; automatic fan switch, limit switch, and gas valve with thermostat and transformer. A.G.A.-approved for use with natural, manufactured, or LP gas. Oran Co., 2222 S. 3 St, Columbus 7, Ohio.

Homeaire Conditioner: new 2-package summer air-conditioning system for low- and medium-price homes, either old or new. Generator unit 32″ x 13⅞″ x 27″; conditioner unit, 28″ x 21″ x 23⅝″, includes air filter, twin fans, and cooling coil. Equipment requires no water, is installed independently of heating system. 15,700 Btu's per hour capacity. York-Shipley, Inc., Penn R. R. and Jessop Pl., York, Pa.

construction

Fenestra Double-Hat Panel: designed in accordance with specifications of American Iron and Steel Institute, new light-gage steel panel for floors, ceiling, or roofs is manufactured in lengths up to 33 ft. Panels interlock to form subfloor or combination ceiling and roof; spot-welded to supporting structural beams or bearing walls. Produced in gages 18 through 13, 24″ wide, depths from 1½″ to 7½″. May be electrified as floor or acoustically treated as wall or ceiling. Detroit Steel Products Co., 2250 E. Grand Blvd., Detroit 11, Mich.

Lifetime Aluminum Sheets: new corrugated aluminum sheets for roofing and siding and industrial corrugated sheets now available in 48″ widths, compared to former 26″ and 35″ widths, respectively. Industrial sheets available in .032-in. (22 U. S. Std. Gage), come in lengths ranging from 5 to 12 ft; weight of material: 56 lb per 100 sq ft of formed sheet. Reynolds Metals Co., 2500 S. 3 St., Louisville, Ky.

doors and windows

Defender Locks: new line of standard-duty cylindrical locksets for light commercial and residential building; fully reversible and adjustable for doors 1⅜″ to 1¾″ thick. Features: ball-bearing latch bolt retractors, dual bearings to prevent knobs from becoming wobbly, concealed attaching screws and knob retainers. The American Hardware Corp., P. & F. Corbin Div., New Britain, Conn.

Silentite Awning Unit: new awning window has spring leaf bronze weatherstripping set in head jamb, overlap sash, concealed zinc-plated hardware, single crank below window operating all sash. Open or with single- or double-glazing and aluminum screens; 12 sizes. Curtis Companies, Inc., Clinton, Iowa.

Glass Seal Thermopane: new insulating window unit made of two sheets of flat-drawn glass with 3/16″ air space between and fire-polished edge. Manufactured in smaller standard sizes beginning with 45½″ x 25″ size. Libbey-Owens-Ford Glass Co., Nicholas Bldg., Toledo 3, Ohio.

electrical equipment, lighting

Private Line: new line of telephone intercommunicating systems for business offices ranges in scope from 10-line automatic system to 50-line automatic system which can be expanded to over 5000 lines. Also 2- to 5-line system designed for professional offices and small businesses. Service features:

Page Beauchamp:

inside TV stations

Probably because of the relative newness of the television industry, there is still a dearth of well-designed offices and spaces for customers or clients. Although the business is growing by leaps and bounds, somehow attention to interior design of these spaces has been by-passed. In many cases, old theaters and movie houses have been taken over because they offer the required space and usable acoustical properties, and are immediately available.

With newness and greatness and driving pace, there has hardly been time or space to stop, consider, and design adequate facilities. The studios themselves, particularly in New York, are set up in every available place to handle programs that may require several studios as well as rehearsal spaces. Offices are set up in left-over spaces. But all of this will change. Attention must be given to properly designed offices, because they have so much to do with the important aspect of selling the client: more important in this industry than many others, because its life-blood is drama (effective presentation, stage setting, lighting, production, and advertising).

The offices, usually the first point of contact with a prospective client can, of course, help immeasurably in achieving this aim. If an executive has facilities at hand to present material efficiently—utilizing up-to-date techniques aided by successful interior design—his success will be much more likely. Similarly, the half-measure, sketchily-presented program, and an office or audition room which seems to have no character or permanence or organization, will tend to discourage a new prospect—who possibly doubts the stability and importance of the new medium.

Here, as in so many instances, double or multipurpose rooms can be helpful. In fact, they are practically a necessity because of the high cost of space. Here is a relatively untouched field open to the interior architect or designer—and he is the one to approach the problem and solve it.

On the following pages are examples of some of the best solutions already completed. The CBS rooms are a remodeling job—expertly done where space was at a premium. The WCAU rooms are in a newly-built building which permitted ample space.

inside TV stations

Designed to serve many uses, this is a board room, a dining room, a meeting room, and an informal television-audition room. One might expect such a hybrid to end being neither one or the other—and without much character. But such is not the case. This is an interesting combination of formality and informality, of dignity and ease. The color key is severe—walls, carpeting, and drapery background are all off-white. The drapery print is gold and black, the upholstered furniture is solid black. Furniture is overscaled to emphasize dignity befitting a board room, yet the design is simple and airy to permit a certain informality. In all, the result is extremely pleasant and satisfying. *Photos: Ben Schnall*

location | Board and Dining Room, TV Division, Columbia Broadcasting System, Inc., New York, New York

interior designers | Maurice and Joseph Mogulescu and G. Luss: Designs for Business, Inc.

printed raw silk

acoustical tile

data

cabinetwork

Modular Wall Cabinet: custom/ recessed/ closet bar unit and television enclosure/ designed by G. Luss: Designs for Business, Inc./ executed by Ezra Blank Asociates, 117 Lombardy St., Brooklyn, N. Y.

Doors: custom/ 4' x 9'/ executed by Ezra Blank Associates.

equipment

Television Equipment: Columbia Laboratories, 485 Madison Ave., New York, N. Y.

furnishings and fabrics

Board Table: custom/ 13' long/ Realwood Walnut-Parkwood Laminate Top/ designed by G. Luss/ executed by Ezra Blank Associates.

Dining Chairs: #1061-A/ cane open-armchair/ designed by G. Luss/ executed by Lehigh Furniture Corp., 16 E. 53 St., New York, N. Y.

Lounge Chairs: #2020/ open-arm easy chair/ designed by G. Luss/ executed by Lehigh Furniture Corp.

Sofa: #5015/ custom 12' long/ designed by G. Luss/ executed by Lehigh Furniture Corp.

Occasional Tables: custom designed by G. Luss/ executed by Lehigh Furniture Corp.

Drapery: "Salt Sticks"/ black-and-gold lines on raw Italian silk/ Arundell Clarke, 31½ E. 65 St., New York, N. Y.

lighting

Ceiling Fixtures: #368/ Hi-Hat/ open baffle downlight/ Century Lighting Co., 521 W. 43 St., New York, N. Y.

Chandelier: #A-1956/ adjustable/ polished brass/ silk diffusing line/ Finland House, 41 E. 50 St., New York, N. Y.

Table Lamps: handmade ceramic base/ jet black/ white Fibreglas shade/ Berrier-Gnazzo, 206 E. 49 St., New York, N. Y.

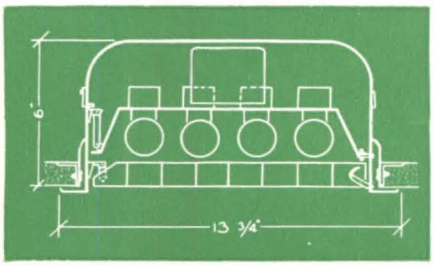
walls, ceiling, flooring

Walls: painted plaster

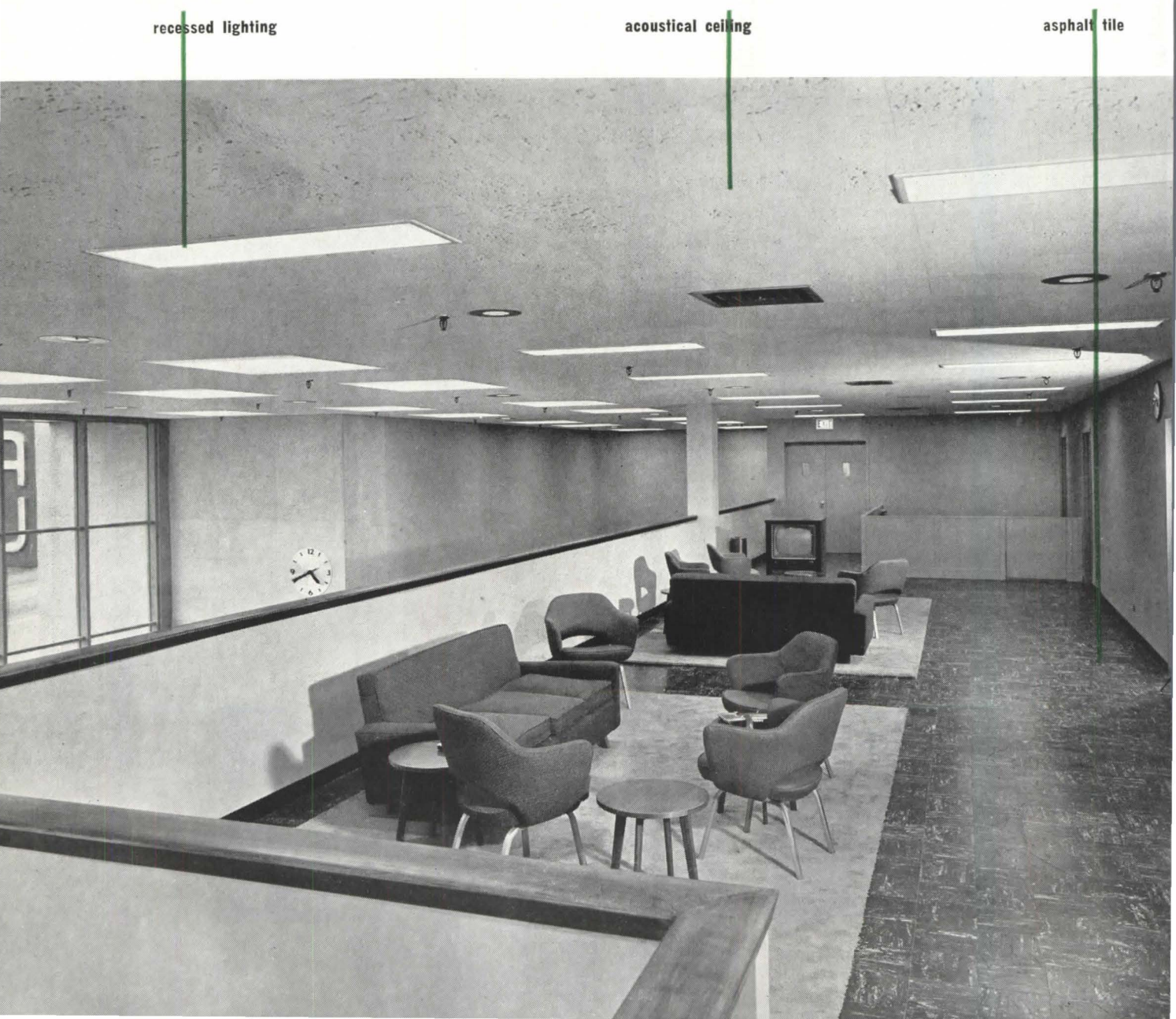
Ceiling: acoustical tile/ "Acoustone F"/ U. S. Gypsum Company, 488 Madison Ave., New York, N. Y.

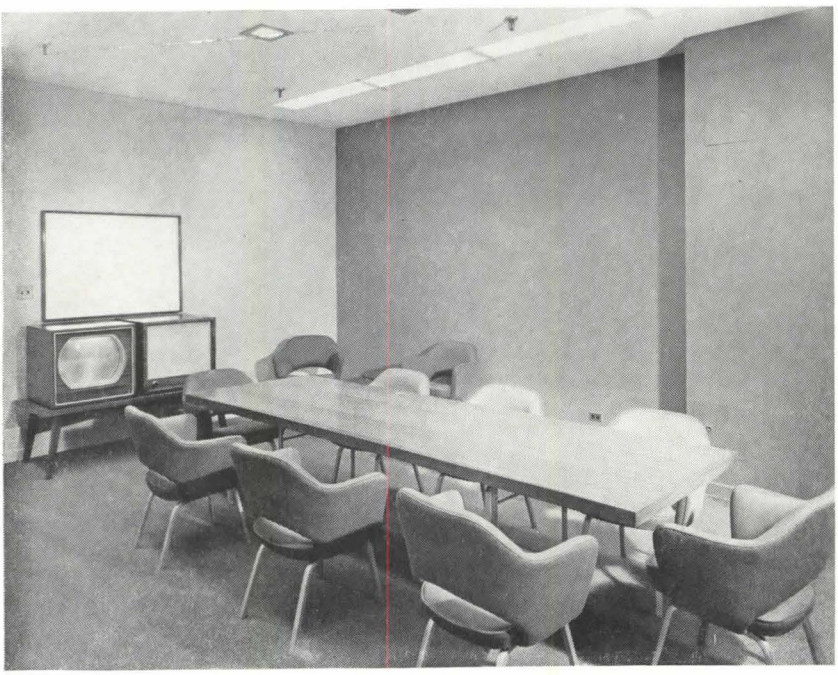
Floor Covering: "Champion"/ cotton chenille/ Vogue Carpet Corp., 17 E. 53 St., New York, N. Y.

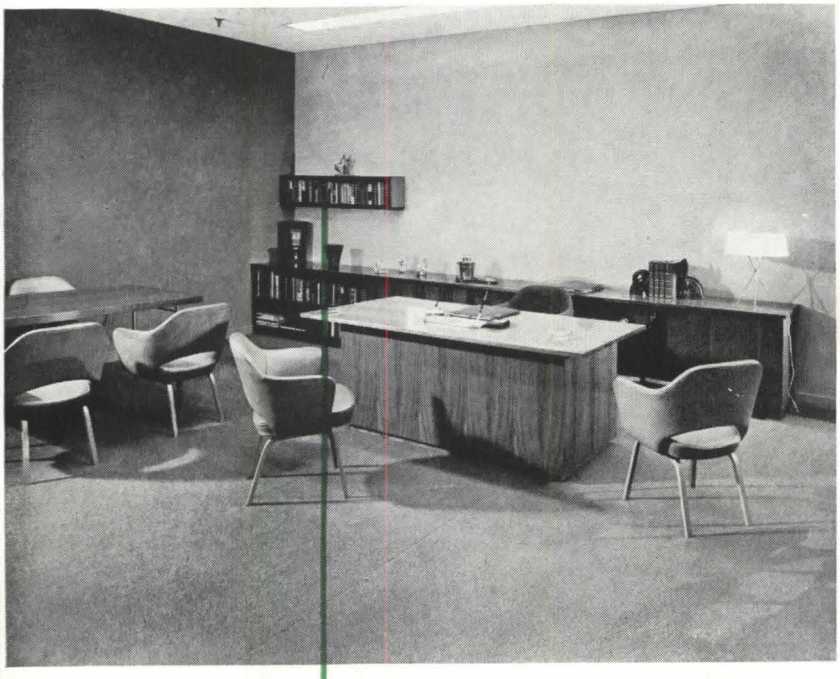
inside TV stations



Interior design of these executives' rooms has been executed in a simple, straightforward manner. Airiness, openness, and a feeling of space is achieved through uncluttered wall areas, a concentration on plain fabrics, and reliance on texture and color for attractiveness. The use of the same chair throughout gives the various areas unity. With the exception of the chair, all other furniture has been custom-designed by the architects. The conference room is adjacent to the president's office. The carpet is beige-and-brown flecked. Three walls in the president's office are beige, with a blue-green texture on the fourth (*left*). Upholstery is tan and brown leather. Wall color in the conference room also is beige, with a medium-blue fabric on the chairs. *Photos: William M. Rittase*







hanging bookshelf

data

equipment

Television Screen (Conference Room): designed by Howe and Brown/ executed by Edward J. Friel Co., 2539 Germantown Ave., Philadelphia, Pa.

furnishings and fabrics

Upholstered Armchair: #71/ 24" x 24" x 30"h./ designed by Eero Saarinen/ **retail:** $150, in muslin/ Knoll Associates, Inc., 575 Madison Ave., New York, 22, N. Y.

Sofas: designed by Howe and Brown/ executed by Gimbel Bros., Philadelphia, Pa.

Tables, Bookcases, Desk, Television Bench: designed by Howe and Brown/ executed by McCloskey-Grant Corp., 20th Ave. & Indiana Ave., Philadelphia, Pa./ metal legs manufactured by John G. Leise Metal Works, 1817 N. 5 St., Philadelphia, Pa.

Carpets: James Lees & Sons Co., Bridgeport, Pa.

lighting

Table Lamp: designed by T. H. Robsjohn-Gibbings/ The Widdicomb Furniture Company, Grand Rapids, Mich.

Troffers: #42235-4/ recessed/ diffusing lens/ 2—40 watt fluorescent tubes/ Day Brite Lighting, Inc., 5434 Bulwer Ave., St. Louis, Mo.

Square Fixtures (Lounge): #SK348-L44/ recessed louvers with 3—40 watt fluorescent lamps/ available for 2, 3, or 4 lamps/ Neo-Ray Products, Inc., 315 E. 22 St., New York 10, N. Y.

walls, ceiling, flooring

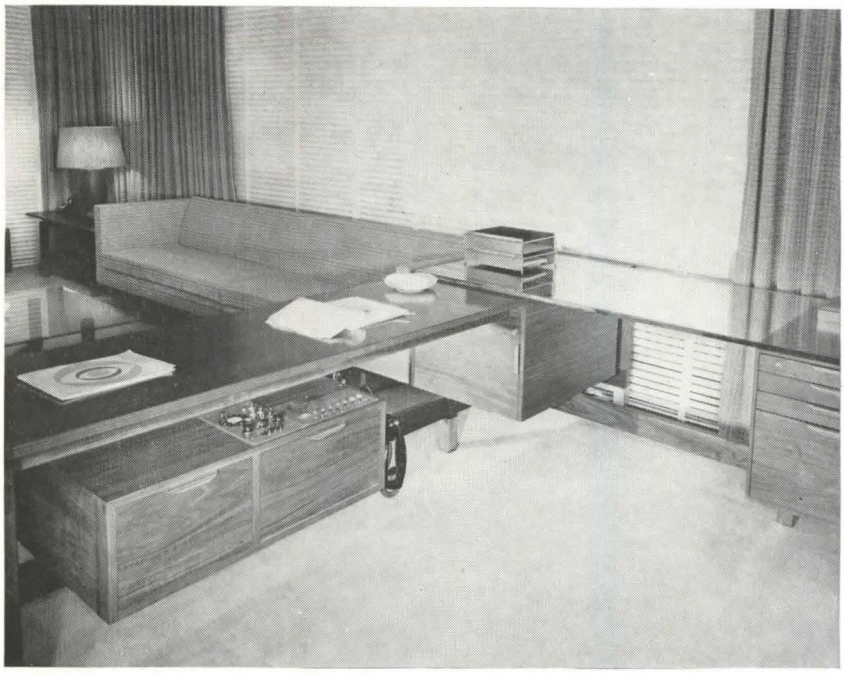
Walls: painted plaster.

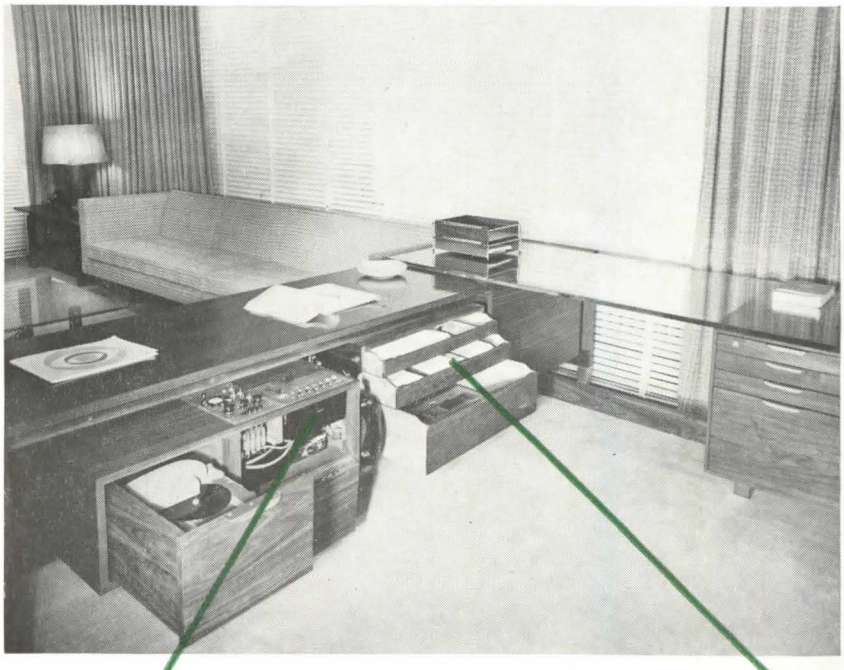
Ceiling: acoustical tile.

Flooring: asphalt tile and concrete.

location	Conference Room, President's Office, and Lounge, WCAU-TV Center, Philadelphia, Pa.
architects	George Howe and Robert Montgomery Brown
designers, engineers, and builders	The Austin Company

inside TV stations





data

cabinetwork

Storage Wall: houses television, black-and-white and color, closet and wardrobe facilities, stationery supplies/ 12" below ceiling incorporates double-strip fluorescent lighting/ designed by G. Luss: Designs for Business, Inc./ executed by Ezra Blank Associates, 117 Lombardy St., Brooklyn, N. Y.

Doors: 4' x 9' flush walnut/ custom designed/ executed by Ezra Blank Associates.

equipment

Television Equipment: Columbia Laboratories, 485 Madison Ave., New York, N. Y.

furnishings and fabrics

Desk: custom-designed/ L-shaped combination conference and work area/ work area top, ¾" Herculite glass/ plastic suspended section contains dictating machine/ telephone controls, television controls/ sliding unit at corner is accessible to work area when necessary/ designed by G. Luss/ executed by Ezra Blank Associates.

Desk Chairs: #C-120/ upholstered open armchairs/ Jens Risom Design Inc., 49 E. 53 St., New York 22, N. Y.

Swivel Chair: special/ leather upholstery/ Jens Risom Design Inc.

Sofa: #5015/ custom/ 10 ft. long/ Lehigh Furniture Corp., 16 E. 53 St., New York, N. Y.

Lounge Chairs: #4030/ Lehigh Furniture Corp.

Occasional Tables: custom/ ½" plate glass top cocktail table/ walnut, plastic-laminate top, end table/ walnut legs polished brass leggings/ designed by G. Luss/ executed by Lehigh Furniture Corp.

Drapery: custom/ coral- white- gray hand-woven fabric/ Wilich-Franke Studios, 305 E. 63 St., New York, N. Y.

lighting

Surface Ceiling Fixtures: #841/ Plexiglas diffusing cover/ Lightolier Corporation, 11 E. 36 St., New York, N. Y.

Table Lamp: custom/ hand-made ceramic base/ Fibreglas shade with hemp covering/ Berrier-Gnazzo, 205 E. 49 St., New York, N. Y.

walls, ceiling, flooring

Walls: painted plaster.

Ceiling: "Acoustone F"/ acoustical tile/ U. S. Gypsum Company, 488 Madison Ave., New York, N. Y.

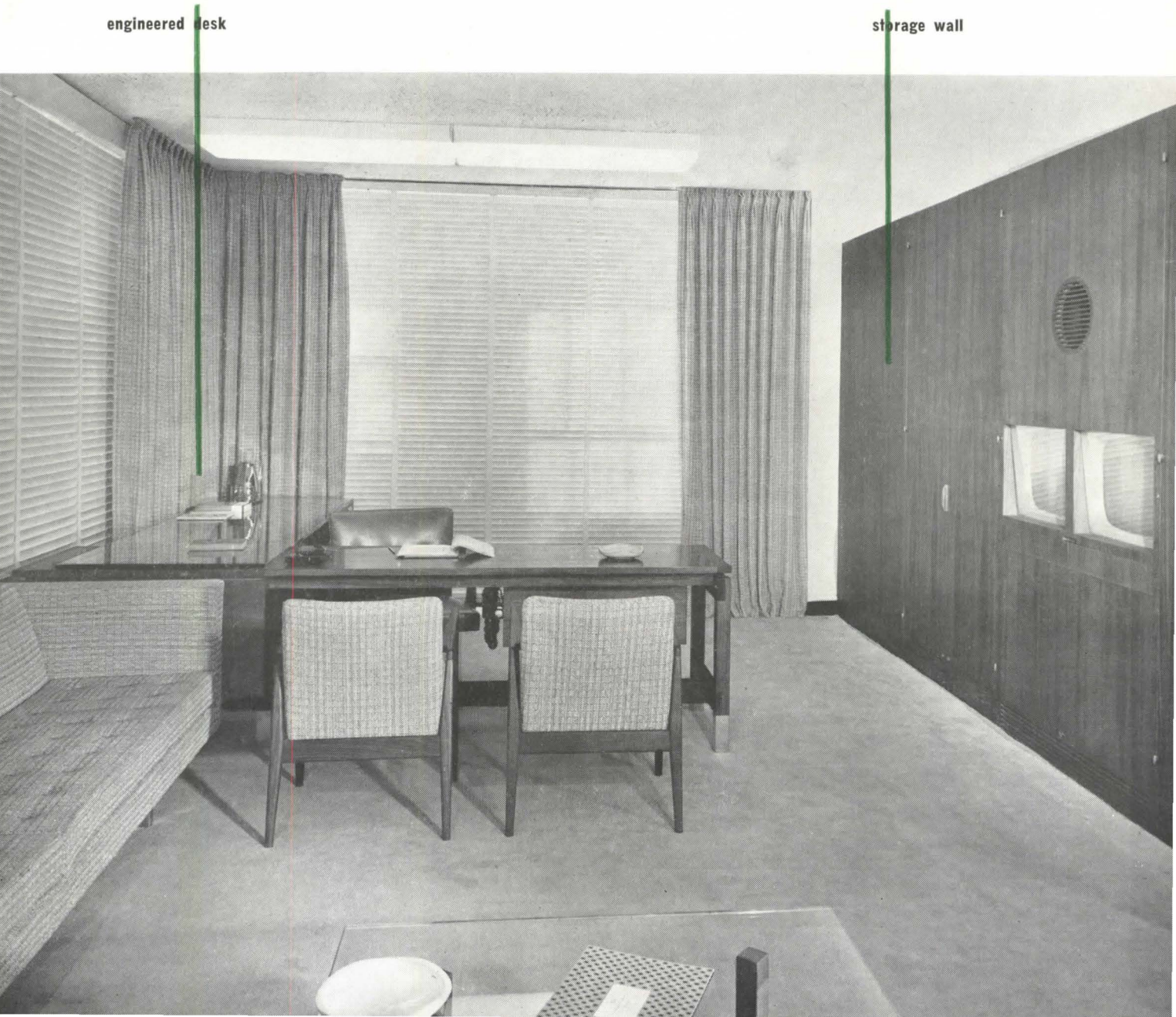
Floor Covering: custom-dyed gray-beige carpet.

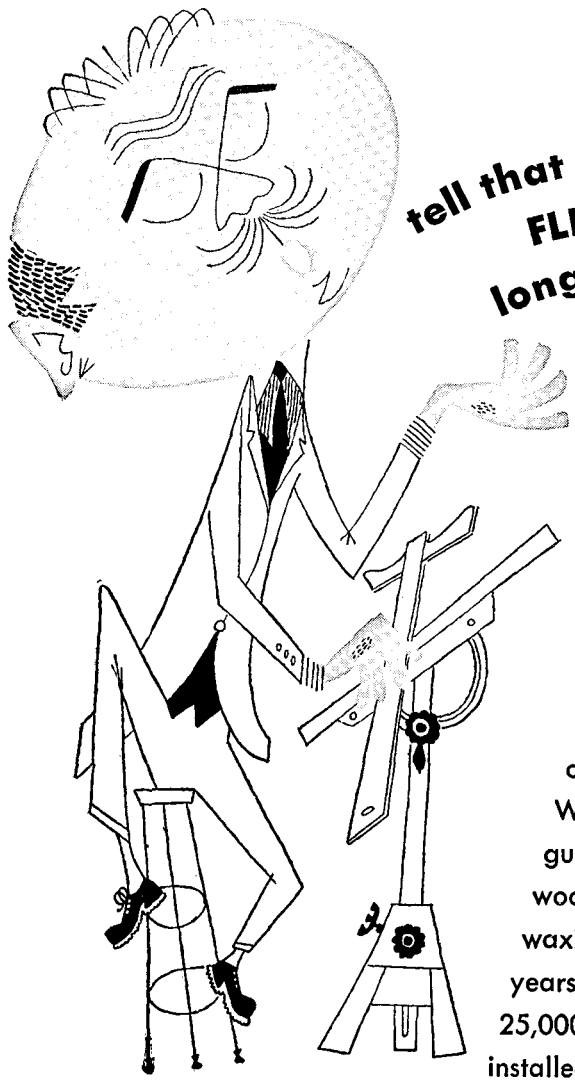
location | President's Office, TV Division, Columbia Broadcasting System, Inc., New York, New York

interior designers | Maurice and Joseph Mogulescu and G. Luss: Designs for Business, Inc.

In this office, several services were to be accommodated—desk space for working area, a separate conference table, and an informal seating area. The television screens were to be visible from the conference table and also the seating area. The custom-designed L-shaped desk separates the working and conference areas, and co-ordinates to either phase with a minimum of effort. The television screens, controlled from the desk, were placed in the flush storage wall, convenient yet inconspicuous, furthering the look of spaciousness. All wood surfaces are walnut, with brass hardware. Gray, coral, and white is the color scheme. Here is grace and comfort, beautifully combined with efficiency and ease of operation—and simple elegance.

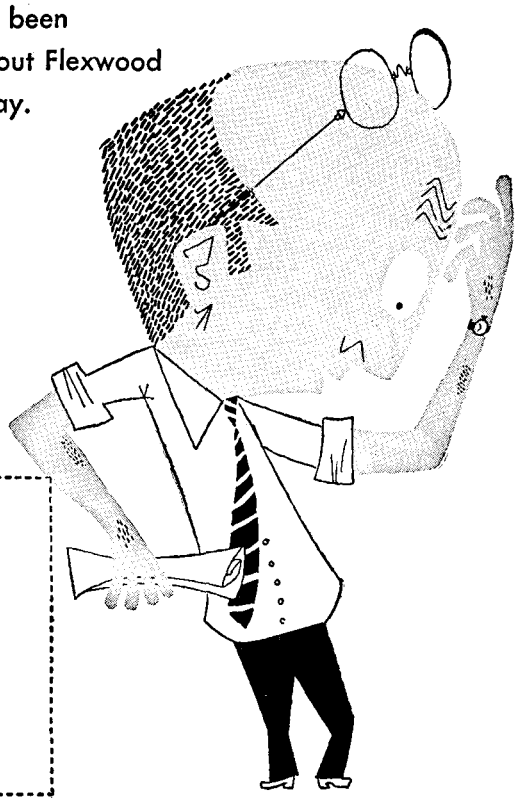
Photos: Ben Schnall





tell that beautiful client that FLEXWOOD'S beauty will last longer than hers!

How does it stand up? That's the first question you'll ask after you see the new things you can do with wood panelling by using Flexwood. Because it *is* flexible, you can curve it, wrap it around posts, get stunning matched grain effects on straight or curved surfaces. *How does it stand up?* Well, the installation itself is guaranteed! And, like all other real wood panelling, with occasional waxing Flexwood's beauty lasts for years—without special treatment. Over 25,000,000 feet have been installed. Learn *all* about Flexwood —mail the coupon today.



FLEXWOOD

Choice wood in flexible sheets

Reg. U. S. Pat. Off.

Flexwood is manufactured and marketed jointly by United States Plywood Corporation and The Mengel Company.

United States Plywood Corporation , Dept. FW59
55 West 44th Street, New York 36, N. Y.
In Canada: Paul Collet & Co., Ltd., Montreal

Please send sample of Flexwood and full-color Fact File.

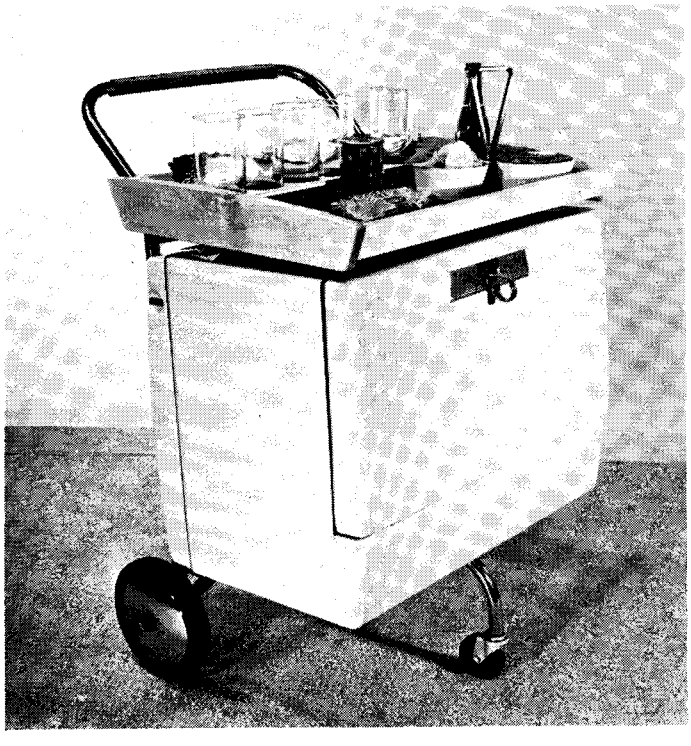
NAME_____

ADDRESS_____

CITY_____ STATE_____

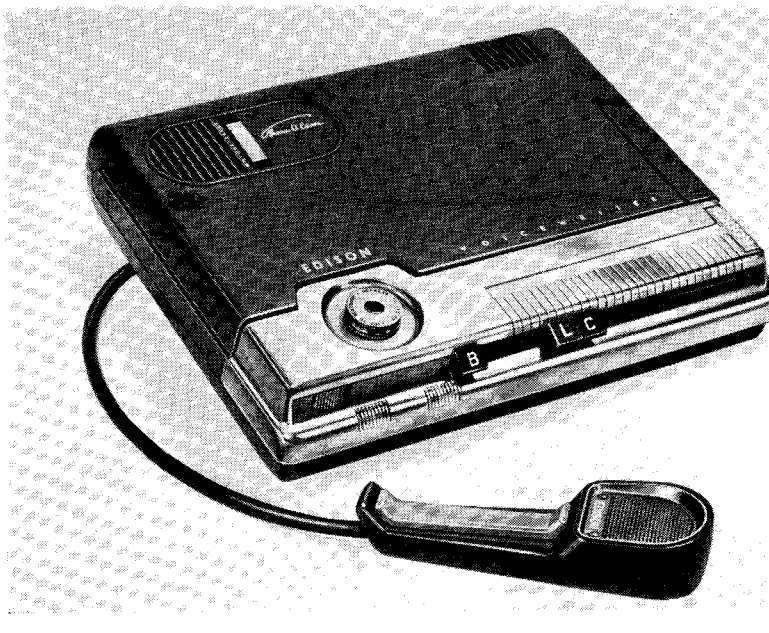
p/a interior design products

The Industrial Designers' Institute has presented awards to the designers of the two products shown on this page. Awards are given for noteworthy approach to design and function, combined with a practical use of appropriate materials in a product that is mass-produced and nationally distributed. This is a form of public recognition for truly progressive and worthwhile achievements, with the hope of focusing attention and at the same time protecting the consumer and designer.



Office Refrigerator, designed by Donald Dailey: "Wonderbar" and "Wondercart"/ one-piece molded plastic case/ available with legged base or wheels/ case may be had in blond, mahogany, or white finish/ height, 38-¾"; depth, 27"; width, 26½"/ portable/ electric/ retail; $199.45/ Servel, Inc.

Recording Machine, designed by Carl Otto: "The V. P. Edison Voicewriter"/ weight, 12 pounds, including hand microphone/ height, 2-7/16"; width, 11-15/16"; length, 9-7/16"/ 4-in-1 control operates recording, playing back a few sentences, complete playback/ has keys for Back Spacer, Length, Correction/ recording time per disc is thirty minutes/ **Thomas A. Edison Incorporated, West Orange, N. J.**



a new
and different
vinyl wall covering
for homes
offices
and institutions...

Bolta-Wall

Tailors easily . . . flexible, easier to install, even in the most difficult areas

Beautiful . . . in textured Bamboo and distinctive Leathergrain patterns . . . colors for every decor

Sturdy . . . a "life-time" installation . . . highly resistant to wear and scuff marks

Dimensionally stable . . . no seam shrinkage

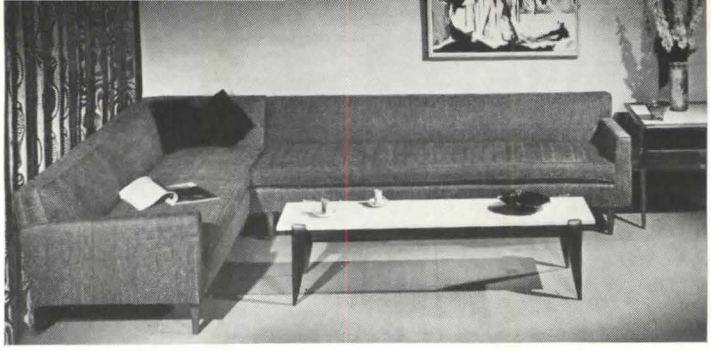
Cleans easily . . . for lower maintenance costs and lasting beauty

Nationally advertised . . . to *your customers*

Box 615, BOLTA, Lawrence, Massachusetts

☐ *Please send architectural specifications on Bolta-Wall.*
☐ *Please send free swatches of Bolta-Wall Bamboo and Bolta-Wall Leathergrain patterns.*

Name.....
Address.....
City.....State.....



1

On this and the following IDD Products page are shown new designs of furniture exhibited at the markets in Grand Rapids and Chicago. This is not by any means a complete coverage, but a selection to illustrate current design thinking which we find very interesting.

1. Seating Units: #144-145 Series/ low-backed, height 27"/ available in any length, with or without arms (high or low) designed by Bertha Schaefer/ length shown, 7 feet/ **retail:** $397, two arm; $360, one arm, in muslin/ **M. Singer & Sons, 32-38 East 19 St., New York, N. Y.**

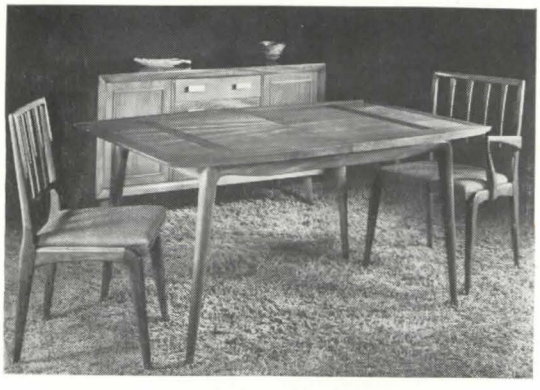
2. Dining Group: #329 table, #1065 side chair, #107 armchair/ mahogany finished in "Charal" tone/ designed by Warner Cleveland/ **retail:** $196.50, table; $55, side chair; $66, armchair/ **The Imperial Furniture Company, Grand Rapids, Mich.**

3. Dining Table and Chairs: #4602, #4103/ teak top table with natural beech legs/ tripod chairs/ designed by Hans Wegner/ **retail:** $170, table; $38.50, chair/ **Richards Morgenthau Company, 225 Fifth Ave., New York 10, N. Y.**

4. Executive Armchair: #C103/ companion to swivel armchair for desk/ available with birch or walnut base/ width, 28"; depth, 29"; height, 36"/ **retail:** $196, in muslin/ **Jens Risom Design Inc., 49 East 53 St., New York, N. Y.**

5. Side and Arm Chairs: #270, #170/ available with birch or walnut frame, curved laminated seat and back upholstered in foam rubber/ **retails:** $104, $134, in muslin/ **Jens Risom Design Inc.**

6. Buffet, Server, and China Cabinet: "Butler Buffet"/ two sliding serving trays at top/ compartmented silver drawer/ four linen drawers/ sliding shelves for china/ tall section for serving pieces/ grooved section for trays/ filler drawer at base/ mahogany/ **retail:** $504/ **Grand Rapids Chair Co., 1661 Monroe Ave., N. W., Grand Rapids, Mich.**

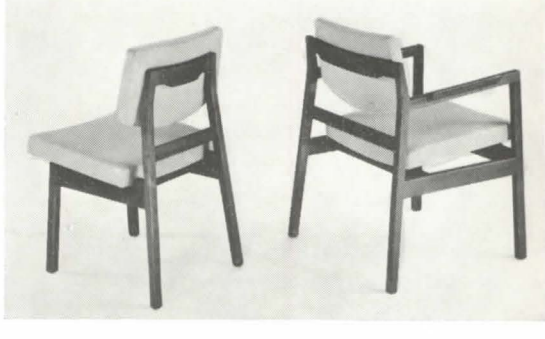


2

3

4

5



6

with this glass—

you enclose space and decorate at the same time

Wall out the weather—shut out an unattractive view — separate two rooms — whatever the purpose of a wall or partition, you can use a material that lights *and* decorates.

Walls of Blue Ridge *Patterned Glass* provide various degrees of privacy. Yet they let light come through. The many attractive patterns provide decorative tones to match any motif —give interior and exterior a smart, up-to-date appearance that is pleasing in almost any type of building.

This installation is in the home of a well-known architectural photographer—Julius Shulman—a man who works continuously with light, color, beautiful architectural effects. He and his architect, Raphael Soriano, chose Blue Ridge Skytex pattern to glaze the sliding doors. The beautiful pattern provides obscurity, yet decorates with light and color from either side.

There are many Blue Ridge patterns from which you can choose—linear, checkered and over-all patterns—in plain, textured and *Satinol** finishes. Your Libbey·Owens·Ford Glass Distributor or Dealer can show you samples of this beautiful glass. He's listed under "Glass" in the yellow pages of phone books in many principal cities. Ask him, or mail the coupon, for copies of our two books of decorating ideas. *®

BLUE RIDGE
Patterned GLASS

Libbey·Owens·Ford Glass Company
Patterned and Wire Glass Sales
B-993 Nicholas Building, Toledo 3, O.

Please send me your two idea books:
Patterned Glass for Modernization in commercial buildings;
New Adventures in Decorating for residences.

Name (please print)_____

Street _____

City_____ Zone____ State_____

1

1. Modular Desk: #SLD-7/ three-drawer desk top/ tri-legged saw horse base/ pull-through lower drawer/ any number of suspended drawers may be used/ top and legs available in walnut, birch, or ebony finish/ **retail:** $89, top, two legs, one suspended drawer/ $52, legs and top/ $15, two legs/ **Richards Morgenthau, 225 Fifth Avenue, New York, N. Y.**

2. Shell-shaped Chair: "Calcutta"/ circular black wrought-iron base/ heavy woven-rattan seat with spar varnish finish/ designed by John Risley/ **retail:** $34.95/ **Ficks Reed Company, Cincinnati, Ohio**

3. Bow Chair: #105/ cotton yacht cord wound on wrought steel frame/ cord available in white, sandalwood tan, leaf green, black/ frame finished with vinyl coating/ **retail:** $20/ **Allan Gould Designs, Inc., 166 Lexington Ave., New York 16, N. Y.**

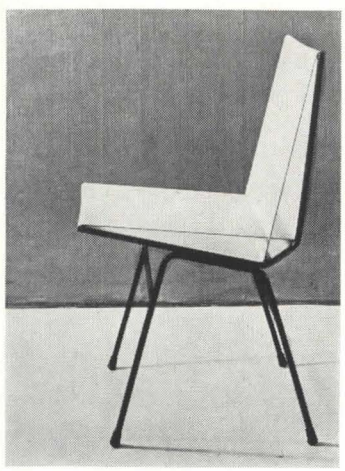
4. Beech Plywood Chair: #3100/ plastic coated steel legs/ available in mahogany, walnut, maple, and palisander wood seat/ designed by Arne Jacobsen/ **retail:** $33.80/ **Richards Morgenthau, 225 Fifth Ave., New York 10, N. Y.**

5. Dining Group: #E4703 chair, #E4509 table/ wrought iron with brass tips/ natural cowhide leather backs with leather lacing/ table, 42" square/ designed by Maurizio Tempestini/ **retail:** $57, chair; $150, table with center planting well/ **John B. Salterini Co., Inc., 510 E. 72 St., New York, N. Y.**

6. Vanity Table, Bench, and Mirror: #2112 #2113, #107/ wrought iron with expanded metal shelves and sides, limed-oak Nevamar plastic top/ may also be used as a desk/ **retail:** $55, table; $10, bench; $15, mirror/ **T. Baumritter Co., Inc., 171 Madison Ave., New York, N. Y.**

2

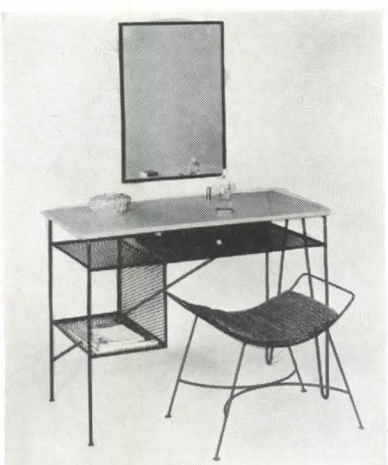
3



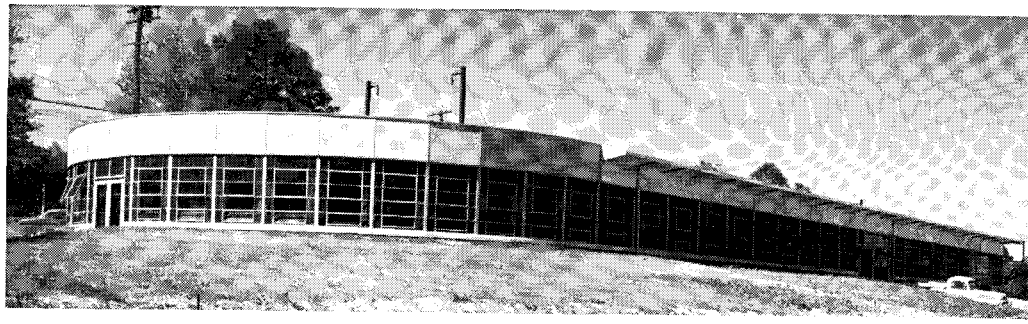
4

5

6



LOW COST CONSTRUCTION Quality Features



The Filler Machine Company, Bethayres, Pa., showing the office end of the plant. Completed in July 1952, the building's esthetic appeal is a direct result of simple materials expertly and economically handled. Roof is supported by lally columns on 14 ft. centers. Space between columns is filled by Lupton Commercial Projected Windows welded to columns. Overhanging roof and heat absorbing glass protect interior from excessive heat in summer.

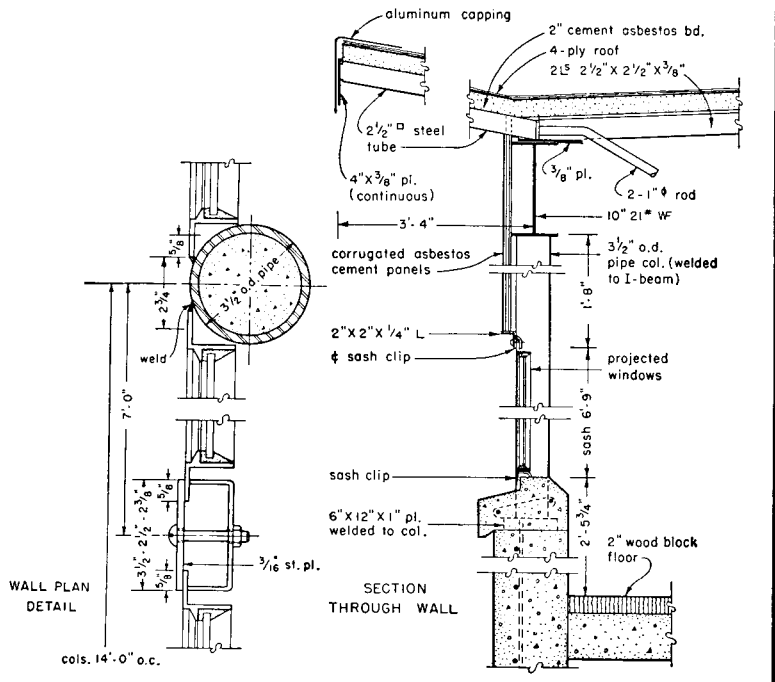
Just north of Philadelphia, on the New York Branch of the Reading Railroad, is one of the most interesting buildings that have contributed to the tremendous industrial expansion of the Delaware Valley.

Built for the Filler Machine Company at Bethayres, Pa., with Ralph Wesley Jones, Philadelphia, as Consulting Engineer, the plant features the utmost simplicity in construction without sacrifice of quality. The 13,300 square foot factory has a 147 ft. by 74 ft. shop. A semicircular 2,000 square foot office is located on the north end. Total cost was $82,000.00 at $6.15 per square foot, yet it has been mortgage appraised at $9.50 per square foot.

Exterior walls are formed by 3½ inch lally columns 14 feet on centers. These rise from a 2 foot high reinforced concrete wall topped by steel bed-plates. The lally columns are welded to the bed-plates and to the sidewall I-beams. Open-web joists, totaling 73 feet 4 inches, span the building and are supported at the center by 6 inch lally columns. This center row of columns offers the only floor obstruction in the entire building. The ceiling is the underside of 2 inch insulated roof slabs covered with built-up roofing.

The two Lupton Projected Steel Windows filling each of the 14 foot bays are tack-welded directly to the lally columns. A 3½ inch plate mullion joins the two windows at the center of the bay. Each window has two ventilators. Upper ventilator opens out, ventilator at the sill opens in. Ventilation is possible in any weather. Glazed with heat-absorbing glass, further sun and weather protection is afforded by a 40 inch roof overhang. The end result is a strikingly modern building with clean lines uncluttered by extraneous construction details.

If you too, are planning unusual construction let Lupton help you. See the complete line of steel and aluminum windows in Sweet's. There is a complete drafting and design staff ready to help you with your window problems.

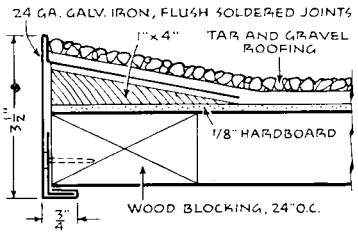


The Factory view at right shows the 14′ bay formed by lally columns. The center mullion is a 3½" formed channel welded to the I-beam and sill plate. Lupton Steel Projected Windows are welded to the lally columns, center mullion provides for expansion and contraction. All glazing is translucent, pebbled, heat-absorbing glass.

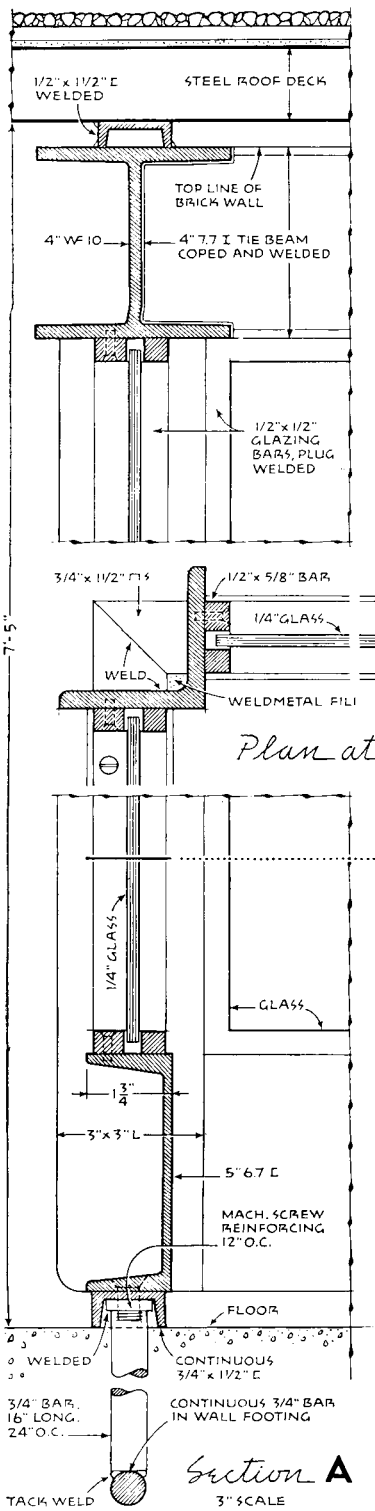
Interior of the semicircular office located at the north end of the building. The second and third rows of window lights are clear glazed, the others have translucent, pebbled glass. Entrance to the building is by a sunken path as the grading has been brought right up to the window sills.

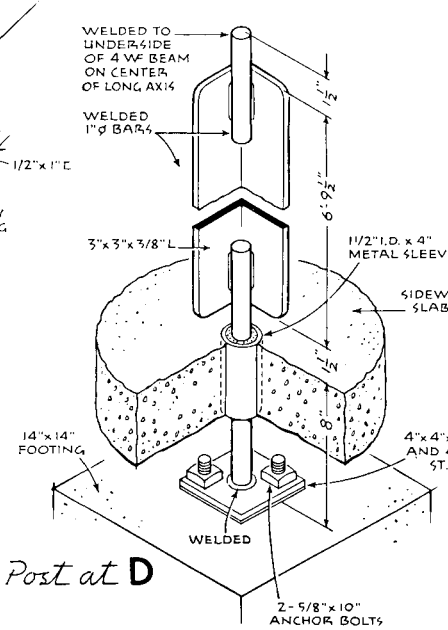
LUPTON
METAL WINDOWS

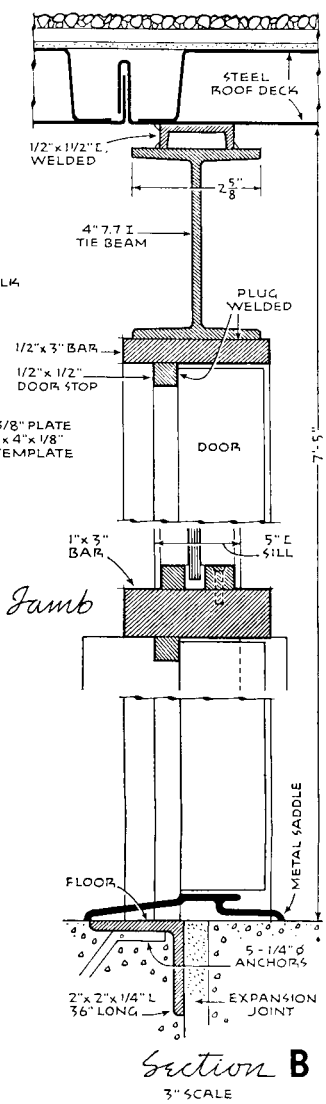
JULIUS SHULMAN

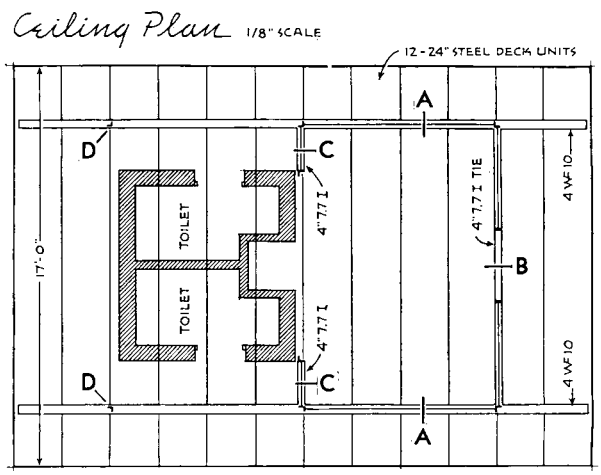


Cornice 3"SCALE

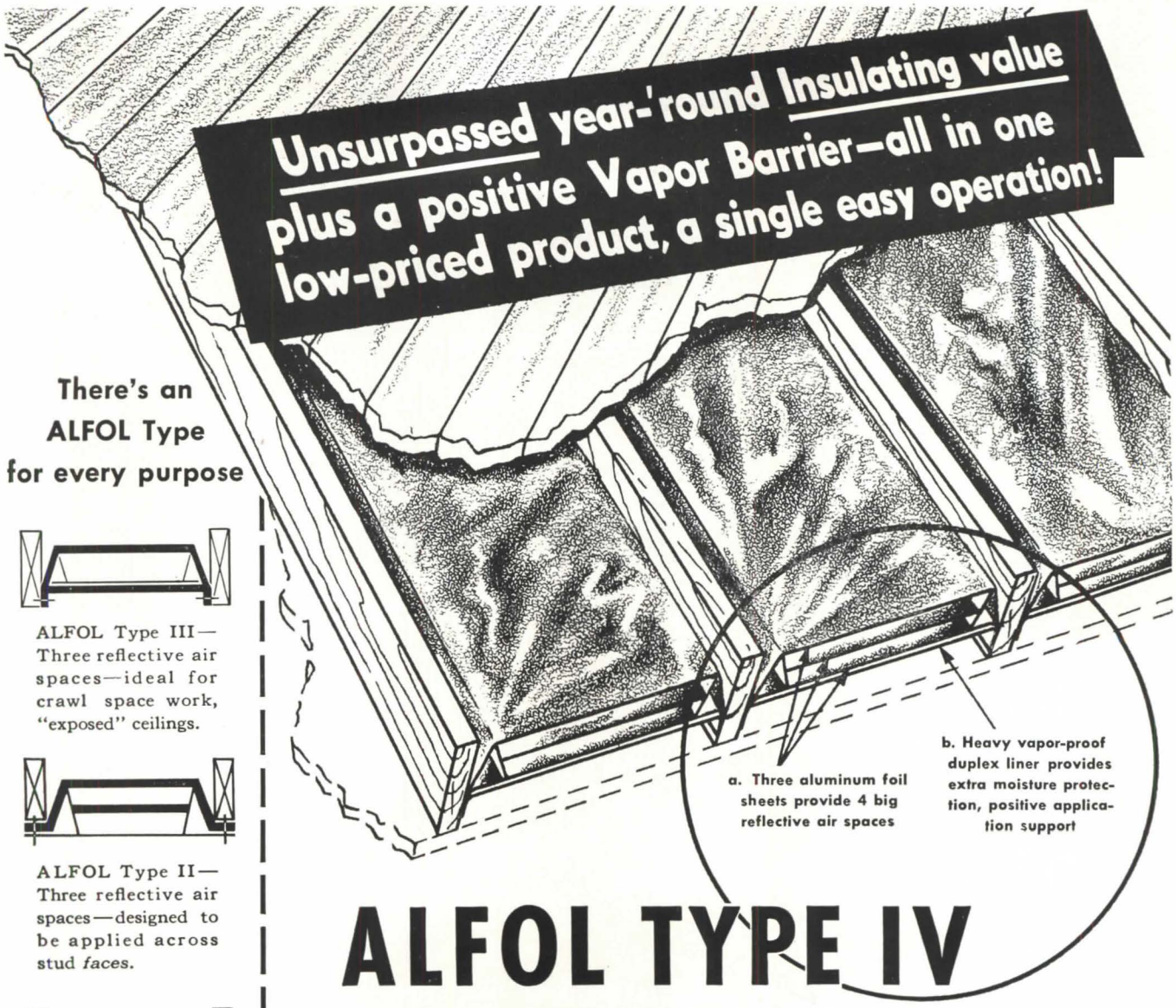








PARKING LOT, Oklahoma City, Okla.
Joseph N. Boaz, Architect



ALFOL TYPE IV

BUILDING BLANKET INSULATION

Here's top insulation value in America's cleanest, most compact "package"—ALFOL Type IV! Design is simple: 3 aluminum foil sheets automatically expanding to create 4 reflective air spaces. Yet as applied above, for example, the year-round value of Type IV surpasses that of full-thick bulk insulation! (Basis: ASHVE calculations.)

Its base foil layer is backed with heavy duplex. Vapor-proof, this backing is an exclusive ALFOL "plus." It enhances the already-great vapor-resistance of the foil . . . and gives the extra support that makes ALFOL sag-proof, rip-resisting.

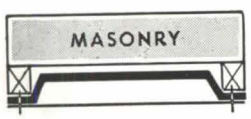
Application is rapid, positive, fool-proof . . . because the aluminum foil sheets space themselves automatically. And ALFOL usually costs less to buy, less to apply. More good reasons why more and more architects are using the entire ALFOL line to "pin-point" their insulation specifications.

There's an ALFOL Type for every purpose

ALFOL Type III—Three reflective air spaces—ideal for crawl space work, "exposed" ceilings.

ALFOL Type II—Three reflective air spaces—designed to be applied across stud *faces*.

ALFOL Type I—Two reflective air spaces—Low cost efficiency, ideal for mild climate use.



ALFOL Type IA—Two reflective air spaces—specially designed for masonry construction.

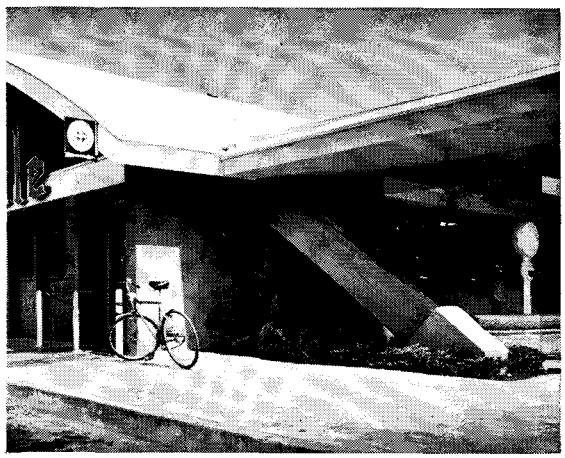
Write for free literature, complete details
—Address letterhead to our Dept. PA-3

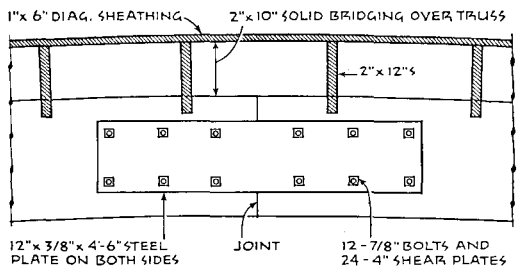
ALFOL
BUILDING BLANKET INSULATION
"FIRST IN REFLECTIVE INSULATION"

REFLECTAL CORPORATION
A Subsidiary of Borg-Warner
155 EAST 44th ST. NEW YORK 17, N. Y.

store: laminated bow truss

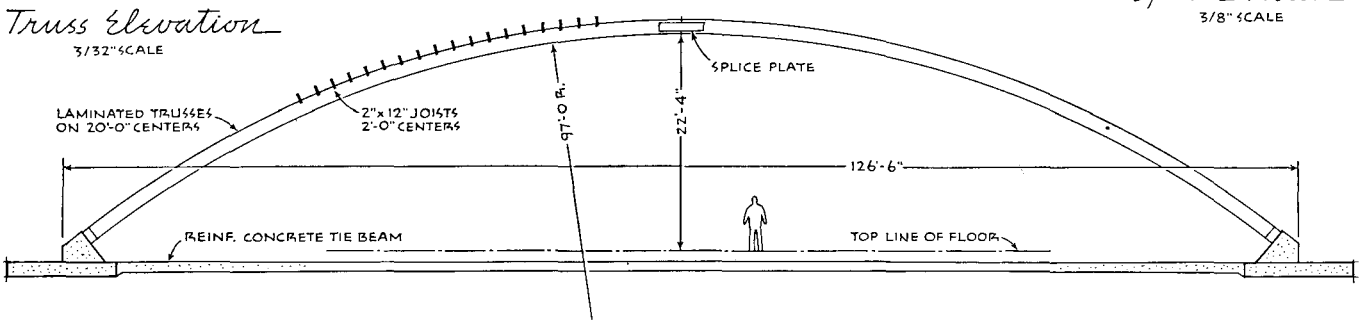
JULIUS SHULMAN PHOTOS



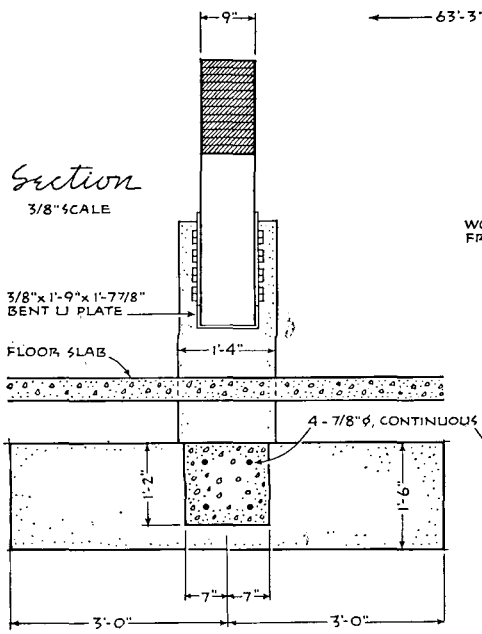


Splice Plate
3/8" SCALE

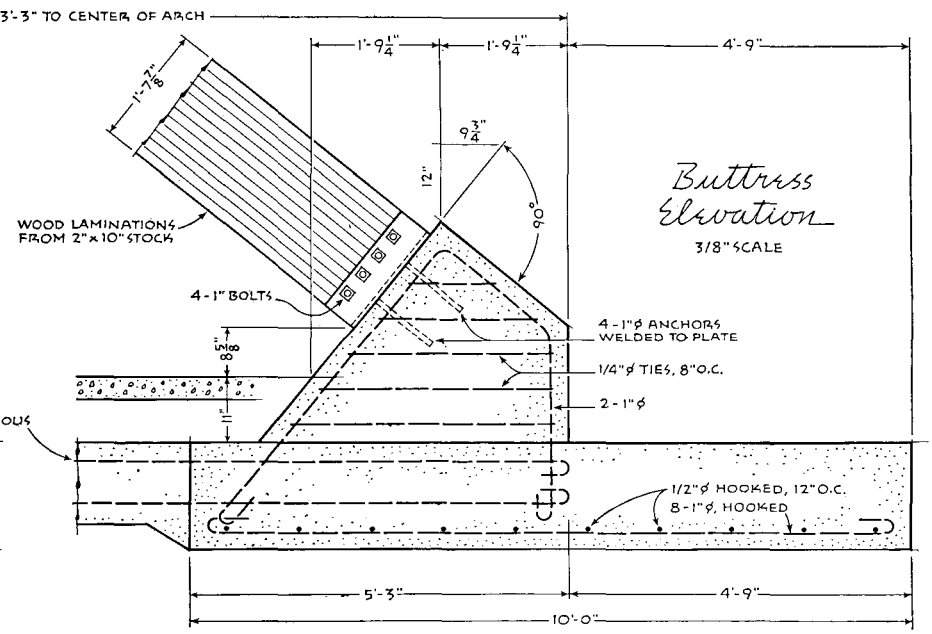
Truss Elevation
3/32" SCALE



Section
3/8" SCALE



Buttress Elevation
3/8" SCALE



KING COLE SUPERMARKET, Whittier, Calif.
A. Quincy Jones, Architect

LUDMAN Auto-Lok AUTOMATIC LOCKING PATENTED

SPECIAL SCHOOL WINDOWS

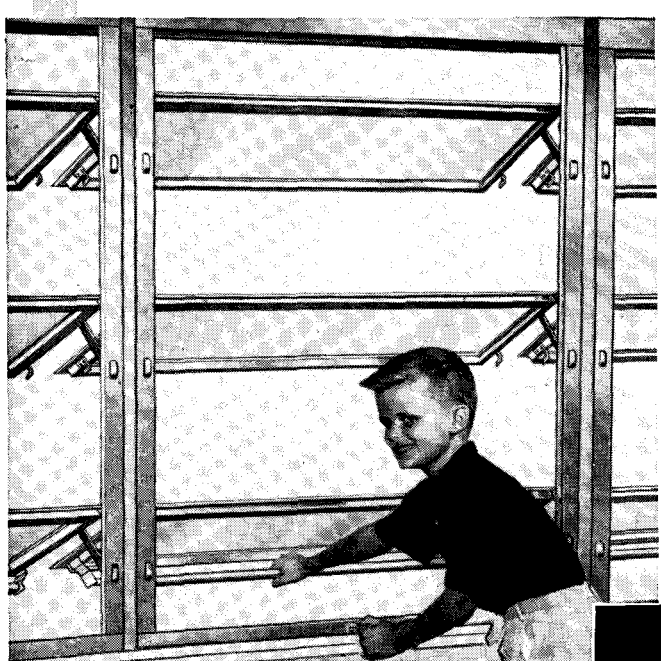
THE TREND IS TO AWNING WINDOWS

only give performance like this!

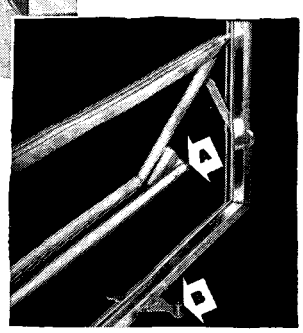
And what performance! Ludman Auto-Lok windows give you complete all-weather window ventilation control! They open widest . . . close tightest. They seal shut ten times tighter than generally accepted standards. Each vent *locks* automatically at *all four* corners when closed. They help air-conditioning and heating equipment to operate more efficiently. And equipped with the exclusive Ludman Control-Bar, Ludman windows are the simplest, safest, easiest of all school windows to operate! They are made to withstand the severest kind of classroom abuse and give a life-time of trouble-free performance!

HERE ARE JUST A FEW OF THE MANY SCHOOLS EQUIPPED WITH LUDMAN WINDOWS . . .

Booker High School
Sarasota, Fla.
Clarkstown Junior-Senior High
Clarkstown, N. Y.
Texas State University (Dormitory Group)
Houston, Texas
MacArthur Gymnasium
Beaumont, Texas
Oak View School
High Point, N. C.
Yonkers Junior-Senior High
Yonkers, N. Y.
University of California (Physical Education Bldg.)
Riverside, Calif.
Evansdale Elementary
Evansdale, Iowa
Wilson & Enslen Schools
Modesto, Calif.
Morrisonville School Addition
Morrisonville, Ill.
Ojus Elementary School Addition
Dade County, Fla.
Forsyth Grade School
Forsyth, Ill.
Consolidated High, District 4
Knappa, Ore.
Nashua School Addition
Nashua, Iowa
St. Mary's School & Convent
Rhinelander, Wisc.
Pleasant Valley Township
Bettendorf, Iowa
Herbert Hoover School
Mason City, Iowa
Glenwood Elementary
Ada, Okla.
Franklin Sherman School
McLean, Iowa
Dorsey Junior High
Miami, Fla.



Over the years it's the least expensive window to use. No maintenance required. Reduces heating costs Write for descriptive catalog.



A: CONTROL-BAR
. . . Another Ludman *first!* It's the simplest, safest operating device ever designed! So little effort is required, even a child can operate it. No maintenance . . . no adjustment ever

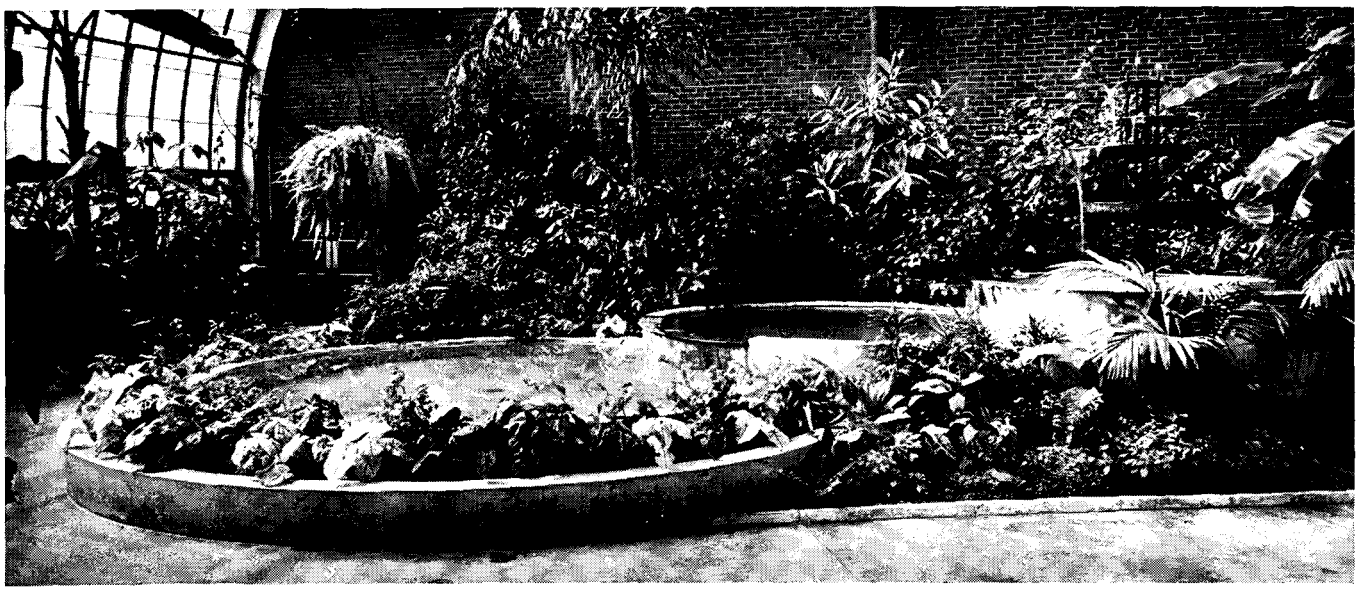
B: SAFETY-LOCK
. . . an improved locking feature that securely locks the bottom vent.

LUDMAN *Corporation*

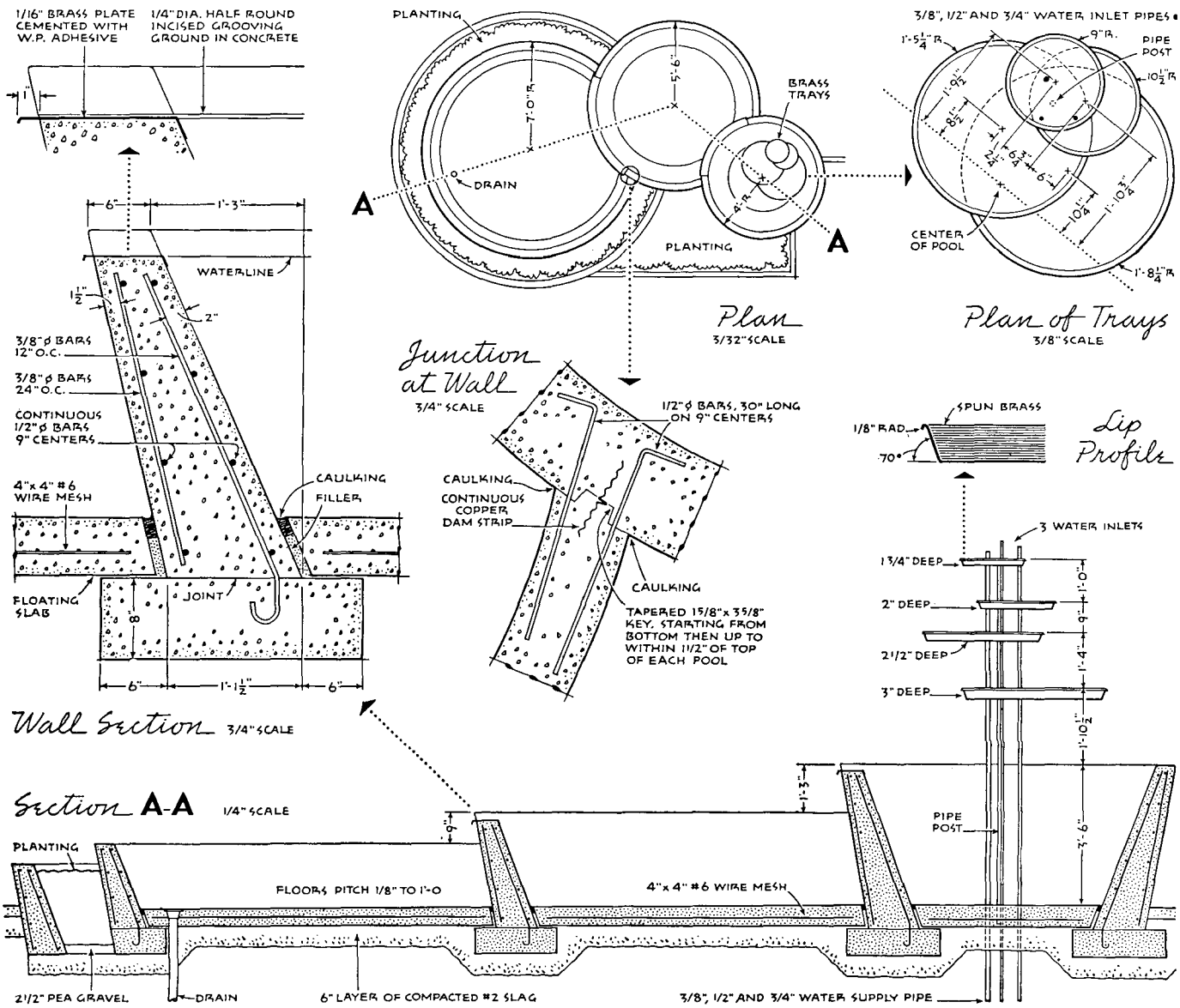
Box 4541 Dept., PA-9, Miami, Florida

LUDMAN LEADS THE WORLD IN WINDOW ENGINEERING

conservatory and aviary: water fountain



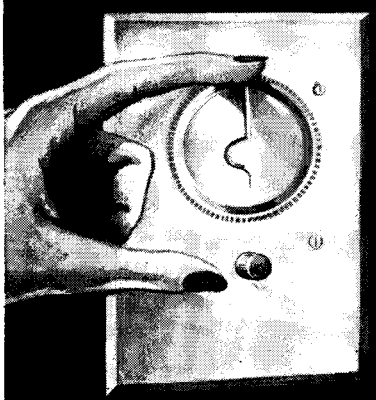
NEWMAN - SCHMIDT



CONSERVATORY-AVIARY FOR THE CITY OF PITTSBURGH, Pittsburgh, Pa.
Lamont H. Button & Paul F. McLean, Architects

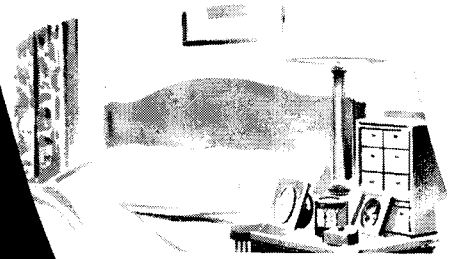
LIGHT...

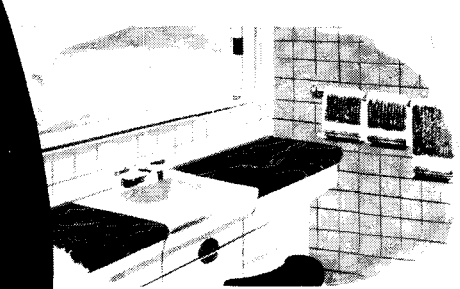
just right for any occasion

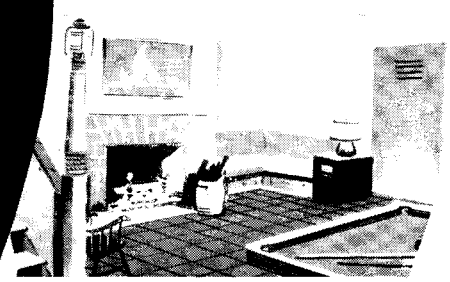


with the **powerstat** Wallbox Dimmer

- Any amount of light from darkness to full brightness
- Use in place of ordinary on-off wallswitch
- Cool, smooth, flickerless silent operation
- Dims any number of lamps up to 360 watts at 120 volts, A-C
- Easy to install
- Underwriters' Laboratories Approved







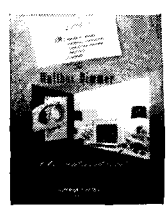
Now, a new concept in light control... the **powerstat** WALLBOX Dimmer offers the beauty, comfort, convenience and versatility of *controlled light* for every room in the home.

By simply turning a knob, any amount of light can be selected — to provide the correct light for every occasion and activity . . . subtle and flattering light for entertaining, bright light for reading and sewing in the living room . . . bright light for table arranging, candle glow for dining in the dining room . . . bright light for reading, lower light for dressing and night light in the bedroom . . . bright light for working, intermediate for serving in the kitchen . . . bright light for safe illumination, lower for night light in hallways and bathroom . . . bright light for games and cards, lower for conversation, television or movies in the recreation room.

Learn more about ***controlled light*** write to:

THE SUPERIOR ELECTRIC CO.
4093 Demers Avenue, Bristol, Conn.

NAME _____
POSITION _____
COMPANY _____
CO. ADDRESS _____
CITY _____ *ZONE* ____ *STATE* _____



THE SUPERIOR ELECTRIC CO.
BRISTOL, CONNECTICUT

it's the law

by Bernard Tomson

Editor's Note—Is the Architect running a grave risk when issuing Certificates of Payment without proper control and audit of the Contractor's disbursements? Tomson has raised in his column many important questions, some of which—notably the need for coordination of licensing statutes—are now being studied by the profession.

None, we feel, has been of graver import than the subject of the series of columns starting this month: the "supervision" of the Contractor by the Architect. Is the Architect assuming a dangerous, unrecognized responsibility? P/A agrees with Tomson that the Architect is: many Architects we have talked with agree.

A meeting of important men in the building field has been called in New York by P/A to discuss this problem. The discussion, with specific recommendations for revision of the present Contract Documents, will be reported in subsequent issues.

Supervision by Architect required.
Supervision of what?
Supervision of construction?
Supervision of the Contractor?
Or supervision of both?

What do I mean by "supervision of the Contractor?" I mean the Architect's control over and audit of those monies paid to the Contractor which the contract requires him to distribute: *i.e.* where in effect he is acting as a fiscal agent of the Owner. Among other things, this would require a proper audit to determine whether the Contractor's requisitions properly reflect requisitions of sub-contractors, material men, and the like, and that payments to the Contractor are disbursed in accordance with contractual obligations. For example, *Article 37* requires him to pay sub-contractors proportionately as he is paid. How many Architects, even on very large projects, actually "supervise the Contractor" as well as construction? The very language of the *General Terms and Conditions* indicates that the answer is: few, if any. The terms and conditions, themselves (*Article 24*), in considering the Contractor's application for payment, call for receipts or vouchers only "if required." The contractual provisions, of course, are silent as to any periodic audit.

In respect to the Architect's function as a "supervisor of construction," the *General Terms and Conditions* and the carefully written specifications on each project state quite explicitly the Architect's function. The attitude of the Architect, the Contractor, and even the bonding company, indicates quite clearly that this is the apparent primary function of the Architect in supervision.

But is "supervision of construction," alone, what the Owner expects and the *General Terms and Conditions* require? As to the Owner, the answer is an emphatic no! As to the *General Terms and Conditions*, the answer is again, no—but in muddied language.

I doubt whether the financial end of any operation in any other field, involving the large amounts of monies that are spent in construction, is as loosely run as the usual construction operation. If this is continued, the consequences could be disastrous, given any kind of general or even local economic recession or disturbance, temporary, or otherwise, affecting prices or materials. Even in the absence of any economic disturbance, the consequences could be equally unfortunate in individual situations.

•

Let me illustrate by an example that could be typical: The Contractor, instead of making payments to his sub-contractors, as required by *Article 37*, shades these amounts. As the job draws to a close he finds himself seriously in arrears to a number of subs. He feels secure because of the 10% retained by the Owner and hopes to stall the subs until the receipt of that amount. The Owner and the Architect apparently have felt secure because of the 10% retention fund.

As a practical matter, however, this is a sham, a snare, and a delusion. The 10% is intended to cover possible claims for defective work. The defective work can be so serious as to absorb that entire fund. In addition, there may be claims for inexcusable delay which may run into substantial sums, where time is of the essence. If the claims of the subs turn out to be so substantial that, when added to the Owner's claims for defective work, the 10% becomes grossly inadequate and the Contractor is unable to meet his payments, the Owner is in the position of paying far more for the job than the contract price. Reliance on the Contractor's bond may, for reasons not necessary to discuss here, also be illusory.

•

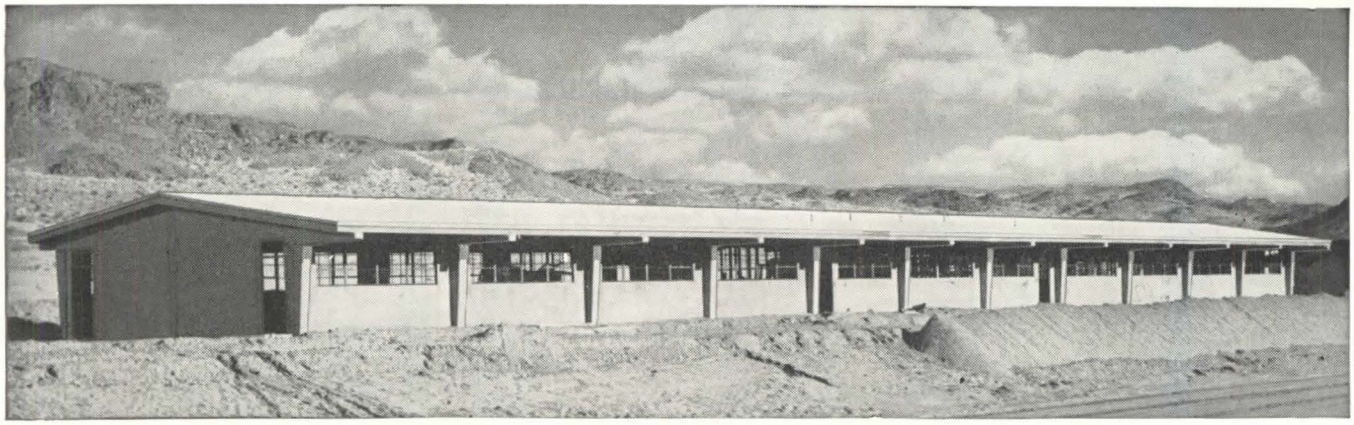
I do not mean to imply here that Contractors are dishonest or that they cynically disregard their contractual obligations. When large amounts are expended, it is not only prudent but routine to require regular audits. The Owner and the Architect should feel that the Contractor engaged is honest, reliable, ethical, and financially responsible. Employes of banks and officers handling public funds are certainly so regarded, yet audits there are routine, expected, and are not considered insulting. A wise man once told me that it is unfair to put unnecessary temptation before an honest man. Routinely, in construction this is done because of a generic failure to require the Contractor to adhere rigidly to his contractual requirements as to disbursements of funds.

The problem, therefore, is extremely important, but may be very simply stated:

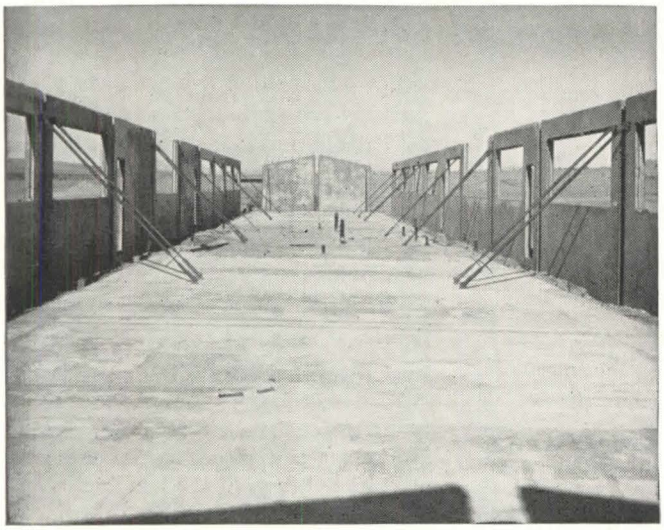
1. Should the contractor's books and records be audited periodically?
2. If so, who shall pay for or provide the necessary accounting services—the Architect, the Owner, or the bonding company?
3. How do the *General Terms and Conditions* now deal with these and related problems?
4. How should the *General Terms and Conditions* be amended so as to clarify the respective responsibilities of the Architect, the Contractor, and the Owner?

I have emphasized the importance of a periodic audit of the Contractor's books and records in order to provide the Owner and Architect with the security to which they are entitled. The cost of furnishing accounting and auditing services, as between Architect and Owner, should be borne by the Owner. It is not within the ordinary contemplation of Owner or Architect that such services be furnished by the Architect—and no compensation therefore is provided. It is in the interest of the Owner that he obtain the security which periodic audits would furnish him; therefore the expense and cost of such service are properly his. If there is a bonding company which has an interest in proper performance by the Contractor, then that bonding company should share in the expense of a periodic audit.

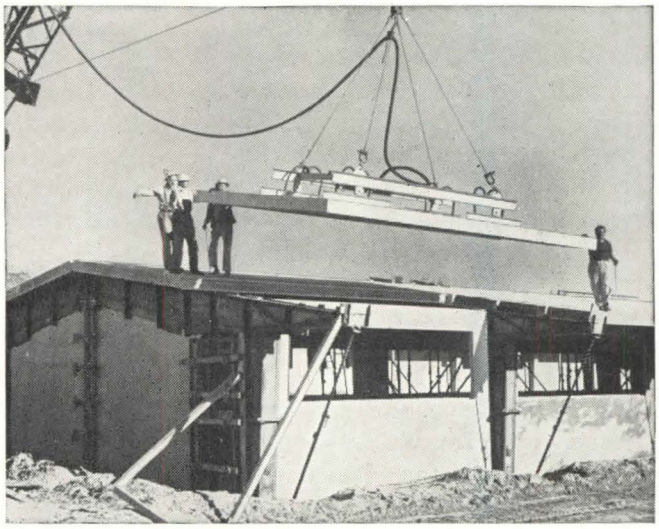
In subsequent columns, I will discuss the answers to questions "3" and "4." B.T.



General view of one of the completed barracks buildings.



Construction view showing wall panels tilted up and braced.



Precast concrete roof slab being lowered into place.

Speed and Economy of *TILT-UP CONSTRUCTION* Demonstrated in Huge Marine Corps Project

Precast, tilt-up concrete construction is giving taxpayers more permanent structures at no extra cost in the Marine Corps Artillery Training Center, Twentynine Palms, Calif. With more than 1½ million sq. ft. of floor area, this is one of the biggest precast concrete construction jobs ever undertaken.

For economy the original appropriation contemplated a type of construction often used for temporary structures. However, cost studies disclosed that durable, sturdy, precast concrete buildings could be constructed for the same appropriation.

Precast, tilt-up concrete construction provided extra values for the same money because it lends itself to simplification of detail, many reuses of a few basic elements and employment of production line methods for fabrication and erection. It offers such additional advantages as firesafety, low maintenance cost, savings in construction time, use of economic materials and fabrication and construction methods equally adaptable to metropolitan centers or to relatively inaccessible areas.

These pluses apply not only to military projects but also to schools, hospitals, commercial and industrial buildings. Fast, economical, precast tilt-up concrete construction is equally adaptable to one story or multistory buildings.

For more information write for free, illustrated literature, distributed only in the U. S. and Canada.

•

Neptune & Gregory, Pasadena, Calif. were architects and engineers for the Twentynine Palms Marine Corps Artillery Training Center. A joint-venture firm, Twaits—Morrison-Knudsen—Macco, was contractor.

PORTLAND CEMENT ASSOCIATION

DEPT. A9-25, 33 WEST GRAND AVENUE, CHICAGO 10, ILLINOIS

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

Vina-Lux®

Showcase Floor that Takes the Spotlight!

Like a veteran trouper, Vina-Lux gives top performance when the spotlight goes on it in this busy TV station. It looks good and *stays* good-looking under all conditions. It takes the tough, harsh abuse of fast changing sets, heavy foot traffic and the punishing rolling loads of cameras and lights. Its lustrous beauty is kept bright with simple, quick mopping—no need for prolonged scrubbing that ties up studio time.

Vina-Lux does all this—performs brilliantly under the spotlight—because it's a "showcase" floor. Because its vinyl-asbestos structure gives it a brilliant, satin-like surface that resists the wearing-in of dirt and grime—a built-in surface sheen that makes waxing unnecessary.

In fact, there's nothing ordinary about Vina-Lux. This versatile flooring has extraordinary flexibility, remarkable resistance to greases, oils, and alkalis, and breath-taking beauty as well. These qualities make it America's leading vinyl-asbestos tile.

On TV station floors . . on shop, factory or home floors . . on any floor, Vina-Lux will do a better job. Find out why—send today for a copy of the new Vina-Lux catalog complete with color charts and helpful data.

UVALDE ROCK ASPHALT CO.

FROST BANK BUILDING • SAN ANTONIO, TEXAS

Makers of AZROCK • AZPHLEX • VINA-LUX • DURACO

AZROCK FLOORING PRODUCTS

"Azrock Makes Fine Floors"

Take this tip from plumbing contractors who know their business!

BRIGGS Beautyware

Plumbing contractors and wholesalers in ever-growing numbers are exhibiting this spectacular Briggs Beautyware display. It is only one of the many merchandising and sales aids that Briggs makes available to the trade.

NATIONAL HOME WEEK · SEPTEMBER 20-27 ·

Briggs Beautyware *sells!* This glamorous plumbing ware sells itself—sells new homes that feature it—and sells the reputations of the men who specify and install it!

That's why so many alert plumbing contractors are displaying complete sets of Briggs Beautyware bathroom fixtures in their business places. They know that Briggs Beautyware sells *on sight* because of its distinctive modern styling—its graceful, eye-pleasing contours—its handsome pastel colors.

Most important of all, when folks buy Briggs fixtures or Briggs-equipped homes, *they know they're getting something special.* More and more, they're asking for Briggs Beautyware by name. There's a sales-making place for Briggs Beautyware in the plans of every architect, builder and plumbing contractor in the home field. It will pay *you* to specify and install Briggs Beautyware *in every home!*

BRIGGS MANUFACTURING COMPANY · 3001 MILLER AVENUE · DETROIT 11, MICHIGAN