Summary

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Recent Developments in the High Rise Office Building by Bruce Graham (pages 118—123)

An architectural development has to be measured in terms of the technology within which it exists. The primary architectural concept of articulation of perceptive space must be related to the palette available. This palette is composed of geology, climate and technological level. Assuming, then, fixed conditions of geology and climate, a brief examination of both technology and function is in order, although these two have a direct influence upon one another. Modern industry is based on specialization and machine production, giving us a hitherto unparalleled capacity to produce. This accelerated activity is demanding new avenues of approach to our building problems. All the parts of a building must eventually succumb to the effects of modern production. Architects have become aware of their dependence on the work of a great variety of specialists. The skins of our buildings can now take on an entirely new character. The old masonry wall, assembled and built on the site, is being replaced by light, shop-built panels set up in large sections with cranes and lifting apparatus. In turn, these walls have brought a greater awareness of joints, materials, upkeep, structure, humidity, heat and many other aspects to which not long ago we paid but scant attention. On the mechanical side, we are still in the opening phase of air-conditioning. This technique, giving even temperatures throughout the interiors of buildings, has made it possible to have greater floor spaces and made it unnecessary to pierce our walls with windows. However, the knowledge of our capacity to temper air has increased the demand for more and more delicate control devices: functional demand grows out of the ability to provide. The activities within a corporation today entail a tremendous quantity of electric and electronic equipment designed to enable the office worker to perform at the capacity of the man behind a punch press and to enable a small force of accountants to keep pace with a large industrial machine. Executives are equipped with communication equipment permitting contact with the vast world within which they operate. Furthermore, these activities are in a state of constant change owing to the tremendous growth and diversity of our industry. In all our buildings, then, partitions must be flexible, floors must be equipped with movable electric, telephone and telegraph wires. Organic architecture which expresses the true spirit of our age must master all these requirements and the form will emerge, not as the result of an independent search for form as such, but as an inherent part of our total nature. After considerable study of function for the Inland Steel Company Building, it became apparent that an unencumbered space, which was completely flexible, was required. The steel structure was resolved into a series of seven rigid frames whose vertical members are totally outside the space. Furthermore, all the necessary services are removed from the office areas, being concentrated in a compact service tower. The exterior wall in this building is a tight glass wall, floor to ceiling in the office area, with a stainless steel skin over the fireproofing on the structure. The service tower, a totally opaque space, is enclosed with prefabricated concrete panels about five feet wide and thirteen feet high poured into stainless steel pans, containing insulation and interior finish brought to the site and erected with hoisting equipment. The building is subdivided into modules, 5′ 2″ x 5′ x 2″. All these units are unencumbered by columns, ducts or pipes so that all subdivision units are exactly alike. The perimeter modules contain air conditioning outlets. The interior spaces contain outlets and exhausts. In this manner, office moves can be made with a minimum of alterations. The provision of parking facilities around a modern office building is a necessity. The parking area at the Inland Steel Building is housed in the first basement, facilities for servicing being included. The office building design for the Warren Petroleum Corporation differs primarily owing to the nature of the site, the climate and social characteristics of the city. Nevertheless, all services were again concentrated in a central service core, which contains all the utilities of the Inland Steel service tower. The working area is disposed around the perimeter of the service core. This space so laid out creates an area again unencumbered by other elements. In New York, Skidmore, Owings & Merrill is building a gigantic skyscraper sixty stories high, the Chase Manhattan Bank. This building has characteristics of both the first two outlined here. The service area is disposed along the center space with a perimeter composed of free space. The structure is placed either at the exterior of the space or within the core. Repetitive floors are located at maximum economic distances from the sources of air fans and equipment. This pattern is expressed on the exterior of the building. Vertical transportation in this building occupies a great portion of the floor area. In this field, elevators are quickly approaching the maximum of capacity based on cable extension. New systems are required and are being developed. Air-conditioning is becoming more and more highly elaborated, and even the basic principle will be examined to simplify the cooling and purifying of air, for the systems used today are encumbered by piping and duct work requiring expensive labor on the construction site and occupying a large percentage of the volume. Fluorescent tubes and luminous ceilings, as in the Warren Petroleum Building, represent the highest stage in the development of lighting. This element is now undergoing intensive study at the laboratories of lighting companies. We are on the threshold of new developments in illumination, which will require less wiring and less power. There are countless techniques in use today which have yet to contribute to architectural design. Despite all these developments within the individual building, the most difficult problem ahead is the relationship of the office building to the many other activities of the city-dweller. The siting and interrelationship of high rise office buildings have not benefited either from the widespread ideas on city planning or from the technology which can render possible an organic city.

The Academic Area. Development of the Master Plan by Walter Netsch (pages 124—128)

The Air Force Academy in Colorado Springs, Colorado required an integration of regional planning, master planning, site planning and building design, all these compounded in a project which is composed of a specialized college campus for 2640 cadets, a town and community center for 8000 people, a service or housekeeping area and an airfield complex. It is located in the foothills of the Rocky Mountains, a region of magnificent scenery and a popular vacation area. The site proper of 17,500 acres is divided into five main valleys. The ground is split up into fingers, as it were, extending east from the Rampert Range, forming the great backdrop to the west. The correlation of the properties of the site and the building program with the regional patterns anticipates the possible lines of growth, and determined the preliminary planning procedure. Regional planning studies within a fifty-mile radius were carried out on land utilization, zoning, transportation, population growth, etc. along with a geological study and slope analysis of the site. The interrelation of the three basic areas—academic, housing and service-airfield—required an internal road network connecting these units radiating from the housing area. This road net was internally separated from the loop or perimeter road which provides the general public with a view of the site without intruding into the normal traffic pattern. The Academy dominates the site occupying a mesa for the campus, the valley to the north being utilized for athletic fields and the valley to the south for golf courses, forming a green belt between the Academy and the community. The town site occupies the two southern valleys divided into two neighbourhoods, each supporting an elementary school. The community center, occupying the mesa between the valleys, dominates the housing area. The housing pattern follows a specially developed cluster pattern providing off street parking and house siting. The community center provides the shopping, recreational and religious facilities. The service or housekeeping area is located in the southwest portion of the site. The north or main entrance to the Academy commands a view of the campus and includes the bus, rail and information center. The location of the stadium permits the orderly influx of cars for football games without interfering with the normal traffic patterns or the need for over-designing the major road net for the intermittent periods of peak use. The remaining structures follow the general land utilization pattern established by the basic areas. As the national character of the project was recognized, the Secretary of the Air Force appointed a group of architectural advisors as his consultants augmented by the Air Force Academy Construction Staff and the Academy faculty. The initial planning phase began in August 1954, ending with the elaboration of the architectural concept in June 1955. Detail refinement and development commenced at this time so that at the present time, roads, utilities and grading are under construction and the Service Area buildings, the Cadet Quarters and Academic Building are ready for construction bidding. The overlapping of design and construction schedules is a consequent procedure in scale with the project.
The site on a sloping mesa makes possible the articulation of levels and also provides a three-dimensional terrace to contrast with the architectural character of the buildings. The Cadet Quarters are the focal point of cadet activities, with access to all parts of the campus. The cadets can march by ramps to the Parade Ground east of the campus. The Social Hall, Administration Building and Chapel, west of the intermediate campus, are on a large Court of Honor overlooking the Cadet campus. The quadrangular form of the Cadet Quarters provides the necessary mass to the essentially narrow volumes of a dormitory unit. Terraced site plan permits the campus entrance to be placed at the middle level which is an open colonnade permitting easy mass movement as well as minimum vertical travel. This circulation pattern is utilized by the Academic Building and Library with auditoriums at open campus level and general classrooms two flights up and laboratory classrooms one flight down. Dining Hall is a 280′ clear span structure seating 3000 at one time. The Physical Education Building is located midway between the campus and the open playing fields. Smaller fields are also on the midway level. Interrelation of building and site, interrelation of building details, material selection, etc. necessitated the use of full scale mock-ups at the site to provide adequate visualization. A separate research and materials group was established to interview manufacturers and pursue specific research projects for the entire planning staff as well as develop the mock-ups on the site.

A Housing Problem (pages 129—130)

In determining the size of a community or neighbourhood area, the classic measure of walking distance from the furthermost house to the elementary school was taken; the school along with a shopping center and apartment buildings form the core of the unit. This core is redolent of the town square so common in the Midwest and the South. The core is ringed by a group of court and row houses. Outermost ring an individually developed section, where architectural control stops. The court house is the solution to the modern motorized family's problem of finding a low-cost house with uninterrupted lawn area and proximity to garages.

The Heinz Vinegar Plant and Warehouse, Pittsburgh, Pennsylvania (pages 131—133)

The warehouse is a windowless reinforced-concrete structure, designed to carry 750 pounds live load.
The Vinegar Plant is an all-glass enclosed building. The industrial type aluminum windows were manufactured right in Pittsburgh and are designed to resist weather from the outside and vinegar fumes from the inside. The glass is blue when seen from the exterior but emits a white light to the inside. The elevation is rich in color and materials. The steel columns and beams are not visible but are expressed in the elevation as a strong black grid of steel channels. The design, as a whole, is as assymetrical as both the requirements and location dictate.

The lecture Auditorium Building, Monterey, California (pages 134—135)

This building is one of a complex formed by the United States Post-Graduate Naval Training School in Monterey. The auditorium, with a seating capacity of 1200, is depressed below ground level. Roof structure of pre-cast concrete trusses resting only on four cross-shaped supports. Provided with glass walls, double-glazed for sound insulation. These buildings harmonize with the California landscape, and have overhangs and covered walkways. The auditorium space is not one single cube but is built up of several integrated structures.

The Gunner's Mate School, Great Lakes, Illinois (pages 136—137)

This building consists of a three-storey reinforced core within a large volume enveloped by a one-storey glass shell. The outer space is designed so that heavy weapons can be moved around by cranes. Concrete core contains air-conditioned and artificially lighted classrooms. Shell and roof have an exposed steel structure; glass is blue, heat and glare-resistant, opaque and its light casts no shadows. Bank-operated windows. This building is a pure spatial concept, each element being free and carefully articulated. The structure is not visible from outside, but expression is given to the independence of the skin as a tight envelope. The building reveals all the self-evidence of industrial construction, while the plan has almost the formality and symmetry of a Renaissance palace.

Kimberly-Clark Corporation, Neenah-Menasha, Wisconsin (pages 138—140)

These buildings contain all the general and executive offices for the Kimberly-Clark Corporation. Site: on Little Lake des Mortes at Neenah-Menasha, Wisconsin. Organization: three elements: two stories on stilts for executive offices, one storey and basement for general offices and a cafeteria building in one storey. Buildings designed to house 900. Structure: exposed steel frame, painted black. Structural scheme expressed as 5′ wide panels of either pre-cast concrete or glass, which run uninterrupted from floor to ceiling. Whole building laid on a 5′ module. South Building: large office space with two courtyards to give light and scale to work area, which is 500′ long and 150′ wide. Air conditioning system for both North and South Buildings is distributed through the steel deck to perimeter outlets under the glass. North Building: on lower level, distinguished by retaining wall of local stone. Lobby for visitors and parking area. Cafeteria building was conceived as clear span facing the lake, measures 60 x 100. Also air-conditioned. All buildings interconnected by passageways.

The Development of a Design by Paffard Clay (pages 141—142)

One person is entrusted with the elaboration of a design through all its stages. The project designer, the project manager and the client are all present at the earliest meetings, and a program is drawn up on sheets in book form. This program is useful in giving a bird's-eye view of the entire problem, before beginning on any architectural concept. The architectural design evolves much as a building is built: first comes the structure, conceived so as to impose as few limitations as possible on the functional lay-out. The sketch model (6 opposite) was made in the design department to study the relations of the building to its site. This is followed by a later model (8) revealing the actual form of construction. At this stage a great number of design sketches are made; they are studies in space, and they are drawn as the building is built, structure first. Alternate systems for detailing of the skin are drawn up for the same framework. These drawings, made on sketch paper, are for the designer's own use and are not intended to be shown to the client, but they give us a close insight into the way a design is conceived.