

Contrasts in Concrete

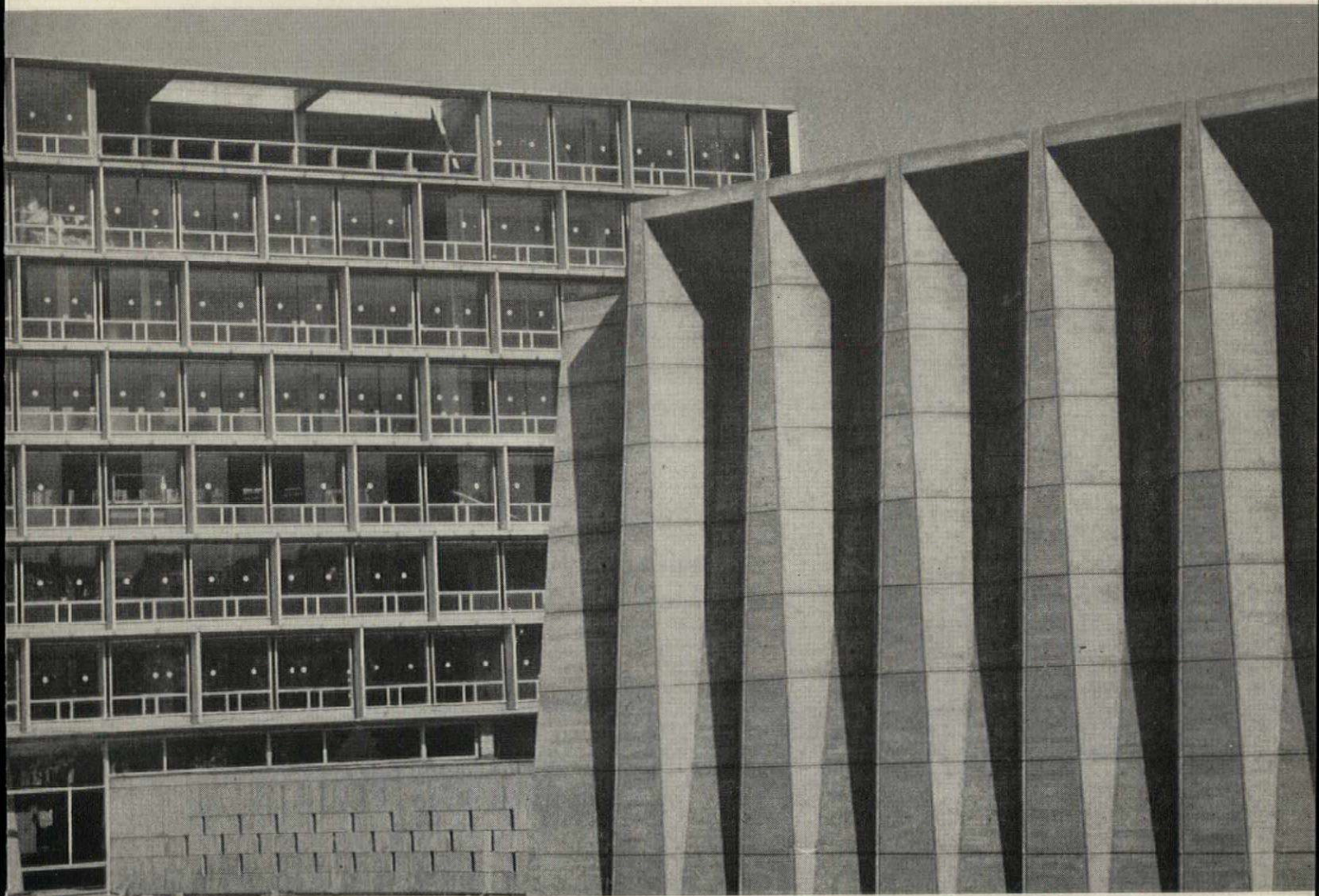
Unesco Headquarters, Paris

Marcel Breuer, Architect

Bernard Zehrfuss, Architect

Pier Luigi Nervi, Engineer

The architecture of concrete permits the development of new structural forms which become an integral part of a building. It is therefore essential to the achievement of results structurally correct and architecturally pleasing that the engineer and the architect collaborate from the very beginning on the development of the project. It becomes also of the utmost importance to consult with the contractor before any final decisions are made, since a concrete work is not assembled by bits of material prefabricated in a factory [except for precasting which is in-



Text by Mario G. Salvadori

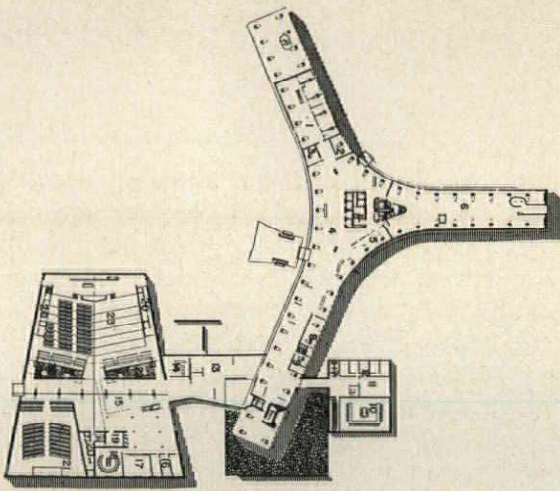
Renderings by Orseo Tamburi

Photos by Marc Riboud — Magnum

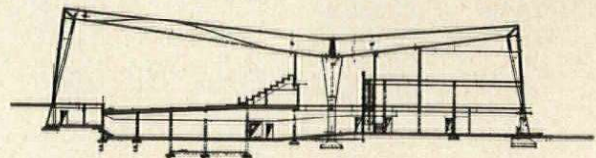
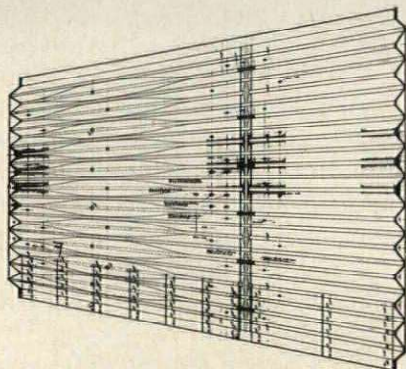
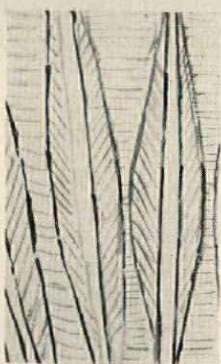
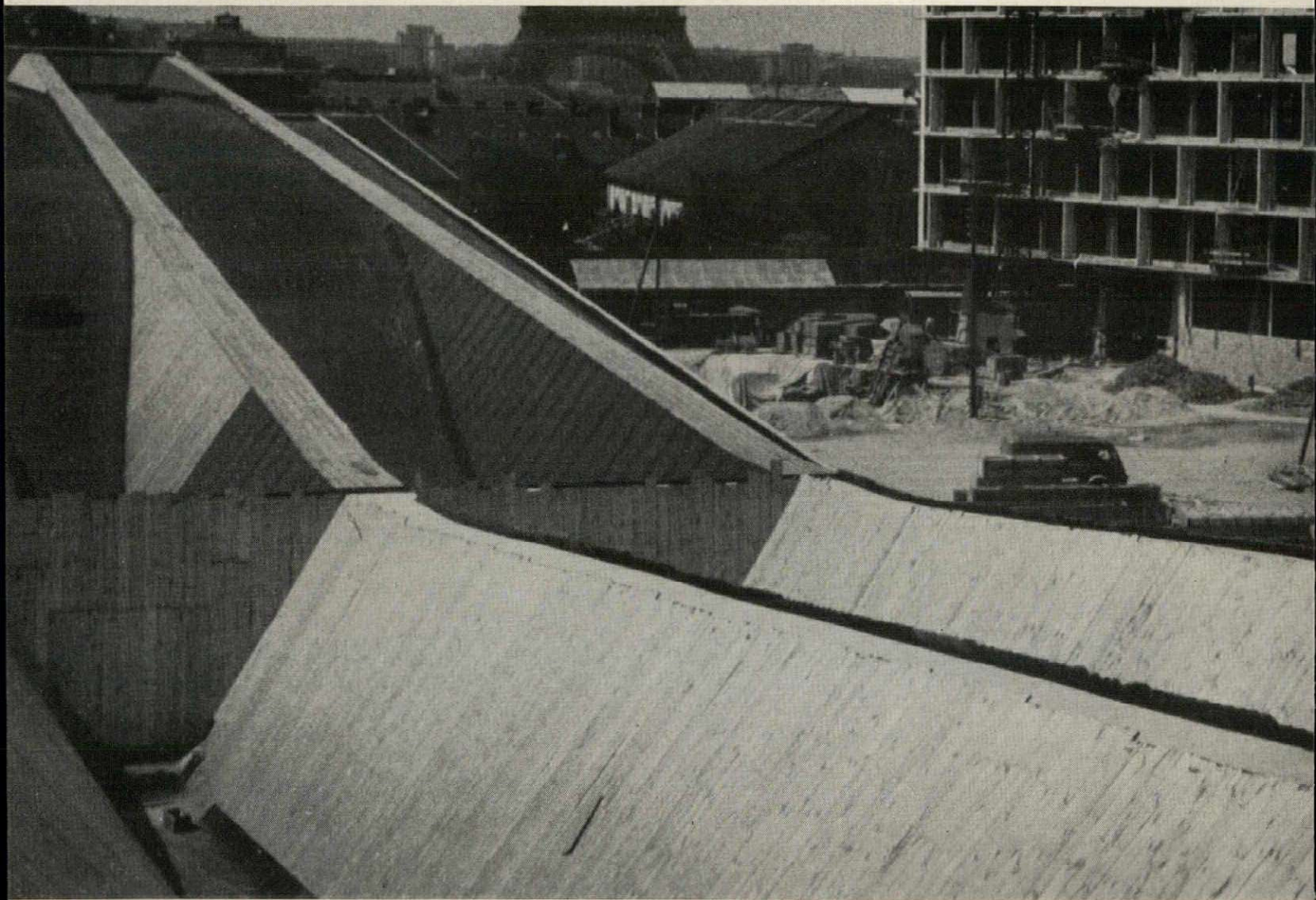
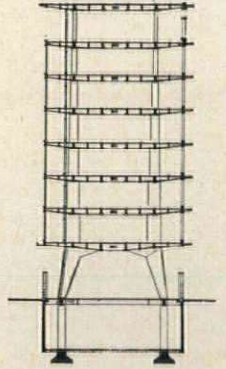
creasing in popularity], but is molded into a unique structure by methods of construction that may influence its economy and its appearance.

When an outstanding architect like Marcel Breuer gets together with an outstanding engineer like Pier Luigi Nervi on a set of buildings like the ones for UNESCO in Paris, the results are bound to be extraordinary. (See also *AR* April 1955, pp. 217-224.)

I saw these buildings nearing completion in September of 1957, and I was deeply impressed by the architecture and engineering designs as well as by the execution of the project.



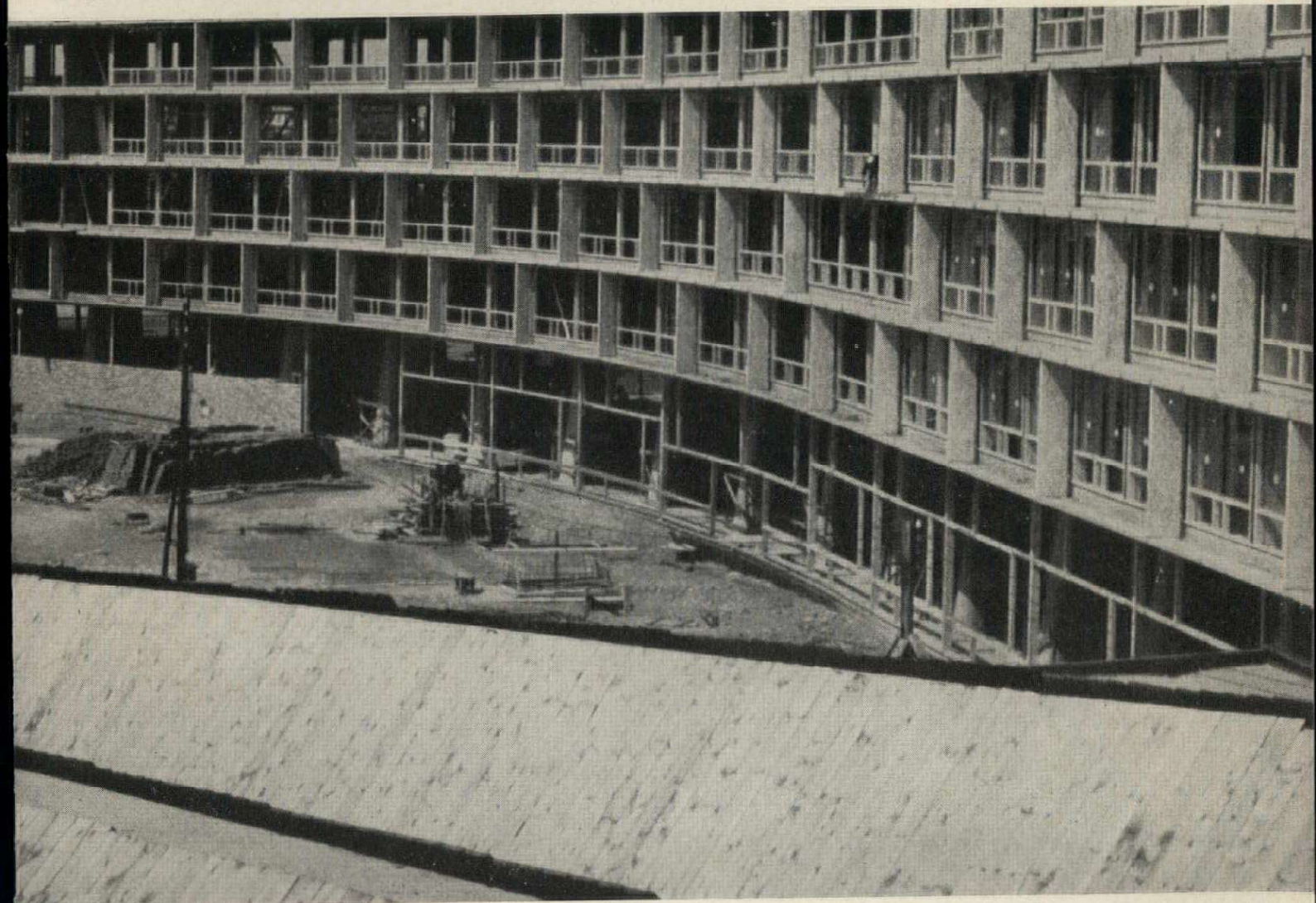
The two main elements of Unesco headquarters are the eight-story, Y-shaped Secretariat, and the folded slab Conference and Assembly building, tied together by a Main Lobby link. Roof of Conference-Assembly building has interior support of columns at point which divides Main Assembly room from smaller committee room and Lounges. Horizontal stiffener between folds of roof over Main Assembly room—a structural design requirement—gives unique and exciting pattern in the ceiling (see drawing below)



The two main buildings for UNESCO are the Y-shaped Secretariat and the Conference-Assembly building. Their characteristics are structurally different: the first is entirely open and shows its structure through its outer glass walls; the second is entirely enclosed with a few openings for some of the smaller offices. The office building is a skeleton of concrete consisting essentially of columns going all the way up to the eighth floor and carrying the horizontal slabs for the floor. The ground floor is entirely open and the columns here take the form of

Another canopy on the second leg of the Y is a flat slab supported on three columns with ribs oriented along the lines of principal moments, a well-known design suggested by Arcangeli to Nervi, which does not seem entirely justified in this context.

The Conference-Assembly Building is an extraordinary and imposing structure which looms larger than its size would suggest. It consists of a solid corrugated front wall which folds at the top to become a slanting roof. The roof slopes down to a set



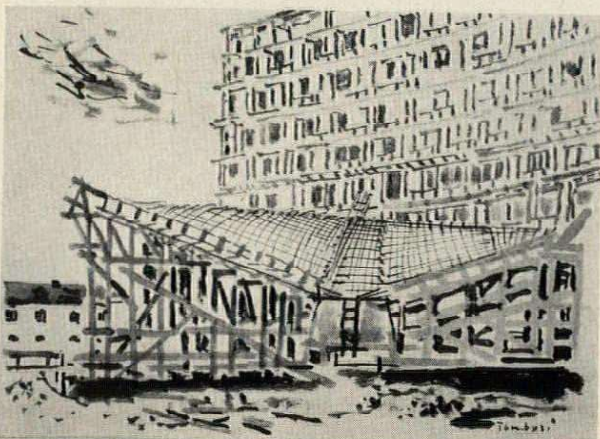
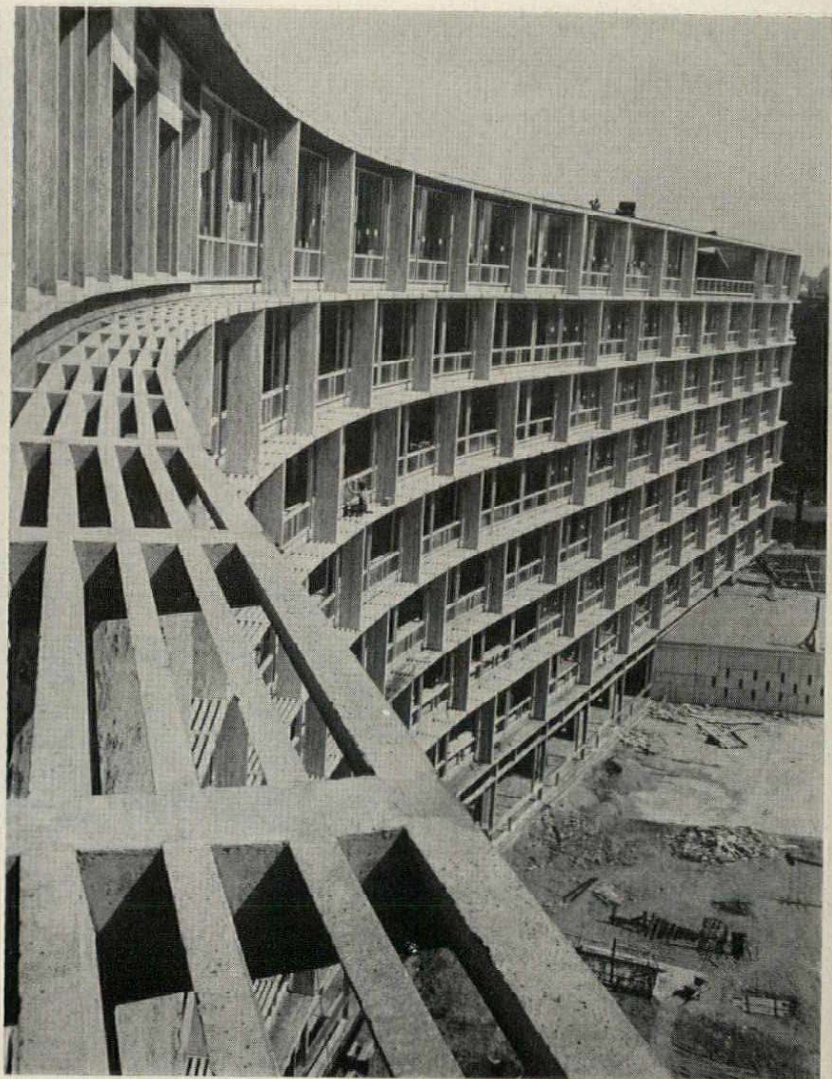
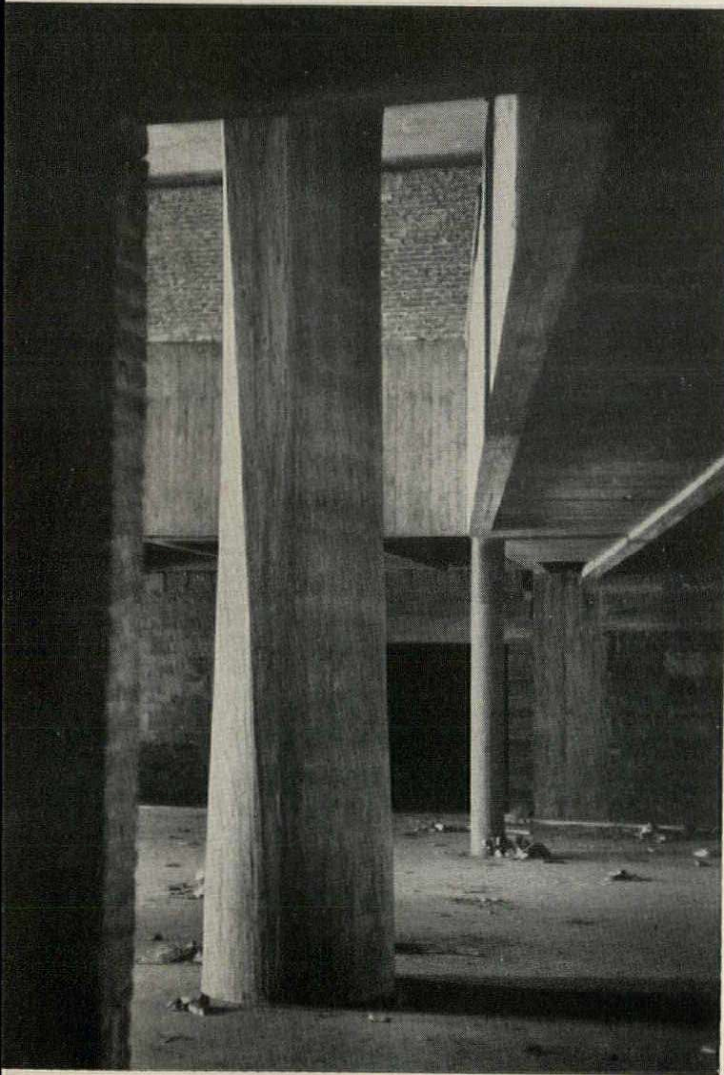
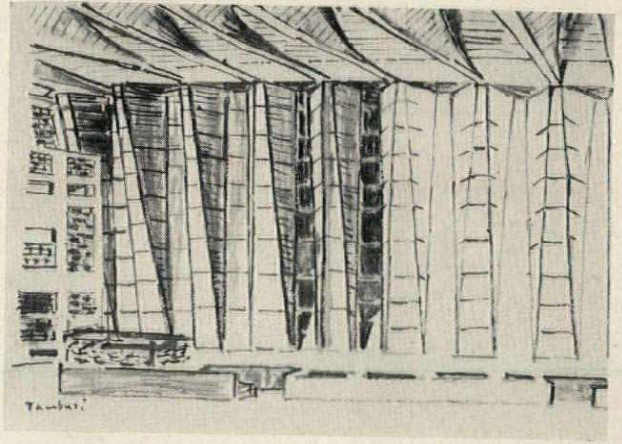
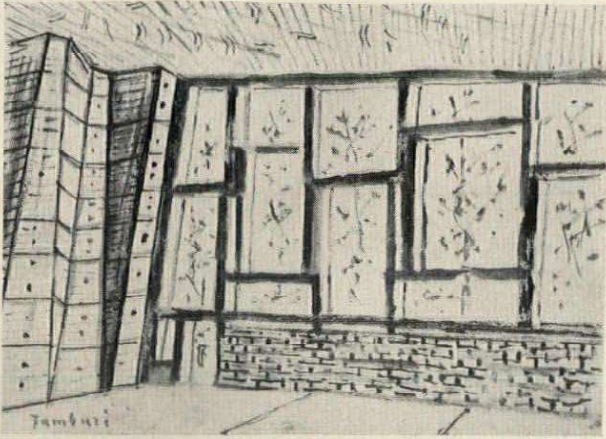
gallows. The building is serviced by elevators, but has also three lovely staircases which unfortunately cannot be too well seen in the finished building.

The pattern of concrete frames, while modular, still freely forms the three facades of the building by not presenting continuous vertical lines anywhere. The glass is shaded by concrete eyebrows which jut out of the wall, and give plastic relief to the outer walls in connection with the vertical legs of the frames.

The main canopy consists of two abutting conoids of great elegance and lightness.

of columns and rises again to the top of the back wall. The structure is monolithic and gives a feeling of tremendous strength and lightness. I consider this particular structure one of the masterpieces of the concrete age. The folded roof is covered with copper and is strengthened by a slab positioned according to the requirements of strength. The corrugated front wall and roof give a plastic definition of space to the assembly hall which is entirely new in concept, completely correct structurally and extremely exciting visually.

The lowest point of the roof is supported by



Top: Conference-Assembly building has folded walls to support its folded roof at the ends. Both show visually in the Main Assembly room. One section of a side wall has staggered concrete framing, serving both as structure and fenestration, giving a playful contrast to the more monumental end wall. Left and below: Large canopy to Secretariat is two abutting conoids; small one is flat, ribbed slab

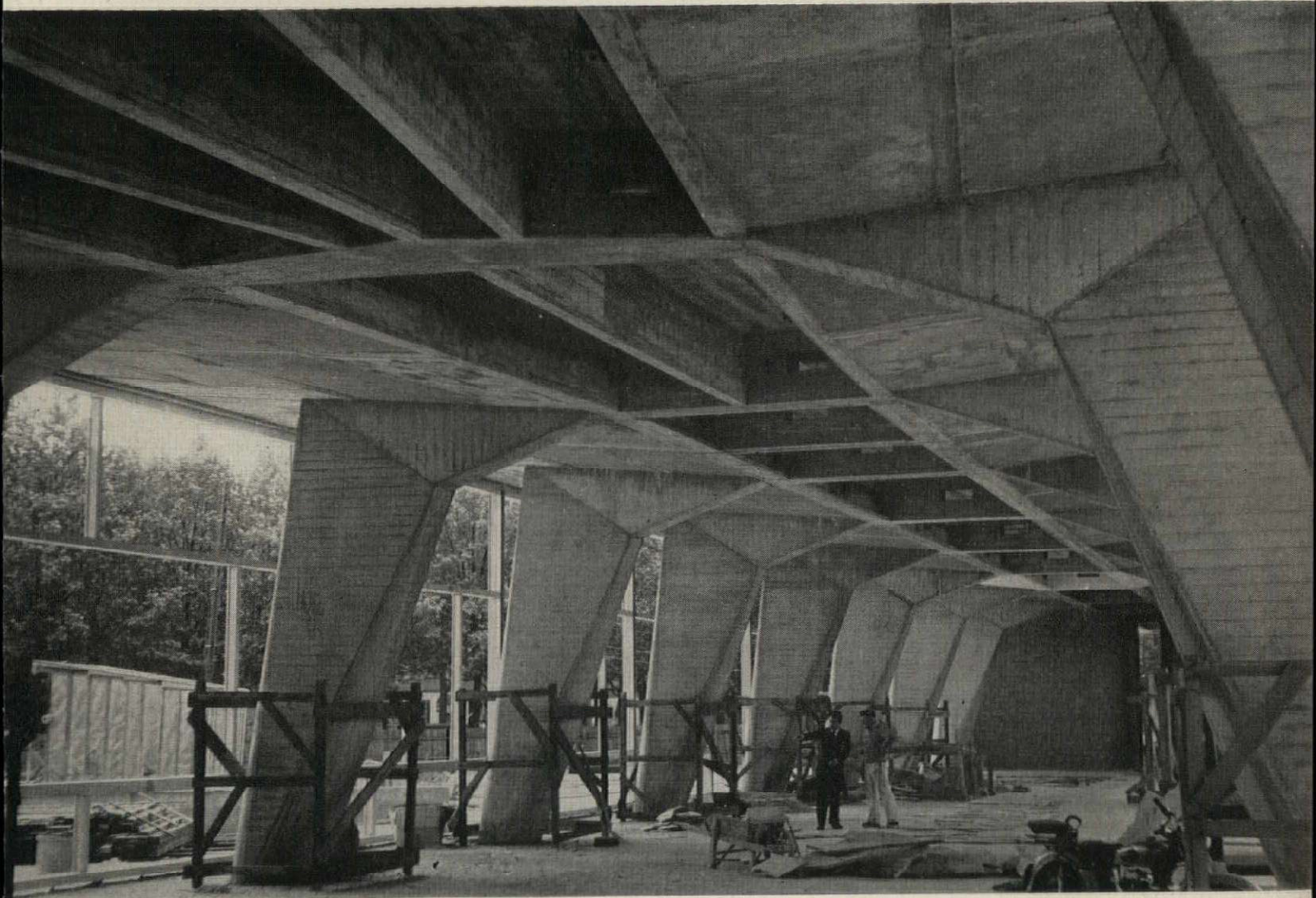


columns which have an elliptic cross-section at the bottom and a rectangular cross-section at the top. This extraordinary shape is enhanced by the wooden forms into which columns were poured. The forms were lined with parket wood and the stripes in the concrete have the marking of the wood. The same visual effect was obtained in the gallows supporting the office building, in which the stripes run vertically on the cantilever, horizontally on the sides and longitudinally on the curved portions of the columns. These naked surfaces are also used on the outer and

crete showing imprints of the form wood giving, paradoxically, a feeling of massiveness and lightness at the same time.

In the same area the parapet of the staircase is a solid concrete wall, but it is recessed by two inches at the floor level and seems to be floating in mid-air.

Because of the tremendous concern for detail on the part of the architects Breur and Zehrfluss and of the gradiosity in conception of the entire project, the UNESCO buildings in Paris are one of the landmarks of concrete construction in Europe today. Never be-



inner walls of the assembly hall whose horizontal and vertical indentations are sharp and clean, although left untouched as they come out of the forms.

It would be impossible to mention the many careful details which enhance the beauty of the buildings. For example, the imaginative use of concrete framing on the side walls of the assembly hall produces a Mondrian-like effect from the inside, which contrasts sharply with the light massiveness of the front and back walls. The back portion of the Conference-Assembly building is subdivided into smaller halls and offices, and here again entire walls of naked con-

fore has the human eye looked at these logically shaped structures. But, the theoretical concepts developed by architect and engineer could have been completely ruined by slipshod execution.

While it is nigh impossible to learn a lesson from structural and architectural geniuses, it is always possible to learn a lesson from a built structure. We in the United States should look at the UNESCO as one of the extraordinary achievements of our technical age and should strive hard to obtain wholehearted collaboration of proud contractors to transform our dreams into solid reality.