# Summary

Programme

Salle avec 1200 places avec podium d'orchestre pour 150 musiciens et 150 chanteurs servant

a) à des émissions de l'orchestre de la rédiffusion

b) comme salle de concert de cet orchestre ainsi que pour d'autres manifestations de la ville de Hanovre.

c) comme salle pour des projections de télévision simples. Vestiaires, WC, entrées pour artistes et public, locaux de régie, du son, techniques, climatisation, électricité, salles de répétition, salle pour accorder les instruments, bureaux, équipement du buffet.

Les locaux techniques et les annexes sont disposés comme agrandissement de la première étape. La salle de concert, dont les dimensions ne s'intègrent pas au module général est traitée comme un corps isolé, surmontant les volumes bas, et formant un accent plastique final de l'ensemble.

Ce volume avec son sol et sa couverture inclinés, et son plan hexagonal a un grand porte-à-faux vers le lac. Les revêtements des parois sont en alu émaillé, le socle, en retrait est entièrement vitré. Le grand auvent marque l'entrée principale.

Construction

Squelette en acier tridimensionnel, s'appuyant sur des murs en béton armé au fond, sur une rangée de colonnes au centre et sur deux pylones à l'avant. Hauteur des sommiers des planchers: 80 cm, hauteur des sommiers de la couverture: 2 à 3 m (40 m de portée). Epaisseur des murs: 90 cm, composés de tôles émaillées, de panneaux en béton armé (9,5 cm) et d'un revêtement en bois intérieur très plastique pour absorber le son.

Couverture: 2 couches de béton à injection, laine de pierre, dalles en laine de pierre comprimée, panneaux en bois aggloméré, multicouche et gravier. Faux-plafond: tôle émaillées blanches perforées, éclairages et rampes d'accès. Plancher de la salle: plaques en plâtre Rigi, dalles creuses en béton armé, gradins préfabriqués pour recevoir les rangs des sièges. Toute l'enveloppe est flottante (par ressorts ou par liège).

Pour respecter le crédit limite à disposition, ainsi que les lois de construction le volume de la salle devait rester aussi bas que possible, malgré les désavantages acoustiques que cela impliquait et qui se résolvaient par le fait de concevoir un faux-plafond optiquement fermé et acoustiquement perméable.

Matériaux

Plafonds: plaques en tôle acoustiques blanches, sols en basalte noir, portes d'entrée, et escaliers en marbre blanc, portes de la salle en alu, vanteaux de la porte d'entrée en acier travaillé (œuvre du sculpteur Fritz Kühn, Berlin). Murs de la salle: bois sombre de mansonia, sol en lino gris; podium et fond en chêne noir; éclairage de Philips, meubles de Löffler et Knoll Int; chauffage et climatisation à distance.

Cette salle d'au maximum 1350 places (orchestre sans chanteurs) aurait nécessité un foyer d'au moins 1500 $m^2$ Actuellement, les cours intérieurs et la terrasse au-dessus de l'entrée peuvent être utilisés par beau temps; or, comme agrandissement éventuel, les architectes prévoient de perfectionner le passage couvert menant aux entrées secondaires depuis les parkings pour permettre au public d'accéder à un pavillon donnant sur le parc et le lac qui servira de fumoir et de bar à l'entre-acte.

Coût de la construction: 8 600 000 DM (226.– DM/$m^3$).

Collaborateurs

Projet: Beier, ing. dipl; Klevenhusen, ing. dipl.; Gerhards, ing. dipl.

Chantier: Below, ing. civil, Schwerdt, ing. civil.

Calculs statiques: Kohlhaas, ing. dipl.; Pfannmüller, ing. conseil.

Etudes du sol: Streck, prof.; Giese, dr. ing.

Chauffage et climatisation: Obering. Scheer, Stuttgart.

Acoustique: Kuhl, dr. ing.; institut des techniques de rédiffusion, Hambourg.

## Summary

Harrel + Hamilton, Tulsa

**Tower Apartment House with 2300 Flats at Riverside, Tulsa, Oklahoma**

(page 450–453)

Site:

Slope leading down to the Arkansas River allowing for easy access on basement level to cars and a side entrance in addition to a main entrance on the ground floor at grade level.

Programme:

Basement: garages, technical installations.

Ground floor: entrance with hall for reception, caretaker's office, flats for guests.

Upper floors: flats, those on north face unfortunately not getting any sun owing to due north orientation of building.

The lifts, as well as the baths and the kitchens of the small flats, are located on the inside; the bedrooms on the outside all have a kind of balcony constituting a loggia.

Areas and rentals of the flats:

flat with 1 bedroom, number: 21, area: 1170 sq. ft., monthly rental: 300/375. Flats with 2 bedrooms, number: 40, area: 2334 sq. ft., monthly rental: 500/575. Flats with 3 bedrooms, number: 20, area: 2924 sq. ft., monthly rental: 700/1000. Guest flats, number: 6.

Average size of rooms:

| | |
|---|---|
| living | 16/23' |
| bedroom | 12/16' |
| height: | 8'9" |

Construction:

Skeleton of reinforced concrete, foundations on rock, decks composed of hollow tubes of fibre serving as ventilation ducts and diminishing weight. The solid concrete core provides reinforcement against wind, this likewise being provided by 4 walls disposed symmetrically in L formation.

Technical installations: hot water distribution via three pipe systems. Hot air circulation via ceiling vents.

Harry Seidler, Sydney

**Blue Point Apartment Tower by the Harbour of Sydney**

(page 454–457)

By the harbour of Sydney on a promontory very close to a high bridge there is a 25-floor apartment tower. In the partially recessed ground floor there are, in addition to the circulation areas, 4 shops. On the residence levels the architect has repeated the plans every two floors, creating very lively façade effects. One-, two- and three-room apartments, 7 per floor, are sited around a lift and stairway core. The plan is 45° off cardinal directions; in this way north orientations are avoided.

Construction:

4 corner pillars with L-shaped plan and in each face 3 reinforcing slabs constitute the supporting framework of the building along with the core of reinforced concrete.

Alvar Aalto, Helsinki

**22-floor Apartment Tower with South-west Apartments**

(page 458–460)

In contrast to the high-rise apartment houses shown in this Issue, on round or square plans, we are publishing here a unique project: The 22-floor apartment house by Alvar Aalto in the New Vahr in Bremen.

Prior conditions posed: maximum sunlight and privacy.

Site:

Peripheral district of Bremen: New Vahr.

Programme:

Studio flats with kitchenette, one-room and one-and-a-half-room.

Design:

Freedom of design, structured plastic faces, subtle volumetric effects (cf.: Wolfsburg center, B+W 2/63 as well as most of the projects by Aalto).

Construction:

Reinforced concrete; façade facing of natural stone; interior walls: reinforced concrete core with plaster; floors: in living-rooms and kitchenettes: thermoplastic tiles, in bathrooms and WC's: ceramic tiles; windows of rare woods; door frames of steel; remote heating system.

Bertrand Goldberg, Chicago

**Tower Apartment House Marina City in Chicago**

(page 461–462)

Just as Darwin took the history of man out of the Bible and made a science of it, so the 19th century took town-planning and turned it from an art into a science.

The ideas of production and population form the basis of our researches and we have just as much need of Marxism as of modern psychology. An attempt has been made to derive rules for man, as is done for traffic, for instance.

Le Corbusier, a pioneer of scientific town-planning, judged in 1925 that the large city was such a complicated piece of machinery that its proper functioning necessitated a very strict organization. Mies van der Rohe relied on rational considerations and Hilbersheimer on economic realities when they worked on town-planning schemes.

Thus the 19th century reduced man to scientific symbols.

Now then, the 20th century is interested in movement, space, health and nature.

Movement has to do with new means of transport and the corresponding problems arising for town-planning; space is expressed in the care devoted to the three dimensions (irregular squares, plasticity in a street through the interplay of volumes, open perspectives, large green zones as breathing vents of densely populated districts). Public health considerations are an integral part of town-planning programmes. The natural landscape has a specific place in the context of any over-all plan («cités radieuses» of Le Corbusier). This situation called forth a new movement: "anti-planning", which reacted against the "standard package" for the "standard man". This new attitude put the main emphasis on man, on the family, on health and on a human cultural environment. The city possesses a very strong kinetic attraction. People assemble there in masses, because they find there an intellectually stimulating atmosphere (50% of them being young people returning to the city from the country, where their parents had sought repose).

The city as "machine to work in" cannot survive economically in the long run (e. g.: Park Avenue, where apartment houses are vanishing, because a square meter of office area can be rented for nearly 3 times what a square meter of residence area brings in).

The result of these business speculations is a daytime population, which is very dense, calling for sizeable equipment to handle it in the shape of public transport, sewers, water supply, etc., soon to be used effectively only 30 hours per week. The reduction of working hours implies two phenomena: more leisure for everyone, unproductive existence of highly specialized commercial and industrial districts of cities; Park Avenue during half the week will look like Wall Street on Sunday.

This artificial separation, ever higher taxes and expenditures without any profit to show for them, inherent in a system like this, will soon lead to regulation similar to that covering motor traffic: for each office building, it will be necessary to build a certain number of housing accommodations.

A balanced mixture of production, leisure activities and cultural facilities will become necessary, not only because it is more desirable per se, but because it will be economically viable. Marina City is an attempt to synthesize all these points of view. Marina City is located in an area bounded by a forest of skyscrapers running from the river to State and Dearborn Streets.

There is no arterial traffic network within the agglomeration: a central square can be used both by cars and by pedestrians.

The 5 high-rise buildings are placed on a platform covering the site in entirety and containing all the community facilities commercial premises, health services, warehouses, reception facilities, restaurant and the "Marina" with 700 boats, where the water extends into the interior of the buildings. Two high-rise buildings of 20 stories are reserved for residence; the office building constitutes a kind of barrier against the north end of the city, which has not yet extended this far.

The theatre establishing the human scale in this texture of paired buildings will be the center of this complex. This city will have its special aspect day and night, summer and winter, which proves that it will be frequented 100%.

From afar it will express the scale of a large concentration (only the high-rise towers will be sensed and the theatre will not be visible) and from close up there will become perceptible many elements that reduce it, as it were, to the human scale (theatre, gardens with sculpture exhibitions, etc.).

Programme, ensuring utilization for 24 hours continuously:

500 residence units

180,000 sq. ft. of office space

recreation (theatre, bowling, swimming-pool, roller skating rinks, etc.)

public health (health club, gymnastic rooms, etc.)

culture (auditorium with seating capacity of 1200 for political meetings, cultural events, etc.).

Construction:

The high-rise buildings are composed of a central core (lifts, stairways, installations) braced against the force of the wind (a round tower offers only 30% as much resistance as a rectangular building of the same dimensions), main structural element; Ø: 18 m. Ø of total building: 34,50 m. Studios: 30%; 2 rooms: 60%; 3 rooms: 10%.

Pace Associates, Chicago

**Building project at Wolf Point, Chicago**

(page 463–464)

Building is constantly going on in the centre of Chicago.

There are various round high-rise projects under way. One of them will be realized in the near future near the big Wolf Point market on the site of an old saloon from the old days. This building will have 80 floors and will be capped by a TV antenna 45 m. high; thus it will be one of the highest buildings in the world.

It will comprise 1300 one-to-four-room flats and will be adjacent to a 320-room hotel.

Circular plan, interior patio, covered, 40 m. in diameter. Here there are two lift towers going up to full height and serving the 80 circular balconies which in turn give access to the apartments. The kitchens and the bathrooms are located on the inside of the ring, the bedrooms and the living-rooms on the outside.

Necessarily some of the flats have a north orientation.

This drawback will be compensated by the large number of common installations (roller-skating rink, covered tennis courts, 4 restaurants on the ground floor, a cinema with seating capacity of 800, shops).

Victor Gruen, New York

**The Regional Shopping Center**

(page 465–470)

This article seeks to illustrate the development of regional shopping centers.

Beginning as purely commercial enterprises, these centers take on cultural importance by the fact that they make available space and facilities for community purposes. Modern methods of transport are permitting cities to expand infinitely. Thus, those who have fled from the old urban centres find themselves hemmed in by ugly suburbs ("cultural deserts"). The dormitory cities, where wives and children get together with their husbands and fathers only on the week-ends, found themselves too far away from the old shopping districts and cultural amenities. Merchants went into business along the connecting traffic arteries and then in the outlying sections, only to find themselves in the end by-passed when the express highways tied in the new suburbs directly with the urban centres.

The final outcome of this development is the regional shopping center, with good connections to the residential districts via fast highways and furnished with big parking fields, making easily accessible shops, recreation facilities and cultural events of all kinds.

We present here as the first example of this development Northland Center, near Detroit (B+W 2/54, 4/56, 8/58), completed in 1954, built for the J. L. Hudson Co. by Victor Gruen Associates. Even now it is one of the most frequented centers, comprising a public auditorium, premises available to various organizations and a large theatre. The pedestrian areas are generously dimensioned, and not, as in many other centers, restricted so that the display windows can be seen from two sides at once. To meet the unsatisfied demand for cultural events in outlying districts, J. L. Hudson Co. set aside a still larger part for community use in their Eastland Center: Purely commercial shows (fashion shows, camping exhibitions, etc.) were rapidly complemented by events taking place evenings or on week-ends (concerts, dances, art shows, etc.).

The first entirely air-conditioned center, closed in on account of the rigorous climate of the region, had been built by Victor Gruen Ass. in 1956 (B+W 8/58). This, the Southdale Center, financed by the Dayton Co., already comprised community facilities such as a covered interior court with children's play area, a miniature zoo, an aviary and rare plants, an open-air café, in short, an all-round community area suitable for dances, concerts, etc.

As these centers became poles of attraction for an entire region (Northland: 500,000 residents), other functions began to be assigned to them (post offices, public authorities, libraries, private schools, offices, doctors' consulting rooms, etc.). Winrock Center in Albuquerque even comprise a hotel. In this way people combine their shopping with other errands and dealers have a wider range of customers.

Having in mind the attractive power exerted by these centers, the builders obtained sites on the outskirts, where they then built housing schemes, office buildings, labs, etc.

At the end of all these enterprises, Victor Gruen Ass. came to assign to plans for new regional shopping centers the function of core for new satellite towns.

These centers, designed for pedestrians, are often surrounded by enormous parking sites, which separate them too much from the adjacent areas. The vicious circle is established: people even in the nearest residential districts use their cars, which demands an ever larger parking area.

Since these centers are assuming the functions of real urban centres, a denser type of construction is required, and it will counter this gangrene that is eating into the countryside. It will be necessary to erect parking silos to reduce walking distances and to furnish adequate public transport. The centers will be accessible on foot to a large number of residents, and they will necessitate less parking area. With generously conceived planning, these centers will be livable, unlike the old centers, which create a stifling effect, although their specific importance, both from a historic and a cultural point of view, remains valid.

To improve and reorganize the old centers, which will preserve the major administrative functions, it would be necessary to start on the basis of the experiences had in the new regional centers. As recent example, we may cite the center that has been reconstructed in Rochester, Midtown Plaza, which separates access roads from pedestrian ways, to which a large area is reserved. 50% of the patrons arrive via public transport (new bus station), 50% in their own cars (200 parking spaces underground), connected directly by lifts.

Thus this development starting from a provisional solution can grow further, to serve finally as a model for the new type of American urban center.

Article taken from the "Technical Bulletin of Producers' Council, Inc." March 1963.

Stäheli & Frehner, St. Gallen

**Neumarkt Shopping Center in St. Gallen**

(page 471–473)

The architectural unity of a city always stems from a strong unified will. The democratic social order is not conducive to planning on a grand scale, for governmental initiatives all too frequently collide with private interests, which are as powerful as the state itself.

The architect interested in town-planning should take a stand without for all that going in for wild speculation and try to unify building lots whose subdivision is purely arbitrary and not at all in keeping with the imperatives of town-planning.

These ideas have led to this project on an area of 2500 sq. meters.

Site:

Traffic focus near the station, central post office, town hall and various banks and insurance companies. As the only shopping center up to now was located in the old town, it was necessary to ensure that the new center would be patronized; the result is a heavy concentration of shops.

Conditions:

Owners generous and interested in a lasting building; local authorities open-minded, good site and unity of conception for the whole complex (same architects from original siting to interior appointments).

Programme:

2 basements, in all, 5000 sq. meters: 80 parking lots, air raid shelters and storage space.

Ground floor: self-service shop with snack bar. First floor: connected by escalators: 12 special shops and first-class restaurant.

Mezzanine: technical installations and children's recreation area.

Construction:

Distance between the supports: 4.50 m. in the office building, 9 m. in the sales areas. Suspension construction on the projections of the high building to get very thin aluminium sections. Basements of reinforced concrete; upper floors: steel construction, faces of glass and aluminium, outside Venetian blinds of aluminium. Complete air-conditioning in sales premises, partial in offices.

Module: 1.48 m.

First floor:

Each shop has 3 to 4 faces entirely glazed.

Conception behind shop design:

In keeping with modern trend toward direct selling, the architects have sought a maximum of contact between the articles on sale and the customers: many show windows and 3 to 4 entirely glazed faces per shop permitting very complete display and free choice starting from the outside.

Architektengemeinschaft Tscharnergut, Bern

**Tscharnergut Shopping Center in Berne**

(page 474–477)

This new project, for 5000 residents, sited on an old property, combines residence and shopping. It comprises shops, a post office, an underground garage for 160 cars, a café, public rooms, a recreation center and a library partly built. All the shop entrances are sheltered and interconnected via covered passageways. On the inside of the center are large flower troughs underneath roof apertures. Delivery to the shops is affected via a blind alley, that to the big cooperative on first basement level. All construction is of reinforced concrete and there is a remote heating system.

Hector Velazquez Moreno, Ramon Terres Martinez, Mexico-City

**Plaza Jacaranda Shopping Center, Mexico-City**

(page 478–479)

The amalgamation of three sites made possible construction on 3000 sq. m. in the center of Mexico-City. The unified site is bounded on three sides by streets, and thus constitutes the head of a block. The architects ran a shopping arcade, at a slightly oblique angle, through the site, with connecting arm to the south-west tying in with main traffic artery.

Shops on three levels (grade level, 1.20 m. below grade level and 1.20 above street level). This arrangement makes for very lively circulation pattern. The general roof structure comprises parking facilities invisible from the street.

Klaus Hendel and Horst Haseloff, Berlin

**Shoe Store on the Kurfürstendamm in Berlin**

(page 480–481)

Renovated 1963

The house originally on the site was renovated in 1928 on the ground and first floors. The commercial premises thus created were used by the firm of Salamander AG; however, in the last few years they have proved to be no longer sufficient to meet the demands of increased business. Therefore Salamander AG decided on a renovation and an extension of its sales rooms. At the same time the necessary technical installations were to be built into the sales rooms and the face, damaged in the war, renewed.

The planning was hampered by the already existing steel construction, the bridging pieces of which could not be related in any way to the subdivisions of the plan, and by the unfortunate proportions of the façade.

The sales premises were made roomy, continuous and clearly integrated with a view to adapting at all times to the ever changing requirements of trade. A differentiated design of the individual departments was deliberately avoided, to leave open the possibility of altering or exchanging them should the need arise. The execution of the ceiling and the lighting fixtures stresses the anonymity of the spatial sequences.

Since the shop is only seven meters deep, it can stand no optical construction, and for this reason the lift and the three-flight stairs are transparent. In cooperation with the firm making the lift, a "glass" hydraulic lift was developed. The transparency of the glazed core helps to further the effect of spaciousness intended.

The faces of the two lower floors were glazed and set in a frame of dark natural stone. In this way the shop was given a main entrance that creates a marked effect of simplicity and dignity.

Eduard del Fabro and Bruno Gerosa, Zurich

**Men's and Boys' Outfitters Shop in St. Gallen**

(page 482–483)

Execution: 1959

A forward-looking concern, with a factory in the Grisons, has had built a modern sales outlet on Marktgasse in St. Gallen. The module is based on the complicated shape of the site as well as on the plan. To allow for sufficient display area, the sales premises are recessed 8 meters from the road. The arrangement of the display windows was the outcome of several experiments, the aim being to invite passers-by to linger and take in the articles on show. The empty space in the middle can be used for temporary displays at Christmas, etc. The rear of this spatial succession consists of a glass-brick wall which invites the customer into ever more lofty volumes, the last comprising a gallery. The effect of spacious calm is achieved by the sparing employment of materials: elmwood, blue floor, plaster ceiling and indirect lighting serve to heighten the subdued fabrics of the men's wear on display. The stairway is handled in a very flexible manner permitting visual contact and an overall view.

Rosenthal Studio B, Selb

**Rosenthal Experimental Studio in Dusseldorf**

(page 484–488)

Site:

On a smart business street in Dusseldorf, which is the main city of the Rhineland, on the site of a dance hall. The conception of great flexibility is the outcome of a competition among the members of the firm.

All elements are mobile (doors, partitions, display windows, panes). Plan based on a square module, composed of sections, receiving 55 glass or wood panels. Intersections resolved according to a new system explained at the end of this Issue.

Thus, the face running along the street, 15 m. long, can be extended to 77 meters of display window. The changes can be effected in one night; in this way the shopper has a complete surprise on the next morning.

1000 sq. m. available, 600 sq. m. of which serve as display surface and for selling, distributed over 4 levels; the 5th floor comprises the storage facilities.

The pool, located in the main part, is the old dance floor. The main feature here is the stairs of plexiglass, with span of 5 m., located above the pool. Lighting is effected by 700 fixtures individually adjustable.

Materials:

Wengé and Sen wood; floors of sales premises variable, of basalt, those of the other parts are fitted with wall-to-wall carpeting; column facing of cop-

per and slate. All the shelves, the display windows and the tables are designed according to one single module to allow for maximum flexibility of utilization.

F. W. Kraemer, Hanover

**The Broadcasting Studio and Concert Hall of the North German Radio in Hanover**

(page 489–496)

The concert hall ought to be a kind of discreet envelope permitting the transformation of a physical event into an emotional experience in the audience, where every individual ought to be able to take in what is happening in his own personal way. The contrast between this substanceless art and the complex and solid building which puts it in contact with the public induces the builder to seek out correspondance between music and architecture.

Are not the laws of intervals in music the same as those of harmony in architecture? (texts of Goethe, Valéry, Romain Rolland, etc.; studies by H. Kaiser at Paestum: dimensions of the temples correspond to the laws of intervals).

History of concert halls:

Origin in the 19th century, because in the Middle Ages music was performed in the churches, at the time of the Renaissance in the palaces of nobles. The middle classes vied with the aristocracy in the construction of "temples or palaces of culture".

The oldest example: Sing-Akademie in Berlin by Ottmer, built in 1825 and renovated in 1865, 1875, 1888; 1000 spectators, 60–70 orchestra members, 300 singers; proportions (hall renowned for its good acoustics): length: 40 m., width: 12.50 m., height: 10 m.

Typical example: Berlin Philharmonic by Schwechten on the site of a former roller-skating arena, built in 1870, renovated in 1888; 1000 spectators, 100 orchestra places, 300 singers; proportions: length: 33 m., width: 24 m., height: 15.40 m.

Standard halls: Musikverein Building in Vienna by Hansen, built in 1869; proportions: length: 40 m., width: 20 m., height: 17.50 m.; 2000 spectators, 500 musicians. Gewandhaus in Leipzig by Gropius and Schmieden, built in 1880 to 1884; proportions: length: 38 m., width: 19 m., height: 14.60 m.; 1500 spectators, 200 seats for orchestra performers, 300 singers.

This results in the standard concert hall layout from around 1870 to 1930: On the upper level a rectangular volume, proportions 1:2, with flat floor, with galleries on 3 sides, and narrow wooden seats (which explains the large number of seats); on the ground level with same area, entrances, cloakrooms and foyer. (Vienna 1869, Leipzig 1884, Magdeburg 1927, Lucerne 1932, etc.)

It is the hall in Göteborg that departs for the first time from this scheme; the designs become more free.

Examples: Liederhalle in Stuttgart, concert hall in Berlin by Scharoun, concert hall in Hanover.

The maximum distance of 40 m. is even today respected for acoustic reasons, but the seats are arranged so that all the audience can hear equally well. What remains unresolved is the formal problem, and this can give rise to new architectural experiments.

Broadcasting studio and concert hall in Hanover

History

First competition in 1948, the programme comprising a technical section, an administrative branch, studios and a concert hall to be constructed later on. Execution: 1949–1952.

Construction of a new studio in 1955–1956.

New plan for the concert hall with fewer seats (1200 instead of 1600), without any prestige function for the city, to look like a broadcasting studio, hence no large foyers, no smoking rooms, etc.

Construction 1960–1963.

Programme

Hall with seating capacity of 1200 with podium for 150 orchestra members and 150 singers, serving

a) for broadcasts and rebroadcasts of orchestra performances,

b) as concert hall of this orchestra as well as for other municipal events,

c) as simple television studio.

Cloakrooms, WC, entrances for performers and public, directors' offices, sound, technicians, air-conditioning, electric installations, rehearsal rooms, tuning rooms, offices, snack bar equipment.

The technical installations rooms and the annexes are arranged as an extension to the first stage. The concert hall, the dimensions of which are not integrated with the general module, is treated as an isolated entity, set above the lower volumes, and constituting the final plastic accent of the whole complex.

This volume with its inclined floor and roof, and its hexagonal plan, has a large canopy on the side facing the lake. The facing material of the walls is enamelled aluminium; the basement course, which is set back, is entirely glazed. The large canopy marks the main entrance.

Construction

Tridimensional steel skeleton, resting on reinforced concrete walls in the rear, on a row of columns in the centre and on two pylons in front. Height of floor stringers: 80 cm., height of roof stringers: 2 to 3 m. (40 m. span). Thickness of walls: 90 cm., composed of enamelled sheet metal, of reinforced concrete panels (9.5 cm.) and of an interior facing of wood to absorb sound.

Roof: 2 layers of injected concrete, rockwool, compressed rockwool panels, laminated wood panelling, gravel. Suspended ceiling: perforated white enamelled sheet metal, lighting fixtures, and access ramps. Floor of the hall: slabs of Rigi plaster, hollow slabs of reinforced concrete, prefabricated tiers to take the rows of seats. The entire envelope is a floating structure (on springs or on cork). To keep within the credit made available, as well as to comply with the building code, the volume of the hall had to be kept as low as possible, in spite of the resulting acoustic disadvantages. The problem was resolved by the conception of an optically closed and acoustically permeable suspended ceiling.

Materials

Ceilings: white acoustic sheet metal panels, floors of black basalt, entrance doors and stairs of white marble, doors of the hall itself of aluminium, leaves of entrance door of wrought iron (work of the sculptor Fritz Kühn, Berlin). Walls of the hall: dark mansonia wood, floor covered with grey linoleum; podium and backdrop of black oak; lighting by Philips, furnishings by Löffler and Knoll; remote heating and air-conditioning.

This concert hall with a maximum seating capacity of 1350 (orchestra without singers) would have required a foyer measuring at least 1500 sq. meters. At present, the interior courts and the terrace above the entrance can be used in fine weather; as an eventual extension, the architects are considering the improvement of the covered passageway leading to the side entrances from the parking lots to allow the public to enter a pavilion looking out over the park and the lake, this place to serve as a smoking lounge and bar during intermissions.

Construction cost: 8,600,000 DM (226.– DM/cu. meter).

Associates

Plan: Beier, Grad. Engin.; Klevenhusen, Grad. Engin.; Gerhards Grad. Engin.

Construction: Below, Civil Engin., Schwerdt, Civil Engin.

Static computations: Kohlhaas, Grad. Engin.; Pfannmüller, Consulting Engin. Soil Analysis: Streck, Prof.; Giese, Engin.

Heating and air-conditioning: Obering. Scheer, Stuttgart.

Acoustics: Kuhl, Engin.; Radio Broadcasting Institute, Hamburg.