Il abrite des bureaux «grands espaces» et des cellules individuelles pour la direction. Le grand volume est redivisé par des cloisons basses et la disposition des meubles y est strictement ordonnée. Les deux niveaux de l'immeuble, un sous-sol et un rez-de-chaussée, reçoivent la lumière par un patio intérieur. Il fut ainsi possible de répartir les locaux selon leur nature, soit vers le patio, soit au rez-de-chaussée complètement vitré. Les visiteurs accèdent par le haut, le personnel par le bas.
La construction est mixte en béton pour le sous-sol avec une trame 7,56 m et en acier pour le rez-de-chaussée sur une maille de 29,30 m.

Jørn Utzon, Hellebaek

Architecture additive

(Pages 251–258)

On ne peut atteindre la conséquence dans l'utilisation d'éléments constructifs préfabriqués industriellement que s'il est possible de les adjoindre aux bâtiments sans aucune modification; de même que l'on ajoute des arbres à la forêt, de nouveaux animaux à la harde ou des wagons supplémentaires dans une gare. Un tel principe d'addition conduit à une nouvelle forme d'expression architecturale qui, conformément aux aspirations de notre époque, nous libérera de la cellule d'habitation cloisonnée traditionnelle.
Ce principe, tout en répondant à toutes les exigences de flexibilité, garde son unité qu'il tient de son caractère additif et non pas de l'aspect d'une façade. Dans des projets tels que celui de stade de Jeddah, on constate que au-delà de la liberté de composition, il est possible de contrôler plus étroitement la production, les prix et les délais que dans les méthodes de construction artisanales.

Un complexe scolaire à Herning

L'ensemble défini par le programme prévoyait de réunir plusieurs écoles professionnelles. Chacune de celles-ci gardant son organisation propre, mais possédant avec les autres un certain nombre de services et de locaux communs. Le tout devrait être adaptable et susceptible d'englober de nouveaux éléments d'enseignement spécialisé.
Constructivement, on a appliqué le principe d'addition sous la forme d'un cadre horizontal normalisé portant sur quatre poteaux d'angle permettant d'obtenir tous les volumes, dimensions ou formes nécessaires.

Centre urbain pour Farum

Le projet résulte d'un concours ouvert en 1966 par la municipalité de Farum. Le programme exigeait qu'on limite les entrées à quelques points précis. Ceci a conduit à concevoir ce centre comme une sorte de bazar refermé sur lui-même.
C'est le spectacle du tout dans sa variété qui domine et chaque boutique ou vitrine en est un élément qui s'y subordonne.
L'ensemble est organisé pour croître à l'aide d'éléments normalisés et ne donne à aucun moment l'impression d'inachevé.

Meubles Utsep

Ce système de meubles a été développé pour répondre à une tendance naturelle de notre société où chacun aspire à communiquer avec son semblable. Les meubles traditionnels ne permettent pas de créer des groupes modifiables.
Au contraire, ce nouveau système comporte des éléments biais pouvant s'adjoindre à des éléments droits pour former toutes les sculptures imaginables au niveau du sol. Le contraste avec les volumes cubiques chers à notre époque n'en est que plus intense.

Actualité

Franz Kießling, Munich
Collaborateurs: Walter Blüme, Ralph Deutsch, Jakob Filler, Hans-Jörg Gottlieb, Adolf Liebisch, Roswita Then Bergh, Werner Weber, Erich Wimmer
Ingénieur: Rudolf Grimme

Séminaire épiscopal St. Wolfgang, Ratisbonne

(Pages 259–264)

Il s'agit du 1er prix d'un concours ouvert en 1964. Le programme fut établi avec beaucoup de précision dans l'intention d'accorder les méthodes pédagogiques contemporaines avec la nouvelle mentalité des jeunes. Les étudiants y vivent en communautés, séparés par groupes d'âge. Situé vers la limite ouest de la ville, le terrain est au bord du Danube à proximité d'un pont enjambant celui-ci.
Le complexe s'articule en deux parties. Un immeuble à 7 niveaux, formant dominante dans l'axe du pont, abrite les salles d'enseignement et de repos; un bâtiment bas concentre les pièces communautaires autour d'un patio. Un hall d'entrée central, flanqué d'un large ensemble d'escaliers et de rampes d'accès, commande toutes les circulations. De là on atteind les réfectoires et la piscine ouverte aussi au public extérieur.
Tandis que l'immeuble haut est marqué par sa structure apparente, des bandes vitrées continues soulignent l'horizontalité du bâtiment bas.
L'église surmontée d'un quartier de cône domine toute la composition. L'aspect général est caractérisé par la texture du béton brut qui contraste avec les grandes surface vitrées aux cadres d'aluminium sombre.
Le bâtiment fut couronné en 1969 par le prix BDA pour la Bavière.

Construction et physique des matériaux

Les prescriptions de la norme DIN 4108 sont insuffisantes quand il s'agit d'isoler les bâtiments en béton brut. En particulier, les contraintes résultant des variations de température à la rencontre des planchers intérieurs et des murs extérieurs doivent être réduites par des mesures d'isolation supplémentaires et reprises par des armatures empêchant la formation de fissures.
Pour éviter les condensations dues à la diffusion de vapeur à travers les parois, il faut prévoir une isolation plus épaisse que ne le prescrit la norme. L'intervalle entre le plafond suspendu et la terrasse isolée doit être ventilé par de l'air chaud éliminant toute trace de condensation.
Du point de vue constructif, la coque qui surmonte l'église est remarquable. Le quartier de cône est une voûte en béton armé d'épaisseur variable encastrée dans une dalle horizontale. Une surépaisseur de 35 cm en partie basse tient lieu de poutre de rive. Le poids supplémentaire est repris par des consoles qui conduisent les forces dans les murs verticaux.
L'ensemble des éléments est conçu avec des joints constructifs tels, que la coque puisse se déformer librement sans dommage.

Summary

On this Issue

Industrial Buildings constitute one of the most important assignments confronting the modern architect. The development of industrial building since the 19th century has been described in great detail – we cannot expect to unearth any new facts, it would seem. However, there are still some surprises in store for us, as can be seen from the publication of the buildings of the Seiff firm dating from 1903. Although eight years separate them from the Fagus works, regarded as a milestone in modern architecture, they surpass the building by Gropius in the consistency with which the curtain wall principle was applied.
The technical article in this Issue deals with the important subject of "Lay-out planning in Industrial Building" – and that entitled "Environmental Planning as Social Planning" covers the theme of building research.
The examples range from the industrial research institute to the office building of an industrial concern.
The feature "Furniture and Design", which will appear regularly in the future, reports on the new projects of Jørn Utzon.
Our special feature this time is the St. Wolfgang Episcopal Seminar in Regensburg, a construction in which a new teaching concept has been translated in terms of an adequate structure.
Jürgen Joedicke

HPC Weidner, Stuttgart

The crystal palace of 1903
A precursor of the modern industrial building

(Pages 229–232)

"Without a crystal palace,
life is a burden".
Paul Scheerbart's inscription on B. Taut's pavilion at the Cologne exhibition in 1914.

To the west of the remains of the circular wall surrounding the Württemberg town of Giengen on the Brenz, can be found the site of the firm of Margarete Steiff, Ltd. Three buildings already described in 1930 as "gigantic hothouses of iron, wood and glass" stand out among the numerous buildings of the factory. The date of 1903, which can still be seen on one of the buildings, shows the visitor that aesthetic and technical solutions to industrial building construction had been found well before Peter Behrens and Walter Gropius. The enterprise founded by Margarete Steiff (1847–1909) enjoyed so much success even before 1900, thanks to its felt toys, that it was necessary to consider planning very early on. This was initially the task of the founder's brother, Friedrich Steiff (1848–1909), who was considered as a builder receptive to new methods. Did the idea of this glass building come from him? "It came from America", it was said at Giengen. His son Richard Steiff (1877–1939) entered the firm in 1897; he it is who is considered to be the "spiritus rector" who played a decisive role in the matter.
It was in December 1902 that two suggestions were received by the firm, probably based on a definite draft which fixed the dimensions, the height of the storeys the foundations etc.; some sketches, abundantly corrected, and found in the archives, testify to this.
The plan of the firm C. H. Ulrich, Charlottenburg, with its cast iron pillars, is decidedly conventional. The building contractor decided on the suggestion of the firm "Eisenwerk München AG", dated 19. 12. 1902. The construction plans arrived at Giengen in January 1903, and contrary to the conventional stone parapets foreseen in the planning project, the facades are conceived as a hearting between the supports visible on the exterior. In addition three roof lights are indicated instead of two. The metal structure was executed fairly faithfully according to these last plans. The building permit of 20th February 1903 (Figs. 4 and 6), again shows certain modifications. The facade with its varied glass elements is completely independent of the steel skeleton behind it. Decorative elements are indicated there which were never carried out. Construction probably started in April/May 1903. Building permission was not granted until August 8, 1903 when the building was already completed, as a letter from Hugo Steiff to Max Cetto reveals.
On the strength of experience gained from the east building, another member of the family, Hugo Steiff (1884–1954), still a student at the engineering school in Mannheim, handed in a building permit in January 1904. This south building, ten times more important than its predecessor, is nevertheless a sort of "reduction" on the construction plan. Despite numerous errors, the unity with the east building is maintained by means of glazed facades.
The rapid increase in production between 1903 and 1907 led to the construction of a west building similar to the preceding one both in dimensions and concept. The two buildings were linked by wooden foot-bridges, now made of concrete. In 1910 the partial realisation (36 metres) of the north building coincided with the end of the economic boom. Building production was only resumed after the Second World War. However, these buildings have been preserved and are still used for various purposes.
The east building is the most interesting of the group. There are three storeys with a surface area of 12×30 metres in the form of a glass prism, regularly squared, above a concrete base 1.30 m. in height, and surmounted by a sloping roof made of galvanized iron sheets.
The ground-floor, with a height of 2.30 m., serves as a storeroom and, in addition, houses the steam heating apparatus. Originally, one hundred employees worked in the upper storeys, which have a usable surface area of 700 sq. metres. A ramp designed for the transport of goods also enabled the owner to move about in his wheel-chair. The building with its three aisles is supported by lattice girder columns and only the lateral supports are made of I profiles. Horizontal wind bracing is secured by frames fixed in a lower timber beam which also forms the ground timbers. Because of the bad quality of the soil, the entire structure rests on piles.
Thus the entire structure appears a very simple and unusual one these days. The construction of the glass outer wall is even more surprising. The lateral supports placed between the two surfaces carry the mullions from these. This arrangement corresponds exactly to the definition of the curtain-wall formulated by Rolf Schaal fifteen years before the Hallidie Building in San Francisco.
Because of continually improving techniques in glass manufacturing, an increase in the size of window apertures, particularly in the 18th century, became possible. It was not until the 19th century that people conceived the idea – beyond that of simple lighting, – of increasing the filigranity of a building skeleton by the use of glass, but even so this was mainly concerned with the effect on the interior. Paxton's crystal palace was no exception to this rule. The system of prefabrication and the lack of time explain the absence of exterior decoration. The example was not imitated and Paxton himself turned to ecclecticism as a result.

Only sixty years later did the poet Paul Scheerbart and the architect Bruno Taut go in for glass architecture. With his material achievements Bruno Taut prepared a promising future.
The industrial building of the Steiff firm shows two tendencies. Both the intention of constructing a utilitarian volume and the desire to create a crystalline cube find expression there. Nor does this rest on an ideology, as was the case with Taut or Scheerbart. Richard Steiff had seen the famous palace at Sydenham but he was a man of industry, for all his success with teddy bears. The use of a curtain-wall was therefore a consistent and calculated step on his part.
The disposition of the building does away with fixed partitions and already announces flexible space surrounded by a neutral facade. The new tendency towards the geometrisation of architectural volumes is here united with the tradition of building in metal and glass in order to realise a project which is not anachronistic, as Cetto declared it to be in 1932, but rather an anonymous "avant-garde" which paved the way for such great architects as Adolf Loos, Walter Gropius and Mies van der Rohe.

Institute of industrial research

Skidmore, Owings & Merrill, Chicago
Myron Goldsmith, George Jarik,
Frank Weiss

Research laboratory of the Inland Steel Corporation, East Chicago, Indiana

(Pages 233–239)

As is usual for an industrial programme, the architects had to create flexible building volumes capable of being easily extended. The programme, comprising laboratories, workshops and offices, required, moreover, a demonstration of the potentialities of structural steel. There are three buildings interconnected by glazed passageways corresponding to the three main research functions. Each volume can be subdivided freely and can be extended in one direction.
In conformity with the client's wish, the steel structure is the dominant element determining the appearance of the buildings. The faces of blocks B and C are sited to the right of the interior line of pilings, while the face of A is clearly detached to the rear of same; this entrance block is also more emphatically articulated.
Building A, carried by cruciform pilings, is on two levels; it accommodates laboratories and offices.
The construction of buildings B und C on one single level is made up of steel porticoes.
The main building is entirely air-conditioned by a system with two ducts, whose intakes constantly and 100% introduce fresh air. The complex is easily modifiable including its technical installations.

Entirely automatic milk treatment plant

Matti K. Mäkinen, Helsinki

Building department of the Valio Dairy plant in Turku
Milk treatment plant, Turku

(Pages 240–243)

Industrial planning includes that of communication routes. Raw materials brought in with their packaging via external routes leave the works again in the shape of finished products via the same routes. The internal transport network of the works (raw materials, power, personnel, etc.) gets in contact with the external network (roadways and parking facilities) at specific points where the products are processed.
These observations apply to all industrial installations and particularly to milk processing plants. Mention should also be made of the adaptation and extension requirements bearing especially on the architecture, for it is not easy to achieve a balanced play of volumes over the entire course of a development.
The Valio concern began to treat milk in Turku in 1918. New installations were successively built in 1924 and 1938 to cover the needs of the city. The heavy increase in demand led to the present complex, which was completed in 1967. Beginning with 3.3 million litres, the plant currently processes 29.9 million litres of milk. The milk supplied either in cans or in tanks is weighed, registered on punch tape, then pumped into the six large reservoirs making up the core of the installation.
The treatment of the milk and its storage in cold rooms are then effected automatically. The L-shaped factory building is situated in the centre of the installation.
On the northeast is the office block with the entrance; in the rear are the garages and the service facilities. All the buildings are low-silhouette volumes, lighted via skylights, this arrangement giving them their indispensable flexibility.

The industrial building as emblem

Hubert Bennett, London
Greater London Council

Ventilation installation in the Blackwall Tunnel in London

(Pages 244–245)

Each of the two buildings situated at the ends of the tunnel crossing the Thames and having a length of around 1 km. contains the ventilation equipment (intake and blowers) required for the ventilation of the complex.
The tunnel is situated in the industrial zone in the East End of London and connects the two banks of the Thames at the level of the urban peripheral highway No. 1. The ventilation blowers characterize the complex and have the shape of two cones of different heights (10.70 m. and 27.50 m.) above the level of the low ground floor.
The building rests on coffers extending down to the tunnel. The curved roof structure is a poured concrete shell. The concrete is protected from the weather by a layer of asphalt. The horizontal foundation executed in brick is surmounted by a window strip constituting an optical separation from the ventilator cones.

The central administration of an industrial group

Yorke, Rosenberg & Mardall, London
Skidmore, Owings & Merrill, Chicago

Office Building of Boots Pure Drug Company Limited, Nottingham

(Pages 246–250)

Since several buildings were in scattered locations, it was decided to regroup in one place all the administrative services, including the head office, situated up to that time in the centre of Nottingham. The new building envisaged for 1300 employees was sited 10 minutes by car from the city centre in an easily accessible industrial zone. Since the ground had previously been used as a dump, a great deal of care was devoted to restoring the landscape.
The building, which is economically laid out, is designed on the basis of a module of 1.83 metres. It accommodates officescapes and individual cubicles for the management. The large block is subdivided by low partitions, and the furnishings are strictly arranged in accordance with this plan. The two levels of the building, a basement and a ground floor, are illuminated via an interior courtyard. It was thus possible to distribute the rooms in keeping with their nature, either facing the courtyard, or the ground floor, which is entirely glazed. Access for visitors is from above, for personnel from below.
The building has a mixed construction, concrete for the basement with a grid dimension of 7.56 metres and steel for the ground floor on a grid of 29.30 metres.

Jørn Utzon, Hellebaek

Additive architecture

(Pages 251–258)

One can be consistent in the utilization of prefab structural elements only if it is possible to attach them to buildings without any sort of modification; in the same way in which one can add trees to the forest, new animals to the herd or additional cars to a train. Such an additive principle leads to a new form of architectural expression, which, in conformity with the trends of our age, will liberate us from the traditional partitioned off living unit.
This principle, while complying with all the needs of flexibility, retains its unity, which it derives from its additive character and not from the appearance of a façade. In projects such as the Jeddah stadium, it becomes clear that, above and beyond freedom of composition, it is possible to keep a more effective eye on production, prices and time limits than with systems of building based on individual craftsmanship.

A school complex at Herning

The complex defined by the programme called for the combination of several professional schools. Each of these retains its own organizational structure, but possesses with the others a certain number of services and common rooms. The whole plant was intended to be adaptable and capable of incorporating new specialized elements.
Structurally, there has been applied here the additive principle in the shape of a horizontal normed frame resting on four corner pilings that permit the creation of all the volumes, dimensions or shapes that are needed.

Urban centre for Farum

The project is the outcome of a competition opened in 1966 by the municipality of Farum. The programme called for the limitation of entrances to a number of fixed points. This has led to the conception of this centre as a kind of bazaar closed in on itself.
The variety of the complex as a whole is the dominant feature, and each shop or display window is a subordinate element.
The complex is organized to grow by means of standardized elements, and it does not give any impression of incompleteness.

Utsep furniture

This furniture system was developed to comply with a natural trend of our society where everyone aspires to communicate with his neighbour. Traditional furniture styles do not allow for the creation of modifiable groups.
On the contrary, this new system comprises bevelled elements that can be attached to straight ones to form all manner of sculptural compositions at floor level. The contrast with the cubic volumes dear to our age is all the more intensified.

Special Feature

Franz Kießling, Munich
Associates: Walter Blüme, Ralph Deutsch, Jakob Filler, Hans-Jörg Gottlieb, Adolf Liebisch, Roswita Then Bergh, Werner Weber, Erich Wimmer
Engineer: Rudolf Grimme

St. Wolfgang, Episcopal Seminar, Ratisbon

(Pages 259–264)

This project was awarded the 1st Prize in a competition organized in 1964. The building programme was drawn up with a high degree of precision with a view to harmonizing modern teaching methods and the new mentality of young people. The students live here in community units, subdivided into age groups. Situated towards the western periphery of the city, the terrain is on the edge of the Danube close to a bridge spanning the river.
The complex is articulated into two parts. A 7-storey building, dominating the bridge axis, accommodates the classrooms and lounges; a low-silhouette building houses the common rooms around a courtyard. A central lobby, flanked by broad stairways and ramps, centralizes all communications. From there, the dining rooms and the swimming pool, which is also open to the public, can be reached.
Whereas the high-riser is characterized by its visible structural parts, glazed strips running continuously around emphasize the horizontal alignment of the low-silhouette building.
The church topped by a quarter cone dominates the whole complex. Its general aspect is characterized by the texture of the raw concrete which contrasts with the broad glass surfaces of the windows with their dark aluminium frames.
In 1969 the building was awarded the BDA Prize for Bavaria.

Building and material dynamics

The specifications of the DIN 4108 standard are insufficient when it comes to insulating buildings of rough concrete. Especially the stresses resulting from variations in temperature where interior flooring adjoins exterior walls ought to be reduced by supplementary insulation and absorbed by stanchions that prevent the formation of cracks.
To avoid condensation due to the diffusion of water vapour through partitions, it is necessary to plan for insulation that is thicker than that prescribed by the norm. The interval between the suspended ceiling and the insulated terrace ought to be ventilated with hot air eliminating all trace of condensation.
From the structural standpoint, the shell surmounting the church is remarkable. The quarter cone is a reinforced concrete vault of variable thickness embedded in a horizontal slab. An extra thickness of 35 cm. at the bottom replaces a peripheral girder. The supplementary weight is taken up by brackets which lead the thrusts into the vertical walls.
The total complex of the elements is designed with structural joints in such a way that the shell can alter its shape freely without suffering damage.