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déterminer le rayon d'action de la colonie: le nouveau lieu spatial ne doit pas être considéré isolément, mais bien par rapport au paysage environnant. Le nombre et les dimensions des services (magasins, jardins d'enfants, etc.) seront examinés et déterminés en fonction des besoins effectifs (population). L'agglomération de puissances économiques mène invariablement à la formation de centres organiques dont l'importance varie avec le rayon d'action de la colonie. Un examen économique-géographique à l'échelle des environs immédiats (si nécessaire, au niveau urbanistique ou même régional) est indispensable. Le degré de «centralité» se calcule aisément si l'on connaît le coefficient de concentration et la densité des rapports.

Pour ce qui est de l'aménagement définitif et de l'architecture, il ne faut pas oublier que les alignements et étapes de construction se déterminent après (et non avant!) les services et les centres. Des examens anthropologico-architectoniques seront indispensables, en effet, les appartements dits éprouvés, sont trop souvent anthropologiquement faux: ils sont l'expression de conventions et de traditions qui n'ont rien en commun avec l'étude méthodique, correspondant aux besoins effectifs, de l'espace disponible.

Centre culturel Den Haag (pages 56—60)

La capitale des Pays-Bas est en train de créer un vaste centre culturel. Les nouveaux immeubles se trouvent au nord-est du Musée Communal de J. P. Berlage. Au rectangle du Palais des Congrès sont adjoints une aile courte avec un hôtel de 18 étages à plan triangulaire et une aile plus longue, mais basse, contenant des salles de séances, des bureaux et un cinéma. Les parcs sont à l'ouest, au niveau et au sous-sol de la tranquille Stadhoudersalaan, qui sera encore pourvue d'un poste d'essence et d'une station-service. Le bâtiment principal du centre culturel de 180 x 70 m est divisé en trois groupes de salles. Le noyau du rez-de-chaussée consiste en un groupe de salles de circulation d'où les escaliers mènent aux salles des étages supérieurs, aux salles de sport et de récréation, ainsi qu'au parking au sous-sol. A l'étage sous l'entrée principale, les vestiaires et la réception se trouvent les salles de sport avec huit jeux de quilles, tennis de table, minigolf, billards, salles d'escrime, etc. Une salle de séjour et un terrain de jeu en plein air seront disposés à côté de l'hôtel: là les enfants dont les parents visitent le Palais des Congrès ou le Musée, ou se trouvent au restaurant pourront merveilleusement passer leur temps.

En plus de l'équipement technique normal, tel qu'installations de conditionnement d'air et raccords de téléphone inter-urbain, les grandes salles auront des amplificateurs et des installations d'interprétation simultanée. Lors de séances nécessitant plus de place que ne peut en offrir une salle, on installera la télévision aux autres salles nécessaires. Les cabines d'interprètes sont installées dans les grandes salles, mais il est possible de disposer de petites cabines amovibles dans les petites salles.

Les surfaces de murs fermées seront revêtues de plaques de pierre naturelle foncée. La tour de l'hôtel, les chambres du côté extérieur et les petites salles seront en verre et en aluminium, les parties fermées en seront remplies de panneaux émaillés ou de verre de couleur. Les escaliers menant au jardin, la face avant du jardin d'hiver et toutes les parties vitrées seront en aluminium. La réception sera habillée de travertin. La grande salle des congrès aura des murs foncés, des parois acoustiques rouges, un tapis jaune, un plafond de couleur claire et différentes sortes de bois naturels. Les frais sont évalués à 35 millions de florins.

Maison à Beverley Hills (pages 61—68)

Le paysage n'offre pas les attraits que nous associons aux mots «Californie» et «Beverley Hills». La façade nord — la côté entrée — est protégée des regards, alors que la façade sud avec le jardin et la piscine s'ouvre à l'air libre. Le plan se divise en trois parties. Les salles de séjour et de réunion couvrent, avec l'entrée et une cour fermée de trois côtés, une surface de 8 x 8 unités de grille de 2,43 m chacune; la partie économique-ménagère avec la salle de petit déjeuner occupe 2 x 8 et 2 x 12 unités respectivement si l'on compte aussi le studio; les trois chambres à coucher et les annexes couvrent 8 x 8 unités.

Summary

The Job of Building (pages 34—35)

Very different persons are involved in any given building project; also the most diverse considerations, conditions and circumstances of an administrative or commercial nature coming from all sorts of persons and groups have to be complied with. It is necessary at all times to form a clear conception and to assess carefully all phases of the construction project and individual problems that arise. In every given case the project is based on equivalent, dissimilar, objective and autonomous facts.

The role of the human being.

The connection between architecture and human values is extremely complex. Knowledge of the anatomical, physiological and psychological characteristics of the human being aids us in recognizing the elementary requirements of the human individual within architectural space. We are in a position to discover the relations which grow out of given human factors for the specific disposition of the rooms (of, let us say, an apartment or of a shop). But man in our industrial society has in the course of time lost many instincts and much of his sensitivity and is developing a consciousness of the most differentiated values, and our usual methods of investigation can only approximately or inadequately give due consideration to these nuances of human existence and human behaviour.

Architectural planning for collective living consists in the additive enlargement and organic disposition of an elementary space to form a sum of elementary spaces. Our task as architects consists in creating connections or contacts when they are desired or beneficial, or to prevent them when they are undesirable or disturbing. The decay of the hierarchical structure of society (democracy, loss of paternal prestige) and the obtaining of legal equality for all men (position of women, freedom of movement, etc.) allow for the existence of differentiated and flexible social relationships. The introduction of mechanical—instead of human—energy produces a new dimension in human existence (e.g., underground transport systems permit the development of very large-scale urban complexes). The social group subjects to temporal variations and combinations all social conditions and attitudes from individual isolation to the voluntary group. The human community does not feel itself to be a mere agglomeration but a unified organism with its own specific physiological characteristics. Its social consciousness gives rise to similar qualities (intentions, reactions). And as in the case of the connection between the elementary space and the individual person, here too there must be established exactly determinate values and special projects be carried out in the correct way. These insights yield possibilities for novel developments, which basically are only a simple logical consequence of these inevitable common conditions. To a far greater extent than with groups, mechanical energies have to be applied here in order to give modern entities a freedom of movement and degree of receptivity like those possessed originally by each individual member of the collective body.

The technical aspect.

The results of methodical and economic labour are no longer artificial short circuits, as it were, but they constitute a body of rational knowledge. Analysis of the total project and of its constituent parts and the coordination of means and methods all have to be related coherently in such a way that a disciplined, smooth operational process becomes possible. New building materials can meet the most demanding requirements, which may lie

outside the area of construction engineering as such. The new building materials are for the most part inorganic in origin and possess highly developed properties, and their specific properties determine quite special and novel forms of material. Synthetic building materials can be produced in the laboratory; it is possible to bestow any desired property upon them. However, the more such a material is invested with specially desired properties, the fewer its other physical properties. Hence it comes about that a wall is no longer constructed of a conventional material like bricks but can be composed of various materials with various properties. The qualities of such a composite structural element are far more manifold than one which is composed of organic materials; at the same time cross sections of the structural element can be appreciably reduced. The more unequivocally a property inheres in a building material, the more that material lacks other properties. Nowadays we no longer have to inquire as to the properties of a material and no longer have to take into consideration these properties when manufacturing the material, and on the building project.

The present-day problem.

In a thoroughgoing investigation of human modes of behaviour and living there is revealed a small number of basic elements manufacture of which is possible only on a mass-production, i.e. industrial basis. Construction materials with specific, high-quality physical and other properties can only be manufactured on an industrial basis. The new construction materials, the new structural elements and their industrial production call for new construction methods and alter to a great extent the structure of the given building. The various functions that a construction material has to perform can no longer be assigned to one single material, but to different highly developed materials, each one of which is assigned one single structural function. The various new construction materials are combined to form one single structural element; this, however, is possible only on a mechanized industrial basis. Highest functional value is coordinated with reduced spatial volume, weight and quantity of material being kept to a minimum. The tasks confronting the builder are posed by modes of living (individual, group, community), by numbers of people, by the appliances with which they surround themselves (radio, car, refrigerator, vacuum cleaner), by economic and technical possibilities and by legal requirements. The problem is to be resolved with the aid of uniform series of elementary, interchangeable spaces in which quite determinate processes take place or in which quite specific conditions obtain. These processes and conditions in the elementary spaces are represented by configurational elements. The investigation of the elementary processes and conditions, of the various types of construction problems and the development of the industrial means and of the applied sciences and methods are absolutely necessary. This task, however, can no longer be coped with by individual experts, but only by great specialized teams attached to a technical institute or a university.

Integrated Housing Centre on the Lake of Bienne (pages 36—41)

The watch centre of Bienne was for years known as the "City of the Future." Nowadays there is no longer any occasion to distinguish it in this way from other towns. Only a town which does not live in the present alone but keeps itself receptive to future impulses and seeks to find in its present condition insights into its future organization, can be a city of the future. Two students had the vision to seize upon the opportunity offered by their professional project to create such a future using Bienne as a point of departure. The project is not merely a rosy utopia dreamed up by architects, is not only a student assignment for the detection of colleagues and professors, but wholly aside from planning and architectural qualities also has a sound legal and economic basis, so that it will not therefore be rejected out of hand by the building authorities. Years and perhaps decades can elapse before this plan can be realized. The authorities and political parties will have to see to it that not only the cause itself but also the high quality of the architectural plan are maintained. If the idea of Furrer and Kyburz is realized, it will provide a focal point of interest for all interested in town-planning.

Metanopoli-Report on a Community Centre near Milan (pages 42—44)

In 1953 the State methane gas company, ENI, was founded to serve as a control and development organ for various other Italian methane gas companies. At the present time the following undertakings belong to ENI: AGIP Minerals for the exploitation of methane gas; SNAM for the transport of methane gas products; AGIP for the sale of these products; ANIC (in Ravenna) for the chemical processing of hydrocarbons for fertilisers; and AGIP Nuclear for research into, development, and use of radio-active minerals.

The whole ENI complex is located in Metanopoli, a newly created community centre in the commune of San Donato Milanese, 7.5 kilometres from the centre of Milan. It lies on the Via Emilia, in the neighbourhood of the autostrada which runs from Milan to Bologna. Following the discovery of coal and petroleum deposits in the Po basin, the first buildings of SNAM and the first housing districts were constructed in 1952 in the region of Metanopoli.

The research centre buildings, which embrace the laboratories of AGIP Minerals, the planning and research groups of ENI, and the laboratories of AGIP Nuclear, were completed in 1953. In 1954 a motel was built for the large number of truck drivers, and good repair shops for lorries and cars were also set up.

At the same time sport facilities were provided for all the workers, clerical staff, and managers, with a stadium, gymnasium, open-air and indoor tennis courts and swimming baths, as well as children's playgrounds and a small zoo.

In 1956 the building of the high-rise administrative centre was begun, and then work was started on the church, the primary school, and a nursery.

3500 factory and clerical workers are now working in Metanopoli. With few exceptions both they and the managers live in the 850 flats of the estate. Most of these flats have either three or four rooms.

Marcello Nizzoli and Mario Oliveri, Architects, Milan. ENI Administrative Building (pages 45—49)

The administrative building stands at the edge of Metanopoli on the Via Emilia within an area of 23,000 square metres, of which about 3,000 have been built up. The remaining expanse has been devoted to driveways, parks, green belts; a part will later be taken up by the library.

The 15 storey building rises to 55 metres. The graphic departments (printing office, photography and heliography sections) are brought together in a two and a half-storey building.

The plan of the administrative building is composed of four hexagonal elements. On the ground-floor there are small shops, a travel agency, and a post office. The entrance lobby allows for the speedy and smooth passage of visitors and clerical workers and contains the necessary internal communications with the graphic departments building and the conference room. The 1500 office workers of the ENI group of companies (SNAM, AGIP Minerals, ANIC, AGIP Nuclear) are disposed between the first and twelfth floors.

On the thirteenth floor there are the administrative board rooms, the restaurant, a bar, and the visitors' room; on the fourteenth there are the rooms for the radio and public address system. The 13 express elevators within the building can carry 185 people altogether. The telephone system embraces 800 instruments. A system for the electric clocks, a control system for the night watchmen, a fire and alarm system, and a pneumatic dispatch tube which connects the storeys with one another and with the graphical services, complete the installations.

Steel supports stand at the points of the hexagonal plan elements at intervals of 12.5 metres, and are connected with one another by 12.5 metre long girders. In order that this roomy and relatively elastic skeleton structure should be able to undergo volume change according to temperature conditions without disadvantages, no masonry has been employed on the partitions. The elevation structure consists of vertical tubular columns and girders, which are tongued into the columns. These columns are interrupted at each storey, so that the 15 mm. maximum vaulting of the floors may share in taking the thrust of the upper and lower columns. Throughout the height of the building each column is connected to it in only two places and the articulated column sections, each a storey high,

remain in every case a straight line, 3.40 metres long, the elements of the elevation thereby retaining their elasticity. The elevation surface which is made entirely out of aluminium frames and glass is able to accommodate all changes in shape of the columns and girders. The construction of the partitions, the partition cupboards between the corridors and the offices, the lighting fixtures, etc., harmonize with the qualities of the skeleton structure. It was e.g. necessary to allow for the elasticity tolerance of all interconnecting materials. The assemblages were able to be carried out without costly adjustments; blueprints and templates were the most important tools on the building site. The whole metal structure is coated with lime mortar cement and the glasswool parapets are insulated with glasswool mats, 6 cm. in thickness. In all the offices air conditioning systems have been installed.

Space, Spatial Research, Spatial Planning (page 50)

It is not surprising that the objective clarification of processes in urban space gives rise to the greatest difficulties, for we are all equally actors and spectators within it. We employ concepts such as size, building-height, boundary, building-zone, locality, region and "space," and then notice that, depending upon our point of view, these concepts suddenly take on a totally different meaning and import. This uncertainty is doubtless due to the tangled nature of concepts, which for the greater part acts as a source of inspiration, but which, however, unfortunately detracts from the value of any would-be objective and scientific spatial study. Spatial research is a well-founded subsidiary science which must not be veiled in the clouds of intuition; its objects of study are the factors which relate to space and its aim the bringing to consciousness of the spatial configuration of our temporal, human environment.

Norms and Specific Characteristics of Spatial Research.

A science which has humanly inhabited space as its subject matter must proceed like any other science from hypotheses, experiments, and methods. These it opposes to one another, co-ordinates, and later, according to any new experimental finding, revises. It will not construct a set of dogmas, but will be rather a self-adjusting and self-controlling activity, for it draws its experiments from nature which does not make itself known to science directly. Methodical investigations lead to the discovery of connections and noteworthy regularities, the knowledge of which enables us to analyse and plan our spatial environment.

The Spatiological Observational Standpoint and Methods.

It is assumed today that any space-area whatever can be regarded as a totality of separate space-elements or space-quanta; in other words, that a given collection of space-quanta make up a space-group. This definition of space-group can be qualitatively and quantitatively enlarged, in that any space-group can be infused with or interpreted by any given number of representative criteria according to the scale and purpose of the spatial investigation. The theory of space-quanta, space-groups, and space-configuration leads by and large to the realisation that any space-element can only be unequivocally defined by reference to the totality of all adjoining space-elements.

Spatial Research and the Planning of Housing Projects (pages 50—55)

The Spatial Bases of the Planning of Housing Projects.

In the same way that the house is the carapace of the smallest community, the family, so is the housing project the carapace of the next largest spatially organised community. Within it clearly defined relations between certain functional space-areas and specified types of men may be seen to obtain. It is self-evident, however, that no rule or norm is incontestably and unchangeably valid.

A. The Site Determination of the Housing Project.

Basically, the site determination of a project can only be carried out in conjunction with a general population study of the municipal or regional area; in connection with this, the following points should be noted:

1. The approximate extent of the housing requirements and the correspondingly necessary surface area of the project must be ascertained from the desired or prescribed plans for utilisation.
2. The area's climate or micro-climate (noise, dust, exposure to sun, humidity, temperature conditions, etc.) and the topographical and geological conditions (steep slopes, the ground's load capacity and drainage, etc.) must be investigated directly after the determination of site requirements.
3. Landscape worthy of preservation should be protected on the grounds of bio-geographical equilibrium.
4. Water, electricity, gas, etc., are unconditional necessities. It should be noted that these sources of power are to be supplied within an economically viable framework.

B. Traffic Planning.

On the basis of the necessity for a general development of local resources, and in order to protect people from motorised

traffic (accidents, noise), traffic planning should precede the municipal architectural studies.

1. The project must never develop along pre-existing traffic arteries.
2. The present and anticipated rate of motorisation of the prospective population must be very thoroughly studied.
3. The project must be integrated within the street network in a grape-cluster pattern. All through-traffic and public transport should, with the exception of the underground railway, run off tangentially.
4. Pathways and organically developed green belts with children's playgrounds within sight of their mothers' kitchen windows have an articulative function.

C. The Planning of Central Areas.

This comprises the differentiation of the utility areas, generally according to the needs of particular main functions and utilisation plans. These areas are:

1. Traffic areas, which must be provided for the following classes: fluid motorised traffic, pleasure motoring, and pedestrian traffic in conjunction with the green belts.
2. The green belts, with facilities for entertainment and sports.
3. Core areas or centres for service facilities (shops, schools, etc.).
4. The actual housing areas, i.e. the built-up land of individual estates, which are to be accommodated in a ribbon-fashion within the green belts on a sound economic basis. Too much green is as bad a mistake as too little!

D. The Planning of Service Facilities and Centres.

1. First of all, the sphere of action of the new project should form the subject of a preliminary investigation, in conjunction with that on its site requirements. The new locality should not be inspected in isolation from the surrounding country.
2. The number and size of the service facilities such as shops and kindergartens should be assessed by reference to the anticipated population rate. Once again, the sphere of action of the project must be the basis of the planning of these facilities.
3. The grouping of economic factors leads necessarily to the construction of central areas or core areas, whose importance varies according to the nature of their environs. The planning of centres can only be carried out after an economic-geographical preliminary survey of the locality; where necessary, this survey is to be made within a municipal or regional framework.

E. House Architecture in a Project.

1. Creative inspiration dominates here.
2. The building lines and the stages of construction as well as cost estimates should be dealt with first, if the service facilities and centres have already been planned, and not vice versa!

3. The architectural planning of the types of houses and flats comes within the scope of the general building plan, and must be elaborated in relation to the anticipated population structure.
4. To ensure the above integration of building-types and population characteristics, it is absolutely essential that a preliminary anthropologico-architectural survey be carried out. The sought-after houses of today are unfortunately often humanly false. All too often are they the expression of convention and tradition which have nothing in common with thorough spatial research and its corresponding necessities.
5. Definitive Survey of the Planning and Conception as a whole.

The basic elements which have been outlined here are not novelties, but rather the confirmation that only a very few correlations between varying functions are really known.

Cultural Center in Den Haag (pages 56—60)

A cultural centre on a grand scale is in process of being created in Holland. The new buildings are to be erected north-east of the Municipal Museum by J. P. Berlage. Adjoining the rectangular convention hall is a short wing with a triangular 18-floor high-rise hotel and a long, low wing containing conference rooms, offices and a cinema. The parking areas are situated on the west side on quiet Stadhouderslaan on two levels, on the ground floor and in a basement. A filling and service station is provided for on Stadhouderslaan. The central building of the cultural centre measuring 180x70 m. is subdivided on the interior into three groups of rooms. The core of the ground floor consists of a group of lobbies, from which the halls on the upper floors and the recreation rooms and parking garages in the basement are accessible by way of stairways.

House in Beverly Hills (pages 61—68)

The landscape is devoid of the special charm that we are inclined to associate with California and Beverly Hills. The north elevation, the entrance side, shields the interior from the public view; the south elevation with garden and pool is open to the outdoors. The plan falls into three parts. The living area takes up, with the entrance, and a patio enclosed on three sides an area of 8x8 base units of 2.43 m. each. The kitchen with the breakfast nook takes up 2x8 or 2x12 units if the studio is included. The three bedrooms with bath, etc. are contained within 8x8 units.

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