

Bijvoet and Duiker

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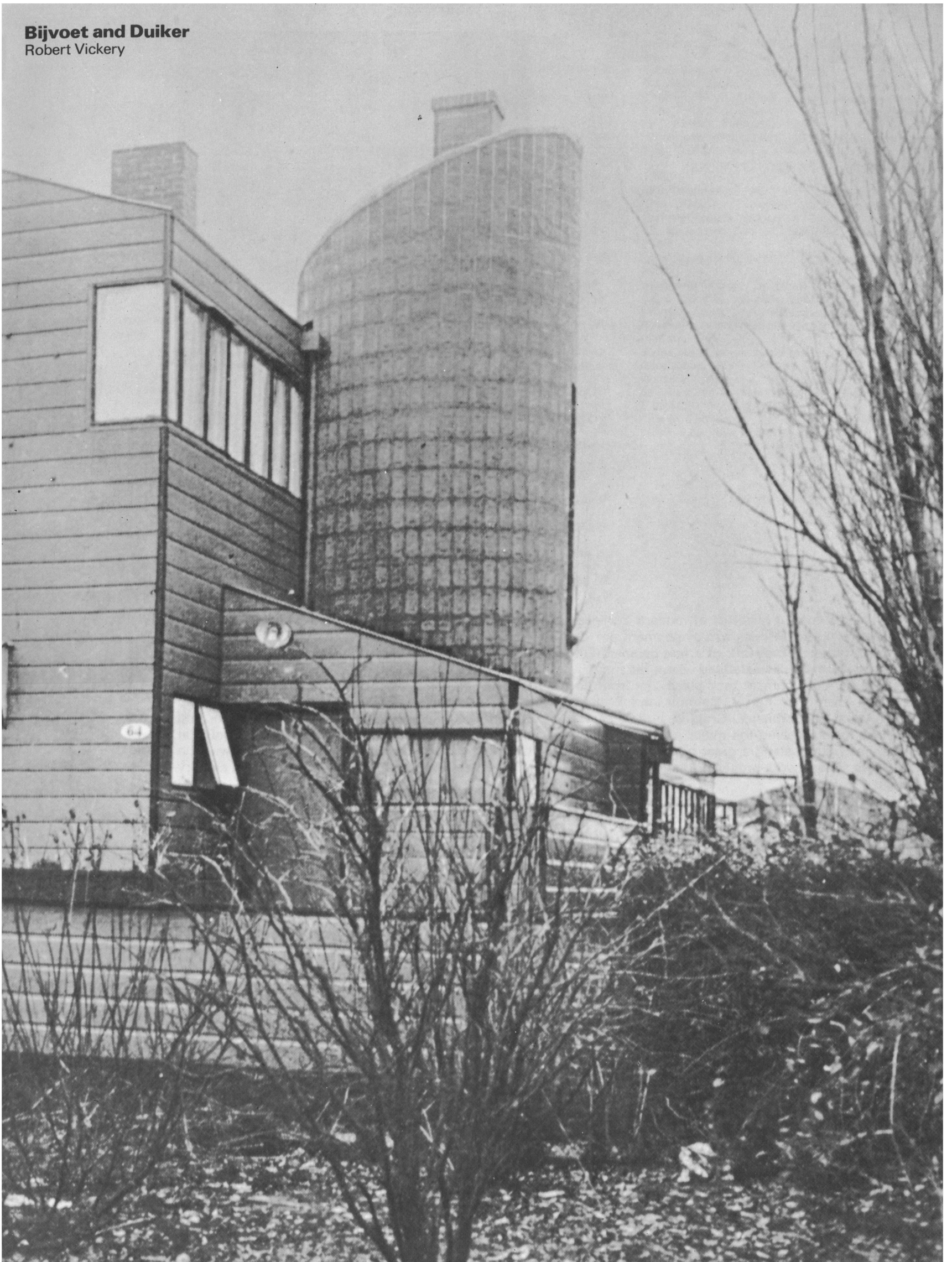
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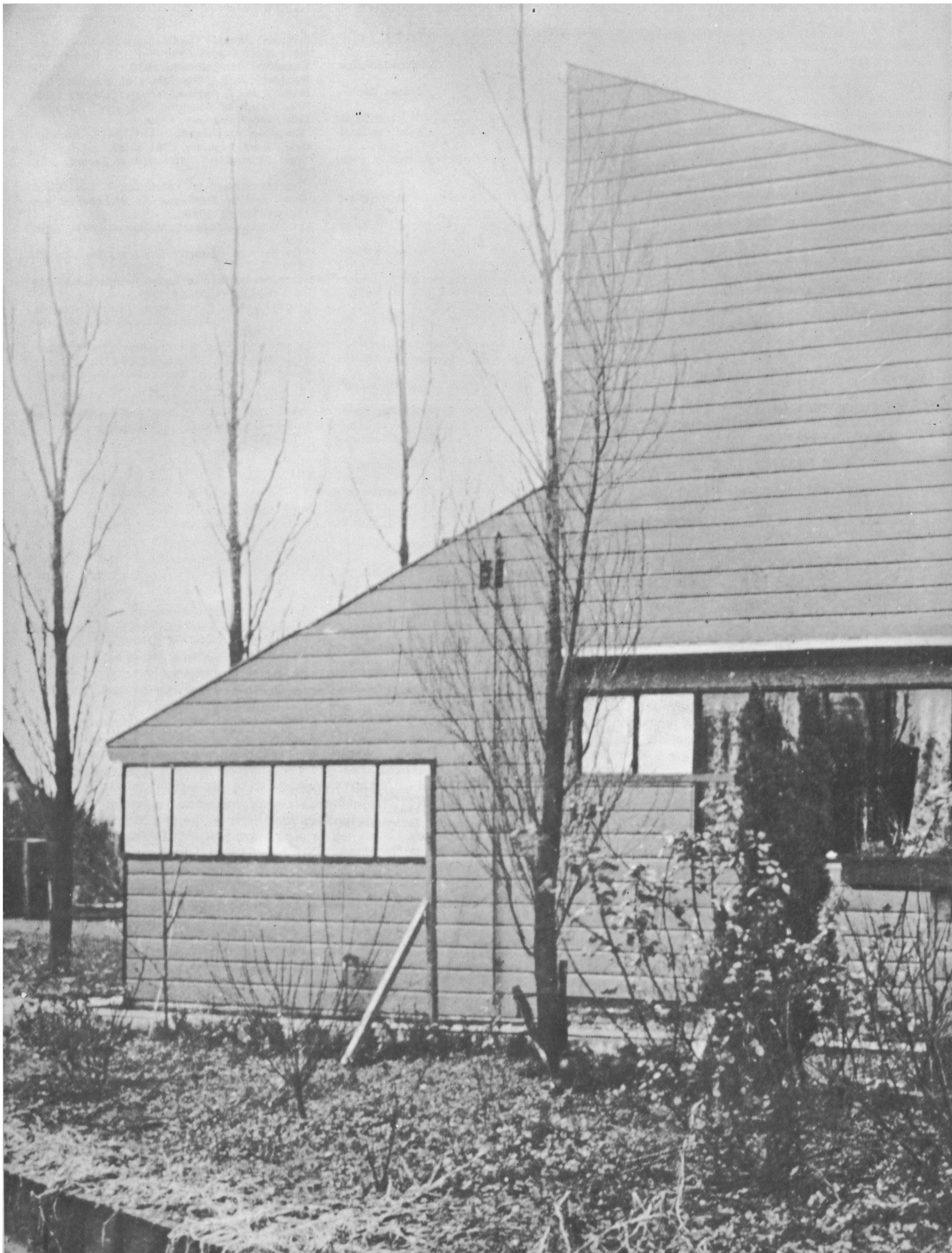
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Diamond-worker's Union

In the current histories of modern European architecture the main lines of development are described in terms of the work of a few personalities. In France, Germany, and Holland where the most intensive early development took place, the front line has been shared by Perret, Behrens and Berlage. Their pupils, Le Corbusier, Gropius, and Mies van der Rohe have received the major acclamation. Behind these figures stand a great number of brilliant architects, whose work proves or disproves the concurrence of ideas.

In Holland, after Dr. H. P. Berlage (1856-1934) of the earlier generation, there was no single master-figure but a group of men, born at about the same time around 1890, who were able to demonstrate their ability between 1917 and 1924. Some, not concerned to make manifestos or protestations, were able to provide the solid model for someone else's ideology, and here I place Gerrit Rietveld (1888-1965). J. J. P. Oud (1890-1963) achieved an early fame for his work as City Housing Architect in Rotterdam, and proclaimed his involvement with *de stijl*. Theo van Doesburg (1883-1931) was at the centre of this new movement and he used skillful publicity and his compelling presence to progress his many interests. L. C. van der Vlugt (1894-1936), Bijvoet and Duiker are credited not with great orations, but with quiet and consistently brilliant contributions.

I want to deal here with some aspects of the careers of Bijvoet, Duiker and Wiebenga, an engineer closely associated also with Van de Vlugt.

Bernard Bijvoet, born Amsterdam, 1889, lives to-day in Haarlem.

Johannes Duiker, born The Hague, 1890, died Amsterdam 1935.

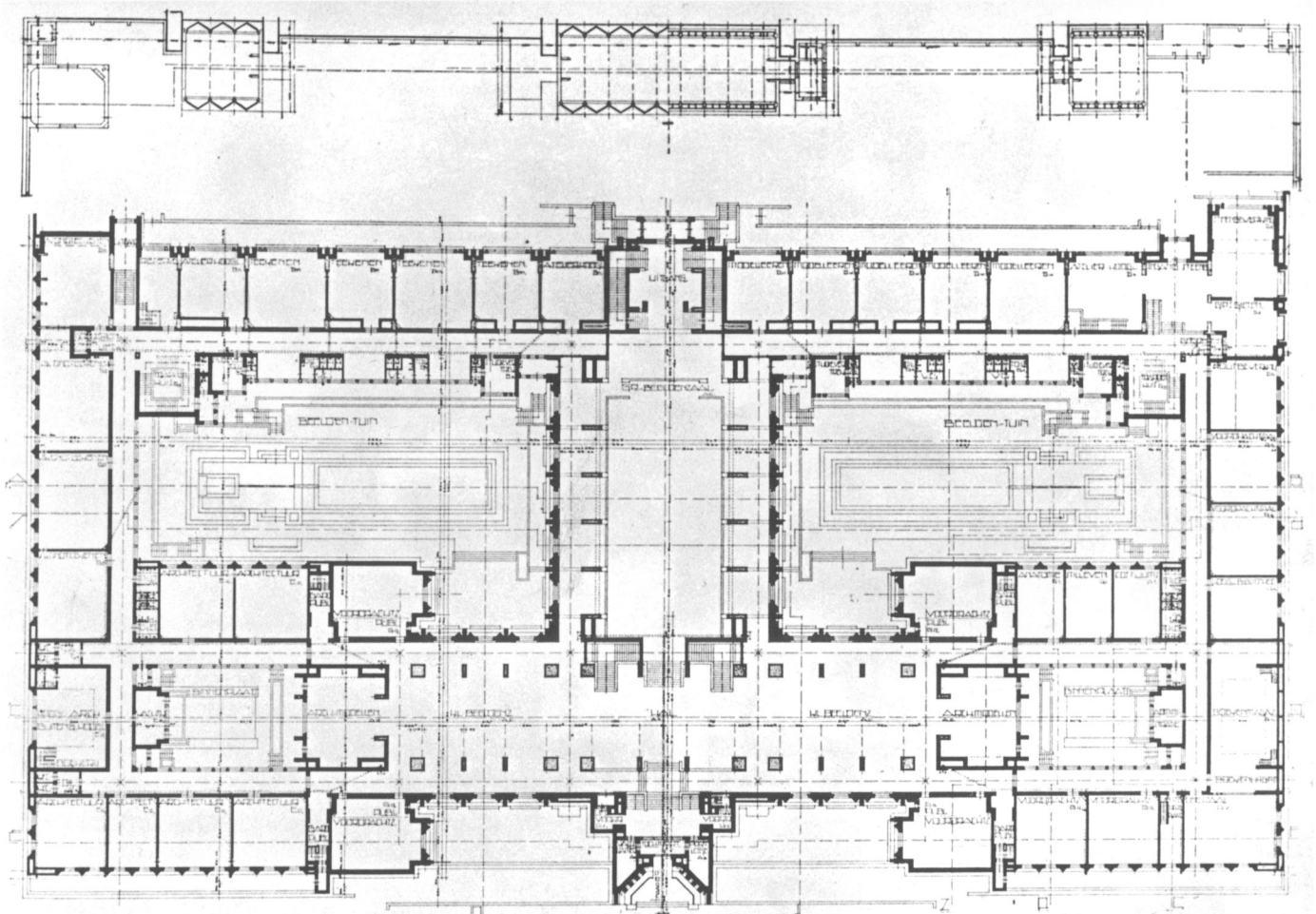
J. G. Wiebenga, born Soerakarta, Java, 1886, lives to-day in The Hague.

For a scholarly account of the forces at work in Holland I refer the reader to Section 3, of 'Theory and Design.'⁽¹⁾ Here I want to highlight only a few factors. First, that while the phase of Art Nouveau affected Holland it had no Horta, Guimard or Mackintosh. Secondly, Holland remained neutral and somewhat isolated during the First World War and there was no echo there of the social and political crises in eastern Europe. Thirdly, Berlage's was the strongest voice in the break with the 19th century romantic revivalist architects. In his own writing and in his admiration for the work of Frank Lloyd Wright he influenced the next generation of Dutch architects.

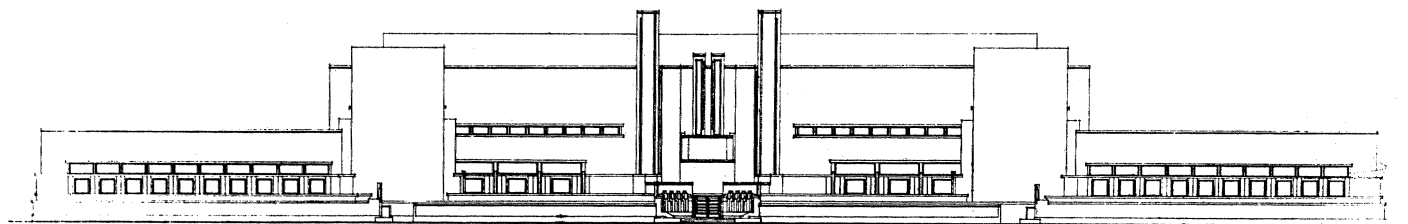
Berlage's praise of Wright's architecture worked on the romantics of the 'Amsterdam School' such that the journal *Wendingen*, established in 1919 by Theo Wjdeveld, gave space equally to Wright and the Dutch figureheads De Klerk, Kramer, and Van der Meij. This publication was never able to provide the liturgy for would-be followers of De Klerk, whose style was too brilliantly personal, and with his death in 1925 the momentum failed.

Wright and Berlage were father-figures also for many of the younger rationalist generation and their influence can be seen strongly affecting Duiker and Bijvoet. Berlage had returned from his visit to Wright full of praise for the Larkin building of 1905. Even before he wrote and spoke of his impressions of Wright's architecture Berlage was respected for his two earlier works, the Diamond-Workers' Union building of 1899 and the Amsterdam Stock Exchange of 1903. In these buildings the functional connection of large simple spaces establishes the building envelope of brick and stone load-bearing walls. He treats walls as plane surfaces, emphasising the contained volumes, and the details of brick and stone junctions are disciplined in this plane.

right
Rijksakademie, ground floor
plan

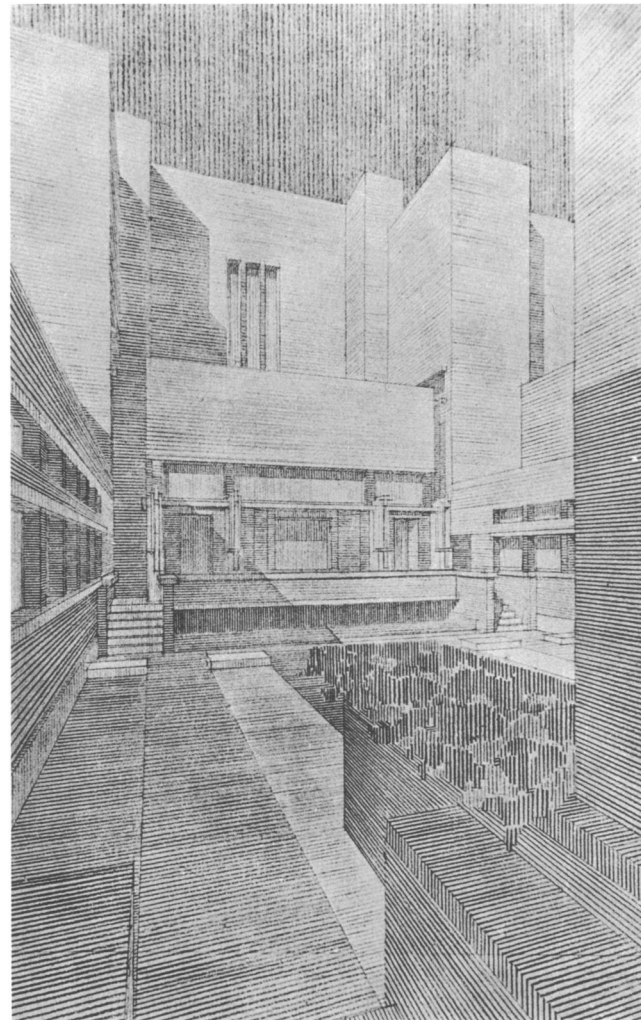
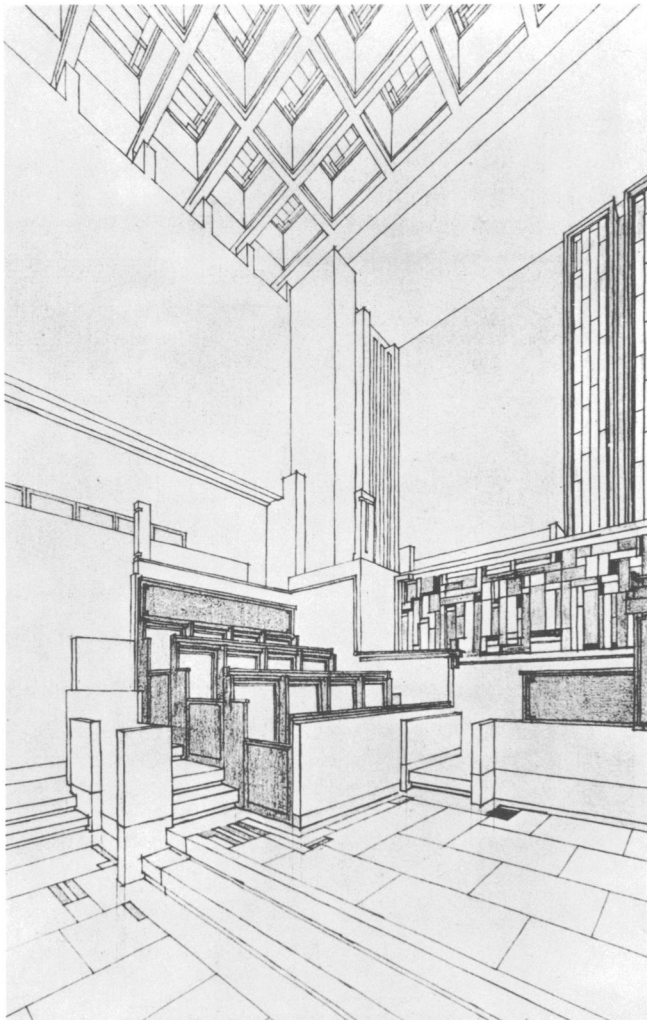


right
Rijksakademie, facade
elevation



Bijvoet and Duiker first met at secondary school and began a friendship that continued at Delft, where they entered the faculty of Architecture of the Technical Highschool in 1907/8, to study for diplomas as *Bouwkundig Ingenieurs*. They are remembered as keen musicians and on occasions they would play piano duets, Duiker being very interested in modern music. On completing their studies in 1913 they worked for Prof. H. Evers, who was engaged on the project for Rotterdam City Hall. They stayed there for three years before achieving their earliest success together. In 1918 it was announced that they had won first prize^[2] in the competition for the *Rijksakademie voor Beeldene Kunsten* (school of plastic arts). The jury of the *Rijksakademie* project included Berlage, Cuypers and Roland Holst. Michel de Klerk's entry came second and was an impressive display in the manner of his *Zaanstraat*^[3] housing. Bijvoet and Duiker produced a direct or-

ganisational solution with very plain elevations, hinting only at some compositional feature at the main entrance. The plan arranges itself symmetrically on the entrance axis to provide, across the front of the building, a range of formal spaces for assembly and exhibitions as well as some administrative offices. On the centre axis a sculpture hall with two flanking courts form the link with the studios, on two main levels across the rear of the building. The young architects decided to establish a practice and used the prize money to buy three houses in Zandvoort, at that time a quiet North Sea resort. During the following four years they continued to develop the design and produced models and perspectives. It is difficult to identify the original competition drawings from those subsequently completed and published. However, the main inspiration seems to have been from Wright, particularly in the interior sketches, but with an overwhelming cubic simplicity



left
Rijksakademie, sculpture
court

far left
Rijksakademie, large
assembly hall

of form. Much of the detail handling of bands of fenestration for example are in the manner of Wright's Martin house of 1904 and later adopted by Dudok in Hilversum Town Hall and Mendelsohn in the Sternfeld house. Bijvoet remembers being most interested in the work of Berlage, Behrens, Mendelsohn and Wright in the early years.

There is a project of 1919 for a house in The Hague which bears an uneasy resemblance to Berlage's big country house St. Hubertus, at Hoenderloo near Arnhem, of 1916. The plans both spread out from a main tower, with the geometry taking in rectangular and 45° forms. The undeveloped project can not challenge Berlage's skill at this time.

Late in 1919 they won a competition for two groups of houses in Scheveningen, which were the first in a series of small housing projects, to bring them to prominence in France as well as Holland. All the projects were for a contractor and developer, Johan van der Houwen, who became almost the patron of the two young architects.

The terrace, 98-114 Joh van Oldenbarnevel-delaan,⁽⁴⁾ is a continuous curved block with small front gardens. The letter with the planning application⁽⁵⁾ states, "It is not in an attempt to achieve monumentality that the curved form of the building mass is unbroken. For this reason modulation is sought after in the additional details on the corners of the block, and in the window boxes built up in front of the ground floor windows, alternating with the extended entrance porches. The material is exclusively brickwork, the use of stone is avoided." In these statements can be seen the determination for simple forms and details which is the discipline of all these houses. The plan form is straightforward although the central well staircase does not provide the economy of the later Thomsonplein houses.

The elevations have details which were to

appear again and of a directness that no present day architect would be ashamed. Almost the whole wall face is opened by two horizontal bands of windows interrupted only by single-brick piers. The windows themselves are set well back in the reveals so as to suppress the heavy effect of timber frames on the continuity of the elevation. The frames are broken into four opening lights in a range of sizes. The flat roof has a light over the stairs and is finished at the parapet with a zinc flashing over two incised courses of brick. The porches provide a canopy at the door with a clerestory light to the entrance hall itself. The whole effect is of a precision and lightness which is absent from the contemporary housing in The Hague, completely fragmented visually by the heavy and obtrusive detailing and the lack of proportional control.

Across the street are a group of four houses placed on a triangular corner site in such a way that they shield a small south-facing garden. They turn their backs to the "unsightly equipment of the steam tram", now replaced by the more advanced wirescape of the electric tram. In this building the windows are again grouped on the south face where they open on to the garden, or balconies on the upper level. The back of the group is used for entrance and utilities and here the outlook onto the street is of little importance. The building plan is interesting for the way in which it aligns itself with the two street boundaries, and in doing so finds the excuse to crank the plan to shelter the gardens.

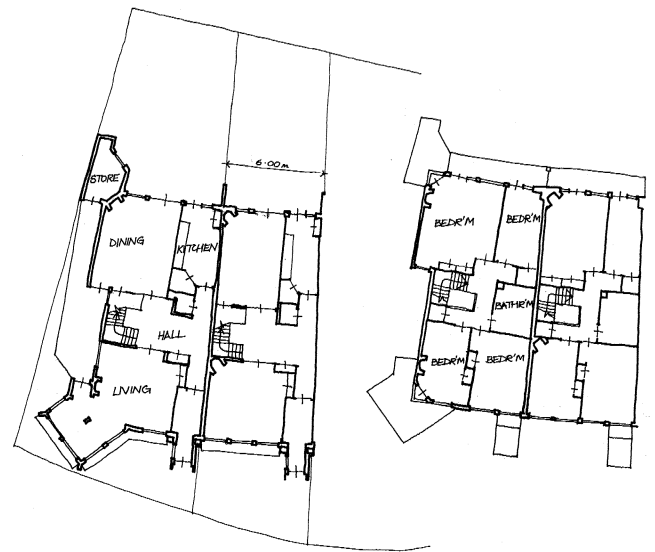
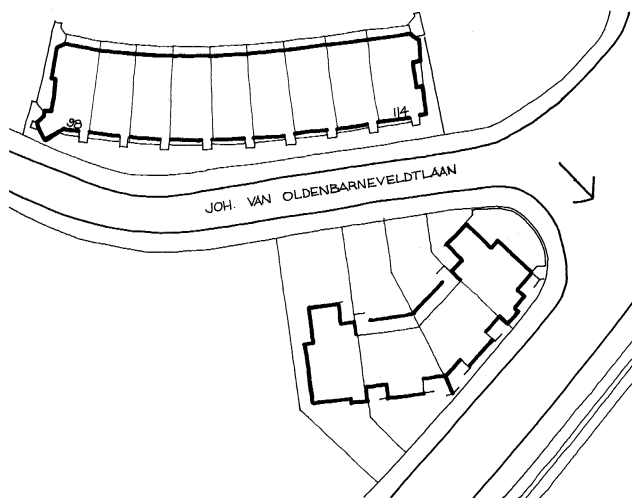
In this same period, in early 1920, the houses and shops on Thomsonlaan,⁽⁶⁾ Iepalaan and Eikstraat were designed and a characteristic precision again appears in the brick detailing. Some small bay windows on a 45° splay have half-brick piers which stretch one's credulity.

A year later the scheme was produced for

right
Joh van Oldenbarnevelde-
laan, view

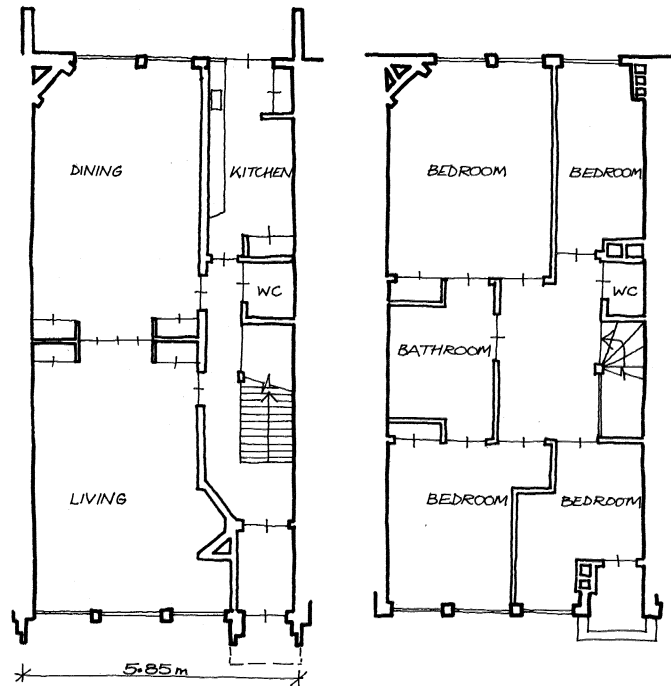


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Joh van Oldenbarnevelde-
laan, plan

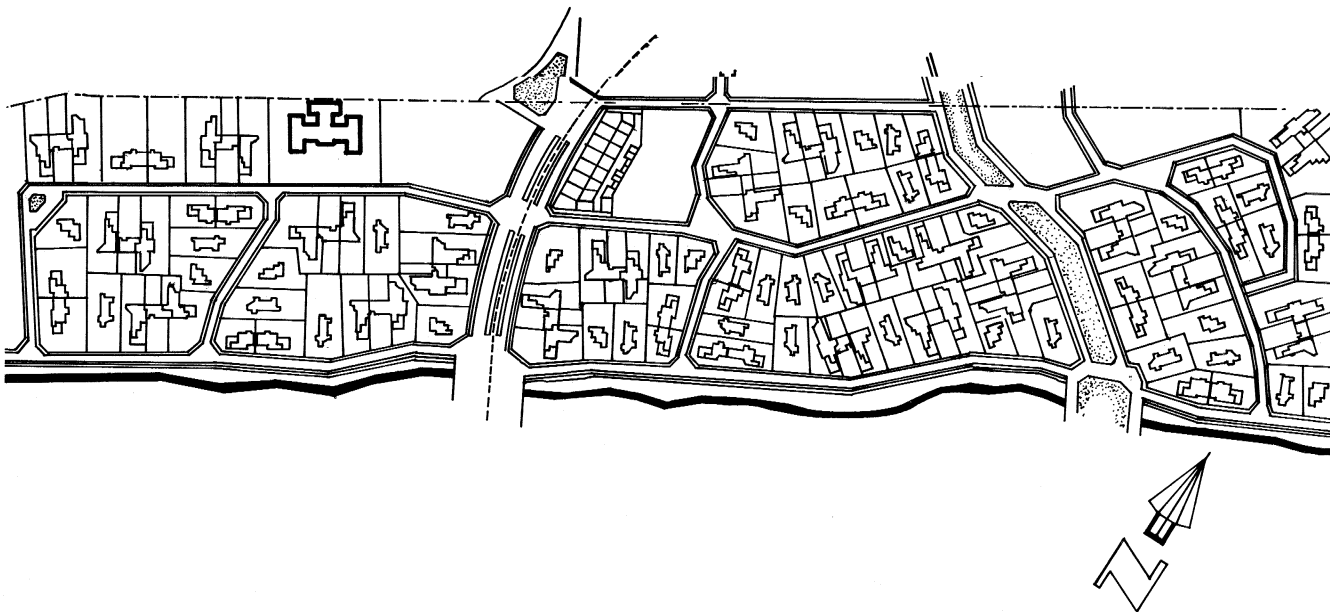


right
Joh van Oldenbarnevelde-
laan, elevation





left
Thomsonplein, plans
far left
Thomsonplein, housing and
shops



left
Kijkduin housing, site



type A



type B



type C



type D



type E



type F



type G

the group of houses and shops on Thomsonplein.⁽⁷⁾ The house plans are more compact than anything so far and are similar to those in Oud's sea front project of 1917. The elevation is handled more plastically with each shop unit separated by the projecting entrance porches and shallow recessed planes on the upper level. The corner shops are set forward slightly to form a strong corner. As with all the early work, the buildings stand today in very much their original form. It is interesting that these are speculative housing schemes in traditional materials. It is the later purpose-built projects in new materials which have suffered most heavily from the changes in fashion.

Van der Houwen began negotiations in 1921 for the development of a piece of land close to the beach at Kijkduin. Bijvoet sent the first site plan to the Municipality in March 1921 for the area lying between a brook and the edge of the sand dunes.

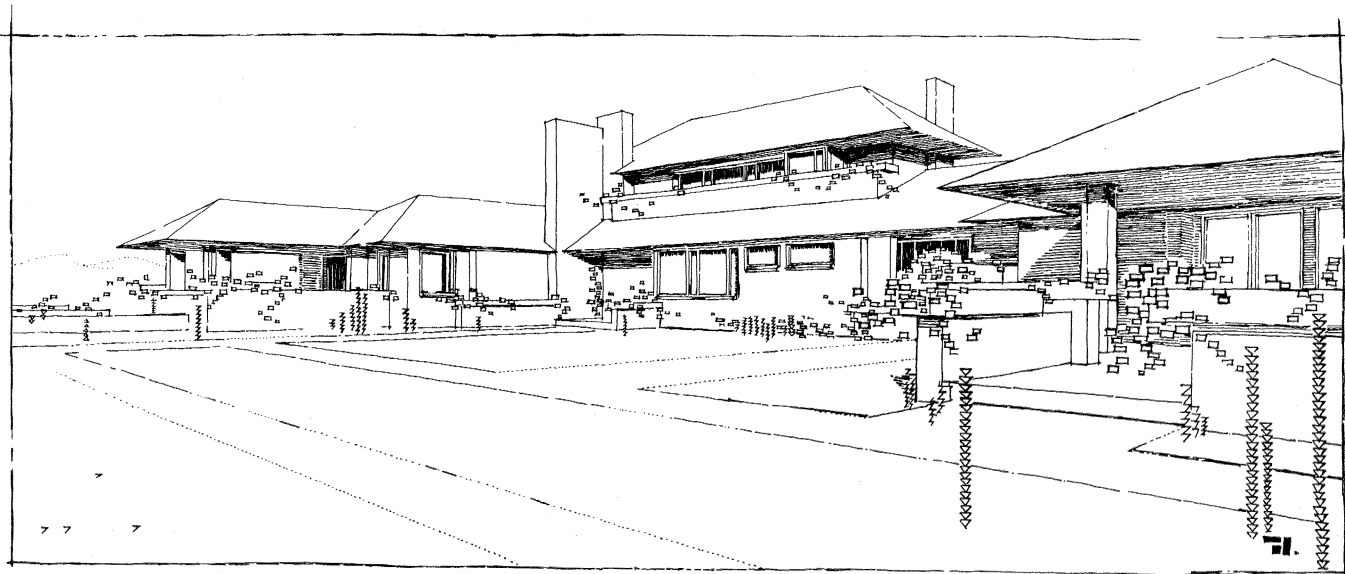
The development was of 126 villas of seven types, of four building forms. All types have differing plans but are 3-bedroom houses with living rooms, kitchen, W.C., and bathroom or shower-room as follows: Type A is detached, single storey, tiled roof, shower, total 22

Type B is detached, two storey, thatched roof, bathrooms, total 16

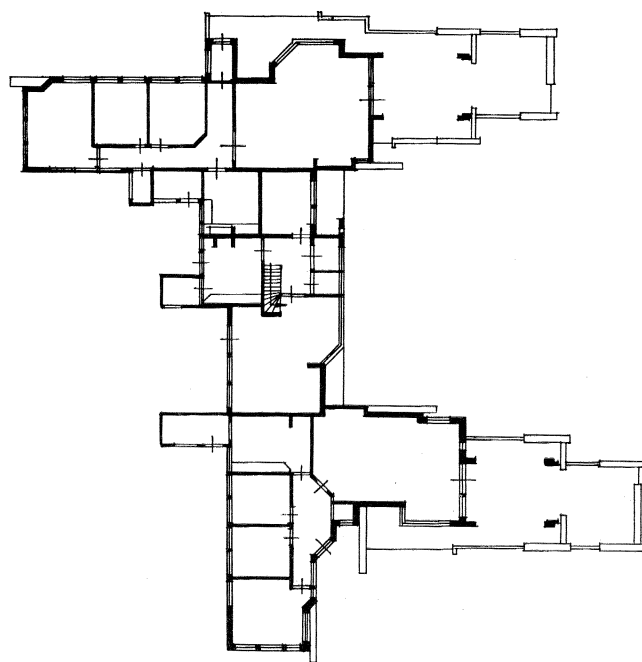
Type C is semi-detached with Type G. C is a single-storey wing with a shower, linked to the two storey G with a shower, all under thatched roofs. Total 14 C+G

Type D is the two storey centre section of a villa to which Types E and F are the flanking wings. The roof of this complex is tiled and there are 20 in this form. As can be seen in the plans of these large houses, the layout is economical with the bedrooms generally contained in one wing while the main living room forms the other wing, with the entrance be-

right
Kijkduin housing,
perspective

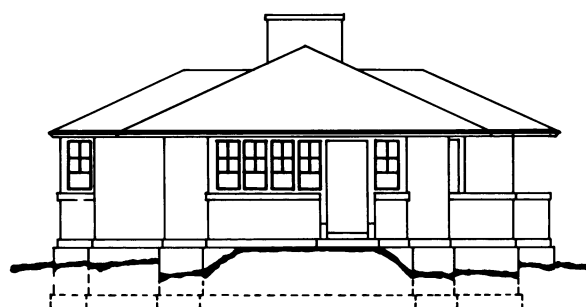
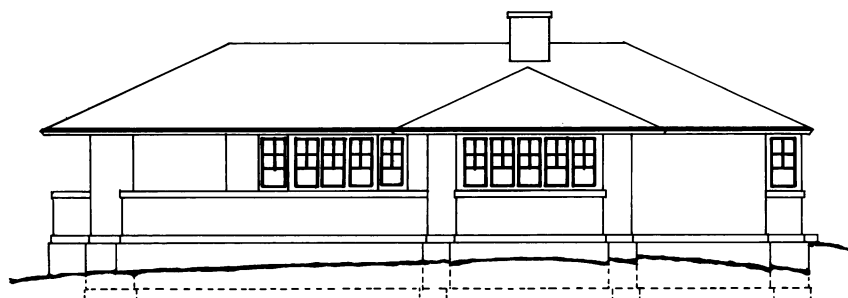
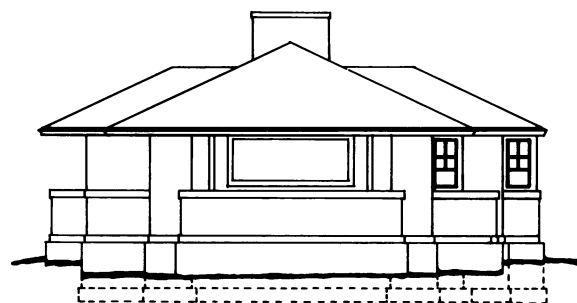


right
Kijkduin housing, general
view



tween. A sparing use of 45° planning in the entrance hall and living room, and the extension of the living room out under the roof as a loggia, and then further as an open terrace, hint at some knowledge of Wright's houses.

It is the biggest housing type that is most striking for the low-pitch over-sailing hipped roofs, which bring to mind the Robie and Willitts houses of Wright. It is well known that the Wasmuth volumes had made a strong impact in Europe and it is perhaps the revelation of Wright's houses, rather than Berlage's own interest in the Larkin building, which had an effect on the younger architects. When Robert van't Hoff built the two houses at Huis ter Heide in 1916 there was a solid example of Wright's style to be seen in Holland. The symmetrical axial plan⁽⁸⁾ of the larger house, with its heavy external string courses and flat projecting roof planes, does not however seem to have influenced Kijkduin. It



seems to be only the low-pitch hipped roofs of the small gardener's cottage which have any affinity with the scheme by Bijvoet and Duiker, who probably took their model from the published material on Wright, much as Wils had done before them.

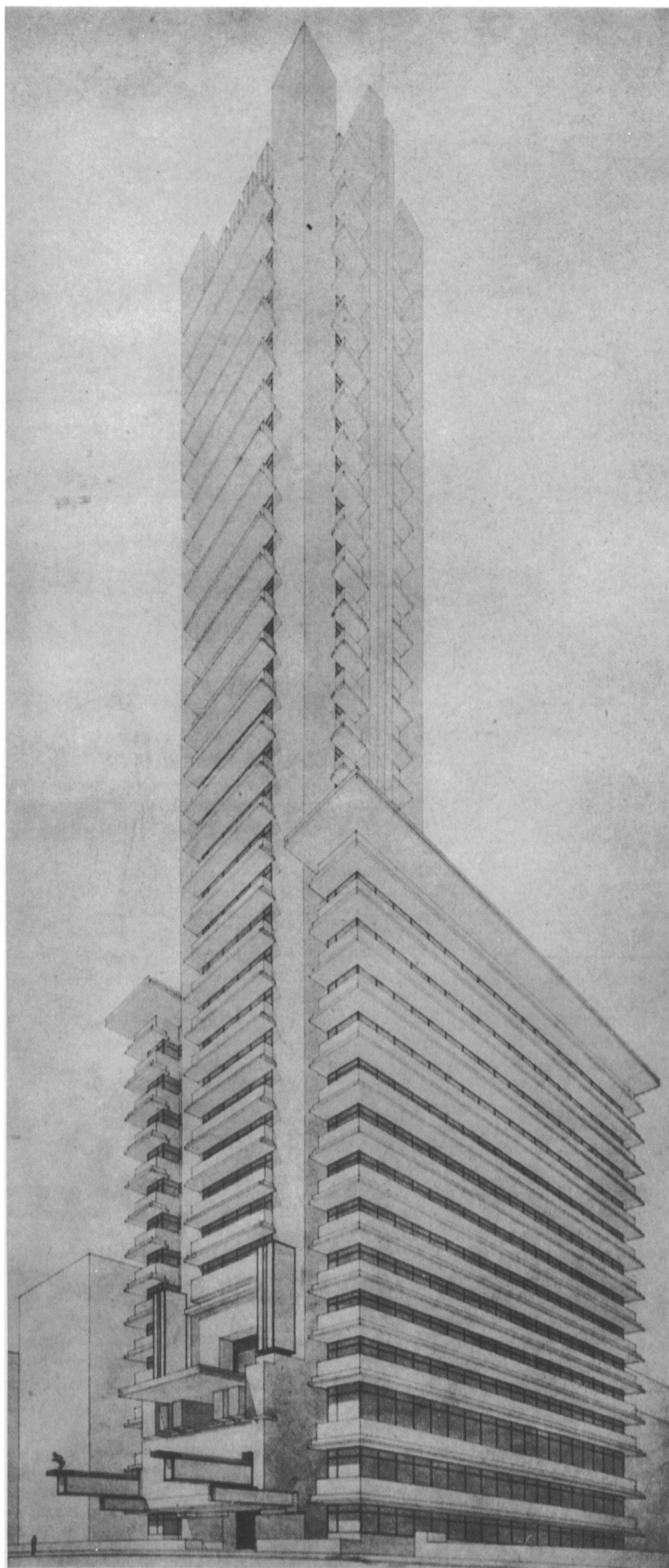
The project began in 1922 and was essentially complete by 1925 (a large section was destroyed during the war, about 36 villas to the southwest of Zeestraat). The only serious external effect of dividing a building into two or three separate freehold parts is that each part can be altered differently. This has happened so that today the cohesion of the original design is fading under the various modifications to the same building. This process began even in 1925, for drawings show that at that time Bijvoet and Duiker were providing details to enable the loggias of some houses to be enclosed with glazing.

Kijkduin takes one through a period which must have been difficult for Bijvoet and Duiker. The Rijksakademie project was being developed in a series of models and coloured perspective drawings. Then Wiebenga was called in as the engineer for the reinforced concrete work and the foundations. He became heavily involved when the authorities began to demand a start to work on site. Eventually they set a starting date and Wiebenga insists that he could have found a contractor ready to carry out sufficient work to satisfy the Government, but Bijvoet and Duiker chose to ask for more time and money to complete the drawings first. This naive approach brought a direct refusal and cancellation of the project. Many people took the matter up on behalf of the architects, but there was a developing economic crisis in the Government and there was no hope of a reprieve.

left
Kijkduin housing.

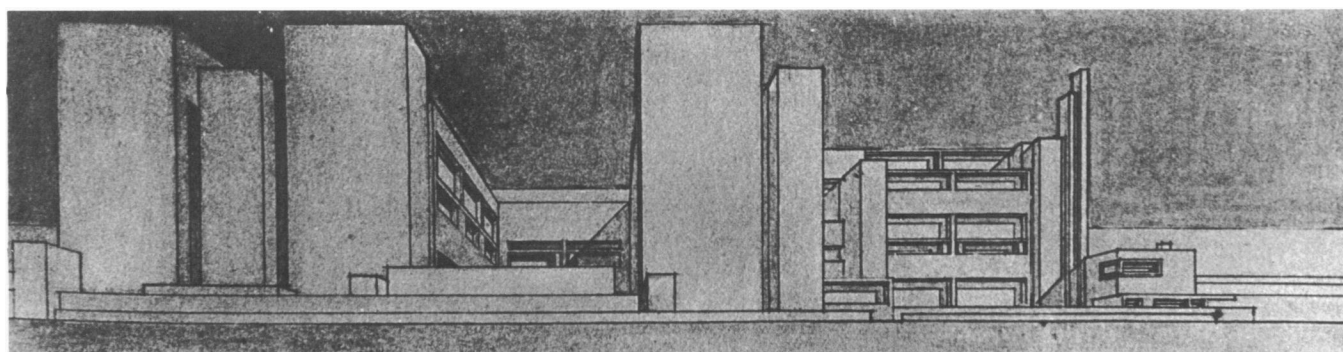


opposite
Chicago Tribune tower
competition project



In 1922 they entered the Chicago Tribune Tower competition with one of the few projects to explore the problem in a modern vocabulary. They designed a 32 storey tower rising from a 15 storey block. The tower has four solid corner shafts, probably for services and lifts, between which runs continuous horizontal glazing. The floor slab continues beyond the plane of the glazing to provide sun shading. The junctions with the shafts seem unresolved, but the eye-catching feature is a symmetrical composition over the entrance at the base of the tower. The symbolism or functions of the various components are not clear to-day, but whatever the doubts in this context, the skill and invention of the design as a whole is evident. The project was an official exhibit at the Salon in Paris, 1925.

Bijvoet and Duiker then wrote some small articles in *Bouwkundig Weekblad*, the official journal of the BNA (Bond van Nederlandse Architecten). They were never fortunate in their press reception in this journal, which took the conservative line between the extremists of the Amsterdam and Rotterdam schools. It can not be said that they ever sought publicity for their work and it was left to others to use their buildings to illustrate new concepts. They did however write an article⁽⁹⁾ to explain the design philosophy behind Wiebenga's new Technical Trades school in Groningen. In this they used a quotation of Oud when talking of functionalism. "The peculiarity of this new aesthetic is that it originates purely from necessity, it promises a functional bond between the necessities of life and the form, in which it finds expression, in such a way that no practical demands are compromised by a consciously cherished conception of beauty." Wiebenga himself had used this same quotation in part of his report of 1922 on technical education in Groningen, and Bijvoet and Duiker propose that the value of such an approach



left
Scheveningen school view

is proved by the new school.

The greater part of their article is a persuasive attempt to demonstrate the worthlessness in following stylistic fashions in architecture, and they use part of a talk about Wright which was given by Berlage.

"In a time of rapidly changing art trends, those who follow the strong personality are working on an unsteady basis, for the pursuit of his individual forms leads to the establishing of a School. It is the fascination of such new trends that they attract irresistibly by imagery, and this urges on more changes, and so they multiply with an incomprehensible speed. The effect is like throwing a stone in a pond. Such a quick change is not possible in a more general art situation, when not only the art form undergoes a change, but it also concerns the reversal of more fundamental values; in short, when the particular individual gives way to the collective public."

"It has been repeatedly said that our period is not dominated by a common current of ideas, as in the great periods of architecture. Nevertheless it can not be denied that ideas and points of view are changing under the influence of these times."

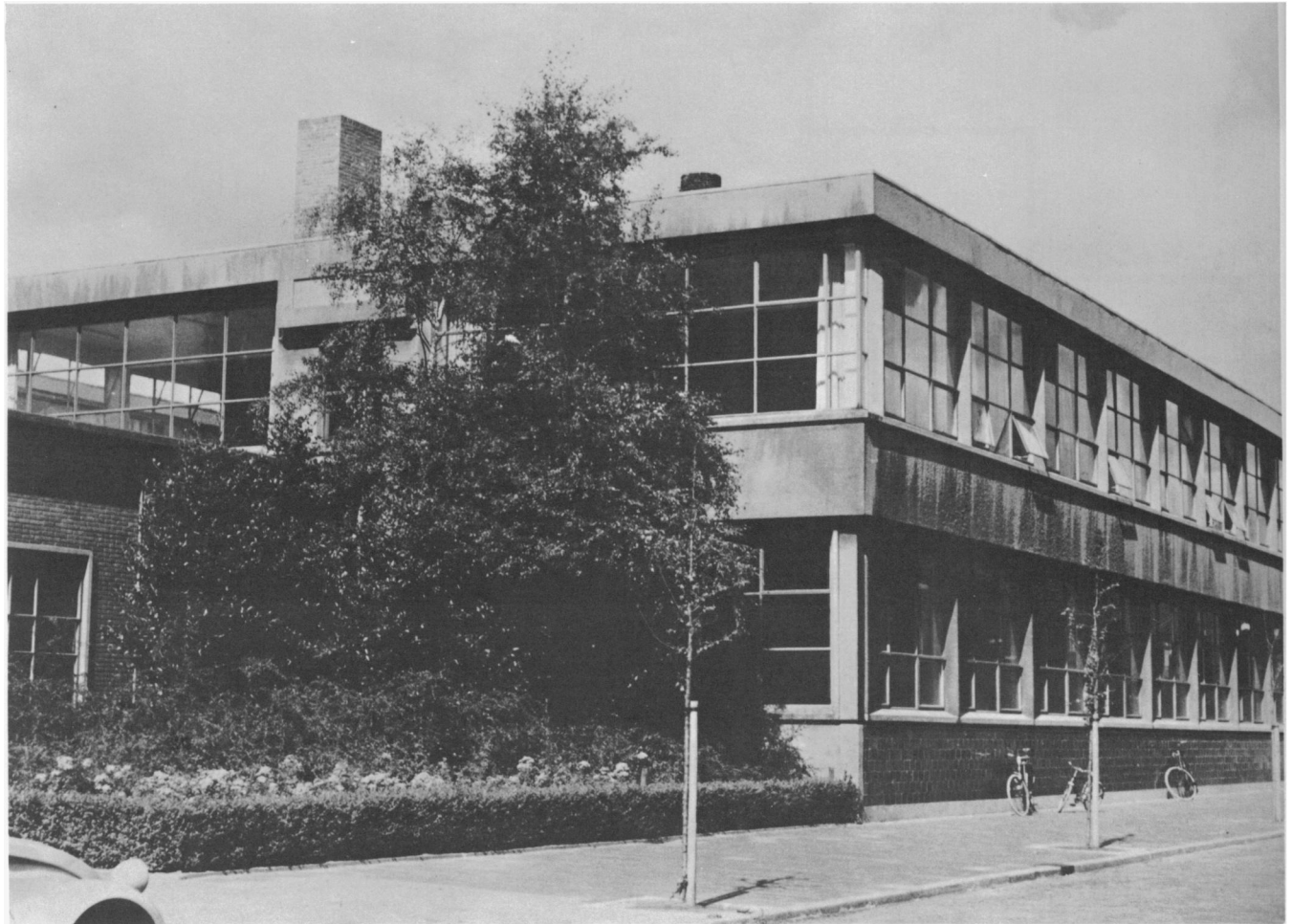
J. P. Mieras, an editor, commented in a later article⁽¹⁰⁾ on Bijvoet and Duiker's own project, for a similar school in Scheveningen. He said that, although the architects had provided scant information about their school, he wanted to publish it for it contained much that was common to Groningen also. Certainly the ideal of Oud had been followed by both architects, but it seems to Mieras that the Scheveningen school is less radical. For it is a school where, although the technical problems have been handled most clearly, it is still a School, an environment where, besides the mechanical process, room is still left, happily, for human feeling. "These two educational buildings are certainly important for our archi-

tecture. Most of our educational buildings, except those for technical education, are quasi-beautiful products where you always get the impression that the staircase is more suited for the National Theatre on the Leidseplein, but which otherwise lacks any qualities. In mentioning Wright's name, I would say that the American is inclined to be poetic in even the most down-to-earth projects, compared with the solid Dutchmen that breath his spirit."

This commentary dwells on the emotive, subjective content of design and ignores the real problems of the architects at Scheveningen. They were working on a restricted site with irregular boundaries and yet they designed a building with a clear plan form, resolving the many large workshops into a direct relationship with each other and the circulation. This having been achieved the elevations are complex but coherent. The articulation of elements, the handling of corners and the shallow projections of string courses and roof planes owe nearly everything to the Larkin building.

Wiebenga's school is simpler in form, having been given a free site and facing onto a small square (which was later built on by a jealous Council architect). The building is mainly 3 storeys stepping down to single storey at either end. It is totally utilitarian and the only visible modulation of the form results from each storey projecting slightly beyond the lower one.

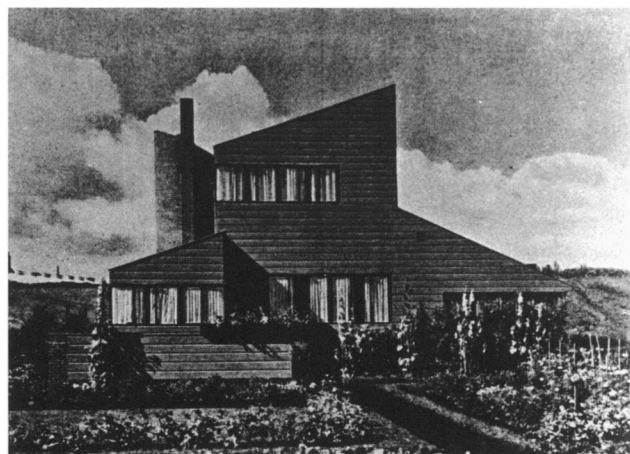
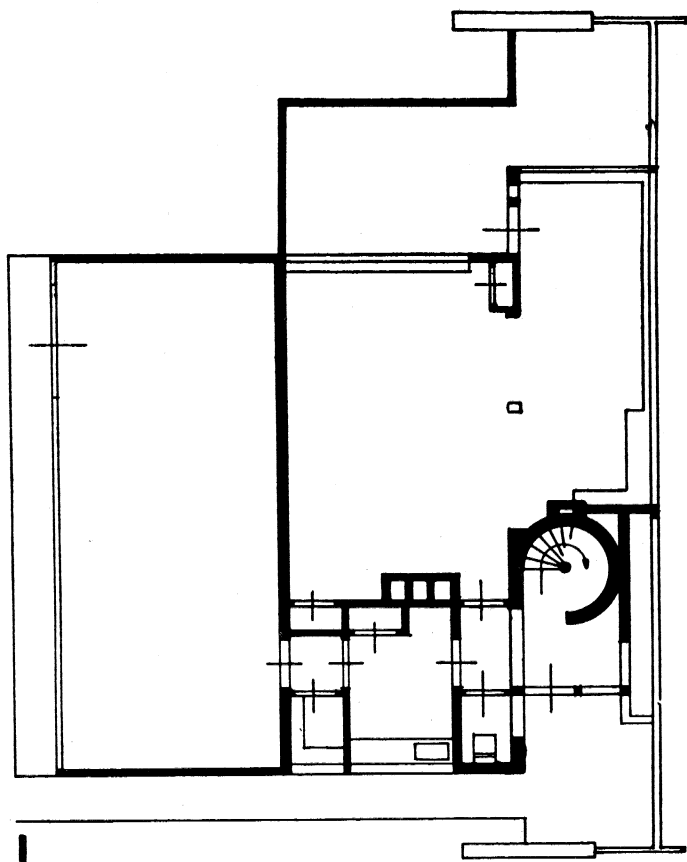
Wiebenga had started to study architecture at Delft but was forced to give way to his father's wish that he should take up civil engineering. Gaining his diploma in 1912 he joined a firm in Breda which specialised in reinforced concrete work and he was involved mainly on architectural projects until the outbreak of war. Holland's neutrality cut her off from German and Belgian sources of coal and she was forced to develop coal mines at Limburg.



right
Groningen school

Wiebenga here suggested the use of Swiss techniques of soil refrigeration to drill shafts through difficult strata where there were underground rivers. At the end of the war he was nominated by Dr. H. P. Berlage for the lectureship at the Arts Academy in The Hague, where he had to give only seven lectures a year. This allowed him to develop his own practice, when he worked on the Rijksakademie project, until 1920 when he was invited to accept a Government post. For some time there had been dissension in the province of Groningen over the subject of technical education and Wiebenga was asked to take over the reorganisation and to report to the Government. In this report he proposed a new technical school and, once Government approval was obtained, he set about designing it himself. His official post did not allow him to take part in such work and it was for this reason that he invited L. C. van der Vlugt to be associated with the work and to sign the drawings. The school was completed in 1923 and very shortly after this he emigrated to the United States with his wife, where he made the most of his energies in gaining wide experience in large civil engineering and construction projects.

Wiebenga as an exponent of functionalism puts him at the 'Rotterdam' end of the scale in the continuing polarisation of attitudes with 'Amsterdam'. This is recorded⁽¹⁾ by Erich Mendelsohn after attending a lecture by Oud in Holland. He wrote, "Oud is, to use Gropius' words, functional, while Amsterdam is dynamic. A unison between the two is conceivable, but not recognised in Holland. The analytical Rotterdam brain denies vision, the visionary Amsterdam brain does not comprehend cool Zakelijkheid. Certainly the primary element is function; but function without sensibility remains mere construction. Both are necessary; they must find one another. Otherwise Rotterdam will construct itself



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Aalsmeer house
far left
Aalsmeer house plan

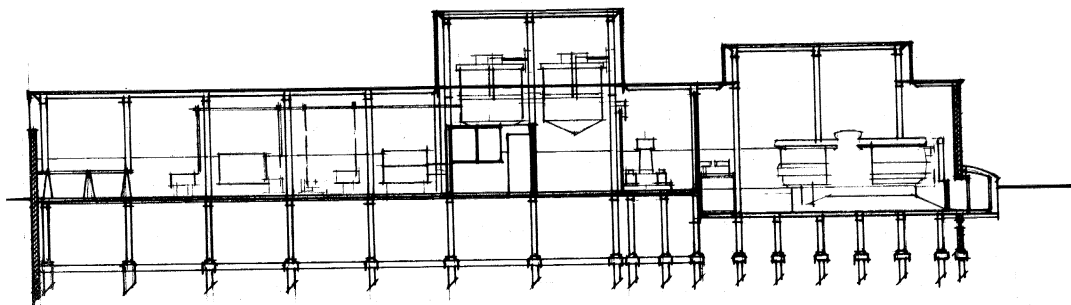
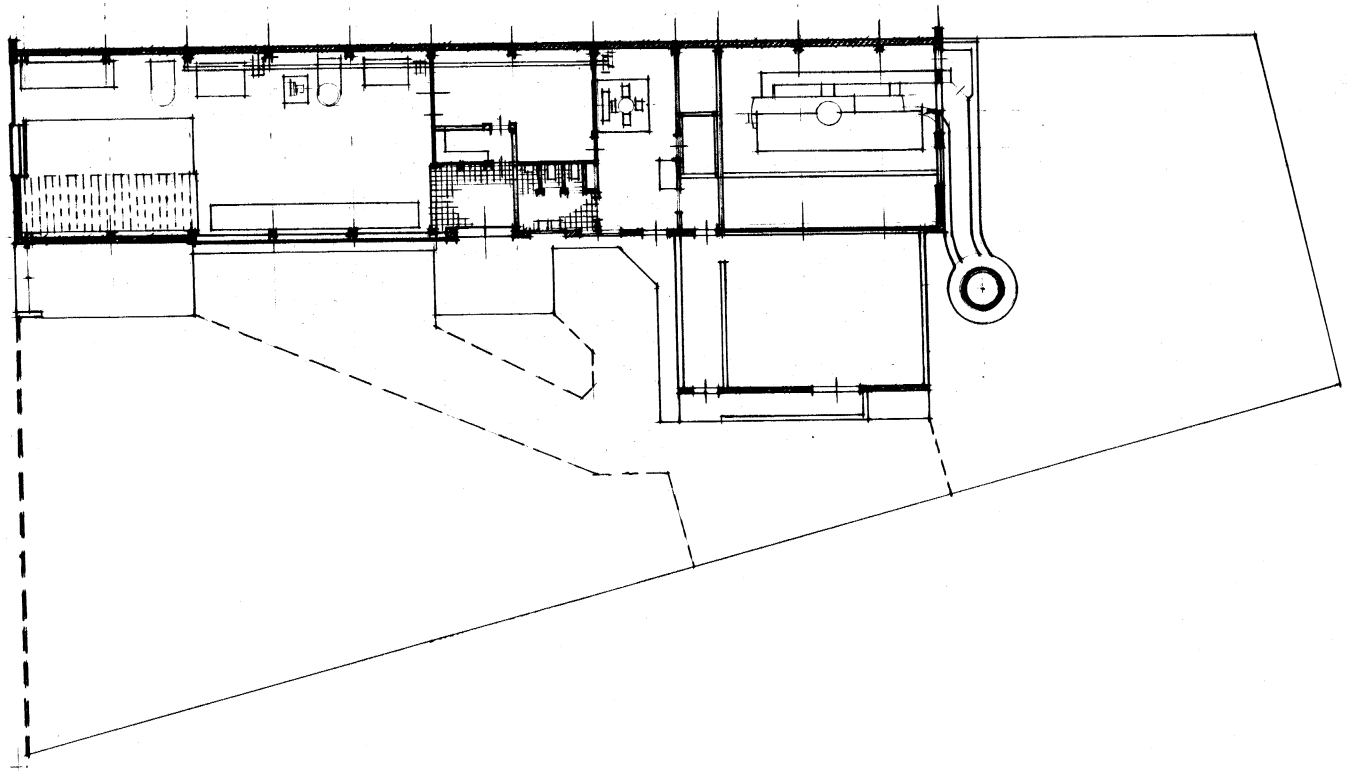
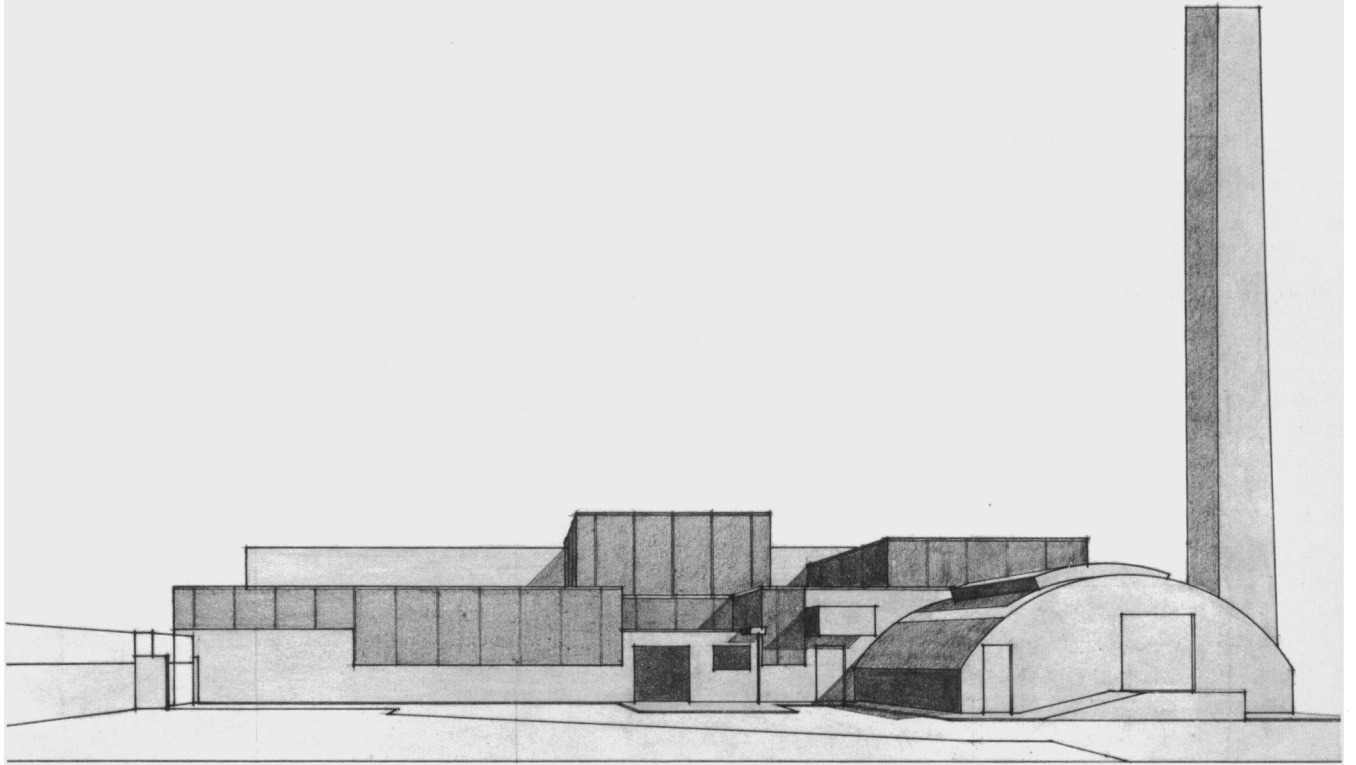
out of all life into cold death, Amsterdam will burn itself out in the fire of its own dynamism. The decorative talents of Amsterdam are certainly a danger. Wijdeveld never gets beyond them, but De Klerk has a genuine spatial talent." Mendelsohn was in Holland at the invitation of Wijdeveld, as editor of *Wendingen*, and he met a number of architects on the visit. At about this time his own work was moving away from the free expression of his earlier sketches towards the more precise and harder forms of the hat factory at Luckenwalde.

With Bijvoet's acknowledged interest in the work of Mendelsohn the next building with Duiker should not cause much surprise, except for its complete lack of any obvious reference to Wright. The small house⁽¹²⁾ for a market gardener at Aalsmeer in 1924 is the first sign of the break with the past. It is not difficult to associate the sharp angular boarded forms of the Luckenwalde dye vats with the equally sharp and angular boarded form of the Aalsmeer house. With its opposing mono-pitch roofs it represents a form to become popular in the fifties, after a revival by Jacobsen, yet it seems to stand outside any general trends of its own time. The choice of a timber frame may have been because of the unsteady nature of the ground, and this is a traditional form of construction in other small villages on the Zuyder Zee. It allowed the windows to be set in continuous bands, even giving visually free corners by placing the main framing members one bay from the corner. The main structure was close boarded horizontally while shingles were used for the circular stair tower. This produced a very neat and compact form which is altogether in contrast to Rietveld's house for Mme. Schroder in the same year. Indeed it is not until 1927 that Rietveld moved away from Neo-Plasticism with the moulded ply chairs and the chauffeur's house in Utrecht. Similarly Oud did not show his split from

De Stijl influence until his housing at the Hook of Holland 1924-7, and developed at Kiefhoek, Rotterdam in the following years.

In 1924 also, Bijvoet and Duiker carried out their first project for the Diamond Workers' Union of Amsterdam, who had commissioned Berlage to design their offices in 1899. In the first part of the century there were over 10,000 people employed in the diamond polishing industry in Amsterdam, working with mechanised wheels, not unlike a potter's wheel. The diamond to be polished was held in a small chuck, which was itself clamped to a short copper shaft, fixed to a bracket on the machine. As each facet of the diamond was polished the copper shaft was rotated or bent to a position for the next facet. With up to 56 facets on a diamond, the shaft eventually broke from fatigue and a new copper shaft had to be substituted. The very fine dust produced by the process had a considerable abrasive effect on human tissue and the workers were badly affected by tuberculosis and other lung disorders. Around 1900 Jan van Zutphen was one of the leading figures in the Union and he tried to find ways to help those who were sick and unable to continue to work. In 1905 the Koperen Stelenfonds (Copper shaft-fund) was set up as a first step to make money from salvaging the broken copper shafts, which were otherwise thrown away with the waste. Widespread collection of the copper brought some help for the more seriously ill, but it still left the main problem unsolved. A further move was to coat the inside of the polishing pans with a grease to catch the loose dust which could also be resold. The project in which Bijvoet and Duiker became involved was to build a laundry for the Koperen-Stelenfonds. Apart from providing a service for their members, it was intended to recover the fine dust from the overalls of the diamond polishers, who from time to time rubbed the

right
Diemerbrug Laundry



diamond on their sleeves before examining their work.

This project⁽¹³⁾ shows their most utilitarian manner, which was to offend the conservatives so much. The plan conforms to the direct sequential process of the laundry, resulting in the long rectangular building, out of which rise clerestory lights to the boiler house and the settling tanks. At one end a curved roof covers the coal stores and clinker waste, adjacent to a tall boiler chimney. The tight thin detail is uncompromising and is carried over directly into the project drawings for Zonnestraal.

At this changing point in their architectural development Bijvoet went to represent the partnership at the International Exposition of Applied and Decorative Arts in Paris in 1925. Their schemes for the Rijksakademie and the Chicago Tribune tower were on exhibition with other national work, including Wiebenga and Van der Vlugt's school in Groningen. (By this time a house in The Hague, the project for the Scheveningen school, and the Laundry had appeared in the early volumes of *L'Architecture Vivante*.)

Bijvoet met Pierre Chareau at the exhibition and he was impressed by the brilliance of the man. He felt that Chareau was a real artist and his personality attracted him so much that he determined to work in Paris for some time. Conditions in Holland were difficult and the partnership had had some financial difficulty which depressed Duiker. He never seems to have handled his own finances very successfully, as Wiebenga remembers his agitation at being near bankruptcy in 1927, and he died in debt. Friends and former associates have also remarked on his dry humour and his tendency to introversion, making him difficult to understand at times. But he also had tremendous energy and Bijvoet says that he was more direct than Chareau, more interested in grand statements than in details. One has the feeling, on meeting Bijvoet, that he would give immense care and attention to detail and this is born out by his participation in the 'Maison de verre'.

Bijvoet settled quickly in Paris and began an association⁽¹⁴⁾ with Pierre Chareau, which included the completion of the house for Dr. Dalsace and a golf club at Beauvallon. In subsequent years he also worked with Paul Nelson, and Eugene Beaudoin, always preferring, as he said, to collaborate with others.

I am trying to suggest that these differences of personality would have contributed to the agreement to work apart for some time. Some time after this Duiker was divorced and his wife went to join Bijvoet in Paris, where they were married. Duiker later remarried to a German, Lucy Kupper.

Wiebenga returned from the U.S.A., for the sake of his wife's health, and late in 1926 he was working again with Duiker on the first drawings for Zonnestraal. The project had been initiated by Van Zutphen in 1921 when, as secretary of the Diamond Workers' Union, he had bought a site for a convalescent home. However a more ambitious fund, the 'Zonnestraal' (ray of sunshine) fund was set up to build a sanatorium and main sets of drawings were complete by early 1927.⁽¹⁵⁾ Bijvoet and Duiker had some correspondence about the project, for Bijvoet sent a site plan from Paris although it was not incorporated in the scheme. The project was soon expanded to include workshops (1927) where the more active could gain a new craft and make products to support the sanatorium. In 1928 a small diamond polishing plant 'Adamas' was proposed but was never built. They did build a large number of small

self-contained timber cabins, where men could sleep and work in the pine woods away from the main buildings. In 1931 a small hostel was built for the nursing staff and in 1932 a canteen was added near the workshops. It was further intended that the separation from family, which occurred in the case of such long term convalescence, could be reduced by bringing the families to live on the site, and in this situation a school would be needed for the children. An open-air school was designed in 1930-31 but the idea for such a community was never taken further.

It is when one looks at the whole range of buildings at Zonnestraal that one notices the firm attraction to axial or symmetrical plan construction. From the time of the departure of Bijvoet many of Duiker's plans show an almost classically symmetrical basis, with often a single asymmetric element leaving the composition in a state of tension.

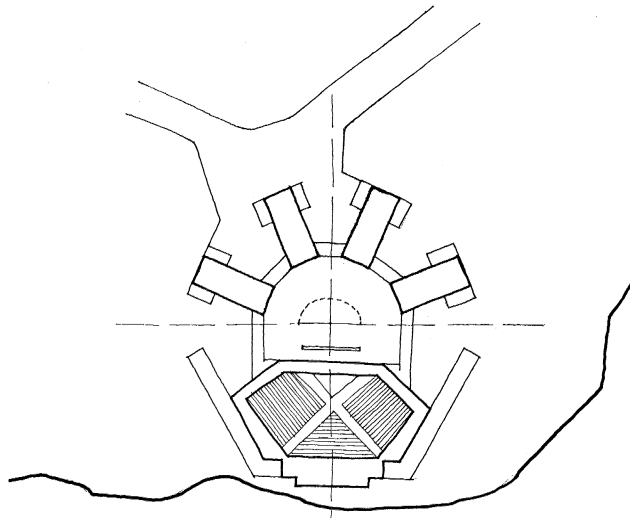
There is the radial symmetry of the League of Nations (four blocks radiating from the main congress building), of the urban housing project Hoogbouw (again four branches from a common service core), of the workshops for Zonnestraal (five sheds) and the open-air school for Zonnestraal (this time enclosing a full circle with six class rooms and a main building). Zonnestraal itself comes close to radial form but instead takes the 'octopus' spread of buildings, at that time favoured for sanatoria. It does however relate almost symmetrically through two axes, one in the direction of approach to the main building, and the other at right angles down the length of the site vista.

What one might call diagonal symmetry is used in the Open-air school in Amsterdam and in the two main cinema projects. The problem of such symmetry when two or more buildings relate at the corners, in chequer board fashion, is handled at Nirwana. The other factor which recurs is the use of cylindrical forms, from the stair turret at Aalsmeer through Zonnestraal and its circular hostel building, to the project for a resort hotel on the Elbe. I will return to many of these buildings in more detail.

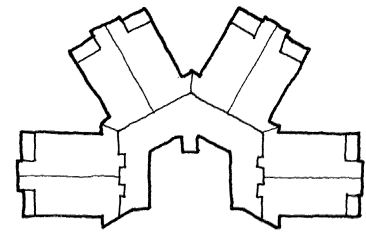
The sanatorium Zonnestraal is placed on the upper part of a gentle southward slope, in heathland wooded with birch and pine. The central building faces south and is connected by white footpaths and low walls to two symmetrically placed groups of pavilions. These each consist of a single storey day-room linked internally to two ward blocks of 26 rooms on two levels, angled outwards to have open views and sunlight.

The ward buildings are planned with all bedrooms opening off one side of the corridors which connect by cylindrical stairs, giving access to the roof terraces. The concrete structure is founded on ground beams which carry the stanchions and the characteristic cranked beams, supporting in turn a flat slab which itself cantilevers to provide the open terraces, so necessary in this type of building. This open frame, in the format of the 'Domino' house, is then completed by infill walls of rendered brickwork or steel framed glazing. Here it must be mentioned that these steel frames were not galvanised at that time, with sad evidence in the corrosion to-day.

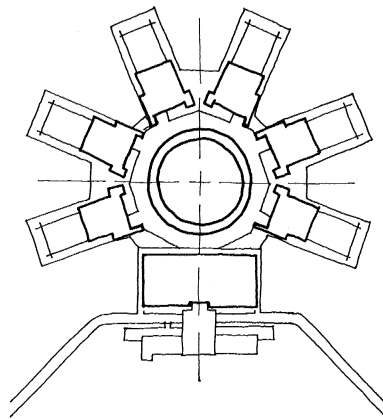
The central building lies at the top of the north-south axis but the approach for the visitor is in the east-west axis. Here a road passes through the building and returns in a loop to separate the ground floor into three main parts, while the upper floor bridges the roads to hold the parts together. At the first point of passing under the building is the main entrance to the reception and administration in the north block. This also contains the doctors' offices,



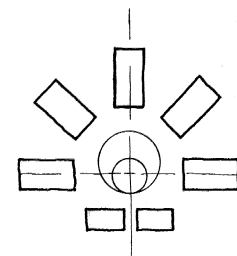
League of Nations
competition project,
schematic plan



Hoogbouw housing project

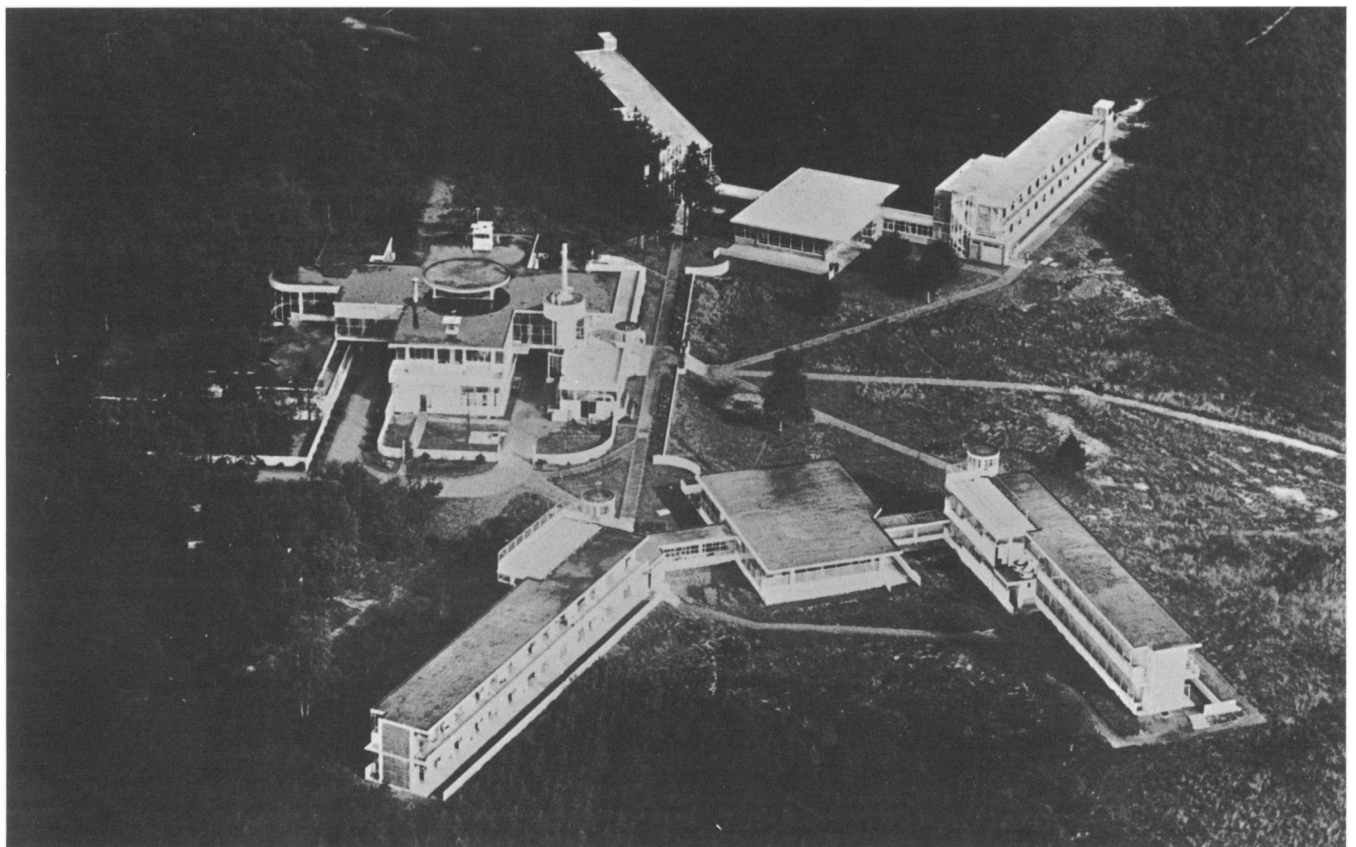


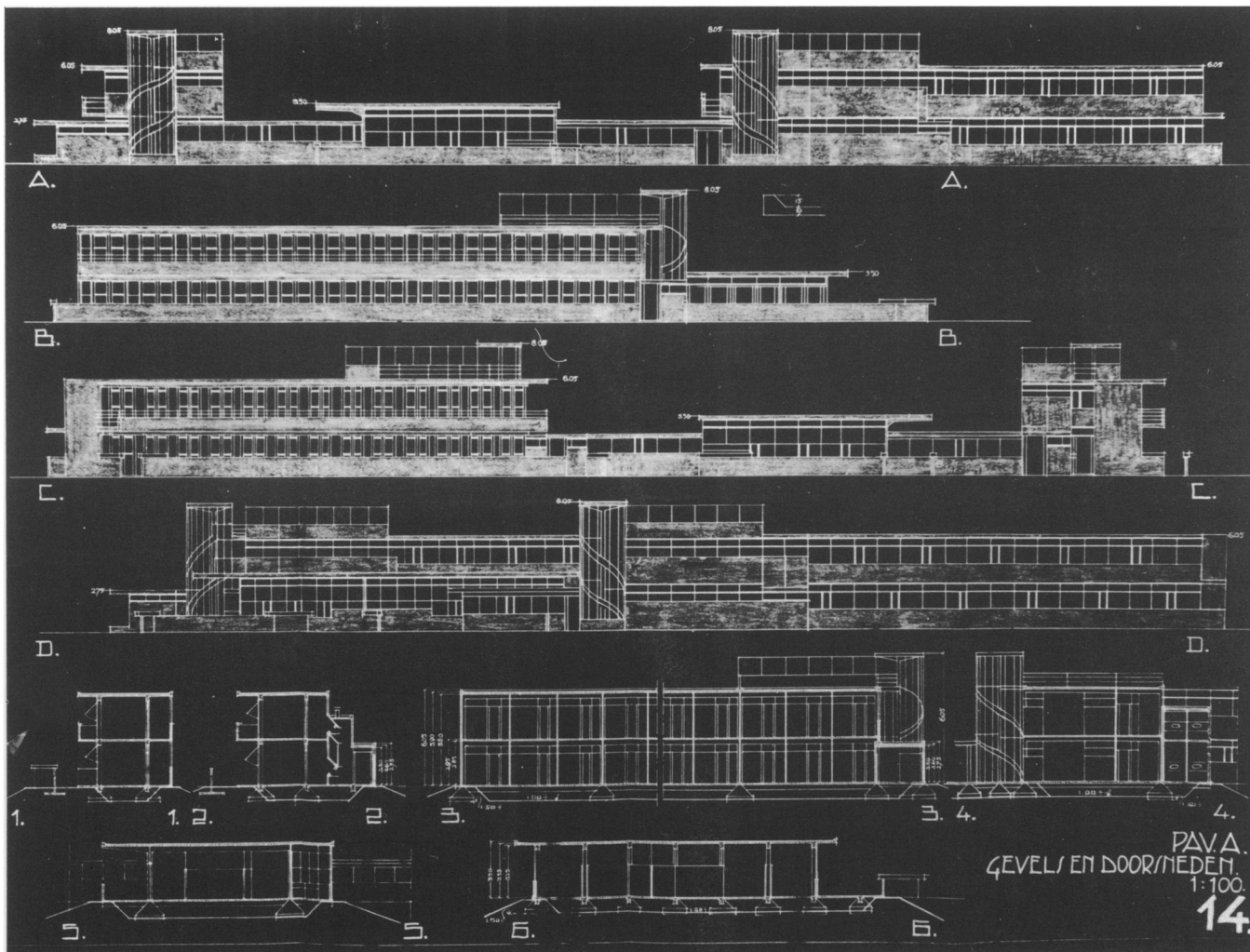
Zonnestraal, classroom
block



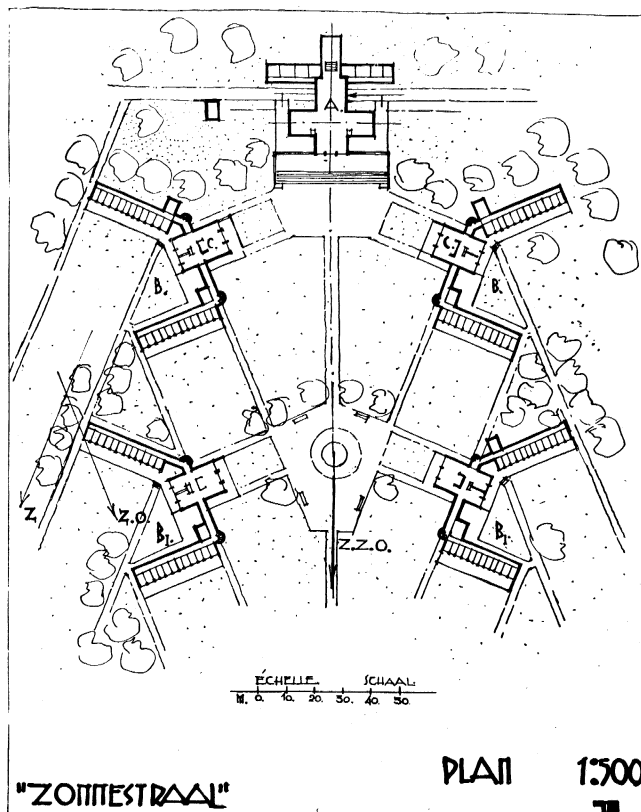
Zonnestraal, workshop plan

right
Zonnestraal, aerial view

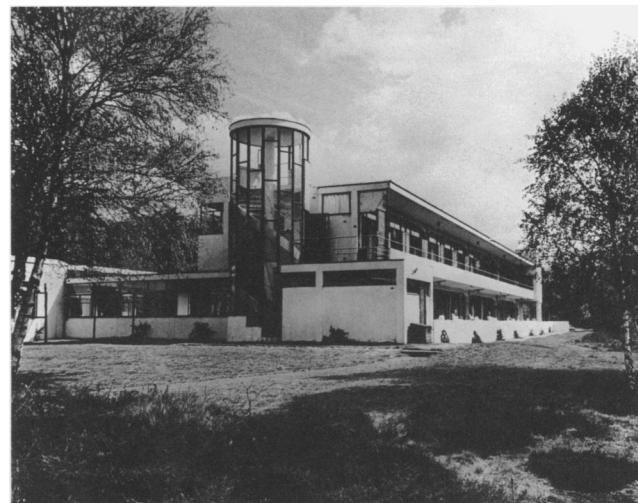




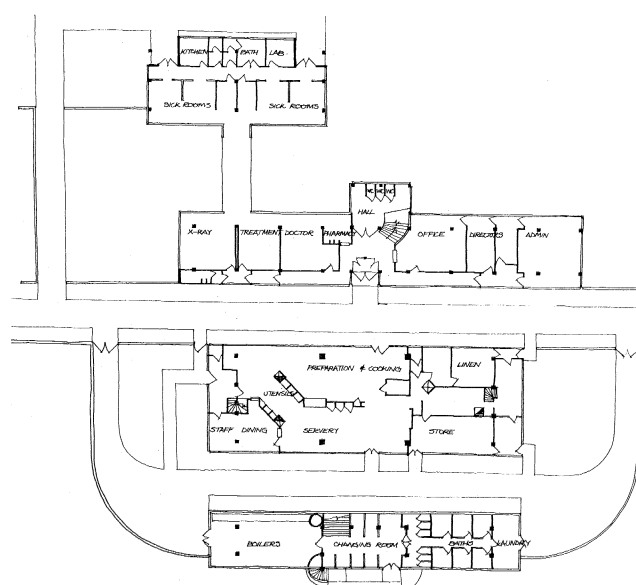
left
Zonnestraal ward building
drawings



far left
Zonnestraal site plan

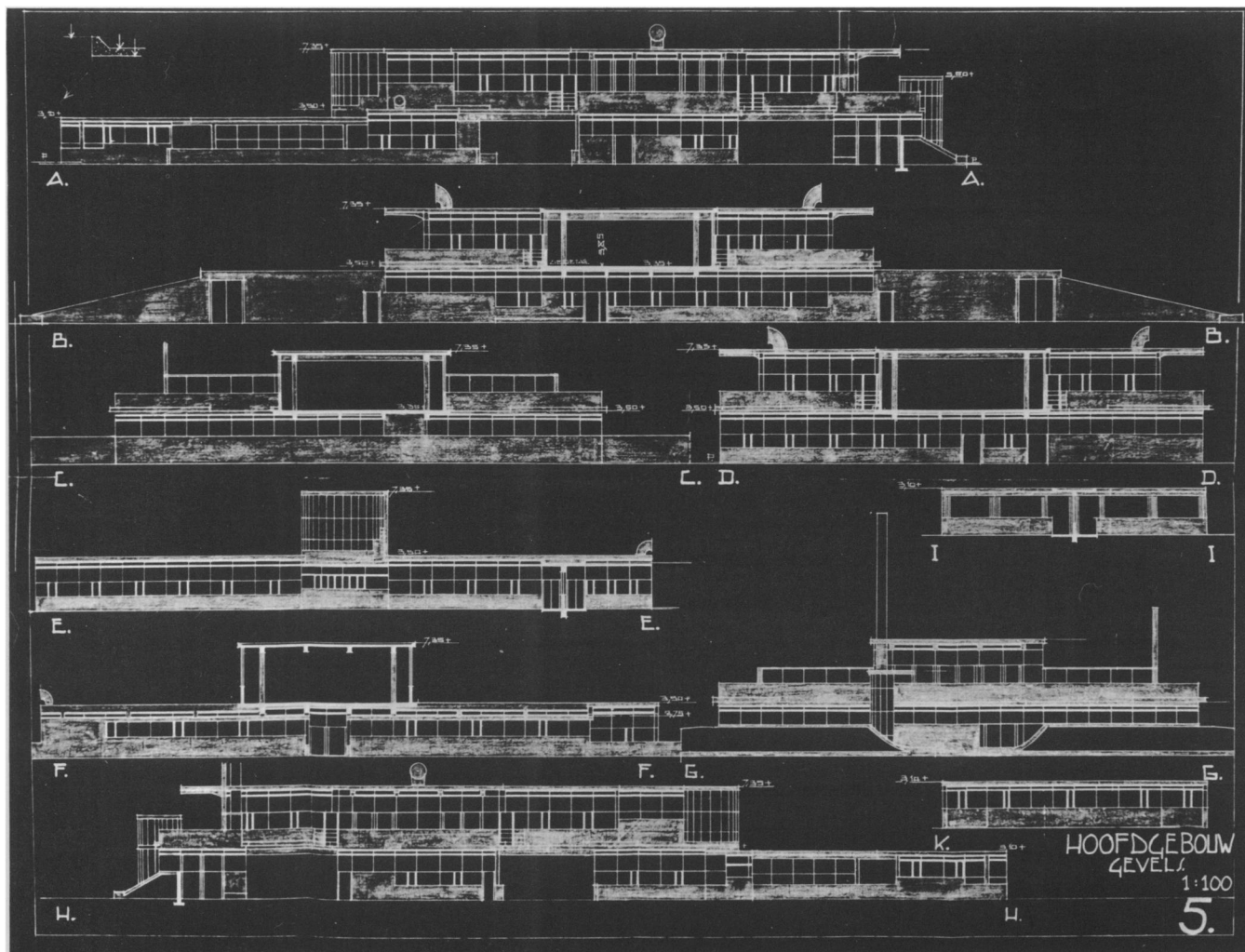


left
Zonnestraal ward
building

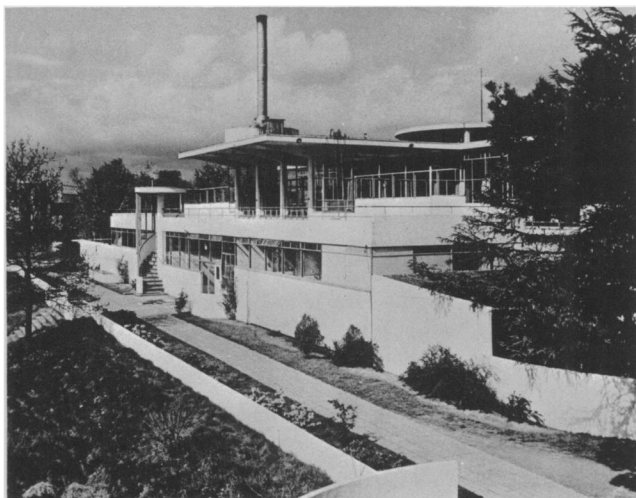


left
Zonnestraal central building,
ground floor plan

right
Zonnestraal central building
drawings



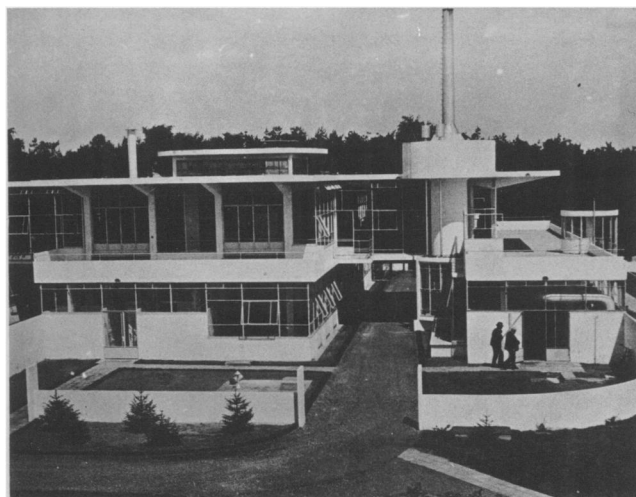
right
Zonnestraal central building,
south view

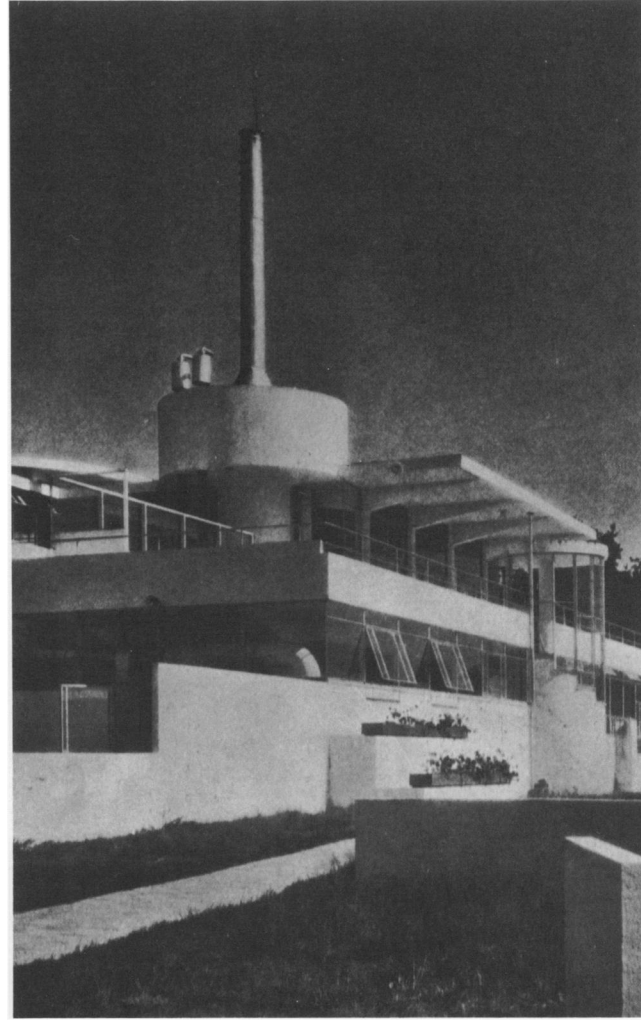
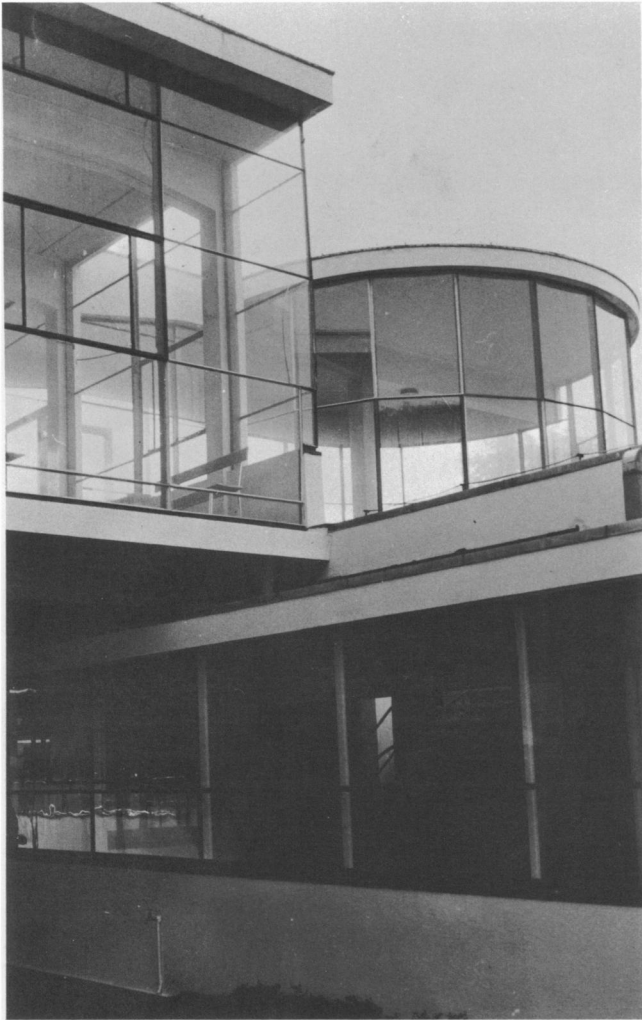


x-ray and pharmacy, and a short link connects to an intensive care unit of six rooms where constant medical attention can be given. In the entrance hall a large circular stair leads up into a glazed drum forming the lobby to the central dining room. This cruciform space lies centrally over the kitchen and is served from there by three lifts and two staircases. The dining room is capped by a raised disc of clerestorey lighting and is glazed between floor and ceiling on all sides. One arm of the cruciform plan bridges to an extensive roof terrace which faces south, down the site, and is protected by glazed wind screens and the generous cantilevers of the roof. There is an internal stair at this point which leads to the central boiler plant, toilets and baths in the south facing block. The boiler flue rises in a tall silver steel tube to pass through a cylindrical water tank.

Thus the plan form separates and surrounds with sunlight and fresh air, the baths and showers, the kitchens, and the medical unit, while the one great social space of the sanatorium lies across all three. For the dining room was used also for parties on the anniversaries of patients, or for their departure, as well as being suitable for plays and cinema. This plan is the evidence of the treatment of this disease in a particular way. It was thought that the only long term cure for tuberculosis could come from convalescence in the sun and open-air, and this medical practice controlled the building relationships. The basis of the whole sanatorium is occupational therapy. It fills the gap between illness, acute enough to demand complete rest, and final restoration to work. The patients, who were all men, were actively employed in many ways, but chiefly with carpentry in the workshops which they had built. Once they had recovered sufficiently they moved to one of the small cabins in the woods where they could continue to rebuild their strength.

right
Zonnestraal central building,
west view

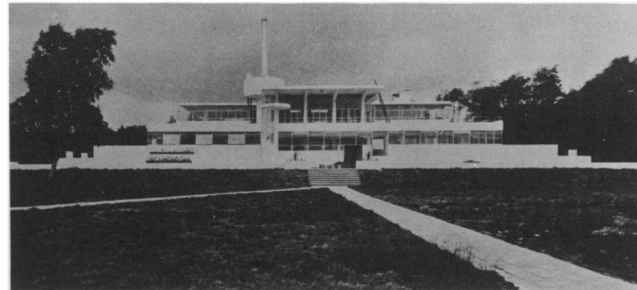




far left
Zonnestraal central building,
entrance to dining room

But Duiker belonged to a moment in time when the rate of growth of scientific knowledge was increasing. If new war weapons were being invented so were new cures being discovered to many accepted illnesses and in only a few years lung disorders could be identified earlier and cures could be effected by drugs. Allied to that has been the improvement in machinery and working conditions and a reduction to about 350 diamond polishers in Amsterdam to-day. The future use of Zonnestraal became less clear after the war, when many war-wounded had been treated there. In 1953 it was handed over to the Hilversum hospital authority and it has been run for some time as a geriatric unit. It is not entirely suitable for this use which involves many disabled and wheelchair patients. Consequently some alterations have been carried out and one must regret very much the manner of most of them. A larger boiler house was added to the main building in 1948 by Bijvoet and Holt and its massive plain brick flue now dominates its host. Another former colleague of Duiker, J. P. Kloos, has in the last three years converted the western ward wing. What hurts is not the fact of alteration but the insensitive approach to detailing from someone who worked on the details of the original building in 1925-27. Kloos is architect to the hospital board, which has proposals for a vast new hospital in the grounds, but there is little hope of money to spare for skillful retention of the original Zonnestraal.

If Rietveld's Schroder house of 1924 stands as the canonical building of the Stijl movement, so I believe does Duiker's Zonnestraal for 'De nieuwe Zakelijkheid' — the group in Holland. There is at the end a building in which all is explicit and minimal. Yet the building is not so cold blooded as to lack poetry. This was apparent even to those who disagreed with the direction taken, as Ir. J. A. G. van de



Zonnestraal central
building



left
Zonnestraal, terrace of
central dining room



Steur who wrote in *Bouwkundig Weekblad*,⁽¹⁶⁾ "in Zonnestraal what seems more important to me is that, in spite of the intellectual attitude of the architect, he is successful in carrying through a conception that possesses emotional value. It is a building work of intellectually pure structuring, and this reconciles me in a certain degree, seeing in it such respectable motives." Then he adds. "However most of us will go in other directions — and I personally will also." He was an editor of the journal and later his own work showed his allegiance to an 18th century style.

Peter Smithson was more enthusiastic than van de Steur.⁽¹⁷⁾ "One imagines that the Constructivist dream was to create an architecture capable of dealing with problems central to a new sort of society in the most ordinary of materials — steel, concrete, glass (albeit materials which were at that time charged with a most poetic vigour), and it was Duiker's luck and genius to make a slightly mad but quite real machine poetry from this ordinary stuff, not in Holy Russia but in Bourgeoise Holland. And perhaps there is no paradox in that. Van der Vlugt at Van Nelle was of course doing the same thing, but Duiker seems to be the one architect who could take what was needed and make something that did not remain in part a demonstration of a theory. His buildings are just buildings, and if one says of them that their poetry is slightly mad, it is I think because they have a purity and faith that we find almost too hard to bear. It shines out of the smallest detail, the windows, for example at Zonnestraal and the small white walls round the trees."

This does raise a question over the source of the catalyst that worked on Duiker in this building. All we do know is that Bijvoet had left Duiker on his own in Holland, that Wiebenga had just returned from America with much enthusiasm for all he had

seen and learnt. Is it reading too much into the situation to comment on Lissitsky's visit to Holland in the⁽¹⁸⁾ summer of 1926, just before the project began? Kenneth Frampton has written⁽¹⁹⁾ of Lissitsky as being instrumental in spreading the international Constructivist movement through Europe. The Russian exhibition of 1922 transferred to Amsterdam after Berlin, through van Doesburg's organizing. He introduced El Lissitsky to many architects including, Oud, van Eesteren, and Mart Stam while giving lectures in various towns. In 1923 and '24 he went to Switzerland to convalesce from an attack of TB and Stam was also there, working with his friend Hans Schmidt, who with Emil Roth established the magazine ABC. They received considerable encouragement in this from Lissitsky, who was by no means isolated from events outside Switzerland, as his letters show. Stam returned to Holland in 1925 and in the summer of the following year Lissitsky visited him at his house in Rotterdam. It was an opportunity to see the new work in Rotterdam and to make a visit to the Schroder house and to meet Rietveld. Is it possible that he met an architect who was shortly to be engaged on a design for a TB sanatorium, about which he would have some opinions? Dare I throw one more herring in the air, the description by Lissitsky of his first building project for some years, in a letter⁽²⁰⁾ from Moscow 1925. "A design for a Yacht-club, I have really slaved at it. I have worked myself stupid. But it's not the problem itself, not the technical aspect of solving it, that has had me racking my brains, it's the artistic aspect! It is interesting to follow the plans now, in order to see that the whole difficulty lies in becoming simpler. I don't think I can set it out in a more elementary way than this. The complex is situated on the slope of a river bank; the three big red horizontal lines — these are terraces; the zig-zag flash on the diagonal is a winding road



which constitutes a way from the top to the bottom, past the terraces. At the bottom right is the large hall. The roofs are designed as grandstands for regattas."

It seems to me that this description could accompany an illustration of Zonnestraal for there is a coincidence of quality in them both, that passes obvious similarities in terraces, bold horizontals and the diagonal slashes of routes.

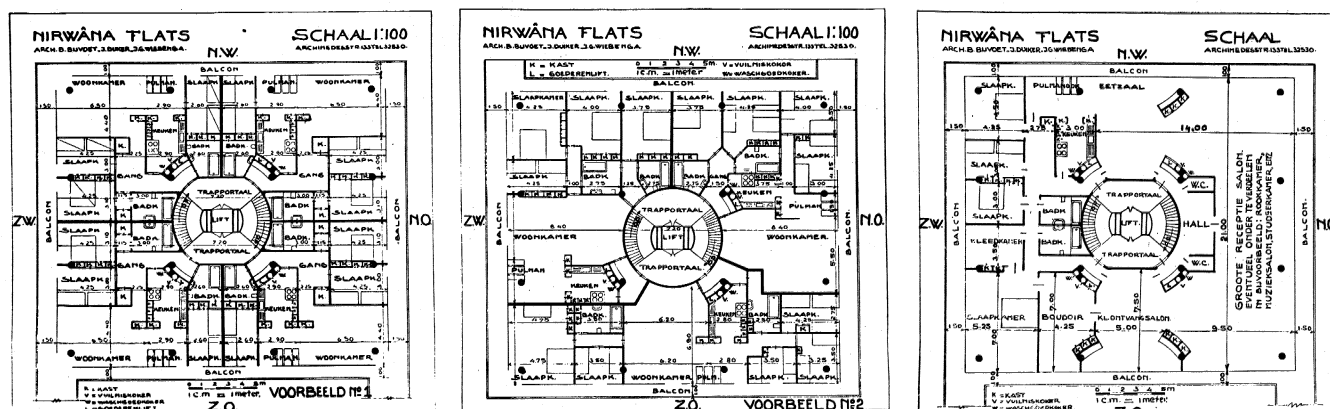
It is perhaps relevant at this point to follow the connection between Stam and the new Dutch architecture, and in particular his involvement with the Van Nelle project. The elder Brinkman had for some years been a successful Rotterdam architect, being responsible for the very early deck access housing in Spangen which Lissitsky visited. He had been appointed as company architect to the family firm of 'The Widow Van Nelle', with a commission to build a new factory to combine all the small separate plants in Rotterdam for the packing and production of tea, coffee, tobacco and snuff. Brinkman died of a heart attack when running for a tram one day in 1925 and the directors had to find another architect. Oud was invited to take the project because of his growing reputation as a speaker for modern architecture and for his housing in Rotterdam. He rejected the offer, unless there was a guarantee of the project's completion. Eventually the directors advertised for an architect and Van der Vlugt was accepted for the work, with the agreement that the younger Brinkman, who was a student at Delft, should be associated with it. Van der Vlugt also used the drawings of the school at Groningen as a sample of his work, having adopted it as entirely his own and sent it to the Paris exhibition under his name. His association with Wiebenga continued however with the Van Nelle project. Despite his earlier insistence, Brinkman had proved incapable of supplying the structural calculations for

the new factory. This had held up the progress of the project and Wiebenga was asked to act as engineer, at short notice. He moved into the drawing office with the staff of fifteen and working with them over ten days was able to provide the structural design. Mart Stam was by then working as head of the drawing office and in this position he was more effective as a partner to Van der Vlugt than Brinkman could have been. There has been speculation about his responsibility for the design in the drawing office, although he was never to be seen on site in discussions with the client. But the Van Nelle building is surely the first Dutch building to be directly influenced by Constructivist ideals.

The Van Nelle building has been visited over many years and it looks little different to-day to the condition in which Gropius found it in 1930. This is due in great measure to the care and attention paid to its maintenance by Dr. C. H. van der Leeuw, who is another striking example of the valuable people who act as enlightened and involved clients. Van der Leeuw was a member of the family who owned Van Nelle and he began a career as a painter. At the age of 31 he persuaded his family that he was the person best fitted to act as client for a really modern building, and this was accepted. He stayed with the project long enough to see its completion and the factory smoothly in operation, then left to study medicine and psycho-analysis in Switzerland. His career in this field was later interrupted by the death of an elder brother, which brought the responsibility for the family business back to him. During his years in control of the organisation he insisted on high standards of care for the building. The widely spaced mushroom column construction and the thorough testing of all new materials used in the original construction have provided the users with few problems.

Duiker's judgement in matters of appropriate

right
Nirwana plans, typical
floors



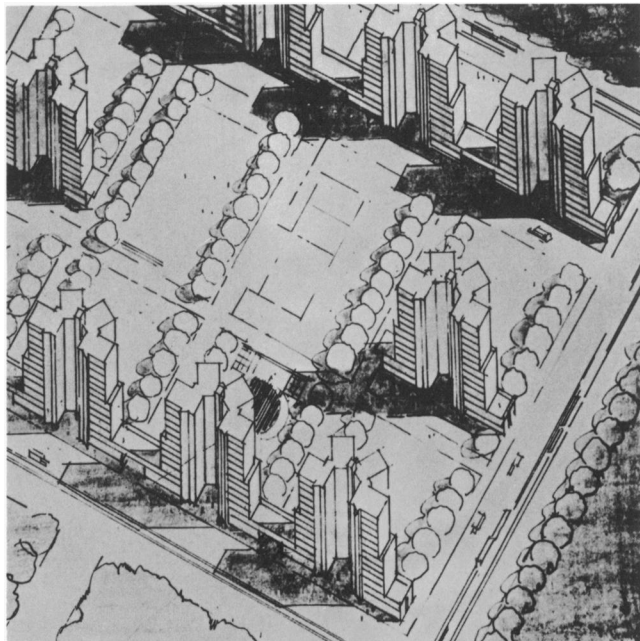
right
Nirwana flats before
restoration

far right
Nirwana flats



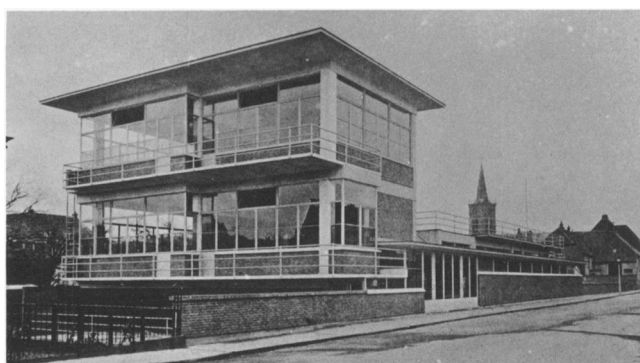
constructional detail has occasionally been too optimistic. The rusting of the windows at Zonnestraal has been referred to, and Wiebenga recalls problems encountered on the Nirwana flats, started in 1927. This project originated in a suggestion by Wiebenga that there would soon be a ready market for service flats, such as he had experienced in America. He produced a first scheme with Duiker, which showed a layout⁽²¹⁾ of five buildings joined at the corners in chequer board fashion. This was to give a high site density with good lighting, and incorporated a continuous linking external balcony which could act as a fire escape route. It was proposed that some of the large embassies in The Hague would take a complete floor as a reception suite, and Wiebenga made some tentative arrangements with tenants in this direction. The standard service was to include a central kitchen where full meals could be ordered by tenants. These could be served direct to the flats by hoist, of which

there were four per floor, this being the maximum number of flats planned. Wiebenga intended to negotiate with a speculator and went to Brussels to meet a Rumanian financier. On his return he found that Duiker had signed a contract with a building firm in The Hague, which was nearly bankrupt. Not only this but the agreement to build was based on one block only. The contract was then sold again to the final client, L. van der Schaar, who sold the flats to future residents on a shareholder's basis. As each option was taken up so were requests made for alterations to the standard plans. The floors⁽²²⁾ now varied in providing between four and a possible eight flats. The continuous external balcony was eroded into shorter lengths by pushing the external walls out to the limit of the floor slab, to provide more storage space in the smaller flats. The continuous horizontal glazing was similarly amended, resulting in the present alternating rhythm of clerestorey and normal win-

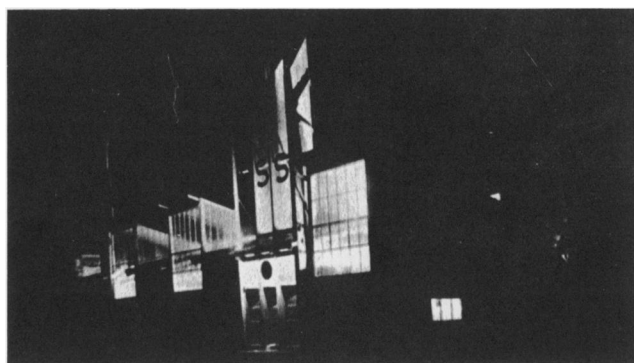


far left
Hoogbouw housing project,
Amsterdam

left
Adamas



far left
Wiebenga School



dows. An attempt at constructional economy led to many later problems. Duiker was interested in using lightweight wall partitions to allow a changeable plan arrangement, as had been done in the ward blocks at Zonnestraal with framed and boarded walls. At Nirwana he proposed using one inch thick reinforced cement walls internally, and only double the thickness for external walls which were to be backed with an equivalent thickness of cork for thermal insulation. The impossibility of making such thin walling on site became apparent, but the final external wall construction was still too thin and this gave rise to water penetration through the concrete, to cause rot in the cork and corrosion of some reinforcement. Recent work has been necessary to restore these thin external walls which had become laced with surface cracks. The constant modification of this project results in a somewhat lumpy building, the timber windows and the busy articulation of the pointless corner balconies having none of the relaxed precision of Zonnestraal.

In the following years Duiker and Wiebenga worked together on a housing proposal which took the form of a book *HOOGBOUW*,⁽²³⁾ published in 1930. It is another argument for well serviced housing, but this time for municipal housing standards. The study involves an analysis of the more successful new city and community projects of Perret, Wijdeveld and Le Corbusier, in opposition to the housing produced in the new suburbs of Amsterdam. They show drawings of their proposal for development at 154 dwellings per hectare, which is equivalent to the density in Amsterdam East of 1924. The project relies on 12 storey blocks with four arms branching from an internal access gallery. The four arms run from east through south to west, giving 60° change of direction between each. Site use in this way relieves large areas for recreation and park be-

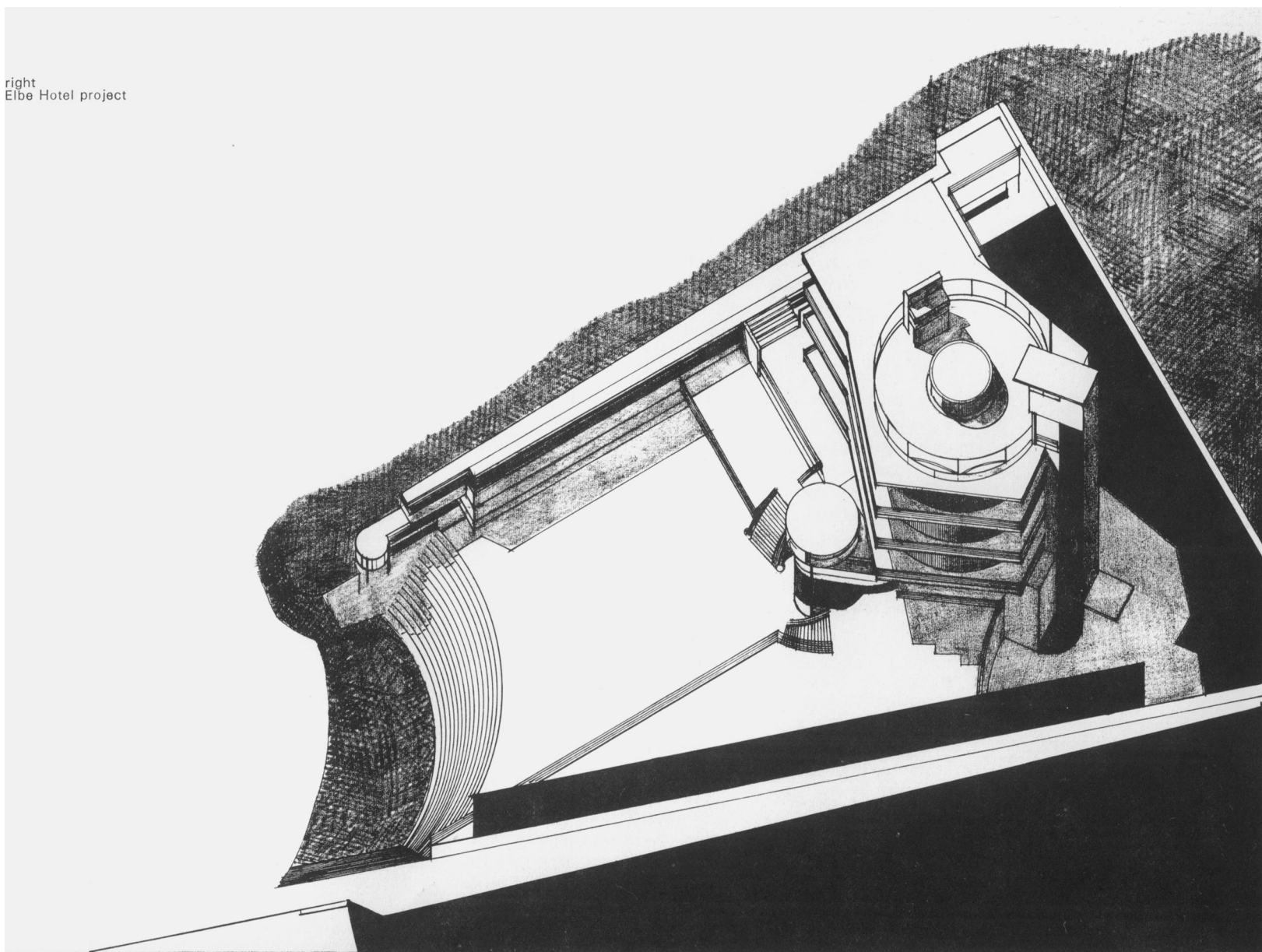
tween buildings. The plan form avoids the use of north facing apartment planning, as occurs in Le Corbusier's towers of the Voisin plan of 1922-30. The importance of this booklet lies in its economic exploration of the possibilities for raising the standards of construction and servicing in modern apartments. They worked within the current ruling that the running cost of apartments should not exceed 10 guilders per week, made up of rents at 7.50 and a subsidy of 2.50. Their scheme shows that even the most ambitious project which they considered had a running cost of 8.87, which includes the following:

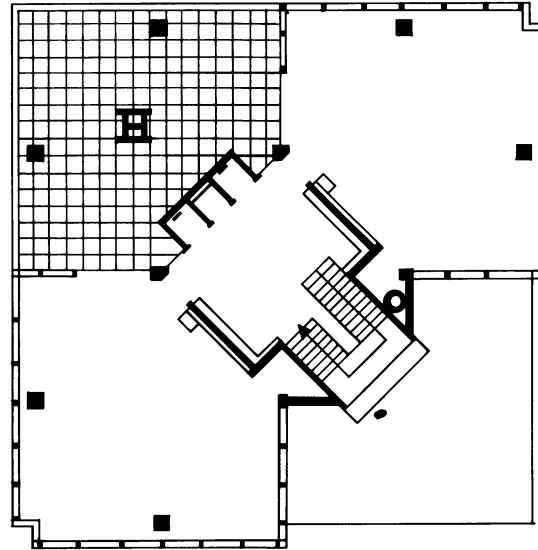
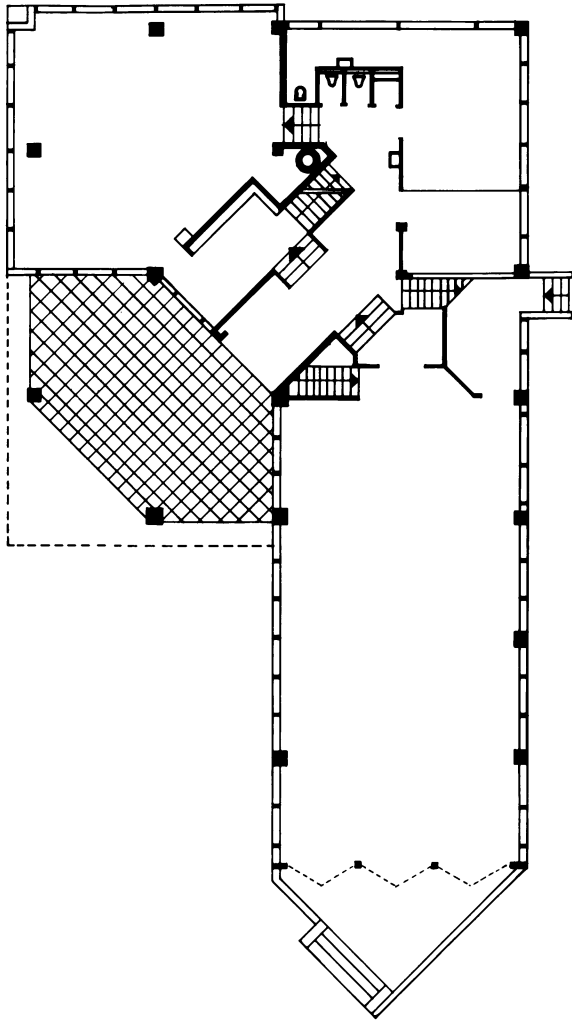
- floor covering in all rooms
- electric passenger lift
- bath, WC and wash-basin
- ventilation plant
- central heating
- isolation of the ceilings
- refuse incinerators
- potential for laundry boilers
- vacuum cleaning installation
- warm water provision
- spin and drying machines
- in the basement for general use
- internal telephones
- cycle storage, etc.,
- light, water, gas and electricity

This is a specification far in advance of anything else in Holland at that time, and yet its basis is sufficiently close to reality to have been easily understood, unlike some of the more utopian concepts in circulation.

From this time on Wiebenga was less closely associated with Duiker, until he was involved in the hotel in Gooiland on Duiker's death. Wiebenga meanwhile built a school on a restricted site in Aalsmeer, and as Director of Public Works in Zwolle, a swimming pool and hospital.

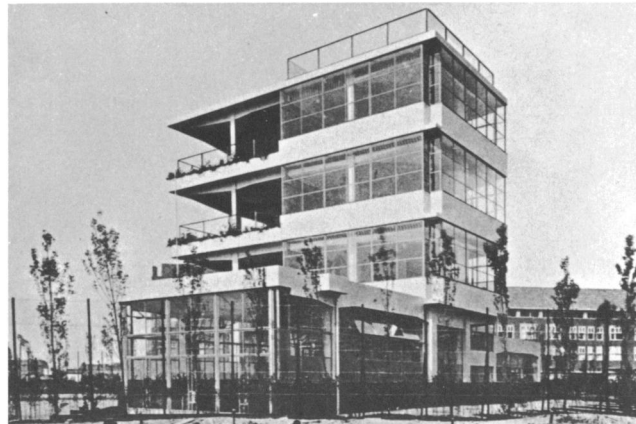
right
Elbe Hotel project





left
plan of typical floor,
Open-air School, Amsterdam

far left
plan of ground floor,
Open-air School



In 1928 Duiker completed two projects which, although never built, develop from the vocabulary of the Aalsmeer house and Zonnestraal. The first was a small diamond polishing plant, 'Adamas', intended for use by those convalescing in Hilversum. It shows the use of contra-pitch roof forms, obtaining high internal lighting levels by glazing the exposed panels of the roof trusses, a form used in an early Russian project. The second scheme was the competition project for a Hotel on the Elbe. Here the bedrooms take the strong form of a four storey drum which rises out of a podium of public rooms, opening on to curved terraces which step down towards the river. The drum is equipped with continuous external balconies which take a pentagonal plan, making it easier to extend an arm of bedroom accommodation as bigger suites, while the main stair and lift are attached to another face. The hollow centre is capped with a circular roof light (like the Coal Exchange, London before it, and the smaller nurses' hostel at Zonnestraal). While the relationship to the site has been well solved, the compromise in the handling of the drum form is not convincing.

In the same year, 1928, Duiker began the well known open-air school⁽²⁴⁾ in Amsterdam. This project follows the pattern established by many of the previous projects, in being dominated by the contemporary ideal of sunlight as a therapeutic factor in life. Duiker wrote of this in '8 en Opbouw':⁽²⁵⁾

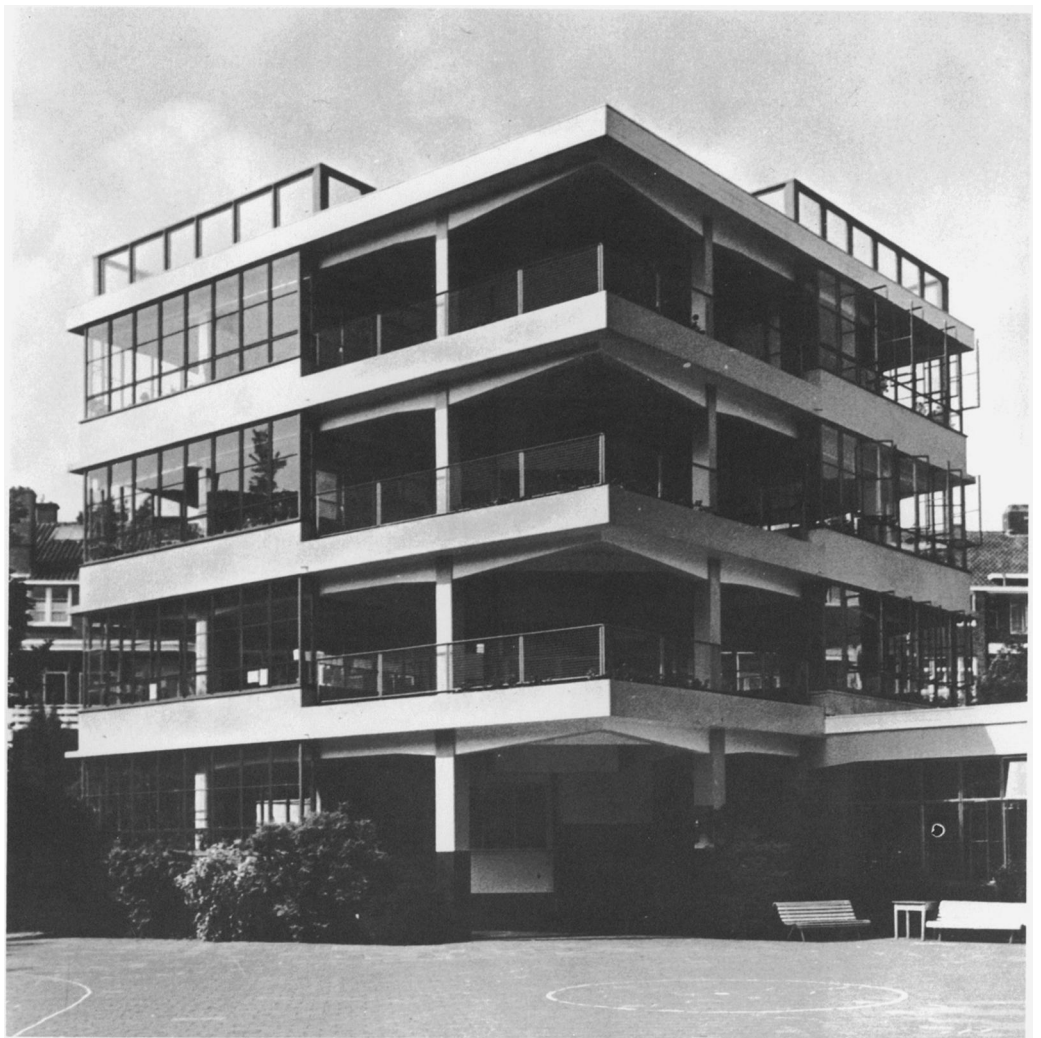
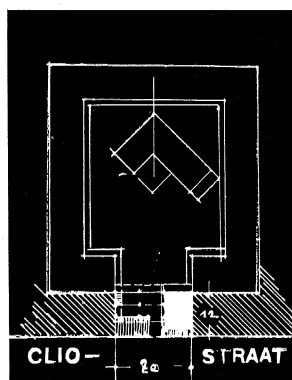
"The healthy school for the healthy child. There are two different types of school at the moment, the normal school that produces patients, and the open-air schools and parks that try to heal them. Every school should be built so that it does not produce sick children. People do not do it though because of the law and their conservatism. The open-air school is stopped by those who have an aesthetic personalised idea about 'gemuchlijkheid', and that

finds its expression in the small windows and 'cottages' (sic) (a reference to the schools with thatched and heavily modelled roof forms). Children have to get ultra-violet light for health, it is an absolute essential, and so the whole thing is nonsense. This individualistic idea of the conservatives is all nonsense, because from the very first thing in the morning to going to bed at night is all part of a collective life. This must be realised and accepted, and the result will be a return of personal freedom. "Duiker was plainly concerned that no amount of idealism in the teaching could overcome the impressed characteristics of a building. His statement follows very closely the tone of Berlage's on expressionist architecture, mentioned earlier in connection with the technical school at Groningen.

The first photographs of this building show it indeed in an ideal new world. It stands alone, ready to receive the expansion of Amsterdam South, while the building envelope has been dematerialised to a point where it seems that everything takes place in the open air. To achieve this the building structure of columns, beams and floors, is completed by a mirror tight envelope of glass, standing in the same plane as the concrete, giving a continuous dematerialised surface. The metal glazing sections were set with the deep leg of the T or Z section to the interior, bringing the glass to the outside face (as Stirling and Gowan later did with the glazed cages at Leicester, and Cambridge). Each wall of glazing was also subdivided in equal intervals in the simplest way. (It is regrettable that this has been replaced by a much heavier steel window section, reversed with the deep legs outwards, and in a different interval and proportion. Architect: A Komter, a former assistant to Duiker).

The open-air school was possible for Duiker since he used a system of ceiling heating to provide

right
site plan, Open-air School
far right
general view, Open-air
School

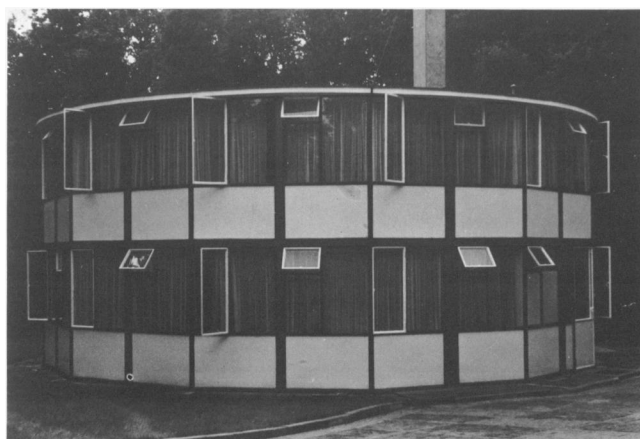


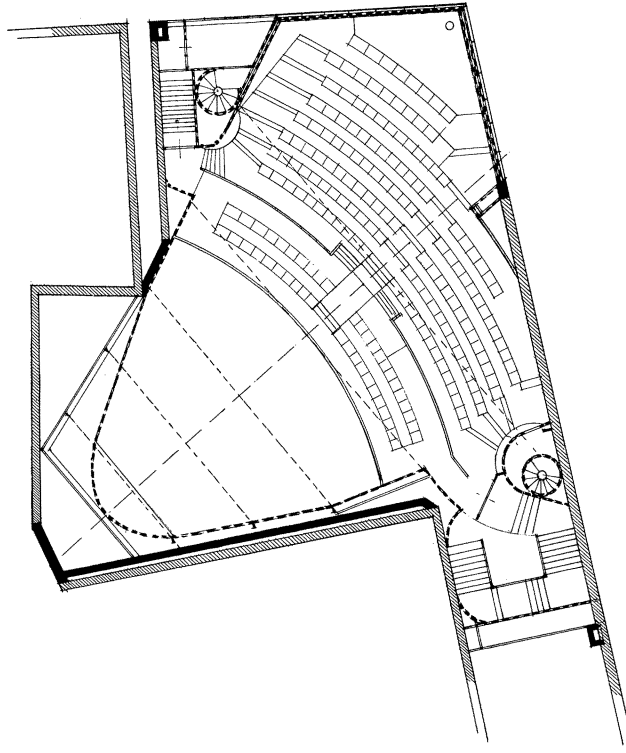
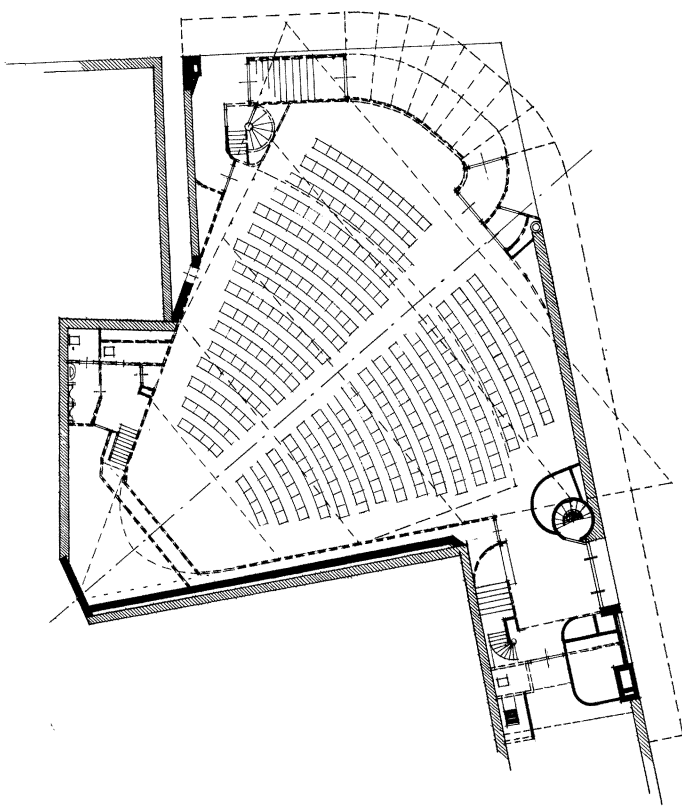
radiant heating for the open teaching terraces. The plan is square and divided into four quarters, two on the diagonal are classrooms, while the one to the south is the open terrace. The quarter to the north is omitted and a smaller square on the diagonal holds the access and toilet functions. It is this resolution of the two planning grids at 45° which is especially interesting, for it includes the dramatic handling of the structure. The achievement here is a compound of many factors, the apparent balancing trick of the bold cantilevers, the diagrid structure, the dematerialised detailing, the diagonal approach.

The placing of the columns, at the mid-point of each side of the three quarters of the plan, leaves a hovering corner over the point of entry to the building. For the building is set at 45° to the street layout and this forces the approach onto the diagonal, the axis of symmetry. This is always an uncomfortable form of approach, to meet the external corner, but in this case it becomes a re-entrant corner as far as the enclosed volumes are concerned. The other advantage of being on the axis of symmetry is of understanding from outside the whole disposition of rooms and space in the building.

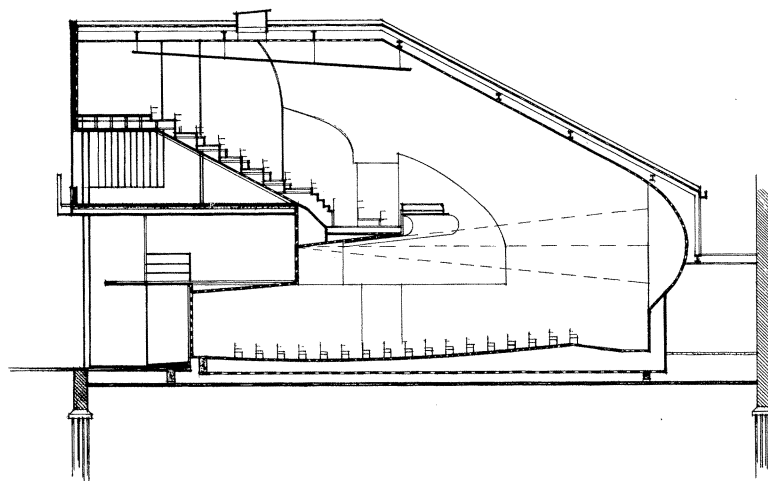
A further open-air school was planned for Zonnestraal, as mentioned earlier. There were few site restrictions and this scheme took a low spreading form of six classrooms radiating from a central circular lake. A small administration building on the northern side of the lake bridges a service road to the school. This with the Amsterdam school mark the beginning of a series of projects exploring the geometry of the circle and the square, during 1929-34. The nurses hostel of 1931 is a simple arrangement of rooms on two storeys, around a circular stair well. A shop for Jamin of the same period has sales stands radiating from the centre of a square, while the areas in the corners accept the stair cases.

right
nurses hostel





left
Cineac, plans of ground floor
and balcony and section



A large cinema project⁽²⁴⁾ began with a near square site and the axis of projection-screen was set on the diagonal, which gives a good use of space for the wedge shape seating plan. Again stairs are tightly contained in the corners of the square. The only cinema completed, Cineac of 1933-34, uses the same plan form on a cramped near-square site.

The adherence to the laws of geometry as a planning discipline is a classical move, releasing him from the possibility of making arbitrary personal decisions once the organisational solution had been achieved by analysis. The choice of solution for materials and building structure and envelope followed closely from such analysis. The avoidance of any personal content is argued in the following extract, reprimanding Berlage for his soft attitude to *Nieuwe Zakelijkheid*, in the form of a conversation:

Berlage: "Zakelijkheid (objectivity) should not mean 'as fast and cheaply as possible' but should

rather be taken as 'spiritual economy in place of financial economy'. Such spiritual economy will lead to economic construction in the materials used, and will develop towards dematerialisation, spiritualisation."

Duiker: "But why do you make windows in such a special way and arches of such a strong shape? Why do you do things that must be materialised, when all the time you are talking of dematerialisation?"

Berlage: "In your way, as shown in your work, inspiration, intuition, architectural capacity, have led you to the furthest technical extreme and at that point spiritual values are missing."

Duiker: "You are being unfair, for you are suggesting that art (architecture) begins only where science ends. But the strongest prime impulse lives in us in every cultural expression, in science and in every natural phenomenon. This inspiration is valuable for it follows the laws of economy. Nature itself demon-

strates this cosmic law. A falling body, a ray of light, stresses and strains in building construction, all follow the shortest course, although there are infinite other routes they could have followed.

If you follow the history of the development of any science you will find that they all follow this principle, or they will quickly expire through cultural unimportance. Developing the mind with these principles has led to the inspiration for the next discoveries. In the middle ages the arch and the vault were only possible through the penetration of the spirit into the existence of the stresses.

Often financial and spiritual economy go hand-in-hand to make all these achievements possible, but the result we see before us is solely the work of the spirit. Why does one always have to have that special signpost 'Art' when one means sublime inspiration?

In the words of Professor Kohnstam, 'the material needs of man are finite, only the spiritual needs are infinite'. With the better materials we have at our disposal it is possible that the society of the future will be able to get, once more, the sunshine and happiness of nature around him, and from which he has turned since the dark middle ages.'⁽²⁷⁾

This extract gives the flavour of some of the debate conducted between the 'objectivists' and the expressionists, in Germany as well as Holland, as was discovered by Lissitsky in the early twenties. In an article by Jan Gratama, in the introduction to the useful series 'Moderne Bouwkunst in Nederland' (1932-5), the concept of two great life-spirits is voiced:

the natural being	and the spiritual being
from the body	from the mind
horizontal-eternal	vertical-changing
Godly creation	working intellect
perfect	imperfect
intuition	concept

Such polarities occur in some of the manifestos of the various groups which reformed after the collapse of loyalties within the Stijl group in 1922 and 1925, the year also of the death of De Klerk, figurehead of Expressionists. From the viewpoint of the Expressionists their work was solely of the 'Natural' being, while the intellect produced 'Zakelijkheid'. Duiker argued differently, and it was his writing which formed a major contribution to the magazine '8 en Opbouw'.

Two groups of Dutch architects formed independently on the occasion of the first C. I. A. M. congress at La Sarraz, Switzerland in 1928. These were the Opbouw from Rotterdam and the '8' from Amsterdam. Here the distinction simply indicates the working environment of the members, rather than in the sense used by Mendelsohn. Many of the Opbouw (constructive) group were members of the Communist party and some later spent time working in Russia in the travelling design groups. They were among others J. A. and L. C. van der Vlugt, J. A. Brinkman, J. J. P. Oud, Mart Stam, W. van Tijen, J. B. van Loghem, Paul Schuitema (typographer), Maaskant, and J. H. van den Broek. The '8' group consisted of Cor van Eesteren, Duiker, Bijvoet, Merkelbach, Karsten, Komter and others. In 1927 'De 8' was forming and made a statement in 'i 10', a magazine for the international avant-garde.

De '8' is the critical reaction against architectonic form-giving of the present day

De '8' is realist in search for direct results

De '8' is only for facts

De '8' says it does not preclude beautiful buildings, but it is better for the time being to build

ugly and functional building, than to make a show of architecture to hide bad planning

De '8' wants no wanton architecture to have arisen from the lust for form of talented individuals

De '8' wants to be rational in the sense that everything is to make way for the demands of the task

De '8' battles against exclusiveness in professional circles

De '8' works towards a science of building rather than an art of building

De '8' reaches out for a place in Society as a DESIGN INDUSTRY ORGANISER

With the amalgamation of the two groups the magazine '8 en Opbouw' came into existence and was published between 1932 and 1942. It was an independent publication which discussed objectively the merits of different forms of construction, contributed new techniques in servicing, and reported on the work of architects abroad. Duiker's contribution can be seen in this extract from his obituary:

"What Ir. Duiker meant for our movement, everyone realises who has read his articles in this magazine, who has carefully studied or seen his work. Until his illness prevented him, he was Chairman of the architects' group 'De 8', was one of the most active leaders of the Netherlands group in CIAM, while he was at the same time a founder member of the editorial of this paper.'⁽²⁸⁾

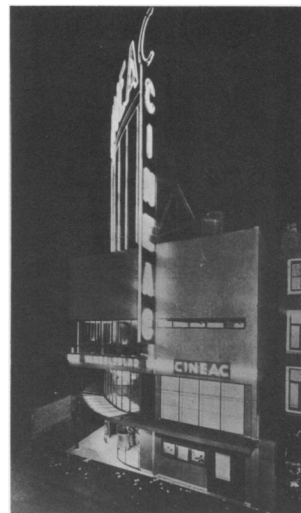
In the year before he died Duiker completed the project CINEAC⁽²⁹⁾ and it was opened shortly before his death in 1935. CINEAC is a news cinema showing fifty minute programmes of cartoons, documentaries and newsreels, opening at 10 a.m. until midnight. The cramped squareish site opens onto a busy street with a site passage between the buildings on one side. Duiker obtained maximum projection distance and seating by planning the auditorium on the diagonal. The audience is divided into stalls, seating 312 on a dished floor, and a steeply raking balcony seating 169. The projection room is inserted under the balcony to give an horizontal and thus ideal projection angle to a vertical screen. Such is the limited area of the site that the foyer has been taken out onto the pavement, where a glazed drum as a ticket office is the only prelude to entering the auditorium through either the stalls or balcony doors.

The whole functioning of the foyer occurs below the glazed awning so that the side passage contains the main exits from the auditorium, and in this protected place, away from the movement of trams and other traffic, one can often find small groups around roast chestnut or hotdog stalls. The building also opens itself to the outside world on the upper floor, where the projectionist's room is directly over the entrance and through a curved glazed wall the flickering light of the projectors can be seen sending the magic pictures onto the screen. To complete this idea of a building, where all the working components are identifiable and communicating to the passer-by in a Constructivist way, there are the illuminated signs which reach across, up, over and around the contained building volume, engaging space functionally on every side. First there are close range neon signs on the elevation, then a larger vertical CINEAC sign, attached at right angles to the elevation and visible for the length of the street, finally a larger still CINEAC sky-sign on a frame, set over the chamfered corner of the building. This last is visible from the Muntplein, a pedestrian crossroads in the entertainment sector of the city.

The building structure acts as a simple foil to all this activity and is a steel frame clad in silver



left
Cineac theater interior



left
Cineac theater

painted steel panels and glazing. Acoustics and heating were both carefully calculated and performed well, in a plain auditorium shell. Cinemas of this time are generally known for their exuberance in exotic decoration or expressive lighting, resulting from their development from live theatre. The concept of a neutral space where the atmosphere is generated by the film material itself is still not accepted by many of the big circuit owners to-day. That Cineac was and is overlooked is not surprising in that context.

In the end of 1934 it became clear that Duiker was seriously ill and that help would be needed to complete the outstanding work. Wiebenga was still a frequent visitor during his illness and was also associated with much structural work through his firm in The Hague. Bijvoet agreed to return to work once more in partnership, although during his absence Duiker had continued to title many drawings with both their names. Duiker's second wife exercised a great deal of influence in pretending that his illness would soon pass and up to the time of his death clients were not told of possible future difficulties. The Hotel Gooiland was in progress then and the Directors of the company were on the point of commissioning a further project in Leeuwarden when Duiker died. On the day of the funeral a macabre incident occurred when Mrs. Duiker had the coffin removed to the back room while Bijvoet was sent to talk to the visiting group of Directors, as though nothing had happened. Mrs. Duiker retained her control over the practice so long as Bijvoet remained to complete the outstanding work. Then she handed the practice on to Karsten and Merkelbach, and Bijvoet later returned to France. He spent the war years in the Dordogne, and in 1947 he returned once again to join Professor Holt in partnership in Harlem. He has since completed a number of theatre projects,

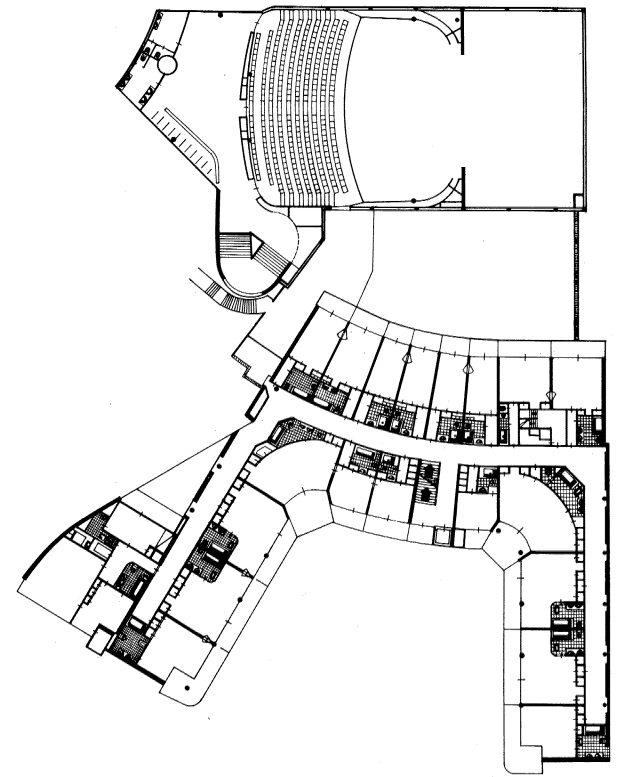
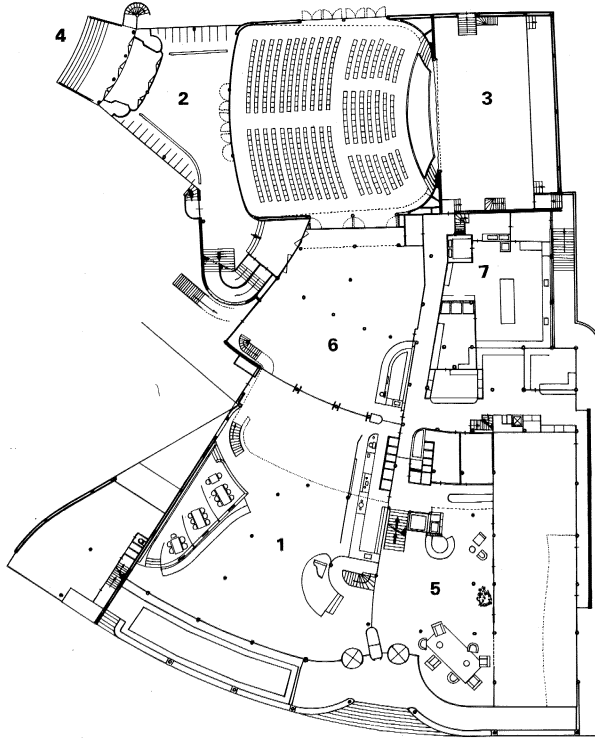
notably in Apeldoorn and Nijmegen, and is currently engaged on the National Opera building in Amsterdam and a nursing home in Haarlem.

The Grand Hotel, Gooiland, Hilversum, was the last building to be commissioned from Duiker, in 1934^[30] and was completed in 1936. In addition to the hotel a theatre was added to the brief during the course of the project, and this part is wholly Bijvoet's work. He also completed the scheme of decoration and some of the minor detail of the main part. The brief asked for a large number of public function rooms as well as about 28 bedroom suites. The larger part of the ground floor is given to the public rooms, which run from front to rear of site as restaurant, ballroom and theatre. A separate entrance on the restaurant terrace leads to the hotel reception and dining-room. The roof, to this grouping of large volumes, serves as a roof garden around which are two storeys of bedrooms in the form of an horseshoe. There is an intermediate level of smaller public rooms around the roof garden, which sets the bedrooms above the garden and retains their privacy. All the bedrooms overlook this garden from balconies separated by glass screens.

The real success of the building is the creation of an urban landscape solution of great subtlety. The opening of the front of the building at the upper level makes a play with the small tree-lined square at street level. A junction of three roads provides a stage on which everyday happenings occur, which can be seen and enjoyed by the watchers in the garden above, shielded by glazed screens from wind and noise. Yet they can turn to enjoy a richly planted garden with its own pond and winding paths.

This was the first building in Holland to combine the functions of hotel, restaurant, ballroom and theatre, and it is still privately run in this way. If there is a point at which the building does not

right
Hilversum, Hotel
Gooiland, floor plans
1 restaurant and cafe
2 theatre vestibule
3 theatre
4 theatre entrance
5 foyer
6 hotel dining room
7 kitchen

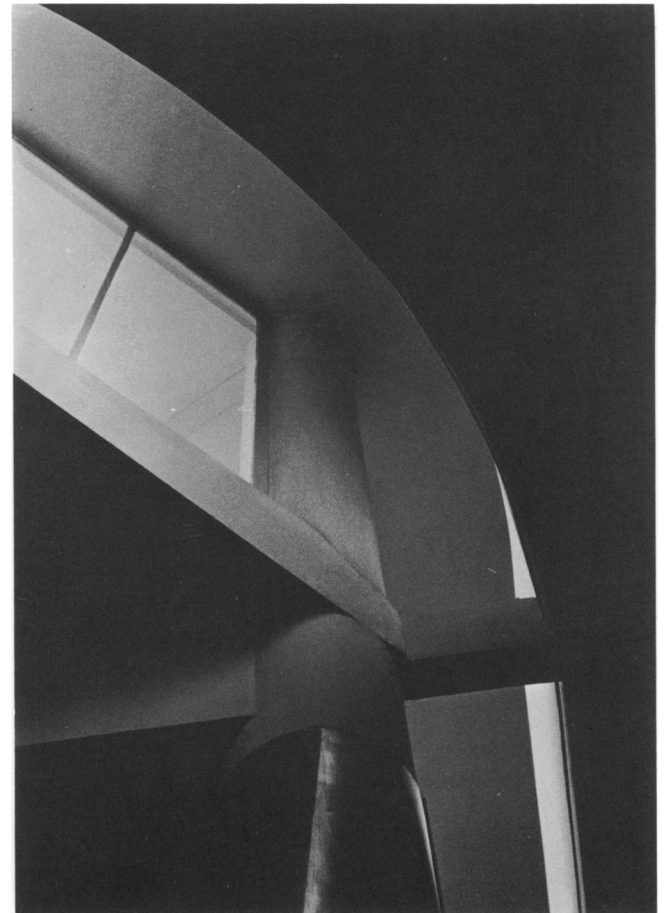
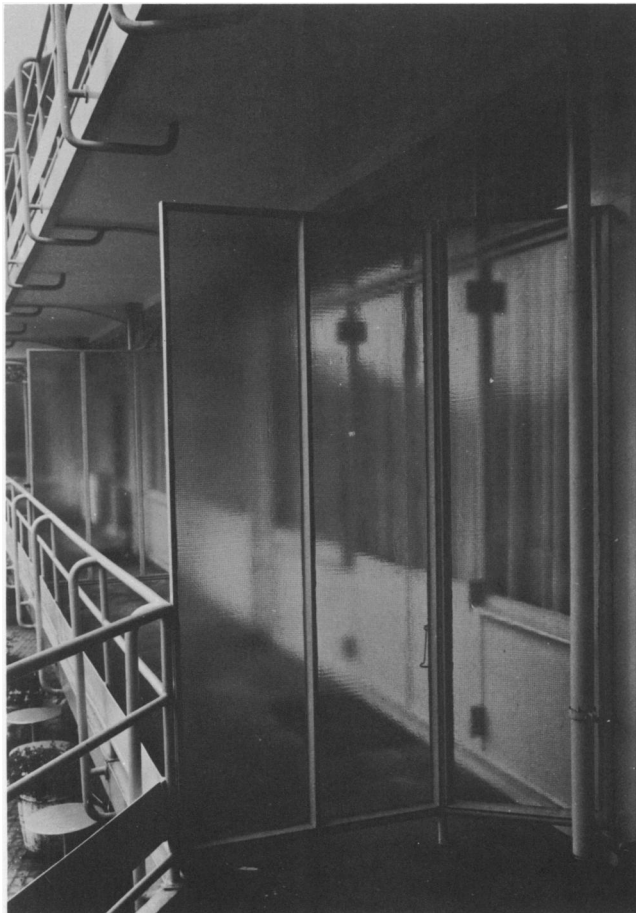


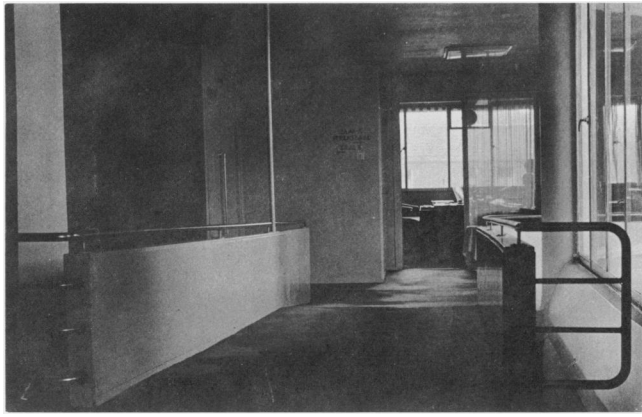
right
Hotel Gooiland, general
view



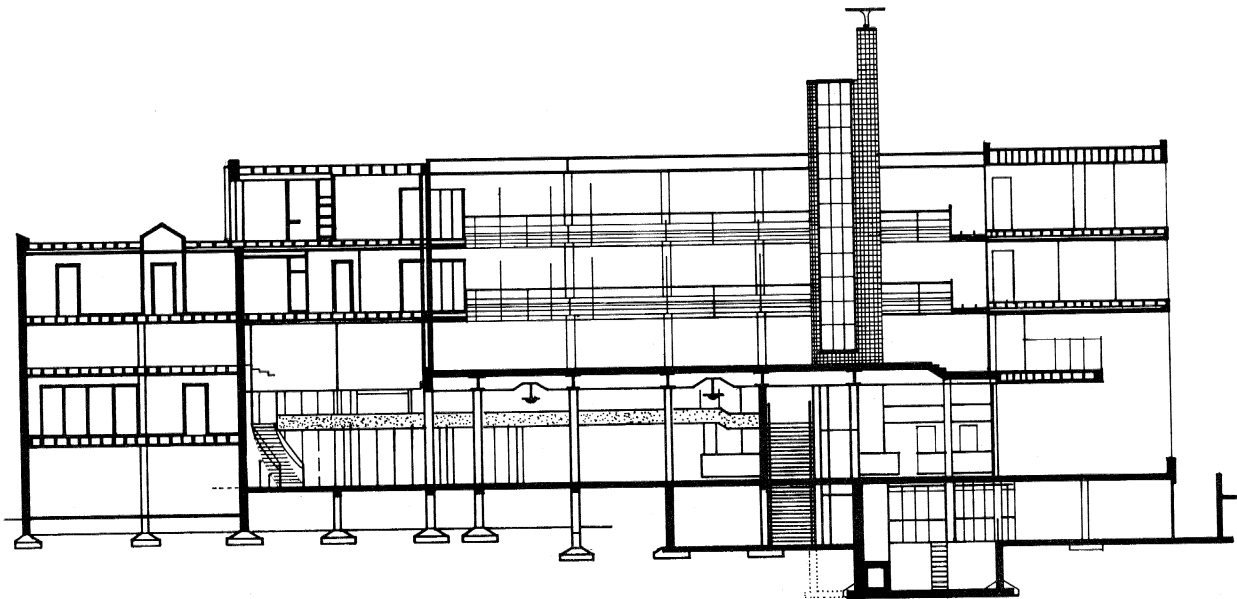
right
Hotel Gooiland, bedroom
balconies

far right
Hotel Gooiland,
structural detail





left
Hotel Gooiland roof garden
far left
Hotel Gooiland, bridge
second floor



left
Hotel Gooiland, section

match the clarity of the earlier work it is in the forms of the ground floor spaces. These do however perform different functions at different times and to-day are modified by many years of fashionable improvements. Most obvious is the internal theatre vestibule ballroom, which can be opened to the theatre during intervals by folding aside the side wall of the theatre, so that the audience can move to tables where coffee is served. It is an irregular plan shape containing some free-standing columns. Some of these have been faced with mirror glass, and have a circular ceiling-plate of mirror. This illusionist technique is similar to that in many Parisian cafes where mirror is freely used on end walls and columns. In this case the suppression of the columns has allowed a bold circular design on the ceiling to dominate the space. Many further additions to the decoration have been carried out since 1936, including cladding of the columns in the entrance foyer with copper sheet. Some of the more recent work is in danger of destroying the coherence and simplicity of the building form.

The structure is once more very clear and works to define some of the functions. The main approach to the building is via a colonnaded terrace, shallow in depth and running the full width of the front. It functions as a normal terrace cafe, since it is provided with glazed wind screens and radiant heaters. The columns at this level can be seen to rise through the building to support the bedroom levels and connect clearly to the tapered beam construction of the balconies. The services were again handled by Duiker with great care and the heating system uses a method patented by him with J. de Ridder. It employs air as the transporting medium in a radiant ceiling. Air is ducted from a central boiler house which also handles some ventilating plant for the theatre. The advantages of this form of heating lie

in light construction, few immediate problems if it leaks, and the ability to ventilate the building without losing the heat source.

With Gooiland we have one more addition to the vocabulary of modern architecture in the cladding of all the main concrete surfaces with a matt buff Czechoslovakian tile. Duiker had moved through a range of materials in search of a hard-wearing building surfacing. We can see the cracking of rendering on brickwork all over Europe, and Zonnestraal is no exception. The thin self finished concrete wall was tried at Nirwana. Steel panels at Cineac need regular repainting, but the tile facing at Gooiland has occasional washing to remain in almost perfect condition. Although James Stirling may not have seen the building one must refer to the similar decision to use red clay tile facing at Leicester and Cambridge, using yet another element of the grammar and syntax evolved by Duiker. Nikolaus Pevsner has described this:⁽³¹⁾ "in the course of the Thirties a style had gained international validity, which had been created between 1890 and 1914, and which was the first style in architecture for nearly five hundred years to have invented its own vocabulary, grammar and syntax. It was an exacting style. Discipline and service counted more than individuality. Beauty or otherwise depended primarily on the subtleties of proportion, of the relation between glass and wall."

If one wants to prove that such currents of ideals existed one has to turn to the modest figures in the background, to Duiker, Rietveld and Van der Vlugt rather than to the great figure heads.

That Duiker was quiet and modest can be gauged from this further extract from his obituary in '8 en Opbouw': "We won't try to summarise what Duiker meant for the reawakening of Dutch architecture for we are so distressed at the moment at what we have lost in the person Duiker. Everyone who had

the privilege to work with him will treasure the memory of the open, honest look that is the mark of the plain, wise man. Everything about him was 'human' in the best sense of the word, and posturing was foreign to him...

Bijvoet and Duiker's style can not be labeled, but at one time or another one can see features, which suggest an understanding of the ideas of Wright, Berlage, Neoplasticism and Constructivism. Their achievement is in coming through such a varied smokescreen to a clear position of their own, not defined by major statement, but made accessible through their buildings. Firstly, they used the materials in most common and sophisticated use in Holland to build the early brick houses in The Hague. They are notable for the sound detailing, resolved by careful articulation of the working elements, each appropriate to the material employed. This inheritance Wright is seen even in the later work. One has only to look at the effect of changes of roof line on glazing junctions, to see the vocabulary still at work. It is with Zonnestraal that the approach changes to represent an architecture in new materials, which, on the one hand reveal themselves in the forms necessary to support their functions, and on the other hand are suppressed by a unification of the building statement in terms of its colour.

With a background of vast numbers of people housed in over crowded and under serviced conditions, and others living out their lives in the shadows of style derived from other cultures, it is no accident that identifiable products of the new architecture were white and silver skeletons.

FOOTNOTES

1. Reyner Banham, *Theory and Design in the First Machine Age*, Architectural Press, London (1960)
2. *Wendingen*, No. 12, 1921 (Amsterdam)
3. *Wendingen*, vol. 6, Nos. 4-5 (Amsterdam)
4. *L'Architecture Vivante*, 1926, No. 6, pls 24, 25, 27, 49, 50 Eds Morance, Paris
5. *Records of Bouw en Woning Toezicht*, The Hague, letter dated 4-11-19
6. *Records*, The Hague, dated, 24-12-19., ditto., 17-10-20
7. *Records*, The Hague, dated 3-6-21
8. *L'Architecture Vivante*, Autumn 1925, pls 21, 22
9. *Bouwkundig Weekblad*, 1924, pp. 23-25
10. *Bouwkundig Weekblad*, 1924, pp. 77-79
11. Erich Mendelsohn: *letters of an architect*, Abelard-Schuman, London (1967)
12. *Records*, Aalsmeer, dated 28-10-24
13. *L'Architecture Vivante*, 1924, No. 3, pls 41, 42
14. This period described in "Maison de Verre", by Kenneth Frampton, *Perspecta* 12 (1969)
15. *Records*, Hilversum, dated 18-11-26 Readers are referred also to *Forum*, No. 1, 1962 (Hilversum), in which Irs E. J. Jelles and C. Alberts presented the first half of their research into Bijvoet and Duiker's work. This part was an illustrated record of Zonnestraal, for which there was a threat of destruction, and a reference index of much of their other work. The intention of the editors to publish the second document was never carried out, and the first is now out of print. While acknowledging the assistance gained from the first article, I offer this present work to others interested in this subject.
Since Jelles and Alberts hold much otherwise unobtainable material it is important that their more comprehensive work is published, or released for other researchers.
16. *Bouwkundig Weekblad*, 1928, 21 July, pp. 225-231
17. *Forum* No. 1, 1962
18. Sophie Lissitsky-Kuppers, *El Lissitsky*, Thames & Hudson, London (1968)
19. Kenneth Frampton, "The work of El Lissitsky", *Architectural Design*, November 1966
20. Sophie Lissitsky-Kuppers, *El Lissitsky*, p. 65-66
21. *Bouwkundig Weekblad*, 1927, pp. 306-310 and 325-327
22. *Records*, The Hague, complete set dwgs dated 15-2-28
23. J. Duiker, *Hoogbouw*, Brusse, Rotterdam (1930)
24. *Records*, Amsterdam, dated 6-8-28.
25. '8 en Opbouw', 1932, p. 238
26. the project was submitted to *Bouw en Woning Toezicht*, Amsterdam dated 29-5-31., but nothing more was heard from Duiker until 27-2-34, when he resigned the commission. Meanwhile Jan Wils submitted drawings 31-10-33 and this scheme was carried out in substantially the form proposed by Duiker.
27. *Forum*, No. 1, 1962
28. '8 en Opbouw', 2 March 1935
29. *Records*, Amsterdam, dated 4-10-33
30. *Records*, Hilversum, dated and stamped 1935
31. BBC radio talk, "The anti-Pioneers", 1967

I would like to show grateful recognition of the help which I have received over a long period in making this study. It was due to the Delft student organisation STYLOS that I first went to Holland, and I am very grateful for their continuing welcomes and encouragement on my further visits. A scholarship from the Netherlands Government made it possible to stay and work in Holland during part of 1968, helped also by a research award from the RIBA. During this period I was considerably helped by meeting, among others, B. Bijvoet, J. G. Wiebenga, Dr. C. H. van der Leeuw, Jan Wils, and Paul Schuitema, whose personal accounts have contributed to a more complete understanding of events. I am indebted to many other individuals who have shown interest in the subject or helped to collect material. In particular I thank Kenneth Frampton for first showing a critical concern in a modest student essay, and for the many searching comments which have contributed to the necessary further examination of Duiker as an architect.