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The Road at Martigues



Andre Derain

CEZANNE AND DERAINE ●

E. K. STRETTON, B.A. Hons. (Rand)

Seeing reproductions of Cezanne's *Paysage Rocheux* and Derain's *Road at Martigues* hanging side by side recently, I found myself comparing these two rather similar pictures with great interest. For the comparison seemed to reveal the fact that the former was painted towards the end of Cezanne's life, when his experiments with water-colours had freed his work of much of the rigidity and ungraceful awkwardness of many of his earlier compositions. On the other hand, Derain seems to have painted his picture before the Great War, when he was still greatly under the influence of primitive arts such as Negro and Polynesian, and when he had a great admiration for the archaic art of mediæval tapestries and Gothic stained-glass windows. I think there can be little doubt of the influence of stained-glass windows in Derain's colour execution of the *Road at Martigues*. The blue, water-logged fields in the middle distance are the radiant blue of Chartres cathedral windows. The mauves, pinks, yellows and blues of the sky and the rich, orange road in the foreground are all colours and shades which recur frequently in stained glass. Even the dark tones of the tree trunk and surrounding earth seem to glow with a warmth that suggests the presence of sunlight behind the picture.

If my theory is correct, it makes the link between Cezanne and Derain a very close one. For it means that Derain is following up the principles of Cezanne at his best and at a time when he is forming the foundations of his own art. In his later works Derain deliberately follows Poussin rather than Cezanne in order to escape being accused of Cezannism.

It is always dangerous for an artist to accept the style and principles of another, since it means that he loses contact with his subject by avoiding the struggle of creation which makes for individuality and greatness. However, I don't think Derain does succumb to this temptation—he is too archaic, and archaism must always bear the stamp of struggle for form, perspective, volume and space.

There is no doubt, however, that Derain does owe a great deal to Cezanne. Indeed, his work shows that, of all Cezanne's followers, Derain is the one artist who thoroughly understands his aims, and Derain might almost be said to complete the work which Cezanne began.

Cezanne strove to give strength to his objects by emphasising the geometric forms—cubic, cylindrical, spherical and conical. Derain has carried this attempt as near as possible to perfection. In *Paysage Rocheux* Cezanne has painted the rocks on the side of his road in a box-like manner which Derain uses for his entire picture, and thereby gains amazing qualities of strength, solidity and volume.

These same rocks in Cezanne's picture reveal one of his most important contributions to art—that of using colour not merely as an adjunct to perspective but actually contributing to it. For he realised that there is a perspective of colour since our eyes are naturally tuned to focus normally in a golden light. Consequently the focus has to be altered when we look at other colours. From this he discovered that blue, green and violet gave a sense of recession, yellow and orange a sense of middle-distance, and red a sense of nearness. In his rocks it is the use of dark blue rather than actual drawing which makes for their rugged, craggy quality. The middle distance of hill-side and fields is given exact tonality and position in the picture by the use of sombre, golden colour and subdued green, while the red roofs of the buildings stand out on account of their colour, but are kept in place by an admixture of yellow with the red.

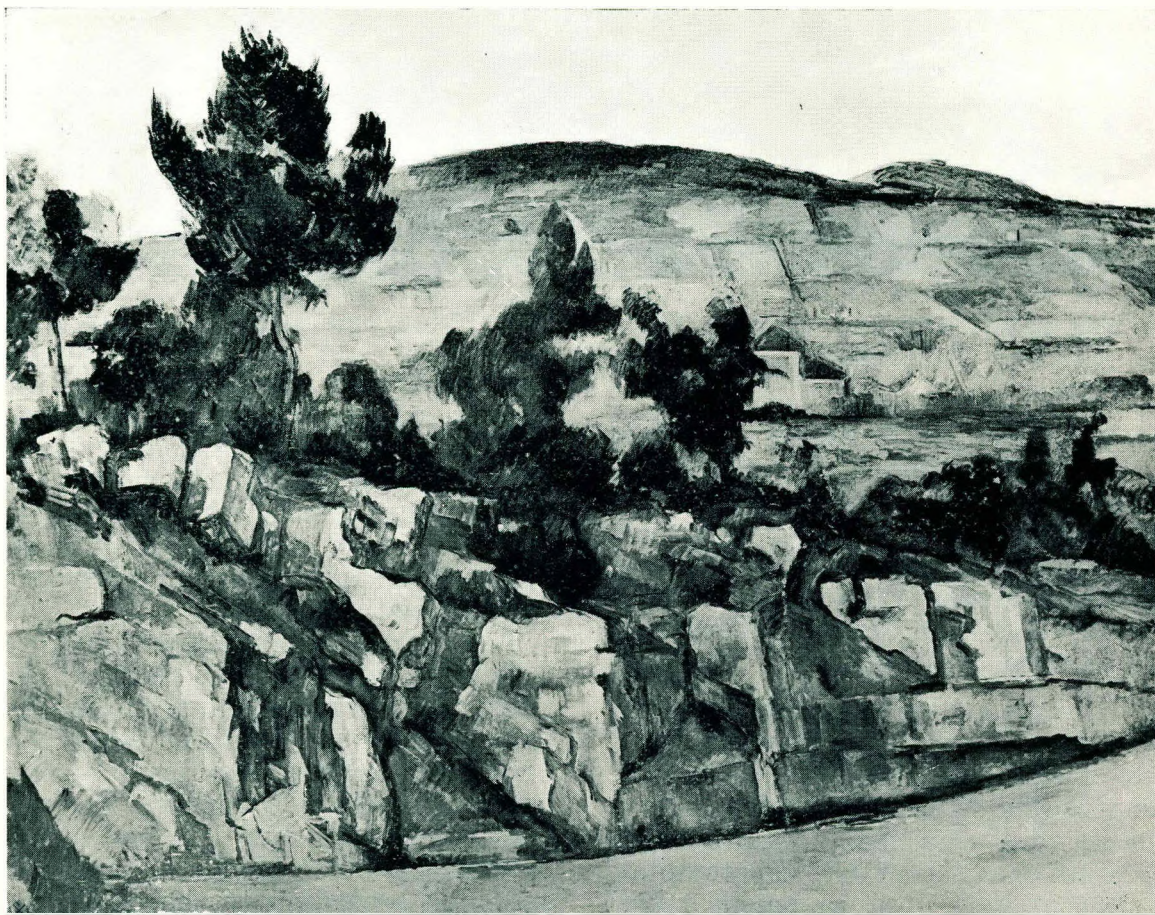
The right-hand background of this picture is "sketchy" in quality and seems to bear out my theory that Cezanne had been greatly influenced by water-colour painting when he executed *Paysage Rocheux*, for his oil-colours do not usually possess this quality. The very polished workmanship shown in the centre of the picture, where he blends his green with yellow and blue according to the degree of recession required, is far more characteristic of his usual oil-colour technique.

How unobtrusive is the road in Cezanne's picture! Its reticent greys are hardly noticeable and are the direct opposite of the road in Derain's picture. But then, Derain's road is one of the most important features of his picture. Its double curve is a valuable part of the composition as a whole, and is repeated in the gracious sweep of the branches of the tree on the left. These three curves give character and interesting contrast to the background composition of the picture, which consists of peaceful horizontal lines.

The dark blues and browns of Derain's majestic tree are far removed from Cezanne's scrubby little trees, which are painted very realistically. A comparison of the two reveals the emotional uplift which the abstract qualities

of cubism can convey to us. For Derain's work is an example of what can be gained from cubism—carefully planned structures, colour which is beautiful in itself and solidity and strength through the recognition and emphasis of geometric forms.

Though the pictures are so alike in subject that Derain might almost be doing Cezanne over again, the treatment, on analysis, shows that Derain has creative resources of his own. Far from being a mere imitator of Cezanne, he has endless knowledge, gleaned from the study of the best periods of all schools, and through his intellect and archaic simplicity he is able to create work that is yet purely Derain although it completes the problems of Cezanne.



Paysage Rocheux

Paul Cezanne

THE LANGUAGE OF ARCHITECTURE



By KURT JONAS

The Architecture of the 20th century: It is indeed a tower of Babel, an unintelligible mixture of languages, which not only the layman, but often enough even the architects fail to understand. How is it possible to come from this chaos to a commonly intelligible language?

In order to answer this question it is necessary to understand what a language actually is. We need not go into the problem of the origin of languages. What concerns us here is solely the character of language as it presents itself to us to-day. Thus we can define: a language consists of vocabulary and grammar. The vocabulary is a collection of different combinations of sound, which by convention have a commonly agreed meaning. The grammar is a collection of rules which by convention represent the commonly agreed ways of combining the words into bigger units, namely, sentences. We see that the main ingredient of language is convention. Yet nobody would hold that this convention is too narrow to allow for the expression of the individual. Though the individual is prevented from using an unintelligible compendium of "personal" sound combinations, yet there is no end to the possibilities of personal expression by the different ways of combining words and sentences, and if the contents are new, the form, if adequate, will automatically be original. Moreover, even though the individual cannot speak or write in a language all of his own, yet he is in a position to add to the language words of his own invention, as long as they are intelligible by their connection with, and the context in which they are used in the conventional language. The grammar gives a still greater scope to the individual modes of expression.

The following article concludes the series of essays by Mr. Jonas in which he attempts to arrive at a systematic approach to architecture. Starting with a practical example (Revelation at Venice) proceeding thence to fundamentals in "Towards a Philosophy of Architecture" and reviewing the psychological difficulties in "Psychology and Architecture" he concludes by returning to the simple facts of reality.

The same applies to architecture. If we look back in history, we will find that every age had its own architectural language. This language was not in all cases original or adequate. In many instances the cultural heritage has been considered so important that the architects adopted the idiom of a bygone age, adapting it only inadequately to the needs of their own time. Yet in all these cases in the past the means of construction, the building materials, the technical implements, had remained more or less the same. Hence, when the architects of the Renaissance adopted classical styles, they had to compromise in practical questions, but their grammar, i.e., their construction was as true an expression of their building methods as the originals had been. That changed radically when steel and reinforced concrete construction were introduced. Buildings of to-day in the classical style have not only to twist this vocabulary of the past into impossible distortions, but they also show a falsified grammar. They speak, if the metaphor is allowable, Shakespearian English, pronouncing the words wrongly and subjecting them to the rules of Latin grammar.

As against this stammering in an obsolete idiom, the modern architecture has at least found ways of expressing its new mediums. It has a grammar, a logical system of construction, which is more or less the same all over the western world. But it has not yet a conventionalised vocabulary, neither nationally nor internationally. And it is just this standardisation of the elements of architectural expression which is so urgently needed and which we have called the necessity for a "language of architecture." From what we have said about languages



House at Paris

Le Corbusier

A plain box-like facade, functions partially expressed by different types of fenestration.

in general it is clear that there is nothing in language as such, i.e., in the conventionalisation and standardisation of the elements, the architectural units, which is contrary to the necessity for individual and original expression. It is only the means by which the personal expression is made generally intelligible.

Where could this new convention start, what could it be like, of what kind is the new language of architecture to be? Too many questions to answer at once, too difficult questions to answer comprehensively. All one can do is to show where to start and in what direction to go.

Where to start? Which are the smallest units that can be standardised so that they add to the comprehensibility of the architecture? Clearly not the building materials, such as bricks, stanchions, slabs, etc. To standardise those is most important from a practical point of view, and has, therefore, been done already to a considerable extent. But they are invisible as units, and therefore of no avail in the present context. To start arbitrarily: windows must be standardised, anew, that is to say, because the standard sections as we have them to-day are too inflexible and conceived too little in the spirit of the new architecture to be of great use. The

new architecture needs standardised doors, fittings, light-fixtures, furniture. But the development will go further; dry building with factory-made big units is no doubt the chief feature of the next development. That means standardised room sizes and room heights (variable, of course), it will bring standardised stairs, kitchens and bathrooms, standardised wall and ceiling thicknesses, standardised heating and ventilation. It will bring factory-made houses. This development is quite independent of whether we like it or not. It will come, nay, it has started already in all its phases. But not always is it directed by architects, with the result that we have to work with units which are not conceived in the spirit of a new architecture. It is the great and historic deed of the Bauhaus and of Gropius in particular, that they early recognised the necessity for the school of architecture to become a laboratory for studying the problems of standardised mass production in architecture. The Bauhaus, working in close collaboration with the industrialists, was responsible for the mass production of innumerable architectural elements, all conceived in the same exemplary spirit. Steel furniture and light-fixtures, door handles and staircase railings, nothing was too small or too big for their attention. We owe to them the first and the only systematic attempt at architectural standardisation.

The Bauhaus no longer exists. Its work must be carried on. The necessity becomes clear if one looks at the factory-made houses as they are to-day produced in America. Standardisation, all right, but it must be done by the architects of to-day, and only after thorough research in every single case.

Yet this standardisation of units is only the first step, and for our particular problem not even the most important one. To make the language of architecture intelligible, we must go further. We must find conventions for expressing the functions of bigger architectural units.

The question that arises here is a rather difficult one. Of which magnitude must architectural units be to deserve special expression? Is, for instance, a normal residence just one element, which needs a uniform, simple, "singular" external expression which states

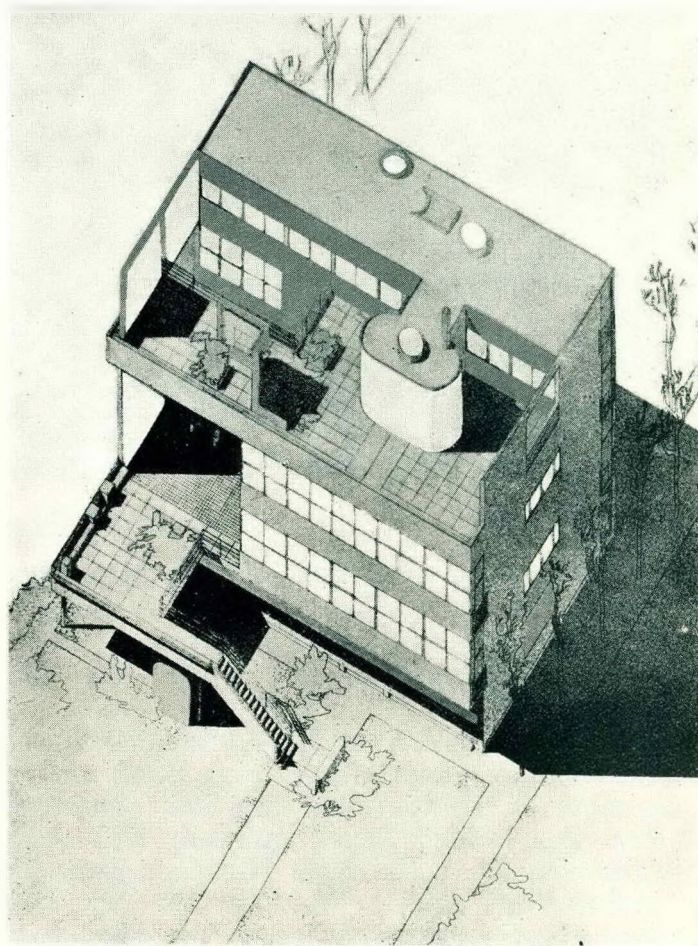
only: this is a villa? Or must it express externally such sub-functions as "living," "sleeping," "service," "circulation," etc? For the first principle Corbusier's Villa Savoye at Poissy is the classical example. Here the only external expression is that of a box with uniform window and terrace treatment all round, the whole thing raised on poles. It only expresses the one main function, in which, according to that view, all other functions are implicitly contained.

It is with the other system, which is the more generally adopted with the young architects of this country, that the creation of definite conventions becomes the paramount necessity, if this architecture is to be understood.

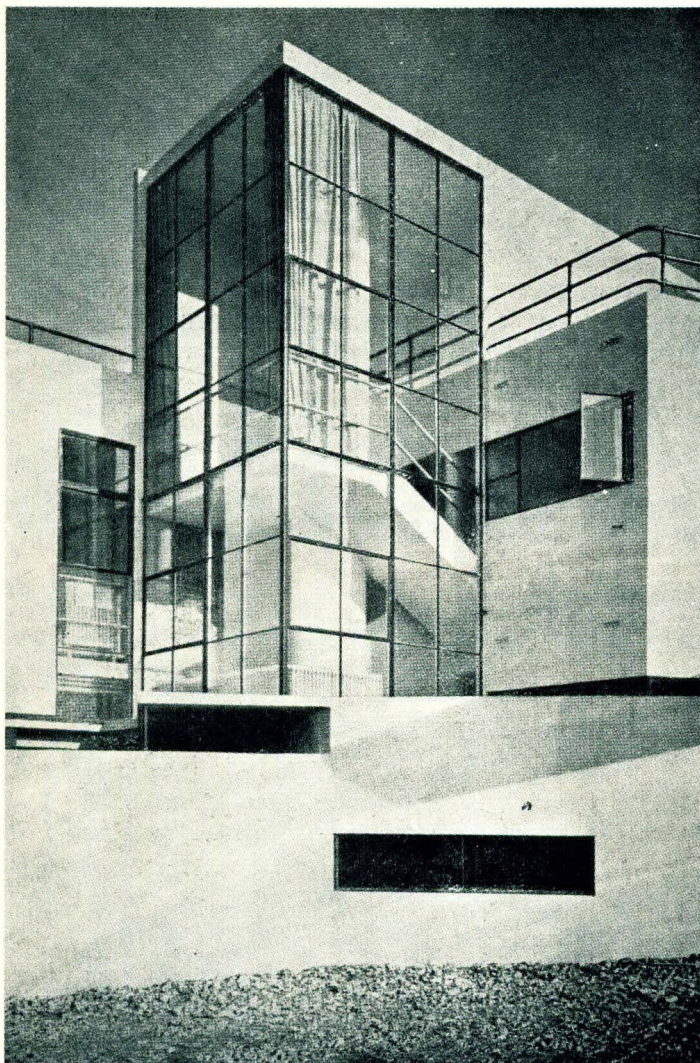
We must, to give an example, agree on a number of definite architectural symbols which stand for: staircase . . . a number, so that the convention might not be too narrow. So has the language different words to convey the same meaning, only with varying nuances. Such conventions may be: the staircase-tower, standing out from the main bulk of the building (example: House Stern) or the long vertical window, stretching as a narrow strip along the whole height of the staircase (examples: Metro and Escom House) or some other convention which in an adequate way, with a functional symbolism, expresses the idea of vertical circulation. Once these symbols, these words, are agreed on, they can no longer be used to express anything else. If, for instance, after such conventions have been generally adopted, an architect comes and uses an element that looks like a staircase tower for putting a collection of minor elements behind this facade, he will not only be misunderstood, but also become subject to ridicule, like a writer who uses his language wrongly.

We must find a number of symbols for showing the difference between main and minor elements. Fenestration will be of the greatest importance here. Certain types of clerestory windows have already become a conventional expression for services, etc., and hence their use in a main bedroom in a modern house could be justly criticised in an earlier number of this journal. The same applies to the "bull's eyes." Here again an example may illustrate how strong this convention has become already. The Braamfontein Flats by Hanson, Tomkin

and Finkelstein show these bull's eyes on the west elevation, where they are to give additional warmth and view to the main south rooms. The architects intended to put in considerably bigger round windows, in which case everything would have been all right, because the big round window is almost as definitely an expression for view, as the two-foot bull's eye is for minor elements. Unfortunate economic restrictions resulted in the present appearance, which to my mind clearly suggests some small element behind each of the round windows. In this connection it may be noted that such a criticism can only be directed against sincere



Garches another example of the "singular" expression of a residence
Le Corbusier



House at Grayswood

Basil R. Ward

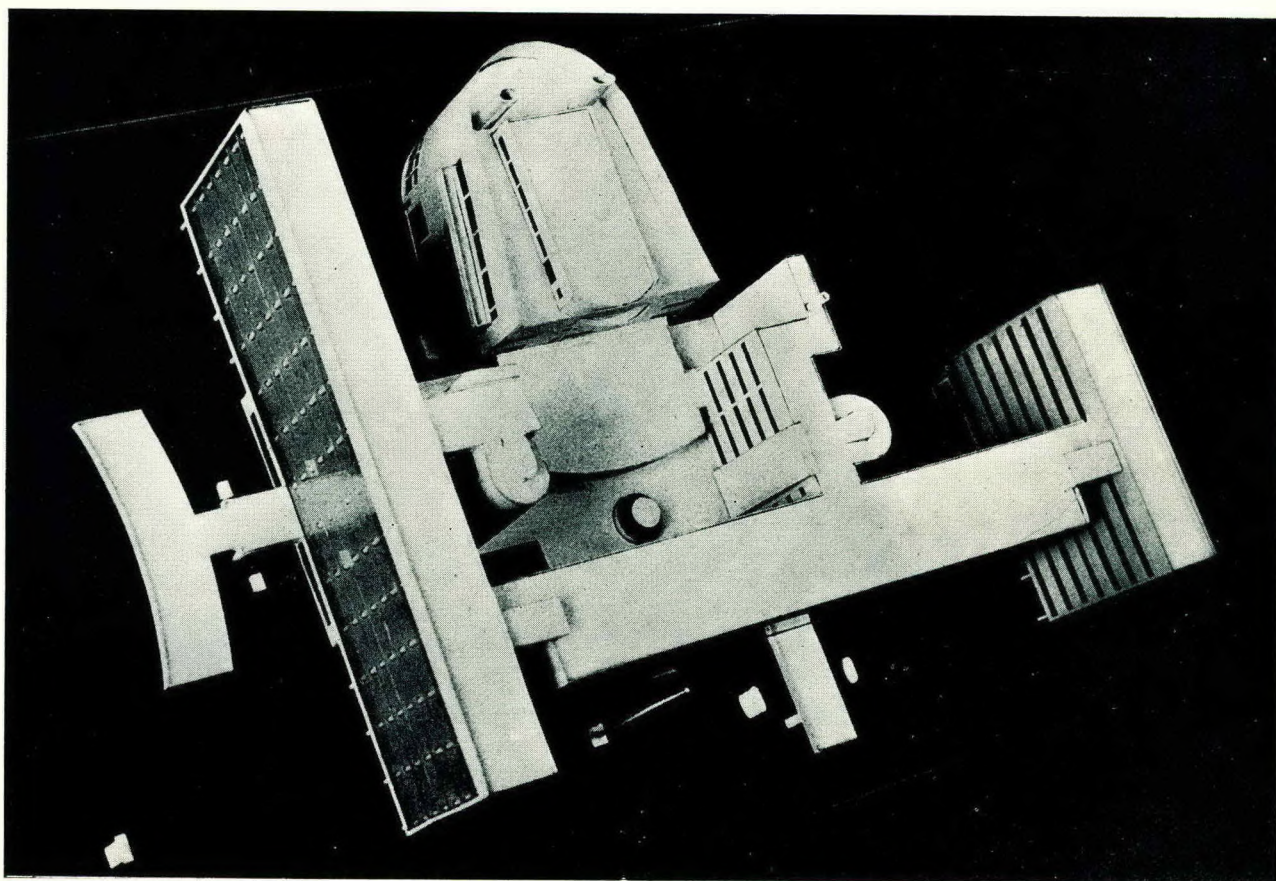
An interesting English example of external staircase expression.

and competent followers of the modern movement, for they alone are striving after a new "language of architecture," and it is therefore among them that frank mutual and self-criticism can have the most fruitful results in achieving that goal. Were we to try and analyse the "antiquated idiom" in the same spirit, there would be no beginning and no end to criticism, for the simple reason that no attempt at all is made to express functions.

One more example from the realm of fenestration: departmental stores. The necessity for having the whole wall-space for internal display is leading to a new method of fenestration. Clerestory windows are taken as a continual band all along the facade, thereby creating a new convention for expressing the particular character of the departmental store (examples: Anstey and John Orr). Or: exclusive shops, jewellers, etc. The minimum sized shop window, more in the line of an exquisite picture frame, would be the adequate symbol, the word for this type of shop (examples: Paris, Vienna).

But the vocabulary is not exhausted with fenestration. Let us take halls of all descriptions. Here the hall shape, governed as it is by the laws of acoustics, must become the outward expression which makes it clear already from afar: This is a concert-hall, or a theatre, or a cinema. Wherever possible an outward expression of roof shape and floor slope must help to make the function of the building intelligible (that is the whole aim!) The bigger the complex becomes, the greater the necessity for expressing the single elements. Le Corbusier, whilst treating the house as one unit in Poissy, uses the other system in the Palace of the Centroyosus. The same holds true if one compares Gropius' houses with the Bauhaus. The Centroyosus and the Bauhaus are two equally admirable realisations of the principles. Circulations, halls, offices, living quarters, studios, etc., are expressed in self-evident word symbols which make it possible to read in these buildings as if they were open books.

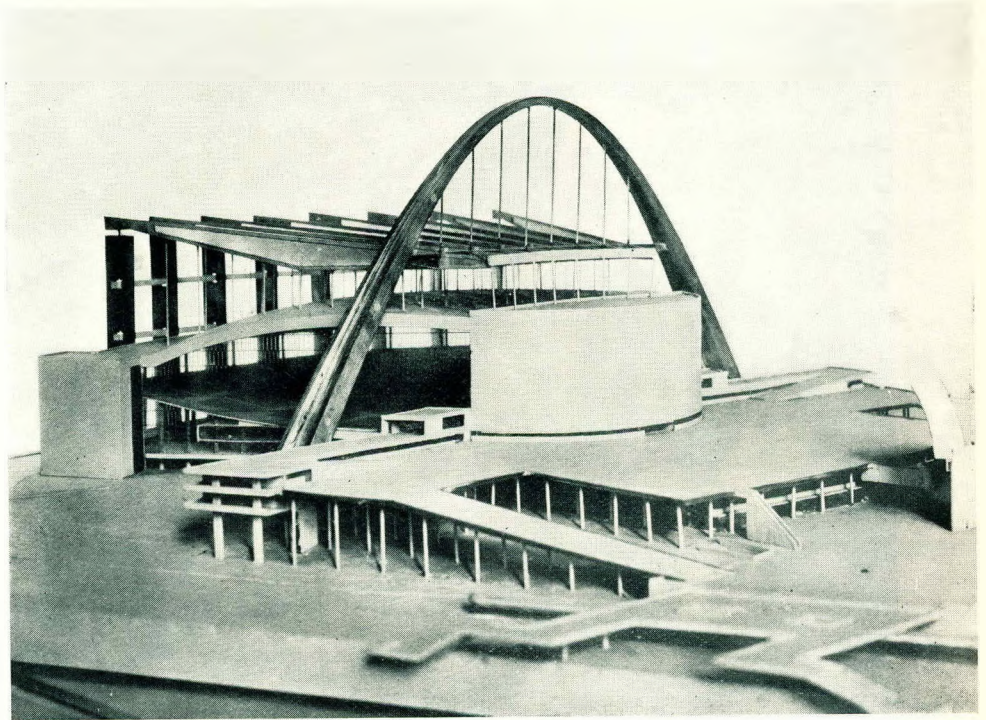
But this direct expression is not always possible on restricted town sites. Then another method must be found. And this other method is the all-glass facade. Here, indeed, everything is automatically expressed externally, and in a way which needs no further explanation. But here, too, there may appear difficulties. What about such elements which are not suitable for "expression," such as bathrooms, etc.? Here again we find an excellent solution in the much referred to Berlin Exhibition House by Mies van der Rohe. The house itself is a practically all glass affair, but the bathroom, with lavatory, is a completely closed unit, put freely inside the bedroom wing and toplit. Thus a clear differentiation is made between those



Palace of the Centroyosus

Le Corbusier

Palace of Soviets, Le Corbusier
showing the hall-shape, floor and
ceiling slope. A particularly clear
expression. Model



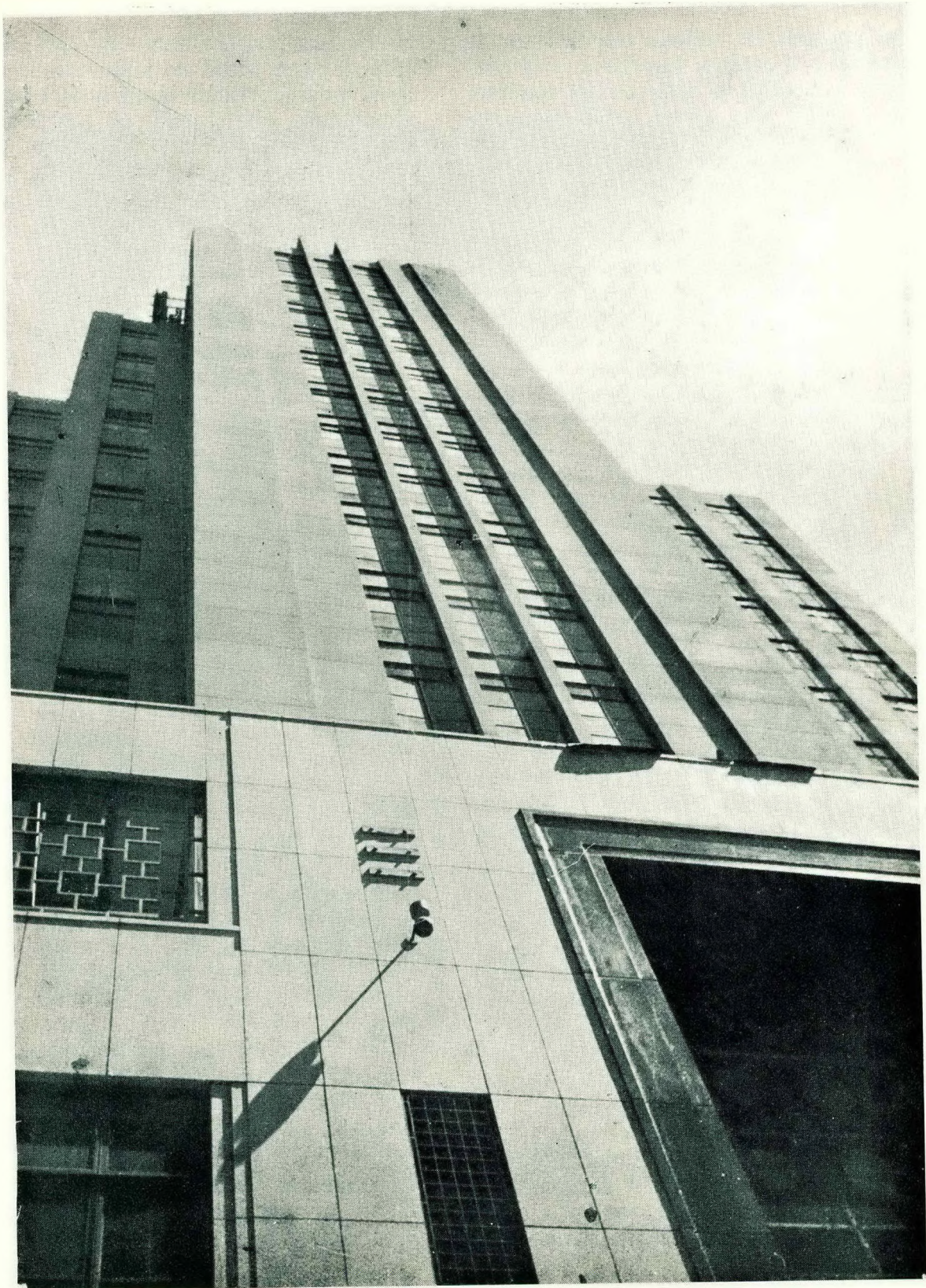
elements that can and must be shown externally and those which for their more intimate character do not allow such an expression. It is the same, as with every other language: there must be words for these things, and yet one does not speak about them in public.

All we were able to do was to show some of the possibilities of stamping certain expressions as significant for certain architectural functions. And by quoting practical examples in every case we have tried to prove that this standardisation and conventionalisation, this striving towards a language of architecture, is not just a dream or an abstract theory, but a natural process which has started and covered already a good distance. And that must be so. For every language is a living organism. It cannot be invented, it must grow. But it must not grow wildly. Its growth can be regulated, encouraged, purified. The nation with the most accentuated consciousness of her own language, the French, have for hundreds of years the "academie francaise," which guards and regulates the development of the French language. In a similar sense the architects can guard and regulate the growth of their own language. They can agree expressly



Bauhaus, Dessau

Walter Gropius



The Staircase Tower



Escom House, Johannesburg

or by silent consent on certain conventions as valid expressions of certain functions, and they may eliminate others which they do not consider satisfactory. They may adopt, without incurring the risk of being called copyists, new words coined by the great poets among the architects of to-day. It is through this type of copying that the commonly used vocabulary of a language grows and becomes richer and more varied. Were every artist to insist on only using innovations of his own, the means of artistic expression would be to-day where they were five thousand years ago. The originality of the artist depends on how he uses the vocabulary. Thus they will slowly start to speak a common language. But the public will not yet understand them, because they do not know this language. But whoever wants to understand French must learn it, and whoever wants to understand architecture must learn its language. Fortunately, languages can be taught, and though one does not become a French poet by learning French, yet one acquires the ability of understanding and deriving pleasure from the French poets. So with architecture.

And then, if we have a language which is common to architects and intelligible to the layman, if he only takes the trouble to learn it, then and then only architecture can be practised and experienced as an art in the full sense in which we have defined it in our attempt at a "Philosophy of Architecture." The limiting factor, which we have shown to be due to our insufficient knowledge about the reactions of the human mind towards spatial creations, is not eliminated. But to a certain extent it is overshadowed and transformed by the power of convention (in the same way in which we no longer perceive the original meaning of a word, once it has acquired a new meaning in the convention of language), and, as for the rest of uncertainty that remains, it is of accidental nature only, not of unalterable necessity. As the psychological science advances, so this limiting element of hampering ignorance will shrink. So that in a time, which need not be far, we may hope to come nearer to a pure architecture. I will close the arch which con-

nects this article with the previous ones by giving once more a definition of architecture as it would present itself now, after our excursions into the world of restricting, that is defining, reality.

"Architecture is a four dimensional art, enclosing space by means of solids and at the same time allowing for a free interpenetration of spaces. The aspects of spatial art and practical efficiency are co-ordinated by an equation which consists in the discipline with which the architect restricts himself to such solids and combinations of solids as are simple and efficient expressions of their practical functions, creating a spatial art with this limited material only. At the same time his work must be directed by a psychological knowledge in the same sense in which it is also subject to the laws and possibilities of engineering. To overcome the associations of ideas which make an understanding of his art impossible for the public, he must, by standardisation and conventionalisation, create a language of architecture, which the layman can learn and understand. Then the functional relationship in which the two aspects of architecture mutually state and express each other, will indeed be achieved. For it will no longer be a unity which exists in the mind of the architect only, but it will be experienced and appreciated as a unity by the public." And once this understanding has come about, a great age of architecture will begin.

There is much work to be done before this goal can be reached. Some of it must be done by the psychologist, some of it by the architect. The most urgent task of the hour is the work which has to do away with the Tower of Babel, with the chaos of individual languages which are hardly more than a stammering, a work which has to further and to encourage, to guard and to purify, to enrich and to complement the new language of architecture that is in the making.

It is on the strength and the unity of this language that the life, though not the essence of an architecture as we see it, ultimately depends.



Bauhaus, Dessau

• Walter Gropius

DURBAN CENTRAL STATION AND RAILWAY DEVELOPMENTS

A Paper read by Mr. A. L. Forbes at the Annual General Meeting of the Town Planning Association 15 June 1936 Durban

As a preliminary, a comparison of the land occupied by railways in Durban 20 years ago with that occupied to-day will be of interest.

At that time a bridge spanned the line connecting Ordnance Road and Railway Street, and Lords Ground was Durban's Show Ground. What is now the great Congella Marshalling Yard was then land in process of being reclaimed. South Coast Junction (now Rossburgh) yards were much used for marshalling coal and other goods trains to Booth Junction—Cato Ridge deviation being then uncompleted. The Point yards likewise were but a fraction of their present extent.

Durban Central Area, about half the extent used to-day, served as passenger, parcels and goods station, as goods train marshalling yard and as workshop centre. The offices also housed a number of officials in addition to those still found there.

To-day the much greater area occupied in Durban central serves only as passenger and parcels station, workshops and storage yards, and what once was the grand stand at Lords Ground houses the S.A.R. Catering Department. There are also on the ground north of Old Fort Road a few wood and coal depots used by private business firms, a Post Office Stores Department and the headquarters of the Defence Department.

At Congella, at the Point (Cato Creek) and at Booth Junction are great marshalling yards.

You will notice that the area of Durban Central actually used for passenger and parcels business is comparatively small. Please bear that in mind.

Recently the railway authorities, being in possession of a substantial surplus, recalled our need for a station to replace the antedeluvian main station and appended tin shanties we have endured too long, and the proposal, I believe, is to remodel the existing station and build permanent structures along Pine Street.

A glance at the map of Durban shows how completely our city is mutilated by this iron wedge driven almost to its heart. At its very centre it is squeezed into insignificance.

I suggest to you that Durban's development along two main streets, West and Smith Streets, can be attributed to this constriction at the centre. The consequent scarcity of land in the recognised business centre has resulted in its subdivision into narrow strips, on which to-day are being built tall, narrow structures, costly to erect and inconvenient in design, yet inevitable owing to the exorbitant ground price and high rateable valuation.

It is difficult to say positively how different Durban would have been had this impassable barrier not existed. We are dealing with a real problem, and to introduce imaginative pictures would detract from an appreciation of the problem, but I think there must be general recognition of the unsatisfactory influence the existence of the station area has had and realisation that if the evil could be removed Durban could and would make the best use of the opportunity.

Again I would avoid painting pictures, but leave it to your judgment to say what possibilities of sound city development would result were the bulk of the area between Pine Street and Ordnance Road to be now available.

It would be indeed an unique opportunity, for it would come at a time when noble buildings are possible. Public buildings, whether Government or municipal, we expect to be of artistic design and of noble proportions, but to-day private houses have the means to and do erect attractive buildings. There are several really fine buildings in our city, but their effectiveness is much impaired through their being scattered about and often surrounded by survivors of the days when a double-storied building was something ambitious.

I suggest that not only would the opportunity be grasped were it presented, but that its possibilities are such that it is in the city's interests to do all in its power to create the opportunity.

Returning now to a consideration of the use made by the railway authorities of this central area, I mentioned earlier how many activities had been diverted to other centres, and how, nevertheless, the central area had been considerably increased.

To-day the area between Ordnance Road and Pine Street is used partly for passenger station, partly for parcels station and partly for passenger trains sidings, but the workshops and storage yards occupy by far the greater portion. If these workshops and all that goes with them could be removed, the area required for the other services would be comparatively small, but before I go any further I would remark that, however small that area, it is essential that it should not be in the form of a "Hindenburg Line" along Pine Street front.

If all this Central Station land is fully used to-day, will it suffice in, say, ten years' time? If not, will the Administration extend towards Brickhill Road, or will the question of removal to some other centre then be considered? Let us suppose that the new station is erected along Pine Street and that in ten years' time the shops are removed and the land thus vacated made available for civic use. How, with the station barrier, could it ever be absorbed as it should be?

There seems to be no good reason why the railway workshops must remain in situ. Heavy traffic now avoids the Central Station, and it is presumably heavy traffic rolling stock which is most generally in need of workshop attention. It would seem to be convenient, then, to have these workshops as near as possible to the heavy traffic centres. The diversion of Point traffic to Congella suggests that erecting shops would be more conveniently situated towards that centre, while for the storage of those spares, such as buffers, etc., in frequent demand, a site nearer at hand could only be advantageous. Moreover, if expansion of the workshops area becomes necessary, such expansion could be anticipated by setting aside now an area which would suffice for very many years to come.

It may be very costly to move the workshops. It may be that the present buildings are so valuable that to scrap them might be a huge expense. I can only say that as far as the buildings are concerned the valuable ones must be well hidden behind the decorative shacks that border Walnut and Ordnance Roads.

Further, it must be agreed that the land that would be released would realise a price that would purchase many times the same area up near Congella or Rosburgh and, in addition, go a long way towards paying for the removal of machinery and the erection of necessary new buildings.

I am not prepared to say which of the possible situations for the new workshops is the best. There is ample land, some yet to be reclaimed, between the Graving Dock and the Umhlatuzana River. There may be good reason to suggest a site adjacent to the Graving Dock, having eventually a wharf frontage, or there may be stronger arguments in favour of a site between the Umbilo and Umhlatuzana Rivers, but I do definitely suggest that somewhere within that area is the ideal situation for the railway workshops and storage yards and not a few hundred feet away from our City Hall.

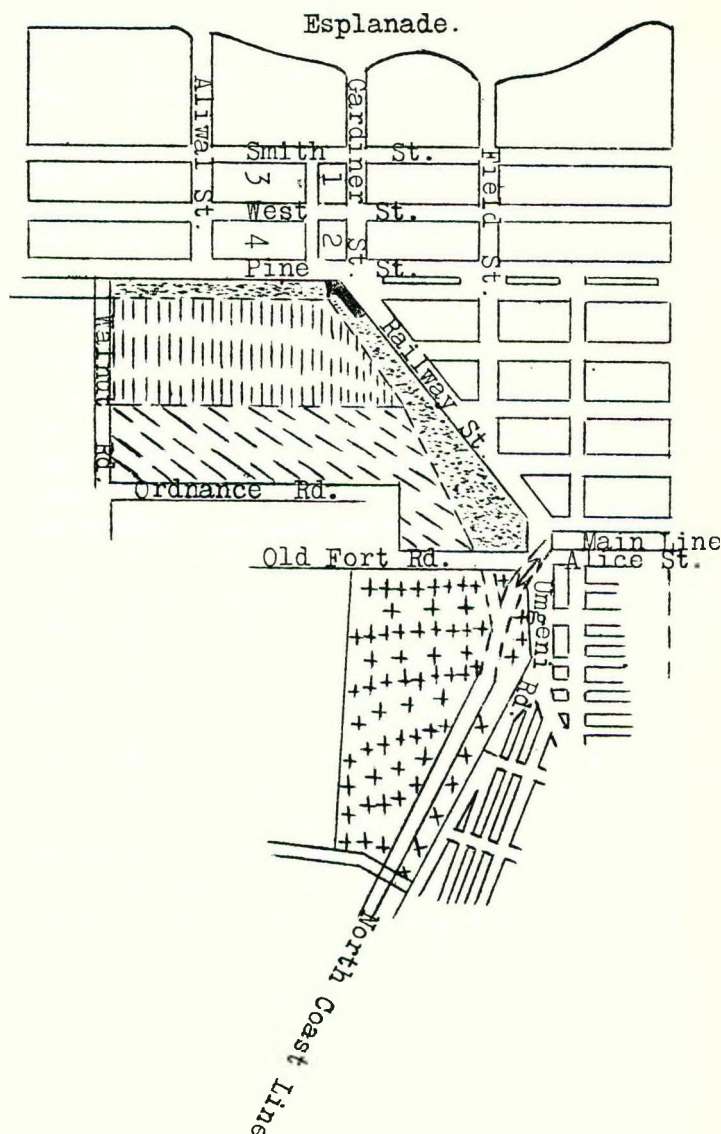
Now, assuming that the shops are removed, where should the new station be situated? As I previously said, to place it along Pine Street would not allow the released land to be effectively absorbed into the city, and would not give us good access to the Sports Grounds, which is a minor point, but worthy of consideration.

I drew attention to the comparatively small area required for passenger and parcels station and passenger train sidings. I know there are those who will argue that the present station is so conveniently situated that to move it elsewhere would be a step in the wrong direction.

Nevertheless, I would suggest that the new station be built north of Old Fort Road, or, alternatively, that there be two stations, one north of Old Fort Road to be the main station and the other in the Alice Street corner of the present site to be the station for suburban traffic.

It is not every passenger arriving at Durban Central Station whose goal is the Playhouse or shops or offices adjacent to the main station. It is not appreciably nearer to the present station

The long distance travelling public would be, I think, as well, it not better served, at the suggested new site. These come or go to or from private houses or the beach hotels. Alice Street and Old Dutch Road make a more direct and less congested route to the Berea than do West Street and Berea Road. From the north end of the city we are a little nearer, for the south end there is practically no difference, with the advantage in favour of the less congested routes to the suggested new site. For Marine Parade traffic there is the fine semi-boulevard, Old Fort Road.



1. Durban City Gardens.
2. General Post Office.
3. Municipal Offices.
4. Public Buildings.

- | | | |
|---|---|--|
| A |  | Area used for Passenger, & Parcels Station and Passenger Coach Sidings. |
| B |  | Area which, added to A, was limit of Central Area 20 yrs. back. |
| C |  | Area added to A and B, which with portion of D, comprises present Central Area. |
| D |  | Area partly used by Railway and on which new station is proposed by me. The greater part, if not all of D, would be available for the new station. |

A. L. Forbes.

Personally, I would not be inclined to give overmuch consideration to this aspect of the subject. It fades into insignificance when we consider the much more important question of the proper expansion and development of the city, but I have considered it.

What of the Railway Administration's point of view? Perhaps the railway experts can easily argue, against any such scheme as this. As a layman, I should think a through station built on the Main-North Coast through line would be easier to operate than a terminus station such as the Central Station is now. In this matter of train services we have grown accustomed to regarding Durban Station as the start and finish of any journey. There are passengers, however—and perhaps they would be more numerous if the facility was there—who wish to travel from one suburb to another via Durban Central. I do not suppose these passengers are numerous enough to dictate a policy, but they are there, and I do suggest that it might possibly be an advantage to be able to work a train from, say Avoca to Pinetown, instead of terminating each service at the Central Station, more especially if we are to have an accelerated and more frequent electric service.

There is also the possibility that the North Coast Line may yet be developed to connect to the Transvaal or the coal mining areas, bringing traffic which would for the most part pass direct to the Congella yards or Bluff coaling appliances. In fact, the through line, which exists to-day as the "avoiding line," is used quite extensively already, and must inevitably increase in importance.

On the suggested new station site are at present situated the Catering Department, a few private wood and coal yards, a Post Office Customs and Excise store, and the Union Defence Force Headquarters. The last-named is quite a new and good building, and might remain, but the others could very easily be moved elsewhere and so provide all the space needed for a large passenger and parcels station and the requisite train sidings.

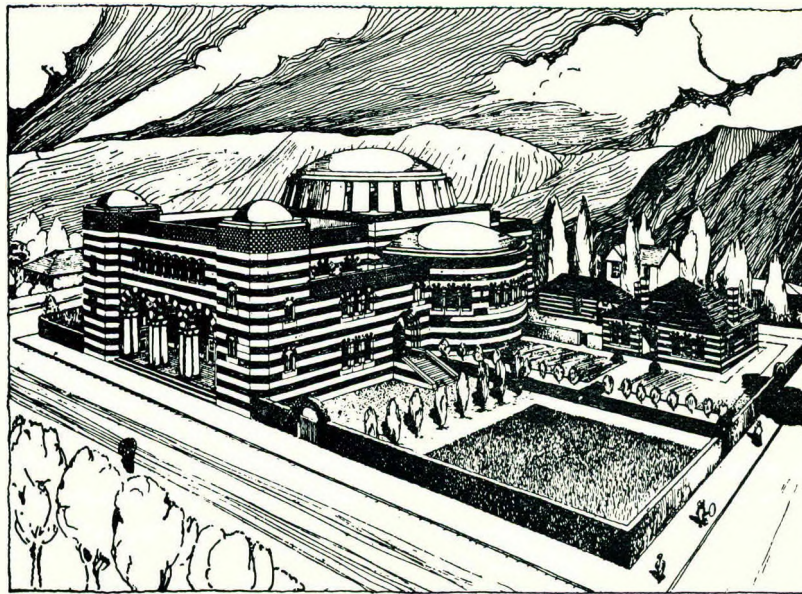
Such a suggestion involves scrapping the present station altogether, and perhaps that is reason enough to commend it. It is generally agreed that the public is not well catered for at the present station, nor are the officials, and I believe the office accommodation in the main building is inadequate and inconvenient. In other words, an entirely new building would not merely be a luxury or an unnecessary expense. The importance of Durban warrants quite considerable expenditure on station buildings and administration offices.

Just a word concerning the fate of the released land. The land is unquestionably valuable, and the amount it would realise would depend greatly on its controlled development. We could not expect the Administration to hand the land over to the city even at a nominal figure, but we would expect co-operation with the city in the lay-out and disposal of the plots.

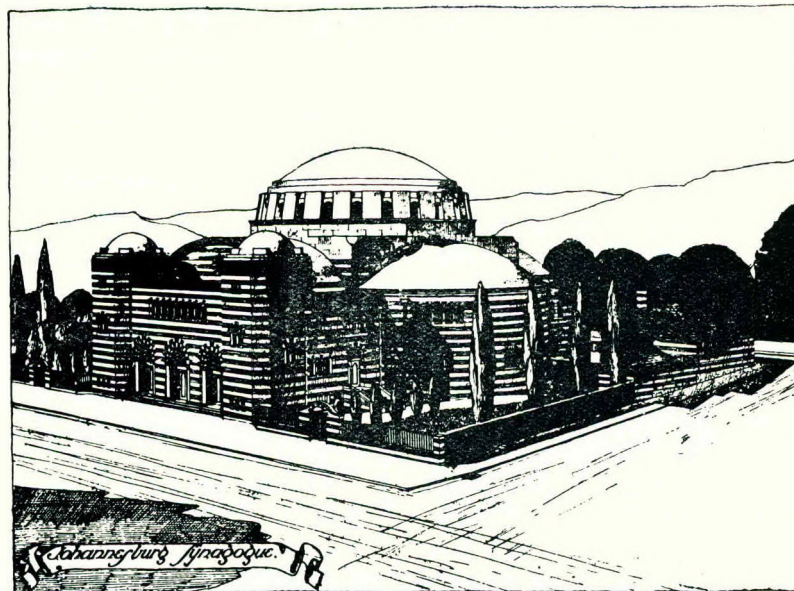
It is here that I would commend our city to design its new civic centre, to be flanked eventually by the Opera House, theatres, Palace of Justice and so on, which as yet exist only in the imagination. But at least let us realise that Durban will have many new and noble buildings in the course of the next few years, and let us provide a place where these will show to advantage and become real additions to the beauty and dignity of the city.

The Administration would realise over a period of years probably much more than it would expend on the changeover of the shops and such other expense as is by this scheme added to the amount it at present contemplates spending on Durban.

It has been said to me that the Administration is antagonistic towards the city; that the men in command are prepared to dictate our Council but not to reason with it. I discredit the statement, but, were it true, I would still say: "This is what Durban wants. This is what Durban needs. It is for us to resolve to be satisfied with nothing less."



COMPETITIVE DESIGN View from the South-East.



ACCEPTED DESIGN

MR. THEO. SCHAEFER, Archt.lect.

The Synagogue, Johannesburg

THE AGE OF REINFORCED CONCRETE

● By THEOPHILE SCHAEERER, F.R.I.B.A.

At a time when there is so much work being done in Johannesburg with reinforced concrete, it may be interesting, particularly to the architects and engineers of the younger generations, to know some of the difficulties the pioneers of this method of construction had to face, and the prejudices against it, which they had to put up with when trying to introduce this excellent construction in Johannesburg about twenty-five years ago.

Few people in this town know that the large dome of the Synagogue in Wolmarans Street, erected in the year 1914, by Messrs. Hoheisen & Co., according to the plans prepared under my supervision, is carried by four reinforced concrete beams, each of which has a free span of 60ft. The beams are 6ft. high and 3ft. 6in. wide, which are hollowed out on the lattice beam principle. Such large spans are even to-day not a very frequent occurrence, and in 1913, when hardly anybody had heard of reinforced concrete work, or as it was then called, "Ciment arme," people thought it quite impracticable.

I was particularly lucky, as I had had experience of this method of construction in 1889 and 1900, when some of the work done for the Paris World Exhibition was carried out in reinforced concrete, "System Hennebique." Further, I was Inspector of Works for a large factory, "Usines Sautier Harley," where the whole of the structure, including the roof, was built in reinforced concrete.

The whole of the construction, the planning and the execution of this work was then absolutely new to all connected therewith, and many of the engineers and some of the heads of the departments used to shake their heads at this new method of construction, and some of them delighted in telling me (then a very young man) what would happen if they put the electric cranes in motion. They maintained that the brackets supporting the crane girders would give way and the whole thing would collapse.

The crane drivers used to sit in a little cabin or box attached to the cranes and travelling with same, but in this particular instance none of the crane drivers would risk their lives, as

they put it, and when the tests were made, and very severe tests were applied, a "controle a distance" had to be specially arranged for.

All this construction stood the test of time very well, and I have never yet heard of any defect having occurred in the construction; as far as I am aware, it is still in existence, although carried out before 1900, and I added to it in 1901, just before I came out to Johannesburg.

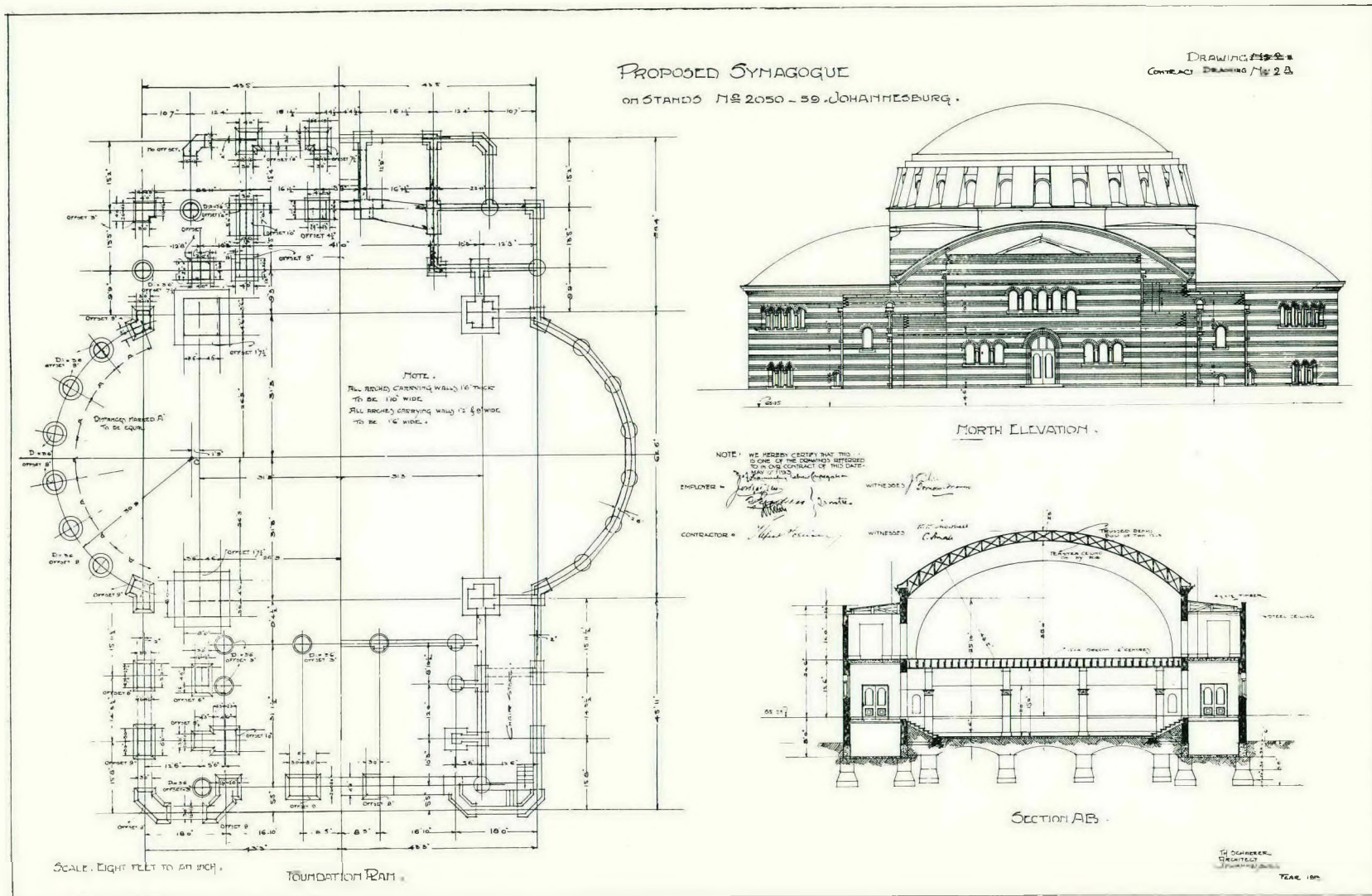
The engineer who designed and carried out this early reinforced concrete work was, if I remember correctly, a Mr. Bonnat, one of Hennebique's first collaborators.

There were, at that time, a few more buildings in course of erection in this system, some for the pavilion of the 1900 World Exhibition and some for private clients. One of the most noted and best known buildings in this system, and at that period, was a large block of flats, about six storeys in height, at the Place St. Michel, in Paris. This construction was particularly daring, and had many of the regular features of the French architecture of this class of building, such as projecting bays, windows and balconies, etc.

Every time I have been in Paris since that period, I have not failed to visit this particular building. The first time I saw it again was in 1907. I was very much impressed with the whole structure and the way it had stood the test of time, and I was then and there determined to use reinforced concrete construction as soon as I had a chance.

My opportunity came in 1912. I won the competition for the Johannesburg Synagogue for the Witwatersrand Old Hebrew Congregation. I was determined to carry out the dome in reinforced concrete, and set to work at once to achieve my aim.

Previously, I believe it was in 1910 or 1911, Mr. Gueritts, senior partner of the now world famous consulting engineering firm of Mouchel and Partners, was out here, and endeavoured to introduce reinforced concrete work here in South Africa. I had the privilege of meeting Mr. Gueritts, the inventor and designer of those famous cooling towers, five of which adorn the new Klip River Power Station, as well as the



The Synagogue, Johannesburg

Theophile Schaerer, Architect

Johannesburg and many other power stations of the Union, and we exchanged our views on the matter. He had experienced the same difficulties as I, and was on the point of giving it up as a hopeless case.

Anyhow, I explained to him where, in my opinion, the difficulty really was, and that under the circumstances did not feel inclined to take all the responsibility myself, but I assured him that I would do all in my power, and go out of the way to carry out such a reinforced concrete job, if his firm would send out a man who was competent to prepare the necessary details for such work, and their firm would assume part responsibility at least. This he did, and it was a representative of Messrs. Mouchel and Partners, a Mr. Reynolds, who designed the beams. Unfortunately, the delays that occurred before I was authorised to carry out the work necessitated Mr. Reynolds' departure, as he was unable to secure another job on the same lines, and I had therefore the privilege and the doubtful pleasure of having to supervise all the bending, the cutting and assembling of the steel bars, placing these into position on the high scaffolding, and to supervise the casting of the concrete beams, as well as the making of the centering and supports thereto. I must say that Mr. Hoheisen very ably assisted me in that very arduous task.

The idea of such a dome occurred to me when I saw St. Sophia in Constantinople, when in 1907 I was on an extended tour for studies in the East. The beauty and the lightness, and the admirable proportions of the dome impressed me so much that I was determined to carry out something on those lines at the first opportunity.

A further very serious handicap for the safe execution of such a structure, with such great free spans, was the stringency of money. Ordinary construction was out of the question, brick arches could not be considered on account of the thrust they bring on their abutment, which would then have to be far stronger than required for vertical loads. Therefore the problem was a very delicate and difficult one, and several times my young collaborator representing Mouchel and Partners and myself appeared to be at our wits' end.

In addition to this, the then Committee of the Synagogue, or at least several of its influential members, appeared to lend their ears to some secret advisors, some of whom I definitely traced. Most of them were of the architectural profession, and some of them disappointed competitors in the competition. Anyhow, at one time they appeared to have succeeded in frightening the Committee to such an extent that the majority of them flatly refused to let me carry out my reinforced concrete scheme.

Unfortunately for me, at that particular time, some very severe earth tremors occurred here in Johannesburg.

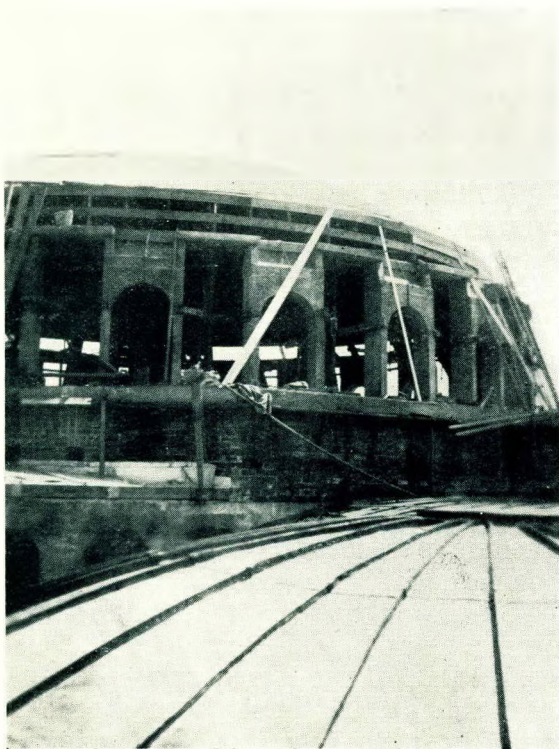
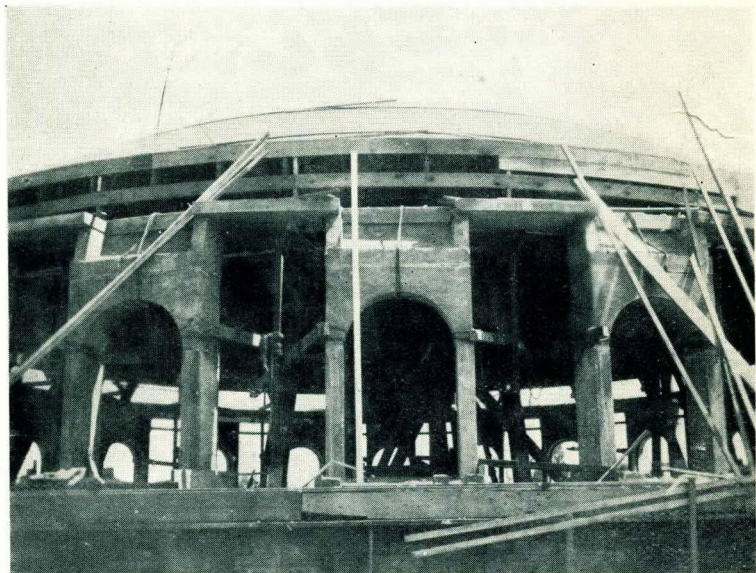
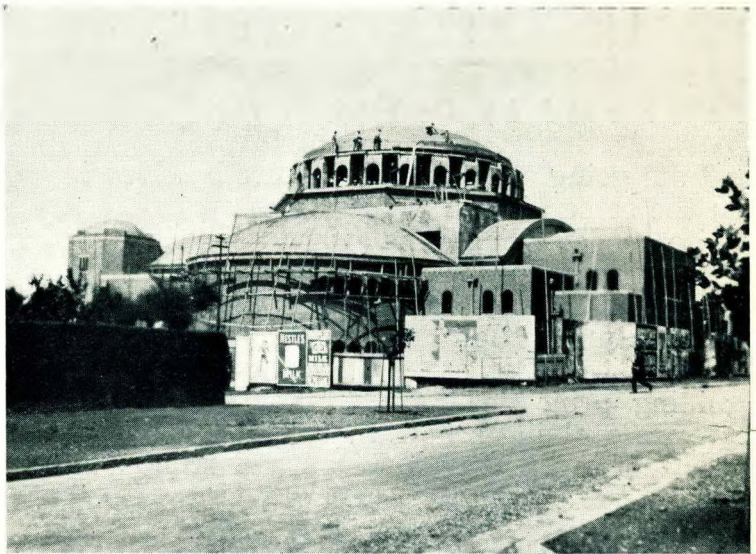
There had been some before, but with ordinary double storied buildings they were of no consequence, and no one appeared to take much notice of them, just as to-day hardly anyone takes the slightest notice of such an occurrence.

But, at that time, it was different, and as it was, to a certain extent, really the beginning of high buildings, and that span of 60ft. had not been heard of here in South Africa, I was severely taken to task, and had to promise the Committee to abandon the idea of a reinforced concrete dome. Very, very reluctantly I agreed to bow before the House, and I promised to abandon the idea of a concrete dome, but I reserved to myself the right to re-examine the question re the method of carrying the dome, and, if I remember correctly, it was resolved that the dome and the supporting structure should be in the orthodox steel construction, a construction which was used largely at the time, and which, to a certain extent, seems now to be obsolete in the building line except for engineering work. Luckily, during the interminable discussions about the "Yes" or "No" of my proposals, I had pushed the remainder of the construction to such an extent that it would have meant stopping the job for about three months pending the arrival of the steel work from abroad. Had we at that time had steel works here in Pretoria, who could have manufactured the particular steel work required, I am afraid I would have had to give in, and no reinforced concrete work of that magnitude would have been built at that time.

The beams carrying the dome have a free span of 60 feet, ten feet more than most of the streets in Johannesburg. They rest on brick piers which are only 3ft. 6in. square, and have a considerable height. The ground where the foundations rest is soft, the red dagga, well known here in Johannesburg. It would, of course, have been better to have rock to build on, but apparently, in that particular position, there is none.

One of the great difficulties to overcome was the arches and pendentives necessary for the internal aspect of the cupola dome. It was absolutely essential to avoid any thrust to be exercised on the pillars through these internal arches. Therefore, to overcome this considerable difficulty, some new means had to be found to permit the arches to remain as formerly designed, but to eliminate all side thrust.

Up to the present day I am asked by competent men in the profession, and by engineers, how this difficulty has been overcome, and when I tell them that there are no arches, or at least no solid ones, and that the apparent internal arches are only 4½ in. thick, hung to the reinforced concrete beams, they generally smile incredulously.



The Synagogue Johannesburg. in course of construction

MODERN ARCHITECTURE — FASHIONS AND TENDENCIES

Paper read by Oswald P. Milne, F.R.I.B.A., before the Royal Society of Arts

I am going to begin this lecture by throwing on the screen in quick succession two slides of quite modern buildings, which, I think, will show at a glance that there is reason for bewilderment as to the direction in which architectural style is heading. This prompts us to question what are at the present time the guiding principles behind this necessary art. Are we evolving a new architecture, or are we just drifting among fashions and stunts with a passion for constant change and a desire to be different at all costs from the generations that have gone before?

You are all no doubt familiar with the great styles of architecture. The school text-books deal faithfully with these. You remember how neatly labelled they are—Classic architecture of the Greeks and Romans; Gothic architecture of England and France, and, as far as England is concerned, again sub-divided into Norman, Early English, Decorated, Perpendicular.

I want here to make the point that, for all its careful arrangement under named headings in the text-books, these architectural styles were really a gradual evolution one from the other. It was a matter of centuries for the massive work of the Normans to evolve into the delicate fantasies and the lace-like traceries of, say, Henry VII's Chapel at Westminster, but the steps of this progression are perfectly clear if we have time or inclination to follow them out.

The decay of feudalism and of the spirit of the Middle Ages was hastened by the new ideas and new learning coming from Italy. A new mode of architecture, based on the revived culture of ancient Greece and Rome, grew up. This architecture we have appropriately termed "Renaissance." It was developed in this country in a masterly manner by Inigo Jones and Sir Christopher Wren, whose influence was apparent right through the eighteenth century. Our stately porticoed buildings, symmetrically planned and with rhythmically spaced windows, we owe to this Classic tradition. Italian grandeur was translated under English conditions into the homely and pleasant Georgian

architecture that we know so well in our manor houses and the charming flat-fronted houses of our country towns.

It is a truism that the architecture of every country and every age is the outcome of the needs, customs and thought of the people who create it. Climate and the materials to hand influence its forms and its aspect. Man does not suddenly invent new styles; he has evolved them gradually to meet the demands of his age.

Looking around to-day at the numerous buildings in town and country that are springing up, often with such disconcerting and disagreeable faces, it is difficult to believe that these same influences are at work. But by and large our building, both considered and ignorant, reflects our outlook and social conditions. It certainly spells a state of mind that is chaotic.

Social and economic change has of course been continuous throughout our history. Up to the time of the Industrial Revolution it had been like a slow-moving stream, but from the days of Watt and Stephenson the pace has quickened until it has become a cataract. The discovery of the power of steam and all the inventions that followed brought an incredible change into the life of man. Up till that time man's swiftest movement over the face of the earth was the pace of a horse. In a few decades he was to have command of the railway train, the motor-car and the aeroplane.

Architecture, formerly subject to a gradual evolution, was called upon to meet this rapid change. Man has shown himself unequal to the task of suddenly inventing a new style of building and nothing less would adequately express the new mechanical powers of which he had become possessed. The tempo of change had been too fast for him.

In the time of the rise of the factory system the mere task of dealing with the expansion of towns and industrial areas absorbed so much energy that building became as a rule an unconsidered matter of construction quite divorced

from any art, or if architecture was attempted, it became a matter of creating a make-believe and romantic back-ground to a materialistic life.

This explains the Gothic revival of the early years of the nineteenth century. Our grandfathers and great grandfathers, bent on exploiting the machine and making money, lived and carried on their work behind curious facades built in a style that had drawn inspiration and life from an age with a singularly different outlook.

This architecture without any roots was bound to wither and was followed by other revivals. Trains steamed into Gothic and Greek railway termini. Parliament made laws and judges dispensed them under Gothic vault and storied window. Town halls were decked in Gothic or Classical dress, while church, college and school were adorned with pinnacle and battlement. The town grew haphazard; factories made no pretence to form or plan, and domestic architecture became an ignorant bash of styles.

The question we have to answer is—Are we to-day emerging from this muddle? Considering the powers of which we are possessed, is our architecture finding a form expressive of our machine age or is it the sport of changing fashion?

I should like to recall the ideas and influences that I have seen working from the beginning of the twentieth century, the time when I began to study and practice architecture.

When I first came to London the force of the Gothic revival had spent itself. We were much preoccupied with the teaching of William Morris and his school. We were conscious that the beauty of building depended on the right use of material; that texture and colour were important matters; that the machine-made copy of something formerly wrought by hand had no spiritual value. It was due to these ideas that we demanded such ordinary building materials as brick to be manufactured of an honest baked clay of good colour. At that time it was only possible to obtain bricks of the brightest red. In those days, when I told a maker that I must have a brick of varied colour and roughish texture he said: "For the last thirty or forty years we have been doing every-

thing we can to produce a brick of perfectly even colour, smooth and square-edged, and now you come along and demand the reverse."

Norman Shaw, designing in the free Renaissance manner, was the master we looked to, and Voysey, with his long low white houses with black chimney pots and sloping buttresses, was the vogue—a very pleasant vogue and an influence from which much attractive domestic work sprang.

On the Continent a fashion—I cannot call it more—dubbed "L'Art nouveau" was holding sway. We, with our native caution for anything new, did not embrace this wholeheartedly, but the more advanced young architects over-emphasised the entasis of columns, trimmed their work with flat O.G. mouldings, and introduced hearts and birds as decoration in unsuitable places. They proclaimed enthusiastically that at length a new and fundamental art had been born—but their enthusiasm was not unlike that of some of my younger friends to-day, who hail the fashion of the moment—the flat roof, the angle window, the line of solid balcony—as the essence of a new art.

There followed, before the war, a period when the cult of the antique was dominant. The cultivated man and his wife lived amid Tudor, Queen Anne or Chippendale furniture, so that a great industry in the most realistic fakes of such furniture, even down to the wood-worm holes, flourished.

But in architecture this was by no means a negative decade: such men as Lutyens were showing how, used with imagination, English styles of the past could be invested with a freshness and life to serve new needs and new social conditions. Scott, at that time a young man and the heir of two or three generations of architectural talent, was doing the same for Gothic forms in church building at Liverpool and elsewhere. Lanchester was evolving the modern civic hall. In the main we have gone back to the last traditional phase of English architecture—Georgian—for inspiration, and were adapting this to meet new demands. Ideas as to the need of definite planning of our towns were in embryo; Sir Raymond Unwin was giving proof at Letchworth and Golders Green that the planned town or suburb, with the

buildings designed by the trained architect, were pleasanter places to live in than the haphazard development of the Victorian period or the ignorant performances of the speculative builder. Yet this lesson is still to-day very far from being learned.

Then came the war with its stark realities making a deep incision across the world. Changes in social and industrial organisation in ordinary times move along so smoothly that mankind does not perceive where they are tending, but the World War, like an earthquake, shook down the walls of habit and made us look around with new eyes, to discover that our landmarks had changed.

We were forced to realise fully that mechanical power and economic forces were in control of our civilisation. Cheap labour was a thing of the past, so in every direction ingenuity was bent towards displacing man-power by the machine. Born of catastrophe, new ideas as to the ordering of human destinies were engaging men's minds. In Bolshevik Russia there was to be a clean cut from the old order. The machine was a god to be worshipped. An architecture suited to the new ideal was to divest itself of sentiment and tradition, and buildings were to be consciously designed merely to function as a machine for living.

This idea was not confined to Russia. Germany developed a functional and robot-like architecture. In France the philosopher-architect, Corbusier, preached and endeavoured to formulate an architecture suited to the machine age. With more enthusiasm, perhaps, than practical ability, he and his disciples put up structures of stark nudity. The only real inherent quality asked of these buildings was that they should meet practical needs and function properly, so that it is disillusioning to find that even in this respect they often fall short of the traditional methods of the more conventional builder. However, the pioneer has to be spectacular in order to rivet the attention of his contemporaries.

Although in England, after the war, inherently conservative, we felt this new architecture to be too freakish for our taste, yet something of its vital influence touched us. There was a movement for greater freedom

of outlook. Instead of looking backwards to traditional forms for inspiration, we hesitatingly admitted that a changed world might need a new dress to express its mechanical-mindedness. Although we moved slowly there can be no doubt that a new, interesting and inventive spirit began to animate not only our architecture but also the decorative arts.

With this new freedom the architect can attack his problem with no preconceived ideas as to the architectural lines of his plan or the style of its exterior. The plan need not follow convention; the thing that matters is what is going to happen in the building, what use every part is going to be put to, and how the whole can be arranged so as best to meet these needs. This is not to say, as the functionalist would have us believe, that good and scientific planning is a new thing. Fine buildings have always been dependent on good planning, just as poor architecture has been the result of muddled planning. It does mean that we are once again putting the horse in front of the cart. We are first of all thinking of the function of the building; then, if to that we can add the qualities of space, dignity, proportion and contrast, the real architectural qualities, so much the better.

The trappings associated with traditional architecture are also being cast aside, both within and without. The columns and pilasters, the pediments and cornices, the egg-and-tongue moulding and conventional architectural ornaments are being abolished. The result is that to get any quality into our work, and I maintain that it is quality that really matters in any building, we depend on mass and line for our effect, rather than upon detail.

It is these qualities of simple massing that one finds is characteristic of modern architecture, though somewhat bald and primitive they may often appear to be. I can well imagine the lover of architecture pointing to the straight cylindrical poles and the bare uprights that serve as supports to the modern building and contrasting them unfavourably with the Ionic or Corinthian column of the classic builders, with their lovely tapering entasis and their delicate, beautifully-carved capitals. This makes them wonder what the architect to-day is doing.

I pointed out earlier in this lecture that styles grow by evolution rather than by active or conscious invention, so that it is only in the process of time that this may transform his negative building into something that may be termed style.

Architecture would be poor indeed if it had to stand still at the point to which the modernists have reduced it, nude, primitive and bald. Humanity will not remain content with the bare bones of functionalism, however nearly it may meet the facts of our problems. Man cannot be satisfied with materialism; his spirit demands something higher than a mere working machine for the fulfilment of life.

There is no doubt that a new generation is asking for things that correspond with its own outlook and not with those that recall the craft of other times; and so in the decorative arts and in the design of everyday things invention and play of imagination are at work. Taking furniture and textiles alone, the design is not now merely an exercise on copying and reproducing ancient forms and patterns.

Alongside this adventure in design has come a huge wave of scientific invention, the machine being its godparents. New materials and new methods in the building industry are numberless, and these are having a profound effect upon architecture also.

Let us consider for a few moments the new uses of one or two of the most important of building materials.

Steel.—Long before the war steel was used in buildings in stanchion and beam, but its use for window and frame is comparatively new. This lends itself to mass production of units and also from its rigidity has enabled us to enlarge the window surface of buildings, in fact, if desirable, to construct them almost wholly of glass held in steel bars.

Reinforced Concrete.—This is another application of steel, steel bars being introduced into the concrete. Concrete itself is as ancient as Rome, but thus reinforced it has given us entirely new powers as applied to buildings. Supporting members can be reduced in size. Walls can be reduced in thickness. Great spans can be covered. New forms of construction in post, beam and flat roofings have been made possible.

New Uses for Wood.—Plywoods and laminated woods are made possible by machine processes. They have quite different properties from wood used in the old way and have revolutionised the design of furniture and joinery. In plywood the tree is first cut into thin layers, which are glued together again with the grain running in opposite directions. The shrinkage inherent in wood is thus minimised. In laminated wood the core consists of narrow strips glued together and surfaced on both sides with a veneer. A manifold variety of decorative woods brought from the ends of the earth are also now available for decorative purposes.

New forms and new applications of other materials, such as glass, rubber, asbestos and cellulose paint, have been brought to the building industry and are influencing architectural design.

The architect, freed from the shackles of designing in a past style, has to his hand all these new materials and new ways of using them. He is at the same time confronted with many social changes, making new demands on planning and organisation. Is it to be wondered at that architecture to-day is dressed in many guises?

The material that has chiefly caught the imagination of the new world is reinforced concrete. Here is something that has properties fundamentally different from those of the older methods of building. Instead of the main structure being built up of a great number of small separate pieces of material stuck together by mortar or cement, it is moulded into shape by running liquid material into forms, and the finished article is a monolith. Now it must logically follow that a true reinforced concrete building, if it is going to express its real qualities, is not going to resemble any building of the past. To present this concrete structure in seemly form is one of the problems of the architect to-day. What is he doing with it? Some would have it left in all its naked engineering; others are trying to clothe it in a way that may express the underlying idea. The results so far are mostly bleak and barren. The skeleton is there, but the flesh and skin are lacking.

So exciting is it to find a material with new possibilities that it is small wonder that some

designers are inclined to lose their heads. A material eminently suited to the spanning of large spaces in factory, cinema, church and hall is being used when ordinary construction would be more serviceable and economic. Because with it we can eliminate the supporting wall and can construct easily the flat roof, some would persuade us that our climate is more delectable than it is; that to live in a glasshouse and sun bathe on the roof are desirable under every circumstance, although we have long found the glare in the conservatory unpleasant, and the close proximity of the suburban house unpropitious for the sequestered sun-bath.

The flat roof is no new thing, but the old builder found that in our wet climate the pitched roof threw off the rain more quickly. The pitched roof, too, gives insulation between our living rooms and the heat of summer and the cold of winter; it makes room for tank and boxes in its stride; whereas with a flat roof elaborate and expensive arrangements have to be made to meet these needs.

I came across an article the other day written soon after new methods of casting iron brought it into industrial use. This article was lyrical on the marvellous properties of cast iron; it would supersede everything else and would fulfil not only our humble needs in garden seat and public convenience, but whole buildings, with staircases, columns and domes, would flow from the heated metal. The recollection of market hall, church gallery, pier, pavilion or bridge, the products of this enthusiasm, may make us thankful that the vogue was not prolonged.

Are we not at this moment in the same state of mind with regard to reinforced concrete? Shall we not later realise that it has added one more weapon to our armoury for attacking certain problems, but that it has limitations, and that stone and brick still have their place and right uses?

I myself believe that unadorned concrete is not going to satisfy us for the surface of our buildings any more than it did the Romans, and to cover it with plaster is but a poverty-stricken expedient, unsuited at any rate to the town or to buildings of any importance. As soon as its slick whiteness and newness fades, it wears a bedraggled, shabby and squalid look.

To my mind it is only when a pleasing and economic material that can be used as a permanent shuttering is evolved, that concrete will come into its own as suitable for fine building.

I might enlarge on the fashions of the moment. First, the sheer box-like walling, without drip-course or overhang, though the builder of the past used these to throw the wet from his wall. Secondly, the line of solid balcony, to give a horizontal effect, often too narrow for use, taking sun from the windows below and ignoring the real charm of the balcony, which is to allow the windows to run low to the floor with a widened outlook. Thirdly, the window that bites the corner out of the building, on occasion a legitimate means of lighting, or of seizing a particular view, but restlessly destroying the sense of stability if used to excess, and, when adopted in brickwork, no more than a sensational stunt.

In spite of excesses, fashions and absurdities, I am wholeheartedly in sympathy with the spirit and idea that informs the best of modern architecture. For it recognises the machine and its possibilities of repetition and mass production; it recognises that the slick and mathematically true surface of machine-made material can produce a quality of its own.

Properly disposed mass and form rather than elaboration or ornament are the qualities on which good examples of modern architecture have to depend. They appear to be clean-cut by the machine rather than by the work of man's handicraft. Inside the building the tendency is towards openness, directness, and a sense of space. As the mechanical works of a building, in electricity, heating and ventilation, become more complicated, so does the outward appearance tend to become more simplified and direct, appropriate in an age in which labour-saving and cleanliness are the ideals.

But in the very freedom that we have attained lurk dangers. The old accepted ideas of style and proportion by which architecture was measured no longer hold. The rules are relaxed; we have to beware of the charlatan and stunt-monger who play upon the human desire for strangeness and change of fashion.

It is perhaps the genius who will evolve from the negative tendencies of to-day a fine and growing style for the future, but it is more likely that this evolution will come through the work of architects, who, endowed with common sense, at the same time have a full knowledge of the newer materials and their possibilities.

Here in England it seems to me indispensable that they should be steeped also in English traditions of building, and that only by knowing and fully realising how skilled the old builders

were in their craft can they carry the art of architecture forward. The idea that to be modern and create a new style it is better to know nothing about the old traditional styles is mere folly.

If English architecture of the future is to have character, as our buildings in the past had, it must have that native graciousness that made our architecture a thing bound up with our character, our climate and our countryside.

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S T E E L I N B U I L D I N G

An Address read by C. J. Kavanagh before the Architectural Association

Concluded from last Issue.

The Dry Technique.

In consequence, they are assuming quite different proportions and quite different aspects in the bill of costs. Future development is undoubtedly in the direction of dry, shop-fabricated units ready for assembly. Similarly, the internal vertical elements, such as partitions and divisions, are required, from pure financial considerations, to be mobile and will be chosen, not to conform to a system of casting in situ, but to satisfy changing occupational needs.

Consider a little more closely the full implications and immense potentialities of the steel-frame method. It must be envisaged not merely as a structural system, light-and-space-saving, but essentially as a method of assembly.

The steel structure is put in hand and manufactured in advance. When the foundations are sufficiently advanced, the steel erection can begin. Under proper organisation the carrying structure, with its main horizontal elements, such as floor and roof supports, are finished in a remarkably short time. Materials, already thoroughly tested as finished products of industry, are used, and when they arrive on the site no supervision of quality is required. The steel frame is capable immediately of sustaining loads without waiting for lengthy

drying out, or setting processes, or 28 day tests; and provides a suitable platform for the placing of materials required for the subsequent operations.

There are some notable examples in this country where the speed of steel erection has shown good comparison with the best American practice, but it is often evident that the full advantages of steelwork technique have not been properly utilised, through an omission to settle all details well in advance and to bring to bear upon the foundation work the same efficiency which characterises the framework erection.

With the completion of the steelwork, the laying of floors and roofs becomes a simple process. Here again, with adequate forethought, these elements can be completed without any appreciable time lag and, it must be emphasised, without any sacrifice of quality on the site. Speed emerges not from any hurried preparation of material on the site, or the massing of labour and machines, but purely from a logical method of fitting all prefabricated units into the building. A perfectly dry technique is achieved unhindered by weather, and providing immediate shelter to the workman.

It transpires, unfortunately too often, that floor construction does not keep pace with the steel and full efficiency is lost by not maintain-

ing floor construction up to the speeds obtained by the steelwork erector.

It is obvious, however, that where a rational flow of work is devised, it must lead to considerable cost reduction over other methods, with which such a clear series of operations is not possible. The magnitude of this becomes apparent when it is remembered that the floor and roof constructions themselves are not only important items in the total bill of costs, but by offering large areas which constitute working platforms, they provide the basis of cost reduction and quality work in almost every other element of the building.

So far consideration has been given to the vertical supporting elements, the simplification of foundations by light point loading and the large working-faces exposed to simultaneous "attack" in the assembly. There may now be examined the effect of this mechanised performance on other operations. Consider, for example, those vertical components which are often the cause of the greatest despair—plumbing and piping.

Full preparations having been made, the plumbing and other services can follow the steel and follow the floors. Units manufactured under workshop conditions can be brought to the site, and the drainage, gas, water and electricity main services can follow in the proper sequence and completed to a stage that leaves fittings to be attached at a later period of the assembly.

The "making-good," and the hundred-and-one contingencies which are wont to appear in the balance sheet of costs, should have as little place in building as they have in other industrialised operations of assembly; "making-good" in competitive motor-car manufacture would drive makers into the bankruptcy court.

Influence on Quality and Costs.

How does the steel frame influence the other vertical items of enclosures and partitions? Firstly it permits the widest selection of materials, steel and glass, bricks and hollow blocks, and insulating materials behind a weather-resisting outer wall. The utmost latitude remains to the architect, and whatever his choice the steel frame gives an accurate "register" which enables him to design, and

have ready for assembly, units which can take their place as works of quality and precision carried out in specialised manufacturing establishments.

It is often said that building costs in America are the same as in this country despite the higher labour charges. This can only be explained by the more highly-developed organisation of site work and the utmost use of cost-reducing factors inherent in the steel frame.

The developments and variety which industries are offering to architecture in the quality, colour and surface finish of their products, combining appearance and fitness with low maintenance, will prove to be more valuable used with steel frame construction than with any other method of building.

In commercial architecture, especially of the multi-storey type of building, economic forces are now a compelling influence on design, and there is everywhere to be observed a tendency towards greater standardisation.

In other branches of industry, standardisation has led to a progressive reduction of cost and a progressive reduction in quality. The newer products such as the motor car, the motor coach and the aeroplane, have developed qualities and aesthetics of their own.

In the steel frame constructional method, the load carrying problems are dealt with distinctly and without any confusion between structural and filling elements. Within its register, the steel frame promotes the easy assembly of sheet metal window surrounds, steel door frames and steel trim. Both exterior and interior filling elements can be easily attached. The day is not far distant when these will be produced in dry full-length slabs, and even cellular sheet steel floor units, giving a 100 per cent. dry assembly and a perfect electrical conduit system, will be available.

The subject of acoustics is too involved to enter upon here, but it is well known that the contact of dissimilar materials of varying acoustic properties leads to the damping down of sound waves, and that, in consequence, the articulated nature of the steel frame building presents greater possibilities for noise reduction than a monolithic reinforced concrete type with its series of interconnected dia-

phragms. As the science of acoustic design progresses, the steel frame will be found to offer the best possibility of a succession of acoustic "breaks." Indeed, the selection of the filling materials and their relation one to the other, with cleavages for sound absorption or sound reflection, will largely be determined by this factor, rather than by any consideration of structure-continuity, which is equivalent to noise continuity.

Financial Considerations.

A review of this character would not be complete without some reference to the financial aspect of building. The rebuilding enterprises which we see around us to-day are based upon a commercial urge. Buildings still structurally sound in their main fabric are being demolished—because they no more satisfy the requirements of this changing world—they have ceased to be earning propositions. In fact, they have become obsolete by their utter inadaptability to modern requirements.

It is not necessary here to go into the many factors which bring about an early obsolescence. It is clear that recent ideas about the length of the earning life of buildings has undergone a most pronounced change. In the past architects thought they could build for posterity—the general mass of our commercial and domestic architecture proves the contrary to-day. We have definitely reached a phase in which it is impossible to look beyond the requirements of our own generation.

It is in consequence essential that our buildings be assembled with a view to change, not only internally but externally as well.

To safeguard an investment in a building one must, therefore, be sure that the building has future value built into it. If the construction follows the steel frame technique, the income can be maintained by simple adaptation as long as possible, and then, when it is obsolete and a new building is required, the least expense and time will be incurred in clearing the site, and not only the steel but many of the other components will be salvaged.

A reinforced concrete type of construction is one in which changes and alterations are difficult and costly, if not impossible. There has been very limited experience of this in this

country, but from failures which have been demolished with pneumatic hammer and drill the process has proved both inconvenient and costly.

Obsolescence and its economic relation to the type of building construction is a matter now receiving the increased attention of building owners who naturally consider the security of their money; it is a matter which definitely figures in the balance sheet of costs.

The Future.

The present development of steel frame technique has been partly determined by traditional concepts and partly by building regulations. In fact, building regulations have done as much to perpetuate traditional ideas as anything else. If we ask ourselves whether structural steel has really emerged in this country from its straight-jacketed control represented by the 1909 Act—the answer is no! But a greater freedom is fortunately in sight.

The fire-encasement of steel—prescribing thickness rather than fire resisting qualities—has led to unnecessary expense. The steel in a concrete member is required to have much less encasement than that in a structural column which, by its size, can transmit the heat at a much more rapid rate. But when the fire resistant materials have been examined more closely it will be possible to effect greater economies and, at the same time, to use materials which will perform the dual function of resisting fire and of giving better acoustic properties: with the present handicaps removed steel will show to still better advantage. If we apply the criterion of weight of construction for "pay load," the ordinary building compares abominably with the aeroplane or the motor coach. The same criterion applied to concrete building should make it blush.

Whatever aspect of design is considered—floors, walls, encasement—we discern the restraining hand of authority and the restraining hand of tradition. No other major industry has been so hedged in with restrictive influences. Nevertheless, mild steel has a noteworthy period of development behind it and we are now entering upon a new age in steel construction.

The extreme adaptability of the steel structure is being further increased by remarkable developments in welding, and in future the steel type can be altered, strengthened and adapted to almost any requirement of the building owner with the least interference to the occupants, without serious loss of business and with the least expense. Already welding has enabled existing structures to be modified to new uses by the most simple expedients.

From the metallurgical side there are now available the new high tensile steels capable of carrying 50 per cent. greater stress than the ordinary mild steel; the ultimate influence of this material on architectural design cannot be exaggerated. The already slender proportions of steelwork and the weight on foundations will be further reduced and clear spans increased: the new steel will inspire new architectural forms. Depths of constructional members will be lessened, leading to cost reduction in other quarters and a greater usable space.

All constructional work is the economic bridging of space, and it is a stimulating reflection to turn from those old buildings like the Crystal Palace, and some of the 100-year-old

railway diehards, and to picture what this new material, undreamt of by our predecessors, has in store for us when we really emerge from the Victorian era and turn to grapple with the great problem of Building's future.

The age of steel construction, under a new freedom, will acquire a new predominance. The sheet steel technique of the motor car will find its place in the hitherto conservative preserves of building. Steel sheet with new plastic finishes will be available, giving perfect weather resistance and high decorative qualities.

The hiatus between the architect and engineer, which at present is the outcome of a transitional phase, will disappear. Building will become an art of assembly not tied to traditional materials and forms, but mobilising the whole resources of industry, building into a steel frame, a great variety of products fashioned with meticulous care, products, yielding a variety of colour, texture and form—each a co-ordinated part of a modern conception, but above all, with aesthetic and physical properties which expressly suit their varying functions.

PROFESSIONAL NOTES AND NEWS

Notice to Members of the Institute and Chapter. Re Congress

The Executive Committee of the central Council announces with pleasure that a Congress of South African Architects and Quantity Surveyors will be held in Johannesburg, beginning on Monday, November 23rd, 1936. The Congress, which will be the second of its kind since the passing of the Act, has been timed so as to synchronise with the Empire Exhibition. As practically all South African architects and quantity surveyors intend to see the Empire Exhibition, it is hoped that they will be able so to arrange their visit to Johannesburg as to fit in with the Congress.

The importance of the Congress to every member of the Institute and the Chapter cannot be overstated. An unique opportunity will thus be afforded to members not only to meet each other, but to express themselves freely and helpfully on matters of the utmost professional importance.

Arrangements have now to be made for the holding of the business meetings of the Congress, which, it is anticipated, will occupy three full days. It will be much appreciated, therefore, if you will advise me, not later than Saturday, October 3rd, 1936, whether you will be attending the Congress.

Yours faithfully,

J. S. Lewis.

Registrar.

[Note: Registered students of the Institute and the Chapter are entitled to attend, but not to vote at the meetings of the Congress.]

Notice to Members of The Institute and Chapter.

Unprofessional Conduct—Advertising.

The Central Council, by virtue of the powers vested in it by Regulation 67, hereby gives notice to all members of the Institute and the Chapter, in respect of Regulation 80 (o), viz.:

That the Central Council disapproves of members advertising in the lay Press in any professional respect whatsoever, or of arranging or inspiring reports, interviews, article or notices of any description referring to themselves professionally in a manner calculated to attract clients.

On behalf of the Central Council,

J. S. Lewis.

Registrar.

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