

GRAIN ELEVATOR

THREE REMINDERS TO
ARCHITECTS

I
M A S S

Our eyes are constructed to enable us to see forms in light.

Primary forms are beautiful forms because they can be clearly appreciated.

Architects to-day no longer achieve these simple forms.

Working by calculation, engineers employ geometrical forms, satisfying our eyes by their geometry and our understanding by their mathematics; their work is on the direct line of good art.



GRAIN ELEVATOR

ARCHITECTURE has nothing to do with the various “styles.”

The styles of Louis XIV, XV, XVI or Gothic, are to architecture what a feather is on a woman’s head; it is sometimes pretty, though not always, and never anything more.

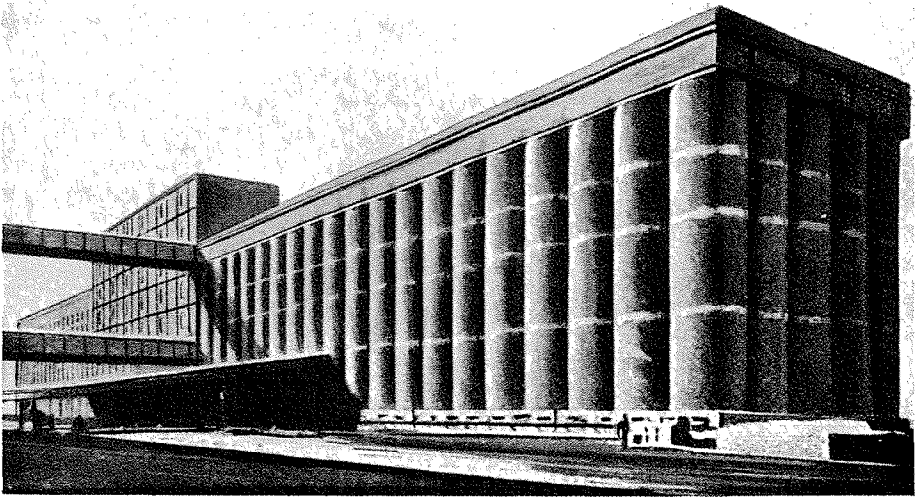
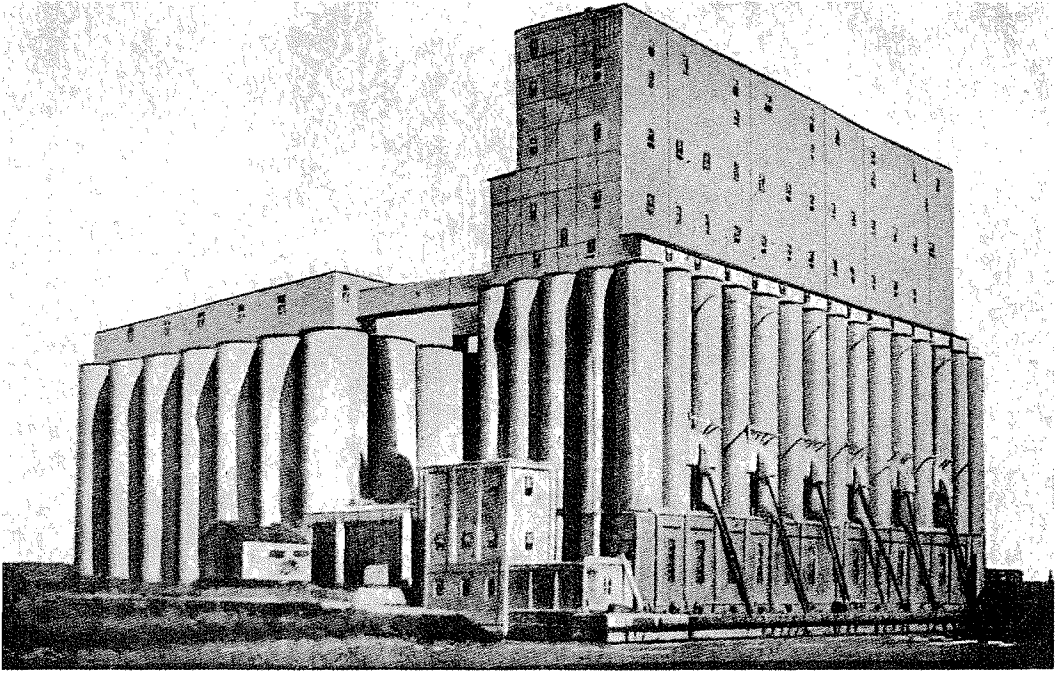
Architecture has graver ends; capable of the sublime, it

impresses the most brutal instincts by its objectivity ; it calls into play the highest faculties by its very abstraction. Architectural abstraction has this about it which is magnificently peculiar to itself, that while it is rooted in hard fact it spiritualizes it, because the naked fact is nothing more than the materialization of a possible idea. The naked fact is a medium for ideas only by reason of the "order" that is applied to it. The emotions that architecture arouses spring from physical conditions which are inevitable, irrefutable and to-day forgotten.

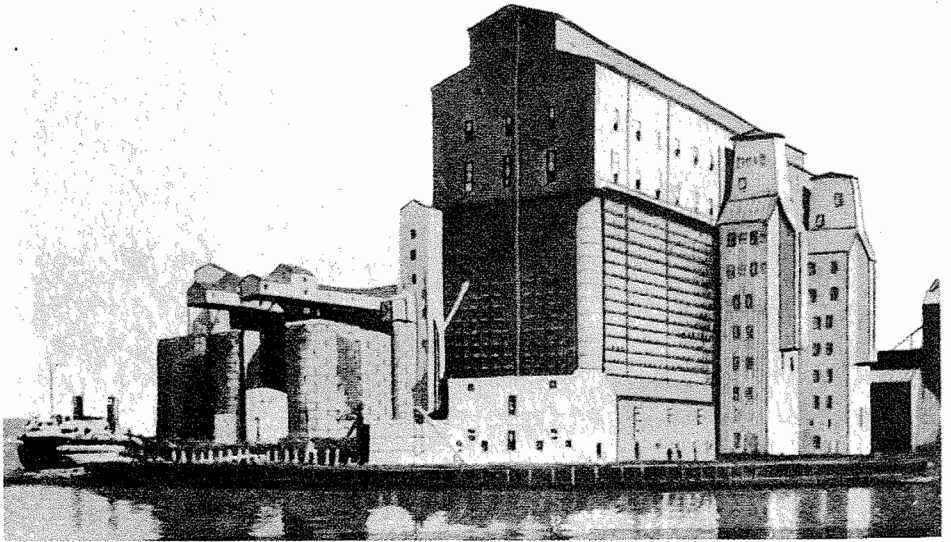
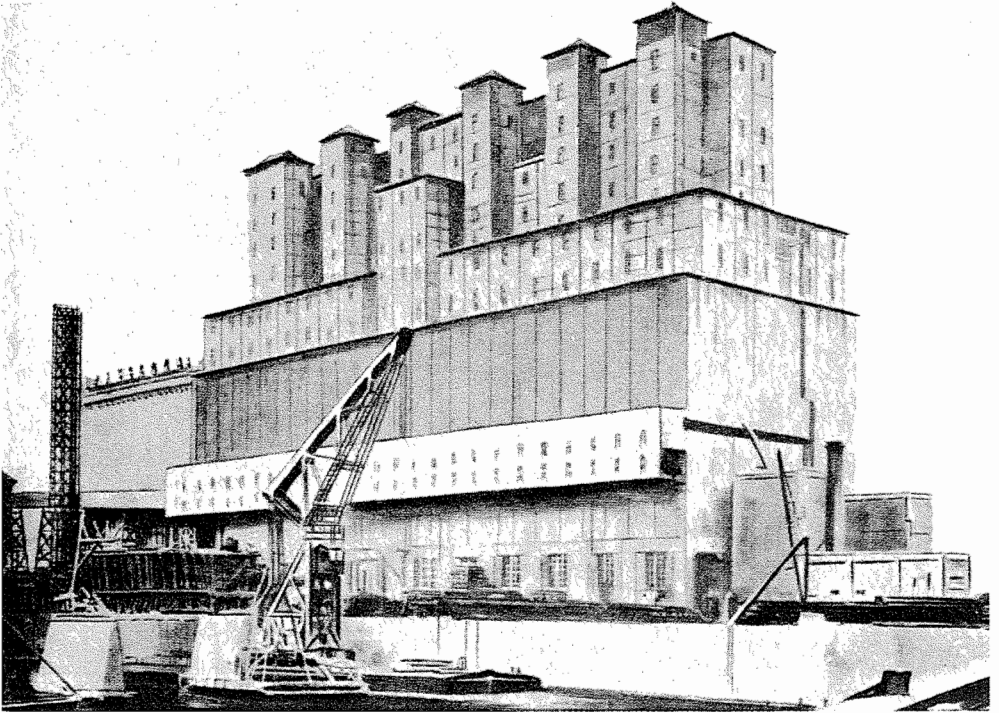
Mass and surface are the elements by which architecture manifests itself.

Mass and surface are determined by the plan. The plan is the generator. So much the worse for those who lack imagination !





CANADIAN GRAIN STORES AND ELEVATORS

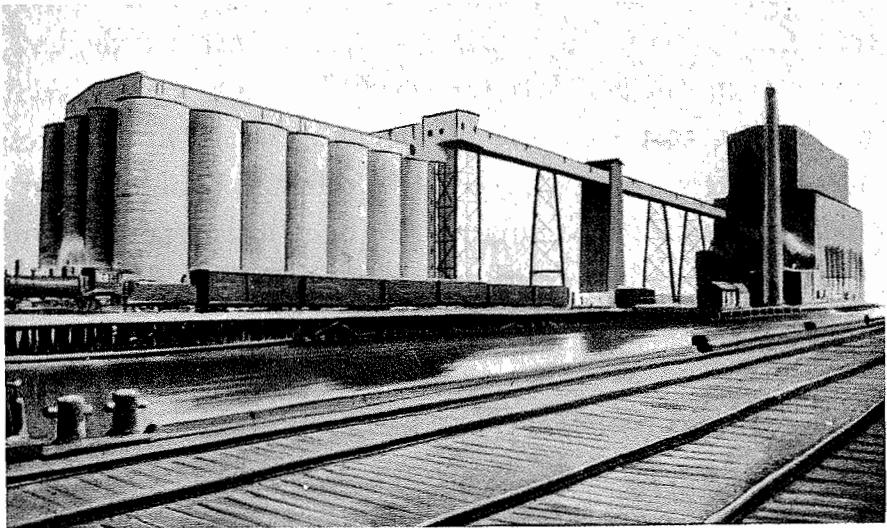


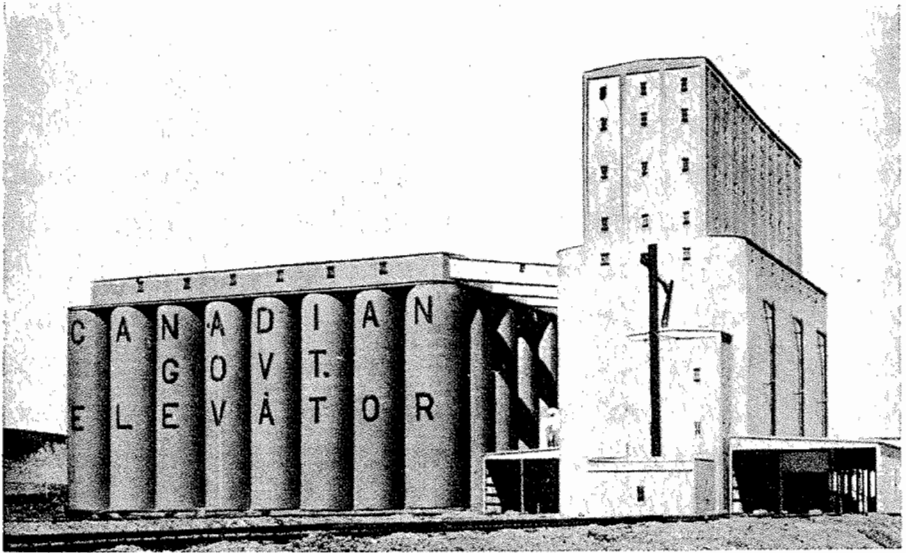
AMERICAN GRAIN STORES AND ELEVATORS

FIRST REMINDER : MASS

Architecture is the masterly, correct and magnificent play of masses brought together in light. Our eyes are made to see forms in light ; light and shade reveal these forms ; cubes, cones, spheres, cylinders or pyramids are the great primary forms which light reveals to advantage ; the image of these is distinct and tangible within us and without ambiguity. It is for that reason that these are *beautiful forms, the most beautiful forms*. Everybody is agreed as to that, the child, the savage and the metaphysician. It is of the very nature of the plastic arts.

Egyptian, Greek or Roman architecture is an architecture of prisms, cubes and cylinders, pyramids or spheres : the Pyramids, the Temple of Luxor, the Parthenon, the Coliseum, Hadrian's Villa.





Gothic architecture is not, fundamentally, based on spheres, cones and cylinders. Only the nave is an expression of a simple form, but of a complex geometry of the second order (intersecting arches). It is for that reason that a cathedral is not very beautiful and that we search in it for compensations of a subjective kind outside plastic art. A cathedral interests us as the ingenious solution of a difficult problem, but a problem of which the postulates have been badly stated because they do not proceed from the great primary forms. *The cathedral is not a plastic work; it is a drama; a fight against the force of gravity, which is a sensation of a sentimental nature.*

The Pyramids, the Towers of Babylon, the Gates of Samarkand, the Parthenon, the Coliseum, the Pantheon, the Pont du Gard, Santa Sophia, the Mosques of Stamboul, the Tower

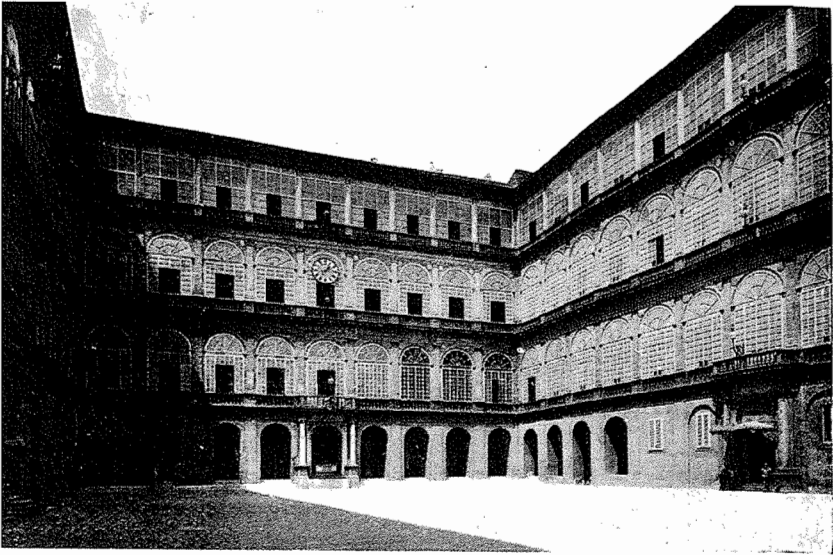
of Pisa, the Cupolas of Brunelleschi and of Michael Angelo, the Pont-Royal, the Invalides—all these belong to Architecture.

The Gare du Quai d'Orsay, the Grand Palais do not belong to Architecture.

The *architects* of to-day, lost in the sterile backwaters of their plans, their foliage, their pilasters and their lead roofs, have never acquired the conception of primary masses. They were never taught that at the Schools.

Not in pursuit of an architectural idea, but simply guided by the results of calculation (derived from the principles which govern our universe) and the conception of A LIVING ORGANISM, the ENGINEERS of to-day make use of the primary elements and, by co-ordinating them in accordance with the rules, provoke in us architectural emotions and thus make the work of man ring in unison with universal order.

Thus we have the American grain elevators and factories, the magnificent FIRST-FRUITS of the new age. THE AMERICAN ENGINEERS OVERWHELM WITH THEIR CALCULATIONS OUR EXPIRING ARCHITECTURE.



COURTYARD: BRAMANTE AND RAPHAEL

THREE REMINDERS TO
ARCHITECTS

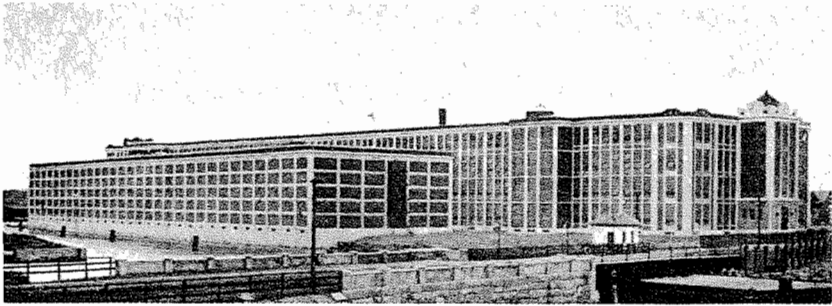
II
SURFACE

A mass is enveloped in its surface, a surface which is divided up according to the directing and generating lines of the mass; and this gives the mass its individuality.

Architects to-day are afraid of the geometrical constituents of surfaces.

The great problems of modern construction must have a geometrical solution.

Forced to work in accordance with the strict needs of exactly determined conditions, engineers make use of generating and accusing lines in relation to forms. They create limp and moving plastic facts.



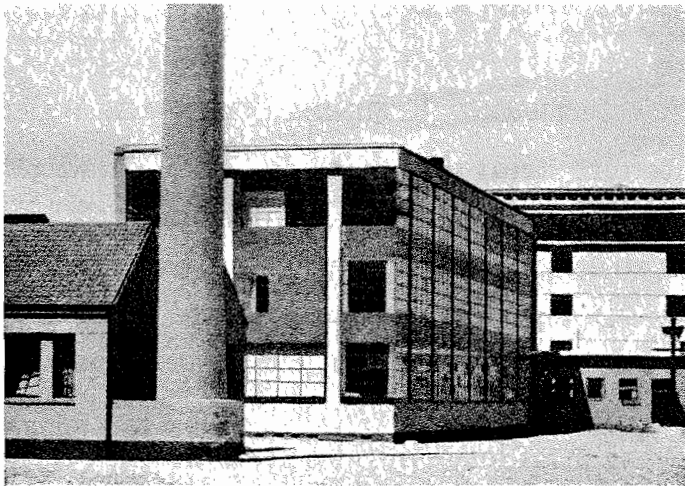
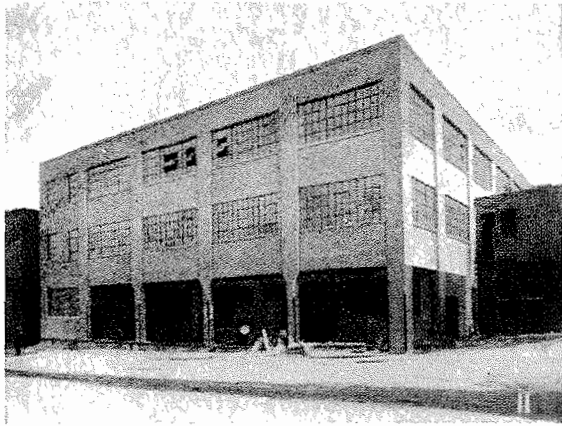
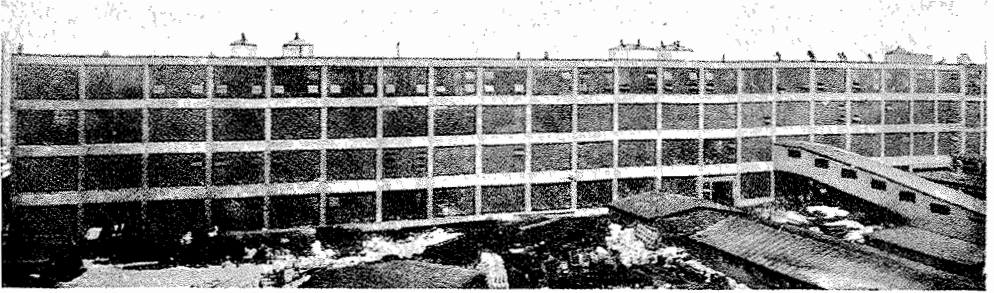
ARCHITECTURE has nothing to do with the various “styles.”

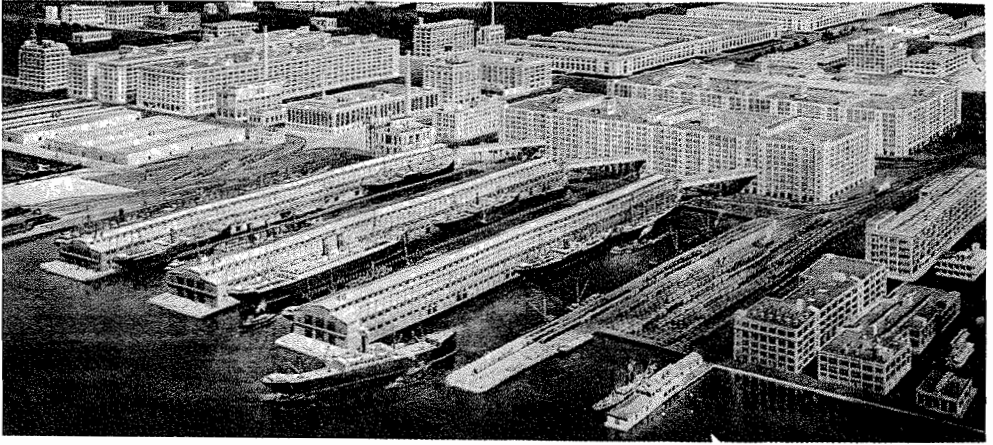
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SECOND REMINDER : SURFACE

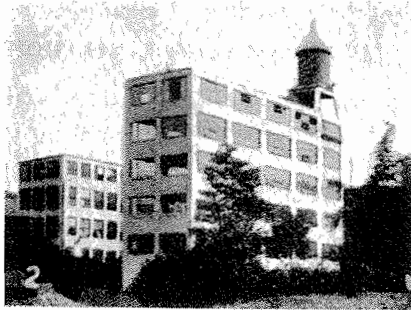
Architecture being the masterly, correct and magnificent play of masses brought together in light, the task of the architect is to vitalize the surfaces which clothe these masses, but in such a way that these surfaces do not become parasitical, eating up the mass and absorbing it to their own advantage : the sad story of our present-day work.

To leave a mass intact in the splendour of its form in light,

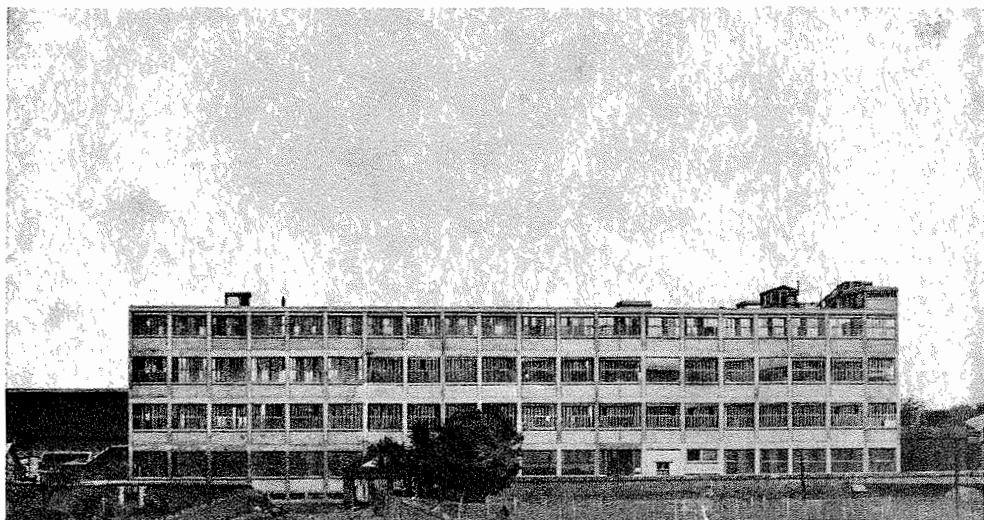




but, on the other hand, to appropriate its surface for needs which are often utilitarian, is to force oneself to discover in this unavoidable dividing up of the surface the *accusing* and



generating lines of the form. In other words, an architectural structure is a house, a temple or a factory. The surface of the temple or the factory is in most cases a wall with holes for doors and windows; these holes are often the destruction of form; they must be made an accentuation of form. If the



essentials of architecture lie in spheres, cones and cylinders, the generating and accusing lines of these forms are on a basis of pure geometry. But this geometry terrifies the architects of to-day. Architects, to-day, do not dare to construct a Pitti Palace or a *rue de Rivoli*; they construct a *boulevard Raspail*.¹

Let us base our present observations on the ground of actual needs: what we need is towns laid out in a useful manner whose general mass shall be noble (town planning). We have need of streets in which cleanliness, suitability to the necessities of dwellings, the application of the spirit of mass-production and industrial organization, the grandeur of the idea, the serenity of the whole effect, shall ravish the spirit and bring with them the charm that a happy conception can give.

¹ Or a Regent Street.—F. E.

To model the plain surface of a primary and simple form is to bring into play automatically a rivalry with the mass itself: here you have a contradiction of intention—the *boulevard Raspail*.

To model the surface of masses which are in themselves complicated and have been brought into harmony is to *modulate* and still remain within the mass: a rare problem—the *Invalides* of Mansard.

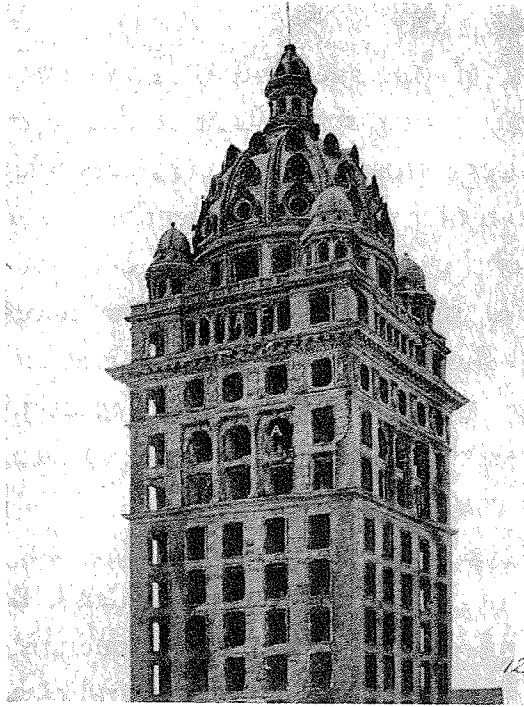
A problem of our age and of contemporary æsthetics: everything tends to the restoration of simple masses: streets, factories, the large stores, all the problems which will present themselves to-morrow under a synthetic form and under general aspects that no other age has ever known. Surfaces, pitted by holes in accordance with the necessities of their destined use, should borrow the generating and accusing lines of these simple forms. These accusing lines are in practice the chessboard or grill—American factories. But this geometry is a source of terror.

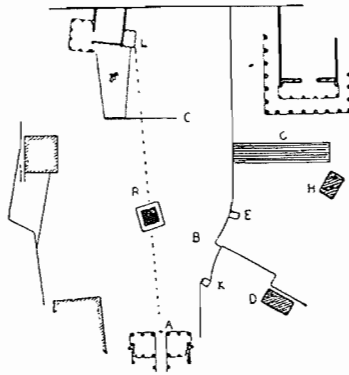
Not in pursuit of an architectural idea, but guided simply by the necessities of an imperative demand, the tendency of the engineers of to-day is towards the generating and accusing lines of masses; they show us the way and create plastic facts, clear and limpid, giving rest to our eyes and to the mind the pleasure of geometric forms.

Such are the factories, the reassuring first fruits of the new age.

The engineers of to-day find themselves in accord with the principles that Bramante and Raphael had applied a long time ago.

N.B. Let us listen to the counsels of American engineers.
But let us beware of American architects. For proof:





THREE REMINDERS TO ARCHITECTS

III PLAN

THE ACROPOLIS

A view which shows the Parthenon, the Erechtheum, and the statue of Athena in front of the Propylea. It should not be forgotten that the site of the Acropolis is very up and down, with considerable variations in level which have been used to furnish imposing bases or plinths to the buildings. The whole thing being out of square, provides richly varied vistas of a subtle kind; the different masses of the buildings, being asymmetrically arranged, create an intense rhythm. The whole composition is massive, elastic, living, terribly sharp and keen and dominating.

The Plan is the generator.

Without a plan, you have lack of order, and wilfulness.

The Plan holds in itself the essence of sensation.

The great problems of to-morrow, dictated by collective necessities, put the question of "plan" in a new form.

Modern life demands, and is waiting for, a new kind of plan both for the house and for the city.

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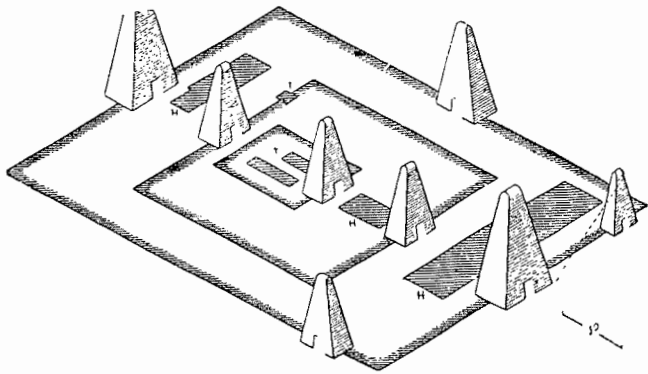
THIRD REMINDER : THE PLAN

The plan is the generator.

The eye of the spectator finds itself looking at a site composed of streets and houses. It receives the impact of the masses which rise up around it. If these masses are of a formal kind and have not been spoilt by unseemly variations, if the disposition of their grouping expresses a clean rhythm and not an incoherent agglomeration, if the relationship of mass to space is in just proportion, the eye transmits to the brain co-ordinated sensations and the mind derives from these satisfactions of a high order : this is architecture.

The eye observes, in a large interior, the multiple surfaces of walls and vaults ; the cupolas determine the large spaces ;

the vaults display their own surfaces; the pillars and the walls adjust themselves in accordance with comprehensible reasons. The whole structure rises from its base and is developed in accordance with a rule which is written on the ground in the plan: noble forms, variety of form, unity of the geometric principle. A profound projection of harmony: this is architecture.



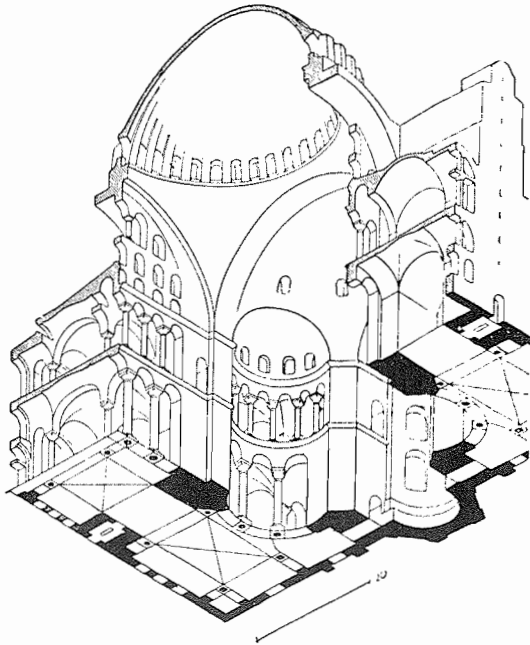
TYPE OF HINDOO TEMPLE

The towers make a rhythm in space.

The plan is at its basis. Without plan there can be neither grandeur of aim and expression, nor rhythm, nor mass, nor coherence. Without plan we have the sensation, so insupportable to man, of shapelessness, of poverty, of disorder, of wilfulness.

A plan calls for the most active imagination. It calls for the most severe discipline also. The plan is what determines everything; it is the decisive moment. A plan is not a pretty thing to be drawn, like a Madonna face; it is an austere

abstraction ; it is nothing more than an algebrization and a dry-looking thing. The work of the mathematician remains none the less one of the highest activities of the human spirit.



SANTA SOPHIA, CONSTANTINOPLE

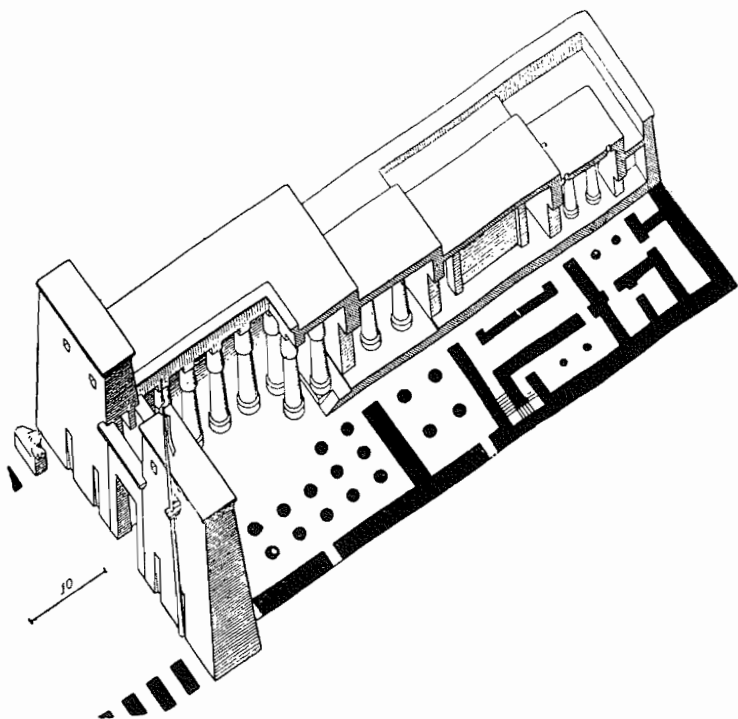
The plan influences the whole structure : the geometrical laws on which it is based and their various modulations are developed in every part of the building.

Arrangement is an appreciable rhythm which reacts on every human being in the same way.

The plan bears within itself a primary and pre-determined rhythm : the work is developed in extent and in height following the prescriptions of the plan, with results which can range from the simplest to the most complex, all coming within the

same law. Unity of law is the law of a good plan : a simple law capable of infinite modulation.

Rhythm is a state of equilibrium which proceeds either



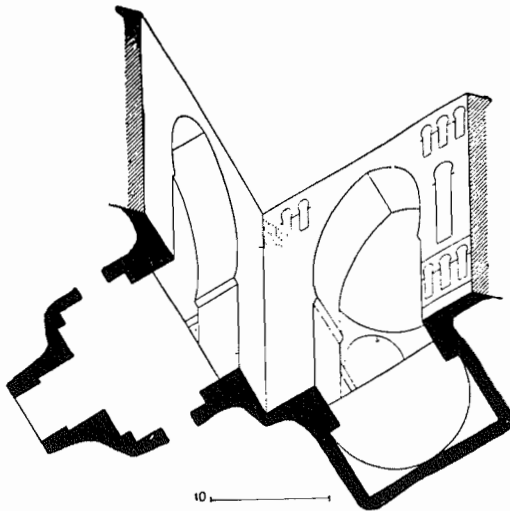
TEMPLE AT THEBES

The plan is organized in accordance with the axis of the main entrance : the Avenue of Sphinxes, the pylons, the courtyard and peristyle, the sanctuary.

from symmetries, simple or complex, or from delicate balancings. Rhythm is an equation ; Equalization (symmetry, repetition) (*Egyptian and Hindoo temples*) ; compensation (movement of contrary parts) (*the Acropolis at Athens*) ; modulation (the development of an original plastic invention)

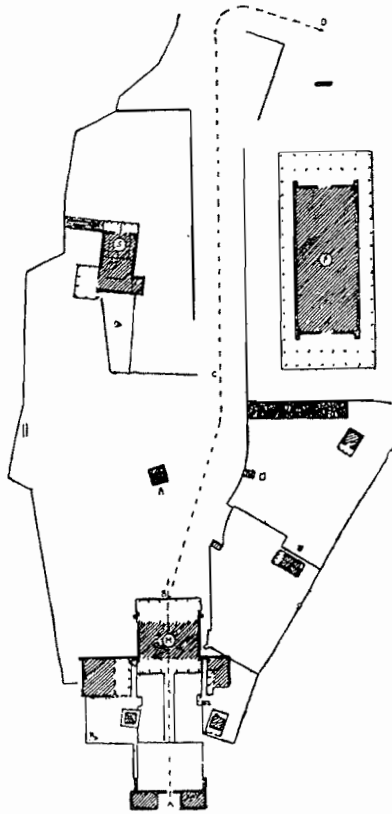
(*Santa Sophia*). So many reactions, differing in the main for every individual, in spite of the unity of aim which gives the rhythm, and the state of equilibrium. So we get the astonishing diversity found in great epochs, a diversity which is the result of architectural principle and not of the play of decoration.

The plan carries in itself the very essence of sensation.



PALACE IN AMMAN (SYRIA)

But the sense of the plan has been lost for the last hundred years. The great problems of to-morrow, dictated by collective necessities, based upon statistics and realized by mathematical calculation, once more revive the problem of the plan. When once the indispensable breadth of vision, which must be brought to town planning, has been realized, we shall enter upon a period that no epoch has yet known. Towns must be



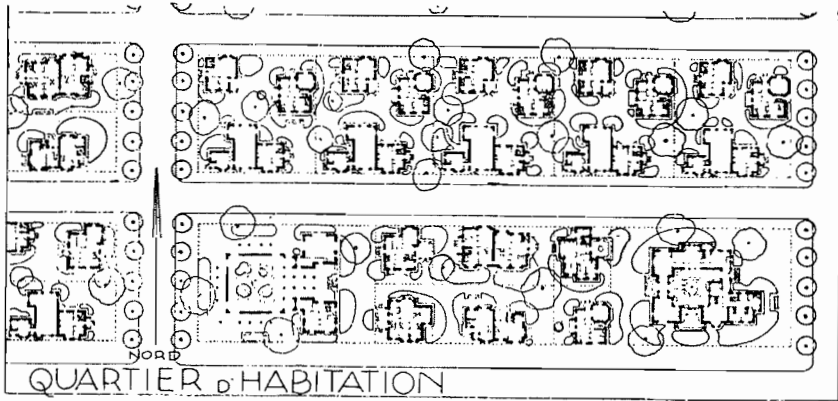
THE ACROPOLIS, ATHENS

The apparent lack of order in the plan could only deceive the unlearned. The balance of the parts is in no way a paltry one. It is determined by the famous landscape which stretches from the Piræus to Mount Pentelicus. The scheme was designed to be seen from a distance : the axes follow the valley and the false right angles are contrived with the skill of a first-rate stage manager. The Acropolis set on its rock and on its sustaining walls, seen from afar appears as one solid block. The buildings are massed together in accordance with the incidence of their varying plans.

conceived and planned throughout their entire extent in the same way as were planned the temples of the East and as the Invalides or the Versailles of Louis XIV were laid out.

The technical equipment of this epoch—the technique of finance and the technique of construction—is ready to carry out this task.

Tony Garnier, backed by Herriot at Lyons, planned his



TONY GARNIER. A HOUSING SCHEME TAKEN FROM THE "CITÉ INDUSTRIELLE"

In his important studies on the Manufacturing Town, Tony Garnier has taken for granted certain possibilities of social development, not yet brought to pass, which would permit of methods of normal expansion of towns. The public would have complete control of all building sites. A house for each family: only one half of the area would be occupied by buildings, the other half being for public use and planted with trees: hedges and fences would not be allowed. In this way the town could be traversed in every direction, quite independently of the streets, which there would be no need for a pedestrian to use. The town would really be like a great park.

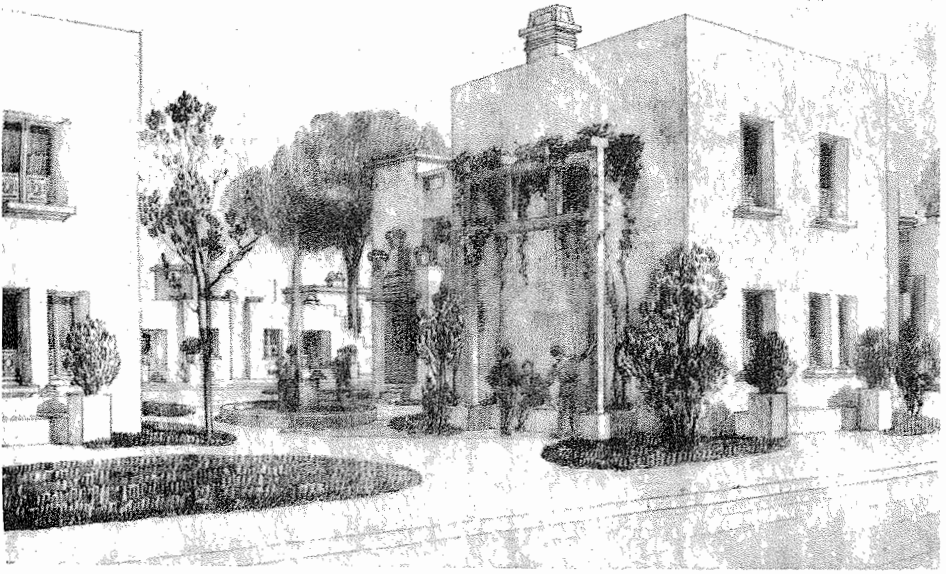
"industrial quarter" (*Cité*). It is an attempt at an ordered scheme and a fusion of utilitarian and plastic solutions. One fixed rule governing the units employed gives, in every quarter of the town, the same choice of essential masses and determines the intervening spaces in accordance with practical necessities and the biddings of a poetical sense peculiar to the

architect. Though we may reserve our judgment as to the relationship of the various zones of this industrial city, one experiences here the beneficent results of order. Where order reigns, well-being begins. By the happy creation of a system of arrangement of the various plots, even the residential quarters for artisans take on a high architectural significance. Such is the result of a plan.

In the present state of marking time (for modern town planning is not yet born), the most noble quarters of our towns are inevitably the manufacturing ones where the basis of grandeur and style—namely, geometry—results from the problem itself. The plan has been a weak feature, and is still so to-day. True, an admirable order reigns in the interior of markets and workshops, has dictated the structure of machines and governs their movements, and conditions each gesture of a gang of workmen; but dirt infects their surroundings, and incoherence ran riot when the rule and square dictated the placing of the buildings, spreading them about in a crazy, costly and dangerous way.

It would have been enough if there had been a plan. And one day we shall have a plan for our needs. The extent of the evil will bring us to this.

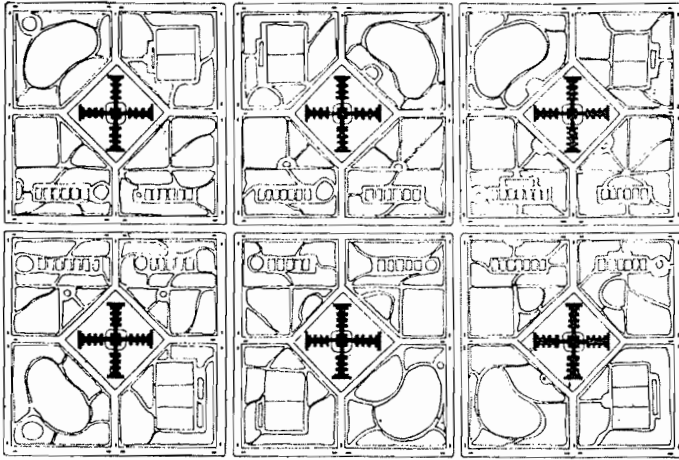
One day Auguste Perret created the phrase: "The City of Towers." A glittering epithet which aroused the poet in us. A word which struck the note of the moment because the fact itself is imminent! Almost unknown to us, the "great city" is engendering its plan. This plan may well be a gigantic affair, since the great city is a rising tide. It is time that we



TONY GARNIER. DRAWING SHOWING THE PASSAGES OR WALKS
BETWEEN THE HOUSES

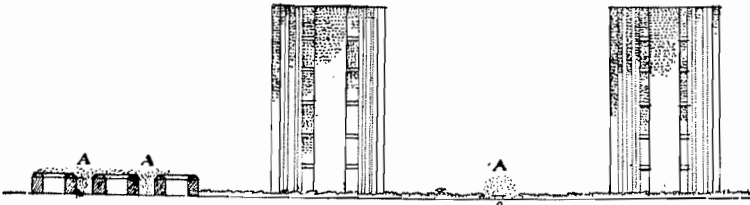


TONY GARNIER. A STREET IN A HOUSING SCHEME



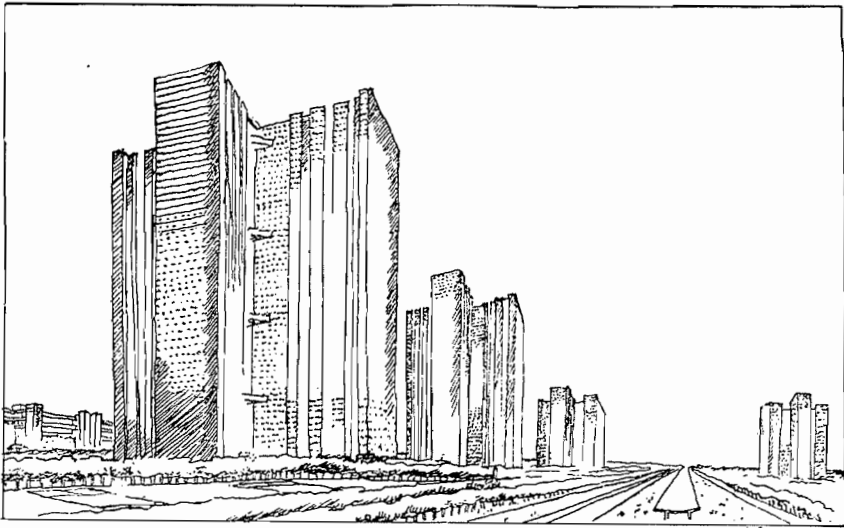
LE CORBUSIER, 1920. A CITY OF TOWERS

A project for Apartments or Flats, built as towers of 60 storeys and rising to a height of 700 feet; the distance between the towers would be from 250 to 300 yards. The towers would be from 500 to 600 feet through their greatest breadth. In spite of the great area devoted to the surrounding parks, the density of a normal town of to-day is multiplied many times over. It is evident that such buildings would necessarily be devoted exclusively to business offices and that their proper place would therefore be in the centre of great cities, with a view to eliminating the appalling congestion of the main arteries. Family life would hardly be at home in them, with their prodigious mechanism of lifts. The figures are terrifying, pitiless but magnificent: giving each employee a superficial area of 10 sq. yds., a skyscraper 650 feet in breadth would house 40,000 people.



A CITY OF TOWERS

This section shows on the left how dust, smells, and noise stifle our towns of to-day. The towers, on the other hand, are far removed from all this and set in clean air amidst trees and grass. Indeed the whole town is "verdure clad."



LE CORBUSIER, 1923. A CITY OF TOWERS

The towers are placed amidst gardens and playing-fields. The main arteries, with their motor-tracks built over them, allow of easy, or rapid, or very rapid circulation of traffic.

should repudiate the existing lay-out of our towns, in which the congestion of buildings grows greater, interlaced by narrow streets full of noise, petrol fumes and dust; and where on each storey the windows open wide on to this foul confusion. The great towns have become too dense for the security of their inhabitants and yet they are not sufficiently dense to meet the new needs of "modern business."

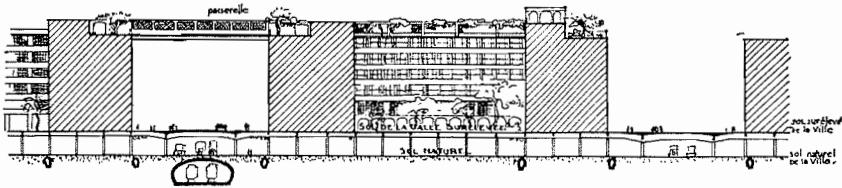
If we take as our basis the vital constructional event which the American sky-scraper has proved to be, it will be sufficient to bring together at certain points (relatively distant) the great density of our modern populations and to build at these points enormous constructions of 60 storeys high. Reinforced con-

crete and steel allow of this audacity and lend themselves in particular to a certain development of the façade by means of which all the windows have an uninterrupted view : in this way, in the future, inside courts and "wells" will no longer exist. Starting from the fourteenth storey you have absolute calm and the purest air.

In these towers which will shelter the worker, till now stifled in densely packed quarters and congested streets, all the necessary services, following the admirable practice in America, will be assembled, bringing efficiency and economy of time and effort, and as a natural result the peace of mind which is so necessary. These towers, rising up at great distances from one another, will give by reason of their height the same accommodation that has up till now been spread out over the superficial area ; they will leave open enormous spaces in which would run, well away from them, the noisy arterial roads, full of a traffic which becomes increasingly rapid. At the foot of the towers would stretch the parks : trees covering the whole town. The setting out of the towers would form imposing avenues ; there indeed is an architecture worthy of our time.

Auguste Perret set forth the principle of the City of Towers ; but he has not produced any designs. On the other hand he allowed himself to be interviewed by a reporter of the "Intransigeant" and to be so far carried away as to swell out his conception beyond reasonable limits. In this way he threw a veil of dangerous futurism over what was a sound idea. The reporter noted that enormous bridges would link each

tower to the next ; for what purpose ? The arteries for traffic would be placed far away from the houses ; and the inhabitants, free to disport themselves in the parks among trees planted in ordered patterns, or on the grass or in the places of amusement, would never have the slightest desire to take their exercise on giddy bridges, with nothing at all to do when they got there ! The reporter would have it also that the



LE CORBUSIER, 1915. TOWNS BUILT ON PILES

The ground level of the town is raised from 12 to 16 feet by means of concrete piles which serve as foundations for the houses. The actual "ground" of the town is a sort of floor, the streets and pavements as it were bridges. Beneath this floor and directly accessible are placed all the main services, at present buried in the ground and inaccessible—water, gas, electricity, telephone wires, sewers, etc.

town would be raised on innumerable piles of reinforced concrete carrying the streets at a height of 65 feet (6 storeys if you please !) and linking the towers one to another. These piles would leave an immense space underneath the town in which would be placed the gas and water mains and the sewers, the viscera of the city. Perret had never set out his plan, and the idea could not be carried further without a plan.

I had myself put forward this idea of using piles a long time before Auguste Perret, and it was a conception of a

much less grandiose character ; but it was capable of meeting a genuine need. I applied it to the existing type of town such as the Paris of to-day. Instead of forming foundations by excavating and constructing thick foundation walls, instead of digging up and digging up again the roadways in order to bury in them (a labour of Sisyphus) the gas and water mains, the sewers and the Tubes, with constant repairs to execute, it would be agreed that any new districts should be constructed at ground level, the foundations being replaced by the necessary number of concrete piles ; these would have carried the ground floor of the houses and, by a system of corbelling, the pavements and the roadways.

Within this space so gained, of a height of from 12 to 18 feet, would run heavy lorries, and the Tubes replacing the encumbrance of tramways, and so on, with a direct service to points immediately below the buildings. This complete network of traffic, working independently of that reserved for pedestrians and quick-moving vehicles, would be a pure gain and would have its own geography independent of any obstruction due to the houses : an ordered forest of pillars in the midst of which the town would exchange its merchandise, bring in its food supplies, and perform all the slow and clumsy tasks which to-day impede the speed of traffic.

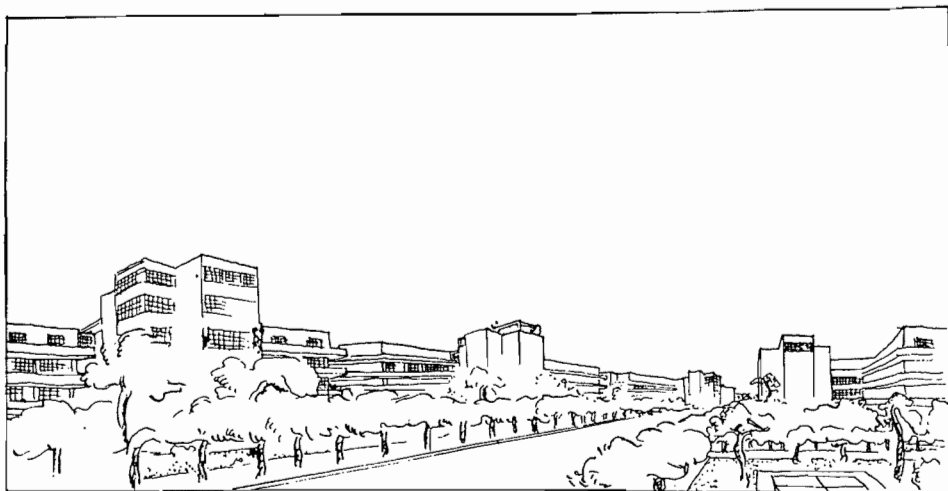
Cafes and places for recreation would no longer be that fungus which eats up the pavements of Paris : they would be transferred to the flat roofs, as would be all commerce of a luxury kind (for is it not really illogical that one entire superficies of a town should be unused and reserved for a flirtation

between the tiles and the stars?). Short passage-ways in the shape of bridges above the ordinary streets would enable foot traffic to get about among these newly gained quarters consecrated to leisure amidst flowers and foliage.

The result of this conception would be nothing less than a triplication of the traffic area of a town; it was capable of realization *since it corresponded to a need, was less costly and more rational than the aberrations of to-day*. It was a reasonable notion, given the old framework of our towns, just as the conception of the City of Towers will prove a reasonable idea, as regards the towns of to-morrow.

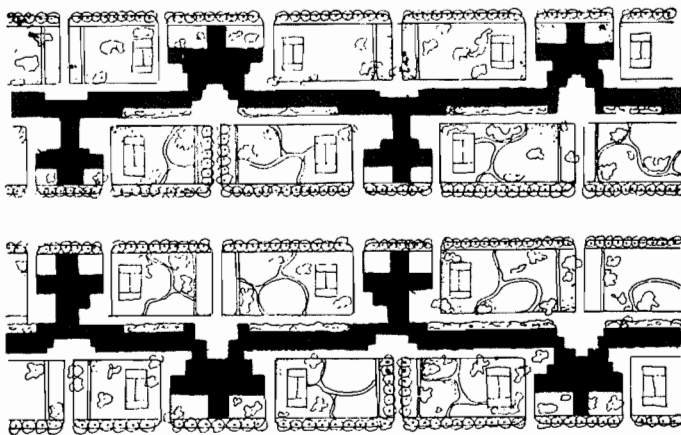
Here, then, we have a lay-out of streets which would bring about an entirely new system of town planning and would provide a radical reform in the tenanted house or apartment; this imminent reform, necessitated by the transformation of domestic economy, demands a new type of plan for dwelling-houses, and an entirely new organisation of services corresponding to modern life in a great city. Here again the plan is the generator; without it poverty, disorder, wilfulness reign supreme.

Instead of our towns being laid out in massive quadrangles, with the streets in narrow trenches walled in by seven-storeyed buildings set perpendicular on the pavement and enclosing unhealthy courtyards, airless and sunless wells, our new lay-out, employing the same area and housing the same number of people, would show great blocks of houses with successive set-backs, stretching along arterial avenues. No more courtyards, but flats opening on every side to air and light, and



LE CORBUSIER, 1920. STREETS WITH SET-BACKS

Vast airy and sunlit spaces on which all windows would open. Gardens and playgrounds around the buildings. Simple façades with immense bays. The successive projections give play of light and shade, and a feeling of richness is achieved by the scale of the main lines of the design and by the vegetation seen against the geometrical background of the façades. Obviously we have here, as in the case of the City of Towers, a question of enterprise on a huge financial scale, capable of undertaking the construction of entire quarters. A street such as this would be designed by a single architect to obtain unity, grandeur, dignity and economy.



LE CORBUSIER, 1920. STREETS WITH SET-BACKS

looking, not on the puny trees of our boulevards of to-day, but upon green sward, sports grounds and abundant plantations of trees.

The jutting prows of these great blocks would break up the long avenues at regular intervals. The various set-backs would promote the play of light and shade, so necessary to architectural expression.

Reinforced concrete has brought about a revolution in the æsthetics of construction. By suppressing the roof and replacing it by terraces, reinforced concrete is leading us to a new æsthetic of the plan, hitherto unknown. These set-backs and recessions are quite possible and will, in the future, lead to a play of half-lights and of heavy shade with the accent running not from top to bottom, but horizontally from left to right.

This is a modification of the first importance in the æsthetic of the plan ; it has not yet been realized ; but we shall be wise to bear this in our minds, in considering projects for the extension of our towns.

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We are living in a period of reconstruction and of adaptation to new social and economic conditions. In rounding this Cape Horn the new horizons before us will only recover the grand line of tradition by a complete revision of the methods in vogue and by the fixing of a new basis of construction established in logic.

In architecture the old bases of construction are dead. We shall not rediscover the truths of architecture until new bases have established a logical ground for every architectural

manifestation. A period of 20 years is beginning which will be occupied in creating these bases. A period of great problems, a period of analysis, of experiment, a period also of great æsthetic confusion, a period in which a new æsthetic will be elaborated.

We must study the *plan*, the key of this evolution.



LE CORBUSIER AND PIERRE JEANNERET. A ROOF GARDEN ON A PRIVATE HOUSE AT AUTEUIL