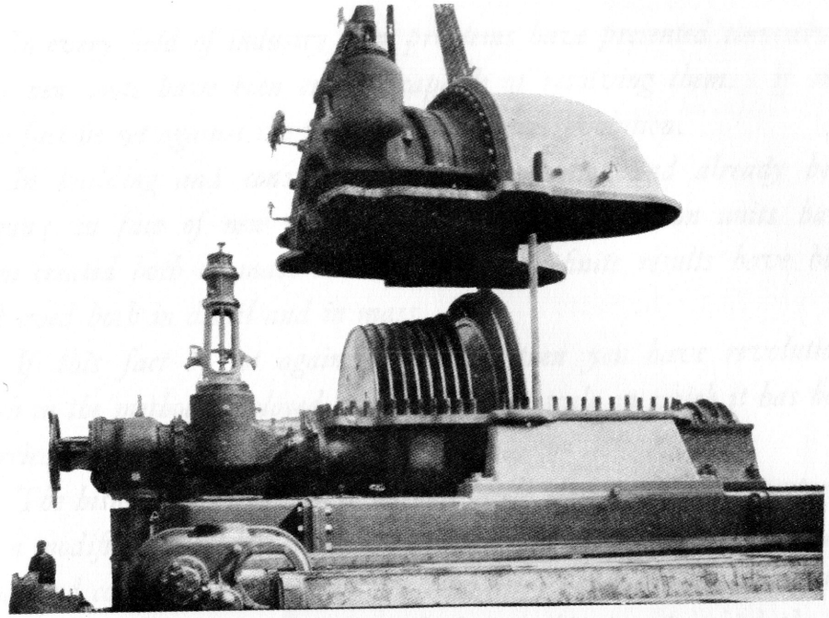


40,000 KILOWATT TURBINE FOR ELECTRICITY

ARCHITECTURE OR REVOLUTION

In every field of industry, new problems have presented themselves and new tools have been created capable of resolving them. If this new fact be set against the past, then you have revolution.

In building and construction, mass-production had already been begun; in face of new economic needs, mass-production units have been created both in mass and detail, and definite results have been achieved both in detail and in mass.

If this fact be set against the past, then you have revolution, both in the method employed and in the large scale on which it has been carried out.

The history of Architecture unfolds itself slowly across the centuries as a modification of structure and ornament, but in the last fifty years steel and concrete have brought new conquests, which are the index of a greater capacity for construction, and of an architecture in which the old codes have been overturned. If we challenge the past, we shall learn that "styles" no longer exist for us, that a style belonging to our own period has come about; and there has been a revolution.

Our minds have consciously or unconsciously apprehended these events and new needs have arisen, consciously or unconsciously. The machinery of Society, profoundly out of gear, *oscillates between an amelioration, of historical importance, and a catastrophe.*

The primordial instinct of every human being is to assure himself of a shelter.

The various classes of workers in society to-day no longer have dwellings adapted to their needs; neither the artisan nor the intellectual.

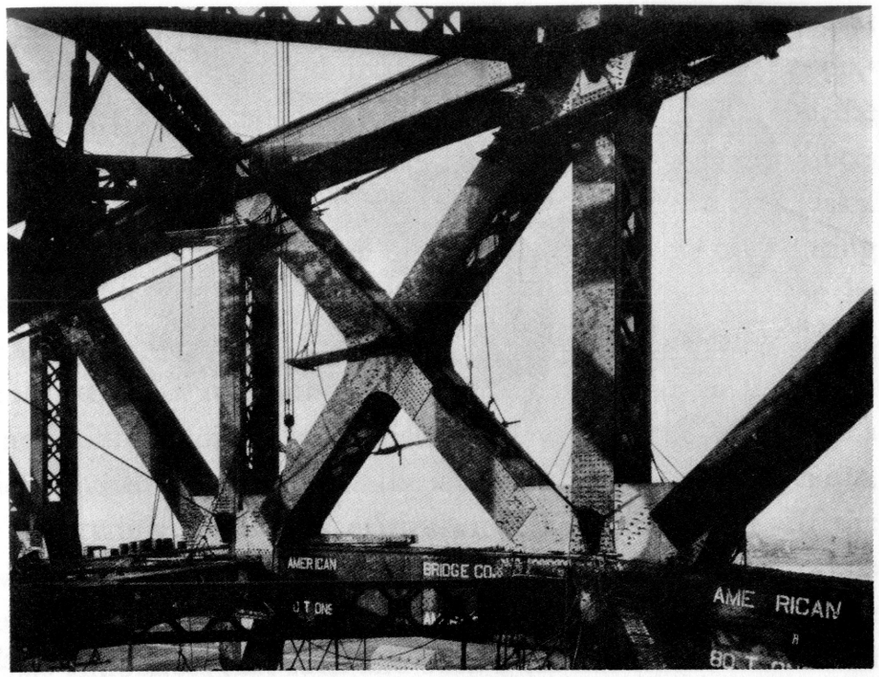
It is a question of building which is at the root of the social unrest of to-day; architecture or revolution.

IN every province of industry, new problems have arisen and have been met by the creation of a body of tools capable of dealing with them. We do not appreciate sufficiently the deep chasm between our own epoch and earlier periods ; it is admitted that this age has effected a great transformation, but the really useful thing would be to draw up a parallel table of its activities—intellectual, social, economic and industrial—not only in relation to the preceding period at the beginning of the nineteenth century, but to the history of civilizations in general. It would quickly be seen that the tools that man has made for himself, which automatically meet the needs of society, and which till now had undergone only slight modifications in a slow evolution, have been transformed all at once with an amazing rapidity. These tools in the past were always *in man's hands ;* to-day they have been entirely and formidably refashioned and for the time being are out of our grasp. The human animal stands breathless and panting before the tool that he cannot take hold of ; progress appears to him as hateful as it is praiseworthy ; all is confusion within his mind ; he feels himself to be the slave of a frantic state of things and experiences no sense of liberation or comfort or amelioration. This is a great but critical period, above all of a moral crisis. To pass the crisis we must create the state of mind which can understand what is going on ; the human animal must learn to use his tools. When this human animal has put on his new harness

THE EQUITABLE BUILDING, NEW YORK

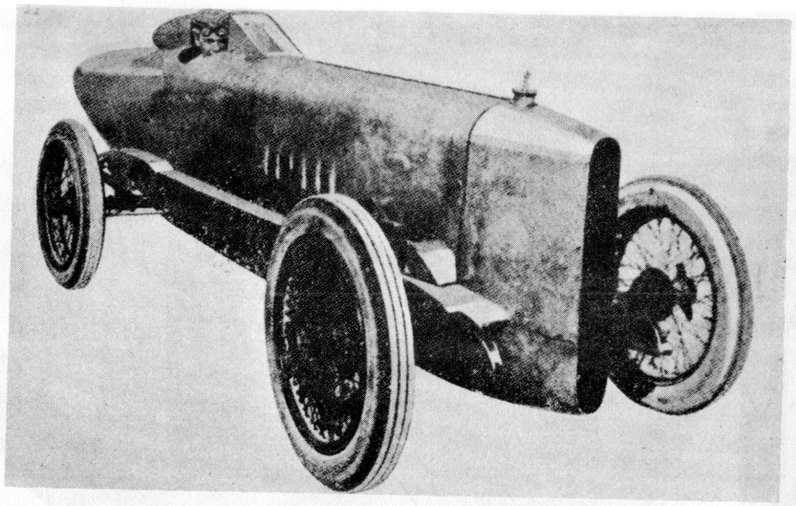
and knows the effort that is expected from him, he will see that things have changed: and changed *for the better.*

One more word on the past. Our own epoch, that is to say the last fifty years only, confronts the ten ages that have gone before. During these earlier ages, man ordered his life in conformity with what people call a "natural" system; he took his tasks upon his own shoulders and brought them to a satisfactory conclusion, bearing all the consequences of his own



STEEL CONSTRUCTION. THE STEEL CORPORATION

little enterprises: he rose with the sun, went to bed at dusk; he laid down his tools preoccupied with the task in hand and what he would begin on the morrow. He worked at home in a little booth, with his family around him. He lived like a snail in its shell, in a lodging made exactly to his measure; there was nothing to induce him to modify this state of things, which was indeed harmonious enough. The family life unfolded itself in a normal way. The father watched over his children in the cradle and later on in the workshop: effort and gain succeeded one another peacefully within the family order; and in this the family found its profit. Now when this is so, society is stable



"AMERICA"

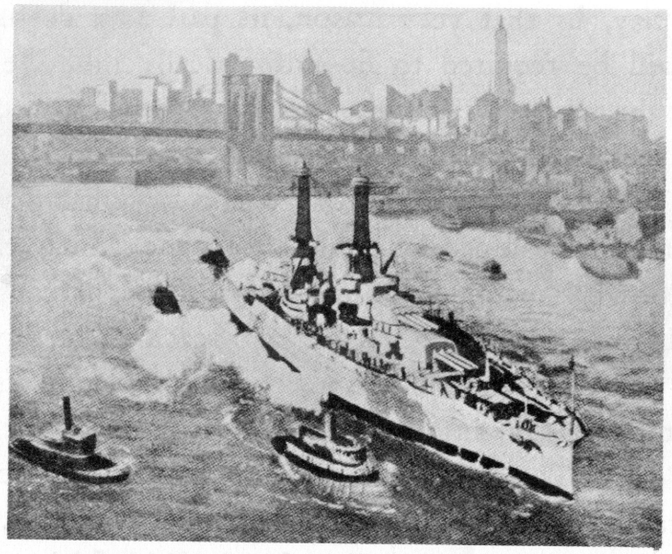
A Racing Car of 250 h.p., capable of over 160 m.p.h.

and likely to endure. That is the story of ten ages of work organized within the family unit; and the story too of every past age up to the middle of the nineteenth century.

But let us observe to-day the mechanism of the family. Industry has brought us to the mass-produced article; machinery is at work in close collaboration with man; the right man for the right job is coldly selected; labourers, workmen, foremen, engineers, managers, administrators—each in his proper place; and the man who is made of the right stuff to be a manager will not long remain a workman; the higher places are open to all. Specialization ties man to his machine; an absolute precision is demanded of every worker, for the article passed on to the next man cannot be snatched back in order to be corrected and fitted; it must be exact in order that

it may play, by that very reason, its part as a detailed unit which will be required to fit automatically into the assembling of the whole. The father no longer teaches his son the various secrets of his little trade; a strange foreman directs severely and precisely the restrained and circumscribed tasks. The worker makes one tiny detail, always the same one, during months of work, perhaps during years of work, perhaps for the rest of his life. He only sees his task reach its finality in the finished work at the moment when it is passed, in its bright and shining purity, into the factory yard to be placed in a delivery-van. The spirit of the worker's booth no longer exists, but certainly there does exist a more collective spirit. If the workman is intelligent he will understand the final end of his labour, and this will fill him with a legitimate pride. When the *Auto* announces that such and such a car has reached 180 miles an hour, the workmen will gather together and tell one another: "*Our* car did that!" There we have a moral factor which is of importance.

The eight hours day! The three "eights" in the factory! The shifts working in relays. This one starting at 10 p.m. and finishing at 6 a.m.; another one ending at 2 p.m. Did our legislators think of that when they granted the eight hours day? What is the man going to do with his freedom from 6 a.m. till 10 p.m.; from 2 p.m. till night? What becomes of the family under these conditions? The lodging is there, you will say, to receive and welcome the human animal, and the worker is sufficiently cultivated to know how to make a healthy use of so many hours of liberty. But this is exactly what is *not* the case;

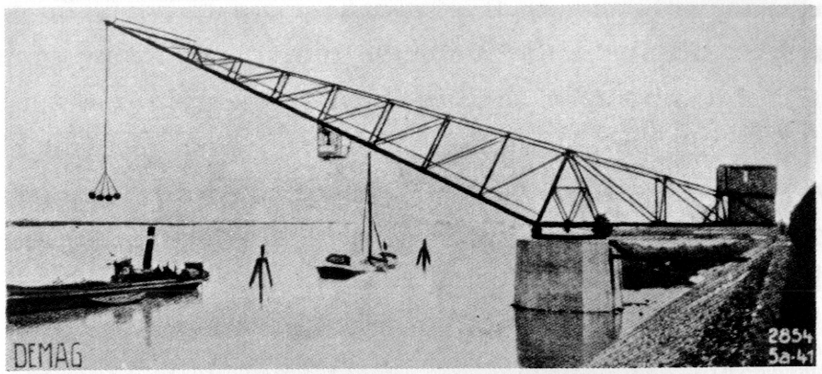


NEW YORK

the lodging is hideous, and his mind not sufficiently educated to use all these hours of liberty. We may well say, then: Architecture or demoralization—demoralization and revolution.

Let us examine another point:

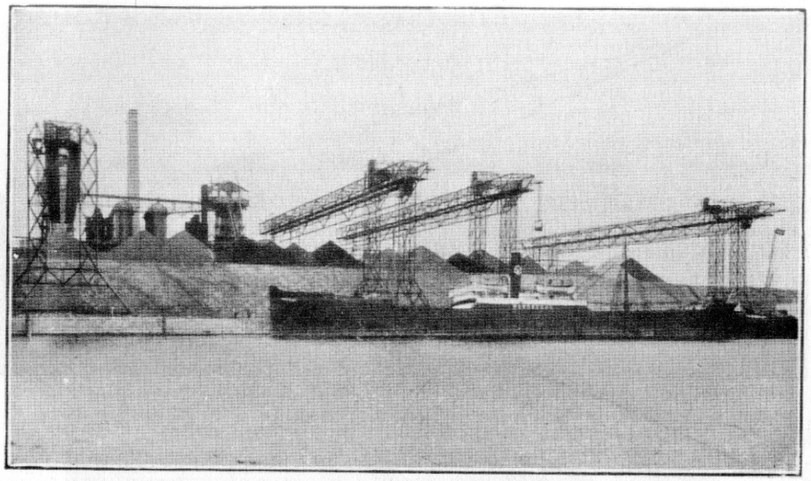
There is a formidable industrial activity at present in progress, which is inevitably and constantly at the back of our minds; at every moment either directly, or through the medium of newspapers and reviews, we are presented with objects of an arresting novelty whose why and wherefore engrosses our minds, and fills us with delight and fear. All these objects of modern life create, in the long run, a modern state of mind. Bewilderment seizes us, then, if we bring our eyes to bear on the old and rotting buildings that form our snail-shell, our habitation, which crush us in our daily contact with them—



A CRANE

putrid and useless and unproductive. Everywhere can be seen machines which serve to produce something and produce it admirably, in a clean sort of way. The machine that we live in is an old coach full of tuberculosis. There is no real link between our daily activities at the factory, the office or the bank, which are healthy and useful and productive, and our activities in the bosom of the family which are handicapped at every turn. The family is everywhere being killed and men's minds demoralized in servitude to anachronisms.

Every man's mind, being moulded by his participation in contemporary events, has consciously or unconsciously formed certain desires; these are inevitably connected with the family, an instinct which is the basis of society. Every man to-day realizes his need of sun, of warmth, of pure air and clean floors; he has been taught to wear a shiny white collar, and women love fine white linen. Man feels to-day that he must have intellectual diversion, relaxation for his body, and the physical



SHIP'S COALERS ON THE RHINE

culture needed to recuperate him after the tension of muscle or brain which his labour—" hard labour "—brings. This mass of desires constitutes in fact a mass of *demands*.

Now our social organization has nothing ready which can answer these needs.

Another point : what are the conclusions of the *intellectuals* face to face with the actualities of modern life ?

The magnificent flowering of industry in our epoch has created a special class of intellectuals so numerous that it constitutes the really active stratum of society.

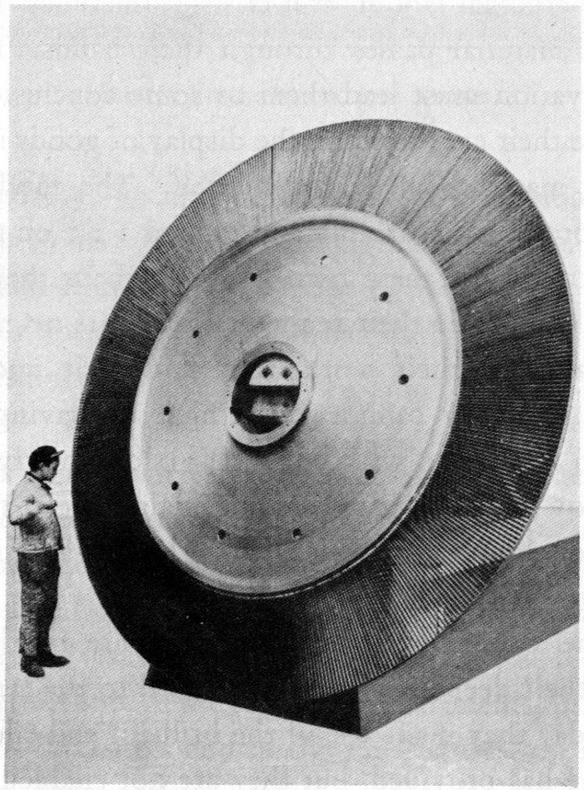
In the workshop, in the technical departments, in the learned Societies, in the banks and in the great stores, on newspapers and reviews, there are the engineers, the heads of departments, legal representatives, secretaries, editors, accountants who work

out minutely, in accordance with their duty, the formidable things which occupy our attention : there are the men who design our bridges, ships and airplanes, who create our motors and turbines, who direct the workshops and yards, who are engaged in the distribution of capital and in accountancy, who do the purchasing of goods in the colonies or from the factory, who put forth so many articles in the Press on the modern production of so much that is noble and horrible, who record as on a chart the high-temperature curve of a humanity in labour, in perpetual labour, at a crisis—sometimes in delirium. All human material passes through their hands. In the end their observation must lead them to some conclusion. These people have their eyes fixed on the display of goods in the great shops that man has made for himself. The modern age is spread before them, sparkling and radiant . . . on the far side of the barrier ! In their own homes, where they live in a precarious ease, since their remuneration bears no real relation to the quality of their work, they find their uncleanly old snail-shell, and they cannot even think of having a family. If they do so there will begin the slow martyrdom that we all know. These people, too, claim their rights to a machine for living in, which shall be in all simplicity a *human* thing.

Both the worker and the intellectual are precluded from following their deepest instincts in regard to the family ; each and every day they make use of the brilliant and effective tools that the age has provided, but they are not enabled thereby to use them for themselves. Nothing could be more discouraging

or more irritating. Nothing is prepared. We may well say: Architecture or Revolution.

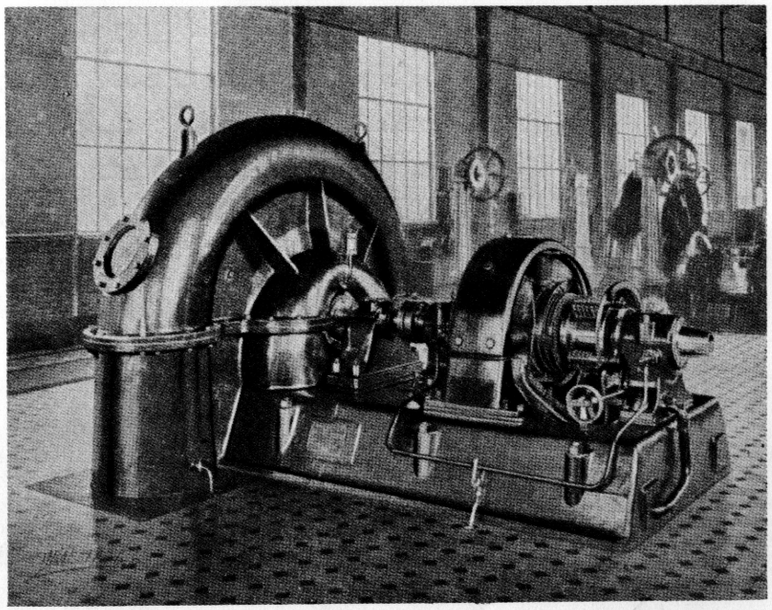
Though modern society does not recompense its intellectuals judiciously, it still tolerates the old arrangements as to property which are a serious barrier in the way of transforming the town or the house. Established property rests on inheritance and its highest aim is a state of inertia, of no change and of maintaining the *status quo*. Although every other sort of



A TURBINE DISC FROM THE CREUSOT WORKS: 40,000 KILOWATTS

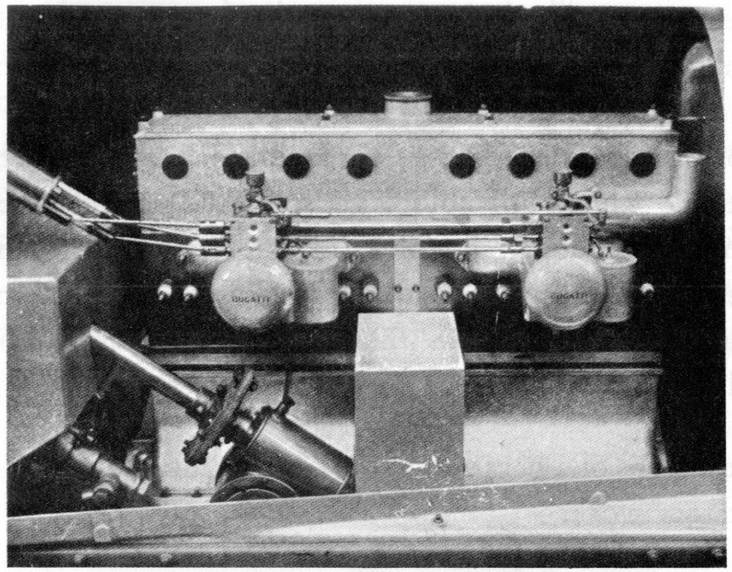
human enterprise is subject to the rough warfare of competition, the landlord, ensconced in his property, escapes the common law in a princely fashion: he is a king. On the existing principle of property, it is impossible to establish a constructional programme which will hold together. And so the necessary building is not done. But if existing property arrangements were changed, and they are changing, it would be possible to build; there would be an enthusiasm for building, and we should avoid Revolution.

The advent of a new period only occurs after long and quiet preparatory work.

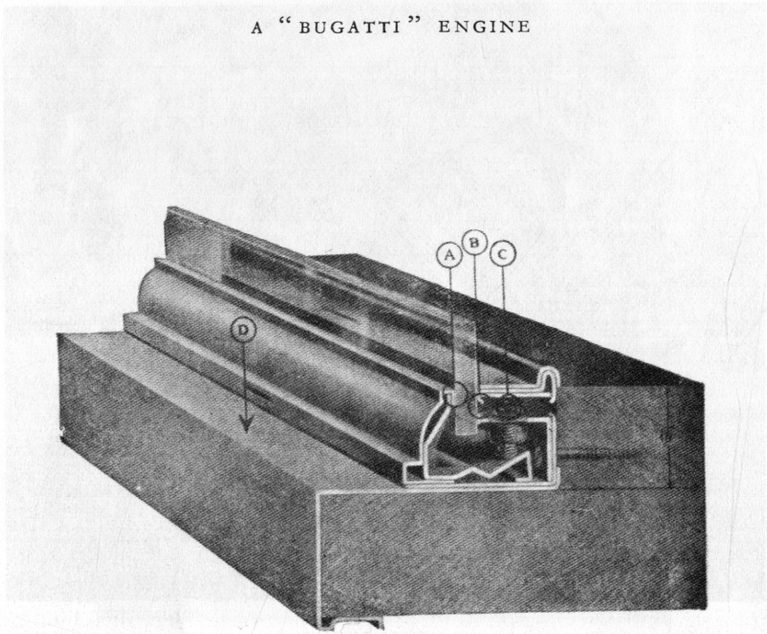


VENTILATORS

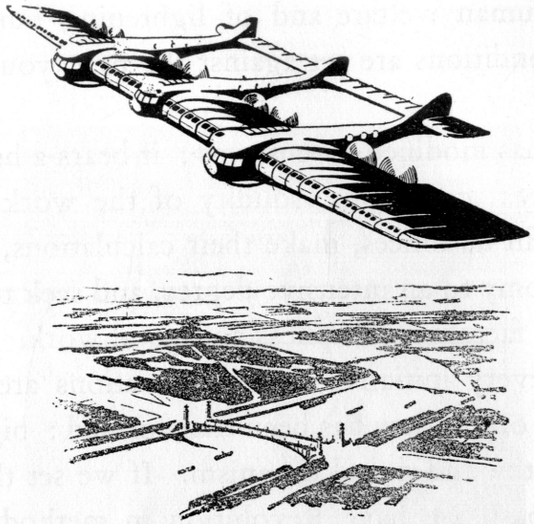
Hourly output 57,000 *cubic metres.*



A "BUGATTI" ENGINE



CHICAGO. CONSTRUCTION OF A WINDOW: INDUSTRIALIZATION



A FORECAST: THE AIRPLANE OF TO-MORROW

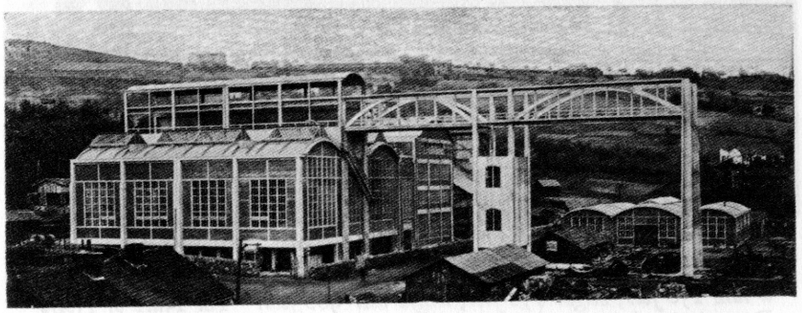
Industry has created its tools.

Business has modified its habits and customs.

Construction has found new means.

Architecture finds itself confronted with new laws.

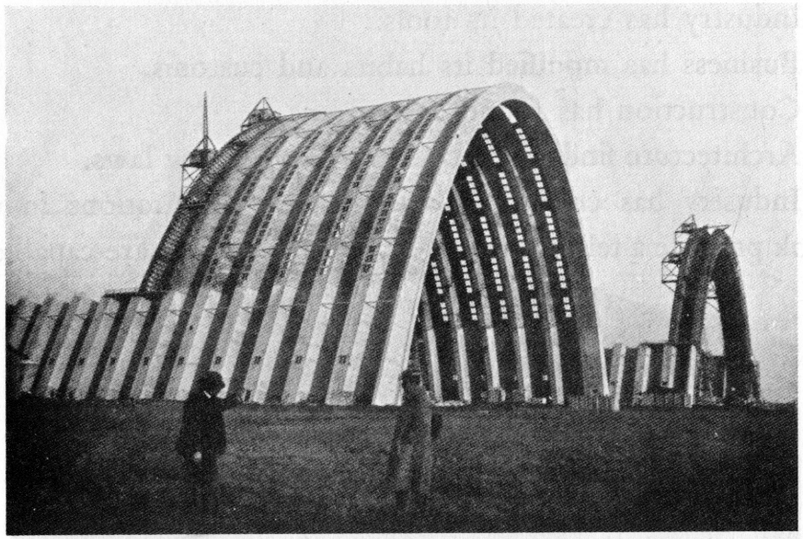
Industry has created new tools: the illustrations in this book provide a telling proof of this. Such tools are capable of



A FACTORY (FREYSSINET & LIMOUSIN)

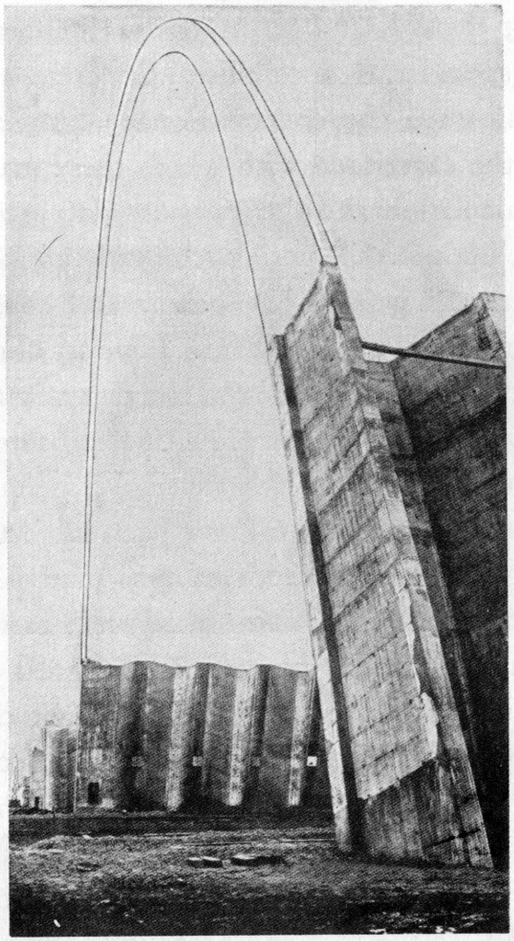
adding to human welfare and of lightening human toil. If these new conditions are set against the past, you have Revolution.

Business has modified its customs : it bears a heavy responsibility to-day : cost, time, solidity of the work. Engineers in numbers fill its offices, make their calculations, practise the laws of economy to an intensive degree, and seek to harmonize two opposed factors : cheapness and good work. Intelligence lies behind every initiative, bold innovations are demanded. The morality of industry has been transformed : big business is to-day a healthy and moral organism. If we set this new fact against the past, we have Revolution in method and in the scale of the adventure.



A HANGAR (FREYSSINET & LIMOUSIN)

Width 250 *feet, height* 150 *feet, length over* 900 *feet. The Nave of Notre Dame is* 40 *feet wide and about* 107 *feet in height.*

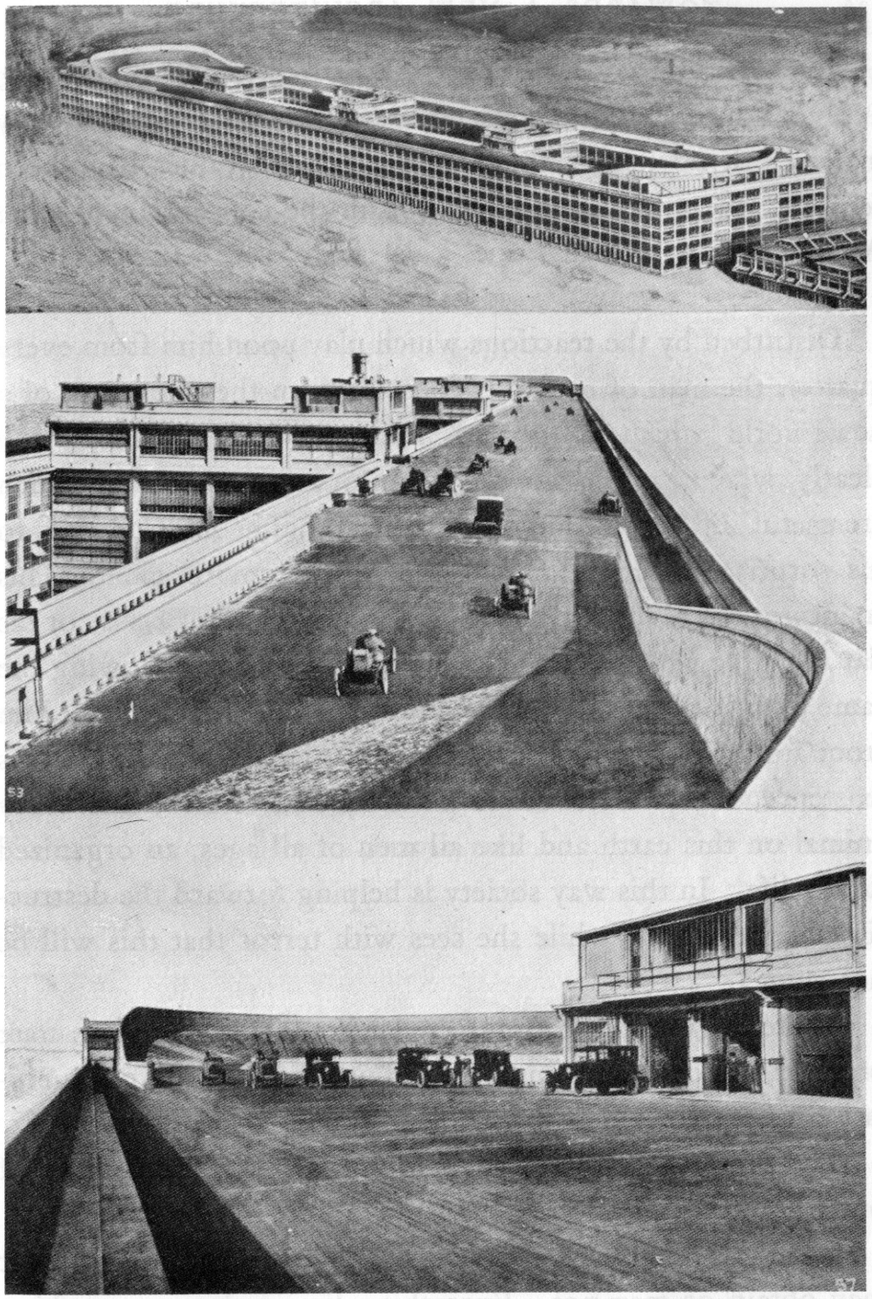


A LARGE AIRSHIP HANGAR AT ORLY (FREYSSINET & LIMOUSIN)

Width 250 *feet, height* 170 *feet, length over* 900 *feet.*

Construction has discovered its methods, methods which in themselves mean a liberation that earlier ages had sought in vain. Everything is possible by calculation and invention, provided that there is at our disposal a sufficiently perfected body of tools, and this does exist. Concrete and steel have entirely transformed the constructional organisation hitherto known, and the exactitude with which these materials can be adapted to calculation and theory every day provides encouraging results, both in the success achieved and in their appearance, which recalls natural phenomena and constantly reproduces experiences realized in nature. If we set ourselves against the past, we can then appreciate the fact that new formulas have been found which only need exploitation to bring about (if we are wise enough to break with routine) a genuine liberation from the constraints we have till now been subjected to. There has been Revolution in methods of construction.

Architecture finds itself confronted with new laws. Construction has undergone innovations so great that the old "styles," which still obsess us, can no longer clothe it; the materials employed evade the attentions of the decorative artist. There is so much novelty in the forms and rhythms furnished by these constructional methods, such novelty in arrangement and in the new industrial programmes, that we can no longer close our minds to the true and profound laws of architecture which are established on mass, rhythm and proportion: the "styles" no longer exist, they are outside our ken; if they still trouble us, it is as parasites. If we set ourselves against the past, we are forced to the conclusion that the



THE "FIAT" WORKSHOPS AT TURIN WITH THE TESTING TRACK ON THE ROOF

old architectural code, with its mass of rules and regulations evolved during four thousand years, is no longer of any interest; it no longer concerns us: all the values have been revised; there has been revolution in the conception of what Architecture is.

Disturbed by the reactions which play upon him from every quarter, the man of to-day is conscious, on the one hand, of a new world which is forming itself regularly, logically and clearly, which produces in a straightforward way things which are useful and usable, and on the other hand he finds himself, to his surprise, living in an old and hostile environment. This framework is his lodging; his town, his street, his house or his flat rise up against him useless, hinder him from following the same path in his leisure that he pursues in his work, hinder him from following in his leisure the organic development of his existence, which is to create a family and to live, like every animal on this earth and like all men of all ages, an organized family life. In this way society is helping forward the destruction of the family, while she sees with terror that this will be her ruin.

There reigns a great disagreement between the modern state of mind, which is an admonition to us, and the stifling accumulation of age-long detritus.

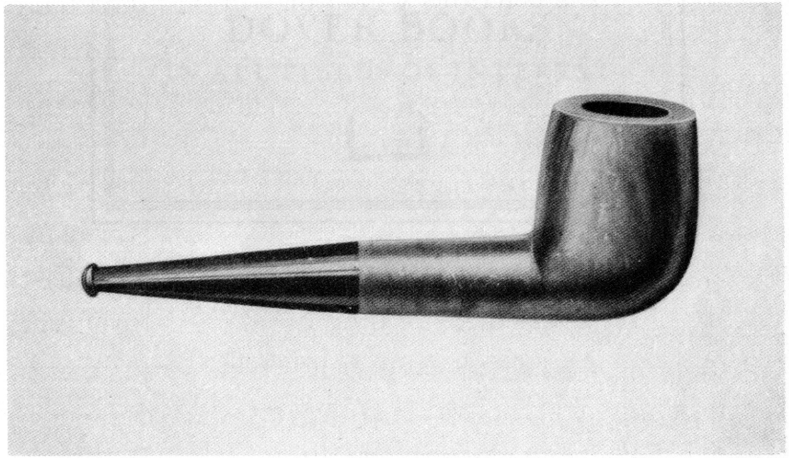
The problem is one of adaptation, in which the realities of our life are in question.

Society is filled with a violent desire for something which it may obtain or may not. Everything lies in that: everything

depends on the effort made and the attention paid to these alarming symptoms.

Architecture or Revolution.

Revolution can be avoided.



A BRIAR PIPE