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The Modern Business Building

THE skyline of New York is changing so rapidly that the American traveler who goes abroad can recognize with more certainty the profiles of the foreign cities he approaches than that of his own metropolis as he sees it from the deck of the steamer on his return. It may be his first visit to Europe; he may know London, Rome, and Paris only from views of them in old prints. But, if he has an eye for such things, his first glimpse of St. Paul's, St. Peter's, or Notre Dame will tell him to what place he is coming, for all the world knows these pinnacles, has known them for centuries. They are as conspicuous and characteristic in the silhouettes of their cities as they were when they were built. One of the Dutch governors of New Amsterdam, seeking in spirit some familiar earthly habitation, might find old Amsterdam, for it cuts the same figure in the sky today that it did when he left it, but the last dead boss of New York, if by any chance he should get away from where he ought to be, would search the horizon in vain for the face of his city. The features his eye would seek are there: Old Trinity still stands, its steeple, like the spires of the old cathedrals, uplifted high above the earth; but its solitary prominence is gone. The modern office building has risen higher than the head of the cross, and the church has lost its distinction. The enterprise of business has surpassed the aspiration of religion.

New York, in this, as in so many other things, is but the archetype of American cities. Chicago, Boston, Philadelphia, St. Louis, even Washington—they all are rising bodily, constantly, fast, and their climbing skylines are writing with reckless realism across the heavens the same great story of material progress. It is time to read this writing of the walls. It may mean more than the increase of wealth, the growing power of capital, the might of skilled and disciplined labor. These have their own value, and have been the cause of national pride, but now they are the scapegoats of reactionary discontent. Men hate them. Is there nothing better back of these things?

The papers that have preceded this one have been answering the question. It was brains and character, the writers showed, that initiate, organize, and develop such enterprises as the department store, the modern hotel, the factory, and the bank; and this is the story of the skylines. They do not tell it so simply as the other businesses, because they are less familiar, but they make it more conspicuous when told, and they leave it in a more enduring form for the future to read. A great building may be a failure financially without disappearing, like a mismanaged store or banking company. It will remain, bearing in its form and plan the traces of its uses, which may be finally the only remnants of the other creations of modern business enterprise, the only legible chapter of the common tale. With this in mind some men build, giving what is called the monumental building; and corporations, seeking, however, the more immediate form of fame—advertisement—put up structures on a scale of expenditure that precludes the possibility of a fair, direct income in rent. The prophecy that the present will be known hereafter as the period of high building in the United States is not absurd, for while other countries have great banks and factories, department stores and hotels, none of them has

“skyscrapers.” The modern high building, whether it be ugly or beautiful, whether it express pleasant or disagreeable traits and truths, is distinctively of this day and this country, and, containing all the other modes of enterprise, it is comprehensively typical.

The men who are raising these new structures are rebuilding cities. That is the scheme of magnificent proportions which the broken skylines sketch out roughly for the imagination to fill in, and the sharp angles of the outline that offend the sense of form now give aesthetic pleasure to the mind by their suggestion of problems solved and to be solved. For mind sympathizes with the efforts of brain labor. The sudden peaks that scrape the sky are not so hideous when the complication of difficulties they overcome is realized. Then it is the gaps of blue sky between that seem unlovely; and they, too, have an appeal for toleration, since the art of high building is new and crude, and these spaces are opportunities for the builders of tomorrow to perfect the architecture of today.

To the minds that are “rebuilding American cities” the work does not appear on the grand scale suggested by that phrase. New York and Chicago have not, as London had in Prince Albert and Paris in Baron Haussmann, a representative of the community to mark out a design and to carry through a scheme to which all of the parts should conform. Here the individual is supreme, and, thus far, unchecked. Even the architects, who have to care for the interest of beauty, do not often strive for unity and proportion in the completion of a block, to say nothing of a street or a district of the city they are making over. Each man builds for himself, according to his own taste; and Greek seldom meets Greek

But that is one of the problems still to be solved, and there is time yet if the willingness to cooperate, found in two or three of the greater architects, spreads through the profession and meets a responsive spirit among the other callings engaged in modern construction. Heretofore the architect has not always been the mastermind, and his considerations have not been the only ones that weighed. The financier, the real estate expert, the engineer, the machinist, the contractor or builder, and the business manager have all worked with the architect, and sometimes one, sometimes another, has been the predominating influence. Capital and labor have also played important parts. But capital, though an essential, is a small element, and receives little of the reward; as an investment, an office building ranks with and pays not much more than a gilt-edged bond. Labor is the most expensive factor, getting from eighty to ninety percent of the total cost of construction, but, like capital, it does none of the brainwork. And the subject of this article is the brains that go into high buildings; we have to do with capital as the financier handles it, and with labor as the contractor directs it. For the rest, our interest is in the foresight, the imagination, the thought, the originality, and the knowledge of these and other experts in this business.

Originally the demand for high buildings presented a purely financial problem. Owners of property in the business parts of cities found they could rent more space than their buildings of two, three, and four stories contained, and they wanted new buildings of five or six stories, or additional floors above the old roof. To finance this operation was easy, and any intelligent carpenter or mason could do the job. After awhile, however, the need in the larger cities for space in the centres where business was most progressive and profitable passed beyond the capacity of the six-story buildings, and a better man than the master-mason was needed.

“Downtown,” as the great city marketplaces are called, became overcrowded. It could grow and expand as a whole, but certain parts of it could not move. Some lines of business had taken possession of ground space enough to accommodate them when they settled, and others grouped themselves close around till they hemmed one another in. Then traditions and the habits

of customers fixed the limits more and more definitely, making changes almost impossible. To cross a street might mean failure, and the turning of a corner would not be thought of. The wholesale dry goods firms of New York succeeded in getting out of Cedar, William, and Pine Streets, but it was done with fear and trembling after years of hesitation, and nobody was certain for many months after the moving that a fatal mistake had not been made. Every effort of the jewelers of Maiden Lane to leave their street has been unsuccessful. Their rent is high, the location is not convenient, and other businesses would pay well to be so near the financial centre, but the jewelers are afraid their customers would not find them elsewhere than in Maiden Lane, and that street as an address is invaluable to the firm that writes to the country with it on its letterhead. Then, for a last example, there is "Wall Street;" how far can the stockbrokers go from Wall Street?

Confined on all sides round, the only way out was up. Limited as to the ground, business sought the air. It had to be done; but how? That was the question. To pile more stories on the sixth was useless, since no one would climb up to them; the young brokers and lawyers might be willing to do it, but their customers would not follow. The problem became mechanical, and the financier and the architect were as helpless as the mason.

The passenger elevator was the solution. It was a clumsy hoist moved by a hand windlass when inventive genius began to study its possibilities, and no one could have foreseen in any of its earlier forms that it was to be to modern building what the steam engine is to transportation, a revolutionary agent. Steam-power was applied to it in 1866. The result was an apparatus with so many faults that it presented dearly all the necessities for success. It was slow, jerky, and dangerous. To overcome these defects the experimenters turned to hydraulic power, in the water-balance elevator. A car was carried up by the weight of a water-vessel filled at the top of the shaft, and was let down by emptying the water at the bottom. Speed and smoothness of motion were thus secured, but the control was doubtful, and though the accidents that occurred were not fatal, they were wet and disagreeable. Absolute safety was first achieved in the direct-acting ram hydraulic elevators; but they, too, were slow and, for high structures, impracticable, since the cylinder had to be sunk as deep below ground as the shaft rose high above it. Having safety, however, the makers clung to the hydraulic power till they eliminated one by one all the defects of their machine. Meanwhile electricity was applied successfully, and now there are several systems that satisfy all the requirements of the highest buildings and the most impatient of human beings.

With the elevator, long before it was perfected, rose all that made the problem of high building—high rents, high prices for ground space, and high hopes. There was great risk in the first application of the elevator to the office building, but it is capital that is timid, not the financiers, the brains that handle it; they are cautious, but daring. They saw that the new device for lifting passengers to the unbuilt upper stories brought the unclaimed space above the costly ground within easy reach, but no one could foresee how the tenants and their customers would take this mode of transit, nor was there any basis for estimating the rents that would be paid. The whole financial question rested on these unknown elements.

The prices charged for a given space in one of the earliest buildings called high in New York will show how speculative and how far astray were the first reckonings on the effect of the elevator. The building was finished in 1868, and the manager let a suite on the top floor for \$850 a year. He raised the rent the next year to \$1,250, and, thinking the limit reached in that figure, signed a contract for a five-year lease. Bound by his agreement, he had to refuse offers rising gradually to \$4,500, which he got readily at the end of the sixth year. People became accustomed

to the elevator as their fathers did to the steam-cars, and now the top stories of high buildings bring in more rent than the middle floors. There are men called "high livers" who will not have an office unless it is up where the air is cool and fresh, the outlook broad and beautiful, and where there is silence in the heart of business.

The first builders, trusting that something like this would come to pass, drew the elevator shaft in their plans, and put up eight-story buildings regardless of the gasping skepticism of the crowd. On every trip of the car was an unseen passenger, the value of property in the financial and other centres where the commercial fight was thickest. A lot that was worth forty dollars a square foot rose to fifty, sixty, seventy-five dollars, and owners of low buildings in good locations found themselves receiving an income, fair for half a million, on what was worth a million. They were tempted to sell or rebuild. Those who could afford it held on for a further rise, encouraged by the slower but equally certain advance of rents. Many sold, however, and the new owners had bought to make the property pay, or, if they sought primarily a permanent location for their business, they listened to proposals to improve the property into an independent paying investment.

This was the financial problem, and it is the same today that it was twenty years ago, and it will be the same twenty years hence. In general terms its purpose is to make a good security also a good investment; to buy something that has a value above its earning powers because it is first-class security for a loan, like a government bond, and is in demand as a perfectly safe investment for trust funds, and then try to make it pay as a business enterprise. In most of our greater cities a man can borrow money at nearly as low a rate on real estate in the financial centres as he can on high-class bonds, and the difference is disappearing. The bonds have the advantage of their divisibility; the holder of a million dollars' worth can hypothecate them in any number of parcels at even rates, while the owner of a piece of real estate of equal value has to put a mortgage on the whole to secure a loan however small, and the first lien lowers the value of all subsequent mortgages. To obviate this difficulty, companies are incorporating to fund real estate so that its value can be handled in the form of stocks and bonds, just as the securities of railroads and manufacturing companies are handled in the financial markets.

Thus stated, the financial aspect of the high-building problem may look like another perpetual motion quest. But the financiers, fortunately, do not take that view of it, and their approximations to the solution have been productive at every step. They began the rebuilding of cities the moment the elevator led the way, exercising little mental power in exact calculation, but showing all the more courage and experimental curiosity. Perhaps there was some recklessness in the first ventures. They spent large sums of money, and could not tell whether they would get back any fair portion of it. It has been said that the earliest builders were corporations, the custodians of other people's money; but the exceptions where individuals, however few, entered the field, some in New York and many in Chicago, indicate that it was a natural, general movement, caused by the chase of brains after the rent-ridden rise of real estate values.

In Chicago the great fire of 1871 forced property owners to reconstruct from the ground up. Having had some experience with values that outstripped the capacity of their old buildings, they rebuilt either temporarily or as permanently as they knew how. They meant to erect structures so cheap that they could be torn down without much loss, or so high that they would be up at any height to which land values might ever rise. They did not build quite as wisely as they thought, it turned out, but they found out how to do it, and as the demand continued to

grow, and architects kept on building, the Chicago builders long held their lead in the solution of the structural problems.

The first “high” buildings, which were from eight to eleven stories high, served only to increase the demand for higher construction, for values kept pace with their growth and the elevator did not stop. It could go on up to any height, and the success of these buildings proved conclusively that tenants would not balk. The financial outlook was clear, but capital waited on the ingenuity of the builders.

From 1865 up to about 1875 the architects planned for solid masonry walls and heavy beams and pillars. The walls carried the weight of the floors and supported themselves. With each additional story, therefore, the walls at their base had to be increased in thickness and strength, so that as the demand for height grew and was satisfied, the lower structure became more and more bulky and costly. The material that went into these sustaining parts was enormous in amount and expensive in quality. It is estimated that the material in a certain high building, erected in 1869, would supply masonry for six modern buildings of its size.

Then, too, most of the high buildings were put up in the streets where ground space was so valuable that even rich men and large corporations could not afford to have very much of it, and one lot or two was so small a space that the thickness of the fattening walls cut appreciably into the rentable room. There came a time when to go higher with the solid masonry method was to lose more income at the bottom than was won at the top. Adding the ever-increasing cost of the foundation and the walls, the financiers saw that their upward course was coming to an end; the beckoning elevator, with its load of rents, had to be disregarded.

There was no time, of course, when either financiers or architects confessed that progress was checked. Nor did the problem set forth here ever appear with the definiteness that it has in the retrospect. Men were working on particular buildings; they were studying out devices to overcome the minor difficulties that beset them, and they made progress slowly, step by step. They began early to use metal, for instance. Probably there is not a building anywhere that rises eight stories without cast-iron or steel somewhere in its frame. It was applied as floor beams, as pillars, later for all interior columns, and by and by was recognized as the key to the building problem. But it was new to architects as a means, and was not the material contemplated in the art they had studied; hence they hesitated.

Another expert was needed, if the art of building was to go on supplying the insatiable demands of the real estate market—someone who understood the laws of metals. The engineer was the man. The architect, seeing him spinning his suspension bridge, recognized that his was the knowledge wanted, and called him down to consultations about the building of houses. It was a new problem to the engineer, and he had to study its requirements; but it was a promising field, too, and he stayed. He studied architecture, and the architectural engineer was the result. In some conspicuous instances his conversion was so complete that his origin is almost forgotten, and he ranks among the leaders of his adopted art. But while the engineer was mastering architecture, the architect was working into the mysteries of engineering, and among the famous builders of any large American city today there are examples of the combination in three ways—the architect who has made himself an engineer, the engineer turned architect, and the firm with one member an architect and another an engineer.

The union of the two arts extended the substitution of metal for masonry. The architect, blocked by the widening base of his brick walls, was taught that a slender pillar of iron could carry as much as his fattest mound. All that stone and brick were needed for was to protect the iron from fire and corrosion. In the superstructure the masonry need be no thicker than was

required to give the framework rigidity. So they built, throwing more and more of the real work on the iron, and leaving off ever-increasing amounts of masonry.

Without following the transition through the minuter changes, the movement may be divided into two periods, that of the double and that of the single construction. After all the saving of space that seemed possible in the details of pillars and girders, the building of high structures had risen only a story or two, and the demand for more of the free air and light continued. The next step was a brilliant one; the engineer suggested that iron could be made to carry the floors. This would relieve the walls of any weight but their own, and would reduce still further the space they must occupy all the way down the building. There would be two distinct structures—the iron frame, which would be independent and complete in itself, and a shell of masonry around it, closing it in to keep out the weather. They were fastened together, these two buildings, and supported each other somewhat, but theoretically either would stand alone so long as there was no wind or other side pressure.

When done, this revolutionary method of construction stood the test that was considered sufficient by the eager men who were trying to solve the modern architectural problem, and the financiers backed them for more. The price of lots in the neighborhood of the new buildings rose with them, in part because of them. The very solution of the old problem entailed a fresh one. The permanent financial question was revived in altered proportions. The builders overcame the difficulties of details, perfected their construction, and forged ahead a story or two by minor savings. But as the buildings grew in height even the separate walls, which had to bear only their own weight, increased at the base again, and presented the same old obstacle, a wall so thick on the most valuable floors that the rentable space was encroached upon to an extent that cut off below the gains in income above.

Why not let the iron frame that had carried the floors so easily take also the weight of the walls? It meant running the floor beams out under the masonry, a little strengthening of the columns, and it presented a pretty problem in handling wind-pressure. But these were matters of mathematics and engineering, not of rentable space. On the contrary, there would be a saving of room everywhere. It was tried on a small scale in New York in 1881, again on a whole building in Chicago in 1883, and during the next few years was gradually accepted everywhere as a profitable method of high construction on a narrow foundation. Steel was substituted for iron; hot steel rivets closed the connections and secured perfect rigidity, and gusset plates took the lateral pressure not distributable to the floors and interior columns. The steel cage assumed the whole burden of the skyscrapers. The walls became a veneer, panels to protect the metals and the tenants from fire and weather. A Chicago architect recently began at the top, and put on his walls in succession downward to show that it could be done, and last year a builder in New York, whose supply of lower story stone was delayed by the cutters, closed in his upper floors while he waited.

Some architects are still afraid of the Chicago method, as the steel cage construction is called, and lean heavily when they can on their masonry, but for the lofty tower on a small base the steel cage is inevitable. No one can tell how long it will stand the test of time. There are 1,950 tons of steel in a building 370 feet high, which weighs in all 15,000 tons, and the metal will surely corrode; but how long before its sustaining strength will be vitiated to the danger point is a question that no one can answer empirically, and the present generation of builders is not likely to know how well or how badly it has builded.

They can be sure of this, however, that they have solved their problem; they have reduced the cost of construction from about \$5 to 37 cents a cubic foot; they can build as high as the

elevator can go, and the elevator knows no limit. Legislation may interfere. The architects and builders themselves have invited legal restrictions to the height of buildings in several of the eastern states. Otherwise, there is nothing in sight to check the rise of the skylines of the great cities. The financier talks of foundation costs and the increasing space required for elevators to serve more than thirty stories. All this means that the problem is back with the financier again, and that to go on would make necessary the combination of capital for the purchase of a large enough ground space to start with to give room for a solid bottom on which to build and plenty of inside room for the numerous elevators, local and express. A building thirty stories high has dug a hole for itself in New York; and, at the time of this writing, in the same city, the plans for fifteen buildings of fifteen stories or more were filed in the Building Department. One heard much grumbling about overdoing, and there was the rub; the builders had outstripped at last the rise of rents, which were handicapped by hard times.

But whether they go higher or not is a question beyond the present theme. The point is that they can. There are engineers who can lay the foundations for fifty stories; there are architects who can plan the construction; there are builders who can realize the conception, and financiers who can manage the scheme. In short, brain can do its work when capital is ready and if the law permits.

The brain that is engaged in this business directly is divided into more than a hundred trades, each one of which has been developing its particular branch with the same strenuousness, boldness, and ingenuity that have characterized the architectural engineering. The architect himself has been laboring with a thousand considerations not even hinted at in this article. He has been studying out such other general problems as ventilation, light, economy of space, convenience, proportion, besides attending to special applications of all his principles, and those of all the other trades that entered the building with his, and add to the ever-varying problem. The engineers have been pondering such essentials as joinings and strains and foundations. In Chicago, where there is no hard pan within reach, they devised a floating "raft" of steel and concrete to lie flat on the shifting sands below the lake level, and on that they can build with such perfectly even distribution of weight that when the whole structure of twenty or more stories settles it sinks plumb. The elevator-builder has achieved such precision that the number of cars put into a building is determined by the cubical contents of the structure. The plumber has applied to his art the principles of sanitary science. The machinist has fitted his enormous plant to the dimensions of the cellar, and has plotted with the elevator man to use for the improved heating system the exhaust steam from the power engines to warm the tenant after it has lifted him to his floor and lighted his room. The heater man has arranged so that all the tenant has to do is to set a gauge opposite the degree Fahrenheit at which he would like to have the temperature of his room kept, and the machinery automatically keeps it there.

So it is with the roofer and the tile man, the master mason and the carpentry man (no longer a mere carpenter), the manufacturer of hardware and the locksmith; the patent spring on the door closes it quickly, but prevents a slam, and the locks are exclusive for each door, with a master-key for the janitor. In one case, an armory, a set of locks was made with a private locker for each man, a master-key for all, and for each company another master-key that would not open a locker in any other company room.

"I didn't realize there were so many trades in the world as I found I had to deal with when I undertook to finance this building," said the president of a corporation that had built a skyscraper. "But what amazed me most was the thought and the forethought and the cleverness

that have gone into even the smallest things connected with a building, and the complicated perfection to which everything has been brought.”

This financier, it happens, is one who attempted to manage the construction as well as the financing of his company's building, and, like many another expert manipulator of capital who has thought he could build an office building to pay, simply because he could put up a country house or run a railroad, he has paid heavily to learn that it is a distinct business, requiring special knowledge and training. Just who the head expert should be—the real estate man, the architect, the builder, or the manager—has not been settled unanimously even in the trade, probably because the business is so new. Each of these can give good reasons why he should control, and in practice, first one, then another, appears as the master mind who hires the special service of the others. Again, all four and the engineer and the owner are combined successfully in one person; but in such a case the comprehensive talent builds to sell, not to rent, which is quite a different business.

The rule that is working out most satisfactorily to the investor, who knows only that he wants a building that will pay good interest on his capital, is to choose his experts, and form them into a committee, over which he himself presides to see to it that the best executive mind directs the work, while the considerations of the other specialists are regarded in proportion to their importance from the owner's point of view; or, if the owner cannot attend to it, to leave it all either to the real estate man who is to manage the building as a business after it is constructed, or to an architect who has built buildings that pay. Corporations appoint a committee of their directors, to which are added, one by one as they are chosen, the architect, the builder, and the manager. Individuals go first to the man they happen to know personally—architect, builder, or real estate man—and whichever is the first on the field is apt to keep the ascendancy to the end. This accidental procedure is operating so steadily to the advantage of the real estate man that he is coming to be the chief of builders.

He is the first and the last adviser of the investors; they go to him to buy the ground, or, if they have it, to discuss what to do with it to make it pay, and they consult with him, when the building is ready, about leases, tenants, rent-collecting, and the details of management. Indeed, it is he who often suggests the whole enterprise. Knowing the value, the probable income, and the capacity for paying improvements of property, he goes to the owners with propositions to tear down and rebuild, and if unsuccessful in this attempt to drum up trade, he seeks for the property a purchaser who will listen. But whether he originates the idea or not, he handles the problem first, and he can come pretty near telling what the solution will be.

The general question is: how to make fair interest out of a safe investment in an office building? So thoroughly has this problem been worked out that the expert real estate man can state with reasonable certainty the following known quantities: the rent per annum per square foot, the cost of the building per cubic foot, the value of the ground per square foot, and the cost of maintenance per square foot. The figures vary, of course, according to the city, the neighborhood, the exact location, and the markets for materials, rents, etc. In New York last spring the figures for the Wall Street neighborhood were \$3.50 a square foot for rentable space, which should be about 66 to 70 per cent, of the whole floor room, and 40 cents a cubic foot for building. There were few sales of lots, and the prices paid were very high. One was next to the highest ever known, \$228.57 a square foot. But the cost of the ground and the location are variables that are subjects of discussion in the light of the determinants, and the expert has to adjust the venture on them as a basis before the business begins.

He may know, for instance, that while one piece of property under consideration is costly, it is better for the whole scheme, either because there is a demand near it for office space, or because that particular neighborhood is not likely to be overbuilt. If a cheaper lot is thought of, he has to advise whether the class of tenants who will occupy it is good; whether a better class of tenants can be drawn so far (it may be only a hundred yards) from the places where they are now; whether the growth of the kind of business they think to build for is in their direction. In short, knowledge and foresight and judgment have to be exercised in settling these preliminaries, which differ in each case from every other the real estate expert has ever had, and he knows that the success of the enterprise depends upon his first decision, the location of his building.

When that is determined, he has one absolute figure for his exact estimates, and he goes over his variables again, square foot and cubic foot, with fresh interest. The shape of the lots may cut off or add to his guess as to the amount of rentable space, which depends on height and air and the class of his probable tenants. If his client has taken a corner, he has increased the first item, the cost of the ground, which is the greatest, but he has gained in spacing and attractiveness. On the other hand, again, he has made it necessary to count on a greater charge per cubic foot for construction, since two fronts demand more for decoration and finish. These readjustments were all considered, however, before the price was paid, and the next question is taken up, also not altogether fresh.

The location decided in a general way what the character of the building must be, but before any plans are ordered that matter has to be considered in detail. The architect needs to know whether there is to be a big bank or a number of small businesses on the ground floor, and whether above there are to be many offices to the story or spacious lofts for storage and factories. The real estate agent, or, if he has been chosen, the owner's own renting agent, sounds for tenants, sometimes getting his principal tenants engaged, always finding out whether he is to have lawyers or merchants. Corporations and large businesses have these first questions off their hands, since they are to be their own principal tenants, but even they have to have an expert pronounce after inquiry upon the possibilities of their building for other uses.

If the architect has not been called in before this point is reached, he is now, for without him no further progress can be made. He may have been consulted first, but his work would not have begun any sooner; he would have engaged some real estate man to do all this preliminary study of the business anyway. When it is done, the architect goes over the financial estimates, taking the dimensions and form of the lot, looking up on his map the character of the subsoil to obtain an idea of the sort of foundation he has to build on, and making observations of the surrounding buildings. He draws roughly the plan of the new building to see what rentable space he can count on for each floor, and then he and the real estate expert compare notes and reckon out the height of the structure.

Assuming a certain number of stories, they multiply the rentable space on the ground plan by it, and that result by the market rate per square foot of rents in the neighborhood. From this they subtract the cost of maintenance, getting the income, which they compare with the interest at the desired rate on the cost of the ground and the estimated cost of the building. If the two figures do not balance in the investor's favor, a story or two is added. Increasing the height, however, may complicate the problem by the considerations of good service and foundation costs. Up to a certain height four elevators may be sufficient, but the car space has to bear a definite ratio to the rentable area, and one added story may just pass the limit of capacity of the assumed number of cars, so that more have to be allowed for. This means more room for shafts and a corresponding loss of rentable space. Again, a building of from eight to twelve stories will

stand safely on a shallow, inexpensive foundation, while fourteen stories would have to be settled on the bedrock, seventy-two feet down at Broadway and Pine Street, New York, or have an elaborate and costly bed made for it, as in Chicago. Thus the rising calculations reach a point where the owner must change his scheme radically. Unless he is willing to venture a much greater amount of capital for a very high building, he has either to relinquish a little income or cut something, the quality of the material or the elaboration of finish; and if he chooses to reach high for the coveted income, he increases the risk of having vacant rooms, since he may exceed the space needs of the neighborhood. For a structure that is built in twelve months, the consideration of these preliminary matters often lasts two or three years..

When they are decided, the architect begins drawing his plans, and continues to draw them till the building is completed. There are some forty sets necessary for a high building. The details are innumerable, and each one has to be fully conceived in imagination before it can be executed in steel or stone. All the possible uses of the building have to be foreseen; every pound of dead and live weight has to be calculated and prepared for; each particular beam, girder, pillar, and arch must be located and marked with its dimensions, material, and the load and lateral pressure it has to bear; the paths of a network of pipes and wires have to be traced through all their ramifications. But even to sketch the architect's work would be a long story in itself. It will have to suffice to indicate some of the features of it that bear obviously on the success or failure of the building as a business enterprise.

There are buildings close together that seem to the layman to be equally attractive for their purposes, but one of them will be filled with tenants, while others will always have vacant rooms and many removal signs outside. In one case of two such contrasting buildings, everybody who knew anything about it—clients, manager, and disinterested architects—said the failure of the building was the fault of the man who drew the plans. One architect will distribute his rentable space in stores or offices nicely adapted to the business of the neighborhood, another will have them too large or too small; one will grasp too much rentable space, another will be extravagant with halls and lobbies. Errors can be made either way on almost any point, and not be the fault of a careless study. The conflict of requirements calls for sacrifices of one set of considerations for some other. The elevators, with their first floor vestibule, should not take up valuable front space that is light, but they should be conspicuously in sight the moment the entrance is passed. The corridors may be inside, away from the daylight, but to leave them dark or dim is fatal. So insistent are tenants of the best class on convenience and approachableness of their offices that they prefer to be in a "tower" building at any height than in a large building with intricate, half-lighted hallways, and this observation weighs in the balance for upward instead of surface expansion. The architect has to conjure up every conceivable need and whim of the tenant, and then, after providing for them, he has to arrange for changes after all. He plans large rooms, not too large, and small rooms, not too small; then specifies partitions that may be changed. He may have one front exposed to the light, or he may have two or three, but in any case, no matter what the depth of the lot, he is expected to have height and good ventilation for every room. When all else is done he may strive for beauty, or the owner's substitute.

Beauty absolute is believed by some critics to be incompatible with remunerative height. Most architects of enlightenment admit that the beautiful "skyscraper" has not yet been designed, but their striving for it proves that they do not despair, and an acknowledged achievement would pay, for advertisement is the mercantile equivalent of applause. Conspicuousness helps rent a building. Men like to be in one so well known that the name of it is address enough without the street number, which is easily forgotten; and a corporation that erects a home for itself striking

enough to be talked about, and pictured throughout the country, finds by actual experience that the investment, though a failure as a renting enterprise, pays astonishingly. Hideousness, if recognized as such generally, is harmful, for the notoriety frightens off the best class of tenants, leaving the building to those who do not know or care and do not pay regularly and well.

The fundamental aesthetic problem talked of in the great architects' offices is to design the exterior to express in some way the character of the construction. To have a light, airy, all-supporting steel cage veneered with a stone that suggests enormous weight and massive walls, is an ugly lie. The conventional notions of the owner may be an explanation of the architect's appointment of such monstrous atlantes as those on page 46 that are pretending to carry a thirty-story building. But the economy of simplicity would excuse saving this expense, and clear the facades for the study of the real question, which the serious architect is trying to answer, to wit: how to make his building look as high as it is, and light and graceful besides. The necessity of a fireproof wrapping for the metal frame is one obstacle; the other is the centuries-old preconception of beauty of proportion. Business interest makes for the destruction of the latter; the former is falling before tireless ingenuity.

While the architect is wrestling with light and space, the contractor begins his race against time. He joins the building committee, and either undertakes for a fee the execution of the plans or offers to do it for a lump sum, taking all risks and making such profits as he can. If he is to finance the construction, he competes for the contract by bidding on the architect's specifications, which are a big book of particulars, prescribing the materials to be used, the amount and quality, the date of completion, and a clause exempting the owner from responsibility for damages by accidents to life or property and the builder from the loss of time in strikes. On some of the specifications the builder estimates for himself, taking the masonry if he is a mason-builder, the woodwork if he is a carpentry-builder, but most of them he has to sublet to specialists: the manufacturer of steel, the plumber, the tile-maker, and the roofer. When all the estimates are in, the builder adds to the sum his profits, and submits the total with a stipulation for periodical payments, one when so many beams are set, another when the iron work is in, another when so many floors are down, and so on to the end, when the balance, including fifteen per cent, withheld from each part payment, is paid. Thus the builder, who is rarely a capitalist, is enabled to arrange for the payment of his labor and the contractors under him. Sometimes a contract on a set of specifications is sublet several times; the hardware contractor, for example, giving out the locks and door-springs to patentees. But the owner knows only the builder, who conducts the whole and has all the responsibility.

If the builder is engaged for a fee, the architect, or, now and then, the owner, lets the contracts and manages the finances of the operation. The builder furnishes his trained office force, his staff of experts, his plant, and his own executive ability, and distributes the payments of labor and contractors on the order of the financing agent. His duties are the same; he is the captain of industry. He orders the movements of thousands of men and thousands of tons of material, according to a plan of campaign that he lays out carefully in advance. With a small space of ground to work on, and a limited time, he has to foresee precisely when each beam and each man shall come and go. The sixth-story piers must be delivered when those of the fifth are in place, and they must not be a day late, for the girders of the seventh come then, and there is no room to store anything, since the masons are there at work on the lower walls, and the ground is occupied by their materials. Each squad of workmen follows another, and if one is late, all that come after are delayed, and the completion of the building is not on time.

That means a loss to the owner, and disarranges the whole scheme, for, from the time the old building is torn down to the day the new one is opened, a large amount of capital is earning nothing. The period of construction when no interest is coming in is reckoned in the cost of the building, and, counting on its coming to an end at a certain date, the rooms are rented from that time long ahead. Even the tenants are inconvenienced and may be lost by any failure of the builder's plans.

To hurry at first is the rule now. The builder has to know how long it takes to manufacture the materials, and he gets out the orders for the difficult work first, and all as soon as possible. With the acceptance of each contract there is a clause binding the contractor to deliver at the date fixed by the builder, no sooner and no later; but the builder informs himself from time to time whether the promise is to be kept, whether the cornice-maker, for instance, who is to be ready a month hence, has begun the work that will take a month to do. That is to say, the builder watches the progress of his building, not at the scene of construction alone, but in the shops and factories also. While the borings are making for the foundation he sends one of his staff up to the quarry to see if the stone is being taken out of the ground, and to report whether the vein is of the quality that was shown when the surface inspection was made. A year is the time allowed to erect the highest buildings, and the foundation and labor difficulties are the only elements of doubt provided for in the contract. Dividing the year into twelve periods, the builder reduces it to days, and appoints a clerk of the work and a timekeeper to enforce the schedule. Each load of cement, iron, piping, or brick is examined as it arrives, and if it is "up to specifications" is receipted for and turned over to the workmen who put it in place. As the construction proceeds, reports are made to the master-builder, who sometimes has photographs taken to save himself a personal inspection. If the masons are lagging, the mason contractor is called upon to put more men on his job, and some other contractor, the tile man perhaps, is asked to begin a day or two earlier to make up the loss.

The architect also keeps tally on the work, for the builder's reports of progress have to be countersigned by the designer before any payments are sanctioned by the owner. These architect's certificates play another part in the financial scheme if the owner is building on credit. In that case he has negotiated for a loan which, when the building is done, becomes a mortgage on the whole property, but interest is saved to the borrower by receiving the money only as it is needed to pay the contractor's bills, in parts timed according to the advancement of the work. The whole loan may be of an amount for which the ground would not be a sufficient security, so, as the improvements increase the value of it, the lender, assured by the certificates of builder and architect, advances the sums that carry on the scheme till, at the end, there is a general settlement by which the owner gets his building, the capitalist the mortgage, if there is one, the architect and the builder their fees or profits, and the manufacturers and labor the capital invested.

But that does not end the business. The completion of the building is the materialization of the architect's plans, but those of the financier culminate in the management, which begins now to realize the expectations of the enterprise as a whole. In the days of the old buildings, this was easy. An agent sat with his feet up on a desk, scrutinizing loftily or lazily the applicants who approached him, credentials in hand, with a request for a place on the waiting list for the offices that might fall vacant from time to time. He accepted those who seemed to his fancy to be up to the mark, rejecting the others in the line with slight courtesy. He rarely went to the building. A tyrant ruled there, some pensioner of the owner, whom all the tenants addressed respectfully as "Mr. Janitor." Sometimes he was a good-natured ignoramus who became a "character;" oftener he was a peevish, useless hanger-on, whose sole purpose was to grind as much as he could out of

his natural prey, the creatures given him with the building by his patron, the owner. All the tenant's lease included was the office, the daylight the carpenter failed to exclude, the right to pass up and down the stairs and halls, and, in the finer offices, a gas-jet or two and a fireplace. There was water on the lower floors. Fuel the janitor provided, for an extra fee and a share. Gas or lamp light the tenant arranged for himself. The cleaning was done by some woman hired through the janitor.

Competition and the high buildings changed all that. It is the tenant's turn now to scrutinize and reject the offers of the line of agents, who have taken down their feet to run about, "hustling" to fill their gaping space. The janitor was hard to subjugate, but he is passing away. The cross old autocrats had to be discharged; the young men who harbored the traditions of their office had their salaries cut in half, and, if that did not reduce their insolence, were put in livery and called head-porters. The owner had set a new example, and he had to choose between the janitor and the spoiled tenant.

Now the lawyer or business man who has been induced to come into a modern skyscraper has the cab-door opened by a uniformed giant, who escorts him (under an umbrella, if it is raining) across a clean sidewalk to the revolving storm-door. Inside the janitor's ghost salutes him, a detective sees that no thief slips in to pick his pocket, or peddler or beggar to annoy him, while the hall-man indicates the one of several elevators that is waiting to shoot him to his floor so swiftly that it can make no appreciable difference in time whether he is on the third or the twentieth story. But, lest a second may be missed, there is an express elevator that does not stop at any floor below the fifteenth. His room has been swept, dusted, and put in order by a staff of servants he never sees. He touches a button to fix the temperature of his room; another to turn on the electric light, if the day is dull or the hour is late, otherwise the daylight will stream in gloriously, for there are "no dark rooms." The dust of the street he may rinse from his hands with hot or cold water, and on his rack are fresh towels, which come he knows not whence. Telephone, messenger calls, and mail-chutes are conveniently near. In the latest of the new buildings there is an internal telephone system that connects through the first floor switch with any other room in the building or with the city service. They furnish also a bathroom on each floor, and a private bath if desired. One of the latest conveniences is a bicycle storage-room in the basement of a building not finished at this writing. Libraries for the use of tenants are not so new, but running ice water and bachelor apartments are.

This last feature makes it possible for a business man to live in a building day in and day out. The manager arranges to have a restaurant somewhere within his walls, on or near the roof, if possible, and some large buildings run their own kitchen, to be sure of first-class service. In the corridor are cigar, news, and boot-blackening stands. Elevators do not stop, as they used to, at six o'clock, but take turns running all night. For society, the tenant has the club, which is coming to be a feature of the high building. The bedroom was all that was lacking, when a New York business man recently called the attention of a manager to the omission, and suggested one for himself. He thought of the fine view of cities and rivers and harbors from his office-window near the roof, imagined the cool, fresh air of that altitude, and recalled the hot and lonely summer months when his family was out of town, and he asked why he should go five miles to an abandoned home every night. The manager said he need not. A bedroom was drawn in the plans, and finding other tenants charmed by the idea of chambers, he adopted them as a novelty for his building. And to complete the scheme, he is talking of having a roof garden, with a variety stage, to while away the evenings of tenants and to catch the pleasure-seekers who now pass through the lower part of the city to go to the theatres uptown.

To make changes suggested by a tenant in this way it is necessary that the manager should have consulted with him before the building was completed, and should have power to carry out his ideas. In a properly conducted enterprise, the manager joins the council of builders before anything is done. He begins his work with the real estate man, sometimes in his stead, and is as busy as the builder throughout the period of construction; for the future of the building is in his charge, and he represents the tenants who are to use it. The time has passed when the capitalist can put so much money into brick and stone regardless of any fact except the insatiable demand for office room in crowded neighborhoods. All the fads and prejudices of a fastidious tenantry have to be anticipated now, and new luxuries may have to be suggested and provided to draw men from buildings equipped only with all the necessaries of business life. The manager, who has to rent the building, knows these things, and he is supreme from the start in all matters of internal arrangement. The only excuse for not heeding his directions is the plea that they are structurally or financially impossible. It is he who decides whether the first floor is to be planned for a bank or a number of stores, and divides the upper floors into small offices or large suites, according to his judgment or knowledge of the needs of the neighborhood.

Usually it is knowledge. The manager keeps himself posted on the movements of business firms, getting in the form of gossip the names of those who are dissatisfied with their quarters, and of owners of old buildings who are preparing to tear down and rebuild, thus threatening the tenure of their tenants. To these people the manager of a proposed new building goes with his offer to let them space with the privilege of subdividing it to suit their requirements. Getting them pledged, he hastens to others, and though he may not secure many tenants so soon, he learns exactly what is wanted on the spot where his building is to be. There may be conflicting demands; he may be on the boundary between importers who require lofts or storerooms, and lawyers who wish offices, and it is often a difficult and delicate task to arrange with the architect for a compromise plan that will satisfy both clients. But the man for such a place has to be able to solve many nice problems, as many as any of the other experts engaged in building operations.

When the manager has determined the character of the building, the contracts are drawn, and the date of completion is set. That limits and drives him just as it does the builder and the contractors, for when the building is delivered he is expected to have ready the occupants, who are counted on to make the capital invested begin again to pay interest, and any failure on his part disturbs the calculations of the financier in the same way that the builder's delay does. And there is another factor that whips on the manager. In every city there are what are called "moving days," when old leases expire and new ones begin. May 1st, for example, is the date when "downtown" New York makes its general shift. Above Chambers Street, and as far north as Fourteenth, the change is made on February 1st, chosen, doubtless, because the old stock of merchandise is low at that time, and the new goods are not yet in. The residence districts of the city move on October 1st, which is about the time when the people who have been out of town for the summer are returning. Why the extreme southern end of Manhattan Island picked out May 1st, no one has been able to explain, but settled it is unalterably, and the new buildings erected there are hurried through so as to be ready for occupancy by that day; and the manager who rushes around seeking tenants knows that he will have in his building all the first year only as many as he has secured on Mayday. He may add a few firms who happen to open business in the interval, and chance may throw in his way two or three tenants who are so dissatisfied with some other building that they move out at a sacrifice of rent paid; but, as a rule, the space vacant on the moving day remains a losing investment for a year.

Hence, besides the advantage of offering the tenant a voice in the planning of his space, the manager is urged to commence early the canvass for occupants by the time limitation and the serious consequences of exceeding it. While the architect is drawing the projected floor plans, the manager takes them, and makes up his schedule of rents. He has already told the committee what he can get for the space per square foot, and the financier has calculated on that figure for a certain income, which has now to be arranged for in detail. It has to be divided among the floors, and then among the rooms. If he has set \$3.50 a square foot as the average, the manager now starts with, say, \$8 as the rate on the ground floor, \$5 on the second, and \$2.50 on the others up to the top stories, where he can charge \$3 or \$3.50. Then, as he puts in the partitions asked for by his first clients, he raises or lowers the rates for the other rooms according to minute considerations of light, convenience, and conspicuousness, taking care, however, to make the sum of his various prices produce the total expected of that floor, and yet have each charge fall within the general market rates.

When this is done he prepares his prospectus, a handsomely printed paper book with diagrams of each floor, a description of the building, with the names of the specialists engaged on it—the architect, the builder, the elevator maker, the electrician, the plumber, the mason, the carpentry-men. There are pictures of the front and sides of the proposed building, of the main hall and the machinery room, views from the windows, sketches of the interior decoration, and little essays on the novelties and special features. The pamphlet is sent out to possible tenants and to the newspapers for “written notices” which are free advertisements, but the most effective use of it is in the hands of the staff of renting agents.

Personal solicitation of the cleverest and most alluring kind is necessary to fill in a year one of these great buildings that will house from one to four thousand people. There are ten or twelve other buildings to be ready, and for them also an active canvass is being made. The competition is almost desperate in some cities where there has been overbuilding in hard times. In New York the stress is such that it is said the only sure source of tenants is in the continuance of the process, as the tearing down of more old buildings for the next year’s crop of new buildings supplies the tenants for this May’s openings.

Despite the scramble, however, the best manager is the one who knows when to reject an application and stand a loss in vacant space; for a building, like a neighborhood, has character, and if it is a new structure he has to create that essential to permanent success. The reputation of the building affects the trade, custom, and clientele of its inhabitants, injuring those who are above it, and injured in turn by those who are below it. Anyone can call to mind well-known buildings that would be creditable as business addresses; they might help to sell a bill of goods. And there are others, equally familiar, that would cause a doubt as to a man’s credit, unless his “line” were as low as the reputation of his building. The experienced manager is well aware of this, and, eager as he is for tenants, hard as he labors and plots for good men to come into his space, he resists the temptation to take everybody who applies.

The method some managers follow to give their place a fine start toward respectability is to get an old firm of national renown to head their rent roll. There are many such that have stuck to the ramshackle, antiquated building where they began their careers fifty years ago. Again and again they have been urged to move into the pretentious new buildings. The darkness of their rooms, the inconvenience of the arrangements, bad plumbing, bad air, slow elevator service, all these and other disagreeable conditions of their environment have been pointed out by the eloquent man with the beautiful little pamphlet; in vain. The old firm has always been there; their clients know the familiar place; they are making a couple of hundred thousand dollars a year as it

is; their books and papers could not be moved. It is hard to persuade the head of the profession to the top of the town. But one by one they are pulled up, almost by the roots. Perhaps the most obdurate member of the firm dies or his energetic son joins the office. The sharp-witted manager, who knows everything that touches his business, hears of the change, and he reopens his case for a last trial.

Sometimes the case is won by making sacrifices. In New York, a year ago, the manager of a new building, desperate for a brilliant opening, went to a grand old firm of lawyers, offered them his best floor, ripped out and rearranged to suit, at a lower rate than they paid in the old building, and undertook to move them free of charge in one day and night—furniture, papers, books, documents, pictures, all to be taken up as they were, and set down in relatively the same positions in the new quarters.

This was an extreme case, but it paid. The name of that firm was used as a charm to draw other firms of equal stability though of less fame, and many more that were seeking in obscurity a similar practice. And the manager foresees that when so immovable a firm is once established in his building it will take root for another half century, while the branches it shoots forth, younger men reared in the office, will seek growing space near the old trunk. The character of his building is assured.

An example on the other side, of a building that made a bad beginning, was furnished by an expert manager who tried to reclaim it. At the time of its completion it was the tallest structure in New York. The man who erected it was a man of low tastes, but of great ability as a sensational business manager. His creation was like him, and it soon expressed his character as well as his mind. He let the first comers settle about him, and did not see he had made a mistake till he discovered that his low class of tenants were not good pay. Then, after himself trying to mend the case, he asked the trained specialist to see what he could do. It was a novel experiment at that time, and the manager entered upon it with energy and ideas. He turned out the worst tenants, and induced respectable people to take their places at very low rents. That was as far as he got. He says with a laugh that he might have succeeded if his exemplary tenants had stayed, but they could not stand it; they told him they would not have minded for themselves two or three months of being crowded and jostled about in the elevators by their neighbors—the trouble was that their clients did not like to see and smell the obnoxious clients of the neighbors, and, besides, thought it disreputable to be seen going into the building. The manager had to give up the task, convinced of the futility of reformation of buildings in general, and more impressed than ever with the necessity of starting aright.

As the opening day approaches, the manager has to organize his system and staff for the conduct, the maintenance, and the cleaning of his building. Everything must be in perfect order on the first day when the tenants arrive, so the staff often enters the building while the last workmen are there, and follows them up with the cleaning, room by room. From twenty to a hundred men and women are employed, according to the size of the building and the manager's notion of economy, and since these people are to furnish the permanent service for possibly six thousand tenants, and their twenty thousand (in one building the estimate on an elevator count of one day was forty-five thousand) clients, each employee, from the machinist down to the scrubwoman, is chosen with the scrupulousness of a civil service examination. The "pull" that used to decide in this business, as it still does in politics, has been abolished by the competition for efficient service.

The methods of running the business of a modern high building are so various that it is impossible to determine either a typical case or the drift of practice under experience. Some

owners have a superintendent of the building, an expert machinist and electrician, who attends to the maintenance and reports to the manager, whose functions are renting and financing. Other buildings are in the control of the manager, who lets out the cleaning and heavy repairing by contract, and has in his janitor and chief engineer executive heads of staffs for routine work. One corporation that has fourteen buildings distributed over the United States, Europe, Australia, and South America has in New York a financial manager for all, with local managers in each building to rent, supply, and keep them in good condition. The central office receives the rent and authorizes extraordinary expenditures, requires regular reports in detail of all changes and expenses, and supervises all the business of each building through a travelling inspector.

These are corporation methods. Individuals who own modern buildings usually abandon the management of them after they have tried it long enough to learn that it is a distinct business, requiring expert direction. They turn it over to some real estate firm that has a staff of men who do nothing else. There is the manager or superintendent of buildings, who is an able organizer of men and a keen executive. Under him is a corps of renting agents and collectors, bookkeepers who carry the general account of expenses for all the buildings and separate individual and proportionate accounts of each owner. Outside this office staff there are an inspector, who visits each building every day, and a machinist, an electrician, a carpenter, a plumber, and a painter, whose duty it is to direct repairs. Then, each building has its own janitor, with his squad of hall and elevator men, scrubwomen, sweepers, moppers, dusters, and outside window cleaners; and the engineer, with his assistants, electrician, and firemen. The janitor makes weekly reports in writing to the central office of repairs, of changes, complaints, and requests of tenants, while the engineer accounts for the coal and other supplies used by him in amounts and in the power expended in heat, light, and elevators.

The cost of maintenance for a year, including taxes, insurance, supplies, repairs, and service, is from two to three percent of the capital invested, and increases with the age of the building. One manager, who had eleven years' experience in a building about fifteen years old, said he spent an average of \$5.50 a day to repair pipes and plumbing; \$4 a day for bricking and tiling; he replaced 2,000 of his 11,000 lights a year; bought sixteen tons of coal a day. But the new methods of construction of everything that goes into the later buildings are expected, and indeed promise, to reduce these items to absurdities. The latter-day managers are setting the builders, contractors, and manufacturers who supply the plant fresh problems of economy by their close figuring on expenses. A boiler that needs more than so much per pound of power for repairs is not satisfactory. Masonry must wear only so much a cubic foot a year to be within the specifications. Lights and plumbing and wiring and tubing that have to be renewed at a cost of more than so many cents per thousand feet are charged up against the supplier of them; and the manager is equally exacting with himself. He doles out coal at so many tons the week per thousand cubic feet of rentable space, and hires scrubwomen on the basis of 32,000 square feet of floor a day for each mop.

Despite all his precise reckoning, however, and his reduction of the problem to an accuracy of calculation that is almost scientific, the inexorable laws of the market gradually cut down his income. The building earns less year by year. The manager's own requirements of economy and ingenuity of construction involve the solution of fresh problems, lowering the cost of building, which entails the increase of new and higher structures; and that carries with it higher values of the ground built on, and correspondingly lower rents. But it is capital that loses by the inevitable process, capital and labor. Competition and progress reduce the one to two or three percent a year, the other to \$1.50 a day. But the same forces stir up brains and strengthen

character; they develop a skyscraping builder, earning \$50,000 a year, whose name is an advertisement for the buildings he puts up, out of a master mason who began life as a bricklayer. And the end is not yet; our cities, as their ragged skylines show, will be rebuilding for many years to come. The grind between capital and labor will go on, while the financier, the architect, the builder, the manager—the brains of business enterprise—will grow and profit mightily.