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CONSTRUCTION

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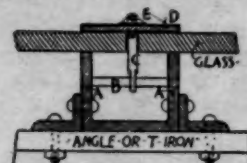
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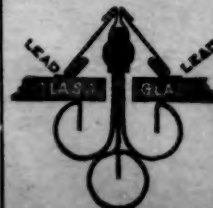


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THE AMERICAN ARCHITECT AND BUILDING NEWS.

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SEPTEMBER 22, 1894.



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THE discussion over the Pullman experiment which has been awakened by the investigations of the United States Commission has brought out, so far, a good deal of nonsense from amateur philosophers, which will probably be forgotten when Colonel Wright, as Chairman of the Commission, makes his report, which is sure to have in it enough good sense and knowledge of mankind, rich and poor, to fit out a dozen average social philosophers. Among the latter, the drift appears to be toward a vague condemnation of Mr. Pullman, on grounds either not specified, or ludicrously disconnected with his relations to his workmen. One essayist, of no small reputation, thinks that "Pullmans ought to be impossible," which is quite likely, but, considering that they at present exist, does not furnish a reason for maligning them, or ignoring their just claim to gratitude for the sacrifices which they make for what they suppose to be the good of their fellow-men. Another thinks that a man who has, or expects to have, a German prince for a son-in-law, cannot claim, even if the right to exist at all is conceded to him, any consideration on account of the money and thought which he has devoted to the welfare of the people who work for him. We should judge that the individual who could trace any connection between the nativity of Mr. Pullman's son-in-law and the duties of his workmen toward him, would prefer an Irish alliance for the subject of his disquisitions; but the fact that the people who wish to excite toward Mr. Pullman the old hatred of the poor for the rich have to go so far to find the shadow of a plausible pretext for holding him up to condemnation is good evidence of the meritorious character of his work in his "industrial city." That his efforts have been wasted would be too much to say, for deeds done with good intention, even with negative result, may benefit the character of those who do them; but the prediction which we made, years ago, that the inhabitants of what was then supposed to be the earthly Paradise of Pullman would, before long, fret at the very care taken to anticipate and provide for their wants, has been amply verified. As an illustration of the danger of treating grown people like children in such matters, Professor Simon describes, in a letter which has been extensively copied throughout the country, a visit to the English town of Saltaire, which was built very much in the same way as the City of Pullman, and for the same purpose; and was heralded in exactly the same way, as the place where philanthropy and industry should go hand-in-hand to brighten and prolong the life of the poor workingman. It may be premised that Sir Titus Salt, the founder of Saltaire, was a woollen manufacturer in a small way. He found in the market some bales

of a very cheap, long-stapled wool, brought from South America, and said to come from a sort of a mountain goat, known locally as the alpaca. He carried home some of this material, and tried to weave it, but without success, neither wool nor cotton machinery being able to make cloth out of it. Believing, however, that something could be done with it, he persevered, designed new machinery, and tried new processes, until he succeeded in producing the cheap, handsome and durable fabric known as alpaca. A great demand sprang up for the new goods. Mr. Salt, as he was then, had no monopoly of them, for other manufacturers tried their hand, and produced alpacas; but he had a long and thorough experience, and the public preferred his cloth. Here a problem presented itself, which we commend to Mr. F. B. Sanborn and others. If Mr. Salt sold his alpacas at the same price as other manufacturers, the public would take so many that his profits would soon make him a rich man, a creature which, according to these philosophers, has no right to exist. If he sold them at so low a price as to make little or no profit, his competitors, who understood the business less thoroughly than he, would be ruined. Like many another man in similar case, Mr. Pullman probably included, Mr. Salt chose to sell his goods at the market price, and try to return a part of the profits to the community by spending them on appliances for promoting health and happiness among people who could not themselves afford to pay for them. His model town of Saltaire was the result of his carefully pondered efforts to do all the good he could with his money; yet, at Saltaire, as at Pullman, according to Professor Simon, the people, although their wages are high, are, on the average, improvident, uneasy and lazy, if not worse. In one word, they have suffered the natural consequence of being relieved from the necessity of working long and hard, and depending on themselves. Unquestionably, the result at Pullman has been the same, and, until the curse of Adam is removed, the efforts of rich people to make life easier for their fellow-men than it has been for themselves will probably meet with similar failure. It is said that one reason of the want of success of the Pullman scheme is to be found in the "hard, cold manner" of Mr. Pullman himself; but, supposing this to exist, which is at least doubtful, no such reason could be urged for the similar failure of the scheme of Sir Titus Salt, who is described as having been a marvel of amiability, and the explanation must be sought in the laws of human nature.

THE daily papers reported on Wednesday that Secretary Carlisle, in "a curt note," had demanded the resignation of the Supervising Architect of the Treasury Department, Mr. Jeremiah O'Rourke. As neither official has been willing to afford the reporters any explanation of this step, the quidnuncs allege that there has been for a long time an irritating amount of friction between the Secretary and his subordinate, as well as between the latter and the officials under him, notably, the head of the law and contract division. For our part, we hope that the real reason is because of differences of opinion on the subject matter of the Tarsney Bill, and its successor, the McKaig Bill. It does not matter which official has been the obstructionist who has succeeded in postponing the reorganization of the method of designing the Government buildings. There is reason for believing that the defeat of the architects' efforts has been due to the influence of one man, and the change that has just taken place will shortly allow it to be understood which one of the two men has stood in the way of reform and progress. If the McKaig Bill can be brought up in the autumn session and then passes, Secretary Carlisle will be relieved of a good deal of odium that has been heaped upon him.

IT will do no harm to remind the public again that the cost of building-materials is, at present, lower than it will probably ever be again in this generation. Structural iron and steel, particularly, have been selling for many months at prices never before known in this country. Even architects can hardly realize that rolled iron beams, which cost twenty years ago, delivered at the building in the sea-coast cities, six cents a pound, or even more, have been sold at the mills during the past year at less than one and one-quarter cents a pound. This

is still a trifle above the current price in Europe, but our structural iron and steel are much better rolled than the ordinary shapes used abroad, and are well worth the difference in cost, even if the Belgian mills were no farther off than Pittsburgh. At such prices, iron floor-beams cost less, for the same strength, than spruce timbers, and less than half as much as yellow pine, and their superiority is infinite. Already, iron floor-beams are extensively employed for dwelling-houses of the best class in our large cities, and their use should increase greatly, in the interest, not only of their owners, but of the public, which finds in every building of incombustible construction a bulwark against fire. Whether structural iron and steel will ever regain their old prices can hardly be predicted, but it is not likely that the mills will accept prices which can hardly cover the cost of production any longer than is necessary, and it would certainly be the part of prudence to take advantage of present rates.

BRUGSCH PASHA, the successor of the lamented Mariette as the first Egyptologist of the day, died at Berlin a few days ago, at the age of sixty-seven. In his early years, as a school-boy in Berlin, the future Pasha, and favorite of Viceroy, was already noted for his interest in Egyptian antiquity. At the age of twenty-one he wrote, as a Latin thesis, an essay on Demotic writing, which attracted the attention of the learned world. The King interested himself in him, and he was sent to study Egyptian remains in various European museums; and, later, was sent to assist Mariette in his investigations in Egypt itself. On his return, he was appointed Director of the Egyptian Museum at Berlin, with the rank of Professor. Some years later, he was attached to the Prussian Embassy at Teheran, and acted for a time as Ambassador, after the death of his chief. In 1864, he was appointed Prussian Consul at Cairo. Returning to Germany in 1868, he was made Professor of Egyptian Antiquities in the University at Göttingen; but was called back to Egypt by the Viceroy, to take charge of the new School of Egyptology at Cairo. He was received with great favor, and resided in Egypt for many years, being elevated successively to the rank of Bey and Pasha. He wrote many books on Egyptology, including a "*History of Egypt, from the Earliest Times to the Present Day*," which was dedicated to the Viceroy. Probably in deference to the court officials, most of whom, in Egypt and Turkey, speak and read French readily, but know little of German, nearly all his books on Egypt and its history are written in French; but he published, in 1877, a history, in German, of "*Egypt under the Pharaohs*," and had previously published some less important books on "*The Travels of the Royal Prussian Embassy to Persia*," and "*Notes of Travel from Egypt*."

FEW, if any, architectural associations can show a more brilliant record than the comparatively young Society of Architects of St. Petersburg. Some of our older subscribers will remember an occasional reproduction, in our pages of illustrations, of some curious details from *Zodtchy*, the monthly magazine which this Society began publishing in 1872, two years after its foundation. In 1876, the Grand Duke Vladimir was elected Honorary President of the Society, and accepted the office, and, at the same time, the Emperor accorded to the Society an annual subvention of four thousand roubles, or about two thousand dollars of our money. Favored by the Court, it is not surprising that the Society has been able to acquire great influence in professional matters in Russia. It has devoted itself particularly to competitions, drawing up rules, and furnishing juries; and a considerable portion of the competitive work of the country is put in its hands. In 1874, the Society, in connection with the Imperial Technical Society, founded a School of Superintendents. This excellent institution gives to workmen the theoretical instruction necessary to enable them to supervise building work intelligently, and the use which it performs is indicated by the fact that the demand for its graduates exceeds the supply. During the last war, the Society raised, by subscription among its members, a sum sufficient to build and equip a small hospital, according to the latest principles of hospital construction, and turned it over to the Red Cross Society, which has conferred upon it the name of the organization that presented it. In 1892, as our readers will remember, the Society, under its Grand-Ducal Honorary President, carried out a very brilliant and successful Congress

of Russian Architects. Two exhibitions, one technical and the other artistic, were held at the same time, which attracted much public attention, and were visited by the Emperor and Empress, and the entire Court. Some years ago, the Society established a fund for the relief of the widows and orphans of architects, which has proved of great service, thirty-two families, or widows of architects, receiving monthly payments proportioned to their needs.

THIS is certainly a brilliant history for a society only twenty-four years old, and containing even now only about two hundred regular members. Of course, the Imperial subvention is of great assistance in its undertakings, and it has other ways of raising money for carrying out its benevolent plans. Besides the regular members, who alone have the right of voting, it has about two hundred associate members, who, presumably, pay a small fee into the Society's treasury. Contractors and manufacturers of building-materials are admitted to the Society on this footing, but, of course, have no vote, and are not even admitted to the meetings of the Society except on the occasion of general reunions. Besides this, the Society holds regular weekly meetings through the winter, to which persons not belonging to the Society are admitted, on payment of one rouble. We fear that the funds of our American Chapters of the Institute would not, at present, be greatly augmented by imitating this practice; but it is probably impossible to do any building work in Russia in winter, so that the architects have leisure enough to make their Tuesday evenings entertaining to the public as well as themselves. However that may be, these particulars which we gather from a letter of M. Paul de Suzor, Architect to the City of St. Petersburg, and former President of the Society, to *La Construction Moderne*, sufficiently prove the energy and public spirit of a society which has already earned the admiration and esteem of the profession throughout the civilized world.

MESSRS. ENDE AND BOCKMANN, the architects of the new Japanese Houses of Parliament, send to the *Deutsche Bauzeitung* a very interesting letter, which they have received from Herr Seel, formerly their representative in Japan, who is now practising there on his own account, relating his experience during the great earthquake which shook Tokio and Yokohama on the 20th of June, and is said to have been the severest known there for a hundred years. Fortunately, the movement only lasted five minutes. If it had continued as long as in the earthquake of a few years ago, not a house would have been left standing. Herr Seel writes that he was inspecting a new building in course of construction in Yokohama, and was at work in the second story, when a mighty shock made everything tremble around him. As he writes, he is tolerably free from the so-called "earthquake panic," and had never before left his room, or his bed, during the slight earthquakes common in Japan; so he stayed where he was, although the building swayed, as he estimated, at least a foot, and the workmen were climbing like monkeys down the scaffold-poles to the ground. A second shock, however, came on, and his resolution failed him, and he followed the workmen to the more solid ground, although this was moving sharply. How he arrived at the foot of the scaffold he was unable to recollect, but, once there, he was cool enough to observe with interest the phenomena about him. His first thought was for the new Parliament Houses, and he hurried there, but was gratified to find that the earthquake had not produced, so far as he could see, the slightest crack, or other sign of injury. This gave him the greater satisfaction, as ruins were visible all around, some among the buildings constructed after the European fashion. The Marine Minister's palace had lost a number of chimneys, besides its dormer-windows; the German Embassy-house had suffered greatly, so that the occupants had been obliged to leave it, and the temporary Parliament House had lost its chimneys, which, in falling, had broken their way through the building to the ground. As a rule, however, the European buildings had resisted the shock far better than the light structures of the natives. Messrs. Ende and Böckmann send with the letter an explanation of the resistance of the new Parliament House, saying that its walls are very thick, and very thoroughly bonded, and batter slightly inward; while strong iron rods tie it together in all parts of each story.

THE EFFICIENCY OF INSENSIBLE VENTILATION.¹

INSENSIBLE ventilation is due to the interchange of air through the materials of which the walls of a building are constructed and through cracks and crevices which are ever present around doors and windows in spite of the best workmanship. Most building materials are easily permeated by air when there is an unstable condition of the atmosphere due to the pressure of the wind, changes in temperature, or internal pressure caused by incoming air from an indirect source of heating.

Before considering the amount of this interchange, I will give you briefly the requirements for good ventilation. The proportion of carbon dioxide exhaled in a given time by any number of persons is nearly uniform, so that the quantity present in the air can be taken to represent very accurately the degree of vitiation from respiration, though the carbon dioxide is not the objectionable element. Pure carbon dioxide may be present in a proportion as high as 150 parts in 10,000 without producing discomfort or giving any special evidence of its presence, but if all that is present above the normal per cent is due to the processes of respiration, then the objectionable impurities due to the exhalations from the lungs and body become noticeable when the carbon dioxide is present in a proportion of 8 to 10 parts in 10,000; thus, we use carbon dioxide merely as an indicator of other impurities less easily determined.

From Billings's "*Ventilation and Heating*," the following data are taken to show the amount of air necessary for good ventilation. An ordinary adult makes sixteen respirations a minute of 30 cubic inches each, or 480 cubic inches per minute. In addition to the carbon dioxide thus exhaled, about one-fifth more is given off by the skin. The total amount varies with the weight, age and state of activity of the different organs, and averages about .6 cubic foot per hour for each person. "If now we divide the amount of carbon dioxide exhaled in an hour by the limit of respiratory impurity for good ventilation, we shall have the number of cubic feet of air per hour required for one person," that is, suppose the air enters, containing four parts of carbon dioxide in 10,000 and we do not wish to exceed eight parts, then the limit of impurity due to respiration would be four parts or 4-10,000. Dividing .6 by this would give 1,500 cubic feet as the amount per hour required for each individual. This value is frequently used, but it is better to allow 1,800 cubic feet.

Having this much established, I will now refer to the porosity of building materials. Putnam gives data credited to Bowditch and Lange from which the following results were computed, showing the amount of air in cubic feet passing through different ones per hour, per square foot of surface under a constant pressure of about 1-100 of an atmosphere which would be equivalent to the pressure of a severe storm. The pieces tested were 1 3-16" thick, and the results per square foot per hour were as follows: mortar, 10.6 cubic feet; Portland cement, 1.6 cubic feet; Ohio sandstone, 3.2 cubic feet; brick ranged from .078 to 2.89 cubic feet averaging about .75 cubic feet; pine, 11.8 cubic feet. Plaster was about the same as average brickwork. Unfortunately, no results are given on building papers, but I believe the best ones would be found nearly non-porous. To apply the above data, I have assumed a room twenty feet square and twelve feet high, with two external walls. In making the above tests, the pressure was perpendicular to the surface, so in this case we must consider only one wall-surface, because if the wind blew at an angle, the sum of the normal components of the pressures on both surfaces would be equal to the total pressure on one surface if it was at right angles to it. The surface on one side of our room would then be $20 \times 12 = 240$ square feet, and if we assume that half the window area is on this side, we will deduct forty feet for glass because it is impermeable. We have then two hundred square feet of surface which we will assume to be a 13" brick wall plastered. Our test was made on a piece of material 1 3-16" thick, but the amount of air passing through porous material of homogeneous structure under constant pressure is inversely proportional to the thickness of the pieces tested. Assuming our brick wall to permit one cubic foot to pass through per square foot per hour, and counting it with the plaster 14" thick, we would have seventeen cubic feet per hour passing through the wall, not counting what passes through cracks around windows. When we remember, however, that we were calculating upon 1,800 cubic feet per hour, per person, we see this is too insignificant for consideration, especially when, for the pressure of a pleasant breeze instead of the storm pressure upon which we have based our calculation, we would have to divide our seven-teen by about two hundred.

Though pine permitted 11.82 cubic feet to pass through, still I think there is no question but that if a frame house is well papered under the siding, its walls plastered and either painted or papered inside, and the outside woodwork painted, it will permit even less interchange of air than the brick wall we have considered. The above computation forces us to the conclusion that the insensible ventilation must be almost entirely through cracks and joints.

Dropping for a moment the theoretical side, I wish to quote you some practical illustrations showing how great this interchange is, considering first rooms which have no air-inlet, and are heated by direct radiation of some form. Pettenkoffer, a German chemist,

found that by diffusion alone, the air of a room in his house containing 2,650 cubic feet was changed once every hour when the difference of exterior and interior temperature was 34°. With the same difference of temperature, but with the addition of a good fire in the stove, the change rose to 3,320 cubic feet per hour. With all the crevices and openings about doors and windows pasted up airtight, the change amounted to 1,060 cubic feet per hour.

To test the same point, I undertook some experiments, which, though they did not prove what I desired, are not entirely without interest. The authorities on ventilation say that if in a closed room we liberate any gas, the amount of fresh air entering the room in a given time may be determined by the dilution of the gas in this time.

I did not take special precautions to have the rooms tight because I wished results from normal conditions, but there were neither inlet nor outlet ventilators. The carbon dioxide was generated by the action of acid on marble dust, and while it was being generated I wielded a huge fan to thoroughly mix the gas. It is erroneously supposed that carbon dioxide separates and falls to the floor because of its greater specific gravity, but having been once diffused, it stays so. The air was, therefore, not disturbed after the first sample had been taken. When the carbon dioxide had ceased to be generated, and the air had become quiet, the first sample was taken in the middle of the room, and samples taken each succeeding fifteen minutes.

The first analysis showed 31.9 parts in 10,000, the results for each successive fifteen minutes being as follows: 22.7, 16, 13.4, 12.8, 11.8, 10.2 and 9.86 parts. The air in the room originally showed 7.54 parts in 10,000. The difference between inside and outside temperature was but 12°. In making the calculations, allowance must be made for the carbon dioxide exhaled by two persons in the room. When plotted, these results approximate to a parabola showing that the carbon dioxide diffused more rapidly than the air in the room, which is contrary to the supposition upon which the experiment was based. Calculations of the amount of air which passed out should, of course, give nearly a constant amount for each interval; this, these results would not do. The last four analyses indicate a more nearly uniform interchange, and it is probable that the excess of carbon dioxide having been by that time diffused, it was passing out very nearly in proportion to the amount of air flowing out. On this basis, we would have an outflow of 1,000 cubic feet each fifteen minutes, or 4,000 cubic feet per hour in a room containing 3,600 cubic feet, and with one wall exposed. This accords quite well with Pettenkoffer's experiment, though the difference in temperature was not so great.

A second test beginning with a lower percentage of carbon dioxide gave similar results. The analysis of the air was made by my brother, who is assistant chemist in the University Laboratory, and great care was taken to obtain accurate results. Pettenkoffer's method was the one used. To a sample of air in a flask, a measured amount of standard barium hydroxide solution is added. The carbon dioxide present combines with the barium solution, forming the white precipitate of barium carbonate. The excess of uncombined barium hydroxide being ascertained by titration with a standard acid, the amount of carbon dioxide may easily be calculated.

To determine anything whatever about the interchange of air in rooms heated by direct radiation is a very difficult problem. Pettenkoffer's experiment showed that the air changed once an hour with a difference of temperature inside and out of 34°, that is, the outside temperature would probably be about 36°. The lower the temperature ranged the greater would be the interchange, so that, in very cold weather, we could probably rely on sufficient ventilation to supply the number of persons usually living in an ordinary dwelling without there being any surplus for company, but it would vary from this maximum to almost nothing at the season of the year when the inside and outside temperatures are nearly the same.

We must, therefore, conclude that, though in the case of direct radiation, the insensible ventilation is an important factor in preventing people from smothering themselves, still it is not of sufficient importance to be taken into account in the designing of buildings, and ventilating ducts should be built of ample size to move all the air required.

Buildings heated by indirect methods give us a little different case. The following account is of an experiment performed by Mr. J. P. Putnam, which he describes in his book on "*The Open Fire-Place*," in a room 16.4 feet square, and 11.8 feet high having five windows, two doors and a fireplace, with plastered walls and ceilings, and a white-pine floor. A flue from a basement furnace furnished the room with hot air. The windows and doors were first made as tight as possible with rubber moulding. The fireplace was then closed by drawing the damper and pasting paper over the cracks. The brick back and jambs were oiled to render them impervious. All the woodwork was thoroughly oiled and shellacked. A good fire was lighted in the furnace, and the register opened into the room, all doors and windows being closed and locked, and the keyholes stopped up. The hot air entered almost as rapidly with the doors closed as when they stood open, and it continued to enter at the rate of eighty-eight cubic feet per minute, without diminution, as long as the experiment was continued. The thermometer stood at 35.6° outside, and the entering air ranged from 104° to 131°. Other experiments gave the same results. A portion of the air must have passed through the pores of the materials, and the rest through

¹ A paper by James M. White, Assistant Professor of Architecture at the University of Illinois, republished by permission, from "*Ninth Annual Report of the Illinois Society of Engineers and Surveyors*."

cracks and fissures which escaped detection. This experiment was performed on the 3d of March. On the 5th of March, a coat of oil paint was applied to the walls and ceilings. This diminished the escape of air only about 5%. On the 19th of March, four coats of oil paint had been put on the walls and ceilings, and three coats on the floor, to render them absolutely impervious to air. The escape of air was diminished only about 10%. On the 25th of March all the window sashes were carefully examined, and all visible cracks at the joints, at the pulleys, cord fastenings, etc., carefully caulked and puttied, and the entire room examined, and putty used freely wherever even a suspicion of a crack could be found. The result of all this was a diminution at the utmost of but 20% in the escape of air, or, in other words, in the entrance of air through the register. Each experiment was continued during more than an hour. The air entered as freely at the end as at the beginning of the hour, when a volume of air more than equal to the entire capacity of the room had entered it through the register with no visible outlet.

In my study, which is in a frame house fairly well built, I found that the furnace delivered a constant supply of air averaging ninety cubic feet per minute, or 5,400 cubic feet per hour. I made no attempt to stop up crevices, but the windows and doors were closed. The room has two outside walls and three windows, and contains 1,620 cubic feet.

Usually, we may assume as a rough estimate, that a quantity of air $1\frac{1}{2}$ times the volume of the room should be admitted per hour to satisfactorily heat it without overheating the incoming air.

These last two experiments would then seem to prove that for rooms heated indirectly we may safely admit a volume of air equal to $1\frac{1}{2}$ times the volume of the room per hour without furnishing it any outlet, and further, that the number of people who can occupy such a room without the air deteriorating would be found by multiplying the volume of the room by $1\frac{1}{2}$ and dividing by 1,800, which is the number of cubic feet we were to allow per person. This would allow, in an average house, about two persons to a room, and where houses are built with arches and folding doors between rooms, as is now the custom, we may in the same manner calculate the number of people who may occupy the house without suffering from ill ventilation. You may infer by this time that I believe it is unnecessary to provide ventilating ducts where indirect methods of heating are used, but that is not the case. Though there may be ample interchange of air without them, and the inmates are not likely to suffer, still, I would rather have the impurities carried up through a shaft and distributed outdoors than to have them strained out as they pass through the walls, and left adhering to the surface to be brushed off by a passing draft and carried back into the lungs.

Our client's purse may not permit a system of vent ducts, and knowing that he will get very fair ventilation with indirect heating without the ducts, the building usually goes without them, but I should prefer them in all cases. They need be designed to care for only about four-fifths of the outgoing air, for insensible ventilation will, in all cases, remove part of it.

We may, therefore, conclude that in buildings heated by direct radiation, insensible ventilation will give a fair supply of air for a short time in the winter to the occupants of a dwelling-house, providing there are not more than two to a room, but that as the temperature outside rises, the ventilation diminishes, and we will come to the point where it is too cold to open windows, and still the difference in temperature is not enough to cause the circulation of air necessary for ventilation.

With good indirect heating, we may count on sufficient air to supply two persons per room in a dwelling with a fair supply of air whenever the fire is going, and, as business men, we are usually forced to rely on this, though from a hygienic standpoint, we should not depend wholly upon it in that case.

For lecture-rooms, school-rooms or other places where numbers of people are expected to assemble, insensible ventilation should never be considered. Ample ducts should be provided, and a positive circulation created by fans or the application of heat at the base of the flues.

THE ANGLE OF CONTENT.

I HAVE been trying to design a small country house. I know exactly what I want. My needs are very simple and correspondingly definite. On the first floor, there must be a large living-room, twenty feet by thirty feet. The windows are to be broad and the ceiling low. On one of the longer sides, a generous fireplace; opposite, a succession of low windows opening on a fine prospect, preferably to the west or southwest. A broad hall. A dining-room, fifteen feet by twenty feet, and the necessary pantries and kitchen. Further, there is to be a small entrance porch, and in addition, a wide living porch on another side of the house. This latter condition is important: it provides that the family group shall not be disturbed by every chance visitor. Upstairs, I want four chambers, perhaps fifteen feet by twenty feet, and a good-sized bath-room. Then in the attic, there is to be a trunk-room, a workshop and a servant's room. I will have no store-room. They are immoral institutions, tending to the accumulation of useless rubbish, and the withholding from your poorer neighbor of much stuff that will be of little benefit to him! In this ideal household of mine, we give away everything we cannot use. This induces a benevolent feeling on our part, — and makes house-cleaning easy.

Such are the requirements. They are simple enough, and as I have said, they are very definite. Moreover, I know just how I want the rooms arranged — I have provided for all the local geography. The living-room is to occupy the whole front of the house; the hall to run through from side to side, with the entrance porch at one end of it, and the family porch at the other; the dining-room and kitchen to be in the back of the house, with the dining-room opening on to the living porch. The upstairs arrangements are equally simple.

It takes time to evolve such a simple house as this. I have been at it for years. Not continuously, of course, but at odd moments and in very odd places. It has become very real to me. I am familiar with every foot of it. I can wander over it in the dark. I experience the pleasant monotony of daily living in it. Of a winter evening, I sit in front of the generous fireplace, toasting my long limbs in the warmth, and letting my fancy wander with the flickering, capricious light. Curled up in a big arm-chair, I read a favorite book, Emerson or Arnold, Spencer or Ruskin. Better still, I throw myself at full length on the bear-skin rug in front of the fire — the bear I killed in the Carolina mountains a year or so since — and listen to Carolus play the Twelfth Nocturne. I have a Steinway Grand in the living-room. In more carnal mood, I am having a cosy dinner-party just across the hall, or drinking early coffee of a summer morning on the wide living porch, and wondering, with all the pride of a successful farmer, whether any one ever grew strawberries quite equal to those before me, just freshly-gathered from my own garden. Industiously inclined, I am up in the work-shop, building electric-stoves, so convenient as to rob the cook's sudden departure of all its terrors; or repeating the experiments of Herz, or making models of steamers that will go a hundred miles an hour — on paper.

Like my imaginary house, this imaginary life is very real to me. I delight in my possessions, and have no taxes to pay. I am a careful householder, a successful host, an earnest student, and the little country-house is very dear to me, for it has made all these functions possible. But observe that in these day-dreams of mine, I never go out of doors. I never gloat over my little house as it peers out from the wood, or clings to the hillside, or commands the soft and velvety meadow. And here is the whole trouble. I have had to stay indoors, or at best, venture no farther than the porch. I have been a prisoner and in my own house. The jailor was indecision — indecision about a ridiculous but all-important matter — the angle of my roof. The dilemma was absurd, but, nevertheless, it was a real dilemma and kept the house from being builded. It was easy enough to arrange the ground floor, and comparatively easy to fit the second floor on this, and the attic on this again.

But with the outside, it was different. It is to be the home of a philosopher and a man of sentiment, and the roof must express both facts. You see the difficulty? There is but one angle that will do this, while of roof-angles in general, there are an infinite number.

First, I had to decide on the style. The plan lends itself to many styles. I have done it in the best Colonial, and painted it white and yellow, with olive-green blinds, and approved balustrades over the eaves, and details from Westover House. I have done it in Early English and made an Anne Hathaway Cottage out of it, with steep thatched roof and timbered gables. I have tried the Italian, with smooth plastered walls, gay-colored awnings, and a roof of mediæval tiles made at Perth Amboy. In an humbler frame of mind, I have covered my house with shingles and affected a plain farm-house style, such as my forefathers up in Connecticut used to build, and thank Providence that certain trees had been created splittable. Finally, I have given it the form of a chalet, and this because I was once a student at Zürich, and have tender memories of blue lakes and steep mountains, and the timbered chalets from which all these can be seen. I do not wander so far afield now-a-days. I have since been drowned in the shallow depths of too blue — but this has nothing to do with the angle of content, or perhaps it has.

At any rate, I do not suffer for lack of ideas. I say this modestly. In the matter of possible styles, I have an embarrassment of riches, as I have an infinitude of possible roof angles. And these different styles express such different sentiments. One style, and my house is pretentious; another, and it is crude; another, cosy, or ill-at-ease, or hospitable, or unfriendly, or contented, or anything you will in the whole catalogue of the desirable and the undesirable. This makes one hesitate. It is I who am to live in this house — this is what I am constantly saying to myself. Whatever sentiment I impress upon it is to stare at me day after day, winter and summer, year in and year out. It is to be the first to greet my guest, before the interior has had a chance to say a word. It is to proclaim to my neighbors, or such of them as are sensitive enough to read, just what sort of a man I am. And, finally, when my estate is being settled, this same bit of sentiment is to go into the inventory of my effects, and condition the wealth of my heirs.

This is a formidable catalogue. All the considerations are very subtle. I am fortunate in knowing exactly what sentiment I wish my house to express. I am at great trouble to find out how to give the sentiment adequate expression. We of the laity do not often state the problem so plainly. This is the reason we get on so badly with our architect. Sentiment is vague. There is little practice in the art of expression. We fail to catch our own inner motive. We fail to communicate it. As a result, our architect succeeds in producing something that pleases neither himself nor us. We vote

him a dull fellow after all, and lament the days of the old masters.

This sense of proportion, — what is it? I have never been able to decide. It baffles analysis. Looking at the Kölner Dom, the Parthenon, the Venus de Milo, the Apollo Belvidere, one is tempted to believe that there is such a reality as absolute beauty, and that the dimensions of a structure may be intrinsically excellent. Hearing the criticisms of contemporary artists, it all seems relative: the sense is evolutionary, and depends solely upon the degree of heterogeneity developed in the observing organism. Which is it? In my builder, the sense is not dull, — it is absolutely wanting. In me it is uncomfortably keen. There are rooms, halls, buildings, decorations, constructions, garments, even people and occasional landscapes whose proportions are such as to arouse in me an active sentiment of rebellion and disquiet. There are others which so completely satisfy this sense of proportion that they are a constant delight. I cannot defend my opinion. I cannot tell why it is so. I can only announce the result. We have some dreadful architecture in America. It is because the men who made it have not this inborn sense of proportion, — the prime qualification of the architect. I am thinking of San Francisco, with its rows of hideously ornate wooden houses, and its intemperance in the matter of bay-windows.

This bringing of the concrete material and the abstract sentiment into harmony with each other is as fascinating as it is difficult. Who wants a house without character? Certainly not a philosopher and a man of sentiment. It is a very intellectual thing to make the outside of your house say what you want it to. In this case, it is to be devoid of all insincerity and pretension. It is to be absolutely simple-minded. It must express substantial comfort, a sturdy independence, a philosophic self-respect, a keen sense of beauty. On the whole, an exacting list.

But I am making some progress. I use the method of exclusion. I have decided against the Colonial. Its amplexness suggests big families, and an amount of domesticity not philosophic. Against the Anne Hathaway Cottage, as not lending itself well to my broad porches. Against the Italian, as too wordy. Against the shingled Puritan, as too prim, and too suggestive of predestination and other hard doctrines. These have all been discarded, and I have settled upon the chalet. This for several reasons. It fits both my history and my ideas. It has been the home of an ancient and republican people. It suggests liberty. It is very local, yet it is intensely cosmopolitan: it has sheltered men of every nation: lovers of sentiment, the world over, have transplanted it to their own lands. You remember in *Deutsche Liebe*, the princess lives in a chalet. Intrinsically, too, I like it. The large, low rooms bespeak a homely comfort. The broad, sloping roof is in friendly relation with the elements, but protects you against them when they are too rough in their play. Moreover, it harmonizes capitally with the lay of the land in my little estate. The chalet will rest on a gentle hillside just on the edge of a wood; it will look across a broad and fertile valley, through a sea of misty ether to a line of noble mountains. I shall grow poetic as I sit on the upper gallery and watch the slowly dying day. Busy people should turn their houses towards the west. The glories of the sunset come at the right hour.

But the final difficulty still remains. It is with the angle of the roof. In a chalet everything depends upon this. If the roof is too steep, the house has an upstart look, as if the sides had been smashed together in bringing from Switzerland, — just what I do not want. If the roof is too low, the effect is depressing and there is total loss of self-respect, — also just what I do not want. I have tried all angles. I have studied photographs. I bought large sheets of manilla paper. I have covered them with elevations of all sorts of chalets. It has taken a prodigious amount of work. But at last I have succeeded. I have just found the right angle, — the angle of content. I am rejoiced. I shall not celebrate by killing a hundred oxen. Times have changed. I shall go to the Symphony Concert instead. For the rest, it is all plain sailing. I shall leave the details to my architect. He is not such a dull fellow, after all. But I shall watch him, goniometer in hand.

It occurs to me that I have omitted to tell what I found the angle to be. Perhaps this is just as well, however, for if one did not agree with me, one might be disposed to discredit all the other wise things I have been saying, and that I should much regret. H. H.

THE CONUNDRUM OF "LABOR DAY."

THE Springfield Republican has contained recently the following interchange of ideas on a subject that is interesting a good many people nowadays:

"Can you tell me what in heaven's name is the meaning of our new national holiday and why it should be called 'Labor' day? What is it intended to commemorate or celebrate, and how should it be observed? If I should advertise to-morrow for 50 'laborers' I should probably have the next morning from 50 to 500 applicants bringing their strong arms and possibly a shovel or a hod by way of tools. There would not be one among them who could shoe a horse, weld a piece of steel, hang a roll of paper, solder a joint, make a chair, a box, or a window-frame, plane a board, lay a brick, act as motorman or conductor on an electric car, and still less handle a locomotive. They would be 'laborers' pure and simple, and the advertisement would be properly answered. If I wanted anything

else I should have to advertise for something else, for farmers, mechanics, clerks, teachers, or whatever it might happen to be. Now, there is nothing in common, unskilled labor that we need to exalt and glorify, to celebrate with the timbrel and the harp, the fire-cracker and the lunch-basket. It is indispensable and honorable, of course, if well done, but its spirit and achievement are not a sufficient cause for national thanksgiving.

"If 'labor' is not thus restricted, then every man, woman and child who works either from necessity, choice, sense of duty or greed of gain, is a laborer. Whether the work is done with the hands, or the head, the feet or the mouth, it is work, and whoever does it is a laborer. He or she may be a clerk, a hod-carrier, a teacher, mechanic, farmer, engineer, commercial traveller, banker, lawyer or journalist, manufacturer, milliner, typewriter, philanthropist, explorer or inventor, each and all belong to the world's great army of 'laborers,' and while there may be intrinsic, certainly are many factitious, reasons given for esteeming one kind of labor as more desirable and worthy of respect than another, there can be no difference in the degree of honor that is due to those who are willing to do their part in the world's work according to their opportunity and ability; and no degrees in the dishonor that rests upon those who are willing to shirk it. Any other ground than this is absolutely undemocratic, un-American and un-Christian. The situation is too simple to admit of argument.

"But now we come back to the first question: what is the meaning of Labor day? Is it for certain kinds and classes of labor? If so, for what? Is it to mark and emphasize class distinctions in labor, and undermine what for more than a century we have been trying to establish? Is it to be, in fact, 'Lazy' day, an excuse for those who are doing work that is distasteful to them, to throw off for twenty-four hours what they consider a bane and a burden, and for one day to do nothing which is of the least benefit to themselves or anybody else?

"Or, is it to be on a large scale what the famous industrial guilds of Florence were — a source of inspiration to the civilized world for all future time? Are we to have as a part of its celebration, exhibitions of skill in the innumerable fields that are covered by human activity with honorable incentives that shall tend to better and better results, both for the thing that is done, and for him who does it?

"Let us hope and, if we can find out where to take hold, strive to make it, at least, a means of maintaining the dignity and the worth of every conceivable form of helpful human industry, of the ability and disposition to work while the day lasts.

"And finally, is it not for those who have money, brains and time to use for worthy objects to make Labor Day like labor itself, a perennial and universal blessing?"

E. C. GARDNER.

Springfield, Sept. 1, 1894.

PLEA IN ANSWER TO E. C. GARDNER'S QUERIES.

Shrewd Mr. Gardner, sharpening his pen,
Inquires "why Labor Day's called Labor Day"
And "what it means, in heaven's name"; and then
He wants to know what is the proper way
To celebrate the worth of laboring men,
And hints a doubt if ordinary labor
Deserves a special timbrel, pipe and tabor.

If Mr. Gardner covets information,
He'll find an answer to his perquisitions
In any Legislature's legislation;
Or he may get it from the politicians,
Who, with a little shuffling and evasion,
Will show the need of labor "recognitions" —
Since lukewarmness in truckling oft denotes
A painful loss of necessary votes.

Perhaps the daily press may give a clew,
That virtuously arraigns the A. P. A.,
And fears to give the devil half his due,
Lest Pat should take his patronage away.
Perhaps he'd get a hint from me and you
(The need to rhyme makes this inversion — pray
Reread it "you and me"), if he should look
In on some little confab with the cook.

How'er this be, I modestly opine
That he's a little cynical, in thinking
Labor much puzzled — if the weather's fine —
To use a holiday, unless in drinking: —
Some of it with a book likes to recline;
Some "wheels" afield; some does a little prinking;
All of it likes to lunch, lounge, stroll and spark,
And "do" the tombs and lilies in the park.

"What's in a name"? — If the name seems unmeet,
The thing's a good; if our new holiday
"By any other name would smell as sweet" —
Or even sweeter — since 'tis here "to stay,"
Pray make it glad, ungrudging and complete;
And you, who have the "brains," point out the way,
To ordinary, fatuous, dull humanity,
To celebrate itself without inanity.

A PLEASED READER.

Springfield, Sept. 4, 1894.

THE REPLICATION.

"Pleased Reader":—

I know not if I ought to say Dear Sir, or Madam:—
 I'm truly grieved by your severe and dark suspicions
 That all these sturdy toiling sons of Adam
 Are helpless tools of selfish scheming politicians.
 If that is true, then Freedom's Temple, democratic,
 Needs drastic disinfecting, from ground-floor to attic.
 Yet you reply so wisely and so well, dear brother—
 Or sister,—as the case may be—to all my questions,
 That I am fain to ask on this broad subject, still another,
 And eagerly await your rhythmical suggestions.
 Please manifest for me once more your mind's agility;
 In mortal man, of course, I shan't expect infallibility.
 Please tell me in these active days of "pull" and "hustle,"
 And tell me just as plain and clearly as you can,
 In what proportions of clear brain and healthy muscle
 You would compound a genuine "laboring" man?
 Inform me, and with me the many million "masses,"
 Just where the line twixt "laborers" and "non-laborers" passes.

ENVOY.

If all of us are "laborers" since creation was begun,
 Then in the words of Tiny Tim—"God bless us every one."
 E. C. GARDNER.

Springfield, Sept. 5, 1894.

THE REJOINDER.

To one who doesn't own an "International,"
 It's really rather puzzling to define.
 But, when one's said his say, it's only rational
 To heed another's say;—to "draw the line,"—
 If asked to do it—and to try to fashion all
 The different ingredients, coarse and fine,
 That makes the big-L'd laborer complete,
 Into a laborer's correct receipt.

Upon the whole it is a serious business,
 Less plain than taking some one else to task;
 And how to do it with the proper quizziness,
 Without resorting to one's pocket flask,
 Quite puzzles one, for there's a certain dizziness
 In this ottava rhyme, that makes the cask,
 Or flask, a perilous aid to one who'd season
 His rhymed rejoinder with a little reason.

But all this poem's neither here nor there—
 It reels, somewhat too volubly suggestive.
 If I must draw a line—and tread it fair—
 Intoxication is somewhat intemperate,—
 I'll try to drive my Pegasus true and square
 (The starting steed is generally restive)—
 So, bringing him at last beneath the "line,"—
 Here goes—I'll make an effort to define.

The laborer—in the popular dictionary—
 Is one, it seems to me—hum—one who labors—
 Hum—labors for another, something chary
 Of paying larger wages than his neighbors;
 Not, on the whole, a pampered proletariat,
 Who thinks he merits timbrellings and tabors
 (I need that word in abors) and is wary
 Of us who, being buoyed in the swim,
 Seem, to his ear, to condescend to him.

He finds it rather dull to delve and plod,
 Drive teams and engines, saw, scrape, toil and moil;
 And, owning all this needful, thinks it odd
 That some should get big pay for selfish toil,
 While he but shells the peas to get the pod.
 It's hard for his slow reason to assail
 The rest of us, for taking what we can;
 But, since we do, he follows the same plan.

He feels, as we can scarcely feel, the line
 That separates the classes from the masses,—
 The fortunate in brains, chance, cash—in fine:—
 The racers in the, say, 2.20 classes,
 Who've won, or win, the prizes, and define,
 Unthinkingly, the distanced ones as asses—
 And the poor herd that mutely sweats and strains
 To get a stall and fodder for its pains.

The line is real, or so it seems to me;
 Inevitable, more or less (see Mill,
 Godkin, Wells, Atkinson and Company),
 And our democracy defines it still,
 Upon new boundaries.—My little plea,
 Viewing the abstract matter how you will,
 Is merely for a welcome to the day
 That gives poor working John a little play.

I think it does him good, and rather think
 His little titivations don't much hurt him.
 Although he seems, at times, too near the brink
 Of social gulfs, his reason won't desert him:—
 When he comes toward a plunge, he'll pause and shrink—
 And you and I'll endeavor to divert him,
 Since we've had ours, let's let him have his say,
 And spout, or stroll away his Labor Day.

PLEASED READER.

Springfield, Sept. 6, 1894.

DETROIT'S POST-OFFICE.

AS we have abandoned a portion of our space this week to the
 Muse—we forbear to name her—it may be as well to grant a
 little more space to another correspondent who has followed
 Mr. Wegg's example and "dropped into poetry" to the following
 effect:

Our Government building will soon be complete;
 To say it is beautiful would be indiscreet,
 But the law of nature, as observed by the sage,
 Is that all things change and fade with their age.

This building, intended to be something great,
 Ten long years has required itself to create;
 So we fear it comes under the law of the sage,
 For its beauty is fading as well as its age.

To the Romanesque style is due an apology,
 Since the author lost sight of true genealogy;
 So to call it—to name it—why, 'twould be a sham!
 But 'tis stamped with the trade-mark of our Uncle Sam.

The limestone, once of a beautiful gray hue,
 Was nice when prison-labor handed it over as new;
 But the law of the sage can't be treated with scorn,
 So the structure grows hoary while yet being born.

Antique its appearance, alas, not its design,
 For no ancient e'er pondered o'er structure so fine
 Greek art is an infant and Roman art is laid low,
 Romano-Greek genius for us was too slow.

As the stars greatly differ in size and in glory,
 So human tastes differ in art and in story;
 Some people may think Detroit's Post-office grand,
 But, we pray you, don't copy it all over the land.

What this country now wants, and has lacked from the start,
 Is divorce everlasting 'tween statesmen and art.
 Granted this, we may hope to see rise on all hands
 Structures grand in their beauty as in other lands.

N. W.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

ENTRANCE TO THE TEMPLE BETH-EL, FIFTH AVE., NEW YORK, N. Y.
 MESSRS. BRUNNER & TRYON, ARCHITECTS, NEW YORK, N. Y.

[Gelatine Print, issued with the International and Imperial Editions only.]

ACCEPTED DESIGN FOR THE TOWN-HALL, BILLERICA, MASS.
 MESSRS. WARREN & BACON, ARCHITECTS, BOSTON, MASS.

WITH the successful design we publish, at the same time, the others submitted in limited competition with it.

COMPETITIVE DESIGN FOR TOWN-HALL, BILLERICA, MASS.
 MESSRS. HARTWELL & RICHARDSON, ARCHITECTS, BOSTON, MASS.

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COMPETITIVE DESIGN FOR TOWN-HALL, BILLERICA, MASS.
 MESSRS. CHAPMAN & FRAZER, ARCHITECTS, BOSTON, MASS.

[Additional Illustrations in the International Edition.]

WELL OF QUENTIN MASSYS, ANTWERP, BELGIUM.

[Gelatine Print.]

POST AND TELEGRAPH BUILDING, ZÜRICH, SWITZERLAND. HER-
 REN VON CHIODERA & TSCHUDY, ARCHITECTS.

This plate is copied from *Architektonische Rundschau*.

COMPETITIVE DESIGN FOR AN EVANGELICAL CHURCH, KARLS-
 RUHE, BADEN. HERR. G. FRENTZEN, ARCHITECT.

This illustration is copied from the *Deutsche Bauzeitung*.

THE COLLEGE LIBRARY, VICAR'S CLOSE, WELLS, ENG.

This plate is copied from the *Building News*.

CHANCEL OF THE NEW CHURCH OF ST. GEORGE, WORCESTER,
ENG. MR. ASTON WEBB, ARCHITECT.

This plate, copied from the *Builder*, shows a building which will cost about \$37,000 and is to seat some 730 persons. The total width is 60 feet, the length 117 feet; the internal width of the nave and chancel is 27 feet 4 inches, while the height to the ridge is 51 feet.

A SMALL COUNTRY HOUSE AT STEEP, NEAR PETERSFIELD, ENG.
MESSRS. CHAS. SMITH & SON, ARCHITECTS.

This house, a perspective sketch of which forms one of our illustrations this week, is now in course of erection at Steep. The site is on the southern slope of the downs, and commands most extensive views towards the coast, which can be fully enjoyed from the balcony and veranda.

MALABAR, TRURO, ENG. MR. SAMPSON HILL, ARCHITECT.

This residence, approaching completion, has been erected near Truro for Mr. W. Chivell. It stands in its own grounds of about twenty-five acres, and takes the place of an old building. The elevation is somewhat lofty, taking advantage of the fine views which the site commands. The walls are faced with a green-tinted freestone from Bodmin quarries, the dressings being of granite, and the pilasters to entrance-porch of polished Aberdeen. The joinery of the principal rooms on ground-floors is of teak wood, and some very effective carving is introduced in the dining-room, hall and doors. The ceilings of dining and billiard rooms are panelled and enriched in plaster, both rooms having a moulded teak-wood dado. The dining-room has an oak parquet floor, and the floor of billiard-room is laid with solid wood blocks.

RESIDENCE, WESTFIELD ROAD, EDGBASTON, ENG. MESSRS. ESSEX,
NICOL & GOODMAN, ARCHITECTS, BIRMINGHAM, ENG.

This residence has recently been erected for Mr. P. A. Martin. The exterior is faced with picked common red bricks and Bracknell rubber brick dressings, and the roofs are covered with brindled tiles.

LONDON & PROVINCIAL BANK, NEATH, ENG. MESSRS. WILSON &
MOXHAM, ARCHITECTS.

The façade is designed in the Renaissance style, and will be built of Box ground stone entirely. On the ground-floor are the bank chamber, with manager's rooms, clerks' lunch-room, strong-room, muniment-room, lavatories and water-closets. There are also the manager's dining-room, kitchen and offices on this floor. The first and second floors are planned for the residence of the manager.

NEW SCHOOL, BATHGATE, ENG. MR. J. GRAHAM, ARCHITECT.



BOSTON, MASS. — Annual Summer Loan Exhibition of Paintings; also, New Accessions to the Print Department: at the Museum of Fine Arts, BRIDGEPORT, CONN. — Exhibition of the Sella collection of photographs of Alpine and Caucasian scenes: at the Public Library Art Gallery, September 8 to October 27.

CHICAGO, ILL. — Seventh Annual Exhibition of American Oil paintings and Sculpture: at the Art Institute, October 29 to December 17.

CINCINNATI, O. — Special Exhibition of Paintings: at the Art Museum during September.

NEW YORK, N. Y. — Second Annual Summer Exhibition of American Paintings: at the Fifth Avenue Art Galleries.

Twenty-sixth Annual Spring Exhibition: at the Metropolitan Museum of Art, opened May 8.

Group Exhibition by American Painters — William M. Chase, J. Alden Weir, Childe Hassam and others: at the Galleries of the American Fine Arts Society, 215 West 57th Street.

PHILADELPHIA, PA. — Sixth Annual Exhibition of the Art Club of Philadelphia: opens November 19, closes December 6.

PROVIDENCE, R. I. — Loan Collection of Paintings: at the Art Club, during September.



THE LUMBER KING AND HIS CRIMES. — A Western lumber expert declares that almost the whole forest area of the country is now in the possession of men who are ruthlessly despoiling it of trees. "I have been appalled," he says, "by the havoc that has laid millions of acres bare by axe and flood and flames, changing the reserve treasure spots of the people into unsightly wildernesses." The few square miles of forest reserved by the Federal Government and the States here and

there, he regards as mere drops in the bucket. Drawing a picture of the immense personal power of the lumber-king of the Northwest, he says: "The land is his and the product thereof; the mills and water-power are his; the stores and necessities of existence are his; the houses and very sidewalks are his; the cattle and horses are his, and all the people are his retainers and servants; the weal or woe of the community is weighed in his hand, the happiness of many families trembles at his word." Admitting that lumbering operations have increased the population and built up towns and settlements, he points out that the work has been a wasteful and a criminal one. "Even the most ordinary means," he says, "would have prevented the loss of millions of trees by fire, and many years of labor and life, for communities have been lost forever in the immense piles of slabs, refuse, sawdust and ashes that surround and overlie hundreds of milling plants. Stock enough to support a whole generation has been burned up, rotted, or run off in streams; in the haste to get rich, the large things only have been seen, and the little things have been overlooked; the future has been sacrificed to the greed of the present. The men who make the millions out of these operations when the timber is all felled, and the mill silenced, pull up their stakes and fold their tents in the night, like the Arab, and steal away to fresher fields—leaving tens of thousands of former dependents behind to shift for themselves." — *N. Y. Evening Post*.

THE RESTORATION OF SAN LUIS REY. — We made a trip in a carriage recently to the old Mission of San Luis Rey. Father O'Keefe, pleasant and good natured as always, took us through the church and among the ruins, explaining to us all that has been done and what he hopes to do. The work is at a standstill, almost, for want of funds, and the father is determined only to incur such obligations as he can meet. The place is very interesting, and the work of restoration, when completed, will give us a perfect reproduction of one of the most extensive and complete missions in California. The church is a fine structure, about 60 x 180, imposing in height and with a façade of characteristic design — its severity tempered by an artistic sunniness which takes it out of the typical sombre heaviness of kindred architecture. When looking into the grand patio or court-yard, with its fountains flowing, one can picture to himself the busy season of harvest in the olden time, when the Indian converts were coming in with their carts laden, and passing their garnered crops into the storehouses, while the tanned brothers kept tally and count and directed the busy scene. Father O'Keefe finds the work he has in hand a much greater task than he had supposed. Treasure-seekers have tunneled in every direction, especially inside the church and near the site of the old altar. The result of this crazy vandalism has been that the walls are undermined in many places, and in order to keep them from going altogether to pieces he has had to build foundations anew in the weak spots, and to tear down and reconstruct where irreparable crevices had opened the whole length of the wall. I am told by Bishop Bourgade, of Arizona, that the premature decay of all the old churches is due to the craze of treasure-seekers. It is universally conceded that the San Luis Rey mission was, in all respects, the finest, most perfect and handsome of the missions of California. — *Los Angeles Herald*.

BOTH CRITIC AND REVENUE OFFICER. — We hear that William Michael Rossetti, assistant secretary to the Board of Inland Revenue, will shortly resign that post after forty-seven years' service. Mr. Rossetti, who is a brother of the late Dante Rossetti, the poet, and Christina Rossetti, the poetess, has for many years rendered valuable service to the revenue by his valuations of pictures for probate duty. His father, it will be remembered, was Gabriel Rossetti, an Italian patriot of the lyre and the sword, who took refuge in London from the troubles of his native land, and was the well-known commentator on Dante. William Rossetti, like his brother and sister, was born in London. Educated at King's College School, he early joined the Inland Revenue Department, and gained a reputation as critic of fine art and literature as early as 1850. With his brother and with Millais, Holman Hunt and Woolner, he was mixed up in the pre-Raphaelite movement from its commencement in 1848, and he edited the *Germ*. Among many books he has published are valuable criticisms and biographies, and he has been chairman of the Shelley Society. He is married to a daughter of the late Ford Madox Brown, who is herself an artist and exhibitor at the academy. — *London Globe*.

COMPARATIVE STRENGTH OF MATERIALS. — Cast-iron weighs 444 pounds to the cubic foot, and a one-inch square bar will sustain a weight of 16,500 pounds; bronze, weight 525 pounds, tenacity 3,600; wrought-iron, weight 480, tenacity 50,000; hard "struck" steel, weight 490, tenacity 78,000; aluminium, weight 168, tenacity 26,000. We are accustomed to think of metals as being stronger than wood, and so they are, generally speaking, if only pieces of the same size be tested. But when equal weights of the two materials are compared, it is then found that several varieties of wood are stronger than ordinary steel. A bar of pine just as heavy as a bar of steel an inch square will hold up 125,000 pounds; the best ash 175,000 pounds, and some hemlock 200,000 pounds. Wood is bulky. It occupies ten or twelve times the space of steel. The best steel castings made for the United States Navy have a tenacity of 65,000 to 75,000 pounds to the square inch. By solidifying such castings under great pressure, a tensile strength of 80,000 to 150,000 pounds may be obtained. — *Railway Review*.

STONE RESERVOIRS FOR COMPRESSED AIR. — Great reservoirs for compressed air, near the machinery to be operated thereby, are cut out of the rock at the Mansfield copper mines in Germany, and then lined with cement. There are eight of these receivers, from 1,235 to 3,950 cubic feet capacity. It is stated that a rock chamber of 2,200 cubic feet capacity costs only one-third as much as an iron receiver of equal size. — *N. Y. Times*.

LAND TITLES IN THE DISTRICT OF COLUMBIA.—The continual increase in the value of land in the District of Columbia has led to exacter measurement, in which even fractions of an inch count. It has also produced more searching investigations into titles of land, and has created several extensive title insurance companies. The operation of the law which refuses to allow interference with the possession of land, where it has been held openly and adversely under claim of title for more than twenty years, has put an end to the Blodgett cases and other suits on behalf of the heirs of original proprietors of city lots. Nor do the title lawyers see any cause for anxiety on the part of lot-owners from the vague claim that "there are twenty entire squares, and over two thousand single lots now held by private parties to which the United States has a fair, legal title." It is true that "no time runs against a sovereign," and that rights of the government are not barred by any time, and that in the District of Columbia, twenty or more years' possession of land by private owner does not bar the United States from asserting any right in the land from which it had never parted. But, although twenty years' adverse possession under color of title might not be effective if set up in the courts of the District of Columbia against the United States, yet it is believed that title out of the United States can be shown to all the lots of the city. The original owners of land in the District, in the summer of 1791, deeded all their lands to Beall and Gant, trustees, and these trustees conveyed to the original commissioners, who began then the conveyance of lots sold at the land sale of October, 1791, and subsequently. In 1853-'55, Mr. Robert Ould, of Georgetown, afterwards United States district attorney here, investigated the matter, and even then no basis was established for extended claims by the United States. No well-informed title lawyer in Washington gives any credence to the idea that any private property in the city is in danger from a raid to be hereafter made by the United States under claims more than a hundred years old. "The trouble is," said a leading title lawyer to a representative of the *Sun* this morning, "that the records of the office of the commissioners of public buildings and grounds are not up with the facts, while the records at the City-hall are kept exact to the minute at which any one chooses to examine them." Another lawyer said, "All these guesses at the claims of the United States are back numbers."—*Correspondence Baltimore Sun*.

THE HOD-CARRIER AS AN ANARCHIST.—Prince Frederick Henry of Russia, the twenty-year-old son of that Prince Albert who fills the office of Regent of Brunswick much against his will, has just had a narrow escape from death in a manner that would have been, to say the least, unusual as far as the takings off of royalty are concerned. It seems that whilst riding through the suburbs of Potsdam the other night, an entire hod of bricks was precipitated upon him from the scaffolding of a house in the course of erection. Fortunately, he was struck on the shoulder, arm and thigh only, sustaining severe bruises, though no injuries of a graver character, and as the Prince is almost as stalwart and muscularly built as his gigantic but dull-witted father, he escaped comparatively easy, a few days' rest sufficing to restore him from the effects of this strange adventure. For it was so strange, that the police are convinced the hod of bricks was intentionally hurled at the Prince whose appearance is familiar to the people of Potsdam. The building trades of Berlin and the surrounding districts simply swarm with Socialists and Anarchists of the most advanced type, and inasmuch as from the way that the hod came down from aloft, it could not have fallen, but must have been thrown, there are some grounds for believing that it was the act of an Anarchist desirous of maiming, if not killing, a prince of the blood. When Emperor William and the Austrian monarch were walking together up and down the platform of the railroad station at Abbazia last Spring, while waiting for the departure of the train which was to convey Francis Joseph back to Vienna, a huge sledge-hammer came crashing down almost at the feet of Emperor William, missing him by only two feet. It had come from the glass roof above, but how it had found its way up there and what hand had directed its flight downward has never to this day been discovered, notwithstanding the most strenuous efforts on the part of the Austrian and German police. Poison, firearms, the bomb and the knife have until now been the instruments employed for the assassination of royal and imperial personages, and have constituted the weapons against which they have had to guard. But if in addition thereto they have now to look out for flying bricks, hods and sledge-hammers coming down from above, life will simply become unbearable.—*The Marquis de Fontenay in the Philadelphia Press*.

FANCIED PORTRAITS IN ARCHITECTURAL SCULPTURE.—Some discussion over conflicting statements upon this subject may be expected to fill the columns of the dailies at the approaching dull season. A traveller lately returned from Antwerp has drawn attention to the curious fact that, in the cathedral of that city, two of the carved heads which support an ecclesiastical chair bear a striking resemblance to the portraits of Lord Beaconsfield and Mr. Gladstone. Visitors to Magdalen College, Oxford, will remember a similar instance in the principal quad. Sometimes such resemblances lie greatly in the eye of the beholder (like Polonius's cloud, "very like a whale"); but there are certainly many curious historical instances of what may be called prophetic likenesses—of features painted or carved in one century which are reproduced in the flesh long after the draughtsman of the picture has passed away. Aubrey tells a long story about some prophetic likenesses in Wells Cathedral. "In the nave of the Cathedral Church at Wells, above the capitals of two of the pillars, are the heads of a king and a bishop; it was foretold that when a king should be like that king, and a bishop like that bishop, abbots should be put down and nuns should marry; above the arch is an abbot or monk with his head hanging down and a nun with children about her. . . . This prophecy was written in parchment and hung in a table on one of the pillars before the Civil War. . . . It was prophesied three hundred years before the Reformation." It is needless to say that an "exact resem-

blance" to King Henry VIII is traced in the portrait of the king, while the likeness of the bishop "much resembled that of Dr. Knight, who was bishop here at the Reformation." It is scarcely necessary to add that these are vain imaginings, and Mr. Hems's letter, refuting by actual inspection the popular delusion, is a welcome and useful contribution disposing of the subject.—*Illustrated Carpenter and Builder*.

THE ALLOTMENT OF ARID LANDS.—One of the most important measures passed by this Congress has attracted comparatively slight attention, although it is one of the most far-reaching in principle that has been enacted by Congress since the construction of the Union Pacific. That is the measure providing for the allotment of arid lands to States in which they are located, and which will improve them. This is regarded in the West as the first step towards the practical solution of the irrigation question. The results of irrigation in the desert regions have been so phenomenal that the matter is regarded by experienced men as certain to attain the importance of a party policy, which will have a strong effect in the West. The present step towards general irrigation was inaugurated by Senator Carey of Wyoming, who has been accused by some of his Democratic associates in the Senate of having induced the Senate to pass it, as well as the House, for political reasons. Mr. Carey denies the impeachment stoutly, and declares he was prompted in his action by nothing but the consideration of the welfare of his State. It is estimated that it costs about \$10 per acre to introduce a successful system of irrigation. The average cost has been known to run as high as \$20. The measure allots 1,000,000 acres to each State, which implies an expenditure of from ten to twenty millions of dollars in each State having arid lands. A member of Congress, discussing the matter yesterday, said that if there was a fair revival of confidence to induce investors to look into irrigation as a source of investment, this action of Congress would do more to return prosperity to the desert-land States than anything that could happen. It would not only lead to the first heavy disbursements, but would leave the States in possession of the conditions by which prosperity could be nurtured and maintained for generations to come. It would lead to the opening of new lands and the addition of substantial benefits to the whole country.—*Washington Post*.

PROPOSED ROMAN CATHEDRAL IN LONDON.—The *Times* announces that a project, which has been under discussion for thirty years, has practically matured to build a Roman Catholic cathedral in London, on a site in Westminster purchased by the late Cardinal Manning for £55,000. The total cost of the edifice, it is estimated, will be £250,000. Nearly half of that amount has already been subscribed. The whole of Catholic Christendom will be invited to subscribe. The architect, Bentley, has been intrusted with the work of drawing the plans. The structure will be of ancient basilican style, which is unique in London. It will be 350 feet long, 270 feet wide, and 100 feet high. It will have a seating capacity of 8,000 persons. The plans will also include a lecture hall, a monastery for thirty monks and forty-five lay brethren, and other buildings. The model is Constantine's Church of St. Peter, at Rome. The foundation will probably be laid next June.

A REVOLVER AS A CURE FOR PANIC.—In the theatre of Homel, in Russia, fire recently broke out at about 9 o'clock in the evening, just as the representation of the second act of a play was beginning. The scenery at the back of the stage took fire, and it spread rapidly. The moment the police officer on duty saw signs of a panic among the audience, he stepped forward to the footlights, a revolver in hand, and, addressing the spectators, said: "If I see any one acting in a way to create disorder, I will shoot him dead." His calmness and resolution had the desired effect. All the people left the house quietly. Not a person lost his life or was injured. The theatre was burned to the ground.—*L'Argus*.

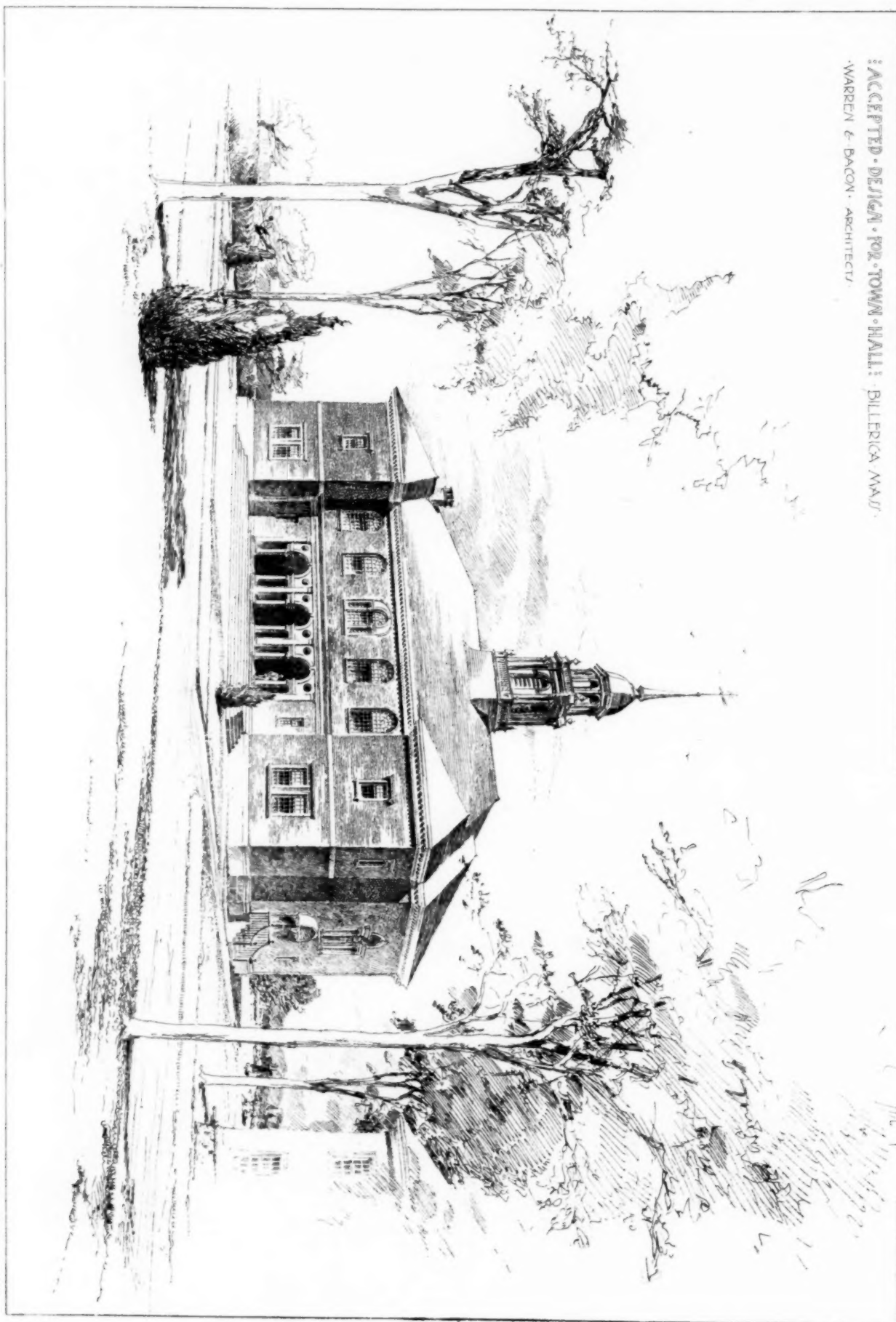
AN ITALIAN LEGEND.—In the little church of St. Thomas Aquinas, at Piperno, Italy, is a statue of the builder Nallo d'Orieto, who was canonized because of this incident: While building, it was discovered that the tie-beam of one of the trusses had been cut off too short. Nallo was equal to the emergency, for he grasped the end of the beam and gave it such a pull, that he stretched it a little too much, so that quite a piece had to be cut away before the joint would come to a bearing. Why Nallo should have been canonized for overdoing his trick, and causing needless waste of material and labor, does not appear.

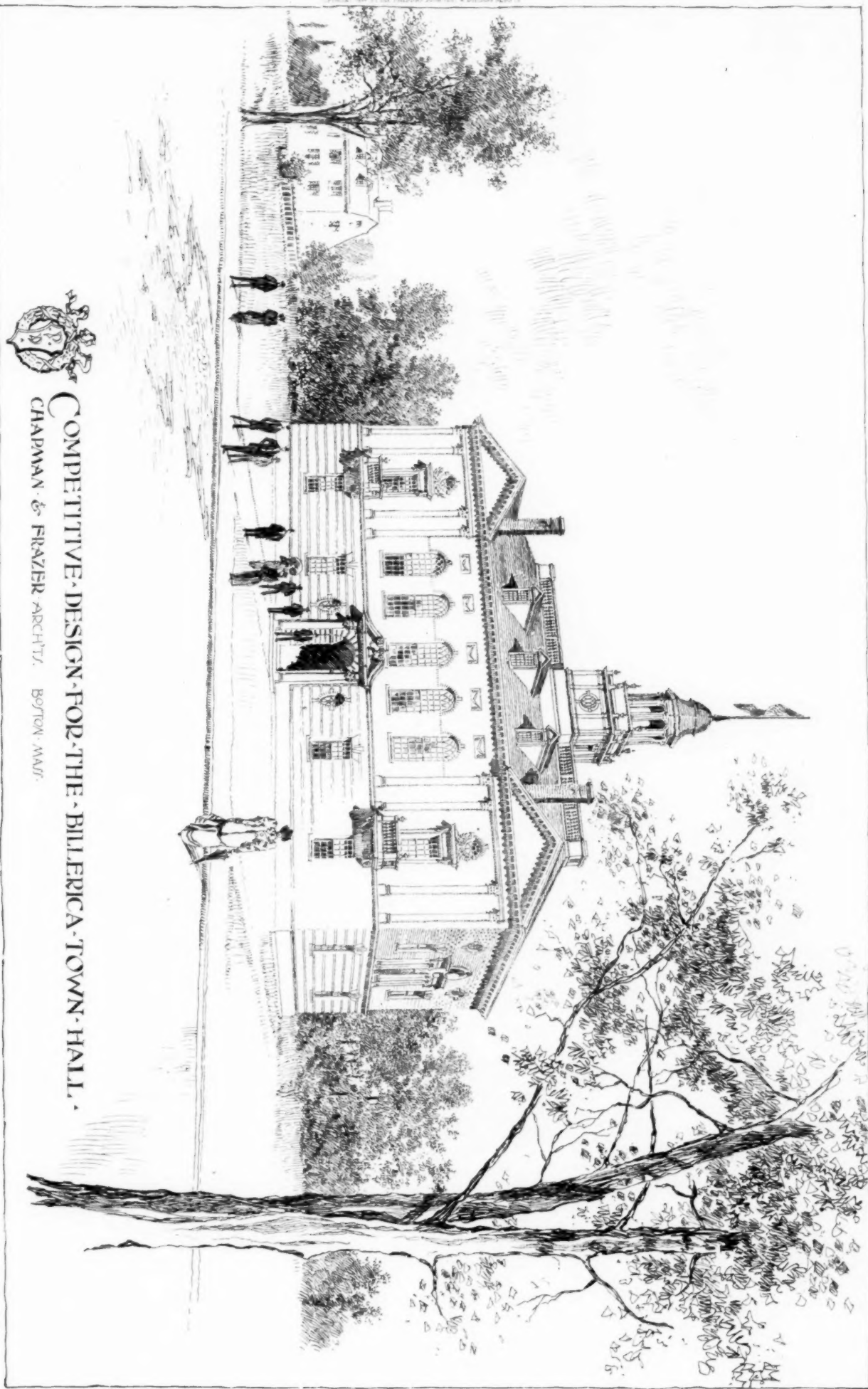
THEATRES AND POPULATION.—There is a theatre in Paris for every 32,000 inhabitants, one in Berlin for 81,000, one in Bordeaux for 84,000, one in Budapest for 85,000, one in Hamburg for 113,000, one in Vienna for 138,000, and one in London for 145,000. There are more theatres, proportionately to the population, in Italy than in any other country, there being one to 9,890 inhabitants in Cantania, one to 15,000 in Florence, one to 20,000 in Bologna, one to 24,000 at Venice, one to 30,000 at Milan and Turin, and one to 31,000 in Rome.—*Exchange*.

A MONSTER LAMP.—The *Echo des Mines* announces the invention by a young Belgian of a lamp such as has never been seen before. The lamp is composed of 3,000 pieces. It is six feet high, and measures 3.10 feet in diameter. Its light is so strong that one can read by it at a distance of six hundred feet. The lamp is fed with lard-oil, and the consumption is said to be very small.

ZOLA AND A BUILDER.—Architecture and Zola would seem to be rather far apart, but none the less, this notorious novelist has been sued by a builder of Lourdes, presumably because of something said in the recent novel of that name.

ACCEPTED DESIGN FOR TOWN HALL, BILLERICA, MASS.
WARREN & BACON, ARCHITECTS.

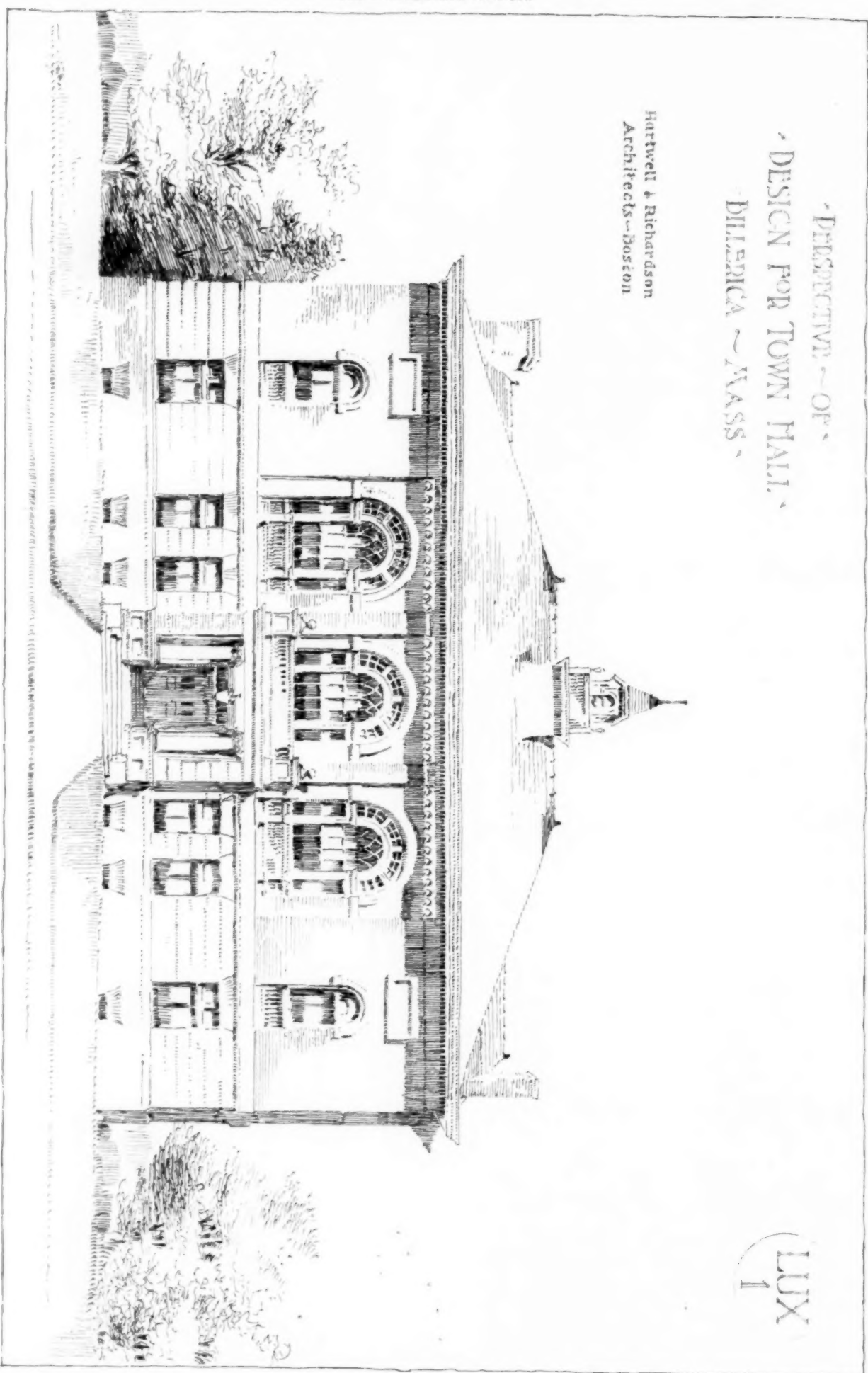




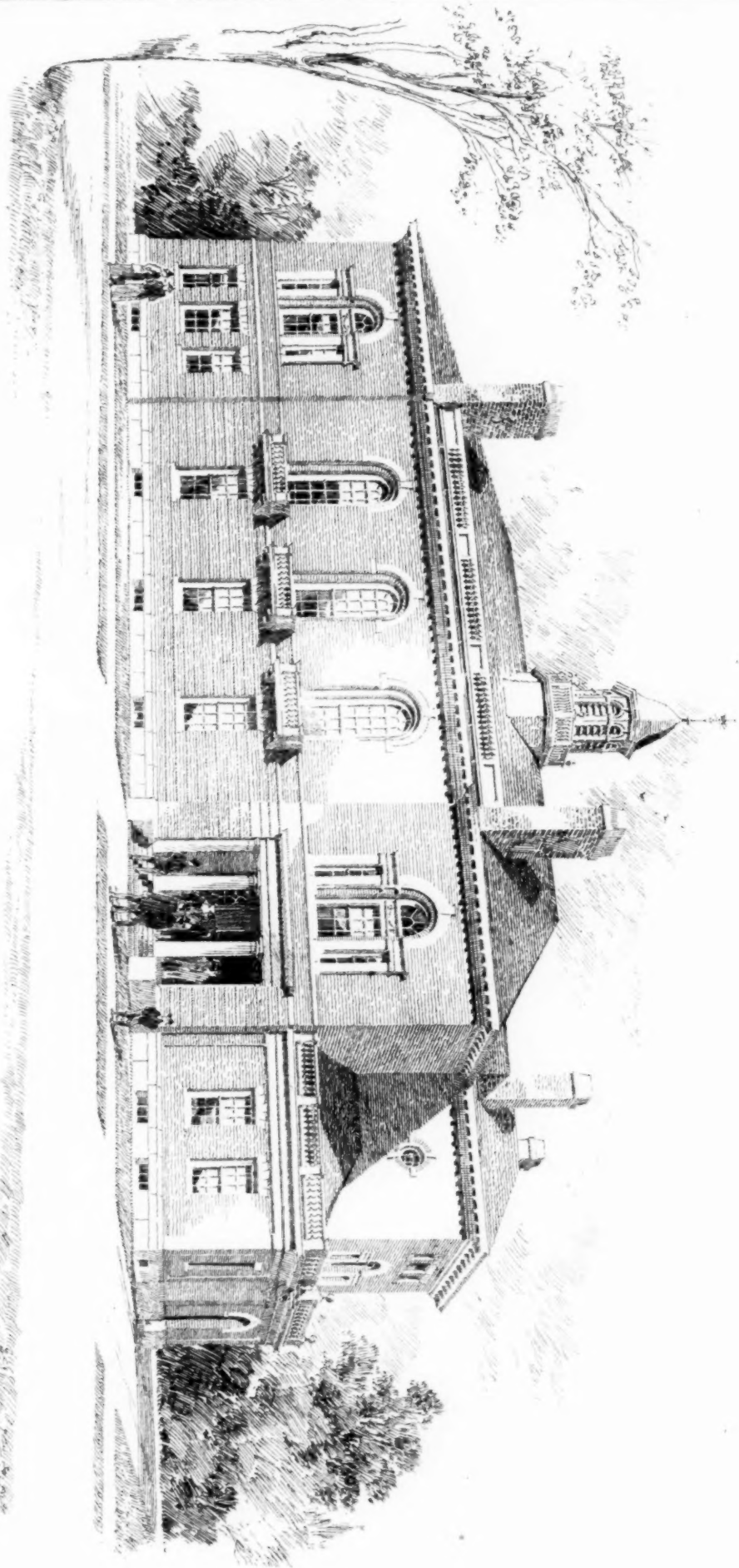
COMPETITIVE DESIGN FOR THE BILLERICA TOWN HALL.
CHAPMAN & FRAZER ARCH'TS. BOSTON, MASS.

· PERSPECTIVE · OF ·
· DESIGN FOR TOWN HALL ·
· DILLERDA · MASS ·

Hartwell & Richardson
Architects · Boston



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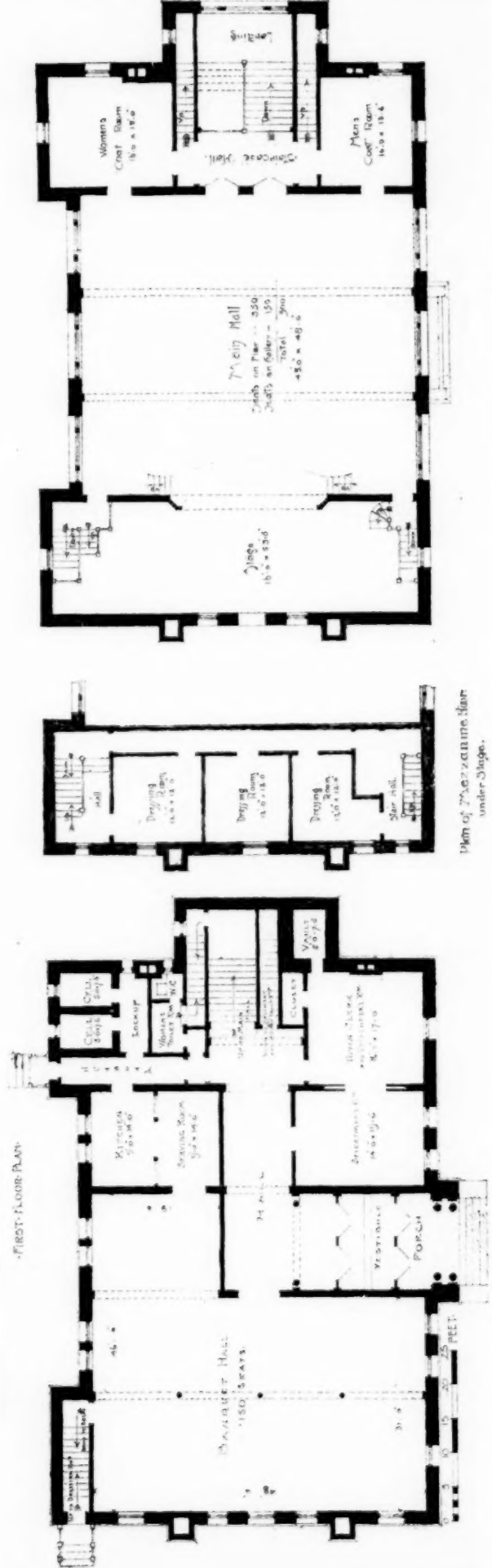
*Henry T. Austin - archt.
Boston, Mass.*

DESIGN for TOWN HALL at BILERICA - MASSACHUSETTS - SUBMITTED by "O.C."



WARREN & BACON ARCHITECTS

SECOND FLOOR PLAN



FIRST FLOOR PLAN

SECOND FLOOR PLAN

THIRD FLOOR PLAN

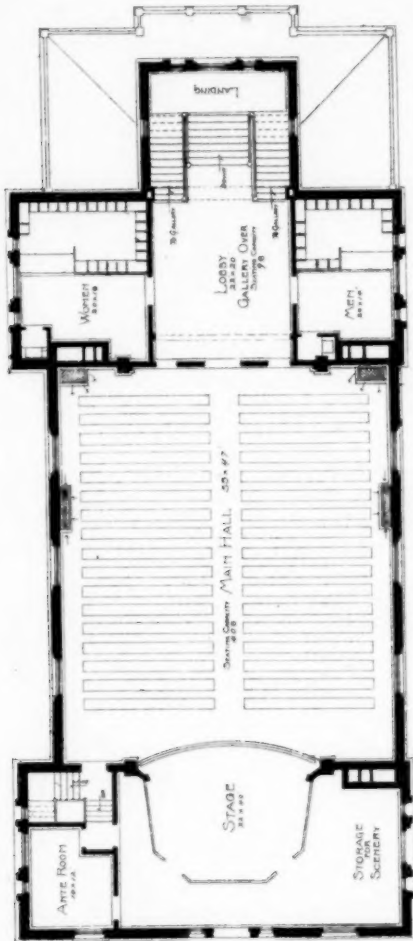
Scale 1/8" = 1'-0"

Plan of the new hall under stage.

Architects - Boston

SECOND FLOOR PLAN

Scale 1/4" = 10'

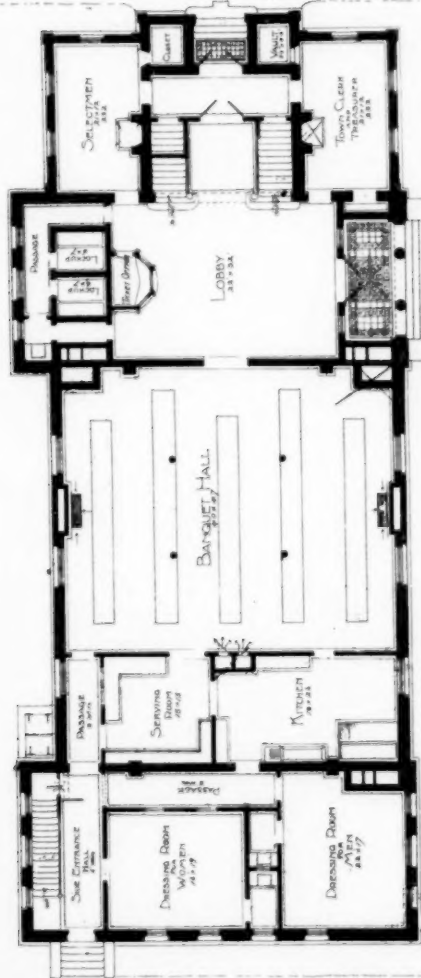


PLAN OF SECOND FLOOR
Scale 1/4" = 10'

*William & Frederick - Architects
Boston, Mass.*

FIRST FLOOR PLAN

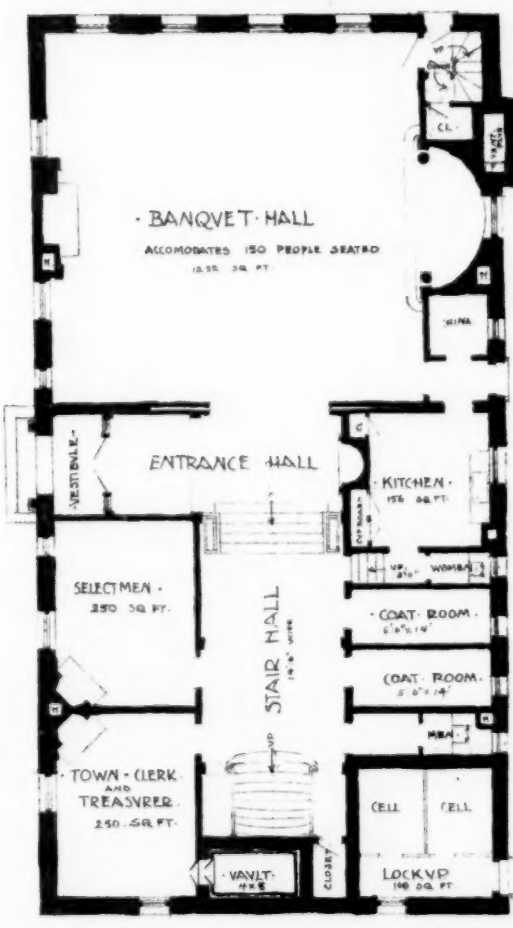
Scale 1/4" = 10'



PLAN OF FIRST FLOOR
Scale 1/4" = 10'



SECOND FLOOR PLAN
0 5 10 15 20 25 FEET



FIRST FLOOR PLAN

CHAPMAN & FRAZER ARCHTS. BOSTON
BILLERICA TOWN HALL

REPRODUCED FROM THE ORIGINAL