THE MARYLAND CLUB—HOUSE, BALTIMORE, MD.

MAY 4, 1895.

THE AMERICAN ARCHITECT AND BUILDING NEWS

VOL. XLVIII. * REGULAR EDITION * NO. 1010.

ARCHITECTVRE

ENGINEERING

DECORATION

211 TREMONT ST.

BOSTON, MASS.

CONSTRVCTION

PRICE 15 CENTS.

CONTENTS.

ILLUSTRATIONS.

Additional Illustrations in the International Edition.

THE AMERICAN ARCHITECT AND BUILDING NEWS.

VOL. XLVIII. Copyright, 1895, by the AMERICAN ARCHITECT AND BUILDING NEWS COMPANY, Boston, Mass. No 1010.

Entered at the Post-Office at Boston as second-class matter.

MAY 4, 1895.

CONTENTS

THE Boston City Architect, Mr. Wheelwright, in reply to the request of a Committee of the City Council, has made a report, in which he very frankly says that, in his opinion, the office which he now holds, and has held for four years in a very satisfactory manner, had better be abolished. He says that he believes that "in the long run, it is more advantageous, rather than to maintain the office of city architect, that the responsibility for the city's architectural work should be thrown on the several departments, who should select their own architects, who, with each proposed design, should be approved by the Mayor," and he, in Mr. Wheelwright's opinion, should have a professional adviser to assist him in the examination of designs, and the approval of architects. As Mr. Wheelwright has done everything that could be done to make the administration of the city architect's office economical and efficient, and has raised it from scandalous inefficiency, if nothing worse, to something like a credit to the city, his opinion, which certainly agrees with that of the profession, and of the high city officials, is of the greatest authority. It is known that the present Mayor, like the last one, entirely agrees with Mr. Wheelwright, but the matter is, to a great extent, in the hands of the Council, whose decision no one can predict.

THERE is a peculiar interest in the annual reports of the Boston Museum of Fine Arts, as showing how such a museum, in a rather small community, and with very narrow resources, as compared with those of the great foreign galleries, or with the more richly-endowed museums of our own country, can be so managed as not only to do a great work in educating the people for whose benefit it was founded to an appreciation of the power and nobility of art, but to offer, in certain ways, to artists and connoisseurs, opportunities for the study of special masters, or special schools, which are to be found in few other collections in the world. As an example of the way in which those who administer its affairs accomplish this result with an available income, which was last year actually insufficient to pay for the care of the building and collections, and for necessary repairs, attention should be particularly directed to the splendid group of paintings by J. F. Millet, and the hardly less important collection of pictures by Corot, which are to be seen together in one of the galleries. It is hardly necessary to say that the works of the great painter of peasant-life are not numerous anywhere. The Metropolitan Museum in New York, if we are not mistaken, does not possess a single example; yet the modest Boston gallery shows seven or eight, nearly all of them of great importance, while the two smallest are of peculiar interest as being specimens of pure landscape, with no help from figures. The famous "Sower" is one of the pictures so shown, and there are two or three more, to our mind of equal artistic value. Of course, these pictures are lent to the Museum, which could not dream of raising money enough to purchase such treasures for itself, but the cordiality with which the owners of such pictures entrust them to the care of the Trustees, for the public benefit, is in itself a striking testimony to the tact and care with which the Museum is conducted. In the same room with the Millets is a most interesting collection of Corots, comprising something like a dozen specimens, including the huge "Dante and Virgil" picture, perhaps the most ambitious of all Corot's works. These pictures, as might be expected from their number, furnish fine examples of Corot's earlier and later styles, and the transition between them, and, as is the case with the Millets, afford an opportunity for the thorough study of the master, such as can be found hardly anywhere else.

THE value of loan collections of this sort in connection with a public gallery can hardly be overestimated. With the Millets and Corots, for example, is placed, of course temporarily, a large full-length portrait, by Bonnat, dated 1894, of Professor Lane, of Cambridge. Whatever may be said of the portrait as a piece of sentiment, there is no doubt of the consummate technical skill of the artist, and the picture will undoubtedly give many a valuable suggestion to students and professional artists. In the same way, some pictures by Puvis de Chavannes, placed for the present in the Museum, will give to many a young artist ideas of decorative painting which would never have occurred to him otherwise; while the succession of examples of the best modern work which frequenters of the galleries are sure to find must do much to keep alive the interest of the students and professional artists of the city. That the Trustees and Director should have been able to do so much in this way is most fortunate, but it is, nevertheless, greatly to be desired that they should have resources for doing more. At present, a large portion of the available income of the Museum is derived from annual subscriptions, the income from funds bequeathed to the Museum being in great part reserved for certain specified purposes, from which it cannot be diverted. The general income ought certainly to be large enough, not only to pay for warming and lighting the galleries, and for repairs and care of the collections, but to buy an occasional picture of great merit, and thus hold out to artists a certain chance of distinction, something like that which the French Government offers by its purchases for the Luxembourg Gallery. At present, as we have said, the total of the subscriptions, added to the other available income, does not suffice, even with the greatest economy compatible with prudence, to meet the cost of maintenance, and the Trustees were obliged last year, as it seems, to take from their capital to make up the deficiency. This certainly ought not to be the case in Boston, and it is much to be hoped that the list of annual subscribers, who, as a rule, only contribute ten dollars, may be greatly extended during the coming year.

MR. HENRY M. HARMON, the last member of the firm of I. & H. M. Harmon, who, at one time, were conspicuous in the building world of Boston, died a few days ago, at the age of seventy-two. Originally builders, the two brothers, by their integrity and intelligence, drifted into an extensive business as superintendents of construction, and for many years a large part of the rich real-estate owners of the city put their building-work in the hands of the Harmons, who, in some cases, furnished plans for them, and, in others, acted in connection with, or in subordination to, architects selected by the owners. In either case, the Harmons usually made the contracts, approved the bills, and supervised the construction throughout. They rarely contracted with any but the best mechanics, and the owners were almost always pleased with the result, and cheerfully paid the firm the four per cent on the cost which they are said to have charged for their services. Naturally, the architects of that day looked sometimes with a certain jealousy upon the people who received a great deal higher price than they for services which they were themselves quite competent to render; but the two Harmons showed tact and consideration in their dealings with the profession, and to Henry Harmon, in particular, as the

practical member of the firm, many an architect is indebted for valuable suggestions, derived from a very large experience, and an unusually intelligent observation.

THE old question, of who owns the sidewalks in New York, has come up again in another form. Years ago, it was the custom in that city, when any one building a store or warehouse wished to occupy the space under the sidewalk, and, for that purpose put in sidewalk lights, to make him pay the city two dollars and a half per square foot, or something like that, for the use of the space under the sidewalk. At that time, there was a great deal of grumbling over the regulation. Many people claimed that the city had no such ownership in the sidewalks as to entitle it to sell the use of the ground under them; but, as usual in New York, they paid the bill, rather than suffer the delay and expense of resisting it. Whether this exaction is still inflicted, we do not know, but the principle is maintained in another way, by the charge which is made against builders of a certain "rental" for such portion of the sidewalks or streets as they occupy temporarily during their building operations. This charge is made in pursuance of an ordinance passed last summer, and the bills are sent out in the name of the Department of Public Works. A certain firm of contractors, Messrs. William Holland & Son, have always refused to pay their bills for rental, and an account against them has accumulated in the office of the Department, amounting to about a thousand dollars. This is a sum worth trying to collect, and the Department has brought suit for it.

ON the part of the city, it is maintained that the "rental" in question is not really rent, but simply a fee, required of builders to prevent the public from being annoyed by obstructions by irresponsible people, the proceeds of which go to pay the inspectors who keep watch to see that the builders do not unreasonably and unnecessarily interfere with the public convenience. On the part of the builders, it is argued that the sidewalks are not the private property of the Board of Public Works, and, being the property of all the citizens, cannot be rented to individuals for any purpose, and that to require builders to pay a tax for their necessary use of what they own in common with the rest of the public is an unjust discrimination against them. For both these reasons, as counsel for the builders claim, the ordinance is illegal, unconstitutional and void. What the decision will be is not yet known, the matter having been taken under advisement by the Court.

IT seems curious to hear any one talking about forestry in England, but it seems from the *British Architect* that the subject is beginning really to excite interest there. The other day, Mr. G. Cadell read before the Surveyors' Institution a paper on the profits of forestry, which contained some remarkable statistics. A certain Sir Dashwood King owns one thousand acres of forest land, which is kept in condition by judicious planting and thinning. According to the books of the estate, this thousand acres has for a long time yielded an average profit of seventeen hundred pounds per annum. This is at the rate of eight dollars and a half an acre per year, a return which would make an American farmer's mouth water. The average annual yield of wheat in the United States is less than twelve and one-half bushels to the acre. For the last year, this wheat has been selling in Chicago for a little over fifty cents a bushel, and the farmer who raised it, after paying for the seed-wheat, ploughing, harrowing, sowing, reaping and threshing his crop, has probably not received a return of more than thirty cents a bushel, or three dollars and a half an acre, and has impoverished his land into the bargain; while his English brother, with his trees, has had no seed to pay for, no ploughing, harrowing, cultivating or threshing to do, and, while securing a profit which would pay the entire cost of many a fine American farm of the same extent, has left the land, at the end of the year, more productive and valuable than it was at the beginning.

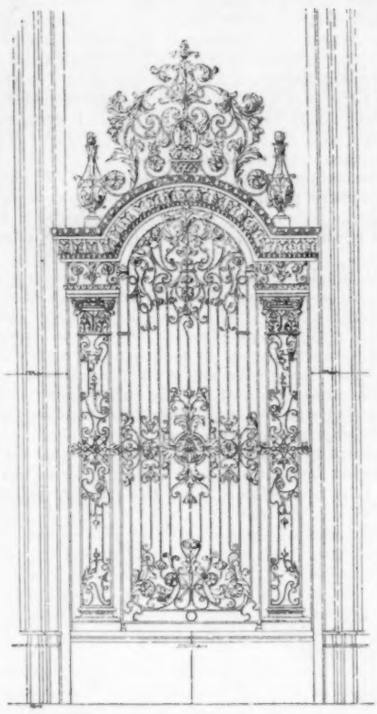
TO judge by the fury with which the people of this country still chop down and clear away forests, to plant their site with wheat, it seems as if this balance-sheet of Sir Dashwood King must be in some way in error; but Mr. Cadell said that German forest-land yielded, on an average, about six dollars and a half an acre per year; and, as we know, many of the German forests are of recent growth, and are increasing rapidly in productiveness, so that a small, well-kept English forest might easily show the profit described. With such a profit, or even a fraction of it, to work for, there must be many fortunes awaiting those who have courage enough, and patience enough, to undertake forest culture in our Eastern States. As we have often before observed, the soil and climate of New England are better adapted than any other in the world to the growth of the most staple timber in the world, — white pine. Even now, many thousands of acres in Eastern Massachusetts are covered with small white pines, the natural product of the soil, which their owners, the descendants of the settlers who cleared away the progenitors of these trees with axe and fire, allow to burn and rot through pure neglect, at the same time that they are paying six cents per square foot to have white-pine boards brought from Michigan to build their houses with. Farther south, the story is the same. Many thousands of acres of land in the Virginia Blue Ridge region, covered with oak and cherry and other valuable timber, have been sold by the State for less than one cent per acre, while the average value of all the land in the Eastern and Middle States now uncultivated, but capable of growing timber, would probably not be more than fifty cents an acre. Of course, it is one thing to grow timber, and another to get it to market; but if the Boston builders can afford to bring pine lumber a thousand miles by rail from Michigan, there must be ultimate profit in timber-raising for the people of Plymouth County, who have only forty or fifty miles of transportation to provide for; and, in districts now unprovided with railroads, nothing would be more likely to attract railroad-building than the prospect of a steady supply of staple freight from a well-managed forest.

M. CHARLES LUCAS has been publishing, in *La Construction Moderne*, a curious collection of the things, bad and good, which have been said about architects, particularly about the more noted members of the profession. Concerning Philibert de l'Orme, the architect of the Tuileries, there are a good many sayings, mostly unfavorable, inasmuch as this noted artist seems to have been a man of haughty temper, and to have taken a spite against the poet and satirist, Ronsard, who revenged himself by epigrams for de l'Orme's malicious tricks. The King, who had taken a great fancy to de l'Orme, had invested him with the abbacy of Ivry, which brought him in an income of twenty thousand livres a year. Ronsard could not forgive this, and, in a satire which he called "*La Truelle Crossée*," or as we might say, the Trowel on a Crosier, he sharply criticised the King for his favors "to masons and other still viler persons." De l'Orme did not relish this thrust, and one day, when the Queen, followed by Ronsard, came to see the work at the Tuileries, he had the door shut in Ronsard's face, as soon as the Queen had entered. Ronsard amused himself by writing on the door with a pencil, in capital letters "FORT. REVERENT. HABE"; and in a few minutes one of the Queen's attendants let him in. When the Queen came out, she saw the words on the door and asked what they meant; and Ronsard explained that they were abbreviations for *Fortunam Reverenter Habe*, the first three words of an epigram of Ausonius, meaning that one who had risen from poverty ought to respect fortune, and not haughtily shut the door in the face of the Muses. The Queen, Catherine de' Medici, took Ronsard's part, and rebuked the architect sharply, saying that the Tuileries were to be dedicated to the Muses.

IT is worth noting that Charles Garnier will be seventy years old this year. It is hard to realize that a man still so active and prominent in the professional world should have been born so long ago as 1825, and it is certainly much to be hoped that he may continue, for many years yet, the labors by which he has adorned the profession of architecture, and the kind offices by which he has endeared himself to his brethren.

THE American Prize of Rome has been awarded to Mr. John Russell Pope, of New York, a graduate in architecture of Columbia College, in the class of 1894, who has also taken the McKim Fellowship, and thus wins thirty-five hundred dollars, with which to support himself for three or four years, as the case may be, in the study of his profession. Under the conditions of the scholarship, one year, at least, must be spent in Italy. The Travelling Scholarship of the University of Pennsylvania, the winner of which receives one thousand dollars a year for the purpose of foreign travel and study, has been awarded to Mr. Percy Ash, of Philadelphia, a graduate of the University.

HOSPITAL VENTILATION.[1]



Grille at St. Ouen, Rouen, France.

IN this climate, the sick in our hospitals often suffer much distress from the excessive heats of summer. Their relief demands more serious attention than it has generally received.

At first sight, it would seem a simple matter by means of the cooling processes known to the arts to surround a sick bed with a cool atmosphere; but this atmosphere must be constantly renewed and the incoming air as constantly cooled; this cooling is a difficult problem, and has not been satisfactorily solved by any of these processes. It is much easier to warm our patients in winter than to cool them in summer.

The three principal ways in which our bodies lose heat are by convection, radiation and evaporation; but they are efficient in very different degrees.

Radiation, although effective in the open air with a clear sky, does us but little good as a cooling agent on a warm and muggy day. In our wards, when their walls are near the temperature of our patients, or rather of their clothing, which is really the radiating surface, radiation benefits them but little, for these walls of necessity return nearly as much heat as is radiated to them. Neither is radiation sensibly modified by any movement of the surrounding air.

Convection, as the name implies, is the carrying away of heat; it increases inversely as the temperature of the surrounding air, and directly with its moisture and velocity. We know well the agreeable sensations on a hot summer's day of the sea breeze, which in a greater or less degree combines these qualities. We know, too, how much, on a still hot day, fanning, which changes neither the moisture nor the temperature of the air, but simply causes more air to move over and come in contact with us, adds to our comfort by displacing the hot and moist air immediately around us.

The Cambridge Hospital is warmed by air heated in passing over pipes in which hot water circulates, enclosed in heating boxes; it is obvious that the substitution of cold water for hot water in these pipes would cool, more or less, the air on its way to the wards.

It was thought worth while to determine by experiment what influence this previous cooling might have on the comfort of our patients as compared with air of the same velocity from the open, unchanged in temperature or moisture.

An *air-chamber* extends under the whole ward; it is devoted exclusively to the purpose of receiving the air for ventilation and distributing it equally through the heating-boxes and ten registers to the ward above. This air-chamber is well lighted, and is kept scrupulously clean; nothing is allowed to be placed in it under any pretence whatever. It is generally cooler in the summer than the atmosphere; water from the city water-service is also cooler by several degrees, in the early summer, than the air. By connecting the city main with the pipes in the heating boxes, and allowing the water flowing through them to run to waste, they become, in some degree, air-coolers.

On the 21st of May, 1893, all windows and openings in the air-chamber were carefully closed, and the water from the main let on. At 3 P. M., the external thermometer was at 84° Fahr.; there was no wind, and the patients were suffering from the heat. The temperature of the air-chamber was 67° Fahr.; the water as it entered the cooling-boxes, 57–58°. The electric fan, 36 inches in diameter, driving the air into the air-chamber, was put in motion, making 500 revolutions with an air-moving power of 10,200 cubic feet a minute. At 4 P. M., the air entering the ward at the registers was at 71° Fahr.

During this hour, 400,000 cubic feet of air, as measured by a Casella's air-metre, were thrown into the ward through the ten registers: a quantity sufficient to fill the ward of 21,000 cubic feet twenty times an hour — once in three minutes.

The result was satisfactory; the comfort of the patients was manifestly improved.

But it must be observed that the cooling-surfaces were, first, the ten cooling-boxes, of 30 square feet each, at 57–58° Fahr., and, secondly, the floor and walls of the air-chamber, the two together amounting to about 3,300 square feet. The temperature of these walls could not well be determined; but as they had not been exposed to much increase of heat since the winter, they may be assumed to have been about that of the water-supply, then 58° (in winter it is about 50°). At the outset, then, we had the air-chamber full of cool air and a cooling surface of about 3,000 feet, along which the air, driven by the fan, was diffused before it entered the ward. The cooling power of the boxes may be assumed to be about one-tenth that of the walls.

These were the arrangements through the month of May, with the same benefit to the patients. In June, the summer heats were greater and more constant, and the fan more steadily used. The temperature of the air-chamber and the air passing through it had increased, and that of the water had already risen to 70°, and is usually somewhat higher later in the season; the quantity of water required was large and expensive; it was, therefore, shut off permanently. The same amount of ventilation, however, was continued, and the conditions as to the air-chamber and the admission of the air to the ward were unchanged. During the summer, the ward temperature gradually rose until it differed but little from that of the open air.

Still the comfort given to our patients and their nurses under both these methods was immediate and decided. To those entering the ward, there was a feeling of freshness and freedom of air quite beyond that of the other ward of similar construction, which had only the usual summer ventilation.

At first, the walls of the air-chamber, to a degree, acted as coolers, but this ceased as they became warmer.

We may form some estimate of the probable effect of the boxes, as coolers in summer, by comparing it with their work as heaters in winter.

The average boiler temperature in December and January is 200° Fahr.; that of the return, 145°; therefore, 55° of heat is lost in heating 120,000 cubic feet of air hourly supplied to the wards in winter.

From these data, Professor Trowbridge has kindly made the following computation:

Mean temperature of water	$= 172.5°$	(173°)
" " " air	$= \frac{1}{2}(30 + 70) =$	50
" excess of water temperature available	$173 - 50 =$	123
Excess per degree rise of air temperature	$\frac{123}{40} =$	3.07

To cool the same amount of air from 80° to 70° (mean temperature 75°) would require, if Newton's law holds, a mean temperature of $75° - 10 \times 3.07 = 45°$ approximately.

Our boxes, therefore, as then constructed, with a water circulation at 58° Fahr., were inadequate to our purpose as cooling-boxes. It is true the boxes could be enlarged. It has been computed that, with a constant flow of cool water at 50° through boxes 5.6 times as large as those we now have, we might keep a ward at 70° with an outside air of 90°, and a ventilation reduced to 40,000 cubic feet an hour — one-third of our winter supply, or one-tenth of our summer supply. But we have no reliable experiments to confirm this computation. Our own experiments have shown that this previous cooling of the air is an expensive and uncertain process, and would lessen the evaporation upon which, as we shall see farther on, we principally depend for cooling, and, what is more important, would probably not be hygienic. No further experiments were made as to cooling the air before its entrance into the ward.

Our first experiment showed clearly enough the advantage of a large supply of fresh and slightly cooled air; but it is not so clear how much was due to the temperature of the air, and how much to the rapid evaporation caused by its velocity and dryness. But as the comfort of the sick continued the same after the rise of temperature of the cooling apparatus and the shutting-off of the cold water, it is probable that it was due more to the velocity and drying qualities of the air acting upon the *patients themselves*, than to any change of temperature in the ward generally, which, as we have already said, differed but little from that of the open air. This is a point of the first importance.

The most effective way of losing heat is that last mentioned, that is, by evaporation. It is Nature's great consumer of heat. Evaporation increases with the temperature of the air, with its dryness and with its velocity. Common observation teaches how rapidly wet clothing and muddy roads dry in windy weather. If we are exposed to a warm dry air, especially if it is in motion, we may feel cool or even cold, because of the rapid evaporation from the skin. In the heats of summer, the relative dryness of the air is of more importance to our comfort than its temperature. The thermometer and our sensations do not correspond. It is evaporation increased by the air put in motion by his punkah that enables the Englishman to bear the heats of India and keep his blood at its normal temperature.

Pettenkofer calculates that in twenty-four hours we lose heat, by respiration alone, as follows:

In dry air at 32° Fahr	293,044	units of heat.
" " " " 86°	274,050	" " "
A difference of about	19,000	" " "
In air completely humid at 32°	265,050	" " "
" " " " " 86°	105,390	" " "
A difference of nearly	160,000	" " "

[1] A paper by Dr. Morrill Wyman, reprinted from the *Proceedings* of the American Academy of Arts and Sciences.

The cooling by respiration in moist air is, therefore, about one-eighth of that in dry air at the same temperature. But this is not all the heat lost by evaporation, nor the greater part; the loss by the skin is nearly twice that by the lungs under the same conditions. Here also the same law holds, the greater the relative moisture the less evaporation and consequently the less cooling.

According to Lavoisier and Seguin, 900 grammes of fluid per day are discharged by perspiration, and 500 grammes from the lungs, making 1,400 grammes of fluid lost in twenty-four hours. The evaporation of this quantity of water will consume 750 units of heat, or about one-fifth of all the heat produced in the body in twenty-four hours.

The production of heat in the animal body, and its maintenance at a normal standard, are two of the most important processes in the living organism. The two chief means for regulating the temperature of the body are the skin and the lungs. Of these, the most direct and simplest is that by the cutaneous perspiration. The relations of these organs to the atmosphere, therefore, are of great importance in the question now under consideration.

But the rate of evaporation and consequent cooling depends in great measure on the aqueous vapor already in the atmosphere. That this relative amount has a material influence on our individual comfort there is no doubt. It is certain that on those days when the proportion of humidity is greatest, even the healthiest feel an oppression and languor, and that on other days when the humidity is less there is an exhilaration of spirits and an increase of muscular energy.

It is worth while, then, to recall the laws governing this aqueous vapor, for it pervades the atmosphere, is one of the main causes of its movements, and the only fluctuating ingredient in its composition.

The evaporating power of air raised to a higher temperature is increased. A quantity of air absolutely humid at 59° Fahr. holds an amount of vapor equal to $\frac{1}{80}$ of its weight; at 86°, $\frac{1}{40}$; at 113°, $\frac{1}{20}$; at 140°, $\frac{1}{10}$; so that while the temperature advances in an arithmetical progression, the vapor-diffusing power of the atmosphere rises with the accelerating rapidity of a geometrical series having a ratio of two; with the same ratio, evaporation increases, and consequently the cooling process.

It is upon this play of forces in the aqueous vapor and the air, and the movements they bring about, that we must rely for the comfort of our patients in the heats of summer. It is not a question of changing the temperature of the air; practically, we cannot alter that nor its humidity, in the volumes required for ventilation. It is a question of the rate of evaporation from a perspiring surface, which again is governed in great measure by the velocity of the air; and this by the improvements in the arts we can control.

If, on the other hand, we attempt to attain our object by cooling the air before it enters the ward, we are met with this fact: If air absolutely humid comes in contact with warmer air, also saturated, the latter will be cooled, it will approach the dew-point, and, if its moisture is condensed into visible vapor, will give out heat. Evaporation consumes heat, condensation liberates heat.

In our first experiment the previous cooling of the air did not bring it to the point of condensation, but its relative humidity was increased; the rate of evaporation was therefore diminished, and to that degree it was a disadvantage.

The quantity of air required for our purpose cannot, as we have already said, be determined by instruments of precision alone; it must be learned by experiment and the declared sensations of the sick.

The movement of the air around us, and it is never still — the natural ventilation as it is called — is much greater than is generally supposed. Repeated experiments have shown that at two feet a second we first feel the air as a moving body; less than that we consider a perfect calm. And yet at this velocity air would move from end to end of our ward of 60 feet in 30 seconds, and across it in half that time, quite unnoticed by us.

To give comfort during the excessive heats of summer the sick require three or four times the air needed for satisfactory ventilation in winter. It required 400,000 cubic feet an hour for our sixteen patients, and yet while this large quantity was passing through the ward it was only known, except at the registers, by the accompanying sense of freshness and pleasant coolness; it was never felt as a draught.

"The great regulator of the heat of the body is undoubtedly the skin." Physiology teaches that perspiration is a secretion, in a sensible or insensible form, constantly going on. Increased heat increases perspiration, and the evaporation of this increased quantity consumes in work a large portion of the heat derived from the atmosphere, and thus prevents an undue rise of the temperature of the bodily organs. The very intensity, therefore, of the peripheral circulation, under the action of heat, leads the way to relief.

Experiments made more than a hundred years ago prove that, if the skin perspires freely and the perspiration be readily evaporated, the temperature of the body may remain nearly normal in an excessively hot atmosphere — even more than 200° Fahr.

In the present atmosphere of mixed air and aqueous vapor, with which it is never saturated, evaporation and convection must co-exist. So long as the expired air is loaded with moisture, and the skin performs its perspiratory function, and the movement of the surrounding air is under our own control, if, so to speak, we own a breeze, we may confidently rely on our ability to dispense its comforting and refreshing influences to the patients in our hospital.

The following observations with the wet and dry bulb thermometer may serve to illustrate the cooling of a moist surface. June 17, 1894, a thermometer in a still room was at 78° Fahr.; after covering the bulb with a piece of thin cotton cloth moistened with water, and fanning it for five minutes with a common fan, it fell to 72° — a difference of 6°. The same thermometer on the same day at 99°, treated in the same way, fell to 77° — a difference of 12°. A thermometer in the open air in the shade, July 13, 1894, with a gentle breeze, was at 95°; with a moistened bulb, at 73° — a difference of 12°. The relative humidity at the same time was 53%.

But the air must be in motion. A perspiring patient in still air is surrounded by an atmosphere permeated by much aqueous vapor; this must be diffused and carried away from the neighborhood by the continued arrival of fresh drier air, to get the full cooling effect due to evaporation.

It is in this way that simple agitation of the air in a warm still room brings relief, as with a common fan, or the rotary fan of the shops, or the Indian punkah. So it is with a ride in the open electric-car on a hot day; the relief is immediate. There is no atmospheric change either in temperature or in moisture; it makes no difference whether we move through the air, or the air moves by us, the sense of cooling is the same. In both, we are surrounded by air constantly renewed, bringing with it the pleasurable sensations and invigorating influences belonging to a freely moving atmosphere.

What these influences are to those in health we know; what they are to those languishing on beds of sickness, those only who have experienced them can fully appreciate. That the patients in our hospital have derived much comfort from them, their repeated declarations fully prove. Besides the physical comfort they give — like the suggestions of flowers and music, with which the sufferings of the sick are now so often soothed — these large volumes of air fresh from the fields seem to hold up to the mind of the convalescents suggestions of other scenes, which displace, for the time at least, present surroundings, and encourage the hope, so helpful to the sick, of a speedy return to their former enjoyments.

The experiences of the Cambridge Hospital leads to these two conclusions: first, that fresh air directly from the open, in the quantity and manner there supplied, can be made to give great comfort to the sick during the heats of summer; and, secondly, that previous cooling of the air so supplied is difficult and practically useless.

To this may be added, what is of much importance to charity hospitals, that the method here adopted is the least expensive of the cooling processes hitherto made generally known.

ELECTRICAL SCIENCE FOR ARCHITECTS.[1] — X.

THE NATIONAL CODE OF RULES FOR ELECTRIC WIRING. — III.

Class B.

HIGH-POTENTIAL SYSTEMS. — OVER 300 VOLTS.

Any circuit attached to any machine, or combination of machines, which develops over 300 volts difference of potential between any two wires, shall be considered as a high-potential circuit and coming under that class, unless an approved transforming device is used, which cuts the difference of potential down to less than 300 volts.

10. Outside Conductors — All outside, overhead conductors (including services): —

a. Must be covered with some *approved* insulating material, not easily abraded, firmly secured to properly insulated and substantially built supports, all tie wires having an insulation equal to that of the conductors they confine.

[Section *a*. Insulation that will be *approved* for service-wires must be solid, at least three sixty-fourths of an inch in thickness, and covered with a substantial braid. It must not readily carry fire, must show an insulating resistance of one megohm per mile after two weeks' submersion in water at 70 degrees Fahr., and three days' submersion in lime-water, with a current of 550 volts, and after three minutes' electrification.]

[The following list of wires have been tested and found to comply with the requirements for an approved insulation under Rule 10 (*a*), Rule 12 (*d*), and Rule 18 (*a*):

Acme. Ajax. Americanite. Bishop. Canvasite. Clark. Columbia. Crescent. Crown. Edison Machine. Globe. Grimshaw (white core). Habirshaw (red core). Kerite. National India Rubber Co. (N. I. R.). Okonite. Paranite. Raven Core. Safety Insulated: Requa white core; Safety black core. Salamander (rubber covered). Simplex (caoutchouc). United States (General Elec. Co.)]

None of the above wires to be used unless protected with a substantial *braided* outer covering.

Services, or service-wires, are the wires that lead from the main distributing wires to any special installation, just as the service water-pipes are the small pipes that lead from the street mains to a building.

Tie-wires are the short pieces of wire that are used to tie or fasten the line-wire to the insulators. (Fig. 25.)

[1] Continued from No. 1004, page 120.

b. Must be so placed that moisture cannot form a cross connection between them, not less than a foot apart, and not in contact with any substance other than their insulating supports.

c. Must be at least seven feet above the highest point of flat roofs, and at least one foot above the ridge of pitched roofs over which they pass or to which they are attached.

d. Must be protected by *dead insulated guard irons* or *wires* from possibility of contact with other conducting wires or substances to which current may leak. Special precautions of this kind must be taken where sharp angles occur, or where any wires might possibly come in contact with electric light or power wires.

A *cross connection* might perhaps be quite as well termed simply a connection. Thus, in Figure 26, if both wires are lying on the wet wood, *A*, there may be sufficient leakage through the wood to form an electrical connection or cross connection between the two wires.

In a similar way, if the two wires in Figure 27 were fastened to the front of a building, and the upper wire were to become loose and

Fig. 25.

Fig. 26.

Fig. 27.

hang near the lower, water dripping from the upper wire might be the cause of a connection between the two.

Guard-irons are used to keep a wire from coming in contact with conducting material when the wire fails to be properly supported by its insulators. Thus, in Figure 28, if the pin holding the insulator *A* should break, the attached wire would, on account of the strain upon it, come against the wire *B* if there were not the guard-iron, *C*, to catch it.

If a wire were to pass over another wire, and there were any liability of the upper wire sagging, coming loose from its fastenings, or breaking, a *guard-wire*, fastened to insulated supports and passing under the upper wire, would receive this upper wire were it to fall, and would prevent its falling on the wire below.

Wires that carry current for running motors, or for furnishing power in distinction from light, are commonly called *power wires*.

e. Must be provided with petticoat insulators of glass or porcelain. Porcelain knobs or cleats and rubber hooks will not be approved.

f. Must be so spliced or joined as to be both mechanically and electrically secure without solder. The joints must then be soldered, to insure preservation, and covered with an insulation equal to that on the conductors.

[Section *f*. All joints must be soldered, even if made with the McIntyre or any other patent splicing device. This ruling applies to joints and splices in all classes of wiring covered by these Rules.]

g. Telegraph, telephone and similar wires must not be placed on the same cross-arm with electric light or power wires.

11. SERVICE BLOCKS: —

Must be covered over their entire surface with, at least, two coats of waterproof paint.

The *petticoat insulator* has a petticoat or lip around the bottom. (Fig. 29.) Wet surfaces allow a leakage over them, but with the petticoat insulator the inside surface of the petticoat is protected from the weather and is always dry. Thus the current cannot leak

Fig. 29. Fig. 30. Fig. 31.

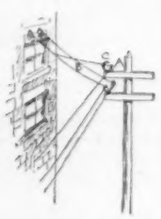


Fig. 28.

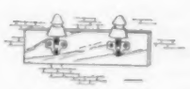


Fig. 32.

Fig. 33.

to the ground since it would have to cross this dry surface in order to reach the wooden pin on which the insulator is screwed.

Figure 12 shows a *porcelain knob*. Dry porcelain is one of the best of insulators, but the knob has all its surface exposed to the weather, and when wet might allow considerable leakage over the surface.

The *porcelain cleat* (Fig. 11) and the *rubber hook* (Fig. 30) are objectionable for outside work for the same reason that knobs are.

Figure 31 shows a "twisted joint" that will be secure without solder and that will insure good electrical connection. If left simply twisted in this way, or even if covered, the copper would soon become tarnished with a thin layer of poorly conducting substance. This would impair the connection and introduce into the circuit a certain amount of resistance that would perhaps be the cause of considerable heating. To make a permanently good joint, it is necessary to solder it thoroughly.

Service-blocks are the blocks of wood to which the insulators holding the service-wires are attached. The object of the waterproof paint is simply to give a safeguard against the absorption of moisture by the wood, which would make it a conductor and thus increase the liability of leakage. (Fig. 32.)

There is, of course, more liability of contact between wires where they are near together, as they would be when attached to the same cross-arm. There is also more liability of a connection between the two circuits on account of leakage through a wet cross-arm. There are only low electrical pressures required in operating telephones, telegraph and similar circuits, and since usually less care is taken with their insulation, even slight leakages to them, of light or power currents, might prove dangerous.

Long stretches of wire are apt to sag, and to make sure that this sagging will not bring the wire in contact with roofs, the provisions in Rule 10–c are made.

It will be observed that most of the foregoing rules in this section are made for the purpose of securing good insulation. Wires and supports out of doors are, of course, often exposed to thorough soaking, and wind storms bring strains upon the supports, swing wires out of position and rub them against awning frames, cornices, etc., so that the greatest precaution must be taken if the insulation of the circuit is to be at all times preserved.

A proper insulating covering on the wire will prevent leakage as long as the covering is in its original condition. It is a protection against leakage coming from accidental contacts with conducting material, and prevents much of the trouble that arises with inferior coverings. When, however, the covering rubs against stonework or other substances, as it often does when the wire is moved by the wind, the covering is soon abraided so that the bare wire is exposed to contact. Thus, while the insulating covering gives security in many cases, it cannot be depended upon exclusively, and precautions must be taken against contacts with any foreign substances and also against the possibility of dampness causing a leakage at some point where the covering has been injured. RUSSELL ROBB.

(To be continued.)

MINOR EXHIBITIONS IN LONDON.

THE N. E. A. C. has just opened its doors for a spring show. The above initials stand for the New English Art Club, as your readers may know, and it certainly is new, though we might more justly name it "The New Experimental Art Club," or "The New Eccentric Artistic Caterers." Its main virtue is its newness, so people say; newness of idea, its admirers affirm. As to its title of English, it possibly may be justified; for certainly it is not French, nor German, nor Italian, nor American; but the Art! of that the less said the better, unless the art of painting the ugly, the suggestive, and the otherwise objectionable, be an art. Certainly in these walks, the members have, this time, been singularly successful.

A few pictures on the walls are charming, eminently so is "Milking Time," by Mr. E. Stott. It represents the interior of a cow-shed, a white cow, and a girl — nothing more; but how exquisitely refined, both in sentiment and color! Nor have we often seen a more beautiful portrait than that by Mr. Cadby, although it may be a little too suggestive of M. Carrière, in manner, and of Mr. Orchardson, in tone. But the beautiful effect of a face entirely in light, and yet strong and rich in color, and the manner of handling the flesh tints, are all Mr. Cadby's own.

Mr. Anning Bell's "Adagio" is much admired by his admirers. Its composition is said to be perfect — by the way, the word "composition" is now out of date; your lights, and shades, and forms, must present a good *pattern* upon your background. And the "Adagio's" color is fine. Well, it may be so; its harmonies of white are pleasing enough, though richness of "color" seems absent — it is rather a harmonious scheme of monochrome. But that conceded, can anything be less graceful than the caperings of three girls, evidently doing that singularly inelegant kicking-about "dance," which we see the children perform in our courts and allies, after the manner of their superiors, the Music Hall, and other, fine "ladies," noble and plebeian. There may be some bodies under those white skirts — we take them upon faith; but the effect is simply a head upon the top of an inflated mass of muslin — no form either in drapery, or in figures; indeed there is not the slightest indication of a human body being within the drapery.

A few landscapes also are noteworthy and sane: Mr. Henry's beautiful effect of "Waning light — Boulogne," and Mr. Alfred Hartley's equally delightful "Charles's Wain," three or four poplars in the dimness of early night, when the stars are peeping out from the mist.

But here a protest must be entered against the new men's ideas of art. We have been told for some years past by the Apostles of Beauty, that Art is Religion, and a great deal more of the same kind of nonsense. No doubt, Art is the handmaid of Religion, and has been, from all time; but that it *is* Religion, is mere artistic cant; and were it a fact, this Religion, as practised by a certain set of painters, would be not only a false one, but a very ugly one — sensuous, suggestive, sensual.

One painter delights in the vulgarity of a Spanish woman, evidently of questionable morals; another's idea of beauty is a lady fitted to be the wife of the savage king, whose full dress was a hat and a pair of boots. This queen of beauty, whose portrait, we are told, comprises a scheme for the decoration of a room! (whose room, I wonder?) also wears a hat, and a very large one, as well as a skirt which appears to be in danger of falling off — judging from the vigor with which she clutches it. As to boots, she may be shod, but the descending drapery hides the feet.

As one looks at these efforts of a young set of painters, one cannot help thinking that the perpetrators meet together from time to time, and consult as to the amount of unsanitary dust which shall next be thrown into the public eye; they seem to say "How much audacity will the public stand?" Happily, many visitors to the gallery are probably too innocent to read between the lines, and see the *double entendre*. Much is frequently written about the Paris *Salons*, and the nudities that are exposed upon the walls; but where is the indecency in a nude figure, except from the point-of-view of Dame Grundy. Even a few pictures which were rejected from the immoral point-of-view, were purity itself compared to a school of draughtsmen here at home. As in literature, so in art; young England is out-Heroding Herod.

Let us turn to a charming little group of water-colors, by Mr. Moffat Lindner, of the Basses Pyrénées, at Mr. Dunthorne's gallery. Here we find the most exquisite refinement, and, in most cases, absolute truth. Occasionally, in the more violent effects of sunlight and sunsets, there is exaggeration of color, and the tones of the red roofs are monotonous — wanting in the variety of color which we always find in all but quite new tiles; the seas, too, are not wet, and the skies are heavy. Again, we may take exception to the drawing of some of the Venetian boats and buildings. But nothing can be more beautiful than Mr. Lindner's treatment of mist, his early morning effects; and his handling of snow-capped mountains and snowy plains leave nothing to be desired.

Mr. Elgood's "Gardens" have been a great success, they are just what the British public love, and many of them are very charming, according to their lights. But they are terribly wanting in variety; whether in England or in Italy, Mr. Elgood always seems to see the flowers in the same light, and his blue skies are of one note. So, too, one wonders at the similarity in the treatment of such diverse places as the Alcazar Gardens, the Villa Medici and Rockingham. Still, the painter has a talent for painting groups of many-colored flowers, which is not common; and as the rendering of the gardens was the primary object, perhaps we ought not to grumble that they were not treated more simply, or as merely a part of the landscape.

S. Beale.

PETERBOROUGH CATHEDRAL.

The appeal of the Dean of Peterborough for aid towards restoring the damage done by the recent storm to the west front of that cathedral has drawn the following remarks from Mr. William Morris: —

Every one who has any interest in art or history must be much moved by this accident and wish for its speedy repair. I may add also that for some years past it has been known that this magnificent work of art, which is by common consent the noblest and most beautiful of our English west fronts, has shown signs of movement, probably due to some defect of the foundations caused by the draining of the fen-land, so that a thorough search into its present condition has been recognized to be necessary. I must say, for my own part, that an intimate acquaintance with the west front of Peterborough has made it so much a part of my life that I long to see it put out of all peril by judicious repair and essential strengthening of its structure, and I have no doubt that the Dean shares this feeling with me.

I heartily wish I could leave the matter here with a promise of what pecuniary aid I could afford, but there is another danger to which this great monument of English art is exposed besides that of falling into ruin. There are two ways in which it may be dealt with by its responsible guardians — the first would be the successful, the second the unsuccessful way. If treated successfully, it will come out of this trial with its beauty intact, its external appearance unchanged from what we have known and admired in our lifetime. Unsuccessfully treated, it will bear the appearance of a modern piece of work founded on an ancient design, and in that case it will have lost the greater part of its interest in the eyes of the historical student and the wide-minded artist; in short, it will have been "restored," and its genuine existence will have come to an end. That this is no chimerical danger is obvious from the fact admitted by almost all observers that all our great architectural monuments have suffered more or less from the "restoration" mania during the last fifty years, and that some (*e. g.* Worcester and Lichfield Cathedrals, to go no farther) have been almost destroyed by it.

I am well aware that the difficulties in the way of successful structural repair of Peterborough west front are, from the nature of the case, very great, that they are serious enough to tax heavily the skill and experience of the best masters of construction amongst us; but at the same time I am sure that they can be overcome by patience and the expenditure of a large sum of money. Only I think the occasion so important that the burden of undertaking the work should not be thrown on one man's shoulders, and that a consensus should be held of the best engineering and building skill before the critical part of the work is undertaken; though the preliminary work of supporting and shoring the threatened parts should be put in hand as soon as possible. And again I must say that if the front be taken down and rebuilt, instead of being made safe in its place — as I cannot see any reason to doubt it may be — the work will not be done, but undone, and a lasting shame will lie upon all who are responsible for the preservation of the fabric.

It would be a great relief, therefore, to all genuine lovers of the master art of architecture if we could receive an assurance from the Dean (1) that as little disturbance of the surface of the building shall take place as possible, and that consequently no merely decorative features shall be reproduced in imitation of the old work. (2) That every device which skill and knowledge can suggest shall be exhausted before rebuilding be even thought of, and that consequently a committee of consultation chosen from the best (not necessarily the best known) engineers and architects shall be called together to consult on the various devices for making the west front good. I think that the public have a right to ask the Dean for the fullest possible information of what is intended to be done before they respond to his very reasonable and necessary appeal for funds. I cannot doubt that he will give that information readily and freely. — *The Architect.*

BUILDING LAW.

Rights and Liabilities of Contractors. — Where a contractor sues for the reasonable value of extra work, without setting out the building contract, the defense that its value has not been submitted to arbitrators, as stipulated by the contract, is waived by pleading to the merits.

Where the specifications require the contractor to rub down all brick-work on street sides, he cannot claim pay for cleaning street walls with acid as for extra work.

A modification of a building contract so as to require pressed-brick walls, impliedly requires pressed-brick chimneys, which are a part thereof.

A contractor is not liable for failure to keep the walls plumb, as required by the contract, where the defect is due to the addition of an extra story without strengthening the foundations.

The measure of damages for failure to use the grade of plastering required by a building contract is the difference between the class of work contracted for and that which was furnished.

[Chamberlin *vs.* Hibbard (Sup. Ct. Ore.), 38 Pacific Rep. 437.]

Liability of Architect for Want of Care and Skill. — In an action by an architect for commission for designing and supervising the construction of a building, the owner alleged that the plans were faulty and the building not constructed according to specifications and claimed damages. The work performed was to be paid upon certificates by the architect, and the owner paid for some work which he knew was not according to specifications. It was held that it was error to refuse to charge that such payments, made with such knowledge, would not preclude the owner from recovering damages suffered by failure of the architect to use proper diligence and skill in drawing the plans and specifications, or in supervising the work done thereunder.

[Pierson *vs.* Tyndall (Civ. Ct. App. Tex.), 28 S. W. Rep. 232.]

Binding Effect of an Award. — Where parties to a building contract agreed to refer any question arising under the contract to a certain architect, whose decision should be final, and disputes arose and were referred to such architect, who made an award, and one of the parties by mistake omitted to submit in evidence the payment of $2,250 to the contractors, there being no claim of fraud, the award is binding and conclusive upon the parties.

[English *vs.* School District, etc. (Sup. Ct. Pa.), 30 Atlantic Rep. 506.]

Sufficiency of Notice of Mechanic's Lien. — 1. A notice of mechanic's lien which states that S. is the owner of the premises, and caused the buildings to be erected, that R. is the contractor, and that materials were furnished under a contract with him, sufficiently shows the relationship of the parties.

2. A notice describing the building as "that certain building or structure" on certain lots is sufficient.

[Collins *vs.* Snoke, 38 Pacific Reporter, 161.]

Basis for Architect's Certificate. — The value of the work performed should not be the sole guide in determining the amount due upon a building contract. The architect must have regard also to the amount and value of the work remaining to be performed; and, if it is apparent that the expense of completing the contract from that point would be substantially the full amount of the unpaid contract price, then nothing is due the contractor. The court can hold the architect to only a fair and reasonably correct judgment in that regard, and the fact that the expense of completing a contract on a building was only $525 less than the balance of the original contract price, which remained unpaid at the time when the certificate was

demanded and refused, is conclusive evidence of such fairness and reasonableness of judgment, where the contractor's estimate called for $2,000, when there had been defective construction and much of the work to be completed under the various subcontracts.

[Kelley *vs.* Syracuse (Sup. Ct. Onondaga Co.), 31 N. Y. S. Rep. 284.]

SOCIETIES

THE ENGINEERS' CLUB OF PHILADELPHIA.

AT the regular meeting, held April 20, 1895, seventy-two members and visitors were present.

The paper of the evening, on Electrical Heating, was presented by Mr. J. Chester Wilson, who illustrated his remarks by blackboard sketches and models of many of the devices referred to.

The proportion of heat developed in an electrical circuit is related exactly to the blockade, or resistance, to the free transfer of electric energy, which may, therefore, be designed so as to produce the heat desired at any local point. The ordinary incandescent lamp is one of the commonest illustrations of the heating of a filament with resultant incandescence, and is now utilized as a heater of small capacity and requirement, in the effort to obtain something unique and exquisitely cleanly for such a purpose as heating water in a teapot, but it could not be looked upon as a factor in designing an article for commercial heating.

The nature of the resisting medium has much to do with the resultant rise of temperature. In comparing platinum with silver, the capacity of the latter for heat is twice as great, but its specific resistance to the flow of current is only one-seventh that of platinum. The rise of temperature, therefore, in each of these two metals under similar conditions would be about 12 to 1 in favor of platinum.

This question of efficiency, together with that of economy, must be considered in selecting a resisting medium for local heat effects. The electric-arc, however, furnishes us the highest type of electric-fire with which we have any familiarity. Violle has attempted to measure the temperature of the arc, and has decided that it is about 3,500° C., which is simply the point of volatilization of carbon. In this intense heat platinum and gold are readily vaporized, and the diamond can be fused. The electric-arc was used for its heating-power before it came into service as a source of light, for it is fifty years since Cowles first used this heat in a reduction furnace for obtaining aluminium-copper alloys.

The advantages of an electric-furnace lie in the facts that the necessary heat exists inside of a hermetrically sealed chamber, so that combustion of foreign material is eliminated, and the purity of the ore or metal under treatment is preserved. As an illustration of the results that this method of reduction have produced, it might be noted that a few years ago aluminium sold at $100 per pound, and now it is being utilized in the manufacture of a great variety of objects, wherein there is a profit at 75 cents per pound.

In domestic heating, it is found that the commercial efficiency of a coal-range is from 3 to 6 per cent, while the heat efficiency of the average central electric-station is about 6 per cent, which could, of course, be improved with apparatus specially planned for higher working economy, while the cleanliness, regularity, convenience, and healthfulness of electric-heating will counterbalance the objection to slightly higher rates in the earliest stages of its introduction. In the electric-kitchen in New York, on a 11-week trial, at the rate of 5 cents per horse-power hour, nearly 100 persons were served at an average cost of 2½ cents each for the heat.

Many forms of industrial work are being improved by the introduction of electric-heating. In electric laundry-service, the features of continued readiness by constant temperature, avoidance of over-heated rooms for operators, cleanliness and safety, all contribute to make the use of the electric laundry-iron advantageous. The 7-pound iron of this type requires but 330 watts, which is more economical than heating with the coal or gas stove. The electric glue-pot, requiring but 2 ampères on the usual 110-volt incandescent-light circuit, and the electric soldering-iron, requiring but 3 to 7 ampères on a 110-volt circuit, are other appliances meeting with popular favor.

Probably the greatest attention in heating has been for personal comfort, especially in passenger street-car work. Here the application is greatly simplified by the presence on the car of the needed source of power. Connection with the line may be had by simply tapping it on its way to the motor, and, with the coils of properly regulated resistance, the needed amount of heat may be developed in a position where it will not interfere with the seating of passengers, the space under the seats being generally utilized for the heaters. These heaters are designed to use 5 to 9 ampères of a current of 500 volts pressure. While car-stoves cost 20 to 35 cents per car-day, the same temperature can be obtained by electric-heaters at from 12 to 18 cents per car-day.

In the Burton electric-heater, which was examined and awarded a medal by the Franklin Institute, the wires giving off heat are imbedded in fire-clay, finely powdered, so that the clay absorbs the heat, and prevents the oxidation of the resistance-wire. In the Cochran heater, the resistance-wire is wound over an asbestos-covered tube, over which another tube is loosely fitted as a shield and an aid in holding the heat, both tubes being perforated for free circulation of air.

Without doubt the most lucrative application of electric-heating at the present time is in the line of welding metals. This is accomplished by using large electric-currents of very slight pressure: for instance, to weld one inch round iron, 5,000 ampères are employed for 20 seconds, while twice this diameter requires 20,000 ampères for 80 seconds.

MR. GEORGE S. WEBSTER: Has there not been trouble in car-heating by electricity, due to the unevenness of temperature on account of variations in current?

MR. WILSON: This trouble has been met with but it could be regulated if the switches were properly cared for, but many of them have been carelessly placed and controlled by incompetent employés.

MR. CARL HERING: I understand that one of the theatres in London is now being successfully heated by electricity. This system seems to be especially adapted for such service — where the heat is needed for only a short time.

PROF. H. W. SPANGLER: As it would be much more expensive, I cannot conceive that electric-heaters would be used in places where exhaust steam is available.

MR. CLAYTON W. PIKE: The problem of heating cars by electricity in this climate is a comparatively simple one. Farther north they have had much trouble in getting a sufficiently high temperature to make the cars comfortable at a moderate expense.

MR. JAMES CHRISTIE: On the other hand, I have ridden in cars in Canada that were very comfortably heated, when the thermometer was 30° below zero.

MR. GEORGE M. SINCLAIR: I understand that one horse-power can be supplied for 10 hours per day at an expense of $25 per year, and at that rate the profits of a single car for one or two days' running, would be sufficient to heat it for the year.

MR. A. FALKENAU: The Niagara Power Company was quoted an offering to supply Buffalo with power at $22 per year per horse-power, 24 hours per day. L. F. RONDINELLA, *Secretary.*

THE ILLUSTRATIONS

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

THE MARYLAND CLUB-HOUSE, CHARLES AND EAGER STS., BALTIMORE, MD. MESSRS. BALDWIN & PENNINGTON, ARCHITECTS, BALTIMORE, MD.

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

THE Maryland Club, of Baltimore, is the oldest social club in the United States, having been started in 1833 and reorganized Feb. 20, 1857, the President then having been Jerome Napoleon Bonaparte — the son of Prince Jerome Napoleon, King of Westphalia. The present home of the Club, as illustrated in this issue, is at the southeast corner of Charles and Eager Streets. The building, which was completed and occupied Jan. 1, 1892, is built of Maryland white marble and treated throughout in modern Romanesque. The lot is 100 feet on Charles Street and 185 feet on Eager Street, the building being 70′ x 155′, with a space on the south for a future annex. The building is very complete in all its appointments as will be seen by the plans. The basement contains barbers'-room, oyster-cellar, various store-rooms, servants' and other service quarters, besides boiler-room and fuel and storage-cellar. On the first floor the feature of the house is the large hall — 18 feet wide in each direction, leading to the large parlor to the right; to the left, billiard-room, café, etc.; while in front of the entrance is the large stairway, lavatory, toilet, elevator, telephone-office, coat-room, etc., and on either side of entrance, reading or paper room and reception-room. On the second floor the same large hall is continued, with access to the large dining-room and private dining-rooms, arranged with wide sliding-doors, so they can be thrown in one for large dinners. The card-room and library are over the large parlor — all the necessary service-apartments, toilets, etc. are provided. Specially pleasant features of the house are the large covered porches on the first and second floors — used in summer for dining, etc. On the third floor is located the kitchen, scullery, refrigerator and serving-rooms with lifts, elevators and dumb-waiters to the several lower floors. Eleven chambers for use of members are provided on this floor, with baths and toilet arrangements. On the fourth or attic floor are located laundry, servants' and other store rooms for linen, etc., with a flat roof for laundry and other purposes. The interior finish is in mahogany and oak. The house is heated and ventilated throughout by hot-water, indirect system, it is also provided with electric-lights, hydraulic passenger-elevator and all of the most modern appliances. On account of the location each room has outside windows and a free and ample supply of sun and light, in all, making a most comfortable and convenient club-house.

PLANS AND ELEVATION OF THE SAME.

DETACHED COTTAGE FOR THE STATE INDUSTRIAL SCHOOL FOR GIRLS, BELOIT, KAS. MR. SEYMOUR DAVIS, STATE ARCHITECT, TOPEKA, KAS.

This building is built of native stone, trimmed with pressed brick and is designed to accommodate forty of the better class of incorrigible girls. It is one of a number of cottages planned for this institution.

APARTMENT-HOUSE, PARKER ST., ROXBURY, MASS. MR. CHARLES A. BROWN, ARCHITECT, BOSTON, MASS.

PRIMARY SCHOOL-HOUSE, GENESEE ST., BOSTON, MASS. MR. E. M. WHEELWRIGHT, CITY ARCHITECT, BOSTON, MASS.

THE BAPTIST ORPHANAGE OF VIRGINIA, SALEM, VA. MR. CHARLES E. CASSELL, ARCHITECT, BALTIMORE, MD.

[Additional Illustrations in the International Edition.]

MAIN ENTRANCE: MARYLAND CLUB-HOUSE, BALTIMORE, MD. MESSRS. BALDWIN & PENNINGTON, ARCHITECTS, BALTIMORE, MD.

[Gelatine Print.]

STAIRCASE HALL OF THE SAME.

[Gelatine Print.]

FIREPLACE IN STAIRCASE HALL OF THE SAME.

[Gelatine Print.]

SMOKING-ROOM OF THE SAME.

[Gelatine Print.]

DINING-ROOM OF THE SAME.

[Gelatine Print.]

COMMUNICATIONS

[*The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.*]

THE BOSTON EXHIBITION OF ARCHITECTURAL DRAWINGS.

Boston, Mass., May 1, 1895.

To the Editors of the American Architect: —

Dear Sirs, — In your review (April 27th) of the recent Architectural Exhibition in this city is a misstatement that the loss of one catalogue alone cannot explain. The loss of your reviewer's catalogue of the Boston Exhibition is made the excuse for various blunders, such as the assertion that only one photograph was shown, when Mr. H. L. Warren showed some dozen different views of his beautiful Troy Asylum in one mat, and Mr. T. A. Fox exhibited a considerable group of superb enlargements of photographs of Greek detail. But the crowning error, which I write to correct, was the following statement:

"In one respect we regretted its [the catalogue's] appearance and make-up, that is, because it contained advertisements of building-supplies — most excellent things in their proper place, but we hold them to be wholly out of place in an Exhibition Catalogue. The position taken by the St. Louis Chapter of the American Institute of Architects was the proper and dignified one and it ought to be followed elsewhere; the catalogue of their recent exhibition, although a much more costly publication than either the Boston or the League catalogue, contained not a line of advertising matter."

As a matter of fact, the St. Louis catalogue contains 62 pages of advertisements, representing 107 different firms.

As regards the policy of securing advertisements in exhibition catalogues there is room for an honest difference of opinion, it being a fair contention that those who have architectural goods to sell can find no more profitable opportunities for legitimate advertising than in the illustrated catalogues of architectural exhibitions.

Yours truly, R. D. A.

[To this very outspoken charge of disingenuousness, if not lack of veracity, the reviewer will merely reply that he pleaded the failings of a "treacherous memory" in addition to the loss of his catalogue, though he willingly admits that a man without a memory has no proper place in life. As to the St. Louis catalogue, he will explain that the copy sent him by the Secretary of the St. Louis Chapter contained not a line of advertising and no indication that it had ever included any such extraneous matter. He still holds that advertising in the catalogue of a fine-art exhibition is as out of place as it is on the programme of a first-class theatre, and feels that it is no more "legitimate" to allow such advertising than it would be to allow the placing of a new-fangled bicycle corset on some piece of sculpture. From the advertisers' standpoint, all advertising is "legitimate," but those in whose hands the safe-guarding of proprieties are temporarily placed ought to look at the matter from a higher standpoint.]

EXHIBITIONS

Boston, Mass. — *Pictures loaned by Quincy A. Shaw; Paintings by Puvis de Chavannes; Japanese Paintings; Color Prints by Arthur W. Dow; Line Engravings, Mezzotints, and Etchings by Rembrandt:* at the Museum of Fine Arts.

South End Free Art Exhibition: at 1151 Washington St., opened April 18.

Caricature Exhibition: at Allston Hall, 194 Clarendon St., opened April 29.

Paintings by Edwin A. Abbey: at the St. Botolph Club, April 29 to May 11.

Chicago, Ill. — *Annual Spring Exhibition of Water-colors and Pastels:* at the Art Institute, April 11 to May 16.

New York, N. Y. — *Loan Exhibition:* at the Metropolitan Museum of Art.

Seventieth Annual Exhibition of the National Academy of Design: April 1 to May 11.

Paintings by the Old Masters: at the Macbeth Gallery, 237 Fifth Ave.

Modern Italian Paintings: at the Holland Art Galleries, 329 Fifth Ave.

Art Loan Exhibition: at Fifth Ave. Art Galleries, 366 5th Ave., opened April 24.

Paintings by W. T. Inglis: at H. Wunderlich & Co.'s, 868 Broadway, April 22 to May 6.

Exhibition of Sculpture by the National Sculpture Society: at the Fine Arts Building, 215 West 57th St., opens May 7.

Engraved Work of Asher Brown Durand: at the Grolier Club.

East Side Art Exhibition: at the Hebrew Institute, East Broadway and Jefferson St., opens May 8.

Providence, R. I. — *Loan Exhibition of Portraits of Women:* at the Art Club, April 18 to May 8.

Quincy, Mass. — *Exhibition of Posters:* in the Unitarian Chapel, May 7 to 11.

NOTES AND CLIPPINGS

Strikes in Ancient Egypt. — The reporter of the time of Rameses IX does not take note of the walking-delegate, though strikes were numerous then among the Theban workmen. As laborers were paid in food, the contractors were often behindhand with their supplies. Erwin writes "that it is one of the acknowledged characteristics of modern Egypt that payments can never be made without delays; so also in old Egypt, the same routine seems to have been followed out with respect to payments in kind." To build or keep the tombs and monuments of the dead in good order must have required a vast number of workmen. If they were not paid and were starving, familiarity with the mortal remains of the great, and the property stored away in mummy cases, had made these workmen indifferent to the idea of there being any peculiar kind of sacrilege in committing robbery. That accounts, so think many authorities, why so many tombs have been rifled. Probably for that reason were built those vast masses of stone, with narrow passages, so as to guard an entrance from thieves. But precautions extending over thousands of years are impossible. If the thief of one generation was foiled, his descendants were more enterprising or expert, or, may be, curious. Bearing this in mind, the more remarkable are the recent finds made by M. de Morgan, at Dachouar. — *N. Y. Times.*

The Delaware House, Bristol, Pa. — The historic old Delaware House, at Bristol, is undergoing improvements. The old arched doorway, forming the main entrance to the house, has been torn away. It was through this old doorway that General Lafayette passed when he took dinner at the house while on his way to Philadelphia from New York, in March, 1824. The old porch at the rear of the house, upon which Lafayette sat after dinner and smoked and chatted with the natives, has also been torn away. In tearing up the old timbers, the workmen found a number of old coins. The Delaware House was a famous summer resort one hundred years ago. It was the stopping-place of the New York and Philadelphia stage line, and many distinguished persons besides the illustrious Marquis stopped there over night. Joseph Bonaparte, while living at Bordentown, N. J., spent several summers at the old hostelry. — *Philadelphia Record.*

Definition of an Architect. — In the last *Nineteenth Century*, Count Alphonse de Calonne gives this definition of an architect: "A somewhat complex individuality, who is not invariably a genius, but who ought always to be an upright man and a gentlemen."

S. J. Parkhill & Co., Printers, Boston, U. S. A.

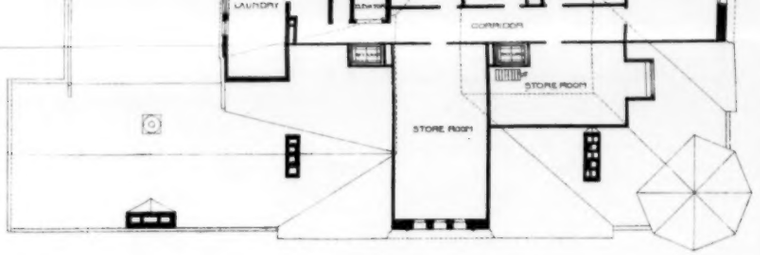
THE · MARYLAND · CLUB · HOUSE ·
· CHARLES · & · EAGER · STREETS ·
· BALTIMORE · MD ·

CHARLES · & · EAGER · STREETS ·

· BALTIMORE · MD ·

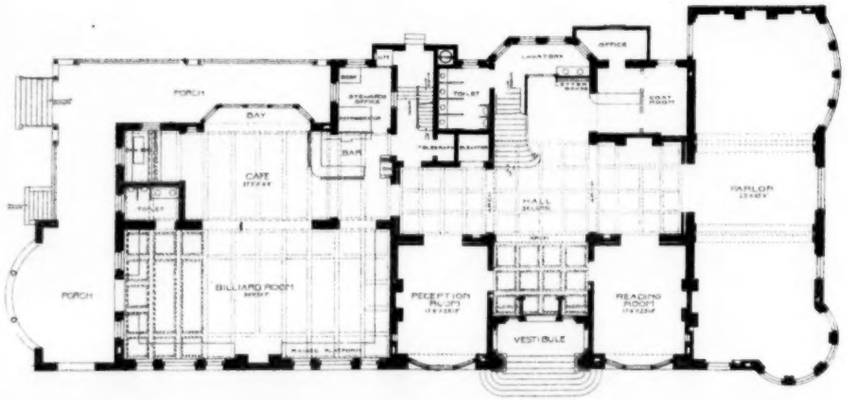
· BALDWIN · & · PENNINGTON ·

· ARCHITECTS ·

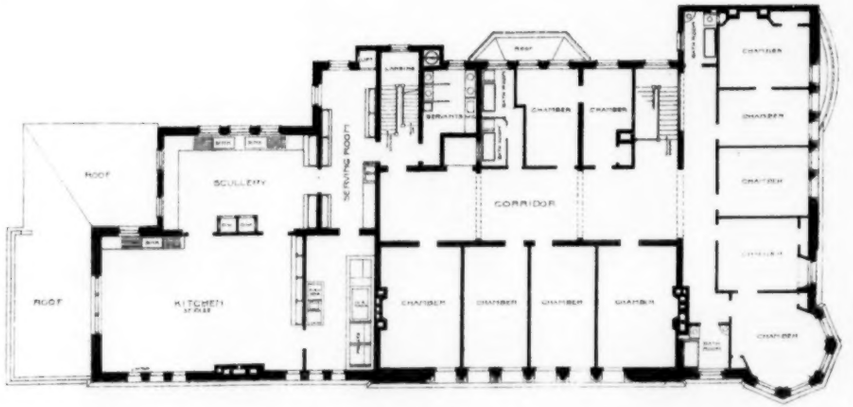


ATTIC PLAN

COURT

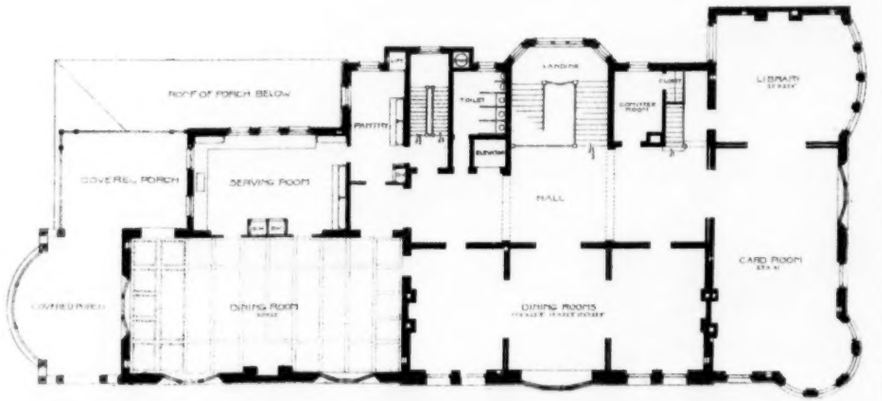


FIRST FLOOR PLAN



THIRD FLOOR PLAN

BASEMENT PLAN



SECOND FLOOR PLAN

HELIOTYPE PRINTING CO. BOSTON

The Baptist Orphanage of Virginia, Salem Va.

Charles C. Connell, Architect
Baltimore, Md.

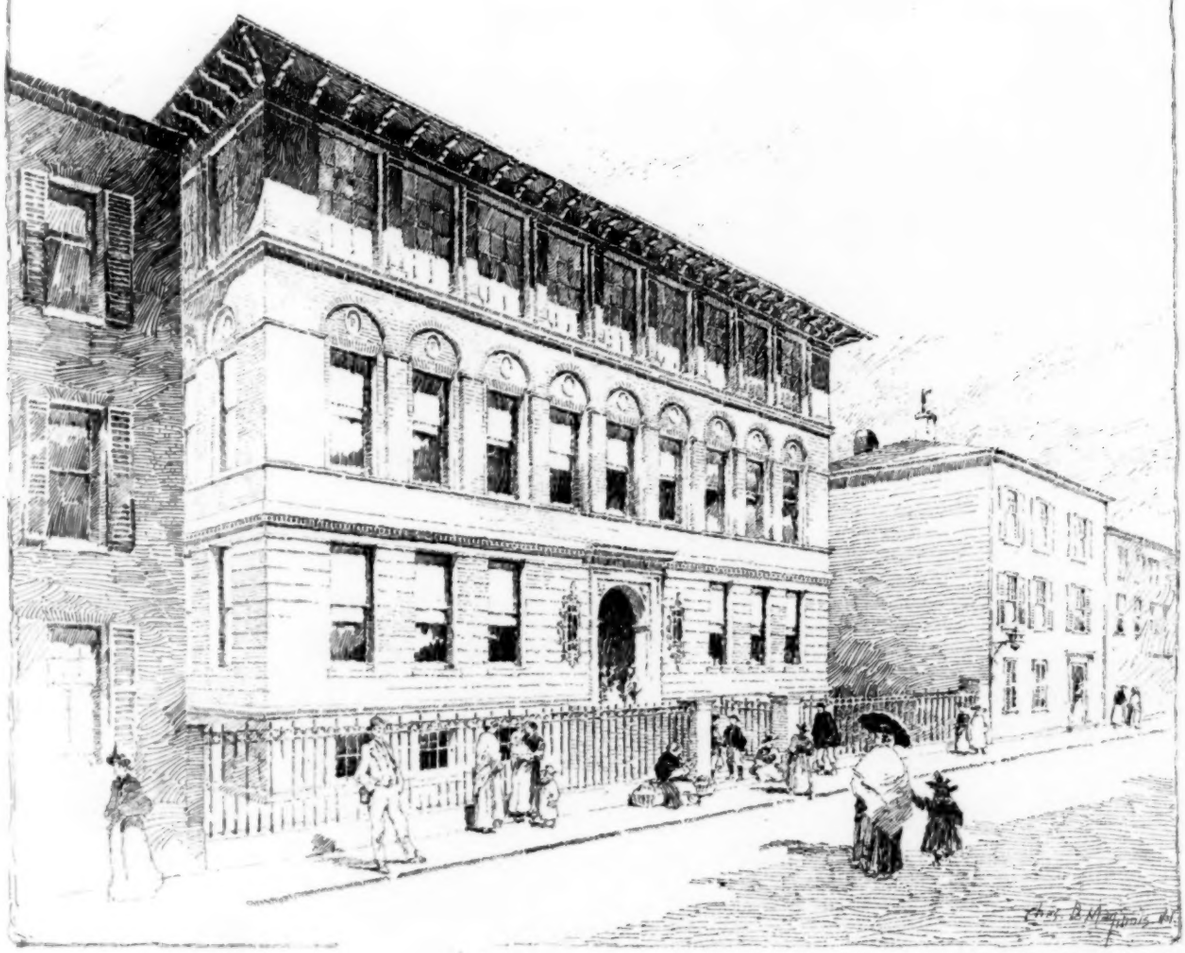
DETACHED COTTAGE.
STATE INDUSTRIAL SCHOOL FOR GIRLS.
BELOIT, KANSAS.
KEYES & VRDAKY, STATE ARCHITECTS.
TOPEKA, KANSAS.

HELIOTYPE PRINTING CO., BOSTON.

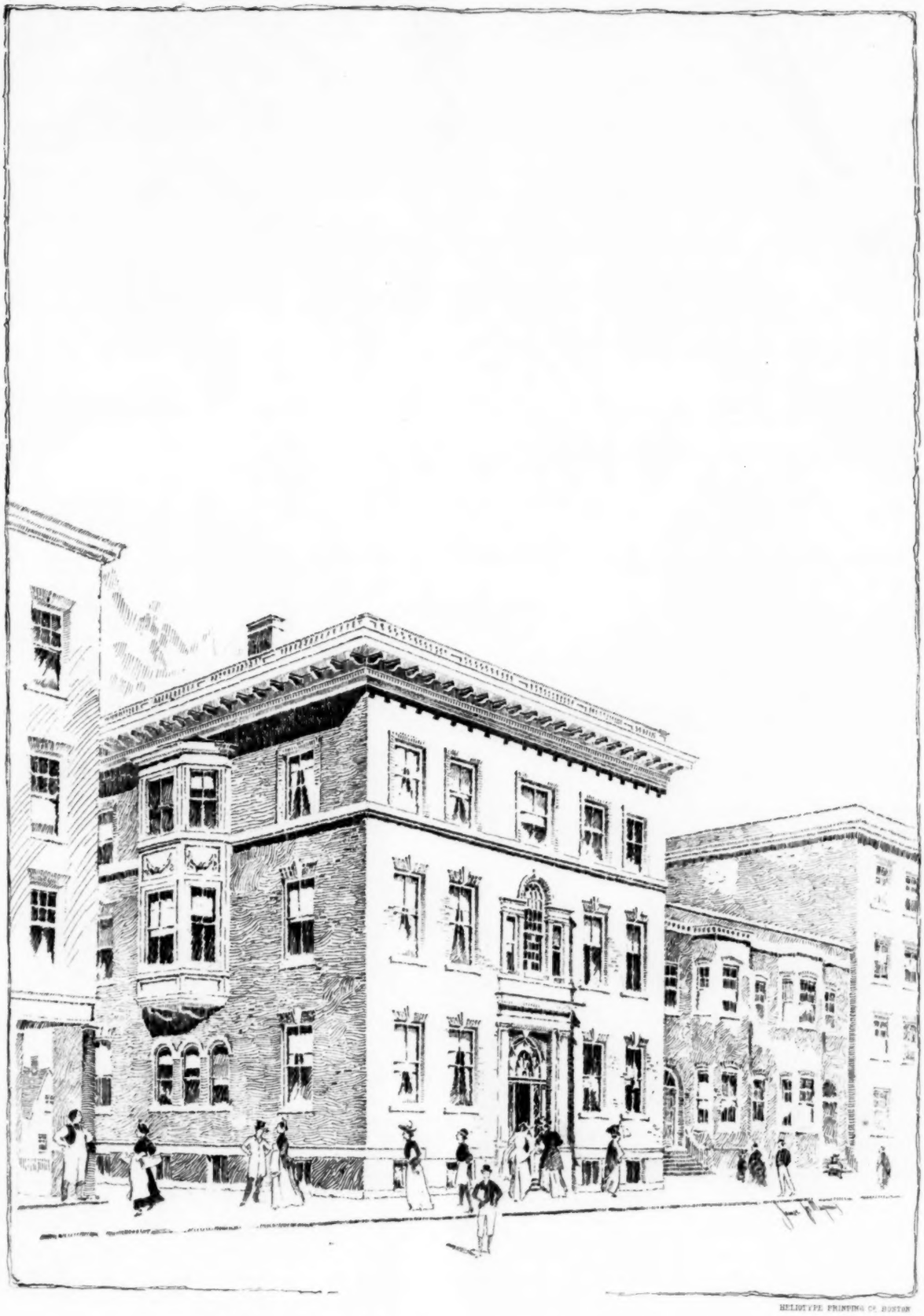
CITY OF BOSTON.

PRIMARY SCHOOL GENESEE ST.

EDMUND M. WHEELWRIGHT, CITY ARCHT.



HELIOTYPE PRINTING CO. BOSTON.



HELIOTYPE PRINTING CO. BOSTON

APARTMENT-HOUSE ···· PARKER·ST·· ROXBURY

CHARLES A. BROWN ARCH.T.

BOSTON MASS