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THE National Board of Fire Underwriters met last week in New York, and statistics were presented of much interest, differing also in some respects from those contained in the report of the Insurance Commissioner, to which we referred two weeks ago, and which perhaps misled us to some extent by including dividends among the expenses of the companies. The New York companies, it seems, paid a dividend of about eleven and a half per cent, on an average, which, it would appear by the Commissioner's statement, must have been taken from their capital, as the losses and other expenses equalled the premiums received. Perhaps some expert will help us out with our figures, as we should be sorry to misrepresent the companies or their business. Meanwhile, we note with great satisfaction that the Committee on Construction of Buildings complain of the unnecessary losses which our reckless habits of building bring upon us, and urge greater strictness in enforcing the building laws of the large cities, and more care in selection of those who administer such laws. They compare the losses in this country with those which are suffered in Europe, and instance with reason the dangerous condition of our great summer hotels. They disapprove, moreover, of very high buildings, and urge the construction of fire-proof interior work. All this is very hopeful, and we trust that the tendency toward mutual coöperation among the companies will take shape in a strong movement toward some of the reforms which are so clearly for the interest of the underwriters as a class, just as for that of the whole community, and that we shall by and by cease to hear the complaint, which is made in Europe as well as in this country, that the underwriters systematically discourage fire-proof building. It is noticeable that the amount of capital invested in the business has decreased some eight per cent within the year, and twenty-five companies have ceased operations altogether. What this indicates we cannot say.

THE Supplementary Report of the Boston Manufacturers' Mutual Insurance Company, or rather, its presidents, shows how a few individuals are working to bring about a better state of things, and, though addressed to manufacturers, is full of suggestions in regard to matters which are strictly within the province of architects. As the writer says, "if the interests of owners, occupants, architects, builders, and underwriters could be made identical elsewhere as they have been in mill-construction, seventy-five to one hundred millions of dollars a year, now wasted, would be saved to this country." And he proceeds to prove this, by showing how the modes of building found by experience best to combine cheapness with fire-resisting quality, and therefore insisted upon by the factory underwriters, have diminished the cost of insurance upon that very hazardous kind of risk from some two per cent per annum to a small fraction of one per cent, — much less than the rate which is imposed upon hotels, churches, school-houses and other buildings where danger from fire is, or should be, less than a hundredth part of that which exists in cotton-mills. The business of the Boston company in 1879 was more favorable than in previous years, partly from good fortune, no doubt, but still more owing to the thoroughness with which good construction has been enforced, and the result is shown in a total loss of

fourteen thousand dollars out of forty-five millions insured; in other words, the losses were *thirty-one thousandths of one per cent* on the amount at risk. Let any architect compare his insurance policies on dwelling-houses, where one-fifth to three-tenths of one per cent is charged for structures always occupied and guarded, and free from accumulations of inflammable material, from the friction of machinery and danger of spontaneous combustion, with the cost of insuring mills packed with dry cotton, their atmosphere filled with floating fibres, which a little extra friction in the all-pervading machinery may set into a blaze, liable always to spontaneous combustion, which, with friction, causes half the fires which occur in factories, left unoccupied at night and on holidays, at which times seventy per cent of the losses occur, and reflect that in spite of these immense disadvantages the cost of insuring the mills is about one-fifth that of dwelling-houses, and he will be convinced that the underwriters have perfected a system of construction which is worth his study. It would be an injustice to a system so carefully worked out to attempt to describe it in a few words, and indeed most of our readers know something of it. If any do not, we hope to be able before long to give an adequate account of it; meanwhile, we will only quote Mr. Atkinson's brief conclusion, which is, that "the customary methods adopted by architects and builders, with a few conspicuous exceptions, are examples of all the faults to be avoided."

THERE is perhaps no way of making building laws so complete that a very considerable amount of discretion in making new rules, or dispensing with the old ones in special cases, must not be left with the officers who administer the law, and this discretion gives frequent occasion for criticism of officials who may have acted according to their best judgment. The Superintendent of Buildings in New York, Mr. Dudley, has suffered lately from the great amount of responsibility which the arbitrary power with which he is clothed compels him to assume. In one instance a permit was issued by the Department, in due form, for the erection of a wooden shed on a wharf within the building limits. This is plainly contrary to the law, but it is common to set aside the letter of the statute to permit the erection of temporary structures. However, in this case some parties interested in neighboring property applied for an injunction to restrain the parties who had obtained the permit from carrying out their plan, and the Superintendent himself appeared as a witness, saying that the permit, although issued from his office, was not signed by him, and was therefore invalid. To this the parties responded that their application was made at the proper place, in the manner provided by law, and that this permit was issued to them in answer, and that having fully complied with the directions of the statute, they could not be prevented from carrying out the work in the manner which had been legally approved. This argument seems hard to answer, and it seems to have prevailed. Perhaps the dissatisfaction of the losing party will lead to some amendment of the law, curtailing the arbitrary powers of the Department. Any approach to a more uniform standard will be much for the interest and comfort both of the officers of the law and the building public.

PROFESSOR BAIRD has made an application to Congress, which we hope will be successful, for an appropriation of fifty thousand dollars, to continue the ethnological researches among the North American Indians, which are now being prosecuted under the direction of the Smithsonian Institution. The sum asked for is very small, and it should not be difficult to obtain it. The opportunity for studying the subject will soon be gone, as the Indians who remain lose their ancient traditions under the influence of civilization, and insoluble as the problem of the origin of the North American tribes now seems, there is no knowing how soon some discovery, perhaps in Asiatic ethnology, may give a clue for pursuing which all the isolated facts which can now be gathered will be of the utmost importance. There is a peculiar fascination about the archaeology of America, the history of Aztecs and Peruvians, and the still less known tribes of New Mexico and Arizona. All that we know is so strange, so unlike European antiquity, that the story of the conquest of Mexico, only three hundred years ago, reads more like the adventures of Jason in search of the golden fleece, than any less remote history, and yet these accounts, far from being mythical, or even improbable, are to be verified by myriads of buildings

still standing, inscriptions, objects of every kind, perhaps even by the traditions of the descendants of Montezuma himself. Here and there some private collections have been formed of antiquities from the south-western territories, and from the tombs of the mound-builders, but these are of far less value isolated than they would be in their proper position in a complete series of American archaeological illustrations, such as national enterprise could collect.

ARCHITECTS in this country have little occasion to trouble themselves about bills of quantities, and it is quite possible that they have no reason to regret that our contractors generally prefer to depend either on themselves or on surveyors employed solely by them. In England, as is well known, contractors expect to be supplied with the quantities for work on which they estimate, and where the work is not important, it is very common for the architects themselves to measure up the amounts of labor and material, and thereby earn an additional two or two-and-a-half per cent beyond their regular commission. This extra fee is generally paid directly by the successful contractor to the architect or quantity-surveyor. Of course, he adds the amount of it to his tender for the work, so that the owner of the new building always actually pays it, and it would be much better if he were to be the visible as well as the virtual dispenser of his dollars, but this fee seems to be a difficult one to collect directly, and if owners prefer paying "through the nose," as the French say, to rendering a definite equivalent for a definite service, it is natural that the method should be adopted which attains the object with the least trouble. After all, the service is for the owner's benefit exclusively, for the simple reason that where quantities are usually furnished he cannot obtain tenders without them, and the comparison of a number of competing tenders forms his best means of getting his work done cheaply, so that the architect, if he acts also as quantity-surveyor, earns his fee just as honestly as by making plans and specifications. Unfortunately, however, the actual receipt of money from the builder gives the transaction an air of being a private arrangement between him and the architect, whereby he receives some benefit. In a case reported in the *Building News*, the judge was pleased to take a view of the matter, which, if not strictly in accord with the facts, had still an air of such high morality that it is likely to serve as a precedent. "No man," said his Honor, "can serve two masters." The relation between architects and contractors, he went on to observe, was such that the contractor could not get his payments without the architect's certificate, and he therefore "bought the architect over by paying him for his quantities." The counsel for the unfortunate defendant suggested that it was the universal custom of the profession in that locality, but this argument was disposed of with equal ease. "Customs," said the judge, "are not good unless reasonable, and there are some customs which are not reasonable because they are not just." All magistrates do not have the propensity for acting as witness, judge and jury at once, which some English ones manifest, but those architects who are tempted to add to their employment by acting as quantity-surveyors may do well to note the light in which their efforts are likely to be regarded.

SOME valuable suggestions in regard to securing monuments of great men may be derived from a recent transaction in Philadelphia, the outcome of a situation whose peculiarities we explained in our issue for May 10, 1879. In 1825, it appears, some one collected fifty-six hundred dollars for the purpose of erecting a monument to Washington, and entrusted the money to a committee for investment. In the lapse of fifty-odd years the amount has increased to one hundred and thirty-seven thousand dollars. In a somewhat similar manner, the Pennsylvania Company for Insurance of Lives received in 1871, thirty thousand dollars from Mr. William Purves, trustee, for the Washington Monument fund, which is supposed to have also increased to about fifty thousand. The Society of the Cincinnati, thinking it a favorable time to secure the erection of the monument, have petitioned for a citation upon the insurance company, which has been granted, requiring them to show cause why they should not pay over the fifty thousand dollars, to be united with the one hundred and thirty-seven thousand, and the whole used in erecting a splendid memorial in Fairmount Park. We hope an agreement will be reached for the disposal of the two funds, and that Philadelphia will acquire an ornament worthy of her illustrious place in the history of the country. The idea of setting aside a small sum for a monument and letting

it increase to a great one before the trophy is erected is, however, somewhat novel. We have heard of such funds which diminished instead of increasing; but this may be owing to their not having been in the hands of Philadelphia trustees. If such could be always secured, the posthumous glory of any ambitious individual possessed of a few thousand dollars would be simply a question of time, and any one who finds this generation ungrateful, and would like to exhibit himself in better style before posterity, has only to lay aside a certain sum in good hands, and a simple calculation will show him how soon compound interest will bear him up to immortality.

THE schools of wood and metal work founded by some gentlemen in connection with the Metropolitan Museum of Art in New York, to which we lately referred, have, it is said, met with unexpected good fortune. Carried on last season in a small way, in rooms on Union Square, they proved that they were not only useful, but that their usefulness was appreciated by those for whose benefit they were designed. Encouraged by this, it is reported that a wealthy and public-spirited citizen of New York has presented to the Trustees of the Museum a plot of ground on First Avenue, just above Sixtieth Street, and has agreed to erect upon it a building of two hundred feet frontage, and one hundred and thirty feet deep, to be devoted to the use of industrial art schools. This gentleman's benevolence is as thorough as it is intelligent, for he proposes to fit up the schools complete with apparatus for class and shop work. Messrs. Atwood and Sandier are expected to be instructors in the new school, and probably four others will be employed, and two additional departments will be provided. It is intended to teach painting and the principles of coloring, as well as form. Students will be admitted between the ages of sixteen and twenty-five, and prizes will be offered for successful effort. The building is to be erected this summer, ready for the opening of the schools in December, and it is thought probable that the Union Square school will be also re-opened, as a branch of the larger one. The enterprise will be under the supervision of the Trustees of the Metropolitan Museum, and its future expenses will, no doubt, be partly defrayed from the Museum funds, but the generous donor of the building proposes to pay the cost of maintenance himself for the first year. It would be difficult to over-estimate the good which may flow from this noble liberality. If he who has undertaken to offer it has the opportunity of observing but a small portion of the benefit which he bestows upon his fellow-citizens, it is hardly possible to doubt that he will feel himself amply repaid for his sacrifice.

THE Pullman Palace Car Company proposes, in its new manufacturing establishment near Chicago, to set an example for other proprietors of large factories. It has secured one hundred and fifty acres of land, bordered on one side by the Illinois Central Railroad, and is to lay it out like a park. A drive two miles in length is to encircle the grounds, which are to be planted with shrubbery and grass, and the whole is to be enclosed by a wall. Between the range of shops and the railroad is to be a garden three hundred feet wide. The actual workshops will cover nearly eleven acres, and a tower a hundred and forty-six feet high will form the centre of the group. The huge fly-wheel of the Corlis engine is to be arranged so as to be conspicuous from the railroad, a novel but by no means ineffective decoration to the mass of buildings. Cottages for the workmen will be scattered about the grounds.

THOSE unsuspecting persons who engage in competitions for public buildings, will be interested in a little piece of evidence sworn to by the architect of the celebrated Cook County Court House, at Chicago. A certain contractor having sued the County for the amount of a bill of extras, this architect was put upon the witness stand. Incidentally, he was examined to show his *animus* toward several of the parties concerned in the suit; and, according to the report of the *Chicago Inter-Ocean*, which we hope was libellous, he testified that he had paid two of them for their influence in securing him the position of architect of the structure. This would appear to introduce a new element into the determination of the relative merits of the architects who compete for public buildings. Once the main question was, Who makes the best design? Gradually this has become complicated with another, — Who will furnish plans for the least money? And now, we may expect to hear a subdued undertone of inquiry, "Who will pay most liberally for 'influencing' his appointment?"

VENTILATION OF BUILDINGS.¹—IV.

THE various methods of heating buildings which are in general use in this country have each their special uses and advantages. A proper selection or combination for any particular place requires some attention to be given to these different methods. Open fire-places are very wasteful of heat, and as a sole dependence are in this climate entirely inadequate for any purpose except single rooms of a limited extent. When used in connection with other methods of heating, they become a valuable auxiliary. The heat is imparted from them by radiation, which does not heat the air at all, except by first heating the walls and surfaces with which the air comes in contact; thus a degree of comfort is attained without over-heating the air. The sun heats the atmosphere in a similar way, — by first heating the surface of the earth, which imparts heat to the air by contact. Moreover, the open fire is a valuable help in removing vitiated air from a room, and is therefore particularly useful in hospitals and other sick-rooms. In a room that is occupied by women and children, and by men of sedentary occupations, and is heated by hot water, steam, furnaces, or stoves, a higher degree of temperature is required for comfort than if a small open fire is used in connection with the other means. Moreover, all rooms that are heated exclusively by currents of warm air that have passed through heating apparatus give a higher degree of temperature near the ceiling than near the floor, tending to heat the head warmer than the feet, a very unsatisfactory state of things, which is partly corrected by the open fire.

If without an open-fire we demand in this climate that the air should be heated to 70° or higher, while if supplemented by a radiating fire it is equally comfortable and much more conducive to health to keep the air about 10° cooler, i. e., if the fire shines on us, the desired heat of the body is maintained without heating the air above 60°. When wood fuel was abundant, fifty years ago, scarce any other means were employed for heating dwelling-houses. The result was not satisfactory, for the influence of the fire was hardly felt beyond the room where it was kept. The fire might be too hot for comfort near by, while on the opposite side of the same room ice might be forming. When wood became more scarce and anthracite was first introduced in our houses, economy and ingenuity devised various kinds of close stoves which, while very saving of fuel, overheated the air without providing for its renewal. The result was a detestable degree of closeness, with loss of vigor, pale faces and dyspepsia among the family. Later came the furnace in the cellar, which is only a large stove for heating rooms above by a circulation of hot air through pipes. The advantages of this method as compared with detached stoves are chiefly in the introduction of a constant flow of fresh air, if taken from a proper place, supplied to various apartments at will, heated to a comfortable degree; and a saving of labor by concentrating the fires in one place.

This was a considerable advance on the detached stove system, provided the air was allowed a way to get out of the room after being vitiated. In fact, for dwelling-houses of small capacity this method, when properly regulated and proportioned, and supplemented by small open-fires in the rooms that are constantly occupied, leaves little to be desired. The whole house can be thus kept at a temperature of about 55° or 60°, while the rooms most occupied are heated to about 65° and thus made quite comfortable by small open-fires of wood or soft coal. These heat the inmates without heating the air as above explained. There is but little doubt about the lower temperature being most healthful, provided comfort is attained, for the breathing of cool air is far more conducive to physical vigor. Even invalids gain strength and can be made quite comfortable out of doors with the thermometer at 50°, if well clothed and exposed to the sunshine while sheltered from the wind. In order to get good results from a heating furnace, regard must be had to the following: first, ample size for the fire-pot, and extended heating surface, so that the needed volume of air can be warmed without the iron becoming red-hot and overheating the air. It should never be over 100° to 110° F. when introduced into the rooms. Second, ample-sized pipes, proportioned to the sizes of the rooms. No definite rules can be given for these sizes, which should be adjusted to the exposure of the room as well as to its size, particularly in a country-house.

The management of the fire demands more judgment and foresight than is often bestowed upon it in the changeable weather of our climate. Anthracite fires are very convenient in this respect, that they do not need frequent attention to keep them alive; but if an equable temperature is to be maintained in the house, this fuel is so slow to ignite, and so slow to burn away, that some foresight must always be exercised in controlling the draught. A great variety of patterns for such furnaces are offered in our market. Their relative merits depend more upon the quality of workmanship and their strength, than upon the particular kind of material. The strength and conductive power of iron render it almost the only material, though soapstone is used to a small extent. It is desirable to keep the joints tight, of course, to prevent the diffusion of the gases of combustion into the hot-air chamber that is to supply the house. For this end it is found that horizontal joints are better adapted than vertical ones in cast-iron. Wrought-iron has been considerably used of late, with tightly riveted joints. When new, it is doubtless a tighter material than cast-iron; but it is more perishable, and quite

as likely to change its form and work its joints open by alternate heating and cooling, so that its superiority is not yet fully established by experience. The permeability of cast-iron to the passage of gases is due more to the quality of the metal than to its fusibility. There is no more difficulty in making cast-iron impermeable to gases of combustion than for steam, and it is used universally for steam-pipes, and to some extent for boilers also, under a thousand times the pressure that can ever exist in a stove with an open smoke-pipe. In order to avoid the chance of furnaces leaking gas, the exit for smoke and gas to the chimney should be ample in size and unobstructed by dampers. Such dampers should be forbidden by the Board of Health. If the draught is to be checked to reduce the heat of the fire, the smoke-pipe should never be reduced in capacity. The proper way is to close the orifices below the fire, and exclude the air from the grate. In order to accomplish this more effectually, the fittings for doors below the fire should be made heavier and firmer than they now are, and carefully fitted by planing the joints, so as to control the flow of air into the fire.

It is found to be difficult to get satisfactory results in distributing heated air by horizontal pipes to a greater length than ten or twelve feet from their origin, particularly when the room to be heated lies to the windward of the furnace, in extreme weather. When houses are expanded in size beyond the limits that can be thus served, two furnaces serve the purpose better than one. But in larger mansions, and in large stores and public buildings, the practice of heating by steam or hot-water pipes has many advantages. The heat can thus be carried horizontally for long distances, the only limit being the loss on the way by escape from the pipes to the surrounding medium. This is checked by *lagging*, i. e., covering the pipes with a non-conducting material like felt or asbestos. The process of heating buildings by steam has had a considerable development here of late, but without a proper regard, in most cases, for the provision of fresh air that is needed in the rooms to be heated. The process known as that of *direct* radiation ignores the introduction of fresh air entirely, leaving it to the chance cracks and openings and pores in the walls. Of course this cannot be recommended, and if exclusively used will be productive of much discomfort and ill health.

It is cheaper, of course, to conduct the steam by small pipes directly to the room which is to be warmed, and there to deploy it by pipes or other forms, to give the desired surface for radiation, — as it is erroneously called, — and omit the introduction of fresh air. We accordingly find all the earlier attempts to heat buildings by steam were on this principle, this building included. But more recently the demand for fresh air reached the ears of the manufacturers of the apparatus, and we have now what is called the indirect method, which, though not quite so economical of coal, is more conducive to health. The ordinary process is to ramify the steam-pipes in the basement at some convenient point under the room to be heated, to introduce outer air around the coil in ducts, and thence up into the room. A large amount of fresh air can thus be introduced and propelled to the desired place. If more heat is needed after supplying the desired quota of air, this heat can be supplied by placing a steam-coil in the room. The terms radiator and radiation are misapplied, because the pipes are rarely heated so much above the surrounding air as to impart much heat by radiation; moreover, radiant heat passes *through* air. The air in contact with these pipes becomes heated by such contact, and, being expanded, rises, to be replaced constantly by other air, keeping up a circulation till all the air within reach is warmed. This process is sometimes called convection. It has generally been supposed that steam-pipes cause no risk of setting fire to wood, since the steam is rarely used with much pressure, 5 lbs. per square inch being a moderate limit, and 10 or 12 lbs. being rarely exceeded. The temperature of steam at a pressure of 5 lbs. per square inch is 228° F., while at 12 lbs. it is 244° F. But it has been found that even this temperature, if constantly applied for long periods, will partly burn the wood — reducing it to charcoal so void of moisture that it is very combustible. Whether or not actual ignition has occurred without further stimulus is not definitely known. But since it is not desirable to char the wood in any part of our buildings, the steam-pipes should not be placed in contact with it.

Concerning the best height in the room to introduce the fresh air and to remove the foul air, much difference of opinion exists among experts, and some heated discussion is to be found on the subject. I can only say that there are plenty of examples where fresh warm air is introduced near the bottom, and the foul air removed above; and other examples with the flow of air in the reversed direction. For ordinary use in private houses, the introduction of the fresh air near the floor is the simpler method. The extraction of the foul air near the floor can only be effected by special apparatus contrived for the purpose, with some aspiratory or mechanical force to move it; while, if the foul air be taken from the top of the room, its higher temperature as compared with the outside air will generally provide for its motion. In the Annen Real Schule at Dresden (described by Dr. Lincoln in Buck's Hygiene) the upward movement is used in summer, when the heat imparted to the air by the children assists, and the downward movement in winter, assisted by aspiration chimneys. In the Hall of Representatives at Washington and in the Boston City Hospital are found two quite successful examples of the upward movement, and in the *grande salle* of the Trocadéro at the Paris Exposition is a good example of the downward system. This hall seats five thousand persons. The air is furnished by a fan, at the

¹ A lecture by Mr. Edward S. Philbrick, C. E., delivered before the students of the Massachusetts Institute of Technology.

rate of 40 cubic metres per hour for each person, or 200,000 cubic metres in all per hour — about 2,000 cubic feet per second. To avoid throwing the whole burden of movement upon the propelling fan, however, which might produce an inconvenient compression, the duty of movement is shared by an exhausting fan, that draws the foul air from five thousand openings in the floor.

Concerning the comparative merits of heating by steam and hot-water pipes, there is some difference of opinion, but the facts seem to be as follows: That hot-water apparatus may require a more costly plant, but is more economical of fuel when used for buildings of considerable size. Moreover, since water is not usually heated above a temperature of 200° or thereabouts in the boiler, the heating surfaces are limited to 160° or less, which is better than the higher temperatures generally used for steam-pipes, a greater surface being used to do the same work. The hot-water apparatus is simpler, and the quantity of heat needed in any particular apartment is controlled by valves in the pipes, that check the flow without entirely stopping it; while with steam we must have the whole or none, and the whole, with a temperature of 212° or more, is often hotter than we wish. The regulation of temperature where steam is used is therefore effected by providing for a supply of cool air, to be mixed with the warm air in the pipes before coming into the room. This system requires very careful adjustment, and is not easily managed.

Dr. J. S. Billings, in a report on the ventilation of the Johns Hopkins Hospital, says: "From practical trial with the hot-water method, I am perfectly sure that for heating purposes it is entirely satisfactory, and is probably cheaper than steam." Dr. Billings goes on: "My attention has been called recently, however, to a very successful application of steam-heating in the new wards of the Boston City Hospital, according to the plans and under the direction of Dr. Cowles, the superintendent. From information furnished by Dr. Cowles, and from my own observations, I believe that this method gives satisfactory results: results, so far as temperature and ventilation are concerned, as good as, but no better than, the hot-water system."

Dr. Billings quotes the following from a report of Surgeon D. L. Huntingdon, U. S. A., upon the heating and ventilation of the "Barnes Hospital," at the Soldiers' Home in Washington:—

"The total space to be heated is about 310,000 cubic feet. The heating is effected by a low-temperature hot-water apparatus, consisting of two tubular boilers each nine feet long, and forty-two inches in diameter, with connecting mains, pipes and coils.

"The heating coils, composed of cast-iron pipe, are placed in brick air-chambers in the basement, at the sides between the windows. At the point of entrance of the supply to each coil is a valve, by which the supply may be diminished to any degree, and the temperature of the coil regulated accordingly.

"From the above coils, pass the flues for fresh-air supply. These flues are of terra-cotta pipe, built into the walls. In the lower wards the flues are so arranged that the fresh air can be admitted either near the floor or near the ceiling. After a fair trial, it appears that the lower registers are to be preferred. When the air is admitted at the top, the ward is heated unequally; a series of observations showing a difference of from 10° to 12° between the floor and ceiling, and the patients complain of cold feet and discomfort, for which reasons the upper registers are not in use." "The apparatus has given great satisfaction, has maintained a pleasant, even temperature of about 70° in the coldest weather, and permits of changing the temperature at any locality, easily and rapidly. Many such changes are made each day by the engineer, to meet the varying circumstances of winds, changes of temperature, etc."

When providing for the ventilation of large buildings used for halls of assembly, theatres, legislative-halls, etc., it is often found that the amount of heat needed for comfort is inadequate to give motion to the quantity of fresh air needed for the number of persons who breathe it, particularly when we consider the heating power of the persons themselves, and the quantity of vapor given off by their lungs, which, as mentioned before, renders a lower temperature desirable than in a dry air. Moreover, in halls that are to be occupied for many hours, as for legislative bodies and courts, there are many days in the year when scarce any heat is needed beyond what is imparted by the inmates, and when the outer air is too cool to allow a free circulation through windows, etc. There are also many more days, in summer, when there is too little wind to effect the necessary change without artificial help, and when the supply of air is needed for its cooling effect upon the overheated assembly. In all these cases, artificial propulsion must be resorted to, either by aspirating shafts, to remove the air from the room forcibly, allowing the fresh air from the outside to take its place; or by *pushing* in the latter by fans or other blowing apparatus. Both of these methods are sometimes used together.

The use of the aspiratory and propulsory systems, separate and combined, is fully set forth in the report of Surgeon D. L. Huntingdon, before alluded to, and I will close the subject by liberal extracts from this report describing one of the most successful attempts at ventilation of which we have record.

"At all times when the building is not thoroughly ventilated by natural means (open windows), fresh air is supplied by means of a vertical air-shaft, placed at the west of the Hospital building at a distance of seventy-four feet. This shaft is thirty-eight feet in height, with a diameter of eight feet, open at the upper part, and protected from the weather by louver blinds. A large weather-cock or vane placed

above it turns a hood or cowl within the shaft, which tends to throw the current of air forcibly downward." This shaft seems to serve the same sort of purpose as the wind-sails on steamships, while its height secures an undoubted purity of the air. "This shaft at its lower extremity connects with a brick air-duct 286 feet in length, which passes under the basement of the building through its entire length, giving off, at intervals, lateral branches, which pass into brick air-chambers, within which are placed the coils connected with the heating-apparatus, and finally terminating in terra-cotta flues distributed to the several wards and rooms above. At its throat this air-duct is eight feet high and five feet wide, but steadily decreases in size in its passage under the building, until at its extremity it is reduced to two and one-half feet in height by two feet in width.

"At the throat, the amount of air passing into the duct, and thence into the building, is regulated and measured by folding-leaf doors. This duct is kept perfectly clean and pure, and arrangements exist by which moisture may be supplied to the air in its passage." The quantity of air passing into the building through the duct varies of course with the direction and force of the wind, and with the greater or less activity with which the air in the interior is removed by natural or artificial modes of ventilation. Repeated anemometrical observations show the velocity of the air current through the throat of the duct to average from 50 feet to 800 and 900 feet per minute, the latter quantity during the prevalence of high westerly or north-westerly winds. The removal of foul air from the interior by aspiration is effected by means of two large chimneys in the main building. Each chimney has an elevation of ninety-six feet, four feet four inches by five feet eight inches area inside, and is protected from the weather by a cap with open sides. A boiler-iron flue two feet in diameter passes up the centre of each chimney to a height of three feet above the cap. Into these flues pass all the products of combustion from the several furnaces, range, and other necessary fires, materially assisting the upward draught in the chimneys. At the base of each flue is placed a fire-grate for the purpose of producing an upward current when from natural causes the chimneys fail to act. Into these chimneys open all the ducts which receive the foul air from the wards; these ducts, or foul-air boxes, fifty feet in length, 3 feet 3½ inches wide, and 12 inches deep, are placed above and below each ward, and communicate above and below with the ward, by means of accurately closing registers. These foul-air boxes are lined with tin, and are cleaned daily. In each ward, and above each gas-burner, is fitted a three-inch tube, terminating in a funnel-shaped cup through which all air rendered unfit for respiration by the burning gas is discharged into the above-named ducts. Each ward contains twelve beds, is fifty feet long, twenty-four feet wide, and fifteen feet high, equal to 18,000 cubic feet. Both fresh and heated air are introduced into the wards by a similar set of inlets. In each of the lower wards these inlets are sixteen in number, eight of them being placed ten inches above the floor, and the other eight ten inches below the ceiling. This double set was arranged for experimental purposes, to determine if possible the best position for warm-air registers for heating and ventilating. The ventilation of the urinals and water-closets of each ward is effected by connecting them with the chimneys seventy feet high, at the end towers, and in which a constant current is maintained by fires used for heating water.

"The experience gained by daily observations continued over rather more than one year, on the subject of the practical working of the aspiratory system, goes to show that the movements of air currents are exceedingly diverse, and that the conditions presented at one time and those at another give widely different results. A high barometer and a low relative humidity, with either high or low temperature, seem to be the first essentials for satisfactory unassisted aspiration. As the relative humidity increases, the aspiration flags, and on days with the barometer below its normal average it becomes necessary to employ assistance to the aspiration. The direction and force of the winds have shown themselves to be important factors in the matter. . . .

"Under the conditions of unassisted aspiration the upward movement of the air in the chimneys, as determined by the anemometer, has ranged from a barely perceptible current to 387 feet per minute.

"With brisk fires at base of the chimneys, and an average temperature within same of 82° F., the highest recorded observation is 700 feet per minute.

"As a practice only one set of ventilating outlets is kept open in each ward, and under these circumstances each chimney will remove about 138,000 cubic feet per hour from the two wards connected with it.

"For the main inlet-duct for fresh air it has been found in practice that an average flow of 60 cubic feet per minute gives the most satisfactory results, and it is the endeavor to maintain about this velocity by the natural movements of air, if possible, or if this fails, by mechanical means, as by the fan or assisted aspiration. The average rate of movement into the inlets of the wards is about 130 feet per minute.

"About 250,000 cubic feet of fresh air are passed into these four wards per hour, or about 5,200 cubic feet per man per hour. With the above-named velocity the air passes into the rooms well broken up by its passage through the ornamental gratings of the registers, and is diffused without draught. . . .

"Propulsory ventilation is effected by means of a fan placed in a separate building 74 feet west of the hospital. The fan is an iron disk, 8 feet in diameter, with twenty-four blades 12 inches wide,

driven by a six-horse-power engine. It is supplied with air only through the air-shaft. The boilers and furnaces are separated from the air-duct by two close doors, rendering it impossible for any smoke or coal-dust to enter the general circulation. The consumption of coal, when in use, is 140 lbs. coal per day.

"At this hospital we have made no continuous use of the fan, using it in summer during the warm stagnant mornings and evenings to create a draught throughout the buildings, and during the cooler weather to 'blow out' the building, and to assist in the ventilation of the wards. It is also used to regulate the temperature of the wards, as by its means we can speedily cool off overheated rooms, or in dull, damp, and cool weather it is usefully employed forcing warm air through the building. . . .

"From what has already been said it will readily be seen that one system blends almost imperceptibly into the other. The three methods may be put in operation at the same time. A very common combination is that of propulsion with aspiration, and the end attained by such combination is still better ventilation than is attained by either alone.

"For more than a year the ventilation of this hospital has been closely watched. Almost daily observations have been made upon the practical working, and the best methods of regulating the machinery have been carefully studied. It is my belief that a very close approach has been made to perfect success.

"Simple and natural as are the laws upon which the supply of fresh and the discharge of foul air are based, and little complicated as is the apparatus, intelligent oversight cannot be dispensed with. I cannot help again expressing my satisfaction with the fan. By its means I hold the power of, as it were, deluging the house with fresh air at any moment, and I am convinced that were the provision for the discharge of foul air far inferior to what it is, the use of the fan for a few minutes hourly would maintain a very satisfactory condition of ventilation."

Thus we see that the ventilation of our dwelling-houses is a matter, governed by laws that are readily understood by all. It should therefore be removed from the realm of mystery where it has been kept so long, and dealt with by a little common sense. Nature has made the aëration of our blood one of the highest and most important functions of life, giving to the organs concerned in that process the monopoly, or at least the lion's share, of space in the whole bust, and defending them by an arm on either side. Man should respect this function by lending it all the cooperation that intelligent attention can afford. Architects should study the subject, house-keepers should give it their interest, for none of us can live for even five minutes without the active exercise of this function.

SPRING EXHIBITIONS AND PICTURE-SALES IN NEW YORK. — II.

LET us look now at the Academy walls, and note whatever attractive and estimable works were there to be found. I do not think it is an injustice to any other to mention first in such a connection a portrait by Mr. A. H. Thayer (No. 533). It was the bust of a young girl, painted simply for the sake of the original, and with absolutely no accessories in the shape of "decorative" dress or background. It was as lovely in its way as the artist's landscape in the other exhibition, as poetical and fresh, and painted with as graceful and individual a brush. Mr. Fuller's portrait of a boy (No. 239) was very clever, and bore the impress of greater actuality than is usually the case with him. Mr. Weir's large portrait (No. 441) was not quite as interesting as his other works this year. Mr. Frederic P. Vinton showed a fine portrait (No. 435), full of life and style. Mr. William Page's strong portrait of General Grant, painted at the close of the war, deserved a more appreciative study than one could give it in the dark corner where, in spite of its being one of the most important pictures in the exhibition, and contributed by a man who is surely entitled, more than most, to all courtesy at the hands of Americans with any gratitude to the pioneers of true art among us, the committee had seen fit to hang it. Mr. Douglas Volk's portrait, in the Studio (No. 454), startled one at first by the boldness of its composition, and the strangeness of its yellow background. A little observation showed, however, how cleverly much of it was painted, and the whole canvas, by its very unconventionality, bore witness to Mr. Volk's talent, which is incontestable, though as yet undisciplined. Mr. Beckwith's portrait (No. 165) of a lady in a riding-habit was clever enough to have been more pleasing. What is it in this artist's work that repels us so often, alike from the painter, the sitter, and the practice of portrait-painting in general? Is it, perhaps, an accent of insincerity which pervades the whole, and convinces us that the artist has not been "in earnest with his art"? Even his clever brush-work, and the relief which he obtains thereby, strike us as affected, overdone. There is a disagreeable German word, *effectascherei*, which they invariably suggest. With these few numbers, and Mr. Maynard's well-drawn, if not very attractively colored Musician, we have come to the end of the portraits in this exhibition which attracted notice for any strictly artistic quality whatever. The average run of the Academical work we know so well was not as good as usual. Mr. Hicks, Mr. Jared Flagg, Mr. Baker, Mr. Le Clear, Mr. Loop, Mr. Julian Scott, had all done their worst, and Mr. Huntington, comparatively speaking, the worst of all. His No. 170, called Elizabeth Princess, whether a portrait or an

ideal subject, was especially poor, carrying us back to the very earliest style of Academy painting. Mr. B. C. Porter showed a more ambitious portrait than he had yet sent to the Academy; but not, I think, a better one. The former sweetness of color was gone, and no additional strength gained in its place. The textures were harder than before, and the attempt at a decorative *ensemble* was scarcely successful.

There were but few interesting figure or *genre* subjects in the exhibition apart from the portraits properly so called. Mr. Fuller's large Quadroon was a little disappointing, only because one compared it involuntarily with his beautiful *Romany Girl* of last year. Mr. Beckwith's *Under the Lilacs* was successful in the decorative result of a rather daring combination of colors, but was meretricious and a little vulgar. Mr. Eastman Johnson's *Cranberry Harvest* was to be praised for everything except composition. Mr. Eaton's *Grandmother and Child* deserved mention, as did Mr. Kappes's pictures, inferior though they were to his work in water-color. I believe that Mr. Wilmarth is still at the head of the Academy's schools. One was driven to regret it in the face of such a picture as his *Pick of the Orchard*. One hated to believe that there were worse pictures in the place, but found them, perhaps, in such as Mr. Bellows's *Into the Sea*, with its impossible composition, and its two figures falling quite out of the canvas, and Mr. Lambdin's *Gradus ad Parnassum*, in which it was hard to say which sinned the most, drawing, coloring, or sentiment. Mr. William H. Beard's pictures were not simply inartistic this year, not simply calculated to amuse those who care to look at attempts to satirize humanity expressed without truth to animal nature or regard for the elementary principles of art. It is not pleasant to cite works for the purpose of saying that they are as bad as they possibly could be; but it is sometimes necessary when they are signed by names whose long familiarity and magic "N. A." persuade a docile public to accept and admire without question. Such a public could not fail to be contaminated by such a picture as Mr. Beard's *Bulls and Bears in Wall Street*, hung on the line, and marked in the catalogue as worth \$6,000. It was, I suppose, to be called an allegory, for while the scene was copied from reality, it was filled with real beasts pursuing avocations supposed to be typical of those pursued by their human namesakes, — tearing and rending and scoffing at one another. The details with which this humorous conception was worked out were equally childish and repulsive. Mr. Beard is probably better able than his critics to gauge the wants of his public, but one would rejoice to be sure that such a canvas as this would never find a place in an American home. It should require no knowledge of the rules of art transgressed therein to make it a disagreeable object to contemplate.

Let us pass now to the landscape art upon the walls, after noting for their good points Mr. Selinger's *White Turkey*, Mr. Baldwin's sketch of an *Oriental Potter* (No. 65), Mr. Ebner's *Hungarian Fortune-teller*, and Mr. Witt's *Rags* (No. 446).

Mr. Clement Swift's large shore view (No. 411), called a *Waif of the Sea*, was interesting and well painted, but by no means as striking or powerful as his *Wreckers* of last year. Nor was Mr. Harry Chase's *Herring Fishers of Scheveningen* as important as his picture in the other exhibition. Mr. W. S. Macy's canvases were as good as usual — somewhat better, indeed, as he proved by them that he could get out of the rut of spring-like foliage and heavy skies in which he had been running till one began to fear for his ability to do anything else with his very clever brush. A *Forest Scene* (No. 32) was very good, and a small *Winter Twilight* (No. 547) most admirable. Mr. Tiffany also appeared to advantage, especially in canvases of a quasi decorative character like No. 432, representing a hillside path in *Algiers*, the foreground filled with some cactus-like plant. Mr. Hugh Newell's landscapes with figures showed strength, and their color was better than in his *aquarelles* of similar subjects. Mr. Francis Murphy's style and sentiment, on the other hand, seem rather better suited to the more delicate medium, though his sunny and thoroughly artistic little pictures were a most refreshing contrast to the bulk of their surroundings on these walls. Mr. Bunce succeeded in getting color almost as rich as his Venetian tints out of home materials in his *Watch Hill* (No. 190). One realizes the beauty of those Venetian things of his, by the way, in looking at Mr. C. C. Coleman's *Venice, Ancient and Modern*, and especially at Mr. Bunner's *Morning in Venice* (No. 364), which had no good painting to redeem its composition, the artist having apparently thought it necessary to try and bring into one canvas samples of every sort of boat and building Venice had ever known. Mr. Bierstadt in his *Turquoise Sea* had evidently tried to show how vivid and apparently translucent a color he could produce with opaque pigments. He certainly succeeded in stunning us with the result. Need I say that his process had been one which transgressed all rules, and that the picture was about as much like a true work of art as a "Catherine-wheel"? It has been more than once remarked that if Mr. Bierstadt wished us to believe in the possibility of any such brilliant wave as this, he should at least have put the sun in the sky instead of a thunder-cloud.

Mr. Samuel Colman, Mr. Swain Gifford, Mr. Farrer, Mr. Quartly, Mr. Sartain, Mr. Edgar Ward, Mr. Wyant, and Mr. Carleton Wiggins, all showed good work, though not above their usual average. Mr. Hopkinson Smith exhibited one number (579) which showed that his skill extends outside of the management of the water-colors with which he was so successful this winter. Mr. Reinhart's *Long-Islander* (No. 599), was an excellent little beach study, and from

Mr. Foxcroft Cole we had good work in a large picture of sheep, (No. 449). One is always glad to welcome Mr. Hennessy, who has been rather a stranger of late years. His Normandy coast-scene, *Waiting for the Boats*, was a good example of his skill, true and poetical at the same time in feeling, and pleasant in tone, if not remarkable for strength. A new name was that of Mr. Thomas Allen, Jr., of Pittsfield, Mass., who showed a strong, large landscape with cattle, praiseworthy in many respects but especially in the matter of composition, — or of conception, if that word be preferred. How few of our painters understand the very elementary fact that Nature does not arrange all her bits for pictorial effect, and that more is necessary to the planning of a good landscape than the mere enclosing of any given portion of the earth's surface within the limits of a picture-frame? How few of them even attempt any subtleties of arrangement such as make the pictures of the Frenchman Jacque, for instance, a perpetual pleasure to the eye? It was all the more agreeable to find a young man like Mr. Allen showing a perception of these things.

One of the most peculiar pictures in the Academy, and therefore one of the most attractive by contrast with the mass of commonplace about it, was, without doubt, Mr. Dewing's *Morning* (No. 373). To me it seemed noteworthy for more reasons than this. Many agreed with me, I am sure, in finding it eminently poetic and charming, while, on the other hand, even those of us who admired it most could, perhaps, understand how to others it seemed to border on the ludicrous. It was not poetry of the lyric, dramatic, or simply idyllic sort, appealing to every class of minds alike and finding sympathy in every observer possessed of any imagination whatever. It was more like some bit of French verse full of odd conceits and conscious archaic flavors. There are those for whom Mr. Rossetti's poems, to make another comparison, strike only a ludicrous chord. They are easily parodied, and so would be Mr. Dewing's picture. They are so far removed from what we consider *natural*, that is, from the actual, that the least approach to a flippant or a humorous mood turns their beauty into absurdity. It is not strange that a flippant and humor-loving American public, and a prosaic, if usually well-meaning press, should have failed to see the delicate grace and quaint poetic feeling of Mr. Dewing's work. The rather large canvas represented two women in mediæval dress seated under a well-canopy backed by stiff foliage, in the middle of a level landscape, and blowing on long horns. In front of them were two slender hounds, and the long lines which thus formed the basis of the composition were repeated by the cloud-forms and by distant flights of birds. A dangerous conception, truly, to tackle unsuccessfully, and easily puerile did the execution prove weak or inappropriate or did the artist show signs of anything but the most entire seriousness of mood. But all these dangers were, I think, avoided. The scale of color was kept low, and an almost tempera-like effect produced with the paint, at least here where the picture hung rather high up on the wall. The formal arrangement and the shunning of any attempt to render textures emphasized most artistically the essentially unreal, poetic aim the artist had had in view, and the harmonious color and formal grace of line showed, I think, a peculiar and original talent. If I have spoken more in detail of this picture than of any other in the place, it has been because it seemed to me, not absolutely but relatively, the most important canvas on the walls, as showing the dawn among us of those qualities which have been most palpably lacking in our art. If the development of poetical feeling is to be encouraged by us along with technical accomplishment, we must cease from such flippant moods as those in which Mr. Dewing's *Morning* was gazed at by the public.

These are not many pictures to have picked out for approval from a total of seven hundred and fifty numbers; yet I think that if we include Mr. Lippincott's and Mr. Ernest Longfellow's work, little of excellence has escaped notice. The drawings were unusually poor, and the sculpture, with one or two exceptions, was, to say the least of it, remarkably dull.

It will not be out of place here to speak of Mr. Bridgman's pictures which have been lately on exhibition at Mr. Avery's gallery. They include all three of the large works which made his reputation at three successive Paris *Salons*. Infinitely superior in every way to the small canvases Mr. Bridgman has been sending home of late, they yet rather seem the work of a scholarly, well-trained hand than of one inspired by much individual talent, or guided by an eye sensitive to artistic effects, or to charms of line and color in themselves considered. From a favorite pupil of M. Gérôme's one does not look for witchery of color or any very sublime or subtle sentiment. But the master shows in his composition most often that he has seen the subject portrayed from a pictorial point of view. This is by no means so apparent in the works of the scholar. Mr. Bridgman's pictures are nothing if not "anecdotal." The *Burial of a Mummy* is the best in point of color, and decidedly so in point of composition. It is the earliest of the three, and Mr. Bridgman does not seem likely to advance beyond it. There is much elaborate archæology in the *Procession of the Sacred Bull*, and still more in the *Pastime of an Assyrian King* — though where the artist got his authority for many things in the latter work one is at a loss to discover — but pictorially they do not stand very high. The technique is careful, and lacks, perhaps, a little of the hardness characteristic of Gérôme's brush; but it also, unfortunately, lacks something of his sureness, is not applied to drawing so accurate, and renders no textures with the perfection Gérôme attains in some; and the pupil fails

utterly in what to me has always seemed the master's supreme accomplishment — the reproduction of oriental expressions as well as features. There was not one countenance in the *Sacred Bull* which might not have been that of a European masquerading in "Aida." Mr. Bridgman, with all his cleverness and all his acquirements, cannot be called a great or even an original artist. There is nothing in his work, either in its technique, its spirit, or the point of view from which it proceeds, that was not familiar to the world long before this man spoke, and we feel that just such pictures, to a hair, may easily be painted when Mr. Bridgman no longer wields a brush. I need hardly add that he will scarcely be enumerated in the future among those who are now, we hope, laying the foundations of a distinctively American school.

At Mr. Moore's American Art Gallery one may still see Mr. Moran's superb *Turner*, which, as I understand, its owner is etching for publication. One is almost tempted to wish this picture had not been so conclusively proved a *Turner*. We might then, on its sole testimony, add another to the list of men whose work we reverence. At the same gallery among the other works, all of which are American and for sale, is the best *McEntee* I have ever seen, and the best *Carleton Wiggins* as well.

At Goupil's just now the great attraction is a beautiful large *Corot*, *An Antique Dance in a Sunset Landscape*. The scene is so still and solemn and the effects of light and air so exquisite that one almost resents the prominence of the figures, which fail a little of perfect grace. A fine large *Heilbuth* — a cardinal talking with school-boys on the *Pincian Hill* — is also to be noted.

The sale of Mr. Abner Harper's collection has been the most important event of the season to picture-buyers. There were few poor pictures in the one hundred and fifty sold, which embraced, among others, good examples of *Diaz*, — in landscape only, — *Dupré*, *Th. Rousseau*, *Daubigny*, *Corot*, *Kaemmerer*, *Michetti*, *Pascutti*, *Clays*, *Jacque*, *Van Marcke*, and the fashionable painters of lower grade, — *Aubert*, *Frère*, *Jaquet*, *Knaus*, *Meyer Von Bremen*, *Schreyer*, *Vibert*, — who vary in excellence so greatly among themselves, but are alike high in the favor of our fashionable public. There were some good *Boughtons*, and calling for especial mention were an exquisite flower-piece by *Mettling*, a superb landscape by *Munkacsy*, and three pictures by *Boldini*. The most fascinating of these last was *The Cigarette*, a tiny bit only four by five inches, yet containing a full-length figure and a number of accessories, all painted with as free and clever a brush and as much resultant life and reality as though the scale had been measured by feet instead of inches. Many of Mr. Harper's pictures were well known from various loan-collections, and the prices obtained for them were high.

At Mr. Avery's recent sale some good pictures came to the hammer with many mediocre ones. The *Monticellis*, the *Calame*, and the fine *Josef Brandt*, which have been the gems of his gallery of late, were none of them, I think, on the catalogue of sale.

Mr. Dolph, the artist, has recently sold all his pictures, whether painted by himself or purchased, together with a large collection of bric-à-brac and studio properties. Some rare specimens of ceramic ware and embroideries went at a very low figure.

The recent disaster at the Madison Square Gardens will, it is to be feared, put an end to the loaning of pictures or of works of art of any kind, for the benefit and entertainment of the public. The worst that lenders have long been predicting has come to pass. Many fine pictures and *objets de vertu* of all kinds perished entirely, or were irretrievably injured. Even their money equivalent, which at the best would be but poor consolation to the owners, is not forthcoming, as the collection was insured against fire only.

M. G. VAN RENNELAER.

THE ILLUSTRATIONS.

FRONT OF STORE AND APARTMENTS, PEARL STREET, ALBANY, N. Y. MESSRS. POTTER & ROBERTSON, ARCHITECTS, NEW YORK, N. Y.

This building has lately been completed for the Hon. Robert H. Pruyn, of Albany, N. Y. The floors above the store are used as apartments in connection with the Kenmore Hotel, which adjoins on the right. The front of this building — which is all that was under the care of Messrs. Potter & Robertson — is laid up with pressed and moulded brick, relieved with Belleville (brown) stone, the ornamental panels, etc., being carved in these materials. The roof is covered with vitrified red tile, and the store front is constructed of iron, as shown on the elevation.

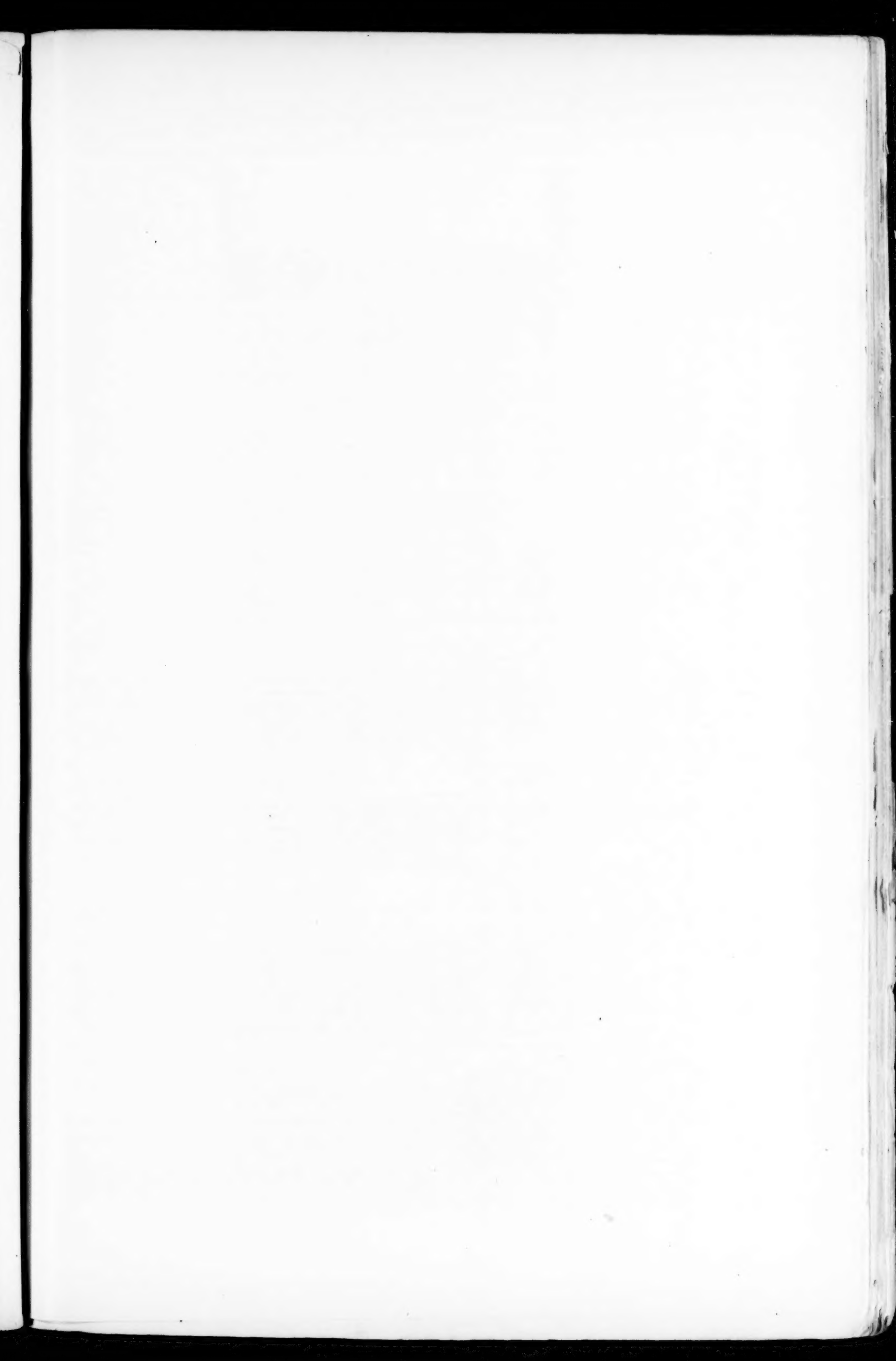
DESIGN FOR A COUNTRY HOUSE. MR. A. E. BARLOW, ARCHITECT, NEW YORK, N. Y.

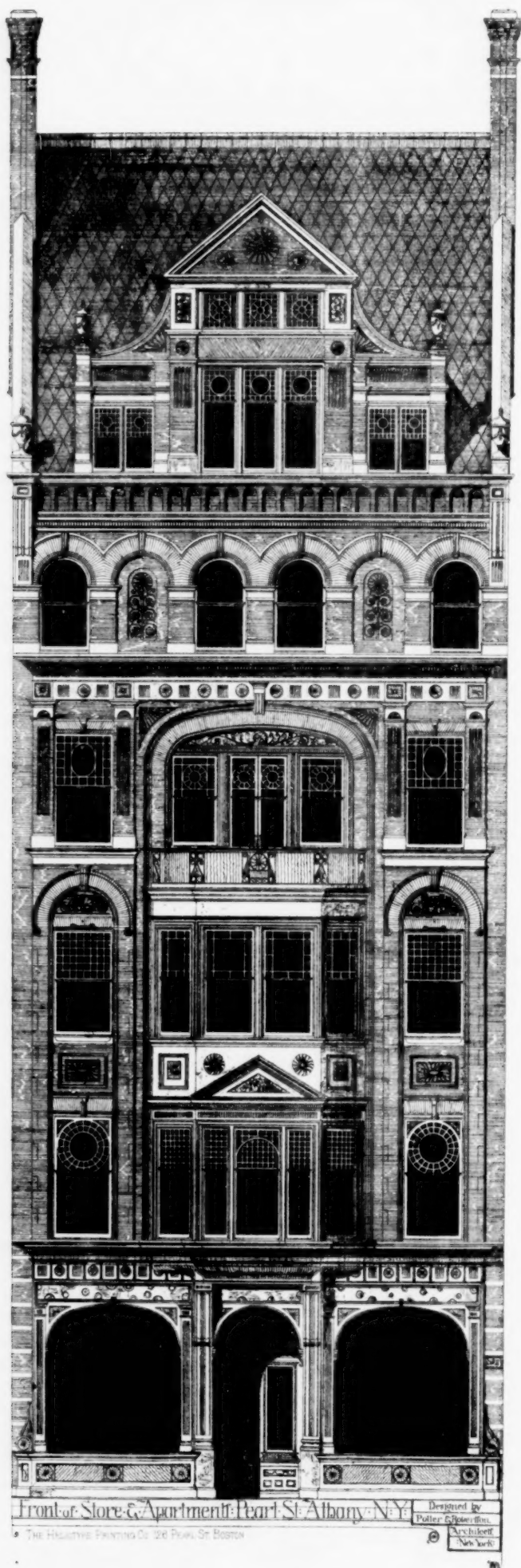
COUNTRY-HOUSE, DESIGNED BY MR. C. W. ROMEYN, ARCHITECT, NEW YORK, N. Y.

DESIGN FOR A VESTIBULE, BY MR. CICERO HINE, OTTAWA, CAN.

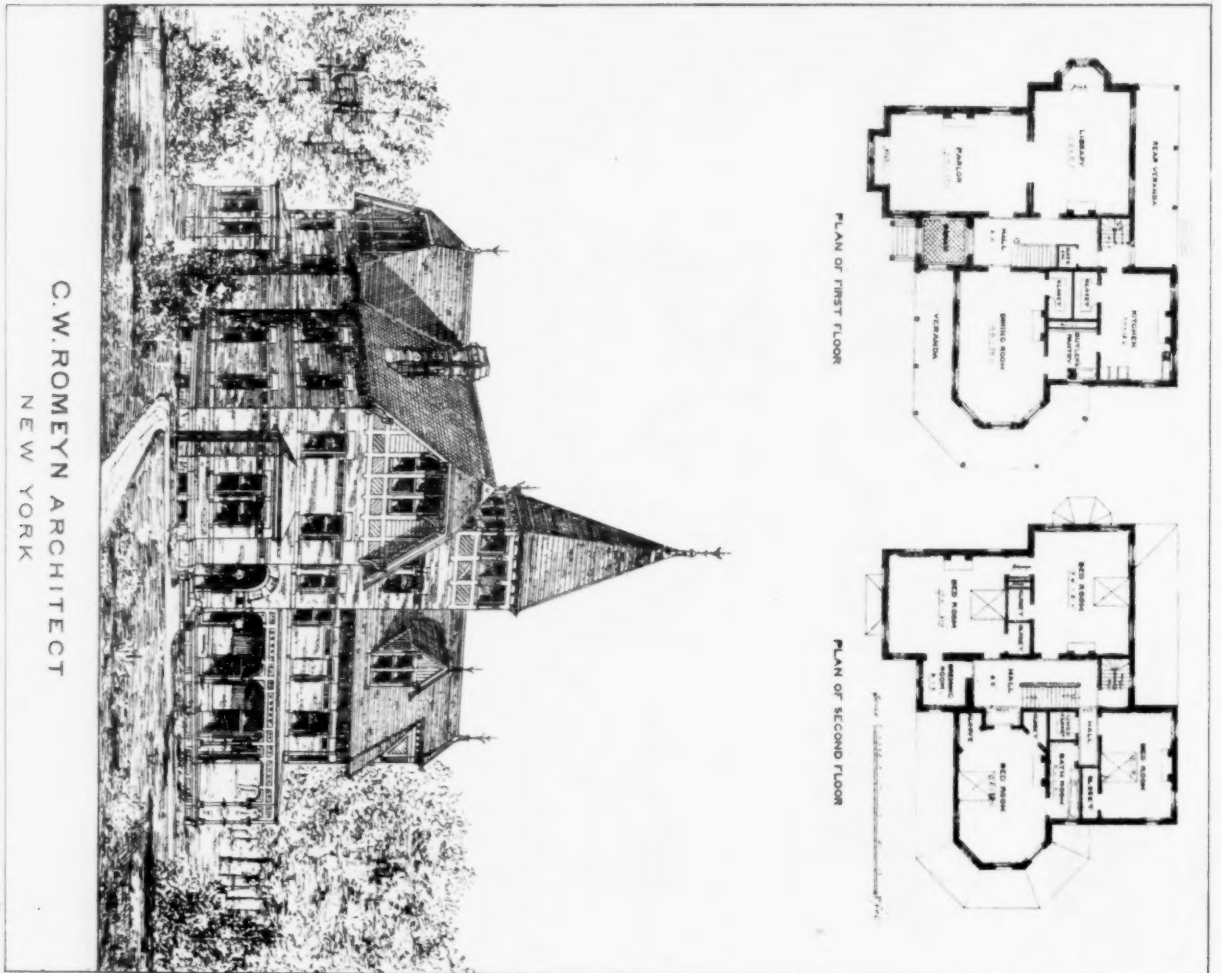
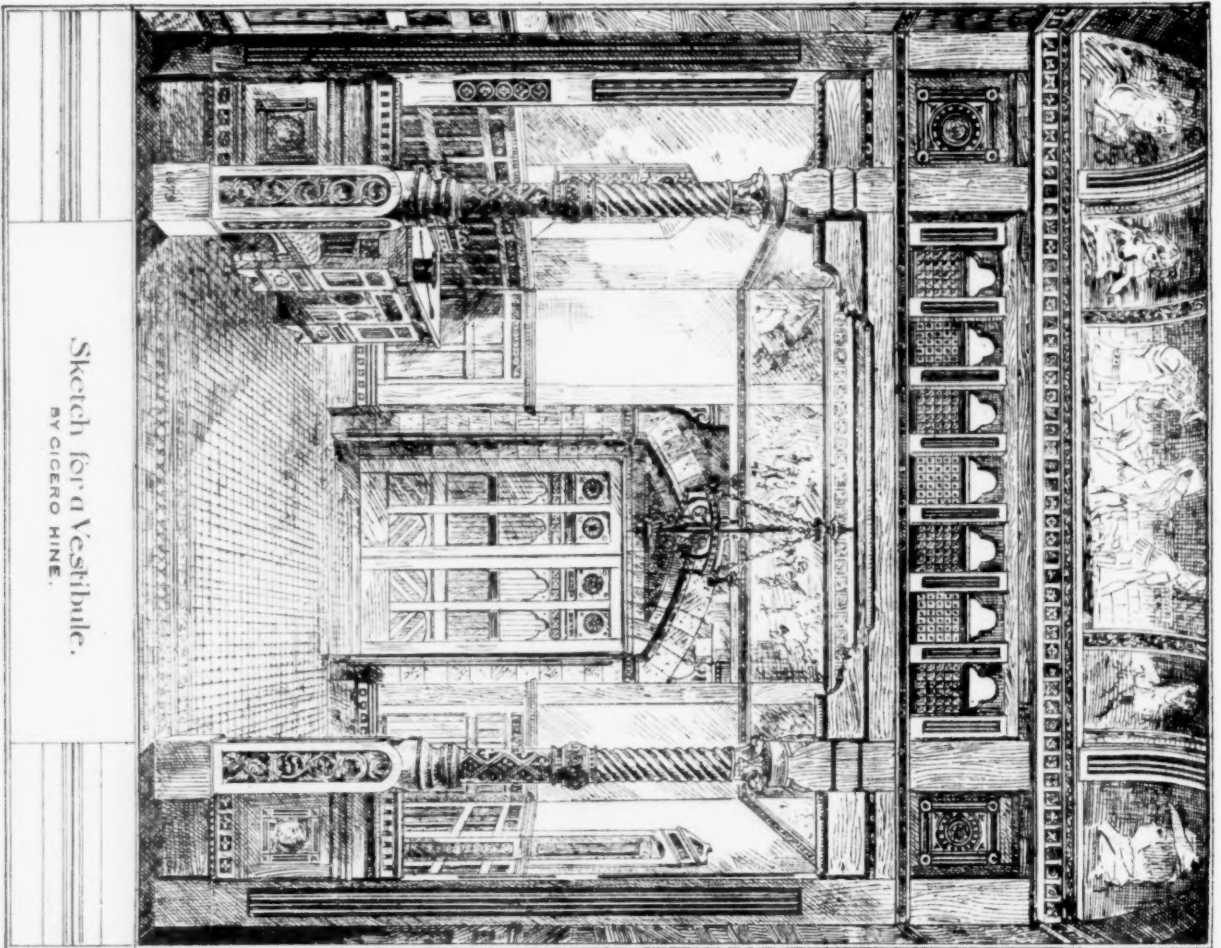
HOTEL AT BURNSIDE, KY. MR. CHARLES CRAPSEY, ARCHITECT, CINCINNATI, O.

This hotel is now being built by a Cincinnati company, on the Cincinnati Southern Railway, one hundred and fifty-seven miles from Cincinnati. The building will be of wood, and will cost about \$15,000.



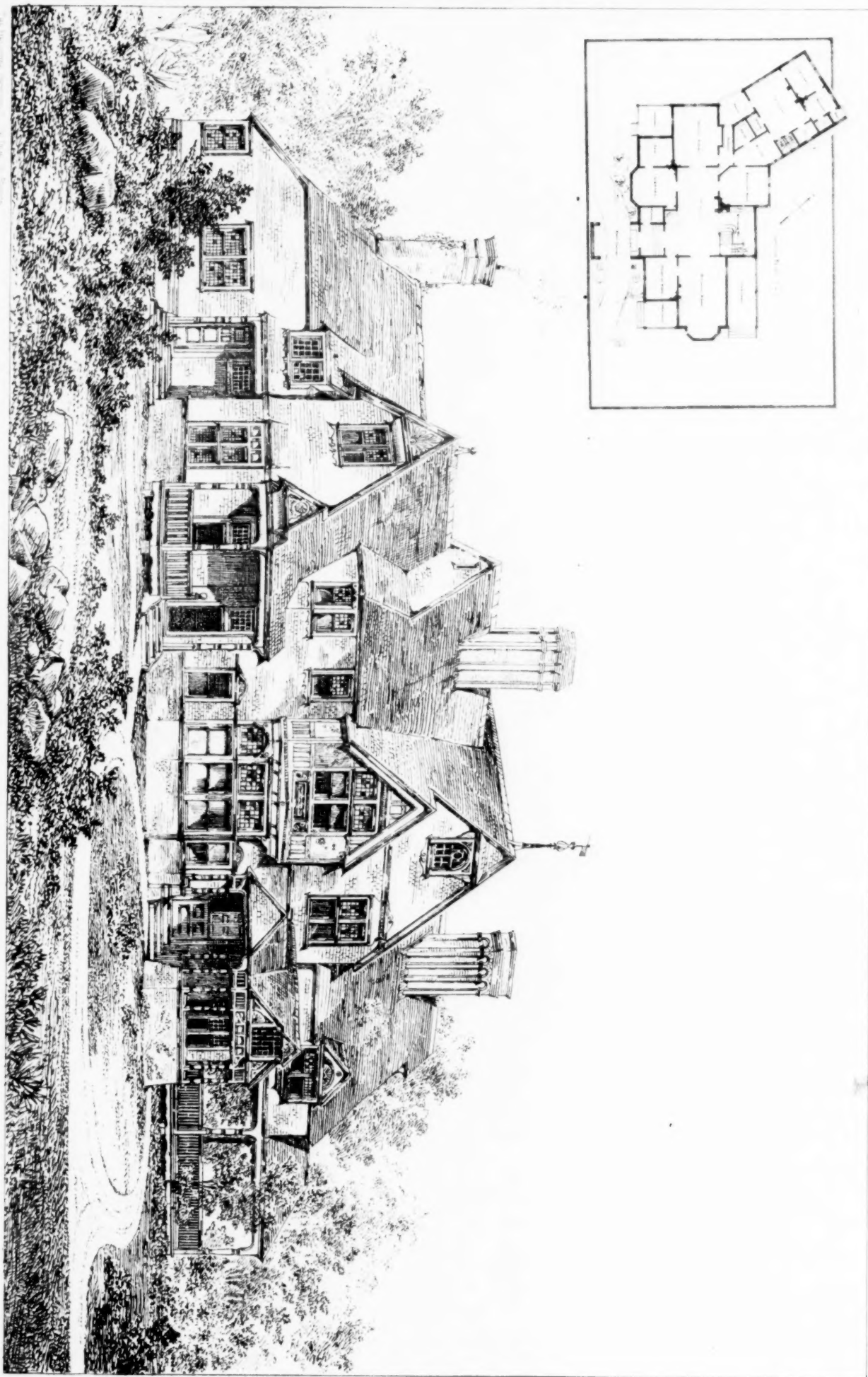








CUMBERLAND HOTEL BURNSIDE KY



PICURED BY THE ARCHT. HOUSE
A. E. BARNES ARCHT.

MICHAEL MUNKACSY.

THE feudal castle of a Magyar is the idea which suggests itself to the imagination as one crosses the threshold of M. Munkacsy's residence. The exterior is of red brick, faced with Caen-stone. The windows are narrow, and defended by iron-work. Lanterns of considerable dimensions, suspended from iron supports, hang at each side of the gateway, of which the very handle of embossed steel is mediæval. You enter beneath an arched passage leading to a courtyard. The former is painted in pale red, with intersecting lines of color. On the right is the entrance hall, a marvel of effective decoration. The winding staircase opposite is of black Spanish oak. The beams and balustrade, somewhat roughly finished, have a magnificent effect against the walls hung with scarlet cloth, and adorned with armor and pictures. The staircase itself is reflected in a huge mirror in the entrance hall, against which is a fine old carved oak bench. A *portière*, of the tint of burnished gold, embroidered with a design in olive velvet, harmonizes the tone of color, which is further subdued by the softened light of the lattice windows, set in a narrow rim of amber glass. A noble palm-tree in a *faïence* jar fills up the space on the left at the foot of the stairs. To reach the *atelier* you ascend to the second and uppermost floor, your attention much bewildered by rare and beautiful objects on the walls, such as etchings set in frames of ebony, a picture by an old master, a bronze reproduction of an antique, etc. A gallery of oak runs round two sides of the landing. Curtains of olive velvet separate the gallery from an anteroom hung with tapestry, and full of artistic beauty.

The *atelier* is one of the most sumptuous in Paris. A curtain of brown velvet crossed by one of olive, and surmounted by an embroidered hanging of gold on crimson, serves for door. The ceiling is of the Henri II. period, in bosses of carved oak on blue and gold—the cross beams which form the compartments of oak and gold. The walls are tapestried. In a recess on the left is a chimney, which recalls that of the Council Chamber at Bruges. The chimney-piece itself is a rare specimen of wood-carving. The upper part is in seven compartments, in each of which is a standing figure of a knight or lady. On each side of the vast fireplace are figures of knights seated. One fresh from the Crusades relates to his host his tales of flood and field. His attitude is full of life and spirit. The figures are in oak. An oak wainscot, some seven feet in height, carved in the style of the chimney, supports a shelf, on which, in the corner to the right, are candelabra of old majolica, a Venetian mirror on a cabinet, and a longer mirror, set in a deep Florentine frame, cutting off the angle. The corner to the left is filled by a majolica jar some four feet high. On a table in the centre stands a splendid bust in bronze of the artist, by Baryas.

Against the wall of the *atelier* itself, and opposite the huge window, there is a gallery of old oak resting on pillars of oak, which forms a passage of communication from one room in the upper story to another. The corner of the *atelier* on a line with the entrance door is cut off, a tapestry *après* Banker filling the space above, and a Dantzie Schronk the lower. The fourth corner disappears behind a curtain, which projects so as to make a door. On this curtain hangs a banner emblazoned with the royal arms of Hungary. To describe the exquisite arrangement of embroidered velvets, brocaded satins on canopies, *fauteuils*, etc., would require the pen of the *redacteur* of the San Donato collection.

There is a strange analogy between the character of his works and his own physiognomy: his powerful figure and energetic countenance have the stamp of a rich artistic temperament. The forehead is broad and arched, and the deep furrows between the brows indicate a profound thinker. The steel-gray eye, with its grave, frank, and dreamy expression, betrays the sensitive nature of an artist. His whole being conveys the impression of a man in whom iron strength of will and genius are united, and these were required to struggle victoriously against the disadvantages of his early years. His story reads like a romance, and to one who has just quitted his princely residence its vicissitudes seem scarcely credible.

The mother of M. Munkacsy died when he was an infant. His father took part in the Hungarian insurrection of 1848, was taken prisoner, and died when the child was but four years old. An aunt took the little orphan to her home, but one night robbers broke into her house and murdered her. A lawyer uncle, ruined by the Revolution, next took charge of the little fellow. Too poor to educate him, he apprenticed him to a joiner. At the end of four years the boy worked on his own account. Some students of the college of Arad taught him to read and write. He then instantly commenced the study of literature and history. Schiller specially fascinated his fervid imagination. He attempted to express his thoughts in poetry, but was dissatisfied by the result. For three years young Munkacsy worked from five in the morning to late at night at the rate of five shillings a week. Hard work, mental excitement, and insufficient food brought on fever. His lawyer uncle had meanwhile prospered, and sent for the lad to his home at Gyula. There he met the portrait-painter, Samosy, and for the first time in his life saw an artist at work. He was just eighteen, when it suddenly dawned on him that he was born to be an artist. Samosy showed him much kindness, gave him some instruction, and took him to Arad, where he was engaged to paint several portraits. There Munkacsy gave lessons in drawing in exchange for his dinner. His first portrait was remunerated by a winter coat. Under Samosy's guidance he made rapid progress, and worked for three months on a picture, which excited so much admiration

that he determined to exhibit it at Pesth. The Art Union bought it for eighty florins. The subject was The Invitation to a Wedding. Two young Hungarian peasants, in holiday attire, decorated with ribbons, invite the inmates of a cottage to a wedding. One of the two delivers the message, whilst his companion makes love to the young girl of the family, whom he seems willing to invite to his own wedding. Munkacsy's second picture fetched 130 florins. With this sum for capital, he started for Vienna, where he studied in the galleries, and returned to Pesth in 1866. Disease of the eyes compelled him to spend six months in a hospital. He left it cured, with but twenty florins in his pocket. With indomitable energy he, however, started for Munich, where he studied two years, and thence to Dusseldorf, where he painted The Last Hours of a Man under Sentence of Death. Knaus discouraged him from undertaking so important a subject. Undismayed, young Munkacsy quietly went on with his painting, which he exhibited at the *Salon* in Paris in 1870, where it created a sensation and carried off a medal. — *The Architect*.

UNRESTRICTED COMPETITION.

"THE beneficent force of competition never ceases," is a maxim held by one school of political economists. Another school asks the question: "If a series of failures disprove a principle, what must be said of the failures of competition, where twenty men fail for one who succeeds?" George Jacob Holyoake, a leader in this school, says: "Had any one invented competition, it would have been hooted out of the world long ago, as an infernal contrivance of spite and greed," and uses the picturesque phrase of a member of the House of Commons, that "competition is an ugly rush;" "an ugly rush," adds Mr. Holyoake, "after bones which everybody is equally ambitious to pick."

Those who are actively engaged in this ugly rush frequently question the truth of the maxim of the first school mentioned, but are often deterred from an expression of the doubt of the "beneficent force of competition," through a fear of being set down as superficial thinkers. Nevertheless, it is my purpose to examine briefly the practical working of the unrestricted competition that has been growing year by year into practice in the business of building, with a view to prove that its tendency is to deteriorate the character both of men and workmanship.

A community suffers by any degradation of the standard of morality, and the narrow use of the word "moral" can no longer be indulged. It fills the warp and woof of all human affairs. George Eliot gives this idea its finest expression when she says: "Thoroughness of workmanship, care in the execution of every task undertaken, as if it were the acceptance of a trust which it would be a breach of faith not to discharge well, is a form of duty so momentous that if it were to die out from the feeling and practice of a people, all reform of institutions would be helpless to create national prosperity and national happiness. But this duty of doing one's work well, and taking care that every product of one's labor shall be genuinely what it pretends to be, is not only left out of morals in popular speech, it is very little insisted on by public teachers, at least in the only effective way,—by tracing the continuous effects of ill-done work."

In order to deduce the prevalence of "ill-done work," of which such loud complaint is at present made in the building occupations, from the practice of unrestricted competition, it will be necessary to illustrate the points I desire to make by examples taken from the methods of competitive building in vogue in the West, as contrasted with the methods of past years.

At the head of the building profession stand the architects, now become a numerous class. Until within the past ten or fifteen years, this class had scarcely felt the effects of severe competition. Now, owing to the rapid increase in their numbers, few professions suffer more from this cause. Perhaps no profession has encouraged and lent its aid to promote and stimulate unrestricted competition in the same degree as has the architectural profession. Architects who have uniformly discouraged and discountenanced competition among themselves have, with very few exceptions, as uniformly encouraged and countenanced it in all other branches of the building business, until, like a boomerang, it has come back to torment them. They cannot escape the effects of customs which they foster in a business where they are the most prominent actors. Hence we find the public soliciting the profession, by advertisement and otherwise, to enter into competitions of the most degrading character. The columns of the *American Architect* rarely contain samples of such solicitations, but other instances might be given which would make the most ungenerous samples appear estimable by contrast.

The effects of this competition among architects have so frequently been enlarged upon in the pages of this journal, that I need not dwell upon them further than to ask one question. If competition among architects (unrestricted competition) is considered so derogatory to the character of the men and the profession, how can it exert beneficent influence on the character of builders and contractors, and upon their branch of the business, or indeed upon any one in any manner concerned in it?

Leaving out of our consideration then, for the present, the architectural competition, let us examine the prevailing methods among builders, and see if we can discover any features in them that deserve to be perpetuated for their "beneficent force."

The architect has plans and specifications prepared, more or less complete, and invites proposals for furnishing labor and materials for

the whole or parts of the building. On the day appointed the proposals are opened, and the contract awarded to the lowest bidder. Now, what will, in the nature of things, be the chief consideration of the contractor who has secured the contract? Of a certainty, it will be where and how he can save in the labor and material, and not how well he can perform the contract. First, he will seek to purchase material as low as possible, perhaps with little or no regard of the requirements of the specifications. Will it pass the inspection of the architect and be accepted? is the mental query, and the same consideration influences the performance of the labor. How little labor will suffice for a given piece of work, to insure its acceptance by the architect? These questions arise in the thought of the contractor, irresistibly, after obtaining a contract in the usual manner. How can he do otherwise? In the "ugly rush" to secure the job, he has estimated it with an eye to the probabilities of degrading the standard of excellence in material and workmanship by scamping it, and evading the requirements of the specifications. He understands that upon the acceptance of the work and material by the architect, he escapes the blame ostensibly. He also understands that upon the architect's knowledge of work and material depend his chances of success in scamping; and he as well understands, if he be an experienced mechanic, that many architects have not sufficient knowledge of particulars to pass intelligent judgment, and that inferior work and material are often accepted with as much satisfaction as the superior, and that architects will quibble concerning trifles, and wholly overlook important matters, from a lack both of theoretical and practical knowledge. A kind of cuckoo song repeats itself in the specifications for all classes of buildings, with regard to material and manner of doing the work, to which little or no attention is paid by the contractor. I will give one item as an illustration:—

"The stones in the foundation walls are to be laid on their natural bed and well bonded." Now, the largest portion of the stones in foundation walls in this city are laid on their edge, because the walls can be built up faster in this manner, and very seldom are they well bonded. The work is accepted, however, as readily as if the specifications were complied with in the strictest manner. In some instances there is a blissful ignorance as to what is the "natural bed" of the stone.

It is as great a violation of business principle, when a specification is drawn up in loose phraseology, that will not be considered as positive in the demand of material and the manner of using it, as it is for the contractor to evade the requirements of such specifications in any way he sees an opportunity for doing.

A specification should be positively explicit, and the contractor held to a performance of the work in accordance with it. Again, all necessary detail drawings should be made, that would fully show the proposed methods of construction, forms of mouldings, etc.,—before contractors are called upon to estimate and make proposals. This is seldom done, except in case of public work, and the contractor has generally to estimate from a quarter-scale drawing and the specifications. This is in point of fact simply guessing.

These incomplete and unjustifiable methods of planning and performing the work of building are well understood, but there is no effort made to effect any reform. They stamp the business in all its branches with a demoralized aspect which presents itself forcibly to the public mind, but the secret of the demoralization is discovered only by the few, while the many suffer, directly and indirectly, from the immorality of ill-done work.

We will now, by way of further tracing the effects of such work, suppose that a contract has been as faithfully fulfilled as it can be, possibly, under prevailing conditions. Architect and client are both well satisfied. The client desires further improvements to complete his establishment,—a case which frequently happens. Suppose that the first contract has been for a dwelling, and that a stable is desired. This involves at the present time another competitive strife. No matter how satisfactorily the first contract has been performed, the contractor, if he cares for the job, must enter into competition with a number of others for the building of the stable. What has he gained by the faithful execution in every detail of his first contract? I have supposed that architect and client were both satisfied with his work on the first contract. He must be content to be satisfied with himself, with his conscientious and creditable work. He has no other source of satisfaction, and he very soon learns that this sort of satisfaction doesn't pay. In fact, by the very performance of his contract in a strictly honorable manner, by his thoroughness, and the "execution of his task as if it were the acceptance of a trust that it would be a breach of faith not to perform well," he may be out of pocket. He is behind in the race that has been governed by unrestricted competition. His self-complacency over a good job, accurate work, and faithful completion of details, will not pay his bills, and the soreness cannot be entirely healed by the plaster of his own satisfaction with his work. He begins to ask himself if it is not a truism which all business men admit, "that it is a disadvantage to any commercial undertaking to say that it is honest," and if the man who asks—as all practical business men do ask—not "is the thing moral?" but "does it pay?" is not, after all, in the right. Is it much wonder that he sets himself to the study of how to scamp a job, instead of how best to secure its thorough performance? Any man who can pass through a series of similar experiments and not become demoralized is a man of superior moral stamina,—a very Caleb Garth among men, the typical workman, with whose portraiture George Eliot has garnished industrial literature.

There was a time in the history of the building business, and that within the recollection of the youngest now engaged in it, when a contractor would treat with scorn the proffer of an opportunity to make a proposal for building a stable when another had immediately before built the house, as in the foregoing supposable case. It would be difficult to find a contractor to-day who is not willing to do this, or even who will not seek the opportunity. This change has been brought about by the practice of the architects who solicit proposals under these circumstances. It is hard to find an architect who has back-bone enough to tell his client that such a course is at least discourteous, if not dishonorable. Architects do not seem to believe this to be the fact themselves, so readily do they lend themselves to the cupidity of their clients, often recommending to them this course. It is pertinent here to inquire where would be the dishonor or lack of professional etiquette, if a second architect should step in at this stage of the work, and offer to furnish the necessary drawings and specifications for the completion of the establishment at one or one-and-a-half per cent less on the cost of the work, than the first architect charged for what he had done. The law of unrestricted competition applauds the one course; why not the other? Honor, etiquette, good-will, and such sentiments go to the dogs under this law, and men go with them. There cannot be one criterion of ethics for architects and another for builders and contractors. A higher standard is demanded for both.

A premium is offered in cases like this for bad work, which cheap work really means. One of the oldest builders in this city, who is now engaged in the manufacturing business, lately said to me: "Were I now in the building business, I should try to establish a reputation as a cheap builder. There's money in it!" He is right. The cheap builder very frequently gets the best prices going, on his reputation for that particular; while the man who does his work invariably well is avoided as an expensive man. It is very difficult to impress upon the minds of people that if good work does cost more than poor work, it is the cheapest in the end. Here again the architect panders to the public, and often solicits proposals from the cheap and inferior workman, excepting only for such first-class buildings as he fears to intrust to him. He does not strive to impress upon his client the fact that inexpensive buildings are really cheaper when well built than if built in a careless and imperfect manner. His reasons for this are evident; it is simply competitive strife again among architects, and this of a very vicious nature. An architect, for instance, takes measures to make it known that he can let a contract to get a house of a given size built for a certain sum, and, to confirm his statements, he points to similar houses that have been built for that sum of money under his direction. The consequence is that each architect now endeavors to compete with this one by cutting and cheapening plans and specifications, and obtaining proposals from mechanics known to perform their work in an inferior manner and therefore cheaply. There naturally follows a general deterioration of work and a general demoralization of all concerned.

In the strife of unrestricted competition, every man and every interest must care for itself, or perish in the struggle. Men lose the courage to be honest. Honesty is outwitted in the contest. "Unmitigated competition is at best," says Mr. Holyoake, "organized war." If men and morals are worthy of consideration, then we should seek to supplant the barbarism of war by the equity-loving rule of peace, and to mitigate the evils that have accrued to the entire profession of building, from the architect to the journeyman, in this ceaseless strife.

Much has been written in the columns of the *American Architect* upon the deterioration of work and workmen in the building trades. The fact must be admitted, lamentable as it is. Various causes have contributed to this end, and are indicated in this article together with those which produce the more general results of unrestricted competition. This last phase of the present investigation, however, demands special attention, which shall be given to it at some future time. It is quite the fashion among journalists to attribute this deterioration to combinations amongst working-men. I do not believe this to be the true cause. It would be equally unjust to attribute the unprofessional conduct of any architect to the American Institute of Architects. Combinations are one form of protest against unrestricted competition.

The evils of unrestricted competition must of necessity become apparent; we must each suffer in our special vocations, and the public must suffer severely, before any stringent measures will be applied to arrest these demoralizing tendencies.

We have each an individual responsibility in the matter. It rests with those who suffer in any degree from the deterioration of men or of methods in the building occupations to urge all measures which shall institute the needed reform. B.

HINTS ON LANDSCAPE-GARDENING.

THE purchaser of an estate has frequently to make it, or more frequently still, to undo what has already been done. The aim of the present remarks is to suggest rather than to lay down any precise rules; to hint at what should be attained and what avoided.

The approach to a place is of the first importance. If there is no convenient and decent road already made, its formation should be the first object. Convenience should always be regarded before appearance, and therefore, if there be no insuperable difficulty in the way, the road or entrance to a place should be made with reference to some desirable point or junction with a public road, or proximity to a town,

railway station, or some eligible neighborhood. To be isolated from the world by the want of some easy communication, is a misfortune which many retiring people make when they choose a country or rural neighborhood. No mere promise of such a convenience as a road being formed should induce any one to build on land, however attractive in other respects it may be: many have been led into such a trap.

The purchaser of a place should further consider what extent of carriage-drive is necessary to be made, as any great length, in some districts, would be an infliction of continual road repairing, a process not always inexpensive. Steep ascents are tiring, though a gradual rise to the house is better than a decline. In small places, a carriage-drive is often better avoided, as it detracts from the size of grounds, and cuts up the garden or lawn. A long serpentine drive through a limited area of ground gives an air of pretentiousness that is distasteful, while a wider gravel road than is really necessary entails unnecessary labor to keep in repair. The breadth of a road should be in inverse ratio to the breadth of the grass at the sides. Room for two carriages to pass is requisite in much-frequented roads. Roads passing opposite or near principal windows should be avoided, nor should they be allowed to intersect the breadth of turf or garden in front of windows.

Some people have a great fancy for straight lines and roads. In small places, as in the suburbs of towns, a circuitous approach is often ridiculous. Quite as distasteful is a straight road or path through a park, unless, indeed, it be a central avenue approach, as was common when the *Le Nôtre* fashion prevailed. It should be remembered, interest can only be preserved by continual changes, and in Nature especially we find a constant variation in contour and line. In laying out an approach, then, it is desirable that we so vary its line and direction, that at each step or turn of it some new scenery opens upon the view.

No less important than the main approach to a house is a back access, and a provision for this must be made without its intrusion within the pleasure-grounds. Sometimes a branch off from the main entrance before it is noticed from the house is necessary, unless any back way or lane can serve. In small places one entrance is often desirable, and by the aid of plantations a branch walk or road may readily be got for the accommodation of tradesmen and the removal and supply of necessities.

The position of the house in reference to level has already been indicated. Prospect must not always be looked for, nor can desirable aspect be secured; other difficulties also frequently arise, such as nearness to unpleasant neighborhoods, buildings, public roads, etc. The art of the landscape-gardener can, however, do much to atone for such deficiencies. By removing ridges of ground, hedge-rows, plantations, and diverting roads and fences, a very confined and cramped situation may often assume an extent its proprietor or occupier little contemplated. In a similar manner objectionable views, bad aspects, and exposures to wind, rain, etc., can often be shut out or remedied without much expense by the intervention of mounds, clumps of trees, or by excavating slight hollows and other like expedients.

The existing levels or surface of ground may often be left much as they are, the removal of a ridge or the formation of a slight bank frequently effecting all that is required. In suburban places an objectionable public road or footpath, or the boundaries of land, can always be concealed by forming a hollow and throwing the earth against a wall, or making a bank. In hilly and undulating districts the best position for a house is on the slope of a hill commanding a valley and another rise; the slope should fall towards a good aspect if possible. Undulating ground is always to be preferred to flat, dead levels which are more difficult to drain and keep dry. In flat surfaces slightly hollow portions may serve for ornamental sheets of water, or for surface drainage, the excavated earth being placed on the higher parts to form a rounded contour. Such variations should be cautiously made, and never overdone, or an appearance of artifice will result, and the general character of the surface of country lost. Undulations ought never to appear abrupt or of regular outline; but the contour lines should agreeably blend or fall into one another without the slightest angularity or harshness being apparent. The bottom of depressions should never be gauged, as it were, by planting; they are best left with a grassy surface, the planting being reserved for the sides and swelling of surface. Variety and contrast not too great nor sudden is what the eye requires in forming groundwork. In small, contracted places a raised bank to conceal the fences, and thereby the limits of the ground, affords an opportunity for the ready disposal of the surplus earth which may be advantageously removed round the house, effecting at the same time a raised platform for the house, the means of draining the surface, and the appearance of extent.

Although these improvements can be made after the house has been built, it is recommended that the rough groundwork and levels should be formed before the operations of building are commenced, as surplus soil is more readily obtained, and the levels adjusted when the excavations for the basement and foundations of the buildings are being performed. At least, such rough groundwork might be done at this time as forming banks or cutting out the approaches, which may be filled in with the rough stone or old dry material, the finishing and sodding of surface and parts near the house being left. It is desirable also that the operations of draining and trenching, and planting the larger trees and shrubs, should be commenced, thereby affording them time to take root and develop the appearance of the place. In bare, exposed places, when planting is left till the house is finished,

a bald and miserable appearance results, which often tends to disgust occupiers or purchasers, besides the inconvenience of such operations being performed after the house is tenanted.

Drainage should be the primary operation in a new place, or continual vexation will be experienced. A damp, sodden soil, always saturated with water, cannot be permeated by even the solar influences, the air cannot penetrate it, and it remains cold and ungenial. Air, warmth, and drainage of stagnant water and gases are as essential to health and growth of plants as to human beings. The extent and nature of the drainage will depend chiefly on the nature of the soil and the kind of surface. A retentive subsoil requires deep drainage, and in flat situations large tiles or pipes. A porous, gravelly, or sandy subsoil, and an undulating surface, requires little or no land drainage, although there are exceptions to this rule. Land drainage tiles are generally used for draining, and where placed not too near plants or trees are effectual. Rubble drains, or trenches cut to fall of ground, and filled with coarse gravel or stones, have been found very useful, and such drainage is inexpensive. Care must be taken to cover the upper part of these drains with grass-sods or straw, to prevent the interstitial spaces becoming choked. In steep declivities ground, as on the side of a hill, it is a good plan to lay a network of such drains or parallel lines of them under the house, such lines of drains being intersected by large cross-drains, running on each side of the building and carrying off all soakages, etc. Surface drainage is best effected by regulating the levels and inclinations of the grounds and paths; the water being carried away into the nearest outlet, or dry rubble pits may be provided, or such surplus water may be carried into any ornamental lake.

Walks.—These should not be left to any ordinary workman or gardener, as is generally done, with the idea that it is a matter of little importance what curvature or direction a path should take so long as it answers its end. The most agreeable and pleasing lines or curves are those which seem to naturally take the most direct route, winding their way between objects and groups of trees as if their course were naturally turned by them, not as though every turn had no object but its own deviation. Their width should depend on their use, their length, and the extent of ground. Straight paths should be wider than curved, which may vary from four to seven feet in ordinary gardens. Paths should partake of the level of the ground, following its contour, though sometimes the edges may be rounded up to the grass levels or lawn. Sometimes a winding path may be best concealed from the gaze of the windows, or its object may be for privacy; in this case a depressed level is best. Generally walks should not be made too wide, as the extent of gravelled surface lessens considerably the apparent size of the grounds. A grassy surface is always more refreshing than one intersected or cut up by paths. The prim gardens and lawns seen in front of many suburban villas and cottages are particularly distasteful and paltry owing to the numerous ramifications of paths and the formality of flower-beds, planting, etc., attempted, as if the object the gardener or tenant had in view was to make the most of the limited slice of land. The most convenient seasons for groundwork are the summer and autumn, as the soil is more easily moved and worked than in damper seasons. If the soil be heavy it should be deeply trenched, especially in those portions to be planted. Lawns require a lighter and poorer soil than that for plantations, which should have the upper or richest earth, which may easily be obtained in the formation of paths, etc. The application of manures, lime, soot, ashes, leaves, or other refuse, whether solid or liquid, to the soil is required on stiff, poor, and "hungry" ground. Moule's earth-closet system, or the irrigation of the land with liquid manure, can easily be adopted in the country and with little or no expense.

Plantations.—If surface and levels do much to alter a place, plantations do more. Improvers and purchasers of property, as a rule, regard this feature with a comparative indifference. The real value of a well-wooded or planted place is never sufficiently regarded, for it should be considered that it is easy to cut down and reduce to bareness, but not so to create the shelter and beauty of a well-wooded locality. The growth of a century is needed to clothe a naked site. Shelter should be the first object in planting a new place. It must be judiciously done, not by stiff lines or belts, but by groups interposed without measured precision. Unpleasant quarters and aspects may be thus effectively shut off, and such masses of trees answer in flat countries the purpose and shelter of hills. As a screen to hide objectionable neighborhoods, cottages, and tenements, they are invaluable. Concealment of boundaries is another use in planting, though this must not be carried to the excess of confining and closing in a place by a close hedge of trees, as is sometimes noticed.

Where old trees and plantations exist great care should be taken in thinning them. In this the landscape-gardener shows his knowledge of pleasing combinations, light and shade, and natural landscape effect. Beauty of outline in foliage and pleasing groupings should never be touched, as when two or three trees form a head, become intermixed and their stems interwoven, but by removing others near them their combined beauty will be enhanced. Sometimes aged thorns, maples, and ash, and other specimens, may be left for similar reasons. As a rule thinning should not be done too evenly, leaving single trees, especially such as have grown together. New additions to old plantations should not be planted separately, or a want of connection will be apparent, an intermixture of old and young being necessary. Sometimes thickets are useful to conceal unsightly buildings and objects, while they form an agreeable variation to more open planting, and may be thinned occasionally.

Evergreens, as a rule, are more desirable in a limited place than deciduous shrubs, though an intermixture of the two kinds is both desirable and more effective, the latter by their brighter spring foliage forming a happy contrast to the duller greens. In old methods of planting, the dwarf plants are placed along the edges of beds, the larger and higher growths being kept in the centre; but this is contrary to natural variety. Irregularity, though not a studied diversity, should characterize both the groups and the outlines of the shrubs and plants, round-headed being blended occasionally with trees of an upright or spiry character.

In planting lawns, single specimens may be introduced, omitting groups and assisting their folial outlines, but never dotted about evenly, destroying the breadth of grass, as often seen. These specimens and groups should unite and soften the outlying groups and trees with the more finished accessories and gardenesque character of the house and its precincts. Neither should single plants intercept the views from the principal windows; they should rather sustain them. A house should never be buried by shrubs and trees, but masses of them may be placed to hide particular offices and diminish outwards in figure and density, so as to allow good ranges of view from the principal rooms.

In large places, the more formal style of planting may be adopted; terraces and avenues of shrubs and flowers, and other architectural accessories being employed, to give importance and effect to the building. Geometrical laying-out entails labor and expense, and is not adapted for ordinary villa residences. For gardens and lawns the plants best suited are rhododendrons, azaleas, laurels, juniper, cypress, arbor-vitæ, cedars of Lebanon and Deodar, with roses, and other flowering plants. Holly, yew, berberry, Norway maple, and other shrubs, are also good as undergrowth plants, and for filling in between others. In the northern United States may be added the Missouri currant, weigelia, cornel, laurel, lilac, viburnum, California privet, Forsythia, spiræa, Tartarean honeysuckle, dogwood, deutzia, magnolia, catalpa, and pyrus japonica.

The ornamental specimens should always be protected by evergreen trees and shrubs, which should be first planted thickly; and for the value of shelter the indigenous trees of a place or a wood should be sparingly thinned. — *The Building News.*

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DWELLING HOUSES: THEIR SANITARY CONSTRUCTION AND ARRANGEMENTS. By Professor W. H. Corfield, M. A., M. D. (Oxon.) Reprinted from *Van Nostrand's Magazine*. New York: D. Van Nostrand, Publisher, 1880. Price, 50 cents.

NOTES AND CLIPPINGS.

THE NEW YORK AND BOSTON MUSEUMS OF FINE ART. — Mr. W. J. Stillman, writing from Florence to the *Nation* about the dispersion by auction sale of Prince Demidoff's treasures in the San Donato Museum, takes occasion to draw a comparison and contrast between the Metropolitan Museum in New York and the Boston Museum of Fine Arts. Says this critic: "It is, in fact, difficult for one who has made art collections a study to comprehend the policy which directs the operations of the Metropolitan Museum. If there were the hope of rivalling the British Museum, South Kensington and the National Gallery in one institution, the purchase at what after all were extravagant prices of a large collection of Dutch pictures to the exclusion of the better schools, of the Cesnola collection of Cypriote art at a cost which would have made a sample collection of art-work of all the centuries from the building of the Pyramids to the present day, etc., there would still be a doubt if the directors of the Museum were guided by sound policy; but when we know that instead of the resources of the whole British Empire we have only those of the city of New York, the laying of the foundations of a civic museum with such disproportionate acquisitions reminds one of a temple which is all portico. An hundred years would not make the Museum a fair representation of art-work at this rate. This is not judicious collection, but ignorant acquisition, and so far from exciting the admiration of the Old World, as some New Yorkers may imagine, it reminds the true collectors and students of collections of the frog who burst, rather than of the bull whom he emulated. The subject suggests a great many bitter comments which good-nature suppresses, and one need only say that, in what pertains to the soundest art culture, the policy which it is understood Boston is entering on will place her in an incontestable superiority to the metropolis before ten years have passed. The formation of art-collections is a thing which demands an amount of art-culture in the collectors which the New York direction do not seem to think it worth while to employ; and we may easily learn that the vanity of art-patronage is no match for the study and love of art, and that all the capital of New York thrown out in the reckless and unintelligent manner in which it has been thus far employed will not compete with the modest resources of the capital of New England under the direction of men who have made art their life-long study. We New Yorkers are as proud of the Cesnola collection as if we had bought a white elephant, and with equal reason. Boston, at a tithe of the cost, will cover the art of 5,000 years. It is not the way to work, and it is unworthy our American shrewdness to work in it. One-twentieth of the Cesnola collection and one-tenth of our Dutch gallery were worth to the metropolis as much as the whole. What is needed is intelligent selection and arrangement, not indiscriminate accumulation."

COMPETITIONS. — It is so seldom that we are called on to publish notices of competition of which we wholly approve, that we are pleased to call attention to the two notices on page viii.

THE STATUE OF GENERAL CUSTER, AT WEST POINT. — A special despatch from Washington says: A bill was recently introduced in the House for the erection in this city of a monument to the memory of General Custer, and the officers and men of the Seventh United States Cavalry, who were killed by the Sitting Bull band of Indians in the fight on the Little Big Horn river. The bill directs the Secretary of War to contract with Wilson McDonald, of New York, for the erection of the monument, "which shall include duplicates of the sculptor's equestrian and pedestrian figures of the late General Custer, and also the likenesses of the principal officers, and the names of the men who were killed in the battle of Little Big Horn." Commenting on the Custer monument at West Point, Mrs. Custer says, in a letter to Representative Daggett, of Nevada: "The statue could not be worse than it is. The face is of a man of sixty, and the dress so unmillitary that his brother officers shudder in looking at it. He is represented with full-dress coat, and top-boots that only belong to undress uniform. The whole costume is incongruous and incorrect. Then he is armed, like a desperado, in both hands, while some of the General's best charges were made with no fire-arms about him. I realize that I am the last one on earth to be satisfied with any representation of my husband. Nothing could portray to me in any form my idea of him. But his friends in civic life, his comrades in the army, and artists, all have but one story to tell—that the statue is a failure as a likeness, as the representation of a soldier, and as a work of art. It seems as if I could not endure the thought of this wretched statue being repeated, and I hope that your voice may influence those upon whom the decision rests." A later despatch states that Mrs. Custer's remonstrance has been heeded, and the West Point statue will not be duplicated.

BLISTERING OF PAINT AND VARNISH. — Many are the opinions expressed regarding blistering, and although some very sensible theories are advanced, we are inclined to believe that the bottom of the subject has never been reached. We hold an opinion of the cause of this trouble, and it may be that this opinion has been forestalled by others; but as we have never seen the points laid down in print, we present them here. Blistering of a varnished surface, after the varnish has had proper time to harden, is due to the evaporation of moisture which lies confined under the shell of varnish. This evaporation is caused by heat, and it is seldom, if ever, a blister will rise upon a varnished surface without the temperature is raised to an extreme degree, near to that which the varnish received in its manufacture. The accumulation of moisture under the varnish may be brought about in several ways; the most particular one being in the closing in of moisture in the rough stuff. During the rubbing of the rough stuff the water used is partly absorbed, and unless due care is taken to give ample time for "drying out" before the application of subsequent coats, a great amount of moisture will be confined within the cells of the rough stuff. Boiled oil contains moisture, as of water, and in cases where steam is used to express the oil from the seed this percentage is increased. Turpentine, an extremely volatile liquid, also forms an evaporating substance which is rendered active by a slight heat, and in its haste to reach the air it disturbs the outer surface, either lifting an elastic coating into bubbles or blisters, or bursting open a hard and inelastic one into cracks. The primary cause, then, of blistering is moisture either in the form of wet moisture or of evaporating liquids, such as turpentine. The wood may be unseasoned, or it may have been wetted in the course of preparation, such as steaming-to bend, etc. The rough stuff water may have been applied before the evaporation of liquids had taken place; either of which would bring about disastrous results.

"Dry blistering" is simply the hasty absorption of the liquids from outer coats by porous putty or paint, which deprives the coating of the requisite amount of binding and adhesiveness. To prevent blistering, close up every lurking-place for moisture, and be careful to have each coat dry before applying another. — *American Coach Painter.*

IMPROVEMENTS IN CHROMO-LITHOGRAPHY. — A process of printing many colors at one impression is said to be in successful operation in Paris. The following account gives a fair popular notion of its nature: "The pigment for the ground color is formed into a solid block of the required thickness, to the surface of which the design, traced in artificial talc, is transferred by mere pressure. All the parts of the block that do not form the ground are then cut out by hand with a sharp knife set in a jointed parallelogram, so as to be capable of moving in all directions in a horizontal plane, but at the same time kept rigidly vertical. The spaces thus cut out are then filled by pouring in the hot liquid pigments corresponding to the colors or shades that are to be represented, pieces of wood, soaked in water, serving to complete the sides of the temporary mould. When cold, the recently-added color is trimmed off by the knife and another poured in. In the case of a large design, several operators are engaged at the same time on different parts, which are afterwards fitted together; and the method is being tried of cutting out the pattern in wood or metal, by the hand-saw, and forcing the dies so cut out into the block of ground-color by means of a hydraulic press, thus forming the pattern at once. When the whole mosaic, as it may be called, is complete, it is placed in a press somewhat resembling that used for lithography, and the upper surface is shaved off so as to render it true and level. The surface is also slightly moistened with a suitable combination of chemicals, and the material to be printed on is placed thereon, face downwards. A frame carrying six rollers is then passed once or twice backwards and forwards over the material resting on the block. A perfectly clear impression is thus obtained, and, in the case of textile fabrics, the color goes completely through their substance. After exposure for a few moments over a hot plate, to drive off the fumes of the chemicals employed, the work is finished."

THE NORSEMAN STATUE FOR BOSTON. — A model has been accepted, it is said, for the bronze statue of Lief, the Norseman, who visited America nearly nine hundred years ago, and a site for it has been designated in Post Office Square, at Boston.

BUILDING INTELLIGENCE.

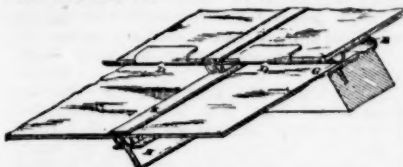
[Reported for The American Architect and Building News.]

[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

BUILDING PATENTS.

[Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.]

224,608. GLAZING.—William E. Rundle, Westminster, England. This invention provides a means of glazing a roof without the use of putty. Horizontal bars of sheet-metal are formed as shown, with a lip on the upper side which receives the lower edge



of the pane of glass, while the upper edge of the pane below is received in the slot that is formed on the under side of this bar. This slot is made deeper than the slot formed by the lip on the upper side, so that it is always possible to take out a single pane without disturbing the others; as will be seen, the pane can be slipped upward into the slot until its lower edge is clear of the lip, when it can be easily lifted out. A hole is left at D, so that any water that may be caught under the lip will be discharged onto the pane below. Also a gutter, G, is formed with a similar outlet, which collects and delivers any moisture that may have condensed on the under side of the glass. The portions of the bar between the lips are slightly recurved so as to form a wind-guard, and prevent the wind from blowing off the glass. The vertical joint of one pane with the pane adjoining in the same row is formed by simply lapping one over the other, or the bars, K, are used, which are made of a single piece of sheet-metal, whose form and the manner of using are clearly shown in the cut. The whole can be supported on wooden rafters and purlins, or T-irons, as shown.

226,823. THRESHOLD STRIP.—Alva Baird, Malcom, Iowa.

226,834. STEAM-CONDUCTING PIPE.—Jacob Brosins, Belleville, Ill.

226,841. VISE.—Clark Fisher, Trenton, N. J.

226,846. SAFETY-DEVICE FOR ELEVATORS.—Henry C. Goodrich, Chicago, Ill.

226,901. MACHINE FOR MAKING METALLIC LATHS.—Charles H. Carter, San Francisco, Cal.

226,908. APPARATUS FOR PURIFYING OR COOLING AIR.—Joseph Edwards, New York, N. Y.

226,912. MACHINE FOR TURNING BALUSTERS.—Philip M. Haas, Warren, O.

226,919. FIRE-EXTINGUISHING APPARATUS.—John B. Logan and Abner Greenleaf, Baltimore, Md.

226,935. STEP-LADDER.—Don Carlos Smart, Cambridgeport, Mass.

226,943. STEP-LADDER.—John M. Valley, Jersey City, N. J.

226,961. SEAL-JOINT TRAP FOR WASHSTANDS, ETC.—Jos. Bendor, Philadelphia, Pa.

226,968. HOLLOW-AUGER.—Orville M. Brailey, Amherst, Mass.

226,981. ELEVATOR.—Stephen B. Conover, New York, N. Y.

226,983. COMPOSITE TILE ROOFING.—William Dale, New York, N. Y.

226,992. ATTACHMENT FOR FIRE-PLACES.—Frank S. Elsberry, Montgomery, Ala.

227,001. CURTAIN-FIXTURE.—Benjamin Handforth, Hoboken, N. J.

227,012. PENCIL SHARPENING GUIDE.—Jehiel K. Hoyt, Newark, N. J.

227,051. WEATHER-STRIP.—Samuel A. Piper, Newton (Upper Falls), Mass.

227,057. FASTENING FOR TOOL-HANDLES.—Levi H. Roberts, Cadillac, Mich.

227,062. ROCK-DRILL.—George P. Schaurer, Nashville, Tenn.

227,080. ROOFING AND PAVING MATERIAL.—Cyrus M. Warren, Brookline, Mass.

9,174. DOOR-HANGER.—Alexander N. Monteer, Kansas City.

SUMMARY OF THE WEEK.

Baltimore.

BUILDING PERMITS.—The following building permits have been issued since the last report:—

Theo. J. Griffin, three-story brick building, 314 Gay St., between Alsquith and Mort Sts.

W. A. L. Storch, three-story brick dwell., cor. Madison Ave. and Wilson St., 22' x 80'.

Chas. Treusch, 6 two-story brick buildings on Alice Ann St.

W. H. Lotz, three-story brick building, 193 Conway St., near Warren St., 17' x 55'.

A. A. Rheinhardt, 3 three-story brick buildings on Calvert St., near Townsend St.

Alex. Weiller, 5 three-story brick dwells., Baltimore St., between Stricker and Gilmor Sts.

Alex. Weiller, 8 three-story brick dwells., on Montrose St., between Stricker and Gilmor Sts.

Church of the Redeemer, one-story stone Lecture-room on Bolton St., between Laavale and Townsend Sts.

Malcolm Creighton, addition and improvement to warehouse, 133 Holliday St., near Franklin St.

Mrs. M. Miller, three-story dwell. on Riverside Ave., between Fort and Handall Sts.

Theo. Madden, three-story brick dwell., cor. Cuba and Andre Sts.

Henry Broughman, three-story brick dwell., Decatur St., near Nicholson St.

One hundred and seventy-four building permits were issued during the month of May.

HOUSES.—Mr. C. P. Paine is about to build a fine, large dwell., 25' x 85', on St. Paul St., near Chase, to be three stories high, and have a Mansard roof; to cost, \$25,000; the front is to be of marble; Mr. Chas. L. Carson is the architect.

Mr. Geo. Blake is building 4 three-story dwells., on North Charles St., near John St., 22' x 75'; two will have marble fronts, and two, green serpentine-stone fronts; cost \$30,000; Mr. Chas. L. Carson is the architect.

Ground has been broken on the east side of Calvert St., north of Eager, for six houses, 20 feet front, of brick and terra-cotta; four, 18 feet front, of Ohio sand-stone; and four, 18 feet front, of red brick and Cheat River blue-stone, for the McKim estate. Mrs. C. L. McKim is also to build a dwelling, 20 feet front, next to the corner of Calvert and Chase Sts., of brick and terra-cotta with red granite base. The entire work is from the designs of J. A. & W. T. Wilson, architects, and under their superintendence.

NEW BUILDING FOR BAY-VIEW.—An ordinance appropriating \$50,000 for a new building for Bay View, came up as a special order in the City Council, Monday, April 26th after considerable discussion, in which several amendments were offered to reduce it to \$25,000, and rejected, it finally passed, making the appropriation \$50,000.

WHARF.—Both branches of the City Council have passed an ordinance appropriating \$5,000 to build a wharf at the boarding station at Hawkins's Point (Quarantine), and work will commence immediately.

Boston.

BUILDING PERMITS.—*Brick.*—Cor. Chauncy St., and Exeter Pl., for H. H. Hunnewell, 1 store, 76' x 106', five stories; F. H. Tarbox, builder; G. R. & R. G. Shaw, architects.

Commonwealth Ave., No. 266, for F. H. Appleton, 1 dwell., 30' x 74', three stories; Vinal & Dodge, builders; Peabody & Stearns, architects.

Bismark St., for Haffner & Co., 1 boiler house, 24' x 27'; Jas. McMorrow, builder.

Beach St., No. 155, for H. G. Hall, 1 store, 36' x 58', four stories; Woodbury & Leighton, builders.

Beacon St., No. 242, for T. D. Boardman, 1 dwell., 31' x 44', four stories.

Cor. Essex and Lincoln Sts., seven stores, 26' x 64', four stories; Webster & Dixon, builders.

Newbury St., for T. F. Cushing, 1 stable, 22' x 66'; Vinal & Dodge, builders.

Wood.—*Schuyler St.,* for J. F. Wetherbee, 1 dwell., 24' x 31'; H. A. Wood, builder.

Lexington St., Ward 1, for G. W. Bennett, 1 dwell., 23' x 34'; Frame & Patten, builders.

Centre St., Ward 23, for B. Clark, 1 dwell., 25' x 41'; Waverley St., Ward 21, for D. Kennedy, 1 storehouse, 28' x 28'; E. H. Sawyer, builder.

Mt. Blandford Ave., for W. Bellany, 1 dwell., 45' x 40'. PERMITS, 4 months, ending April 30:—

Brick 101

Wood 153

Repairs, etc. 693

Boilers and engines 117

Being 50% in excess of last year.

DEPOT.—The new Passenger Station of the Boston & Albany Railroad on Kneeland St., will be of brick and granite; Mr. A. R. Esty, architect.

HOUSES.—Mr. J. H. Besarick is the architect of a house on Montana St., near Grove Hall, for Mr. A. M. Gardner; contract awarded to S. M. Chesley; cost, \$6,000.

On Commonwealth Ave., are building five houses for Messrs. A. A. Wheelock, C. B. Wilson, Wm. Noble and Dr. Wm. Baker; Mr. Geo. A. Avery, architect.

STORES.—There being no prospect of securing the extension of Hamilton Place to Washington Street, it is said that the trustees of the Hemenway estate will build upon the site of the old Marlborough Hotel and the Lowell Institute Hall.

Brooklyn.

BUILDING PERMITS.—*South Third St.,* 1 three-story brick and stone Dispensary and Hospital, 75' x 22' x 45'; cost, \$13,000; owner, Brooklyn E. D. Dispensary and Hospital Association; architect, C. C. Buck; builder, John D. Anderson and S. M. Weeks.

Seventh Ave., 10 three-story brick flats, each 17'8" x 45'; cost, each, \$3,000; owner and architect, Thos. Corrigan, 648 Sixth Ave.; builder, Wm. Corrigan.

St. Mark's Ave., 4 three-story brown-stone dwells., each, 20' x 50'; owner, J. E. Styles, 752 Union St.

Park Ave., cor. Sanford St., 1 two-story brick machine shop, 35' x 97'; cost, about \$5,000; owner, John Clark, 675 Willoughby St.

Lefferts Pl., 2 three-story brown-stone dwells., 22' and 18' x 45'; owner, Wm. Kennedy; builder, A. A. Reeves.

Vernon Ave., 5 two-story frame dwells., each 18'9" x 38'; cost, each, \$2,300; owner, B. F. Boreum; architect, Isaac D. Reynolds; builder, Thos. E. Greenland.

Greene Ave., 6 three-story brown-stone dwells., five, 19' x 48', and one 28' x 45'; cost, each, \$7,000; owner and builder, Levi Fowler; architect, W. H. Baker.

Grove St., 1 two-story frame dwell., 38' x 38', with extension 15'8" x 18'; cost, about \$7,500; owner, Henry Hulsberg, cor. First and North Eleventh Sts.; architect, A. Herbert; builders, Henry Grasman and John Stocks.

Laquer St., 1 three-story brick tenement, 21'3" x 40'; cost, about \$3,000; owner, Edward Keogh, 482 Court Street; builder, Thos. Keogh.

Putnam Ave., No. 757, 1 two-story brown-stone dwell., 20' x 40'; owner, Jas. McAlley, 761 Putnam Ave.; architect, F. M. Bickford; builder, John Softy.

Park Ave., 5 two-story brown-stone dwells., each 20' x 45'; owner, John Monas, 187 Bergen St., builder, J. J. Gilligan.

CHURCH.—The new church for Sixth Ave. Baptist Society, at the corner of Sixth Ave. and Lincoln

Pl., which was begun some three weeks ago, will have an auditorium 60' x 60', and a Sunday-school room 80' x 30'.

Chicago.

DEPOTS.—A permit has been issued to the Pennsylvania Railroad Co., to build a passenger and baggage depot at the corner of Canal and Madison Sts., at a cost of \$225,000.

The Chicago & Northwestern Railway Co., have abandoned the million-dollar-plan, and will build a modest structure to cost \$175,000, on Kinzie St., at the corner of Wells. The joint depot at Canal and Madison Sts., will be built as projected.

WAREHOUSE.—Ground has been broken at the corner of Franklin and Adams Sts., for Mr. George Armour's new building, which will cost \$170,000.

BUILDING PERMITS.—C. D. Martin, two-story dwell., 215 Third Ave.; cost, \$4,000.

J. Moerschbaecker, three-story store and dwell., 216 Rush St.; cost, \$6,500.

J. Vandresack, two-story dwell., 576 Centre Ave.; cost, \$3,000.

E. B. Leland, two-story dwell., at 414 and 414½ West Monroe St.; cost, \$8,000.

Pennsylvania Central and Pittsburgh and Fort Wayne Railroad Companies, three-story depot and baggage house, corner of Canal and Madison Sts.; cost, \$250,000.

A. Ryerson, three-story store and dwell., cor. Archer Ave. and Butterfield St.; cost, \$8,000.

John Bismark, two-story dwell., cor. Sixteenth and Morgan Sts.; cost, \$2,000.

Barth & Meyer, warehouse, 421 Illinois St.; cost, \$2,000.

Cincinnati.

WORK IN APRIL.—During the month of April the following building permits have been issued by the Board of Public Works:—

Michael Gily, three-story brick; cost, \$3,100.

Wm. Muller, one-story brick; cost, \$5,000.

Wm. Collier, two-story brick; cost, \$1,500.

S. H. Foster, 2 four-story bricks; cost, \$6,000.

John P. Shur, two-story brick; cost, \$2,400.

Mrs. T. Flaig, three-story brick; cost, \$3,500.

W. H. Harrison, four-story brick; cost, \$8,000.

Wm. Goldkamp, two-story brick; cost, \$3,500.

S. W. Smith, two lime-stone fronts; cost, \$7,000.

F. Britt, two-story stone-fronts; cost, \$6,000.

James Griffith, 2 stone dwells.; cost, \$15,000.

H. H. Hoffman, three-story brick; cost, \$2,500.

L. Denning, two-story brick; cost, \$2,400.

Gabriel Stadler, two-story brick; cost, \$2,500.

H. Heiners & Co., four-story brick; cost, \$5,500.

James Griffith & Son, two-story brick; cost, \$13,000.

John Drott, two-story brick; cost, \$2,000.

Thos. Emery's Sons, 10 two-story brick; cost, \$8,000.

Peace, Atkins & Co., three-story brick; cost, \$5,000.

La Kamk & Wuefeck, three-story brick; cost, \$4,500.

45 permits for repairs, total cost, \$23,100.

Total permits for the month, 65.

Total cost for the month, \$129,500.

Total cost to date, \$501,575.

Total permits to date, 214.

BUILDING PERMITS.—C. Moerlein, addition to two-story brick, Henry St., near Elm; \$3,000.

Cincinnati Enquirer Company, addition to three-story brick, Vine St., near Sixth; \$1,200.

James Griffith & Sons, to alter four-story brick, northwest corner Fourth and Race Sts.; \$1,200.

Edgar M. Johnson, two-story stone front, Elm and McMillan Sts.; \$15,000.

H. H. Hoffman, three-story brick, Elm St., near Front; \$2,500.

G. Stodler, two-story brick, Browne St., near Baymiller; \$2,500.

Herman Tapke, four-story brick, Sycamore St., near Webster; \$5,500.

F. Marmet, addition to three-story brick, cor. Central Ave. and Charles St.; \$1,500.

New York.

BUILDING PERMITS.—*Greene St., Nos. 20, 22, 24,* and 26, two six-story iron front warehouses, each 37'8" in front and 84' to 92' deep; cost, 40,000; Samuel Inslee, Jr., owner; Samuel A. Warner, architect; Richard Deever, builder.

Fourth Ave., cor. One Hundred and Tenth St., four-story brown-stone front apartment house; 20' x 75'; cost, \$18,000; S. F. Treacy, owner; Charles W. Romeyn, architect; James Frame, builder.

One Hundred and Tenth St., 3 three-story brown-stone front dwells., for same owner; cost of each, \$14,000.

Seventy-ninth St., three-story brown-stone dwell., 22' x 45'; cost, \$8,000; Hiram Bowman, owner; A. B. Ogden, architect; William Picken, builder.

Fifty-seventh St., J. H. Valentine, architect, Jno. Livingstone, owner and builder, 5 five-story brown-stone flats, 22'3" x 65'; cost, 70,000.

One Hundred and Twenty-Second St., A. S. Bird-sall, owner and builder, J. H. Valentine, architect, 5 brown-stone dwells.; cost, \$45,000.

Sixty-seventh St., for D. Hennessy, Thom & Wilson, architects, 2 brown-stone dwells., 25' x 61'; cost, \$50,000.

Jay St., Nos. 37, 39, and 41; for Thos. Patten, H. M. Reynolds, architect and builder, 3 brick stores, 22' x 70'; cost, \$25,500.

One Hundred and Fifth St., for Ann E. Davis, J. H. Valentine, architect, J. B. Davis, builder, 5 brick flats, 20' x 60'; cost, \$50,000.

One Hundred and Seventeenth St., for A. M. Jenney, J. H. Valentine, architect, Jacob Jenney, builder, 3 brick flats, 16'8" x 50', and extension; cost \$27,000.

One Hundred and Fifth St., for Ann E. Davis, J. H. Valentine, architect, A. B. Davis, builder, 2 brown-stone dwellings; cost, \$18,000.

ALTERATIONS.—*Fifth Ave., No. 144,* extension on rear to be raised to two stories; cost, \$2,500; owner, Cottier & Co.; architect, R. Fenton.

Avenue A, cor. Fourth St., new store front on first story, new stairs and interior alterations; cost, \$2,200; owner, George Agne; architect, Chas. Sturtzkoher; builder, John Schmitt.

Fifth Ave., No. 634; one-story and basement brick extension on rear, 15' x 13'; also two bay windows on

first st'y; cost, \$5,000; owner, D. O. Mills; architect, C. W. Clinton; builder, D. H. King.

Broadway, No. 63, rear of building to be raised five feet, 3d, 4th, and 5th floors to be divided into offices; cost, \$25,000; owners, Vandewater Smith and The Mining and Developing Co.; architect, Stephen D. Hatch; builder, R. L. Darragh.

West Fourteenth St., No. 114, to be changed to store and offices; two-st'y brick extension on rear 25' x 50'; new store front and interior alterations; cost, \$4,000; owner, A. B. Woodhouse; architects, West & Anderson.

Franklin St., No. 199, three brick ovens and a new chimney 75' high; cost, \$75,000; lessees, Holmes & Co.; builder, A. Crumlie.

Catharine St., No. 32, extension 26'6" x 50' on the rear; cost, \$2,000; owner, Wm. Hart; builder, Robert Huseon.

Market St., cor. East Broadway, to be raised to five stories, exterior and interior alterations; cost, \$5,000; owner, Thos. Shells; architect, Thos. Godwin.

Broadway, Nos. 234 and 235, two stories to be added, front and rear walls to be taken down and rebuilt, and interior alterations; cost, \$47,000; owner, Thos. Maddock; architect, G. L. Morse.

Broadway, No. 57, brick vaults and partition walls to be constructed in cellar; cost, \$3,500; owner, Charter Oak Life Ins. Co.; builder, Edward Smith.

BANK BUILDING.—Mr. David H. King is taking down the building on the corner of Broadway and Wall St. The work is to be completed by the 5th of June.

EXCHANGE BUILDING.—The Stock Exchange has adopted the plan of Mr. James Kenwick, architect, for the enlargement of their building. The work of alteration is to be begun on May 1, and the expenditure is limited to \$300,000.

HOME FOR POOR BOYS.—The East Side Boys' Lodging-house and Industrial School, on the corner of East Broadway and Gouverneur St. is almost completed. It will be capable of accommodating 300 boys comfortably.

HOUSES.—On Fifty-fourth St., between Fifth and Sixth Aves., two fine houses are to be built from designs of Messrs. D. & J. Jardine. The dimensions are 25' x 70'. Fronts will be brown-stone. One is for Jno. Hall Deane and the other for W. A. Cauldwell.

PRINTING-HOUSE.—On lots Nos. 22 and 24 West Thirtieth St., a printing-house, 50' x 100', is to be built of Philadelphia brick with stone finish, for Messrs. Ogden and Clark. Mr. Jas. Stroud is the architect, and Messrs. H. B. & A. L. Weeks will be the builders. The cost will be about \$44,000.

STORES.—Altmann's store on Sixth Ave. is to be enlarged to about three times its present dimensions, at a probable cost of about \$100,000. Messrs. D. & J. Jardine are the architects.

No. 370 Broadway is being rebuilt for Hon. Jno. Jay. It is to be of brick, with stone and terra-cotta finish, 25' x 150' in size. Cost, about \$40,000. Messrs. D. & J. Jardine are the architects.

The adjoining stores are being built from designs of Mr. Jas. B. Snook, for the Lorillard estate, and Mr. S. D. Hatch for the store being built by Mr. R. L. Darragh.

Philadelphia.

ADDITIONS.—Cor. Germantown Road and Canal, two stories added to factory, 30' x 40'; H. Brockelbros, contractor.

Norris St., second st'y added to a factory, 44' x 70'; Jesse W. Taylor & Sons, owners.

Montgomery St., cor. Tulip, three-st'y addition to dwell., 18' x 29'; W. Bartholomew, contractor.

Jefferson St., between Wakefield and Railroad, two stories added to factory, 22' x 39'; Eli Leach, contractor.

Dock St., one st'y to add to depot, 59' x 94'; Penn. R. Co., Third St., and Willings Alley, owners.

Frankford Road, two stories added to factory, 20' x 40'; E. G. Ritter, owner.

CHURCH.—Ground has been broken at Twenty-eighth St. and Susquehanna Ave., for the Church of St. Chrysostom. It is an enterprise begun by the Rev. Charles S. Daniels.

CHAPEL.—Lee St., West of Eighteenth, one-st'y chapel, 80' x 36'; W. Keas, contractor.

FACTORIES.—Linn St., four-st'y factory, 49' x 140'; C. Tweed, contractor.

HOUSES.—Ruscomb St., two three-st'y dwells., 16' x 42'; Robert J. Siddall, owner.

Thirty-sixth St., cor. Rockland, 4 three-st'y dwells., 15' x 16'; W. S. Ray, owner; J. Wilson, contractor.

Airy St., three-st'y dwell., 21' x 32'; Jno. McAlarman, contractor.

Ninth St., three-st'y dwell., 18' x 56'; Henry Hotzel, contractor.

Twentieth St., cor. Callowhill, three-st'y dwell., and hall, 27' x 65'; A. Catanch, contractor.

Dauphin St., two-st'y front building, 18' x 20'; Sam'l Stewart, contractor.

Terrace St., three-st'y dwell., 18' x 50'; Staley and Davis, contractors.

Eighth St., 7 dwells., 17' x 48'; Benj. Ketcham & Son, contractors.

Montgomery Ave., three-st'y dwell., 20' x 50'; A. T. Richmond, contractor.

Prospect St., near Kibben St., three-st'y dwell., 20' x 32'; Christian Kern, owner.

MACHINE SHOP.—Twenty-third St., cor. Turner, one-st'y machine shop and foundry, 40' x 240'; Rush, Whiteside & Co., contractors.

NEWSPAPER OFFICE.—It is stated that Mr. G. W. Childs is to build a new home for the Ledger, the plan of which is to be selected in competition.

SAVINGS BANK.—A four-story brick and fire-proof building, 140 feet deep, is to be built on the south-west corner of Twelfth and Chestnut Sts., by the Beneficial Savings Fund Association. The bids of contractors for the building will be opened this week.

STORES.—Second St., three-st'y store and slaughter-house, 18' x 45'; F. A. Burkle, contractor.

South St., No. 214, three-st'y store and dwell., 17' x 22'; M. McConnell, contractor.

STABLE.—Cammess St., No. 1817, two-st'y stable, 31' x 30'; J. S. Cornell, contractor.

Springfield, Ill.

HOUSES.—South Seventh St., two-st'y frame cottage,

7 rooms; cost, \$1,500. Fred D. Buck, owner; Geo. H. Helmle, architect.

Cor. Eighth and Clay Sts., one-and-a-half-st'y frame cottage, 6 rooms; G. C. Honehens, owner; cost, \$1,465. Geo. H. Helmle, architect.

Cor. Fifth and Scavritt Sts., two-st'y frame dwelling, 8 rooms; Louis F. Deye, owner; Geo. H. Helmle, architect.

Cor. Seventh and Allen Sts., remodeling residence for Wm. S. Allen; cost, \$1,000. Geo. H. Helmle, architect.

CHURCH.—A Christian church to cost \$8,000 will be built during this season, at the cor. of Fifth and Jackson Sts. S. S. Bullard, architect.

ALTERATIONS.—The Springer building, on cor. of Sixth and Monroe Sts., is being remodeled; cost, \$5,000. Booth & McCosker, owners.

St. Louis.

BUILDING PERMITS.—Forty-four permits have been issued since our last report, five of which are for frame structures, of slight importance. Of the rest, those worth \$2,500 and over, are as follows:—

Owners Name.	Use.	Stories.	Rooms.	Cost.
Excelsior Mfg. Company, Fict'y.		1	1	\$8,000
Wm. Wellman, Dwell.		2	2	3,200
Wm. Pampenier, Dwell.		2	20	7,000
C. E. Nixdorff, Fict'y.		2	2	7,000
Frazier Lubricating Co., Fict'y.		2	2	5,000
John Steininger, Dwell.		3	12	4,500

General Notes.

ALLENTOWN, PA.—Mr. Oscar E. Holman is building a brick house with marble finish, size 24' x 54', on Sixth St., costing about \$7,000; Mr. L. S. Jacoby, architect.

Dr. H. K. Hartzell is about to build a fine house on the cor. of Walnut and Eighth Sts., to be of brick with marble finish, size 40' x 45'; cost, \$12,000. Mr. L. S. Jacoby, architect.

ATTLEBORO, MASS.—The town has voted \$6,000 for a new school-house.

BRISTOL, R. I.—Mr. F. A. Carpenter, of the Bristol Hotel, is building, at Mount Hope, two buildings, one 22' x 75', two-stories high, the other 30' x 100', one-story high.

CONCORD, N. C.—J. A. & W. T. Wilson, architects, of Baltimore, are making drawings for a country house in this place for Mr. Jas. C. Gibson.

DUBUQUE, IOWA.—F. D. Hyde, architect, is preparing plans for a row of five two-story houses, brick and stone, to be built on Locust St., near the post-office, for Messrs. Andrews & Treadway.

EATON RAPIDS, MICH.—The Methodist Episcopal Church Society will build a church, costing \$8,000, this summer.

FLORISSANNA, MO.—Erastus Wells, president of the West End Narrow-Gauge Railroad, is building a hotel on the depot grounds, 107' x 34', and two-stories high.

FREDERICKSBURG, VA.—The corner-stone of the French Memorial Chapel of the Presbyterian Church was laid April 29.

HAGERSTOWN, MD.—A memorial tower is to be placed upon the Protestant Episcopal Church on Prospect St. The plans for the tower and spire are to be furnished by Mr. Bushman Schley, the architect of the church.

HYDIE PARK, ILL.—Ground was broken, April 26, for the combined shops of the Pullman Palace Car Company and the Allen Paper Car Wheel Company, on the Illinois Central Railroad. The works will occupy 160 acres; will cost about \$125,000, and be completed about October 1. Between 300 and 400 cottages will be built. The new town will be called Pullman. Mr. S. S. Beman, of New York, is the architect. The material will be pressed brick of two colors, with stone. The structures will consist of two parallel erecting-shops, 87' x 600', and three-stories high, with a tower 136 feet high. Back of these are four buildings, covering an aggregate frontage of 1,047 feet, with a general depth of 200 feet. Still back of these is another erecting-shop, 494' x 86', a dry-kiln 150' x 80', and a foundry 130 feet front and 200 feet deep. The contractors are Messrs. Price & Avers.

JAMESTOWN, N. Y.—A new public school is to be built.

JEFFERSONVILLE, IND.—Mrs. Zulauf is building four new cottages on Canal and Chestnut Sts.

LANCASTER, PA.—Mr. F. E. Davis, architect, Baltimore, has just completed drawings for a public school, 74' x 90', two stories high; cost, \$25,000.

LOUISVILLE, KY.—The Bar Association is considering the practicability of putting up a building.

J. L. Deppen is to build a three-st'y brick dwell., on Third Ave.; cost, \$7,500.

Wm. P. Frederick is to alter a two-st'y brick dwell., on Gray St.; cost, \$1,200.

J. C. King is to enlarge a one-story brick chapel on Sixth St., near Green; cost, \$2,600.

MINNEAPOLIS, MINN.—The contract for the new Methodist church has been let. The cost of the building will be about \$50,000.

MONTAGE, MASS.—The Prospect Block will be 37' x 44'; R. M. Startnek, owner.

MONUMENT, MASS.—A new depot is to be built at Monument Beach.

MT. VERNON, O.—Mr. George W. Bunn, is building a fine house on East High St.

MT. ZION, MD.—Subscriptions are being made for the erection of a new Reformed Church at Mt. Zion, between Frederick and Jefferson. Over \$1,000 have already been subscribed.

NEW MARLBORO, MD.—Mr. F. E. Davis, of Baltimore is preparing drawings for a new Court House; cost, nearly \$20,000.

NEWPORT, R. I.—New houses are to be built at once for Mrs. H. N. Pond, Mr. Charles Post, Mr. Edward Mayer, Mr. Ball of Ball, Black & Co., all of New York, and possibly Mr. Robert Mackie, the California millionaire.

PITTSFIELD, MASS.—It has been decided to build a school-house in the rear of that now standing at Renfrew.

PLAINVILLE, MASS.—Mr. Fenner Hawkins is building a house.

PORTLAND, MICH.—A \$10,000 opera-house is being built here.

ST. PAUL, MINN.—The Northern Pacific has secured nearly twenty acres of ground and has already begun work on the handsome building which is to become headquarters for the Company's army of officials. A mammoth freight house is also to be begun in a short time.

The new Chicago, St. Paul, Minneapolis and Omaha is also about building its shops on forty acres of land it has secured for the purpose, besides which a fine building has been planned for headquarters.

The Chicago, Milwaukee and St. Paul road will soon build immense freight-houses on the river bank, 1,800' long by 100' wide.

TOLLEDO, O.—The Wabash Elevator Company of this city is to build another mammoth elevator, with a capacity of 1,600,000 bushels. It will be 341 feet long, 104 feet wide, and 145 feet high. There will be 270 bins, and 28 loading and unloading elevators.

WELLSBOROUGH, PA.—Mr. W. H. Hayes, architect, of Elmira, N. Y., is building for Wright, Bailey & Hastings, a brick and stone block of three stores; cost, \$7,000.

WEST EATON, N. Y.—A new Catholic Church will be built.

WESTFIELD, MASS.—The Episcopallians have secured a lot on King Street, and will soon begin to build a new chapel.

WEST NEWTON, MASS.—A house for Mr. C. W. Leatherbee, on Mt. Vernon St., is to be begun in a few weeks. Cost, about \$7,000. Contract not yet awarded. Mr. J. H. Besarick, of Boston, is the architect.

WILMINGTON, DEL.—The new court house is rapidly approaching completion; will soon be ready for the iron roof. Mr. T. P. Chandler, of Philadelphia, is architect.

WORCESTER, MASS.—The foundations of a house for Mr. G. Henry Whitcomb, are now in place. The building will be of granite from Monson, Mass. W. F. Flint & Co., of that place are the masons. The building measures 50 by 70 feet, and will cost \$15,000. Mr. S. C. Earle, of Boston, is the architect.

WORCESTER, MASS.—Mr. C. Morton is to build the enlargement of the Edgeworth Street School-house, for \$4,750.

Industrial.

AUGUSTA, ME.—The Sibley Manufacturing Company is making rapid progress in the arrangements to build a mill.

BRIDGEPORT, PA.—An addition, 77' x 139' and four stories high, is making to Mill No. 1, and a similar addition to Mill No. 2, 55' x 75', owned by James Sees & Sons.

HAMILTON, ONT.—The new cotton factory will be completed by September next.

IREDELL, TEX.—F. W. Carter is building a "New Process" four-run mill, and Owens & McDonald of Ireddell have the contract.

LOCKHAVEN, PA.—The Kistler Brothers' tannery will be rebuilt.

MILVILLE, MASS.—Messrs. Cook & Bannagan, of the Lawrence Feltung Company, are about to build a new mill 125' x 44', three-stories high, and work is to be begun at once.

NAUGATUCK, CONN.—Scott & Brooks are building a new factory, 140' x 40'.

NORTHAMPTON, MASS.—The Nonotuck Silk Company are to build a three-st'y mill, 100' x 40'.

NEW BEDFORD, MASS.—The Morse Twist Drill Company have purchased over 300,000 brick for their building.

ORANGE, MASS.—The Orange Foundry Company has broken ground for a brick annealing room, 30' x 40'.

PARTINGEVILLE, MASS.—A. Hill and S. W. Amsden are building a 50' x 30' woolen mill.

PHILADELPHIA, PA.—Mr. John McCreight, Progressive Forging and Ship Smith Works, Beach and Norris Sts., will soon make a large addition to his establishment.

PITTSBURGH, PA.—Mr. W. F. Eichenlaub has begun to build a large brick furniture warehouse at Thirty-fifth and Butler Streets.

Thomas Wightman & Co., are building a new glass-house.

SPRINGFIELD, MASS.—Messrs. Dwight & Hoyt are building a new brick factory; also an office-building.

TROY, N. Y.—The Messrs. Burden are building a large addition to their iron works. Extensive improvements are to be made to the Merchant mills of Corning & Co., the coming summer. There is also a rumor of a new mill to be built.

William Coutie & Son, intend to build on Mechanic St., a three-st'y brick addition, 90' x 40'.

UTICA, N. Y.—The Mohawk Valley Cotton Mills are to build a mill, 250' x 90'.

VALLEY FALLS, N. Y.—James Thompson & Co., are erecting a new building.

WAKEFIELD, R. I.—Messrs. Woods & Curtis are rebuilding their carriage-shop.

WEST CONSHOHOCK, PA.—A new mill 50' x 100', and two stories high, is building for Messrs. G. & J. Bullock.

WEST POINT, GA.—J. F. Manney is building a new two-run mill.

WEST WATERVILLE, ME.—Messrs. Emerson, Stevens & Co., are to build a large addition to their scythe and axe shop.

Bids and Contracts.

APPLETON, WIS.—C. Muensch, has let the contract for building the largest brewery in the State outside of Milwaukee. It is to be completed Sept. 1.

BOSTON, MASS.—The Committee on Improved Sewerage have awarded to Stoddard & Hillier, of Bangor, Maine, the contract for 4,000,000 of brick, at \$8 per thousand.

HOLYOKE, MASS.—George R. Smith has the contract for the brick work on Mayberry's new High St. building. The wood work will be done by Jones Brothers.

NEW YORK, N. Y.—The Erie City, Pa., Iron Works have been awarded the contract for the wrought iron tubular lining for the Hudson River tunnel. Three years will be needed to fill the contract, which is worth \$700,000.