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SUMMARY:—

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to a last will and testament can by analogy be applied to other legal papers, contracts for instance, it becomes a matter of daily importance to all. Perhaps other papers than wills have a "physical end," and perhaps other States than New York require such instruments to be signed only at such physical end. If so, it is well to be on one's guard and ascertain just where such physical end occurs. Even the plain man, we think, would not dream of adding a postscript to a will already signed, but would take care to give it the proper effect of a codicil with fresh signature and witnesses thereto. But the courts of New York have discovered a new method of taking an unfair advantage of a dead man, and have now ruled that a will written, on a folded sheet, after the method common to all letter-writers, the writer passing from the first page to the third and then back to the second and there signed, has not been signed at the physical end of the instrument, and is, therefore, null and void. If the ruling holds and can have application to contracts, architects will do well to see that their clients' interests are not imperilled through a desire to economize in stationery or an unwillingness to use blotting-paper.

FOR some time past, Society in New York has taken up the tenement-house question as a fad, and a good many newspaper and magazine writers have found in the movement a fund of "copy," by the judicious placing of which they have been able to appreciably benefit their own incomes, even if they have not been able to help the tenement-dwellers very materially. The immediate outcome of the movement is the appointment by Governor Roosevelt of an excellent commission, who have just begun to make "tours" and "investigations," and are discovering just what has been many times before disclosed. Eternal vigilance is necessary for the preservation of cleanliness quite as much as for the preservation of an academic liberty, and we are far from believing that the work of the present commission is either uncalled for or unwise; but in this day and after the investigations of earlier commissions and individual sanitarians, such work ought not to be needful in a civilized and well-governed community. The investigators find, as always will be found, dirt and overcrowding, both of which are within the present control of the Board of Health, the most autocratic governing body known to our system of government; and if the particular group of men who form the New York Board would devote themselves to their proper duties, in place of playing politics and setting up as constructing-engineers, for the sake of attacking and bleeding the elevated railroads, much less dirt and overcrowding would be found. Both of these ills, great and undoubted as they are, have their physical causes and cures, and the cure exists and can be applied under existing laws, if the Government so choose. The creation and, still more, the toleration, of dirt is due to imperfect education, and this natural and inherited infirmity is the very one that Boards of Health were organized to cope with. Overcrowding is a more difficult ill to overcome and its existence is due to various causes, as the physically restricted space on Manhattan Island, the natural increment of the family tied by limitation of means to a fixed domicile; but more than to either of these causes is it due to the influx of immigrants who for shorter or longer terms must be housed somewhere in the tenement districts, newly arrived relatives naturally seeking the rooms, already crowded, of those of kin to them, while those without friends naturally look up tenants who speak their language and offer themselves as boarders. The natural congestion of the tenements is thus greatly increased during good immigrant seasons like the present one.

BUT in the same newspapers in which these investigating tours are recorded is paraded with exultation the fact that the liquor licenses produced a revenue for the city of a little over three millions, the balance of the fees going to the State Treasury. The picture of a great city forcing dirt and disease upon the occupants of tenement-houses in order that it may provide salaries for political heelers is not a pretty one, nor the thought that the coat-of-arms of the city should include a pair of outstretched hands bearing, one the brimming glass, the other the open handcuffs. Governor Roosevelt's commission will accomplish no more than their predecessors, unless they attack primal causes.

THE Chinese rid themselves of superfluous babies in one way, the red Indians in another, while still other methods are followed by various Polynesian tribes, but the good citizens of Boston prefer to do away with theirs by roasting. It is probably due mainly to the fact that no babe that sees the light first in Boston can be superfluous that the odor of roast infant does not often assail the sense of smell, but that does not affect the existence of the custom and due and adequate preparations for practising its rites are made and perfected by the city authorities, firm believers in the Malthusian theory. The children are gathered daily in great buildings ready for the fire when the time is ripe for it to be lighted, and though a fiction of the law compels all buildings in which large numbers of human beings congregate to be furnished with fire-escapes, these buildings, or some of them, where the children gather are furnished with folding fire-escapes, vertical ladders hinged on one side and folding into a sheath: never opened, rusted and padlocked! Certain school-houses in Boston, on the testimony of Mr. Edward Atkinson, are in first-rate working order for the charring and vaporizing of superfluous children with a certainty and despatch which show how far in advance the civilization of Boston is over the practices of the ancient civilization of China. In glancing over a pamphlet, just issued, in which Mr. Atkinson reviews the record of fifty years of factory mutual insurance—a pamphlet we shall return to later—our attention was caught by a passage in which he speaks of his unavailing attempts to have improper fire-escapes on Boston school-houses replaced with proper ones, the passage closing thus: "These conditions have remained the same for about twenty years. I sent one of my young men *an hour ago* [the italics are ours] to some of these school-houses, and there he found this so-called fire-escape in position, in one the padlock rusted and the janitor condemning it as utterly worthless, himself unable to unlock the ladder!"

BETWEEN the red tape of bureaucratic officialdom and the eccentricities of legal rulings, the plain man who seeks to do his business in a common-sense way has a hard enough time in life, and his heirs sometimes find that his efforts and plain intentions are set aside and defeated, though for the accomplishing of no discernible good. The New York courts have just rendered a decision which, if it is allowed to stand, is of consequence to every one, and if the ruling now applied

IT seems at length to be reasonable to believe that the long-talked-of memorial-bridge over the Potomac at Washington may have form and substance; at least the project has acquired form, and an appropriation by Congress of some four or five millions of dollars may give it substance. The form it has on paper now is that devised by Prof. William H. Burr, of Columbia University, whose design, submitted in competition against those of three other noted engineers, has been selected by the commission appointed by the Secretary of War, a body which consisted of three officers of the Corps of Engineers, U. S. A., and Messrs. Stanford White and James G. Hill, architects. Roughly speaking, Professor Burr's bridge is a bascule draw-span supported on either side by three segmental arches, each of one hundred and ninety-two feet span, continued on the Washington side by twelve sixty-foot arches supporting the approach, while fifteen similar arches perform the same duty on the Virginia side. Fortunately for artistic effect, the bridge is designed for construction in stone, cement and steel, of course, being more or less used in piers and roadway; but the general effect is that of a stone bridge of seven wide spans, supported on either hand by the smaller arches of the approaches. A bridge of such size—a sixty-foot roadway with sidewalks of twelve feet on either side is suggested—and of solid masonry would be in itself sufficiently monumental, if appropriate decorations for piers, balustrades, pandrels, railings and so on were designed with good taste and refinement, and with proper attention to the landscaping of the entering roadways little more would be needed to make such a bridge a suitable memorial structure. But to the American a memorial structure means something that sticks up into the air, and so, though a bascule bridge does not necessarily require towers for the counterweights, there is incorporated in this design a species of triumphal arch spanning the roadway over each of the central draw-piers. The resulting effect does not promise to be happy even when the arches designed by Mr. E. P. Casey are substituted for the heavier ones shown in Professor Burr's original design. The eye feels that, for effect, a single arch would be enough, and the mind, knowing that Engineering does not rigidly require any such feature, asks why Art need do herself such gratuitous injustice by bringing into close juxtaposition two identical arches which yet are too far apart and too disjointed to compose into a group: two vertical features rising without softening introduction of any kind from the middle of a long horizontal line. But, still, the resulting effect promises to be vastly better than it might have been—would have been, if carried out when the scheme was broached, a dozen years ago.

IN comparison with the method followed in procuring a creditable design for a great bridge may be contrasted the one being followed in procuring the design for a bridge, which though less than one-fifth the size of the Potomac bridge will yet be seen and used by a large number of people who will resent keenly the presence of a bridge of unsatisfactory design. The State Engineer of New York is seeking from engineers, architects and bridge-builders the design for a bridge in the Niagara Park Reservation leading "from the mainland to Goat Island, over the American Rapids, not far above the American Falls," but he evidently has no clear idea of what he wants to get or how to get it. He seems to be certain, however, that the bridge must be finished before January 1st next, that there is an appropriation of one hundred and twenty thousand dollars to cover the cost, and that "the party" who secures the job is to accept in partial payment of his service the existing bridge. Any architect, therefore, who needs such an article to bridge the chasm between present poverty and future affluence will know to whom to apply. One or two further particulars are insisted on: there must be spiral staircases, and also seats "accommodating three to five persons." The State clearly does not intend to provide seats built for two—lovers or bride and groom. Selection from the designs submitted in conformity with these very loose specifications is to be made by the Commissioners of the Reservation, aided and advised by the State Engineer who has prepared them.

WE fancy that it is the elders in a profession who feel most regret at learning of the death of a promising younger fellow-member, for they, having "arrived," are not likely to fear the stress of competing against his abilities as keenly as do those of his own age who, unless personal friends, are not

unapt to feel a sombre relief that a dangerous antagonist has been removed from their pathway. As William Lincoln Thorne, who died at the age of thirty-two in Denver, May 2, had but just entered on private practice, he has left little behind him in the way of professional record, but it is fair to assume, in view of his training, that he would have held his own in the ranks of the younger men who are now practising their calling after a real professional training, and the fact that in 1893, he won the Columbia Travelling-Scholarship is a sure token of his comparative ability. Graduating at the College of the City of New York, he entered the architectural department of Columbia College and, after winning one of its travelling-scholarships, he passed the next three years at the École des Beaux-Arts in the Atelier Blondel. Ill-health caused him to return home and seek in Colorado the climatic conditions most likely to prolong his life and usefulness.

VANDALISTIC attacks upon works of art are sometimes in some degree pardonable, as when they are found to be motivated by social or racial prejudices, as in the case of the mutilation of the Heine Monument in New York a few months ago, or when social grievance or political enmity furnish the animus, as was the case when, somewhat later, the new statues of the Emperor's forebears on the Sieges Allee in Berlin were overthrown and mutilated in the night-time. This latter outrage was paralleled a short time ago by the slashing and tearing of twelve life-size portraits of German emperors and princes hung in the corridors of the old town-hall at Nuremberg. In carrying out such outrages as these there is an audacity which, taken in connection with the fact that the vandal seeks to satisfy a real or imaginary grievance, makes the act fairly respectable. The meanest and least excusable acts of vandalism are those committed by the relic-hunters, men and women seemingly honest, law-abiding and respectable, but all insane, all afflicted with *mania iconoclastica*. Washington, the goal of innumerable tourists, has suffered much through these unfortunates and is likely to suffer more, and just as the real value of her art-works increases so will their mutilation follow, unless practical means are discovered for arresting and secluding during their sojourn all those in the grasp of this peculiarly American disease. The records kept by the Superintendent of Public Buildings and Grounds show that eight out of ten vandals arrested for yielding to their mania are clergymen, and as the great majority of clergymen adopt a garb easily recognizable, the guardians of works of art should not have an over-hard task in preventing four fifths of the assaults which, for instance, have mutilated one hundred and seventy-seven out of the one hundred and eighty-four memorial tablets in the Washington Monument.

WE have been asked to state that the Art Institute of Chicago will this year, for the first time, conduct a "Summer School" of art practice in three courses, Academic, Juvenile and Normal. It may be taken for granted that the juvenile classes are undertaken somewhat for the purpose of keeping idle hands out of mischief, while the academic curriculum will be availed of by those who feel that their life's work begins with their later school-days, and that they have no time to waste. The normal course, for teachers, seems likely to be of much real value, and though it is intended to advantage mainly the teachers of Cook County, Ill., it might be of use to others, and teachers who discharge their pedagogic duties in other States, but have a desire to broaden their views and expand their perceptions by observation and culture would find that Chicago as a summer resort is not absolutely unbearable, and that they could derive much benefit from the teachings of Mr. Emil Lorch and his assistants.

THE retrospective exhibition held this week and next, to mark the twenty-fifth anniversary of the Art Students' League of New York, is not only a reminder of the existence and continued prosperity of this school, now grown to hold an important place amongst the art-schools of the world, but recalls the forgotten fact of how great a number of American artists, whose names are familiar to the art-world everywhere, owe their early training to, received their first impressions from, and derived encouragement in their careers in the mutual fellowship and association afforded by the League in its early days. The list of exhibitors contains the names of almost all the leading practitioners in the various arts who have not themselves yet crossed the half-century mark.

ARCHITECTURAL ACOUSTICS.¹—IV.

REVERBERATION: RATE OF DECAY OF RESIDUAL SOUND.

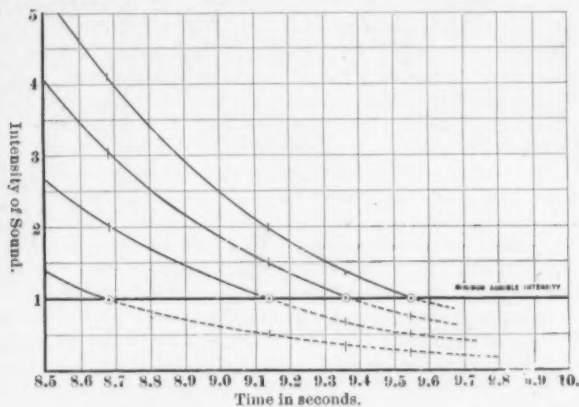


Fig. 18. Decay of Sound in the Lecture-room of the Boston Public Library from an Initial Sound of one, two, three, and four organ-pipes, showing only the last second.

IN a subsequent discussion of the interference of sound it will be shown by photographs that the residual sound at any one point in the room as it dies away passes through maxima and minima, in many cases beginning to rise in intensity immediately after the source has ceased; and that these maxima and minima succeed each other in a far from simple manner as the interference system shifts. On this account it is quite impossible to use any of the numerous direct methods of measuring sound in experiments on reverberation. Or, rather, if such methods were used the results would be a mass of data extremely difficult to interpret. It was for this reason that attempts in this direction were abandoned early in the investigation, and the method already described adopted. In addition to the fact that this method only is feasible, it has the advantage of making the measurements directly in terms of those units with which one is here concerned—the minimum audible intensity. It is now proposed to extend this method to the determination of the rate of decay of the average intensity of sound in the room, and to the determination of the intensity of the initial sound, and thence to the determination of the mean free path between reflections,—all in preparation for the more exact solution of the problem.

The first careful experiment on the absolute rate of decay was in the lecture-room of the Boston Public Library, a large room, finished, with the exception of the platform, in material of very slight absorbing power—tile ceiling, plaster on tile walls, and polished cement-floor. The reverberation was very great, 8.69 seconds. On the platform were placed four organ-pipes, all of the same pitch, each on its own tank or wind supply, and having each its own electro-pneumatic valve. All these valves, however, were connected to one chronograph, key, and battery, so that one, two, three, or all the pipes, might be started and stopped at once, and when less than four were in use any desired combination could be made. One pipe was sounded and the duration of audibility of the residual sound determined, of course, as always in these experiments, by repeated observations. The experiment was then made with two organ-pipes instead of one; then with three pipes; and, finally, with four. The whole series was then repeated, but beginning with a different pipe and combining different pipes for the two and three pipe sets. In this way the series was repeated four times, the combinations being so made that each pipe was given an equal weight in the determination of the duration of audibility of the residual sound under the four different conditions. It is safe to assume that with experiments conducted in this manner the average initial intensities of the sound with one, two, three and four pipes were to each other as one, two, three and four. The corresponding durations of audibility shall be called t_1 , t_2 , t_3 and t_4 . The following results were obtained:—

$t_1 = 8.69$ seconds.	$t_2 - t_1 = .45$ second.
$t_2 = 9.14$ "	$t_3 - t_1 = .67$ "
$t_3 = 9.36$ "	$t_4 - t_1 = .86$ "
$t_4 = 9.55$ "	

It is first to be observed that the difference for one and two organ-pipes, .45, is, within two-hundredths of a second, half

that for one and four organ-pipes, .86. This suggests that the difference is proportional to the logarithm of the initial intensity; and further inspection shows that the intermediate result with three organ-pipes, .67, is even more nearly, in fact well within a hundredth of a second, proportional to the logarithm of three. This reinforces the very natural conception that however much the residual sound at any one point in the room may fluctuate, passing through maxima and minima, the average intensity of sound in the room dies away logarithmically. Thus, if one plots the last part of the residual sound—that which remains after eight seconds have elapsed—on the assumption merely that the intensity of the sound at any instant is proportional to the initial intensity, the result will be as shown in the adjacent diagram. The points at which the diminishing sound crosses the line of minimum audibility in the four cases are known, the corresponding ordinates of the other curves being multiples or submultiples in proportion to the initial intensity. The results are obviously logarithmic.

Let I_1 be the average intensity of the steady sound in the room when the single organ-pipe is sounding, i the intensity at any instant during the decay, say t seconds after the pipe has ceased, then $-\frac{di}{dt}$ will be the rate of decay of the sound, and

since the absorption of sound is proportional to the intensity

$$-\frac{di}{dt} = Ai, \text{ where } A \text{ is the constant of proportionality.}$$

$$-\frac{di}{i} = A dt,$$

$$-\log_e i + C = At,$$

a result that is in accord with the above experiments. The constant of integration C may be determined by the fact that when t is zero i is equal to I_1 ; whence

$$C = \log_e I_1, \text{ and the above equation becomes}$$

$$\log_e \frac{I_1}{i} = At.$$

At the instant of minimum audibility t is equal to t_1 , the whole duration of the residual sound; and i is equal to i' ,—as the intensity of the least audible sound will hereafter be denoted. Therefore

$$\log_e \frac{I_1}{i'} = At_1.$$

This applied to the experiment with two, three and four pipes gives similar equations of the form

$$\log_e \frac{n I_1}{i'} = At_n,$$

where n is the number of organ-pipes in use. By the elimination of $\frac{I_1}{i'}$ from these equations by pairing the first with each of the others,

$$A = \frac{\log_e 2}{t_2 - t_1} = 1.54,$$

$$A = \frac{\log_e 3}{t_3 - t_1} = 1.62,$$

$$A = \frac{\log_e 4}{t_4 - t_1} = 1.61,$$

$$A (\text{average}) = 1.59,$$

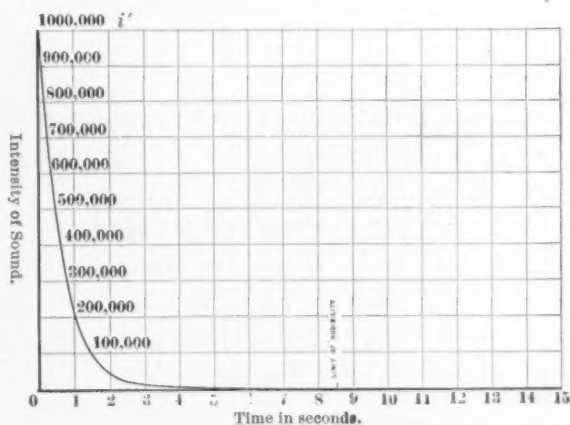


Fig. 19. Decay of Sound in the Lecture-room of the Boston Public Library beginning immediately after the cessation of one organ-pipe.

where A is the ratio between the rate of decay and the average intensity at any instant.

¹A series of papers by Wallace C. Sabine, Assistant-Professor of Physics at Harvard University. Continued from No. 1271, page 37.

It is possible also to determine the initial intensity, I_1 , in terms of the minimum audible intensity, i' .

$$\log_e \frac{I_1}{i'} = At_1,$$

$$I_1 = i' \log_e^{-1} At_1 = i' \log_e^{-1} (1.59 \times 8.69) = 1,000,000 i'.$$

With this value of the initial intensity it is possible to calculate the intensity i of the residual sound at any instant during the decay, by the formula

$$\log_e I_1 - \log_e i = At,$$

and the result when plotted is shown in the diagram, the unit of intensity being minimum audibility.

A practical trial early in the year had shown that it would be impossible to use this lecture-room as an auditorium, and the experiments described above, with some others, were in anticipation of changes designed to remedy the difficulty. Hair-felt, in considerable quantities, was placed on the rear wall. The experiments with the four organ-pipes were then repeated and the following results were obtained:—

$$\begin{array}{lll} t_1 = 3.65 & t_2 - t_1 = .18 & \therefore A = 3.79 \\ t_2 = 3.85 & t_3 - t_1 = .31 & \therefore A = 3.54 \\ t_3 = 3.96 & t_4 - t_1 = .42 & \therefore A = 3.29 \\ t_4 = 4.07 & & \end{array}$$

$$A = 3.54 \text{ (average).}$$

$$I_1 = 420,000 i'.$$

A few nights later the apparatus was moved down to the attendant's reception-room near the main entrance—a small room but similar in proportions to the lecture-room. Here a careful experiment extending over several nights was carried on, and it gave the following results:—

$$\begin{array}{lll} t_1 = 4.01 & t_2 - t_1 = .19 & \therefore A = 3.65 \\ t_2 = 4.20 & t_3 - t_1 = .28 & \therefore A = 3.90 \\ t_3 = 4.29 & t_4 - t_1 = .37 & \therefore A = 3.75 \\ t_4 = 4.38 & & \end{array}$$

$$A = 3.76 \text{ (average).}$$

$$I_1 = 3,800,000 i'.$$

The first interest lies in an attempt to connect the rate of decay, obtained by means of the four organ-pipe experiments, with the absolute co-efficient of absorption of the walls, obtained by the experiments with the open and closed windows; and to this end recourse will be had to what shall here be called "the mean free path between reflections." The residual sound in its process of decay travels across the room from wall to wall, or ceiling, or floor, in all conceivable directions; some paths are the whole length of the room, some even longer—from one corner to the opposite, but in the main the free path between reflections is less, becoming even infinitesimally small at an angle or a corner. Between the two or three hundred reflections that occur during its audibility the residual sound establishes an average distance between reflections that depends merely on the dimensions of the room, and may be called "its mean free path."

$a = \frac{.171 V}{t_1}$ is the absorbing-power of the room, measured in open-window units.

Let s = surface.

V = volume.

A = rate of decay of the sound.

v = velocity of sound, 342 m. per second at 20 degrees C.

p = length of the mean free path between reflections.

Whence $\frac{v}{p}$ = the average number of reflections per second,

and $\frac{a}{s}$ being the fraction absorbed at each reflection, then will

$$\frac{av}{sp} = A,$$

and $p = \frac{va}{As} = \frac{v.171 V}{A s t_1}$, whence may be calculated the mean free path, p .

	V	A	s	t	p
Boston Public Library Lecture-room, bare.	2,140	1.59	1,160	8.09	7.8
" " " with felt.	2,140	3.54	1,160	3.65	8.5
" " " Attendant's Room.	63.8	3.76	108	4.01	2.27

The length of the mean free path in the lecture-room, bare or draped, ought to be the same, for the felt was placed out from the wall at a distance imperceptibly small in comparison with the dimensions of the room; but 7.6 and 8.5 differ more than the experimental errors justify. Again, the attendant's room had very nearly the same relative proportions as the lecture-room (about 2:3:6), but each linear dimension reduced

in the ratio 3.22:1. The mean free path, obviously, should be in the same ratio; but when the mean free path in the attendant's room, 2.27, is multiplied by 3.22 it gives 7.35, departing again from the other values 7.8 and 8.6 more than experimental errors justify. The explanation of this is to be found in the fact that the initial intensity of the sound in the rooms for the determination of t_1 was not the same but had the values respectively, 1,000,000 i' , 420,000 i' and 3,800,000 i' . Since t_1 has been shown proportional to the logarithms of the initial intensities, these three numbers 7.8, 8.5 and 7.35 may be corrected in an obvious manner, and reduced to the comparable values they would have had if the initial intensity had been the same in all three cases. The results of this reduction are 7.8, 8.0 and 8.0, a satisfactory agreement.

The length of the mean free path is, therefore, as was to be expected, proportional to the linear dimensions of the room, and such a comparison is interesting. There is no more reason, however, for comparing it with one dimension than another. Moreover, most rooms in regard to which the inquiry might be made are too irregular in shape to admit of any one actual distance being taken as standard. Thus, in a semicircular room, still more in a horseshoe-shaped room such as the common theatre, it is indeterminable what should be called the breadth or what the length. On account, therefore, of the complicated nature of practical conditions one is forced to the adoption of an ideal dimension—the cube root of the volume, $V^{1/3}$, the length of one side of a cubical room of the same capacity. The above data give as the ratio of $\frac{p}{V^{1/3}}$ the value, .62.

It now becomes possible to present the subject by exact analysis, and free from approximations; but before doing so it is worth while to review from this new standpoint that which has already been done.

It was obvious from the beginning, even in deducing the hyperbolic law, that some account should be taken of the reduction in the initial intensity of the sound as more and more absorbing material was brought into the room, even when the source of sound remained unchanged. Thus each succeeding value of the duration of the residual sound was less as more and more absorbing material was brought into the room, not merely because the rate of decay was greater, but also because the initial intensity was less. Had the initial intensity in some way been kept up to the same value throughout the series, the resulting curve would have been an exact hyperbola. As it was, however, the curve sloped a little more rapidly on account of the additional reduction in the duration arising from the reduction in initial intensity of the sound. At the time, there was no way to make allowance for this. That it was a very small error, however, is shown by the fact that the departures from the true hyperbola that were tabulated are so small.

Turning now to the parameter, k , it is evident that this also was an approximation, though a close one. In the first place, as just explained, the experimental curve of calibration sloped a little more rapidly than the true hyperbola. It follows that the nearest hyperbola fitting the actual experimental results was always of a little too small parameter. Further, k depended not merely on the uniformity of the initial intensity during the calibration of the room, but also on the absolute value of this intensity. Thus $k = at_1$, and t_1 is in turn proportional to the logarithm of the initial intensity. Therefore in order to fully define k we must adopt some standard of initial intensity. For this purpose we shall hereafter take as the standard condition in initial intensity, $I = 1,000,000 i'$, ($I = 10^6 i'$), where i' is the minimum audible intensity, as this is the nearest round number to the average intensity prevailing during these experiments. If, therefore, during the preceding experiments the initial intensity was above the standard, the value deduced for k would be a little high, if below standard, a little low. This variation of the parameter, k , would be slight ordinarily, for k is proportional to the logarithm, not directly to the value of the initial intensity. Slight ordinarily, but not always. Attention was first directed to its practical importance early in the whole investigation by an experiment in the dining-room of Memorial Hall—a very large room of 17,000 cu. m. capacity. During some experiments in Sanders Theatre the organ-pipe was moved across to this dining-room, and an experiment begun. The reverberation was of very short duration, although it would have been long had the initial intensity been standard, for in rooms constructed of similar

materials the reverberation is approximately proportional to the cube roots of the volumes. There was no opportunity to carry the experiment farther than to observe the fact that the duration was surprisingly short, for the frightened appearance of the women from the sleeping-rooms at the top of the hall put an end to the experiment. Finally, k is a function not merely of the volume but also of the shape of the room; that is to say, of the mean free path, as has already been explained.

It was early recognized that with a constant source the average intensity of the sound in different rooms varies with variations in size and construction, and that proper allowance should be made therefor. The above results call renewed attention to this, and point the way. In the following paper the more exact analysis will be given and applied.

WALLACE C. SABINE.

(To be continued.)

A DAY AT DIJON.



Wine Pavilions at the Paris Exposition. From *l'Architecture*.

ARCHITECTS who go from Paris to Switzerland, or in the reverse direction, should not fail to stop over for a night or two at Dijon. By doing so they can make a break in what is otherwise a long and tedious journey, and there is hardly a place in France where a day's sketching can be more thoroughly enjoyed. Moreover, there are several good hotels. In fact, Dijon is said to boast the best provincial hotels in France, and the professional man's family can be comfortable and happy while its head is improving his mind. Viollet-le-Duc says that the admirable stone of Burgundy, beautiful in color, easily carved, yet of great strength, has given the inspiration for the boldness, both of construction and detail, which characterizes the province, and particularly Dijon, which, as its capital, and the political and religious centre of a powerful dukedom, rapidly accumulated, during the Middle Ages, civil and ecclesiastical buildings of importance. Even now, Dijon is the seat of a university and very influential in church affairs in France, and it is curious to see that the new buildings, although less original than the old ones, are carried out with the same audacity, in the way of corbelled corner-turrets and other projections, and with nearly the same skill, as in former times. Besides the boldness of its old and new work, Dijon offers an additional interest in the fact that it has escaped, to a great extent, the desolations of war, and very old constructions, or at least portions of them, meet the eye constantly, side by side with modern work. In one street, close by the church of Saint Bénigne, is a small portal of beautiful Romanesque work, in the style of Vézelay, quite perfect enough to show its design and effect, although it is now walled-up and forms a part, I think, of a hay-shed. In the same way, the church of Saint Philibert, an early thirteenth-century building apparently, with the capitals and bases of its piers mostly buried in plaster, but with its fine vaulting in perfect condition, is now used as a storehouse for kerosene oil. Strangers are by no means welcome in it, and, on a former visit to the town, I was unable to get in; but this time, seeing the door open, I slipped through, and succeeded in disregarding the hints of the guardian long enough to get a tolerably good idea of the structure.

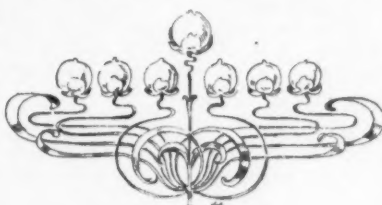
In the streets everywhere are to be seen bits of architectural interest. A little shop, devoted to some sort of tinkering, possesses a door with beautiful mouldings, and the most charming crocketed drip-mould and *acolade*; and outside spiral staircases, corbelled

turrets and projecting upper stories are constantly met with. The famous old palace of the Dukes of Burgundy is now the town-hall, and is so restored and made ready for exhibition as to be less interesting, perhaps, than the unheralded discoveries that one makes for himself. Of course, it is desirable to have the "monuments historiques" kept from destruction, but as even a little natural decline in a woman is preferable to a coat of "beautiful forever" enamel, so an old building loses something as soon as it is taken in hand for embalming, and I was rather glad than otherwise to see the masons busily at work walling-up the western bay of the north nave arcade in Saint Bénigne, for some purpose that I could not discover.

Besides the suggestions for the bold and skilful use of stone-construction which Dijon affords, and the example of magnificent effect presented particularly by the portals of the cathedral, the city offers a great variety of models of small *hôtels* with courtyards, such as would be particularly suitable to our cities. The princely mansions of Paris, *entre cour et jardin*, are almost too large and expensive to become common with us; but in towns like Buffalo, Cleveland and Detroit, where land is not extravagantly costly, the little *hôtels* of the Burgundian nobility in Dijon would be far more convenient, architectural and aristocratic than the rows of square houses, with uninviting spaces between them, which are now the rule, and would cost no more. It is hardly necessary to observe that the essence of distinction in architecture, as in manners, is unobtrusiveness, or rather, perhaps, reserve. A house which exposes every portion of its organization, even to its clothes-yard, to the gaze of the passer-by may be rich, or handsome, or neat, or genteel, but it cannot be aristocratic, and no more thoroughly aristocratic arrangement of a dwelling has yet been devised than that by which the house itself is set a little back from the street, with a court in front, to which admission can be gained only with the consent of the *concierge*, and a garden at the back. In Paris, the court is enclosed at the sides by kitchens or other housekeeping-rooms, one or two stories high, the house proper being rigidly kept back, out of sight of the *roturiers* in the streets; but in Dijon the servants are not numerous enough to make this necessary, nor is there so much reason for exclusiveness, and it is common to see the rooms of the house extend on one side, at least, of the court, to the street line, perhaps even with a projecting turret to give a better view of the street; but in all cases the entrance is only through the guarded court, and in Dijon, as in the Faubourg Saint-Germain, the nobles help each other to maintain their exclusiveness, by building their houses close together, so that no one can get at any house from the side, or in any other way than through the court. In the courtyards of Dijon, also, the splendid *marquises* of glass and metal which protect from rain the people who alight from their carriages at the door of a great Parisian house are generally lacking, but there is room enough to drive into the court and turn around comfortably, and the corners afford space for some oleanders and laurels, or a few azaleas, to brighten up the entrance to the mansion.

C.

THE CHICAGO POST-OFFICE AND CUSTOM-HOUSE.



Incandescent Lights.

THERE is an old saying that we learn by our failures and that the only way to do a thing right seems to be to do it wrong first and then to make corrections. The history of the late Custom-house and Post-office at Chicago is an illustration at once of

how not to do a thing, and of the manner in which men of presumably fair and competent minds may arrive at quite different conclusions. In some respects this was the most remarkable building with which the United States Government has ever had to do, and a presentation of some of the facts in connection with its construction and decay will be of interest both as a matter of record and as a warning.

On the 21st of December, 1871, an act was passed by Congress making provision for the purchase of ground and the erection thereon in Chicago of a fireproof building suitable for the accommodation of the Custom-house, Sub-treasury, Post-office, United States Courts, Pension and Internal Revenue offices. An appropriation was made of \$2,000,000 to be expended under the direction of the Secretary of the Treasury. Mr. Mullett was the Architect of the Treasury at that time. In some respects he was, undoubtedly, as able a man as ever filled the position, but his ability did not lie either in the line of excellence of design or in ability to meet and overcome unforeseen difficulties. The Post-offices at Boston and New York, and the Army and Navy Building at Washington, which were, perhaps, the most important of his works, will illustrate at once his limitations and his capacity. His talents were those of an organizer and administrator rather than a designer or constructor. The Post-office at Chicago as designed by him was a structure much purer in detail than most of his work, and one which gave every promise of being an ornament to the city and a credit to the government, but even before the roof was on the masonry began to show signs of disturbance, and it was found that not only was the building settling very

unevenly, but the stone of which it was built was disintegrating to an extent which threatened ultimate total destruction. The work progressed with the tortoise-like rapidity which characterizes all government work in this country, and by 1875, although it was nowhere near completed, it was found necessary to appoint a commission of investigation composed of Messrs. William Sooy Smith, the eminent engineer, George B. Post, the well-known New York architect, and Mr. O. W. Norcross, the builder. After careful investigation they submitted a report, the conclusions of which indicated a remarkable condition in a building which was supposed to be of the best in every respect. They stated that the foundation was too weak, that dangerous settlements had occurred, that to make the foundations secure could only be accomplished by a very great expenditure of time and money, that the stone used was wholly unfit for its purpose, and that even if the foundations were perfect the character of the construction and material was such that the edifice did not deserve to stand. Seldom in the history of the world has a public building been erected in such manner as to deserve so scathing condemnation. Indeed, the report of the commission was so sweeping a denouncement that the civic pride of Chicago seems to have been aroused, and at the instance of the mayor and council of the city, with the permission of the United States Treasury Department, another investigation into the condition of the building was made by gentlemen designated for that purpose by the mayor, and who upon the conclusion of their labors made a very different report. This second commission consisted of the then city engineer, E. L. Cheshbrough, and six architects, J. M. Van Osdel, E. Burling, W. W. Boyington, O. L. Wheelock, A. Bauer and J. T. Egan. The difference between the finding of these two commissions is something that forms very interesting reading after the lapse of all these years.

The first commission reported that borings made showed under the building a stratum of loamy clay of varying thickness, which was so soft as to be readily cut, and into which a spade could be forced to its full length by the workmen without difficulty. Below this clay throughout about one-third of the area covered by the building there was a deposit of mud varying in depth from three to fourteen feet, being so soft that the weight of one man was sufficient to force a one-and-one-half-inch auger through it, and indeed the auger and rod would have sunk through the mud to the bottom by its own weight. Underneath the mud, at a depth below grade of from twelve to thirty-two feet was a stratum of stiff, firm clay which appeared to extend to a depth of at least fifty feet. This lower stratum of clay had an undulating surface, and depressions in the surface were in many places filled with mud or quicksand.

The foundations of the building consisted of a bed of concrete about two feet wider than the footing courses, and of a thickness varying from two feet six inches to four feet. A part of the concrete at one of the corners of the building was removed, when it was found that the material upon which the concrete rested was so soft that two men forced the auger down to a depth of ten feet by their weight alone without difficulty. The thickness of the loamy clay crust under the concrete and overlaying the soft mud varied from one-and-one-half to six feet only. It was found that the weight upon this loamy clay in the heaviest parts of the building amounted to four tons per square foot on the area of the concrete foundations, notwithstanding that the custom in Chicago at that time was to consider the ground capable of sustaining a weight varying from only one to two tons per square foot.

On the concrete foundations two courses of Joliet limestone were laid. Above this, all piers and the facing of all walls was of Buena Vista sandstone, a fine-grained, white-colored stone, which even in the few years it had been exposed in the building had considerably disintegrated, laminae having in some places scaled to a depth of a quarter of an inch from the surface and on all visible sides of some stones. The stock used in cut-stone work was found to vary in color from light-buff to almost black, and an attempt had been made to render this aspect less apparent by painting the surface of many of the stones. This particular sandstone is of the sort which comes in close connection with petroleum rock, and some of the blocks were so saturated with petroleum that it exuded from the stone, disfiguring the stone, and in some cases running over the face of the stone below. The stone was also impregnated with oxide of iron, which in some cases had caused a bursting out of the face. Certain stock was found to contain fossil impressions of a form of vegetable growth, which impressions showed on the surface as serious blemishes, and had been filled with an artificial cement. To hide these defects patches of the same stone had been very frequently inserted. It is interesting to note in this connection that the architect's specification for the stonework distinctly states that the contractor should not attempt to repair any stone with shellac or other adhesive substance. This prohibition would seem to imply that such a practice was to be anticipated. As many as twenty-two patches were counted in one of the stones investigated. These patches were inserted with wonderful accuracy, and were in some cases clamped in with iron, but were generally held in position with shellac or other similar material. One patch weighing as much as twenty-six pounds had fallen from the sill of the west front. Spawls had become in some instances so loosened that they could be readily removed by inserting a knife-blade. In some cases it was found even that three separate laminae had peeled off from the same stone during the brief period it had been laid.

So much for the report of the first commission. It would not be

fair to say that the second commission went to work deliberately to reverse the conclusions of the first, but the conclusions were entirely diametrical in their nature. Although the first commission had found that the building had settled very badly and unevenly, the second reported that the fronts were perfectly level with a variation between the corners of not over one-eighth of an inch, and that the foundations exhibited no uneasiness under the existing load. They caused test-pits to be excavated and reached conclusions radically different from the report of the first commission. The soft clay stratum, they said, was uniform in density and of consistency similar to modeller's clay. They also examined the foundations of buildings close by and reported that none of these heavy buildings showed any signs of unequal settlement or of any uneasiness on the foundations. They also made tests of the supporting capacity of the sub-strata in three different places about the building, loading points with the equivalent of over eight thousand pounds per square foot without causing a settlement of over an inch and a half, which they apparently did not regard as a serious deflection. From this they concluded that the settlements of the building that had taken place had been uniform and worked no injury to the structure. They explained some large cracks on the interior walls as having been caused by allowing the frost to get under the wall, which at first lifted it and subsequently allowed it to settle. The gaping and cramping of the joints of the water-table which the first commission had commented on so adversely they attributed to the action of the frost, and cracks in the concrete footings they attribute to the same cause. In fact, to judge from the wording of the report, all the troubles which had come to the building were due entirely to causes which could not have been foreseen nor their action prevented, and as to the cut-stone, while admitting that certain portions were inexcusably patched and that some of them had scaled, they stated that such scaling was not confined to what is supposed to be an inferior quality of stones, but takes place in stones supposed to be of the best quality, and they attributed the deterioration very largely to the fact that the stones were not properly seasoned, stating that few stones placed in the work were of inferior quality and that they could be easily removed; even adding the further report that the concrete and workmanship of the building, including the cut-stone, was unexceptional. The conclusions of the signed report were, therefore, first, that there was no weakness or instability in the present structure; second, that the foundations were sufficient, with the precautions suggested in their report, to carry the load contemplated for the design; third, that the stone was as durable as any sandstone that could be obtained; and, finally, that work on the building could be resumed with certain precautions and carried to completion.

As a resident of Chicago at the time the second report was made, the writer well remembers the comment it aroused, especially as in some mysterious way the building continued to settle, the masonry continued to crack, and the stone kept dropping off in fragments and scales in most disconcerting proportions and places.

Naturally, the matter was not allowed to stand here. In fact, the condition of the building was such as to force public attention of some sort. Accordingly, a third commission was appointed by the Secretary of the Treasury and made a report September 23, 1875. This commission consisted of W. B. Franklin, J. H. Wilson, John McArthur, Jr., Henry Whitestone, Nathaniel J. Bradlee, Henry Kennedy, and R. J. Dobbins, none of whom, I believe, were residents of Chicago, and, as far as their names are familiar to the writer, were certainly in a condition to judge with impartiality of the facts. In regard to the four points towards which their investigations were directed, the commission found that the foundation, which they stated to be composed of excellent concrete, should have been carried to the hard blue clay, instead of which it rested upon a compressible stratum varying in thickness from twenty to twenty-five feet. They agreed with the second commission that a considerable amount of the upheaval might be attributable to frost, but that on the whole, the foundations then resting on imperfect soil and but scantily proportioned below, had not as yet evinced any marked signs of settlement. As to the stone, while they stated that it was not such as they would have selected for such a building, they would not recommend its entire rejection. Then they added to their report suggestions as to taking down certain piers, lightening certain loads and bridging-over certain difficulties in the construction which were too manifest to be ignored. All the recommendations of this commission were adopted by the Secretary of the Treasury and carried out.

Thus we see that a commission of three perfectly reliable experts, who had no axe to grind, who simply wished to advise the Government as to the best procedure and as to its possible danger; in other words, who looked at the building and its liabilities just as every first-class constructor would regard it, reported the building as so far on the shady side of safety that they could not see any way to its being retained. A second commission of Chicago constructors, having in mind the credit of the city and the issues at stake, did all they reasonably could to look at the building in a hopeful manner and to make it possible for the building to be retained. While the third commission, evidently appreciating the plight in which the Government was placed and the dilemma in which the city found itself, tried most conscientiously to reconcile the facts to a possibility of allowing the building to continue along slightly modified lines. Space would prevent following in detail the subsequent history of this most interesting structure, and the report of the Architect of the Treasury is discreetly silent, but we know from observation and by report that,

although the building was completed and occupied by the United States Post-office Department, it was always considered dangerous and there was constant liability of portions of the stonework dropping. So much so, that at times travel was cut off on the streets and portions of the stone had to be taken down. How long the Government and the people would have stood a nuisance of this sort is a question, for we are remarkably long suffering, especially as regards our public buildings, but after years of delay the dilemma was finally taken by the horns and a few years ago Congress passed an appropriation for tearing down and entirely removing the existing building, and Mr. Henry Ives Cobb was commissioned to design a structure which would be not only a credit to the State and the city but should be constructed on the lines of permanence. Bad luck had not yet, however, ceased to follow the Chicago Post-office. The setting of the corner-stone precipitated a quarrel between the trades-unions and the contractors which threatened to make it impossible for the chief magistrate of the nation to handle the official trowel. There is no knowing yet what future troubles may arise to add further complications to this most interesting episode in our national architecture, but it is safe to say that the structural perils of the past will be safely avoided by Mr. Cobb, and that in time the rickety old structure which called forth such wordy war between three different commissions, and was for so many years a bone of contention in Chicago architectural history, will be remembered only as a legend of the records of the Treasury Department.

C. H. BLACKALL.

BOOKS PAPERS

IN dealing with any question requiring the utmost care in detail, the nicest observation of results, and the most systematic delineation of observations, the palm must surely be yielded to the typical German professor. Certainly no product of any other race could bring to a subject as much painstaking deliberation as is evinced by the translation of Professor Martens's "*Handbook of Testing Materials*."¹ The title is a trifle misleading. It first suggests the materials with which tests would be made. It is, however, more properly an investigation into both the methods of testing and the results of tests applied to materials of all sorts. It is presented in two very solid volumes, and is designed to be a counsellor to the constructor in all questions relating to the properties of the materials of construction. The first volume relates to the general properties of materials of construction, and especially to the art and science of testing materials as applied to machinery and superstructure. The second volume includes the illustrations of methods and photographs of results. The whole topic is treated with the exhaustive thoroughness which we could expect of a work of this kind, and we find it by no means easy reading, nor of a kind which would commend itself for an afternoon's relaxation. It is full of meat for strong men, and discusses conclusively a subject of vital importance to all architects and constructors.

ANY one who undertakes in the year 1900 to produce a work on English-Gothic architecture must do it for pure love of that particular period of architectural development, for while there has probably never been a period when Gothic art was more intelligently appreciated and understood than the present, there has, on the other hand, been no time since 1500 when the influence of the mediæval styles counted for so very little in current work. We all admire the naïve expression of national feeling which found expression in the architecture of Western Europe during the twelfth to the fourteenth centuries. We all concede the daring structural feats which were peculiar to the best period of Gothic development, and we admire the simple directness with which the problems were met and naturally worked out. But our admiration is purely intellectual, and, with a very few and, it must be admitted, notable exceptions, Gothic architecture is a thing of the past. The few architects who now attempt to utilize its motives and inspirations do so with a spirit which is worthy of all praise, for they are swimming against the tide rather than with it. Nevertheless, even the most pronounced *fin-de-siècle* Ecole des Beaux-Arts student must find a good deal to commend in Mr. Prior's work.² The prime motive of the author is never lost sight of. In the preface he states that his aim has been less to tabulate the conclusions of archaeology than to exhibit the broad impulses of design as being the vital expressions of the English Gothic; and for his purpose he has gone rather to the buildings themselves than to the experts of archaeological detail. In two points only has he attempted something more than generalization. First, in the distinction of the English style as a true line of Gothic creation, native in its origin and in its progress and separated by its qualities from the Continental styles. Secondly, as to the existence in the English art of local schools and centres of craft which made distinct sub-styles in their districts. The enthusiasm and undaunted determina-

tion with which the author undertakes to view everything from the English standpoint and the unflagging zeal with which he brings together the varying lines of development and builds up the consecutive history of art in England is sure to awaken deep interest, although one may not fully agree with all his ideas. He makes a bold attempt to demonstrate that the English Gothic was not derived from that of the Ile-de-France, but was to a very considerable extent, if not *sui generis*, at least self-developed. The distinction is one which the student of archaeology prizes more highly than the artist. It is certainly impossible to deny that French architecture exerted a powerful influence on the art of its insular neighbor. But certainly English architecture in none of its periods has ever tamely followed imported direction. It has worked out its own lines in its own way, impressing on all its creations that solid substantial character which we are so fond of claiming as a peculiarity of the English-speaking races. The distinction is very aptly made that the tendency of the French Gothic is constantly aspiring, that the lines all run up, the vertical proportions accented and the effect of the perfected design is one of lightness and buoyancy, whereas in the English work the horizontal lines predominate, the building seems to be thrusting its feet into the earth, and it has a solid, immutable expression and a sense of repose which is not so manifest in the Continental examples. It was the logic of the Parisian that brought Gothic to both its extreme excellence and its decay. The science of vault-construction fell in with his bent. The idea having once attracted him his logical faculty compelled him to follow it to the end, his vaults rose higher and higher; his poise and counterpoise, his linkage of thrust and strain grew more complicated and daring, until material mass disappeared from his design and his cathedrals were chainworks of articulated stone pegged to the ground by pinnacles. On the other hand, the English work, even in the latest and most extravagant developments, never departed from the idea of adorning a solid masonry construction, and accordingly, even in such structures as the Henry VII Chapel, or King's College Chapel, there is a sense of repose which not even the elaboration of the fan-vaulting can obscure, while the English cathedral builders in their treatment of what our author calls the "quire," gave to the eastern end of their churches a character of dignity that the French never equalled.

"So ran the course of Gothic art in England. No daughter of the French, but its twin sister, and but a moment younger; a separate embodiment of the Gothic spirit — not growing with southern fervor, as the elder did, to a miracle of sudden loveliness, and then all too quickly turning cold and hard-featured. In English art, when the grace of first youth was passed, there still remained the freshness of tender sentiment and the charm of a constant devotion. An art it was that in no wise leaned on foreign assertion for its code of merit, but was fashioned among ourselves to be agreeable to our native instincts, and in accord with the sober dress of our skies and the simple pleasantness of our scenery."

As a sample of book-making Mr. Prior's work is very satisfactory, barring its size, which makes it rather difficult to serve for ready reference. The illustrations, to the number of 340, are very well chosen and illustrate exactly what the author is trying to bring out, but it is rather to be regretted that his fondness for drawing should have kept entirely out of the book any photographic reproductions. A drawing, at the best, shows only one phase of the subject, and when an author has undertaken to prove his position it is inevitable that the drawings may to a considerable extent be forced into offering the desired proof, whereas a photograph leaves the reader a certain liberty of discernment for himself, and, to our mind, no treatise on architecture is quite fair unless it presents the architectural facts as they are rather than through the medium of a translator into pen-and-ink. The work is not written in the ordinary form of a history. In fact it would hardly be fair to call it such, but it takes up successively chapters of English development, treating each period by itself, and yet continuing the change in development in such manner that though the work is more a series of essays than a consecutive history it preserves the continuity of growth and presents the topic in a most attractive form. The author is a Pre-Raphaelite of the Pre-Raphaelites. He has no sympathy with revived Gothic, not because it is revived, but because it is not Gothic in his eyes. Nor has he the slightest mercy with the restorer. The keen enthusiasm which pervades every page of the book makes it delightful reading and it forms a distinct addition to the already large amount of literature upon the subject.

SOCIETIES

RESOLUTION PASSED BY THE WASHINGTON ARCHITECTURAL CLUB, SATURDAY, APRIL 7, 1900.

THE Washington Architectural Club, an organization whose object it is to foster and further the study of architecture as a Fine-Art, seeing in the movement promulgated by Mr. Franklin W. Smith, to erect a group of buildings illustrating the history and development of architecture, a means for furthering the object for which this Society was established,

Resolves, That we extend to Mr. Smith an expression of our good

¹ *Handbook of Testing Materials*, for the constructor. By Professor Adolf Martens, Director of the Royal Testing Laboratories at Berlin and at Charlottenburg. Authorized translation and additions by Gus. C. Henning, M. E. New York: John Wiley & Sons.

² *A History of Gothic Art in England*. By Edward S. Prior, M. A. With illustrations by Gerald C. Horsley and many plans and diagrams. London: George Bell & Sons. 1900. Price \$10.

will, by endorsing the movement initiated by him and declaring our belief in the immense amount of good such a scheme will ultimately accomplish, by popularizing the study of architecture and, by object-lessons, creating a just appreciation of it.

That we believe the expenditure of money required is proportionate to the benefits to be derived, and that we urge Congress to take some definite action on the subject.

And be it further resolved, That these resolutions be typewritten and copies forwarded to Mr. Franklin W. Smith, the proper Committees of Congress, the architectural journals, and to such other persons as may be deemed proper by the Secretary of this Club.

Committee, { T. F. LAIST, *ex officio*,
E. W. DONN, Jr.,
W. B. WOOD.



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

HOUSE: BALTIMORE, MD. MR. WM. M. ELLICOTT, ARCHITECT, BALTIMORE, MD.

This house is carried out mainly in brick, including the shafts of the columns. The cornice, caps, door-head and so on are of terracotta.

PEDIMENTAL GROUPS: COURT-HOUSE OF THE APPELLATE DIVISION IN NEW YORK, N. Y. MESSRS. DANIEL C. FRENCH AND KARL BITTER, SCULPTORS, NEW YORK, N. Y.

HOUSE OF JOHN D. CRIMMINS, ESQ., NO. 40 EAST 68TH ST., NEW YORK, N. Y. MESSRS. SCHICKEL & DITMARS, ARCHITECTS, NEW YORK, N. Y.

"DOORWAY OF THE PRESENTATION," IN THE CLOISTER OF THE CATHEDRAL, TOLEDO, SPAIN.

This plate is copied from "*Monumentos arquitectonicos de España*."

[The following named illustration may be found by reference to our advertising pages.]

THE STADIUM: PAN-AMERICAN EXPOSITION, BUFFALO, N. Y. MESSRS. BABB, COOK & WILLARD, ARCHITECTS, NEW YORK, N. Y.

THE completed Stadium for the Pan-American Exposition at Buffalo next year will offer to the lovers of sports a splendid arena. The Athletic Carnival to be held during the great Exposition will be notable in the history of American sport, the coöperation of many of the best promoters of athletic games and contests having been secured.

It is said that the Colosseum at Rome could accommodate 87,000 spectators. The Pan-American Stadium will be 129 feet longer and but ten feet narrower than the historic amphitheatre of Rome. The Stadium, however, will have a larger arena, and the seating-capacity is estimated for 25,000 people. The top row of seats will be 60 feet above the ground, and every seat will command a perfect view of the vast interior. Standards are to be placed at various points for the support of awnings in such a way that they will not obstruct the view from the other seats.

The Stadium will have a quarter-mile track and a sufficiently large space inside of this for any athletic game. Great attention has been paid to having a large number of aisles to reach the seats, and, in addition to the principal entrance on the west, there are provided seven large exits. These exits are made of sufficient breadth and height to admit, in case of need, the largest vehicles or floats, as it is proposed to use the Stadium for certain pageants, exhibits of automobiles in operation, judging of live-stock, horses, agricultural machinery, road machinery, etc. The space under the seats is to be used for exhibition purposes, and is in itself the equivalent of a very large building.

A large and picturesque building forms the main entrance to the Stadium. This is 241 feet long by 52 feet wide, with towers 164 feet high. The style is in conformity with that of the other buildings, with an arched effect in the lower story, red-tiled roof, broad eaves and bright colors. The old Spanish towers give a finished beauty to the structure and make it one of the most prominent features of the Exposition.

The Stadium resembles in a general way that erected at Athens a few years ago. Although this one can be, of course, only a temporary structure, it is intended as a model of what it is hoped may be executed some day in permanent form.

The Stadium will cover ten acres of ground and its situation is on the east side of the Plaza, opposite the Midway, near the great entrances from the steam and trolley railway-station, at the extreme north end of the Exposition grounds.

A CORNER OF THE SAME.

[Additional Illustrations in the International Edition.]

STAIRWAY FROM MAIN HALL: COURT-HOUSE OF THE APPELLATE DIVISION, NEW YORK, N. Y. MR. JAMES BROWN LORD, ARCHITECT, NEW YORK, N. Y.

[Gelatine Print.]

CLOAK-ROOM IN THE SAME BUILDING.

[Gelatine Print.]

HOUSE OF WM. B. BACON, ESQ., LENOX, MASS. MESSRS. SHAW & HUNNEWELL, ARCHITECTS, BOSTON, MASS.

[Gelatine Print.]

PARLOR CHIMNEYPIECE: HOUSE OF COL. CHARLES S. HILLS, ST. LOUIS, MO. MESSRS. BARNETT, HAYNES & BARNETT, ARCHITECTS, ST. LOUIS, MO.

THE DINING-ROOM: HOUSE OF COL. CHARLES S. HILLS, ST. LOUIS, MO. MESSRS. BARNETT, HAYNES & BARNETT, ARCHITECTS, ST. LOUIS, MO.

HOUSE OF COL. CHARLES S. HILLS, ST. LOUIS, MO. MESSRS. BARNETT, HAYNES & BARNETT, ARCHITECTS, ST. LOUIS, MO.

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EARLY GLASS-LINED WATER-PIPES IN BOSTON.—In making recent repairs upon the interior of the dwelling-house numbered 181 Harrison Avenue, the discovery was made that the water-pipes were lined with glass. The house was built sixty years ago by Nathan Prince for a residence, and when Cochituate water was introduced in Boston, he, as well as hundreds of others, becoming panic-stricken over the possibility of lead-poisoning, had all the pipes used in bringing city water into his house lined with glass. It was expensive and unsatisfactory, so that few persevered in maintaining glass-lined pipes, which soon became unpopular. It is believed that no other house in Boston has that style of plumbing. — *Boston Transcript*.

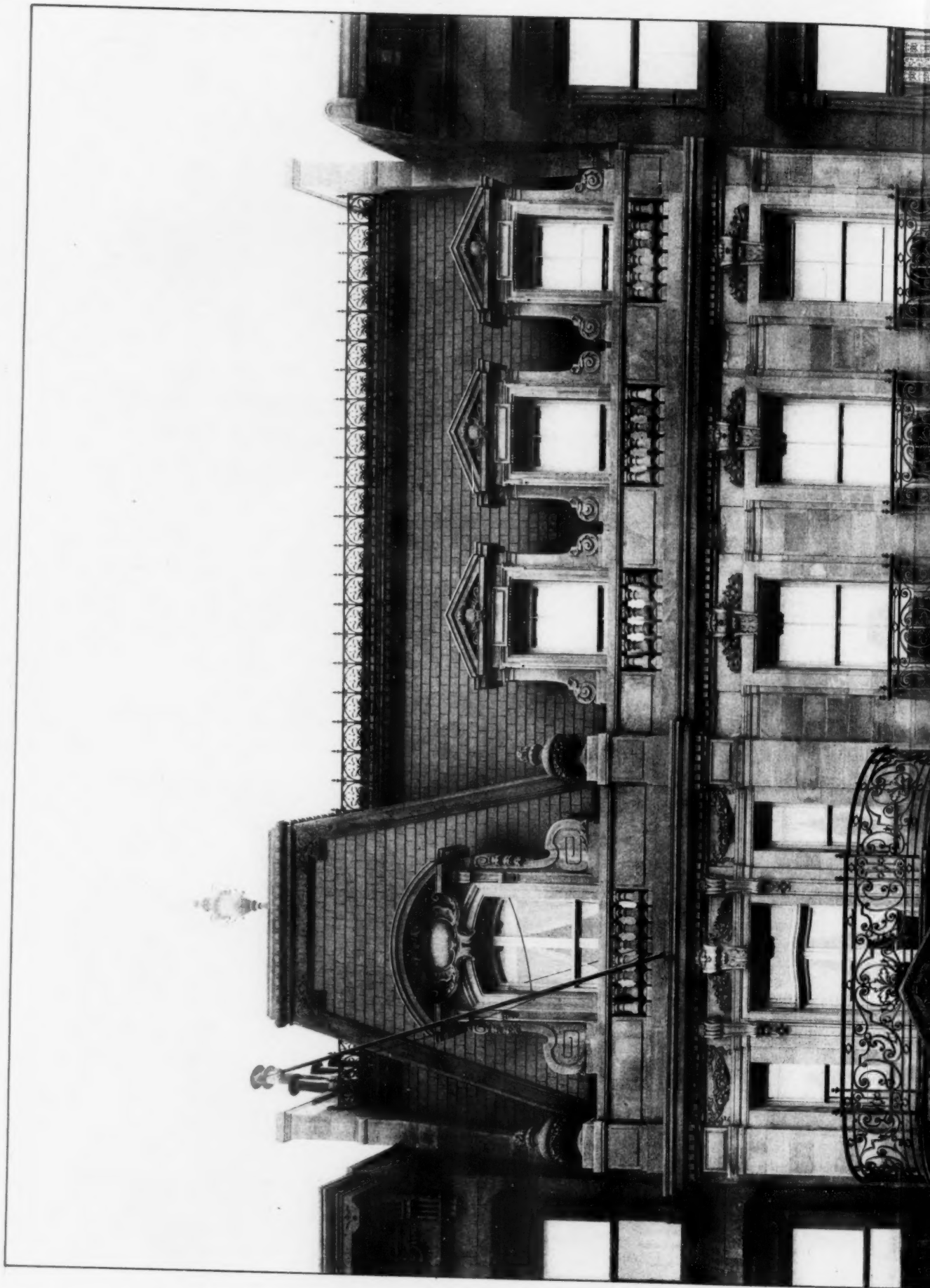
WATER A NEW HIGH EXPLOSIVE.—An important discovery has just been made by an Italian officer, Colonel Cornara, from which it would appear that water has a very high explosive power. Water, if subjected to great compression and then decomposed by means of an electric current into its elements, oxygen and hydrogen, explodes with tremendous force in the process. Colonel Cornara succeeded by these means in producing in water an explosive force fifty-five times greater than that of ordinary gunpowder, and twenty-eight times greater than that of dynamite. This new explosive, to which he has given the name of Cosmos, entails no danger upon the person using it. A company has been formed at St. Marcel, close to Turin, for the manufacture of the explosive water-cartridges, which, if the experiments are to be trusted, will play an important part in war and commerce. — *London Chronicle*.

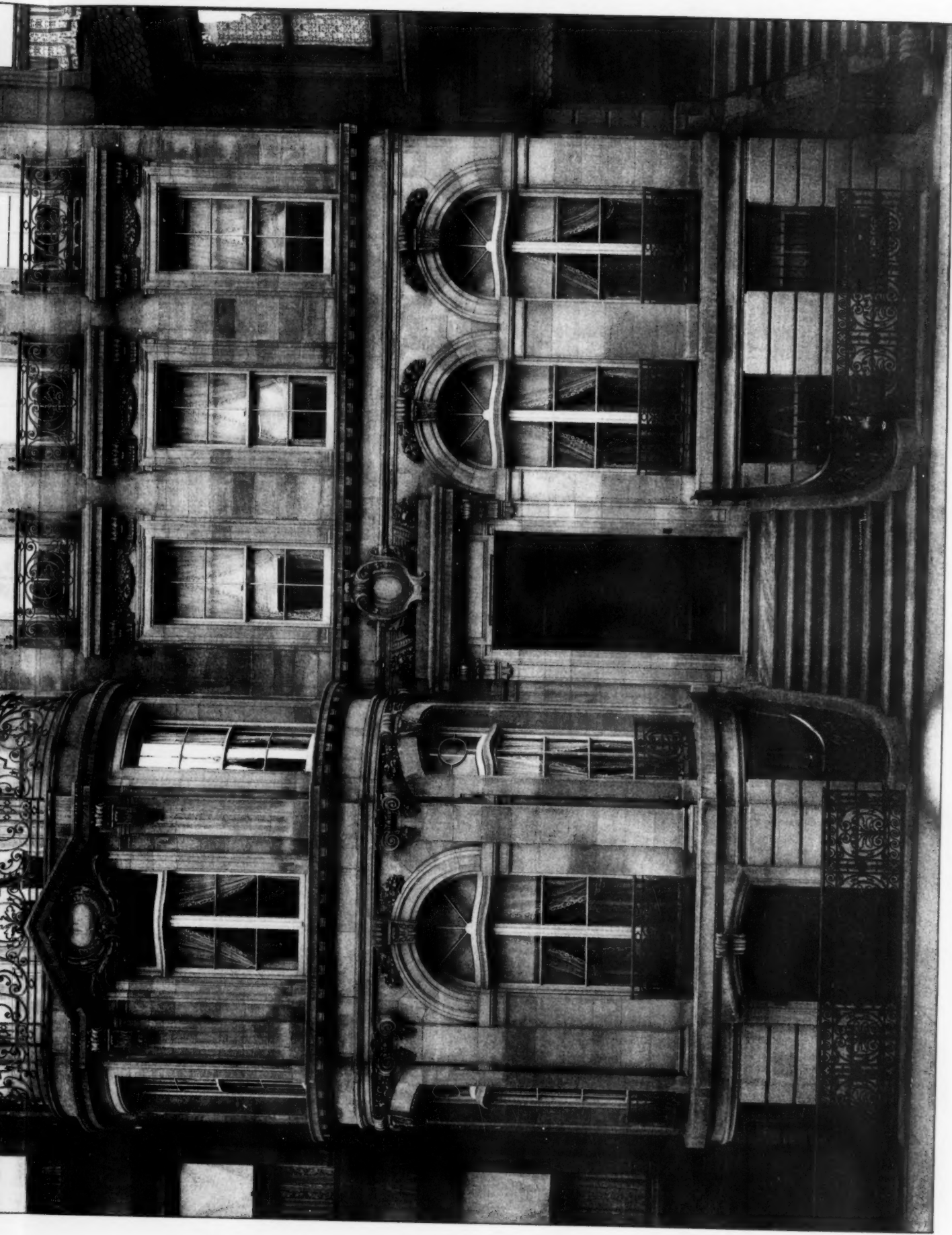
THE FORESTS OF WASHINGTON.—According to a compilation made by the Land Office of the State of Washington, 15,858 square miles in that State were originally covered with merchantable timber—fir, cedar, hemlock and spruce. One-fifth of this area has been ravaged by fire, 22½ per cent has been cut, and the remainder, or 9,039 miles, is covered with standing timber. Upon this timbered area there is estimated to be standing 103,503,576,000 feet, board measure, which in itself is sufficient to supply the saw-mills of the United States for four years under the present rate of cutting. By a comparative table the reports show that with the single exception of the redwood forests of California, the forests of Washington are the densest, heaviest, and most continuous in the United States. With the exception of a few prairie openings and where the timber has been removed by fire or the axe, they cover the country as a thick mantle from high up on the Cascade range westward to the shores of the Pacific. — *N. Y. Evening Post*.

AMERICAN ARCHITECT AND BUILDING NEWS, MAY 12, 1900.

No. 1272.

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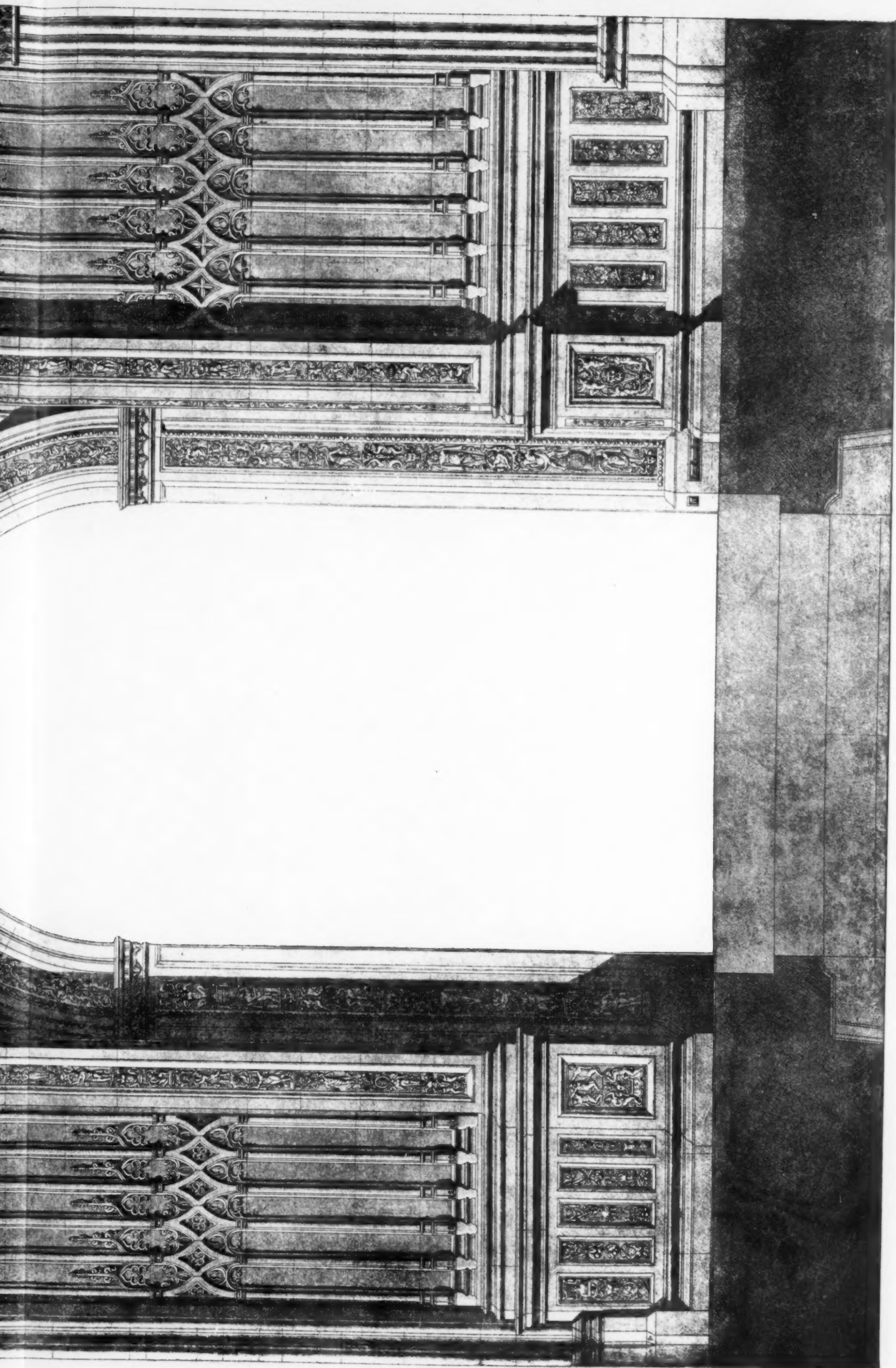




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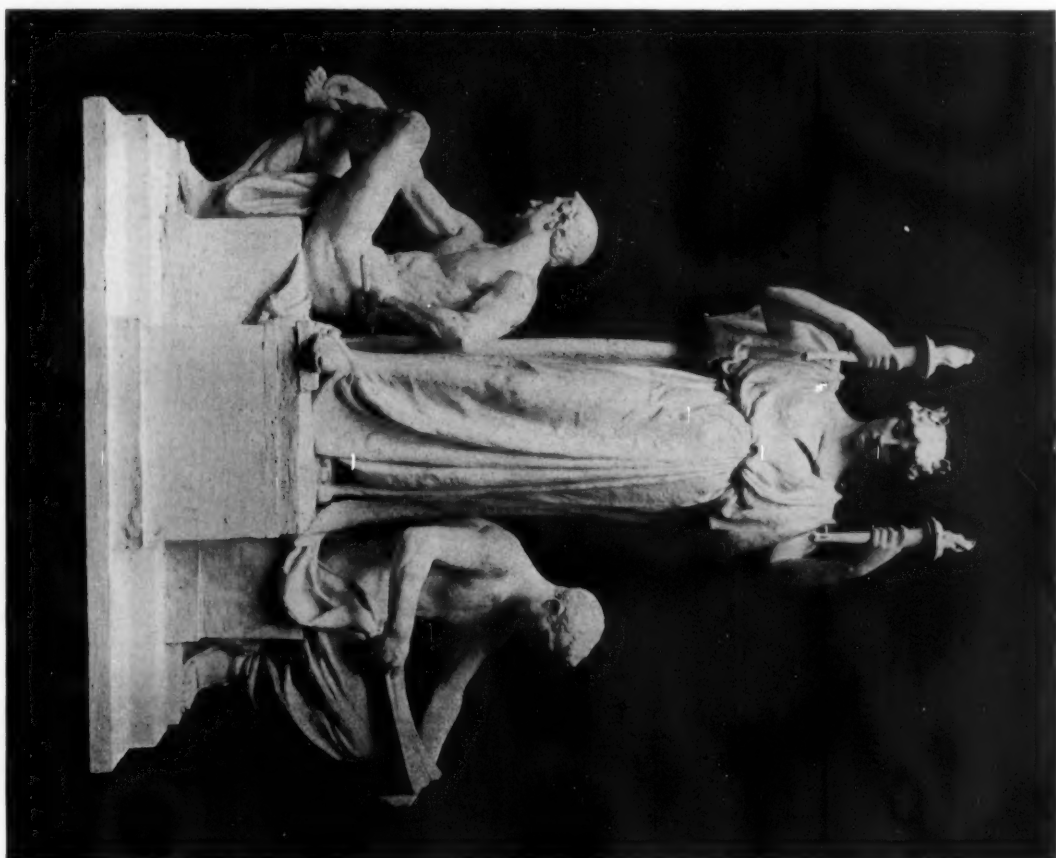


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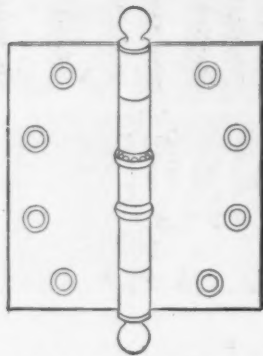
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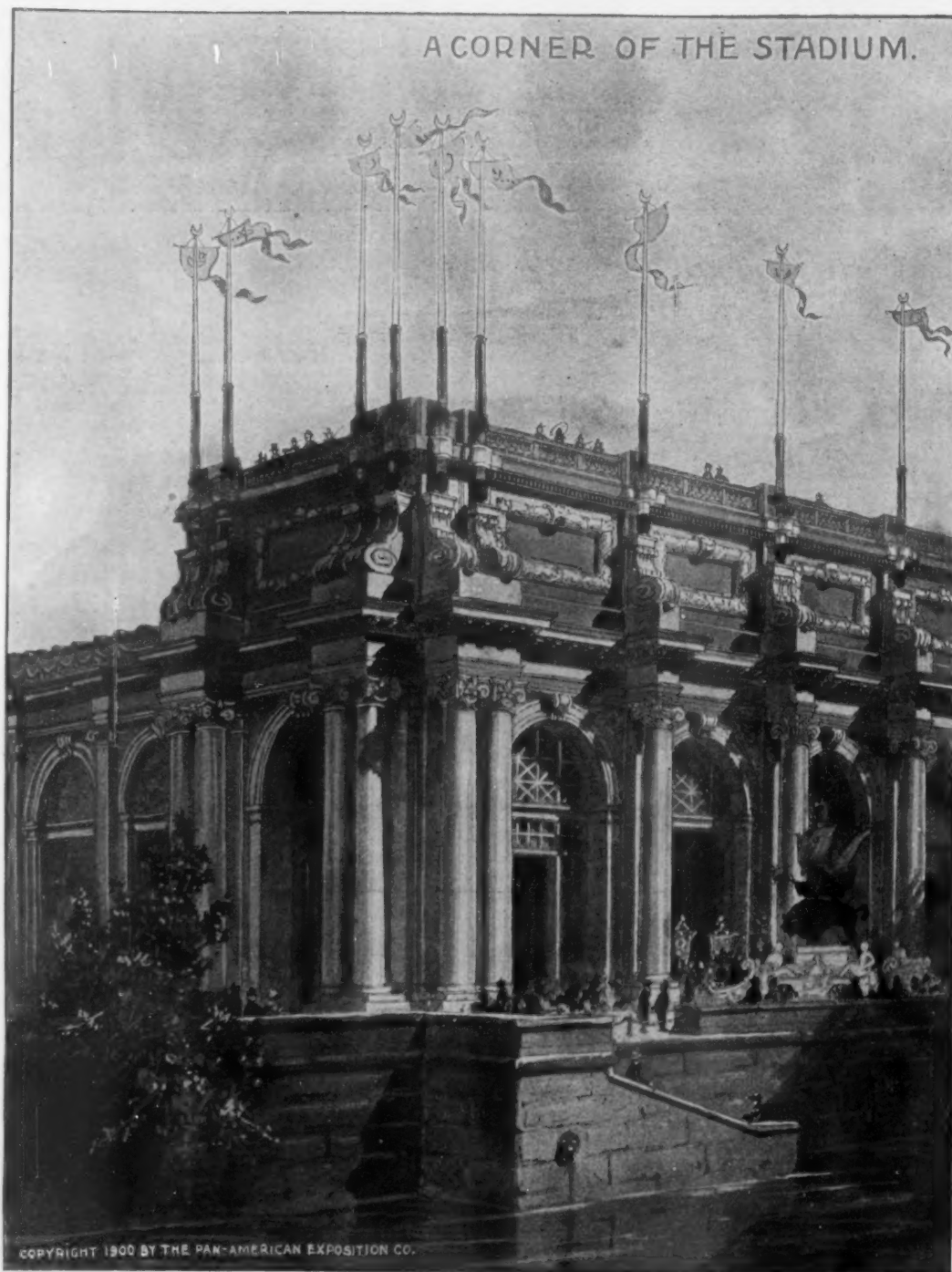
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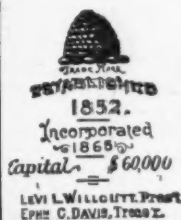
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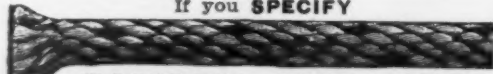
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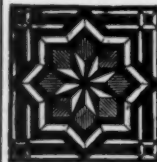
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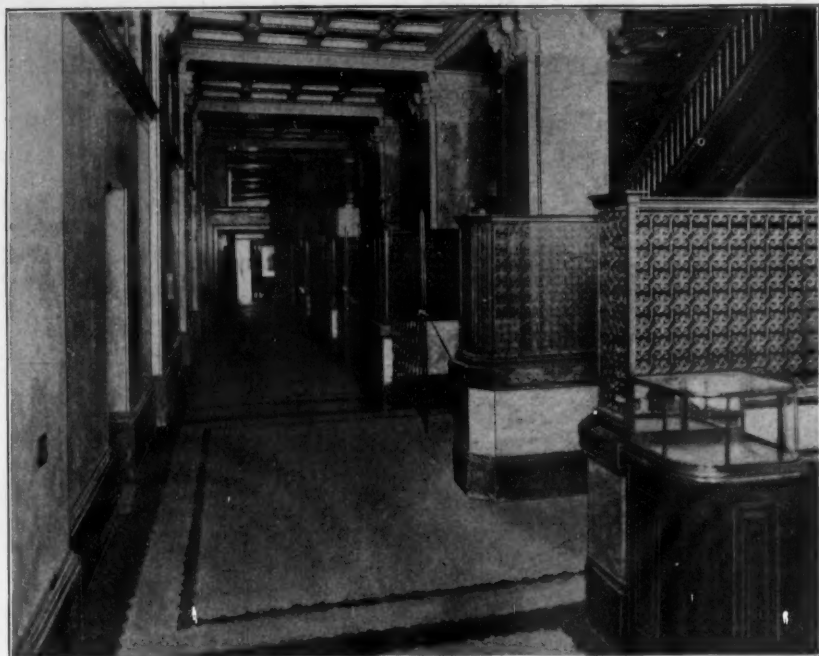
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III.

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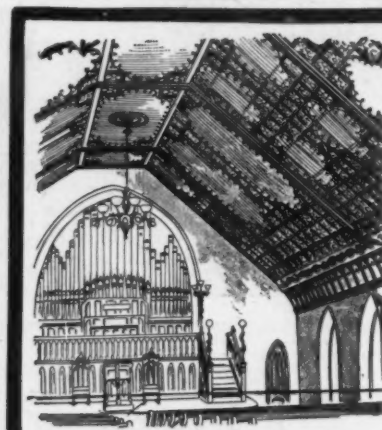
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[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

ADVANCE RUMORS.

Atlantic City, N. J.—Architect Vaughn is preparing plans for the proposed twelve-story stone and iron fireproof hotel to be erected here by a syndicate of New York and Philadelphia capitalists; cost will be about \$3,000,000.

Breckenridge, Minn.—Schuler Bros., architects, of Wabpeton, N. D., have prepared plans for Mikache & Verdon for a department store. It will be two-story, 68' x 112', of pressed and common brick, Kasota stone, pitch and gravel roof, and will cost \$20,000.

Bridgeport, Conn.—It is reported that the Building Committee, Dr. C. L. Adams, secretary, has engaged McKim, Mead & White, 160 Fifth Ave., New York City, to draw plans for the proposed City Hall.

Brookline, Mass.—The committee on new contagious disease hospitals has completed its report, advising the construction of a building to accommodate about 60 patients. It is recommended that the building be of brick with a central section and a scarlet fever hospital on one side and a diphtheria hospital on the other.

Charlotte, N. C.—Architect Frank P. Milburn has prepared plans for a large business building to be erected by the Wadsworth Sons Co.; cost, \$16,000.

Chelsea, Mass.—An order for a ten-room brick school-building in Ward 2, to cost \$50,000, was introduced at a recent meeting of the Board of Aldermen.

Chicago, Ill.—Anton Charvat has prepared plans for an \$8,000 three-story pressed brick front addition, 24' x 52', to the store and flat building at

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

northwest corner of S. Ashland Ave. and 21st St., for F. Ciba.

W. A. Otis has designed a \$50,000 residence to be erected on Wellington Ave., for F. A. Delano, 2018 Prairie Ave.

The Second Presbyterian Church will erect a new temple at the corner of Michigan Ave. and 20th St., costing \$80,000, to replace the one recently destroyed by fire.

Cloquet, Minn.—The Catholic Society, Rev. Fr. Giroux, pastor, will erect a church this summer, to cost about \$10,000.

Council Bluffs, Ia.—John Beno & Co. are having plans prepared by Architects Cox & Schoentgen for remodeling their brick store building into a model dry-goods store; cost, \$15,000.

Dallas, Tex.—The Mansam & Tebbetts Implement Co. has plans furnished by J. Riley Gordon Co. and H. A. Overbeck after which it will erect a warehouse at the corner of Pacific Ave. and Jefferson St. The proposed structure will be five stories in height with basement, and will be built of brick, 100' x 100', costing \$40,000.

Des Moines, Ia.—The Advance Threshing Machine Co.'s building on 3d St. and the Des Moines Union tracks, it will be three stories in height, 60' x 132', and will cost \$40,000.

Duluth, Minn.—Reports state that the Northern Pacific Railway Co. will build a warehouse, to cost \$40,000.

East Greenwich, R. I.—The corporation of East Greenwich Academy has decided to build a new dormitory for female students. Work will probably be begun on the new building this summer.

Fairmont, Minn.—H. W. Sinclair will erect a three-story brick and stone building after plans furnished by Architects Omeyer & Thorl; cost, \$16,000.

Graniteville, Ga.—The Board of Directors of the Graniteville Manufacturing Co. will build a new mill near its present plant, at a cost of \$500,000.

Greenfield, Mass.—The Massachusetts Tool Co. has been formed here with a capital of \$25,000 for

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(Advance Rumors Continued.)

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Harvey, N. D.—A. H. Stem, architect, is preparing plans for a hotel building to be erected by W. E. Cooke. It will be 75' x 100', three stories, pressed brick, cut stone, gravel roof, and will contain about 60 rooms; cost, \$20,000.

Indianapolis, Ind.—Architect W. Scott Moore will prepare preliminary plans for a new building for the city hospital. The improvements will cost about \$50,000.

La Salle, Ill.—The Utica Hydraulic Cement Co. will rebuild their plant, which was destroyed recently at a loss of \$175,000.

Louisville, Ky.—Architect John S. Minor & Sons have furnished plans for a six-story brick warehouse, to cost \$18,000, to be erected by Bernheim Bros.

Madison, Neb.—J. C. Stitt, architect, Norfolk, has furnished plans for a \$13,000 school-house to be erected here.

Marion, Ind.—Dr. D. A. Williams has had plans prepared by Architect B. L. French for a \$6,000 frame residence.

McKeesport, Pa.—The building committee of the public library have selected William J. East to prepare plans for the proposed library building, to cost \$50,000.

Menasha, Wis.—H. A. Foeller, architect, of Green Bay, has furnished plans to St. Patrick's congregation for a school and sisters' residence; cost, \$10,000.

Merrill, Wis.—A. H. Stange contemplates erecting a large hardwood factory to produce millwork, bar and office fixtures; cost, \$100,000.

Minneapolis, Minn.—Frank M. Prince, of the First National Bank, is having plans prepared for a residence to be erected on Groveland Ave.; cost, \$20,000.

Norwalk, Ia.—Architects Liebbe, Nourse & Rasmussen, Des Moines, are drawing plans for a bank building to be erected by Simon Cassidy.

Oil City, Pa.—Press reports state that Andrew Carnegie will erect a public library here costing \$40,000, as soon as the city has provided a site.

Omaha, Neb.—I. P. Hicks, architect, is preparing plans for a double store, 49' x 80', with office and lodge hall above; cost, \$5,000.

Parkersburg, W. Va.—The Directors of the First National Bank contemplate erecting a hotel on Market St., to cost \$200,000.

Philadelphia, Pa.—Jacob Myers & Sons will erect a charitable building for the 8th Ward Settlement Club at Hutchinson and Locust Sts., after plans furnished by Architects Furness, Evans & Co.; cost, \$17,000.

The Sisters of St. Francis, who are in charge of St. Mary Hospital, have been given a plot of land at Bridgeport, comprising 160 building lots. The Mother Superior of the order in this country, who is stationed at Glen Riddle, has inspected the site

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

and has expressed her intention of having built thereon a hospital for convalescents. The structure will cost about \$75,000.

Architect D. K. Boyd has furnished plans for the new Radnor High School. The proposed structure will be two stories in height, 80' x 130', and will be built of either brick or stone.

A residence adjoining the Frontenac apartments at the southwest corner of Broad and Oxford Sts. is being razed and this site will be used on which to build an addition to the Frontenac. The new structure will be five stories in height, 25' x 52', and of architecture similar to the present building with which it will connect; cost, \$10,000.

Portland, Ore.—The Henry Fulling estate will erect a four-story brick block at Washington and 3d Sts., to cost about \$150,000.

Racine, Wis.—The J. I. Case Threshing Machine Co. will build a boiler factory, to cost \$50,000.

Red Jacket, Mich.—Carl E. Nystrom, architect, of Laurium, has prepared plans for a three-story brick office-building for N. P. Swanson. It will be 47' x 58', of pressed brick and sandstone; cost, \$15,000.

Rochester, N. Y.—The First M. E. Society will erect a new church building on the site of the old structure. It will be built of St. Lawrence marble. Its seating capacity will be 1,100; cost, \$75,000.

Sangatusck, Mich.—E. G. Lelendker will rebuild the hotel destroyed by fire last year, after plans furnished by W. K. Johnston, Chicago, Ill. It will be a two-story, 56' x 97' frame structure, costing \$10,000.

Sing Sing, N. Y.—School Districts Nos. 2 and 4 are to be consolidated. The school-houses used by these districts have been condemned and they will be replaced by one large pretentious building centrally located in the new district.

St. Louis, Mo.—Burkhead & Reese, architects, have plans for an annex to the exchange building for the Stock Yards Co. It will be three-story, 63' x 96', of local pressed brick and Kasota stone; cost, \$15,000.

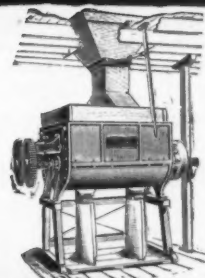
Curtis Bros. & Co. contemplate erecting on W. 4th St., between Bluff and Perry Sts., a large brick building, to cost about \$500,000. The structure will be two stories in height and will cover a plot of ground, 130' x 148'.

Spokane, Wash.—St. Luke's Hospital will erect a large building on the cottage plan; cost, \$50,000.

Springfield, Mass.—The Third Universalist Society contemplate beginning the work of building a new church at once. James Gibbins, M. F. Palmer and O. H. Dickinson have been appointed a building committee.

St. James, Minn.—Omeyer & Thorl, architects, St. Paul, are preparing plans for a church to be erected by the Norwegian United Lutheran Society. It will be built of wood, and will have a frontage of 44 feet and extend 65 feet in the rear; cost, \$6,000.

St. Paul, Minn.—Architect W. T. Towners is preparing plans for a four-story brick and stone apartment-house, 75' x 80', for R. Courtenay; cost, \$55,000.



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BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

Sturgeon Bay, Wis.—Fred D. Crandall has prepared plans for the hotel to be erected by B. Hahn. The structure will be built of brick and stone, 100' x 100', three stories in height, and will cost \$25,000.

Toledo, O.—Architects Bacon & Huber, Spitzer Building, are preparing plans for a \$12,000 residence to be erected on Broadway, near Walbridge Park, for Dan Jones.

Valley Junction, Ia.—Smith & Gutterson, architects, St. Paul, Minn., will furnish plans for a four-room brick school-building to be built here; cost, about \$6,000.

Winnipeg, Man.—The Merchants' Bank has plans for a new building soon to be erected for its use. It will be seven story, 60' x 86', the first two stories of brownstone, and above of red brick; cost, \$150,000.

ALTERATIONS AND ADDITIONS.

New York, N. Y.—William St., No. 84, rebuild front wall; \$18,000; o. The North River Ins. Co., 52 Cedar St.; a., Tryon, Brown & Burnham, 41 Union Sq.

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(Apartment-Houses Continued.)

steam; \$9,000; o., Mrs. Bause; a., Van Ryn & De Gelleke.
Sherman St., No. 400, 2-st'y fr. apart., shingle roof, furnace; \$5,000; o., Charles T. Allen; a., H. J. Rotler.

Mt. Vernon, N. Y.—Sixth Ave., cor. North St., three-st'y fr. flat, 22' x 54'; \$5,000; o., Arthur D. Gedney; a., F. W. Ringrose, 142d St. & 3d Ave.

New York, N. Y.—Eighth Ave., cor. 118th St., 2 five-st'y bk. flats & stores, 25' 5" x 25' x 84' 1", 95'; \$49,000; o., Daniel Hennessy, 799 Madison Ave.; a., Neville & Bagge, 217 W. 125th St.

W. One Hundred and Twenty-eighth St., No. 22, five-st'y & base, bk. flat, 25' x 86' 6"; \$28,000; o., Brady & Hauptmann, 1538 Madison Ave.; a., G. F. Pelham, 503 Fifth Ave.

Seventy-seventh St., 280' w 2d Ave., six-st'y bk. flat, 25' x 88' 8"; \$28,500; o., Moses K. Wallach, 240 E. 79th St.; a., G. F. Pelham, 503 Fifth Ave.

Third Ave., 100' 174th St., 3 five-st'y bk. flats, 25' x 87'; \$54,000; o., Solomon Jacobs, 1547 Madison Ave.; a., Thos. Graham, 1238 Madison Ave.

Spencer Pl., o. a. 300' n 144th St., 2 four-st'y bk. flats, 27' 5" x 90'; \$44,000; o., Michael O'Connell, 751 Third Ave.; a., Chas. W. Miller, 971 E. 169th St.

Seventy-first St. nr. West End Ave., seven-st'y bk. flat, 49' 6" x 115'; \$165,000; o., K. C. Brown, 60 Liberty St.

Broadway, nr. 91st St., seven-st'y bk., st. & terra-cotta apart., 53' 3" x 97'; \$140,000; o. & b., Adolph Hoffstadt and Amund Johnson, 114 W. 34th St.

Toledo, O.—Monroe and Sixteenth Sts., three-st'y & base, bk. apart., 100' x 100', asphalt roof, hot water; \$35,000; o., Jerome H. Smith; a., Wachter, Hudson & Co.

BUILDING INTELLIGENCE.

HOUSES.

Belleville, O.—Two-st'y & base, bk. & st. dwell., 40' x 65', slate roof, hot water; \$9,000; o., E. Stofer; a., Vernon Redding, Mansfield.

Boston, Mass.—Boylston St., cor. Chestnut Ave., three-st'y fr. dwell. & store, 21' x 31' x 50', flat roof, furnace; \$6,500; o., Mary E. Boyle; a., S. Rantin & Son.

Washington St., No. 586, three-st'y fr. dwell., 50' x 65', flat roof, steam; \$7,000; o., Caro Jackson; a., H. J. Preston.

Bay State Road, three-st'y bk. dwell., 25' x 70', flat roof, hot water; \$30,000; o., Edwin U. Curtis; b., John Y. Mainland; a., Stickney & Austin.

Fenway St., nr. Boylston St., 2-st'y bk. dwell., 33' x 85', flat roof, furnace; \$35,000; o., Robert S. and Annie Peabody; b., McNeil Bros.; a., Peabody & Stearns.

Kirkland St., nr. Kirkland Road, 2-st'y fr. dwell., 37' x 42'; \$6,500; o., Edith Bradford; b., David Burns; a., Geo. A. Moore.

Greenwood and Harlem Sts., 2-st'y fr. dwell., 32' x 50', pitch roof, hot water; \$6,000; o., a. & b., J. S. McLean.

Quincefield St., nr. Humphrey St., 2-st'y fr. dwell., 26' x 40', pitch roof, furnace; \$5,000; o., a. & b., J. E. Wilbur.

Bowdoin St., cor. Hamilton St., 2-st'y fr. dwell., 28' x 39' x 45', pitch roof, furnace; \$6,000; o., Jas. O. Jordan; b., F. J. Rockwell; a., A. M. West.

Charlestown, Ill.—S. Sixth St., two-st'y & base, bk. dwell., 40' x 52', shingle roof, hot air; \$5,000; o., M. C. and S. F. Ricketts; a., B. R. Maxwell.

East Hancock, Mich.—Two-st'y fr. dwell., 32' x 50', shingle roof, hot water; \$7,000; o., A. Mette; a., H. T. Liebert.



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(Houses Continued.)

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OFFICE BUILDINGS.

Boston, Mass.—Bartlett Pl., off Green St., three-st'y bk. office-building, 40' x 80', flat roof, steam; \$15,000; o. & b., B. F. Sturtevant Co.

Brooklyn, N. Y.—Broadway, cor. Bedford Ave., five-st'y fireproof bk. & st. office-building, 75' x 102'; \$80,000; o., Nassau Trust Co., 101 Broadway; a., Johnson & Helme, 220 S. 8th St.

New York, N. Y.—Maiden Lane, Nos. 51-53, twelve-st'y bk. & st. office-building & store, 39' 2" x 133' 1"; \$400,000; o., Erasmus D. Garney, 132 E. 28th St.; a., Hill & Turner, 150 Fifth Ave.

Philadelphia, Pa.—Tenth St., cor. Rose St., four-st'y bk. & terra-cotta office & store building, 19' 11" x 70' 7"; \$14,000; o., Daniel Echternoch; b., Thomas M. Seeds, Jr.

STABLES.

New York, N. Y.—W. Eighty-fourth St., Nos. 213-217, five-st'y bk. stable, 72' x 102' 2"; \$55,000; o., Borden's Condensed Milk Co., 71 Hudson St.; a., H. C. Chamberlain, 1181 Broadway.

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Marshfield, Wis.—Two-st'y bk. store & apart., 44' x 100', comp. roof, steam; \$9,000; o., E. M. Deming; a., Van Ryn & De Gelleke.

New York, N. Y.—Leonard St., Nos. 66-72, twelve-st'y & base, bk. flats & stores, 101' x 124' 11", concrete & tile roof; \$600,000; o., Importers Bldg. Co., 137 Broadway; a., H. J. Hardenbergh, 10 W. 32d St.

Westchester Ave., s w cor. St. Ann's Ave., five-st'y bk. & st. flat & store, 50' 4" x 98' & 98' 11"; \$30,000; o. & a., Albert Rothermel, 663 E. 144th St.

COMPETITIONS.

SCHOOL-BUILDING.

[At Albany, N. Y.]

Plans and specifications will be received until June 1st, for a new school-building. ISADORE WACHSMAN, Clerk School Board. 1273

HOSPITAL ANNEX.

[At Jackson, Miss.]

Plans, specifications and sealed proposals will be received until May 25th, for the erection of an annex to the State Insane Asylum. ROBERT B. MIMS. 1273

FIRE STATION.

[At Chelsea, Mass.]

Plans will be received for a new fire-station for the City of Chelsea until May 15. WALTER BACH.



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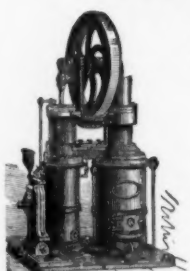
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ELDER, Superintendent of Public Buildings, City-hall. 1272

PROPOSALS.

Treasury Department, Office of Supervising Architect, Washington, D. C., May 5th, 1900. Sealed proposals will be received at this office until 2 o'clock P. M. on the 11th day of June, 1900, and then opened, for the installation of a wiring system for the U. S. Mint Building at Philadelphia, Pennsylvania, in accordance with the drawings and specification, copies of which may be obtained at this office or at the office of the Superintendent of Construction at Philadelphia, Pa., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1273

SCHOOL-HOUSE.

[At Yuma, Ariz.]
Sealed proposals for furnishing labor and materials required in the erection of a frame dormitory at the Ft. Yuma School will be received until May 23d, by the Com. of Indian Affairs, Washington. W. A. JONES, com. 1273

BARRACKS.

[At Fort Du Pont, Del.]
Sealed proposals will be received until May 31st, at the office of Constructing Quartermaster, Delaware City, Del., for construction of 2 barracks, 2 double sets of N. C. S. O. Quarters, administration building, stable and wagon-room building, guardhouse, bakehouse, 6 single sets officers' quarters, hospital and hospital stewards' quarters at Fort Du Pont, Del. J. DE L. LAFITTE, Constructing Quartermaster. 1274

GATE HOUSES.

[At Brightwood Reservoir, D. C.]
Sealed proposals will be received until May 19th, at the office of the commissioners, Washington, for

PROPOSALS.

constructing two gate houses. JOHN B. WIGHT, JOHN W. ROSS, L. H. BEACH. 1272

NORMAL SCHOOL.

[At Brockport, N. Y.]
Proposals will be received until May 19th, at the office of the State Superintendent New York City for the construction of a State Normal School. CHAS. R. SKINNER, State Supt. 1272

SCHOOL-HOUSE.

[At Burlington, O.]
The Board of Education will receive sealed proposals until May 19th, for the erection of a school-building. J. ROBERT HUNTER. 1272

STATE-HOUSE.

[At Trenton, N. J.]
Sealed proposals will be received until May 17th, for the erection of an addition to the State-house. FOSTER M. VOORHEES, Gov. 1272

BARRACKS.

[At Fort Washington, Md.]
Sealed proposals, in triplicate, will be received until May 23d, at the office of constructing quartermaster, 419 N. Washington St., Alexandria, Va., for the erection of six sets of officers' quarters and two sets of company barrack buildings at Fort Washington, Md. A. S. BICKHAM, Major and Q. M., U. S. V. 1273

SCHOOL-HOUSE.

[At Knoxville, Ia.]
The School Board will receive bids until May 25th, for the erection of a school-house. G. E. CLARK, sec. 1273

OPERA-HOUSE.

[At New Ulm, Minn.]
The Building Committee of the Turnverein will receive bids until May 26th, for the erection of an opera-house and gymnasium. JACOB PFENNINGER, chairman. 1273

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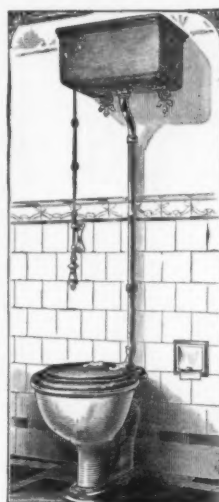
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PROPOSALS.

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[At Burlington, O.]
Sealed proposals will be received until May 19th, for the erection of a school-house. J. R. HUNTER. 1273

FAIR BUILDING.

[At Columbus, O.]
Sealed proposals will be received until May 16th, by the department of agriculture for the erection on the State Fair Grounds of an auditorium central court building, a horticultural building, horse exhibition building, carriage building, dining building, and an addition to power hall. W. W. MILLER, sec. 1272

ADMINISTRATION BUILDING.

[At Fort Myer, Va.]
Sealed proposals, in triplicate, will be received at the Depot Quartermasters' office, Washington, D. C., until May 25, 1900, and then opened, for constructing at Fort Myer, Va., one administration building and one balloon house. MAJOR T. E. TRUE, Depot Q. M. 1273

LIBRARY.

[At Washington, D. C.]
Sealed proposals will be received until May 19th, for the erection of the building for the Washington Public Library. B. R. GREEN, Supt. of Construction. 1272

HIGH SCHOOL.

[At Waterloo, N. Y.]
Sealed bids are wanted by the Board of Education until May 15th, for a high-school building. GEO. BELLOWS, sec. 1272

SCHOOL-HOUSE.

[At Wooster, O.]
Bids will be received until May 19, for a two-story brick school. PHILIP MARKLEY, Clk. Bd. Educ. 1272

CHURCH.

[At Winfield, Ia.]
Sealed proposals will be received until May 17th, for the erection of a brick church for the Presbyterian Society. J. N. OSBORN, ch. 1272

BANK BUILDING.

[At Springfield, Minn.]
Sealed proposals will be received until May 15th, for the erection of a bank building for the State Bank of Springfield. HENRY BENDIXEN. 1272

HEADSTONES.

[At Boston, Mass.]
Sealed proposals, in triplicate, will be received until May 16th, for supplying 10,000 white marble headstones in slabs. MAJ. J. E. SAWYER, Depot Quartermaster, Boston. 1272

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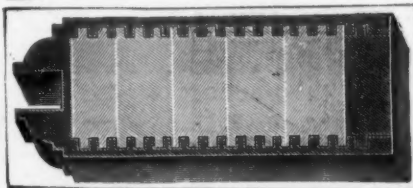
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SECTION 2. A Member having any ownership in any building material, device or invention, proposed to be used on work for which he is architect, should inform his employer of the fact of such ownership.

SECTION 3. No Member should be a party to a building contract except as "owner."

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SECTION 5. It is unprofessional to offer drawings or other services "on approval" and without adequate pecuniary compensation.

SECTION 6. It is unprofessional to advertise in any other way than by a notice giving name, address, profession, and office hours, and special branch (if such) of practice.

SECTION 7. It is unprofessional to make alterations of a building designed by another architect, within ten years of its completion, without ascertaining that the owner refuses to employ the original designer, or, in event of the property having changed hands, without due notice to the said designer.

SECTION 8. It is unprofessional to attempt to supplant an architect after definite steps have been taken toward his employment.

SECTION 9. It is unprofessional for a Member to criticize in the public prints the professional conduct or work of another architect except over his own name or under the authority of a professional journal.

SECTION 10. It is unprofessional to furnish designs in competition for private work or for public work, unless for proper compensation, and unless a competent professional adviser is employed to draw up the "conditions" and assist in the award.

SECTION 11. No Member should submit drawings except as an original contributor in any duly instituted competition, or attempt to secure any work for which such a competition remains undecided.

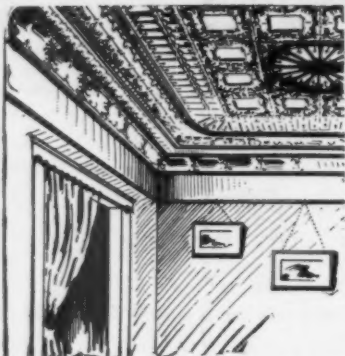
SECTION 12. The American Institute of Architects' "schedule of charges" represents minimum rates for full, faithful and competent service. It is the duty of every architect to charge higher rates whenever the demand for his services will justify the increase, rather than to accept work to which he cannot give proper personal attention.

SECTION 13. No Member shall compete in amount of commission, or offer to work for less than another, in order to secure the work.

SECTION 14. It is unprofessional to enter into competition with or to consult with an architect who has been dishonorably expelled from the "Institute" or "Society."

SECTION 15. The assumption of the title of "Architect" should be held to mean that the bearer has the professional knowledge and natural ability needed for the proper invention, illustration and supervision of all building operations which he may undertake.

SECTION 16. A Member should so conduct his practice as to forward the cause of professional education and render all possible help to juniors, draughtsmen and students.



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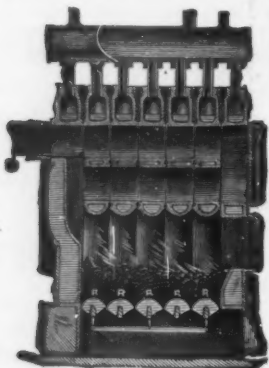
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" dark.....	@ 12 00
" red.....	@ 12 00
Chicago pressed.....	
" Moulded.....	
Baltimore.....	37 00 @ 41 00
Philadelphia.....	19 00 @ 21 00
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Milwaukee.....	
Moulded:	
Red Pressed.....	@ 29 00
Buff.....	@ 27 00
Moulded Red & Buff.....	45 00 @ 70 00
Enamelled: Imp.....	85 00 @ 100 00
Enamelled (edge).....	90 00 @ 110 00
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18 00 @ 25 00

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Enamelled B'k.

Imported

Enam. (edge)

105 00 @ 120 00

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120 00 @ 135 00

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@ 65

