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WE are glad to believe that Lord Dufferin's scheme for the use of Niagara Falls is more likely to be carried out than Dr. Siemens's or Sir William Thompson's. The joint commission of the State of New York and the Dominion of Canada met on the ground not long ago to discuss the proposition to which we have before referred (*American Architect*, July 5, 1879), for securing the lands about the falls to be maintained by the two governments as a perpetual park, free from private encroachment. The commissioners had apparently no difficulty in deciding that the grounds needed the care of the governments to protect the scenery from disfigurement or destruction; and find themselves substantially agreed, we understand, as to the manner in which the thing should be done. It is expected that they will meet again in November, and render a decisive report, with a scheme for carrying out the project. This action comes none too soon. The degradation of the surroundings warrants the *New York Times* in saying that already "the superb adjuncts of the fall scenery, on both the American and Canadian sides of the chasm, have been robbed of much of their original beauty and grandeur. Where picturesque groves once stood, unsightly mill-sheds and rickety drinking booths now appear. On the Canadian side, only a few stunted trees remain to remind the visitor of the old-time forests. Year after year the change goes on, the rocks are covered with the signs of quack medicine men, every prominent outlook is crowned with the booth of some vagabond peddler, and the grand old trees, once the pride of the neighborhood, are being cut down to build mill-races or supply with fuel some petty factory." The vexatious exactions of people in possession of the approaches to the falls have done as much as anything to win the public mind to the idea of protection; but a still more serious argument is the need of securing the falls against the ravages of speculators, who would ruin them for the sake of mechanical uses, or of savants who itch to convert them to some scientific toy.

THE building accident of last week was one of peculiar horror. On the last day of the county fair at Adrian, Mich., a thousand persons or more had gathered on a new grand stand at the fair-ground to watch the closing races, when the stand suddenly gave way, falling partly into the river, on whose brink it stood, and partly upon the track. More than two hundred persons were reported sufficiently injured to be under medical treatment; sixteen had died within a day or two of the accident, and others were expected to follow them. The cause of the fall was of course the bad construction of the stand. It was a slight building, forty-four feet by one hundred, with a lower story intended to serve as a restaurant, but used for a part of the exhibition and filled with people at the time of the accident. It had just been put up under contract from plans and specifications by Mr. C. F. Siser. There is a disposition to blame the designer, and it is clear that the blame must be with either him or the builder for the slightness of the structure, which was very lightly framed, it is said, and simply spiked together, without framing or bracing. In fact, the western system of "balloon framing" appears to have been very logically carried out. The architect on his part is said to claim that his directions were not followed, and that he did not consider the work finished. We are not told, however, that he entered any protest or objection against using the

stand as it was. There can hardly be any difficulty in fixing the responsibility for this terrible disaster, if the people of Adrian are bent upon fixing it; and we may hope that those to whom it may be found to belong will not get off with a newspaper scolding. It is not pleasant to think that such an accident is likely to occur at any time in any part of the country, and that no defence is provided to protect the public against the ignorance that causes it.

THERE is some encouragement for the inmates of unsafe tenement-houses, and, what is perhaps more likely to be on the whole efficacious, some salutary warning to their proprietors, in the late decision of the Court of Appeals of New York. Mr. Patrick Mullady was owner of a tenement-house in Brooklyn which burned two years ago, and the staircase burning first, as usual, the wife and child of Joseph Lilly, one of the tenants, were burned for lack of means of escape. Mr. Lilly sued for damages on the ground that the house was not provided with a fire-escape, as is required by law. The jury returned a verdict of some sixteen hundred dollars damages. The case was twice appealed, and decided by each successive court in the same way, so that the decision would seem to be sufficiently well established to serve as a warning. So long as fire-escapes are set forth by the law as the protection due to the occupants of the class of buildings known as fire-traps, their employment ought to be assured, not only by liability of damages to those who suffer through the omission of them, but also by sure penalties enforced by the State for the general welfare against those who neglect to provide them. It ought, in fact, to be made more expensive to neglect them than to provide them, apart from the liability of compensation to the injured.

PER contra we have the rather cynical report by Judge Fallon, of the South Boston Municipal Court, of the inquest held on one of the persons who were burned in the tenement-house fire in South Boston, which we described a week or two ago. The report says that "though there was no fire-escape, the building was deemed as safe as most other cheap tenement-houses." It goes on to explain how one and another of the inmates might probably have succeeded in escaping, nevertheless, if he had had judgment enough to do the best thing, and ends by saying: "I think it can be truly said that the great loss of life was in a measure, if not wholly, due to the want of presence of mind of the unfortunate inmates." All this is probable enough, and so far as it is probable is sufficiently obvious, but it strikes us as altogether trivial and beside the mark. It is quite true that the Gold Street tenement-house was as safe as most others of its class. Here is the important lesson of the disaster, and the reason for making a strenuous effort for the improvement of the whole class, — for making, if there is legal warrant, a deterrent example of this case. If a fire-escape is the utmost means of security which the sense of the community is yet ready to impose, let us at least insist on it rigorously. The influence of the verdict, so far as it has an influence, will be to encourage the owners of perilous buildings in their neglect of precautions, and the public to believe that after all things are very well as they are, and that if women and children will only show activity and presence of mind in getting out of windows and off of roofs we need not look out for their safety. The public is only too lethargic in providing for the general safety, and to lull them into a feeling of security is to misuse the one opportunity for good which is to be evoked from this calamity. Although it is possible that dexterity and presence of mind and an unerring judgment might have extricated some or even all of the victims of this fire, we all know that most people, if suddenly waked to an overwhelming peril, lose their presence of mind, and act by instinct, not by judgment. We know that if we are planning a theatre with an eye to the danger of fire, we must give the audience an opportunity to escape not only with considerate discipline, but in the height of disorder and terror. It is the ordinary condition of mankind not to have presence of mind in the face of sudden and extraordinary danger; and it is to the ordinary condition of mankind that human laws and human precautions must be adjusted.

WE have received a file of newspapers from Detroit, containing an animated controversy which shows that there is some disagreement over the proposal to build a new market there; and

that the procuring of plans for the new building was done under circumstances the like of which are familiar to us all, with the usual result of reerimination, accusations of bad faith, and an attempt to set aside the decision. We have not traced the history of this controversy from the beginning, but it appears that some time ago an order passed the common council for building a new market house at a cost of fifty thousand dollars, and a committee was appointed to select plans. A competition was accordingly invited, and a premium of three hundred dollars offered, not for sketches, as we understand it, but for the successful plans. This invitation was not of a kind to allure the more experienced and better occupied architects, but secured a certain number of plans; and a design was accepted from one of the younger men which was rather ambitious, being adorned with towers, and in order to fill out the author's architectural conception providing extra room which, it was suggested, should be used for an armory or such other public use as it might suit. The plans having been accepted, however, newspaper critics have attacked them, whom one or two architects have seconded vigorously, Mr. Charles H. Marsh, an unsuccessful competitor, having opened fire, both in a newspaper article and by an open letter to the common council which condemns the accepted plan and invites a new trial. He is assisted by Mr. Gordon W. Lloyd, an architect who refused to compete:—to all of which Mr. F. G. Russell, alderman, and apparently the architect of the successful design, has retorted in letters fuller of wrath and vili-pending than of argument.

ALL this makes a very pretty quarrel, but its interest is entirely local, and we shall not attempt to follow it into detail. The suggestions of the critics that it is better to build a market alone, and finish it, than to begin upon a building for compound uses; that towers are superfluous to a market; that a basement room forty-five by sixty, and nine feet high, lighted only from the side, is not quite the thing even for a fish-market; and that iron and glass are better than close walls and sparse windows, certainly seem in accordance with the eternal fitness of things. It would be safe to advise the authorities of Detroit, if they are in a mood for advice, that according to the experience of most cities, markets are better for being buildings that are used for nothing else, for being detached on all sides, or as nearly so as possible, and for being open to the roof; that they need as much air and light and as free application of water as possible. To these pretty well acknowledged conditions one might add that their construction had better be light, and their architecture is most satisfactory when not too pretentious; that they are not the kind of buildings most people would choose to grace a grand thoroughfare, but are best placed where their natural accompaniments of noisy traffic and odors will not obtrude themselves upon the public, nor their own use be encumbered with the dust and throng of a great business street. As for the competition, with its award of three hundred dollars for plans of a building to cost fifty thousand, it is not surprising if architects held aloof from it. One only wonders at those who keep such competitions alive by contributing to them. The common attitude of their authors is sufficiently well indicated by Alderman Russell's remark that it was "believed that three hundred dollars would bring in a suitable plan." This is the belief on which committees are wont to act, and as things go it is not strange. Three hundred dollars will always bring a plan, and to the inexperienced committee one plan is apt to be satisfactory till another is seen.

THE passion of the modern Italians for unifying their ancient and their present history, and their delight in refurbishing up old traditions for modern use, has found a new and characteristic outlet. The cheerful assurance with which they revamp their venerable buildings, the happy-go-lucky content with which they repaint the pictures of their great masters when age has dimmed them, are familiar,—as familiar as the disregard with which they pass by, or sweep away, the remains of old art which do not invite, or will not submit to, the attentions of the modern besom. Nobody, so far as we know, has yet proposed to restore Pompeii, and adapt it for modern uses, but some one has now devised a way of passing the current of modern life through that too, and connecting it with the observances of to-day by celebrating the eighteen hundredth anniversary of its destruction. The anniversary occurred on the twenty-fifth of last month, and invitations were sent the chief archaeological and other artistic societies of Europe to attend the

ceremonies, which consisted of a report from the Director of Excavations, a view of the principal monuments, and a special excavation of some hitherto unvisited parts of the ruins. This last was naturally the most attractive feature of the celebration, as it was the unique one, and the apparently unmanageable number of forty new diggings were appointed for the great day, all excavation having been interrupted during the preceding summer months. A savor at once local and classic was given the ceremony by sending the invitations on classic tesserae inscribed in red mural characters, thus: "Tessera for gratuitous admission to Pompeii. — The XXV of September, MDCCCLXXIX, on the recurrence of the XVIII centenary after its destruction." This recalls the passage in a favorite German students' song, explaining how, in the Syrian hostelry at Ascalon, the waiter

"Brought in the bill in cuneiform
Indented on ten tiles."

M. VIOLETT-LE-DUC.

THE place that Mr. Ruskin might have occupied, if he had been a Frenchman and an architect, with a turn for science, Viollet-le-Duc has filled. It is not his fault if his books are frequently used as mere storehouses of forms, to be employed without discrimination. No one would rebuke such abuse of his labors more severely than himself. That which forced itself upon his own mind in studying Gothic as well as ancient architecture, but especially Gothic was the profound technical skill of the early builders, their knowledge of all matters of practice affecting their profession, and their ingenuity in providing for every contingency with the means, often scanty, which they had at hand; and it is this which he seeks principally to enforce. The labors of Ruskin in bringing to our attention the inspiration and feeling with which the mediaevals worked are well supplemented by the detailed and minute view which these books give us of their processes.

Few realize the vast change which has taken place in the estimation put upon mediæval design since the time of Wren, who, speaking of the architecture called Gothic, which even in 1835 Nicholson considers "a term of reproach," refers to it as consisting in "mountains of stone, not worthy the name of architecture."

After a few other archaeologists and sentimentalists had for a time pointed out and defended the beauties of the buildings of the Middle Ages, but without pretending to understand their construction, came Pugin and Ruskin, who were perhaps the first to perceive how essential was the element of truth in an architecture which their predecessors had thought could be reproduced in lath and plaster.

The fervency with which Ruskin preached the new doctrine of moral principle in design aroused the sympathy of those who saw in it a means of at last freeing art from its wearisome slavery to stock patterns, of which even Pugin and Rickman only professed to have discovered a new set, and some of the best minds in Europe set themselves to the revivification of truth in design with a devotion and enthusiasm which have not yet faded away. But they would have lost much, from sheer impossibility of any one man, or set of men, inventing an architecture in the hum of professional life, if not *de novo*, at least with the scanty materials then accessible, if Viollet-le-Duc's books had not opportunely appeared, overflowing with suggestions, examples, and precepts, which were eagerly seized upon and appropriated.

Perhaps the deep impression produced by the knowledge of the constructive skill, the ingenuity and versatility of the French mediæval school, derived from these books, overpowered for a time the natural independence of precedent which the following of their own principles would give, and led to that frequent adoption of French models by English architects of avowedly Gothic proclivities which has been wrongly attributed to mere desire for novelty; and yet, great as is the influence which that school has exercised of late, we are far from an adequate acknowledgment of the surpassing skill of those who originally created it, or of the comparative clumsiness and inefficiency of our modern constructions. It is instructive to reflect upon the paucity of means with which the mediævals attained results which all are boasted learning and wealth cannot always rival. There our not many architects who, with all the help that their science can give, would undertake to reproduce the cathedrals of Amiens or Salisbury, and yet the poor *maîtres de l'œuvre* of the thirteenth century knew how to construct them, without cement, without

iron, except in small pieces, and little of that, without large stones for bonding, because they had no means of hoisting such materials, and could arrange the masonry with certainty, so that its own weight should hold it together for seven hundred years. How many architects could build the front of Notre Dame with its flanking towers in *lime mortar*, and be sure of its settling uniformly? Or how many engineers would dare to oppose the thrust of a vault by a buttress overbalanced toward it, both the buttress and the vault being of small stones without any such cohesion as would be given in one day by cement? Or where do we now find such refinements of construction as the beautiful piers of Salisbury, built in low courses, with wide joints of soft mortar, but stiffened against bending by their four slender marble colonnettes, in long pieces, each joint encircled by a slender bronze ring, secured to the body of the pier by a long appendage in the form of an anchor, built in between the stones? It is amusing to observe the confidence of mankind in the novelty and value of modern inventions. To this confidence we owe the satisfaction among other things of paying a royalty on the well-known expanding water conductors, square or corrugated in section, which were used in England in the fourteenth century with the same object, — to prevent bursting by the freezing of water in them, — and remain in some places to this day, as we might have known if we had only thought of looking for them, while the better class of manufacturers are in many instances trying hard to bring their products up to the standard of the once-despised mediaevals. The progress is slow, but it will be sure; the principles of truth in design, and reason in construction, notwithstanding occasional reactions, will not be abandoned by those who have seriously adopted them.

To all such, the works of Viollet-le-Duc will long remain one of their greatest comforts and resources; a resource, not in the sense of a means for stupid copying, but as showing by example the way in which the characteristic properties of materials can be availed of for suggesting forms continually fresh and interesting; and a comfort, by the proofs which they give, that some, at least, of the greatest masters of architecture that the world has seen found it no hardship to live and die in obscurity, content with the consciousness of duty well performed, and finding sufficient amusement for their modest leisure in the study of the little field plants, whose delicate forms they reproduced upon the stones of their buildings with such matchless grace and tenderness.

Viollet-le-Duc, though first of all a scientific and practical constructor, was not the less an artist. He won repeated medals for his water-color sketches, and if we are not mistaken his reputation as a designer preceded his fame as an archaeologist and architect. There is a certain work, published about 1840, consisting of pictorial and historical sketches of the ancient provinces of France, which seems never to have been completed, but volumes relating to one or two of the provinces are occasionally seen; one of them being exhibited in the British Museum, where it is labelled as the finest existing specimen of modern book-making. The portion entitled "*Souvenir de l'ancienne Picardie*," in three magnificent volumes, contains lithographic illustrations by many hands, among which are Samuel Prout and Viollet-le-Duc. The latter's drawings are finished works in black and white, drawn with a fire worthy of Alfred de Neuville, whose works they somewhat resemble in treatment and choice of subject. Generally they represent a procession, battle, or other memorable circumstance in the history of the particular château or church under consideration, and the drawing of the accessories is as careful as that of the figures themselves.

In the drawings of later times, of course the buildings are principal, and the figures accessory; but we have sometimes wished, in looking at the vigorous little scenes of war which explain the diagrams of redoubts and *têtes de pont* in the Dictionnaire, that for once the artist might forget the architect. The constant subjection of pictorial effect to clearness of outline, and the habit of associating all other forms with architectural lines, were undoubtedly the source of the pronounced mannerism which is shown wherever his drawings of any subject can be compared with those of others, but this did not interfere with their substantial accuracy, nor did it, as it would in most men, obscure his perception of the peculiar grace of modelling and outline which form the essence of thirteenth century sculpture. In the representation of this, so far as it can be represented on paper, Viollet-le-Duc, to our mind, has never had an equal.

The writings of Viollet-le-Duc, to an attentive reader, show him to have been endowed with a temper serious, almost melan-

choly, interested in many things which do not often engage the attention of a busy architect; intolerant of what he conceived to be commonplace or unreasonable, but kind and patient with those whom he hoped to instruct. A quotation which we have often called to mind in visiting the great apartment-houses now so popular will serve to illustrate the seriousness with which he regarded professional subjects, and will perhaps surprise some readers, as the utterance of a Parisian architect.

Speaking of the "*Magasins de Famille*," as he calls these structures, he says, "In our opinion, a state cannot be called morally civilized until the day when each citizen shall possess his own home, in which he can bring up his family, where he will leave the souvenir of the good which he has been able to accomplish, or of the services which he has rendered to his neighbors. Walls have ears, and the man who would do an unworthy action in the hired apartment which he may quit in six months will hesitate to give himself up to his evil inclinations within the house which is his own and which his children will inhabit after him." (*Dict. Rais. Art. MAISON*).

And in another place, after describing the beautiful decorations of the mediæval chancels (*Art. AUTEL*), he says, "Is it not truly the noblest mode of honoring God, to place art above all other things in his sanctuary? And was there not a true and just sentiment in the perfection which the artist strove to give to his humble materials? We confess that we are far more touched at the sight of an altar of common stone on which man has exhausted all the resources of his art, than before those clumsily shaped masses of bronze or silver, whose value consists in their weight, and which excite cupidity far more than they touch the heart."

His life was indeed more that of a teacher than an original creator, and we may be glad that it was so, for in the present state of art he would have been of less use in any other capacity. As it was, he found the world none too well prepared for him. Little by little his fame spread among thinking people, and those who were really incapable of seeing his merit found it best to keep silent. The misfortunes of the late Emperor, who was well qualified to appreciate him, doubtless delayed to some extent the growth of his reputation, but although he had no business office, and was principally devoted to his writings, he had of late become an authority in the adornment of Paris, and a member of the municipal council, and to him is due the project for the adornment of the Avenue des Champs Élysées with statues which has lately been adopted.

HYGIENE AND PUBLIC HEALTH.¹

WE confess ourselves to be rather unfavorably disposed towards cyclopædias in general. Whether it be that the articles which compose them are apt to be hurriedly written, and often by persons whose knowledge of literary work makes them more available than others more distinguished for their learning on the given subject, or that the various opinions of the different authors upon topics which must necessarily overlap, to some extent, occasion confusion in the mind of the reader who finds them presented side by side, may be a question, but our experience has generally been that a student, especially of technical subjects, could, if properly directed to original sources of information, gather for himself what he needed from these with less expenditure of time and trouble than from the ostensibly condensed but really diffuse *résumés* which purport to be made for his special convenience.

There are two ways in which such books may be constructed, one by entrusting some individual with the task of collecting and digesting all the knowledge attainable upon all the subjects within the scope of the proposed work, so as to present it elaborated, so to speak, in a coherent form, ready to be assimilated by all the minds to which it is offered; and the other by collecting a series of independent theses, each by a master of his particular topic, but without any attempt at unity either of thought or of style. The first method, in skilful hands, is generally the best. Repetition is avoided, and the information given, although the expert may sometimes accuse it of lack of freshness or completeness, is presented in such a form that the average reader is enabled to gain a clear understanding of the rudiments, at least, of each branch, and more than this it is hardly worth while to attempt.

The second method is apt to result in a series of memoirs, each of which is interesting to a comparatively small number of specialists, but unintelligible to the mass of readers, while the same ground is sure to be covered two or three times over in different ways, resulting at the best in waste of the student's time.

The publishers of "*Hygiene and Public Health*" have thought, reasonably enough, that in view of the great spread of interest in sanitary matters, and the progress of knowledge of organic chemistry, the rationale of healthy life and the causation of disease, with

¹ A Treatise on Hygiene and Public Health. Edited by Albert H. Buck, M. D. Vols. I. and II. New York: William Wood & Co. 1879.

the increase in the number of appliances and methods for protection against deleterious influences, an unprejudiced *résumé* of the latest facts and opinions regarding that group of subjects related partly to medicine, partly to physics, which are included under the general name of hygiene, would be of use to the large number of physicians, town and city officers, engineers, architects, and householders, on whom may be imposed the duty of guarding against or remedying the evils which flow from ignorance or neglect of nature's laws. They have attempted to supply the deficiency by the method of collecting essays, most of them by good hands, on the hygiene of infants, of soldiers, miners, and other persons, on water-supply and drainage, hospital construction and vital statistics, with many other allied matters, but that the attempt is wholly successful we cannot conscientiously assert. As a manual the work is too cumbersome and too technical to be of great use to many of the readers who most need such assistance, and at the same time, while many of the judiciously selected subjects are treated in a manner which leaves nothing to be desired but a little less technicality, others are disposed of in a manner which, if not absolutely careless, does not show the precision or knowledge which should be required of writers on such topics.

Notwithstanding these defects, of which we shall have occasion to point out particular instances, the two volumes form a work of great value. If not all that it might be, it is by far the best general view of the subject with which we are acquainted, and there are few who will not find profit in reading it, and keeping it at hand for reference, while the best informed will meet with new and interesting matter in many of the articles.

Dr. John S. Billings opens the book with an introductory chapter, judicious and forcible, as might be expected of him, on sanitary legislation and the duties of health officers. Discussing the modes in which boards of health are appointed, and the manner in which they execute their trust, he makes one suggestion which may well be taken to heart by all who have to do with the election or appointment of such officials, that a lawyer, an engineer, and a physician, each fairly skilled in his profession, associated as a sanitary board, are by no means equivalent to one man who has had so much training in each of these professions as to be well acquainted with that part of each which has a bearing on hygiene. When the public, especially in this country, shall have learned the value of special knowledge, and understand that a man who has devoted his life to a special subject is likely to know more about it, and to be more useful and efficient in that particular branch, than others, however intelligent, whose qualifications consist chiefly in self-confidence, an important advance in civilization will have been made.

He quotes from Mr. Dorman B. Eaton's work on sanitary legislation the account of the constitution of the New York Health Board at one time, when "out of the forty-eight health wardens and assistants more than half were keepers of corner groggeries, and the other half were partisan repeaters and bullies," so that the mayors for a whole term did not dare to call them together, and "the exercise of their authority became a greater peril than miasma or contagion."

In contrast with such officials the memory of the late Massachusetts State Board of Health shines with peculiar brightness, and few New Englanders will fail to experience a certain pride in observing the frequency with which the labors of that board are referred to and their reports quoted in this, as well as most modern sanitary works.

As an aid to sanitary practice, Dr. Billings considers it essential to understand clearly the present condition of scientific knowledge regarding the nature of infection. As he says, "great as is the importance of filth as a cause of disease, it is necessary not to overestimate it, and to beware of the popular notion that filth is almost the only thing which requires the attention of the sanitarian." He shows that exclusive attention to the removal of the products of animal and vegetable decomposition not only cannot prevent such diseases as scarlatina or measles, but may under some circumstances be of no avail against the typhoid infection, and quotes from Dr. Netter Radcliffe that "the fundamental principle of sanitary practice is the discrimination of conditions under which disease prevails," and that "to relegate sanitary matters to common notions of cleanliness, and to 'common-sense,' is to relegate them to general ignorance and general slovenliness."

He therefore gives a synopsis, extremely interesting, but too long to quote, of the present condition of knowledge regarding infectious diseases. In brief, the weight of evidence, in his opinion, goes to prove that certain microscopic forms of life, originating or capable of existing outside of the body, although harmless under ordinary circumstances, may, under others, become either the producers or carriers of a deadly poison. He describes the diseases in which such organisms are positively known to play a part, the "malignant pustule" of cattle, the hog-plague, and relapsing fever, and compares them with diphtheria, in which the presence of similar microphytes is probable, though not established, and with scarlatina, small-pox, and measles, the contagious principle of which is thought to consist of certain minute transparent particles found in the blood, but concerning which there is no evidence that they can, like the bacteroid forms, reproduce themselves outside the living body. A singular and suggestive observation is mentioned in regard to one of the last-described diseases, — small pox. As is well-known, the "spe-

cific contagium" fevers, in which are included small-pox and its milder form, the vaccine disease, usually affect the same person but once, and in the case of the vaccine fever it has been found that this immunity is connected in some way with the presence of the vaccine cicatrix, since in cases where the limb containing the cicatrix has been removed the person has again become susceptible. It is a common notion that vaccination is a certain protection against small-pox only so long as the scar left by it remains visible, and it would therefore seem that this idea may have some reasonable foundation.

Concerning the specific poison of the disease known as pyæmia, septicæmia, or hospitalism, Dr. Billings considers it "highly probable" that the action of microphytes is necessary to the production of the septic poison; and that this is the received opinion is shown by the precautions usually taken in hospitals to protect the living tissues, during and after surgical operations, from any possible contact with the germs which may be floating in the air. Some protect the part by impervious coverings, others, with the same object, give it the freest possible exposure, that noxious atoms may escape. Sometimes a serious operation is performed with the limb wholly immersed in an atmosphere of carbolic acid vapor.

What the action of the infusoria may be is far from being explained. Some organisms which are known to have the power of causing putrefaction under favorable circumstances exist constantly in the healthy body without harm. It seems to the author necessary, in order that the microphyte or microdeme, as he prefers to call it, may become the starting point of the septic process in the living organism, that it shall have been derived from, or come in contact with, some specific source of contagion, or else that the condition of some part of the living body shall have been so far changed from its normal vitality that the microdeme can flourish in it as in dead organic matter. In connection with this he quotes the observation of Dr. Burdon Sanderson, that while the ordinary bacteroid forms have not, at least to a marked degree, the property of producing the septic poison, it may easily be developed in great potency by injecting fluids containing these forms into the peritoneal cavity of a guinea-pig, reinjecting the effused fluids thus formed into a second animal, and so on, each successive production of fluid increasing in its power of producing rapid pyæmic infection.

After a slight reference to the sanitary protection associations at Edinburgh, and Newport, R. I., this admirable paper closes with a list of two hundred and five titles of books on hygiene and state medicine, selected, the author tells us, out of a much larger number, but certainly tolerably exhaustive, comprising, as it does, works in eleven languages, including Magyar and Polish.

Next comes a treatise on infant hygiene, by Dr. Abraham Jacobi, of New York, which we will not undertake to criticize, as it is avowedly intended for the medical profession. It is, however, not too technical for the comprehension of most intelligent persons, and those who have, directly or indirectly, to care for the health of very young children will find much to read and remember.

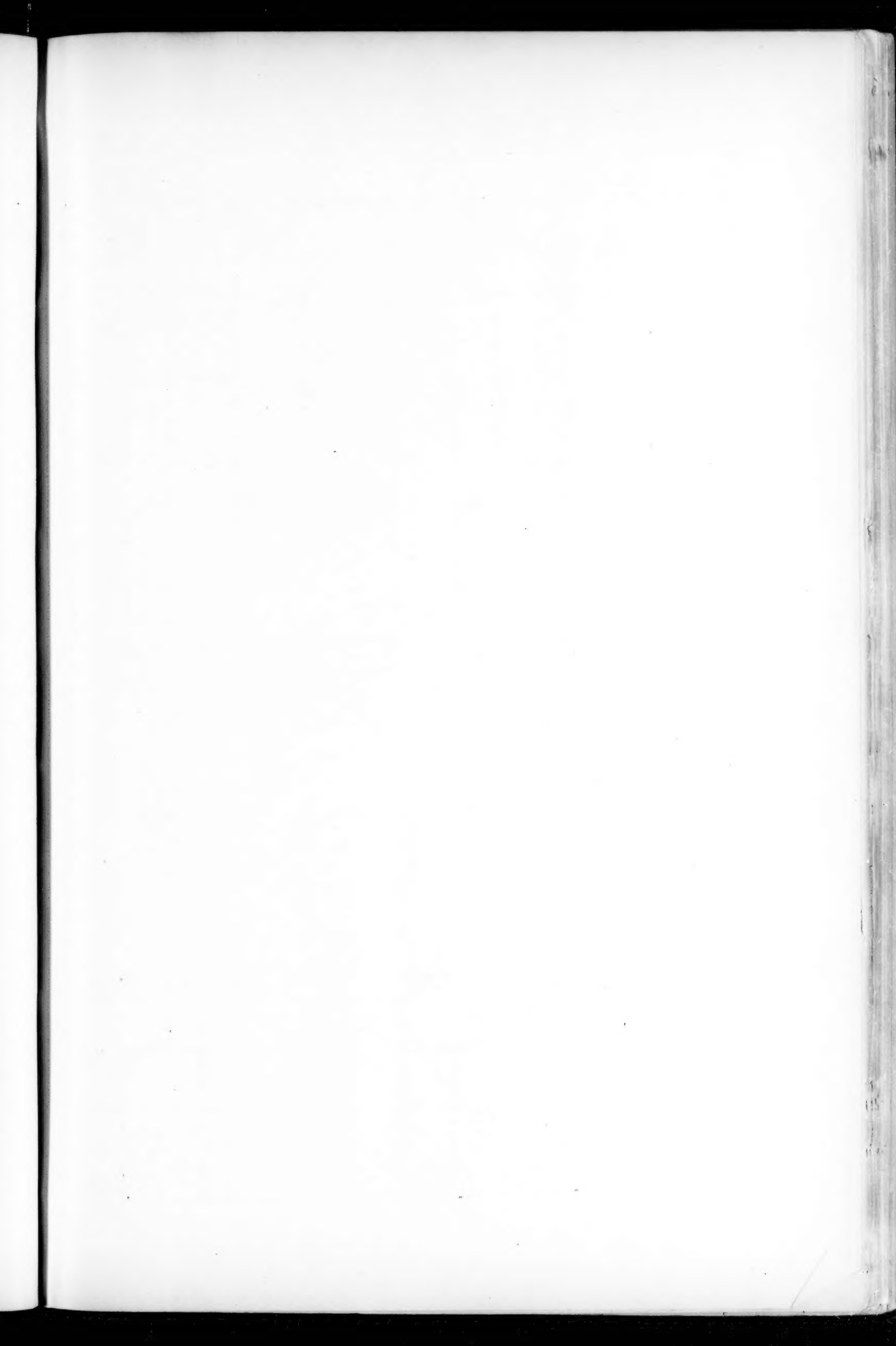
Some of the advice contradicts prevalent notions, but is probably none the less valuable on that account. For instance, the doctor discards the very prevalent theory that it is essential to a baby's health to feed it with milk from only one special cow. He says, on the contrary, that he prefers to rely on the mixed milk from a dairy on account of the possibility of changes in the health of any one cow.

A mixed nourishment for infants is spoken of with commendation which, we venture to say, would hardly have occurred to a layman, consisting of one pint of water to one quart cow's milk, and a half teaspoonful of official dilute muriatic acid. He gives good reasons for his high opinion of this compound, and muriatic acid may be remembered as one of the things which is good for nursing babes. Another practical suggestion is that cow's milk should never be administered to young children without the addition of salt, and the doctor moreover says that under all circumstances he forbids that infants shall be fed on raw, that is, unboiled milk. Some directions about children's teeth, and the proper school age, carry to their eighth year the subjects of a paper which we finish with sincere regret that it could not have been extended to cover a much larger portion of childish life.

Next follows a rather over-scientific disquisition on food and drink, by Dr. James Tyson. The portion which will most interest sanitarians is that describing the development and mode of communication of trichina and tænia.

The experienced health officer will readily see how this knowledge can be applied in preventing the spread of these disgusting and dangerous parasites, whose existence is continually fostered by the filthy practices common in our rural districts. Individuals who have only their health to guard need to read but once the natural history of *tænia solium*, which can be found in any encyclopædia or book on zoology, to be effectually warned against eating raw pork, or corned beef, however good its condition may seem, or any meat whatever, whether cooked or not, in which are seen "vesicles, white spots, or streaks of an uncertain nature."

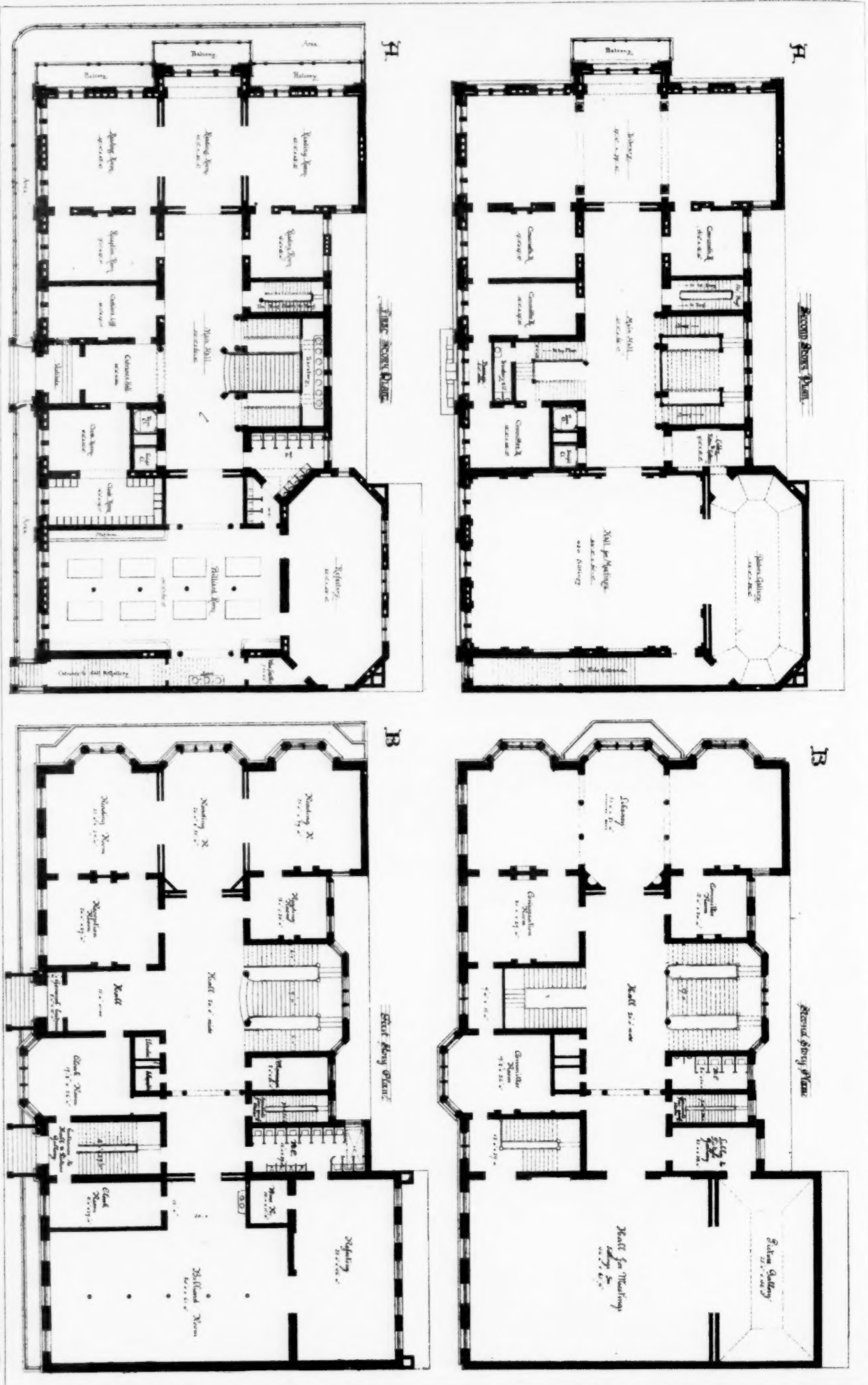
A tract on "Drinking-Water and Public Water-Supplies" is furnished by Professor William Ripley Nichols. This contains a number of valuable reference tables, with which, indeed, the whole book is well furnished, but there is no unnecessary display of science. If we were disposed to suggest improvements, they would be in the direction of omission of some of the matter drawn from English text-

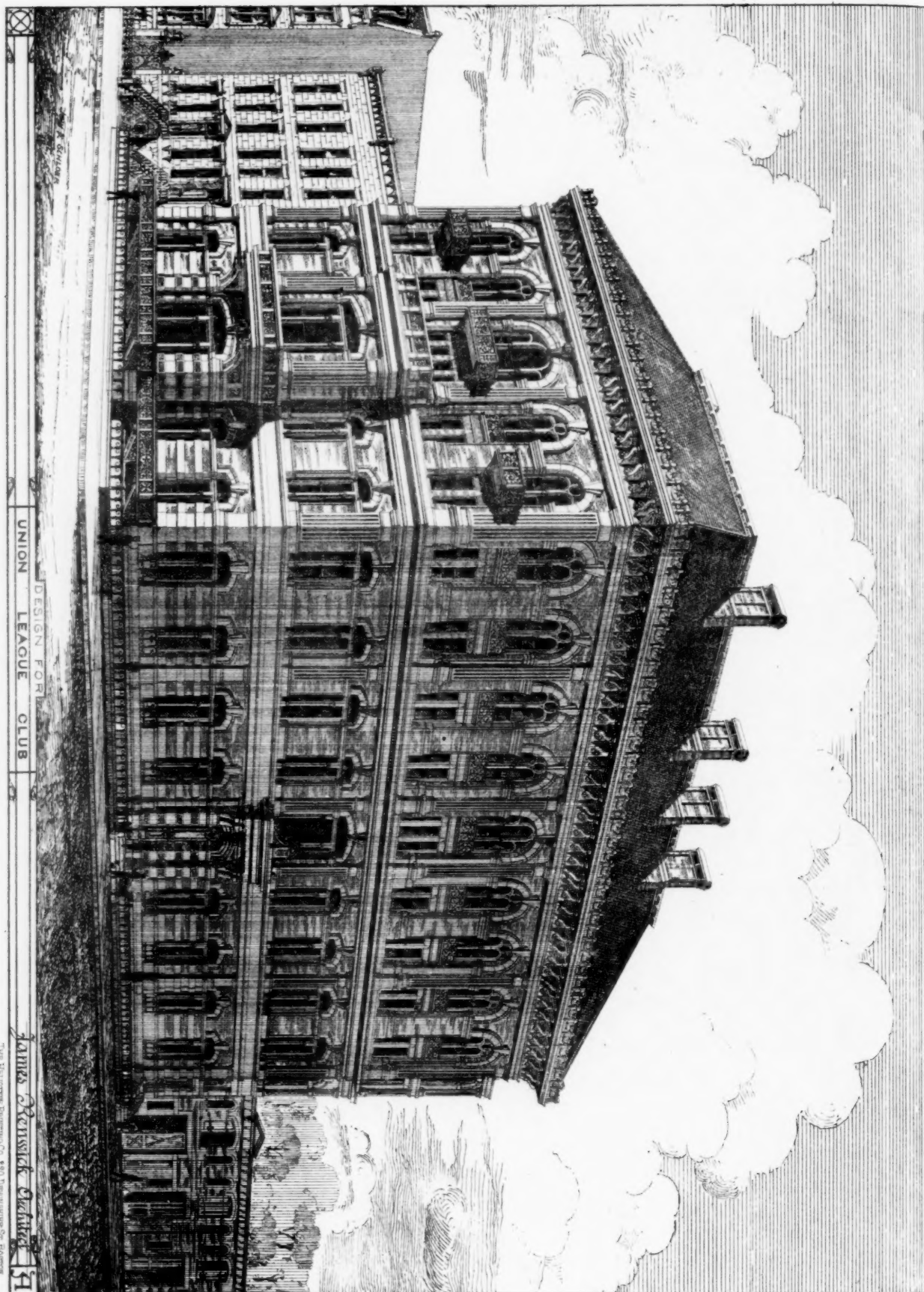


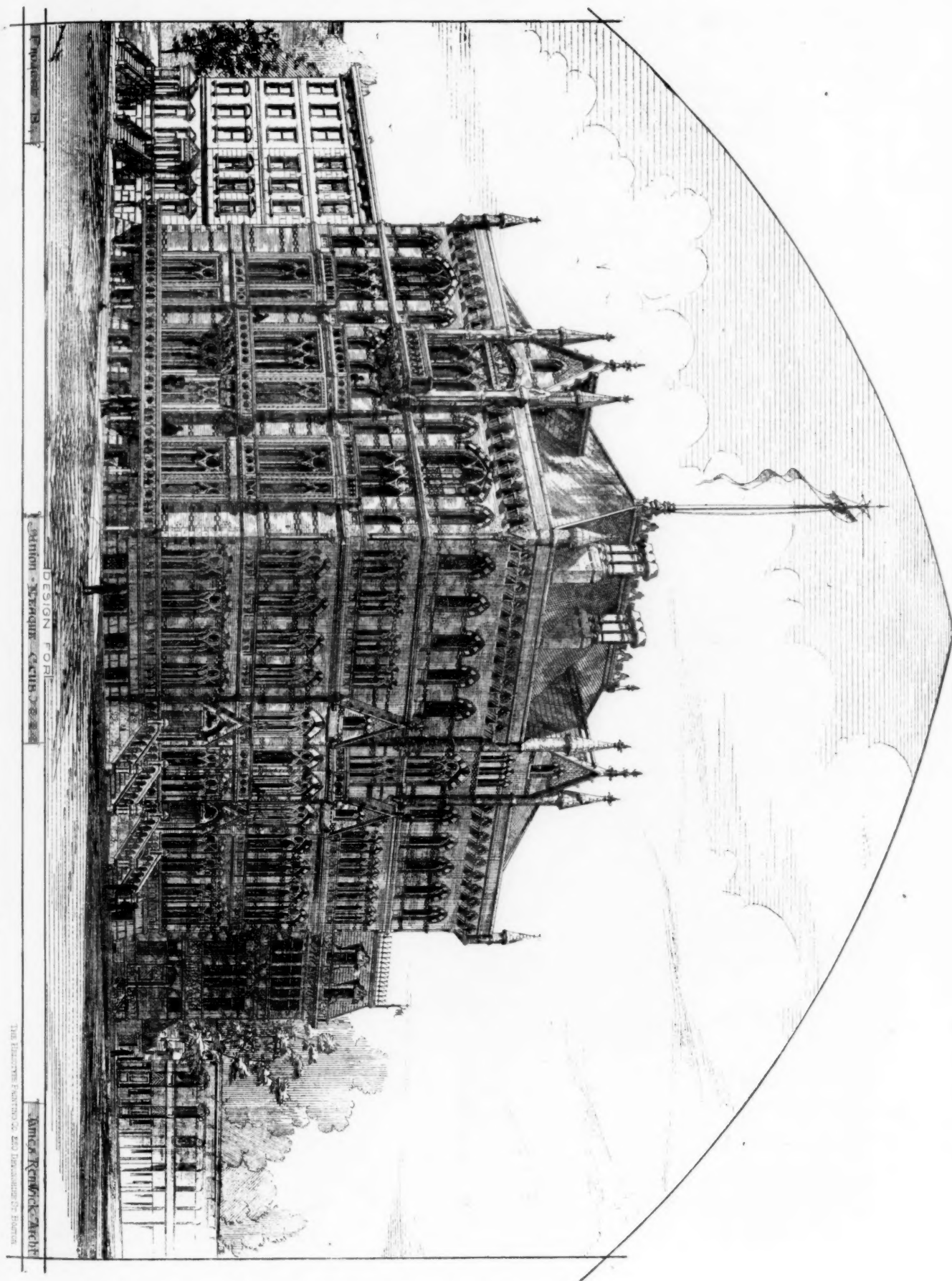
THE HUNTER-PARTNERS AND DECORATIVE ARTISTS

DESIGN FOR UNION LEAGUE CLUB HOUSE

JAMES H. HARRIS
ARCHT.



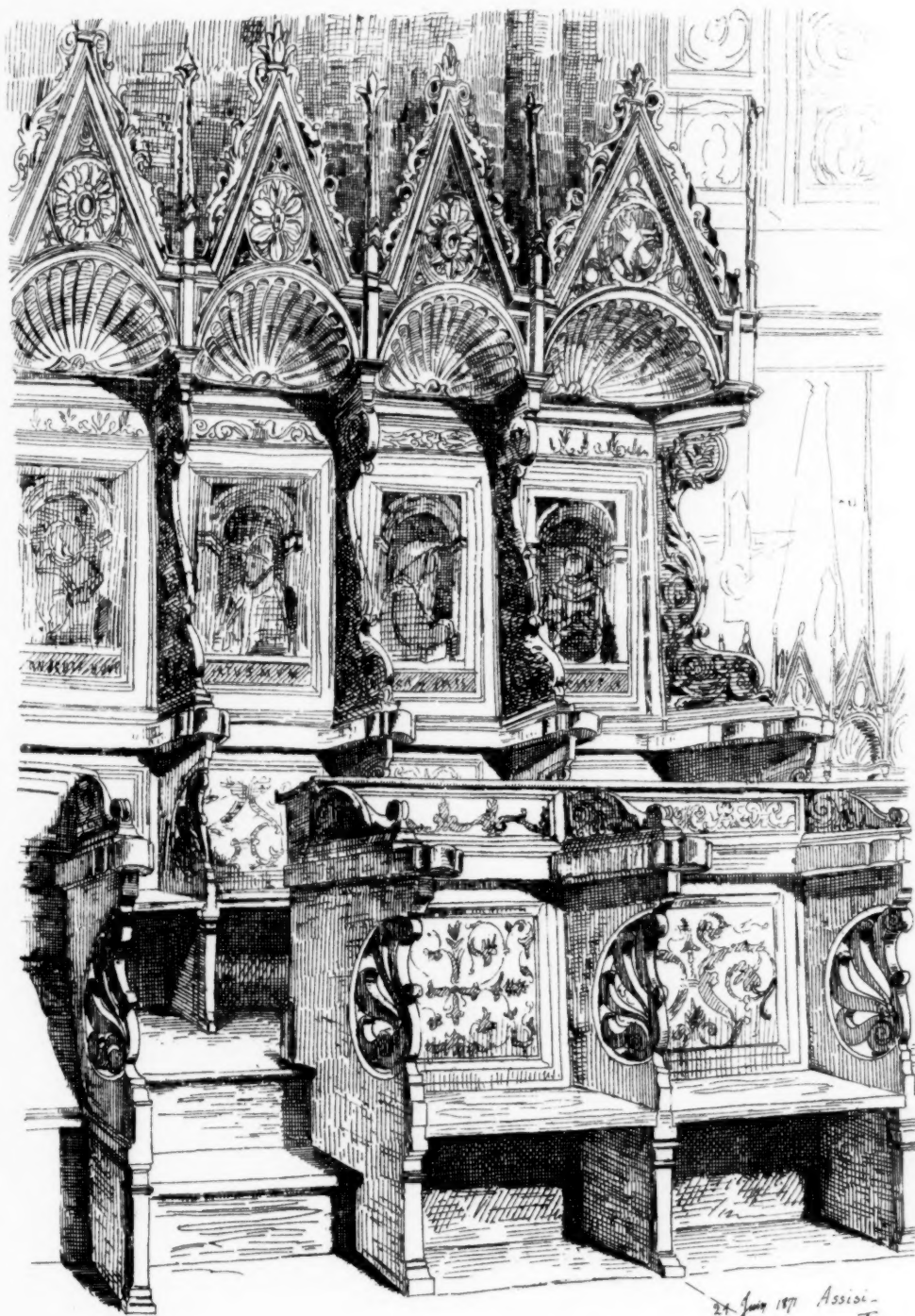




DESIGN FOR
THE NEW CATHEDRAL

AMERICAN ARCHITECT

THE EDITOR'S OFFICE IS AT THE OFFICE OF THE ARCHITECT



Imp. Moreau, Paris.

24 Jan 1879 Assise - F

STALLES DE L'ÉGLISE HAUTE
DE SAINT FRANÇOIS A ASSISES. (ITALIE)

d'après un dessin de M^r ALBERT THOMAS

books, and the substitution of more detailed criticism of the appliances usual in this country. For example, the description and illustration of the rain-water cisterns of Venice, which could never, we trust, serve as a model for any other locality, might well give place to a more extended notice of our ordinary form of rain-water reservoir, of which thousands are in use all over the country, although not one in ten is quite satisfactory.

Few people know how to construct a good cistern; one which shall be tight and clean, whose roof shall not, as wooden ones generally do, condense slimy drops, to fall back into the water, whose overflow pipe shall serve neither as an inlet for drain gas nor as a highway for beetles, toads, or poisoned rats; which shall be well ventilated, but not liable to collect dust, and shall filter well and quickly, and never clog. Yet the differences between good and bad construction are easily explained, and should be described at length in a work so comprehensive in its intention as the present one.

The brief mention of driven wells also seems to us inadequate to the importance of the subject. They are described with artesian wells as a means for obtaining water from deep-seated strata, whereas the great majority of those in use draw only from the ground water, just as would a common dry well. Of the remarkable augmentation of the supply to tube wells, apparently by the atmospheric pressure called into action through the exhaustion of the air in the tube by means of the pump, there is no mention, nor of the easy mode of increasing the supply by connecting several tubes together above ground by means of ordinary T's and horizontal pipes. We are as much opposed to the indiscriminate use of ground water for drinking as any, but if no other supply is attainable, the employment of tube wells saves so much risk of its contamination by surface water, insects, and other animals, which find their way down into the ordinary wells through the loose soil around the steining, if not over the top of the curb, that they deserve, and should have, a much more extended consideration.

Some illustrations of the common practice of well sinking and drainage, by which two holes are dug, in greater or less proximity to each other, into the same stratum of porous gravel, the household liquids being poured down one and pumped up out of the other, are repeated from the Massachusetts Board of Health reports, but there is no danger of enforcing such things too strongly upon the public mind.

Some suggestions about filtration of house supplies, following an extended description of filter beds on a large scale, will be interesting and useful to architects, as well as householders. Beginning with the little tap-filters, of which hundreds are sold weekly, Professor Nichols says plainly, "There is no known material which can be introduced into the small space of a tap filter, and accomplish any real purification of the water which passes through at the ordinary rate of flow." For straining the water, which is all that can be expected of such appliances, he says that "animal charcoal in such filters has no advantage over clean quartz sand." We will add that it has a serious disadvantage, — that of harboring worms, which should prevent its use unless frequently changed. The sponge filters are better, but are also "worse than useless unless removed and washed with water every few days." Of the larger filters the author has a higher opinion, where proper attention is given them.

After a description of the different kinds of water-pipes and the modes of laying them, in which he mentions the common coating of coal tar for iron pipes, with commendation in which we cannot quite agree, knowing the strong taste which such a coating badly applied gives to the water, the paper closes with a very clear and sensible discussion of the modes of analysis and examination of potable waters. Speaking of the ordinary wells, the professor makes an assertion which will be credited by sanitarians, however violently it may be repelled by householders, that "a large majority of the shallow wells in actual use are so situated that they receive sewage either directly or indirectly." To prove whether a well receives taint from a cesspool, vault, or stable yard, he advocates throwing a quantity of strong brine into the suspected source of contamination, testing the well water for chlorides (by means of nitrate of silver), before and afterwards.

The treatment of water to ascertain the amount of organic matter present by means of the bleaching of permanganate of potash, which is very common, he considers unreliable in inexperienced hands. Another ready test, which is sometimes advocated, by dissolving white sugar in the water, keeping it in a warm place, and observing the turbidity produced by the developments of microscopical organisms, he does not mention.

THE ILLUSTRATIONS.

COMPETITIVE DESIGN FOR THE UNION LEAGUE CLUB-HOUSE, NEW YORK. MR. JAMES RENWICK, ARCHITECT, NEW YORK.

Two alternative designs are here given with the first and second floor plans of each.

STALLS OF SAN FRANCISCO, AT ASSISI.

These stalls are in the choir of the upper church in the two-storied Church of St. Francis at Assisi. The illustration is from a drawing by M. Albert Thomas, published in the Sketch-book of the *Intime Club*.

THE LAST PARIS SALON. I.

PARIS.

I RETURNED from Spain in time to see the Salon here, and, as undoubtedly the American papers have long ago given their *résumé* of it, I shall send some notes bearing particularly upon the American artists exhibiting. In view of the labor and anxiety involved in passing the ordeal of admittance, our pioneers, who boldly dare to place themselves side by side with the greatest from other countries, deserve our warmest sympathy and encouragement. It is so much easier to avoid this cruel public test and so much more agreeable to exhibit advantageously to admiring friends, that those who do exhibit here show a serious purpose in itself to be admired. I devote this letter to painting the more readily in that the exhibition of architectural drawings at the Salon was singularly uninteresting, — probably because the architects, having sent their chief projects to the Universal Exhibition, had nothing new before the opening of the Salon. The sculpture was of less interest than usual, so that the powerful figure of a genie guarding the secret of a tomb, by Saint-Marceaux, easily carried off the *médaille d'honneur*. It is a vigorous and fascinating figure, with its lithe limbs and savage eastern head; and shows a strong Florentine character which may be hailed as invigorating influence for the French school beginning to petrify under exclusively Greek models.

A generation ago it was the critics who carped habitually at the average works of art, and awed the enthusiastic public by cold reservations; but the secret once out, the trick was quickly caught, and now, the more ignorant an amateur is, the less likely is he to frankly admire anything, while the public in general have learned to look wise and shake their heads at exhibitions before any but acknowledged masterpieces. If one should believe the criticism heard annually in regard to the Salon, it would be difficult to measure its present degradation, for each year it is loudly proclaimed to be the worst which has been seen for several years. As usual this is heard on all sides in regard to the present exhibition at the Palais de l'Industrie, but all artists and critics are by no means of this opinion. There are, in fact, to the thoughtful observer, encouraging signs to be found in this year's Salon, which are the more unmistakable because the germs of this improvement were visible last year. Although it is true that this year's exhibition contains fewer remarkable works than did several preceding Salons, still, on the other hand, there are not as many bad pictures, and the average may be said to be quite as high as it has been the last few years, if not higher, and this with 3,040 oil pictures admitted against 2,330 last year. But the real improvement lies in the absence of the coarse and revolting subjects which were painfully numerous five years ago, and in a return to a more sober and refined style promoting conscientious and truthful study. There is, for example, a larger average of works which, in sentiment and execution, are appropriate for private houses, and it seems as if the taste for crude and violent effects, which the great size and strong light of the exhibition rooms tempted artists into for the sake of attracting attention, had given way to a more healthy ambition and a more practical use, for, however much of a sensation a coarse, large work may make, unless bought by the government there is little chance of its being sold.

There is still, however, a tendency to use too large canvases. I do not so much refer to such immense ones as Gustave Doré imposes upon the exhibition, — being *hors concours* (H. C.) he can send what he likes, and this year has a Death of Orpheus monstrous in all senses, — but rather to painting *genre* pictures on too large a scale, for costumed figures do not gain, but lose, dignity and character by heroic size. Then, too, many of the canvases are but scantily filled. It is, of course, well to give enough air and room to a subject, and the English and German schools have spoiled many a good work by crowding and cramping it, but the fashion here is rather to over-ventilate, so to speak, the subject, and not unfrequently the personages look rather as if set out for a game of base-ball. This is the principal fault in a picture by Mr. Walter Gay, of Boston. His Fencing Lesson is unfeignedly in the style of Fortuny, and shows the agreeable coloring and minute, if not very firm, drawing which characterize that school. The action of the figures is well-conceived and characteristic, and the modelling carried to a high finish. Beside the fault of too much elbow-room, the figures lack accentuation as masses; but the picture is one before which the public stop with signs of approval. There are comparatively few pictures in the Spanish style this year, which, considering the large collection of Fortunys gathered together at the Universal Exhibition, is remarkable, and perhaps significant. I believe that collection did much to correct the enthusiastic admiration for him stimulated by his untimely death, and which culminated in preposterous prices at the post-mortem sale. That Fortuny had originality and extraordinary natural facility, backed by an incredible capacity for work, is undeniable, and he certainly promised to become a great painter, but his works, considered as pictures, can only have a pernicious effect. They were only studies in which he worked up the bit which interested him, and for which the study was made, leaving the rest to take care of itself, whence impossible values and straggling composition. These careless faults seemed at one time likely to be accepted as merits, and actually are in Spain, but when a number of these studies were brought together their true character and purpose became more apparent. Fortuny is reported to have said a short time before his death, "I begin now to feel ready to paint a pict-

ure.' That picture would probably be very different from anything which now exists. Of other Spanish artists who attracted attention at the Universal Exhibition, neither Rico nor Madrazo is in the habit of exhibiting at the Salon, while Escosura has only a small picture, and Gonzales one which is quite unworthy of him.

Remarkable among the *genre* pictures of another style, Henry Mosler, one of our countrymen, has a work full of high dramatic and artistic qualities. His *Return* represents a Breton peasant who, reaching home after an absence, finds his mother dead. The whole story is told with a directness which gives an intense pathos to the scene. The painting and drawing ably second the composition, and it well deserved the honorable mention it received. Mr. Bacon, though living in France, is one of the few of our painters who has the courage — shall I say good sense? — to paint American scenes, and the attention which they attract justifies his patriotism. His *Burial at Sea* is an earnest realization of a terrible scene, — launching a corpse from the deck of one of our Atlantic steamers. There is a strong reality in the general movement, no less than in the individual attitudes, which is admirable. The lineal composition is good, but the masses of color want concentration to accentuate the central group. The effect as represented is, no doubt, true, but so tragic a scene justifies and requires the forcing of effects to realize the powerful impression which would be produced on the mind. The general coloring, though harmonious, is too thin and pale to appear to advantage in the strong glare of the Salon. Mr. Bridgman, of New York, sends a work which compensates for the falling off in his Salon picture of last year, and which, if no better than his remarkable picture of two years ago, — it was this *Funeral of a Mummy* which took a first medal in the Universal Exhibition, — shows the same distinguished qualities. His *Procession of the Bull Apis* has thought and research expressed with vigorous precision. Mr. Blashfield, also of New York, is equally drawn towards archaeological subjects; though his "call" is not so evident. His *Roman Ladies Practising in the Arena* has, however, more life and movement than his previous pictures. As fine examples of what *genre* pictures should be I must cite *La Tournée Pastorale of Worms*, which is full of the character of Spanish life and admirably painted; and M. Salmson of Stockholm, in his *Arrest of a Woman in a Village by Gendarmes*, expresses with wonderful precision the various characters, and has composed a powerful picture. Of the battle scenes the most remarkable was Detaille's *Défense de Champagne*, full of unrivalled delineation of soldiers in action. In fact, there is too much individuality given to the men, and this, coupled with a want of simplicity in grouping, injures the composition. Mr. D. R. Knight, of Philadelphia, has so charming a vintage scene that one is grateful that no especial fault distracts the attention from its enjoyment. Agreeable in color and composition, it has a certain Anglo-Saxon purity of sentiment which is the chief merit of English painters; but Mr. Knight has what they rarely attain, — a free, vigorous, and solid style of painting.

Belonging to the *genre* class of pictures, though with figures almost size of life, is Herkomer's *Home for Old Women*. As in the picture of the *Chelsea Veterans*, which last year gained for him a medal of honor at the Universal Exhibition, he has chosen the most distinctively Anglo-Saxon types, which in itself attracts the French. The picture, however, though the old women are admirably painted, is badly composed. The picture of the *Veterans* was remarkable for no composition, which the subject allowed, but here the composition is unpardonable. The principal group is crowded into the right-hand corner, so that the frame promiscuously cuts off arms and legs, while more than half the canvas is occupied by a steep perspective of floor, and some small distant figures.

R.

CORRESPONDENCE.

EPHESUS.

THE EGEAN, August, 1879.

THE water of the Gulf of Scala Nova, which is of so beautiful and transparent a blue near the hills upon which are the ruins of Colophon, becomes a little farther on turbid and defiled, so charged with foreign matter that it is scarcely possible to see the strange livid jelly fishes which float near its surface. The wind brings from the land the vapors which rise from a miasmatic swamp under the summer sun. It is the ooze and marsh of the Cayster, the stream which, after robbing Ephesus of its harbor by silting up the bar, has formed so pestilential an alluvion that the country for miles around is almost uninhabited, and at this time of the year is entirely deserted. I should doubt whether the land has encroached upon the sea as much as is generally supposed. The hills which rise from the midst of the plain may perhaps have once been islands, but hardly in the historical period. Ancient walls, with iron rings for mooring vessels, are quite near the present coast line; it is well known that the port of the city was connected with the sea by a canal. The position of this harbor basin is to-day marked by a forest of high rushes and flags, which map out the antique water-works to him who has climbed the neighboring hills, by a distinct dark green line. Ephesus was already swampy in the time of Xenophon, though being well drained it was not unhealthy. That much of the city lay on low land is evident from the success of Lysimachus in drowning the inhabitants out of dwellings which he considered too near the temple, by stopping their sewers during a heavy rain. Ephesus is the only site of Greek remains

in Asia which is accessible by railroad. The ruins are on this account often visited, and almost invariably from Smyrna. Yet those who come to the city from the inland Ayassabouk lose many interesting characteristics of its ancient approach, the natural passage to the interior along the banks of the Cayster, which must in earliest ages have guided the sea-faring colonists. On the high and steep hill, conspicuous from the coast, there stands the tower traditionally called St. Paul's prison, the age of which has caused some discussion. Its well constructed walls, nearly a metre and a half thick, are of cut limestone laid without mortar, and appear of late Greek workmanship, a characteristic form being the pointed arch cut from horizontally projecting stones, — a mannerism common in Greek fortification walls after the time of Alexander. It seems not improbable that at least some part of the structure was built by Lysimachus. On this hill the primitive Greek acropolis may have stood, though as the rock was not levelled off sufficiently to give much extent, its importance can never have been great. The ruins of Ephesus are scattered upon the sides of this and the hill opposite, farther inland, and in the great natural amphitheatre which lies between them. They are in a state of utter destruction, a confused mass of Roman architectural details, shafts, architraves and archivolt, frieze and cornice fragments, wall blocks and pavement slabs, marble and granite, of every variety and color. Ionic details are everywhere prevalent, where details can be distinguished. The plans which can be traced give little idea of the form or destination of the buildings to which they belonged. A Greek peasant who comes through the thistles in the blazing sun, carrying the noonday meal to those who during the cooler hours of the morning have been at work in the tobacco fields of the fertile plain, points out a cylindrical mass of masonry as the grave of St. Luke, an antique substructure, whether of a monopteros temple like the somewhat venturesome restoration given by Mr. Wood, or of some other of the circular buildings of the later Greeks and Romans, is not clear. Its transformation for Christian usage is attested by the crosses upon it and by the cut through the stylobate. Another krepidoma may be so far followed as to show it to have been that of an amphiprostyle temple. Conspicuous upon the side of the farther hill are the remains of the great theatre; a rough measurement of the diameter shows it to have been about two hundred metres; a few bases of the proscenium are in place, but all is too much destroyed to be of architectural interest, and is withal too generally known to need description. In the crypt-like basement there are some curious Doric shafts with twenty-eight channels. Occasional fragments of Roman sculpture have been purposely mutilated, the heads being maliciously chipped from reliefs. Of Greek remains, or even of Roman workmanship, previous to the Christian era, there is very little; much reaches down to the Byzantine period, and this in turn is supplemented by the great mosque of Selim. The oldest building of Ephesus not entirely overthrown, though roofless and dismantled, this mosque would be eagerly torn down by archaeologists were the Turks to permit it, because of the great amount of antique material which must have been built into its walls. Constructed in the fifteenth century, a time when even the sun of Byzantine Ephesus had fairly set, it took its stones freely from the remains of every period; its wide-spreading façade shows many a block of the temple; the granite shafts of its court of columns must have been polished by Roman artificers. Much material must also have been taken from the ruins to build the vast castle or barrack of Ayassabouk which stands near by, watching over the little town on the hill-side and the broad green expanse through which the Cayster lazily winds its way. The metropolis of Asia has become a deserted and pestilential swamp. The Artemision, the wonder of the world, uncovered from the earth which hid it for ages, can be traced only by a few basement stones; but the relation of the building to the city is the same; the chief interest of Ephesus centres to-day, as it did twenty-five centuries ago, in the temple of Artemis. Ten years ago its very site was unknown; one of the largest monuments of antique architecture had so entirely disappeared that the fact of its existence had even been doubted. Now the stereobate pavements of the three last temples have been found one over another. How many may have preceded these as the Artemision it is impossible to say. Judging from the history of the colonization of Ephesus, and from the architectural development of the Ionic style, the earliest stone peripteros may perhaps have been built here some time in the seventh century. One of the first was imitated in a Roman temple upon the Aventine, built by Servius Tullius (about 560 B. C.); all were of great dimensions. On the coasts of Asia, the threshold of the immense empires of the East, the Hellenic colonists seemed to share the Oriental taste for the colossal, and designed their temples upon a grander scale than elsewhere. The easy and light forms of Ionic architecture were adapted for their requirements; the early development of this style in the Ephesian temples seems to have been so marked that Ephesus was regarded by later antiquity (Vitruvius) without further questioning as the place where the Ionic style originated.

Many literary notices refer to the Artemision; the famous name of Cressus occurs in the list of subscribers to it; accounts of the lavish expenditure in its construction are numerous; the most costly materials were employed; to it applies the only ancient mention of ebony as a building material. References to constructive peculiarities are particularly interesting. We are told that the temple was placed upon so marshy a spot that it might be exempt from the concussions of earthquakes. Architects of Samos, schooled, doubtless, by dealing

with their own low plain, taught the Ephesians to lay a foundation of charcoal upon the swamp, even as we to-day would use a basing of sand coffer in similar circumstances. Peculiar systems of rollers brought the massive blocks of stone from the somewhat distant quarries. The thankful rejoicing of the city was without bounds when a shepherd discovered a nearer ledge of marble, one that could more easily be used for the construction. The son of the Cretan architect who had originally drawn the plans laid the immense weight of the entablature gently and evenly upon the columns by emptying bags of sand from counter-balances. Now that a few stones of the structure have been found, we can easily verify the statement that the shafts were eighteen metres high. The exposed plan shows that the area covered by the last temple was more than four times that of the Parthenon, half as large again as that of Cologne Cathedral.

It seems strange that so vast a building, and so late intact (it could hardly have been injured before the advent of the plundering and destroying Goths in the third century A. D.), could have been so entirely hidden and forgotten that a laborious search of six years, and the expenditure of some twenty thousand dollars in trial pits, were necessary merely to discover its whereabouts, all this time, pains, and cost being but preliminary to the real excavations. A clayey soil of from five to seven metres in depth had been carried down upon it by mountain streams, situated as it was on the extreme edge of the plain. With five years more work and the further disbursement of sixty thousand dollars, Mr. Wood laid it bare, being rewarded by most meagre results. To-day the site of his excavations is a vast pit, its bottom more than half covered with stagnant green water, the abode of water-snakes and fevers. Here lie blocks of the last krepidoma, some seeming to show marks of a fire: broken bases, shafts, and capitals of bluish marble, not unlike the stone of Poros, and a few mutilated fragments of sculpture, not considered worth transporting to England. The tireless labor of Mr. Wood is well known, from his book, "The Discoveries at Ephesus." All has remained unchanged here since he ceased work five years ago. The site of the temple is much as it was represented in the illustrations of that time, — a few only of the better building stones have been carried off. Mr. Wood's restorations should perhaps be regarded with some allowance. Two ancient authors tell us particularly that the ceiling of the last temple was of cedar beams. The cuts in "The Discoveries at Ephesus" — perhaps, by the way, as good and straightforward a representation of the hypothetical hypæthron as can be referred to — have no ceiling at all. The results of the immense expense of time and money at Ephesus were decidedly disappointing. We are now perhaps able to say that the world-renowned temple stood in such a spot, and that the last one was of such and such general dimensions; but all that has been discovered has been of very little importance otherwise. As before said, the Artemision is practically all the city; the fragments of Roman and Byzantine masonry are not worth mention. Ephesus is a discouraging chapter in the story of modern attempts to uncover the remains of ancient civilization. The utility of excavations upon the site of cities which have died of old age, so to speak, may be questioned.

J. T. C.

BUILDING IN NEW YORK IN 1879.

NEW YORK.

THE first half year of 1879 makes a very gratifying exhibit on the books at the Department of Buildings, and real estate owners and builders have been more than surprised at the great activity in this line of business. This year was looked forward to with more than ordinary expectancy. The recovery from the panic was beginning to be seen and felt, and many were anxious to see whether the revival was a real one. Last year seemed to show a better spirit, and was encouraging, but the spring of 1879 was regarded as the crucial season, and the offerings, at the Department of Buildings, of plans for buildings were watched with more than the ordinary interest on this account. There was another influence which was to work very powerfully on the building interests, especially of the upper section of the city, — the elevated railroads, giving rapid transit from one end of this island to the other, a distance on the east side of some thirteen miles. There had been many promises from the managers of these lines of traffic; but it was not until June, 1878, that they were really open, and even now the system is far from its full development. It was almost too late then to build for that season, and many cautious investors preferred also to wait and see how far these air-lines were real successes and how far mere experiments. The winter demonstrated that they were capable of doing all that was promised for them, and the demand for residences in Harlem told the owners of real estate there that the time for immediate improvement and rental had come. The winter and early spring was spent in preparation, and the opening of the building season saw a great rush of mechanics into the section known as the rapid-transit wards.

The first quarter of this year showed an improvement as compared with corresponding quarters of previous years as far back as 1872. The 393 buildings proposed during the months of January, February and March, 1879, were not exceeded, as the following table will show; but the second quarter set all doubts at rest, and in number of buildings, as in cost, the figures ran up to anti-panic showings, and the total for the half year shows that 1163 separate buildings have been projected, at an estimated cost of eleven and three quarters million dollars.

The actual figures stand: —

YEAR.	1ST QUARTER.		2D QUARTER.		HALF YEAR.	
	No.	Est. Cost.	No.	Est. Cost.	No.	Est. Cost.
1868	432	\$5,300,790	711	\$11,704,926	1143	\$17,005,716
1869	674	9,179,070	630	15,320,463	1304	24,499,533
1870	426	5,724,650	844	12,364,553	1270	18,089,203
1871	709	10,098,975	1096	16,002,576	1715	26,101,551
1872	445	5,718,640	690	12,412,150	1135	18,130,790
1873	330	5,320,940	502	11,960,025	832	17,280,965
1874	338	3,977,920	447	6,076,209	785	10,054,127
1875	334	4,765,300	477	7,223,200	811	11,988,500
1876	300	2,723,697	509	7,650,585	809	10,374,282
1877	325	2,776,530	495	5,437,975	820	8,214,505
1878	314	2,884,250	605	5,498,975	919	8,382,325
1879	393	3,131,663	770	8,616,889	1163	11,748,552

Taking the five wards to the north of Fortieth Street, the following table is constructed for the present year; it shows that of the 1163 buildings 898 are in these wards, and the better class of buildings, too, as the analyzed table exhibits: —

BUILDINGS.	WARDS.					TOTAL FIVE WARDS.	TOTAL IN CITY.
	12TH WARD.	10TH WARD.	22D WARD.	23D WARD.	24TH WARD.		
1st-class dwellings.....	159	199	44	7	—	409	434
2d-class dwellings.....	73	25	20	17	—	135	146
French flats.....	32	49	21	—	—	102	121
Tenements.....	21	116	11	—	—	148	253
1st-class stores.....	—	—	—	—	—	0	24
2d-class stores.....	—	—	—	—	—	0	8
3d-class stores.....	2	1	1	1	—	5	9
Office buildings.....	2	1	1	—	—	4	6
Workshops.....	5	6	6	1	—	18	45
Schools.....	1	1	—	—	—	2	8
Public buildings.....	3	4	—	—	—	7	14
Churches.....	—	—	—	1	—	1	2
Stables.....	2	8	7	4	1	22	46
Frame buildings.....	6	2	—	30	7	45	52
Totals.....	396	412	111	61	8	898	1163

Out of a total extent in the city of 24,893 acres these five great wards embrace 20,830 acres, but in many parts they are virtually wild, and the eighty-five or ninety thousand structures in the metropolis are crowded upon four or five thousand acres at the lower point of the island.

It is curious to observe that while in 1863 a total of 1143 buildings cost over seventeen millions of dollars, it is now proposed to put up 20 more buildings, or 1163 in all, at a total cost less by five and a quarter millions of dollars. It is not that the buildings are on the average of a meaner grade. The difference represents only the drop which has taken place in cost of material and labor, and the closer margins on which contractors are willing to take hold of pieces of work. The figures for 1879 do not represent any very heavy jobs. The plans for the Union League Club-House, put at an estimated cost of \$350,000, have been entered since the report above quoted was made up, and with it comes a flat to cost \$110,000, under the superintendence of C. W. Clinton, architect.

The prospect now is that the fall of the year will see no diminution in the rush of plans for approval, and unless some new cause to checkmate the movement should appear, it may be fairly said that the building trade of New York has indeed revived.

A DECORATION FOR THE WALLS OF SCHOOL-HOUSES.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

Sir, — I beg to suggest a method of decoration for the walls of school-rooms which may combine art and utility in connection with the use of color.

Very false ideas of the relative sizes of different states or countries are conveyed to our minds, in spite of all our efforts, by the school maps, and others that we use, because the maps are drawn with reference to the size of sheet and we have no standard constantly before us by which to gauge their respective areas.

Let us assume that we have at our command the whole side of a room on a party wall in which there are no windows or other necessary breaks in the surface. This whole square would represent the area of habitable land of the globe. It would then be divided by colors into the sections representing the areas of continents. Each continent then to be divided by color into countries, and each country into states. The impression of relative size would then be kept before the minds of the pupils, and could never be forgotten.

As an example, assuming that a common checker-board represents the State of Texas, we have sixty-four squares equal to about 275,000 square miles, or about 4,300 square miles to each square. The present German Empire would be represented by fifty squares; Massachusetts by a little less than two. On a large side wall the divisions, marked and named, would be conspicuous, even in the case of a state as small as Rhode Island.

The frieze could be utilized in stripes or lines of various colors to represent the length of rivers, the height of mountains, etc.

An ingenious person could decorate the other walls by the graphical method in a very instructive way. For instance, five squares of the checker-board would indicate the area occupied by the whole cotton cultivation of the United States. A large portion of the graphical presentation of the facts of the United States census, as exhibited in General Walker's statistical atlas, could thus be appropriated to mural decoration.

Yours very truly,

E. A.

SOME EXPERIMENTS IN BURNING SLUDGE INTO CEMENT.¹

PORTLAND cement is manufactured from chalk or limestone and clay. The component parts of these materials vary very slightly, and therefore the manufacture is nearly constant. The average analysis of five large manufactories gives the following results, namely, lime, 56.21 per cent; silica, 24.44 per cent; iron, alumina, 12.1 per cent.

The manufacture of Portland cement from sewage is much more precarious. Sewage, according to my experience, varies in every place and during every hour, and consequently has to be carefully watched in order that the requisite quantity of milk of lime may be added. At Burnley, on certain days, large quantities of dye water come down, on other days butchers' refuse, and once or twice we have observed the sewers full of coal tar and oily refuse. All these facts have to be carefully observed, and only after careful experiments can the quantity of lime necessary to precipitate the sewage be determined. The resultant sludge at Burnley on an average only contains 46 to 50 per cent of lime, and therefore before it is fit to be burnt into Portland cement clinker, more lime has to be added. This is done after the supernatant water has been run off the sludge deposited in the tanks. The sludge has afterwards to be passed through a pug-mill in order that a uniform compound may be obtained.

At Birmingham, where Portland cement was also made, the sewage is so capricious that a uniform manufacture could not be guaranteed. This is accounted for by the fact that at certain times very large quantities of acid from the hardware manufactories of the town are poured into the sewers.

At Portsmouth, where I have studied the sewage, which has wholly water-closet and house drainage, there is little or nothing to interfere with the manufacture of a high class Portland cement. I believe the same remark would apply to the lower Thames valley sewage. The sewage requires only a small quantity of lime to defecate it; 16 grains of quicklime per gallon is ample. The sludge I have found generally contains from 58 to 60 per cent of lime, and therefore no fresh lime would have to be added. The fact that at Portsmouth the storm-water is partially kept out of the sewers is also greatly in favor of the manufacture of good cement. And in places where the separate system is in force, and where the proportion of water-closets is large, it would be, perhaps, worth while to allow the finely suspended organic matter to subside before liming, and to treat the organic matter described in General Scott's patent.

The sludge resulting from limed sewage may also be burnt at a lower temperature than that necessary to produce Portland clinker, and be re-used to precipitate the sewage. After this has been done several times the lime becomes rich in phosphates, and may be profitably sold as a first-class agricultural lime.

As a result of my experience I have arrived at the following conclusions:—

- a. The sewage of every town should be carefully watched and experimented on before any plans or estimates are made.
- b. The storm-water should, if possible, be kept out of the sewers.
- c. A paved town is more favorable to cement manufacture than an unpaved one.
- d. That manufacturing refuse, except acids, does not materially interfere with cement manufacture.

In conclusion, I may state that the cement now being made at Burnley is much improved in quality since the manufacture began, and much has been sold. The latest tests give excellent results. Mr. Deacon, borough engineer of Liverpool, reports the tensile strain of 695 pounds on the $1\frac{1}{4}$ inch square, and that the cement passed through a sieve of 50 meshes to the inch, leaving only 7 per cent of residue. The latest test at Burnley gives 698 pounds.

A portion of a sea-wall at Portsmouth has been built with it, and it has stood this test remarkably well.

Much has been learnt since the process was first started at Burnley, and it may be fairly expected that towns will obtain purification, and at the same time will recover the greater part of the cost of so doing, by adopting this process.

NOTES AND CLIPPINGS.

A STATUE TO BRUCE.—A fine statue of Robert Bruce, the hero king of Scotland, was unveiled Saturday, September 13, in front of the town hall at Lochmaben, Scotland, in the presence of a vast concourse of people. The statue is carved out of close-grained freestone, and stands upon a pedestal of Dalbeattie granite. Pedestal and statue together are eighteen and a half feet high, and are placed in a very conspicuous spot at a point previously occupied by a large cross. Bruce is represented as a sturdy warrior who has accomplished his task, but is ready, if need be, to strike yet

¹ Portions of a paper by Granville Cole, Ph. D., printed in the *Journal of the Society of Arts*.

another stroke for the cause he has made his own. He appears in a mediæval shirt of mail and loose upper tunic, yet with a crown and royal mantle. His attitude expresses resolution; his right foot is advanced, and the weight of his body is thrown upon the left, as he is supposed to have stood while presiding over the great convention of the estates of Scotland, at Arbroath, 1320, to protest against the threatened interference of Pope John in support of English oppression. The head has been designed according to hints supplied by an ancient silver coin. The people of surrounding towns joined with the people of Lochmaben in thus doing honor to the memory of the conqueror, and the festivities of the occasion lasted through the day and far into the night.

HUNT'S LAST DAYS.—The *Sunday Times* has the following anecdote of Hunt:—

I hear a characteristic anecdote about Mr. Hunt from Mr. Loring, the publisher. Several years ago Mr. Loring engaged Mr. Schoff, the well-known engraver, to do an engraving of Rev. George MacDonald for him. He sent to England for a photograph, which he forwarded to Mr. Schoff, who was then in Washington. Mr. Schoff sent it back with the words that he could do nothing with it as it was, and asking Mr. Loring to go to Mr. Hunt and request him to furnish a sketch after which he could work. "Tell him it is for me and he will do it," said Mr. Schoff. So Mr. Loring went to Mr. Hunt's studio on Summer Street, — it was before the great fire, — and found a notice on the door, "Engaged; positively no admittance." He knocked, however, and Mr. Hunt came to the door with palette in hand. Mr. Loring explained his errand, and Mr. Hunt said, in his abrupt way, "Oh, I am altogether too busy to do anything with it; have just had to refuse an order from Gardner Brewer." He paused a moment, and then said, "Did Mr. Schoff send you to me? Let me see it!" And taking the photograph and scanning it instantly with his marvellously quick, keen glance, he made about half a dozen pencil dashes on it and handed it back with the words, "There, send him that! That will show him what to do." He had not taken half a minute in doing it, but the few simple lines were enough to tell Mr. Schoff just what was wanted, and he produced a remarkably fine engraving.

SIGNOR BRUMIDI.—Signor Brumidi, the artist who has been employed for many years painting in fresco the Capitol at Washington, narrowly escaped a frightful death while at his work two or three days ago. He was painting upon the circle of historical figures which he is making around the dome. His scaffold was about sixty feet above the tiled floor, and in attempting to touch with his brush a point at one side he was forced to lean over. The chair in which he was seated toppled, and he was thrown over the side of the scaffold. As he fell he grasped with one hand a rung in a ladder, and sustained himself until one of his assistants reached him. He is very old and so feeble that he can scarcely stand upon his feet. He was completely prostrated by the nervous shock, and it is doubtful if he ever entirely recovers.

THE CALIFORNIA DEBRIS QUESTION.—W. C. Schaffer, of Sutter County, proposes to take the whole of the Yuba River, at ordinary stages of water, through a double flume, down into the low lands between the Yuba, the Sacramento, and the American Rivers. He suggests a double flume, with rifles in each, for the purpose of running one of them at a time, and catching the fine gold. He thinks that the gold thus caught would alone pay the interest on the cost of the flume, which he estimates at \$10,000,000. Under Judge Keyser's decision, which is most likely to be affirmed, it is the miners' business to provide means of taking care of the debris. Under this plan the whole basin, some 100,000 acres, would have to be condemned. The flume could then be carried to that part of the land nearest the foothills first, and that filled in, say twenty feet above the bank of the river, and then moved towards the river, making land as it went. It would take two or three generations to fill the whole in, but a great deal of land would be made every year.

THE CARICATURIST "CHAM."—The late Count de Noé looked more English than French. He was a tall, carefully dressed, and serious man, with a long, fair mustache and an erect carriage. He had an astonishing facility for work, and he worked without fussiness, anywhere and anyhow, without ever wasting a minute, and yet without intruding the fact of his being busy on the notice of others. He was always ready to receive visitors; and in his home circle he was the least tyrannical of men, one who never scolded or fretted, and who was in fact so uniformly gentle as to be almost puzzling. He never spoke evil of anybody; his very drollest sayings were flavored with a mild kindness, yet he knew so many things, and the judgments of his facile pencil revealed such a depth of shrewdness, that one was often tempted to suppose that he held in his tongue with a bridle. The genius of "Cham" was twofold: he was an admirable caricaturist and he was a wit, for the letterpress under his sketches was always of his own writing.

FIRE DEPARTMENT SCHOOL.—The fire department school of instruction will be reopened in Chicago. The school is held one day in each week during the winter months. The programme of instruction marked out for the ensuing year is: 1. Combustible and explosive oils, especially kerosene, gasoline, and that class of hydrocarbons most in use at present; their nature; their use; their danger; how they may be used safely. 2. Other combustible matter, showing gradual spontaneous combustion. 3. Explosive compounds. 4. Causes of fire in paint shops, drug stores, warehouses, wooden roofs, asphalt roofs, and defective chimneys. 5. Buildings where steam power or steam pipes are used; the danger thereof. 6. Boiler explosions, the cause, and how to prevent the same. 7. Lightning as a cause of fire; lightning-rods, their construction and utility. 8. The chemical engine, its principle and use. 9. Engines, their nature; pumps and vacuum. 10. Effect of fire upon iron, granite, marble, sandstone, and brick. 11. Electricity. 12. Laws of falling bodies.

ELEVATOR ACCIDENT.—The rope of an elevator in a Manchester mill broke Friday, causing the elevator to descend with lightning-like rapidity, and Thomas McNally, aged 14, who was riding upon it, jumped from a three-story window to save himself, and received a broken hip.